



Chapter 3

Environmental Impacts

The study area covers nearly 47 miles and includes a wide variety of topographic and geologic settings. This area also includes four communities; Westphalia, Freeburg, Vienna, and Vichy, which are situated in large rural areas dominated by farmland, forested areas, and pastureland. In order to evaluate the potential environmental impacts accurately, two approaches were used. The first approach evaluates community impacts. For example, socioeconomic impacts, displacements, and hazardous waste issues are discussed for each of the four communities. The second approach evaluates impacts throughout the study corridor. For example, threatened and endangered species, water resources, farmland, and land use issues are discussed for the entire Route 63 corridor.

What are the different types of impacts?

Direct impacts are caused by the construction of the project, for example: a wetland filled to accommodate construction of a roadway.

Indirect impacts are caused by the project and are later in time or farther removed in distance than direct impacts, but are still “reasonably foreseeable.” Consider the construction of a new highway on what is now farmland. With increased access to this rural area, developers build new residential developments, and new houses increase demand on water supplies. The construction of the homes and increased water consumption are not directly caused by road construction, but rather are indirect impacts.

Cumulative impacts are impacts on the environment resulting from the incremental impact of the project when added to other past, present, and reasonably foreseeable future projects regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. An example: homes were acquired for the original construction. This next improvement to the route would result in yet more homes being acquired.

Community Impact Analysis

This section discusses the potential impacts to the communities of Westphalia, Freeburg, Vienna, and Vichy. A brief discussion of the methods used in the analysis is included prior to the description of the potential effects of the No-Build Alternative and the build alternatives. A map of the study corridor and alternatives are contained in Appendix C.

How was an assessment of the communities developed?

The study team used information from the United States Census Bureau, the Meramec Regional Planning Commission (MRPC), the National Agricultural Statistics Service (NASS), and other sources to develop a general profile of the residents in the study area. Information on income is displayed in the tables that follow in this section and in Appendix D.

What is a census block?

A census block is made up of one or more actual neighborhood blocks depending upon the density of the local population.

Census blocks provide the best available information concerning demographics. Due to the low population density in the area, the census blocks extend beyond the area being studied in for the Route 63 study.

The study team examined median household income and per capita income. Median household income is measured by taking all of the annual incomes reported to the United States Census by households in an area, and calculating the income level that half of the households are above and half of the households are below. To calculate per capita income, all of the incomes reported for an area are added and divided by the number of people in the area.

Site visits, meetings, and phone conversations with local officials, stakeholders, residents and business owners provided Community Impact information. Also input was provided through public meetings and discussions with the Route 63 Advisory Committee. A list of a majority of these meetings is included in Chapter 4 – Public Involvement.

How would MoDOT and FHWA reduce and compensate for community impacts?

Discussed in the following paragraphs are the potential impacts to residents and communities. If impacts to communities cannot be avoided, MoDOT and FHWA will minimize the impacts as much as possible. Some impacts would be mitigated if required by federal or state laws or regulations. During design MoDOT and FHWA would work with the community on measures to mitigate or compensate, as required by law, for the effects of the construction of a new Route 63. These laws include the Uniform Relocation Act, and those laws and regulations governing noise, water and air quality.

Who lives in the study corridor?

The study corridor consists of a 750-foot strip from the beginning point of the study, just south of the Route 50/Route 63 junction, to Vichy where the corridor narrows to 300 feet through town and then returns to a 750-foot corridor south of Vichy to the ending point of the study just north of Rolla (Appendix C).

With the exception of Westphalia, Freeburg, Vienna, and Vichy, the study corridor is largely rural in character and has low-density residential uses. Businesses in the corridor are a mixture of retail, construction, automotive dealerships, and professional offices. Most of these business types are located along existing Route 63. Other businesses are the numerous agriculture related enterprises, including farms of various sizes and incomes.

Using information obtained from the 2000 U. S. Census Bureau, the study team assessed the effects of the alternatives on this area. The eight census blocks that cover the majority of the study corridor are comprised of 10,313 inhabitants. The corridor population is growing at a healthy rate, which is a sign that traffic numbers would likely not decrease.

The counties and the city of Westphalia are exhibiting population growth rates near or greater than the overall growth rate for the state, 9.3 percent, for the same time frame. Westphalia's growth rate was particularly strong. It could be inferred that this growth rate could be attributed to its close proximity to Jefferson City, a major employment center with state government and various industries. Vienna exhibited slow growth, while Freeburg actually had a negative percentage.

Population trends for the study corridor are shown in Table 3.

Table 3. Community Population Trends						
	Osage	Maries	Phelps	City of Westphalia	City of Freeburg	City of Vienna
1990	12,018	7,926	35,248	287	446	611
2000	13,062	8,903	39,825	320	423	628
1990 to 2000 Percent Change	8.7%	12.3%	13.0%	11.5%	-5.2%	2.8%
Source: 2000 U.S. Census Data No data available for Vichy						

How do the alternatives affect emergency services?

Emergency services that would be affected by the construction of the Preferred Alternative include fire protection districts, county sheriff departments, and county ambulance districts.

The No-Build Alternative would not change any of the existing emergency access to the study corridor and would potentially result in increased response times because as traffic volumes increase on the existing system, so would congestion.

The Preferred Alternative would require the relocation of the volunteer fire department in Vichy and Alternative 2 might require the relocation of the Westphalia fire department depending on design constraints. The influence of all of the build alternatives will be changes in emergency access routes and improved response times.

How would the alternatives affect residents?

Residents have access to various service and retail establishments located in the study corridor, primarily within Westphalia, Freeburg, Vienna, and Vichy. These consist of gas stations, fast food restaurants, convenience stores, automotive dealerships, and small retail establishments. These businesses employ people who live directly in the city as well as those who live in adjoining locales. Employees commute from within the towns to the surrounding communities for work. Affects to these businesses may have consequences to the residents in the area; the relocation of Route 63 could change where people shop or eat.

Residential neighborhoods may also be affected. Transportation projects can impact neighborhoods by relocating residents, dividing the neighborhood, removing local businesses, and creating an atmosphere that discourages neighbors from interacting with each other. For example, the construction of a new, busy road can separate one part of a neighborhood from another. The removal of some homes in a neighborhood can separate friends and result in a smaller sized neighborhood.

The No-Build Alternative would not affect the neighborhoods or relocate any homes surrounding existing Route 63. As traffic congestion increases, living near Route 63 would be more difficult. Without improvements, local residents can expect greater traffic numbers leading to decreased safety and potentially increased noise. Increased traffic numbers on the existing highway would put pressure on local roads and would make it more difficult for local residents to access local businesses and the road would serve as a barrier from east to west for other facilities.

The Preferred Alternative would acquire a total of 27 residences and 15 businesses. Of these relocations, Westphalia has five residential and one commercial relocation, Freeburg has six residential and no commercial relocations, Vienna has one residential and no commercial relocations, and Vichy has the most relocations with 15 residential and 14 commercial.

In addition to the residential and commercial relocations, a combination fire station and community center would also be relocated in the Vichy area. Further, to avoid sensitive historical resources in Vichy, the widening would be to one side of the roadway. Therefore, the total residential and commercial relocations would be lessened when compared to widening on the existing alignment, which would have impacts to both the east and west sides.

The existing route through the communities of Westphalia, Freeburg, Vienna, and Vichy would undoubtedly become safer for local travelers and the public school bus service. This alternative would have potential noise and visual effects on residents now closer to the new highway.

Alternative 1 would relocate a total of 28 residences and two businesses. Of these relocations, Westphalia has 12 residential and two commercial relocations, Freeburg has seven residential and no commercial relocations, Vienna has eight residential and no commercial relocations and Vichy has the fewest relocations with only one residential and no commercial relocations. This alternative would not require the relocation of any community facilities.

Relocating Route 63 away from the existing alignment would also have some impact to businesses that have developed along the existing route. Limited access to the communities of Freeburg and Vienna would make it less likely that travelers would exit to access community businesses. The business impact study found in Appendix D shows that the effect should be modest to those businesses that are travel-oriented. Local residents would continue to have access to local businesses without any delays.

This alternative would also have potential noise and visual effects on residents now closer to the new highway.

Alternative 2 would relocate 38 residences and 33 businesses. This is the highest number of relocations of any of the build alternatives for the study corridor. Of these relocations, Westphalia has 14 residential and 19 commercial relocations, Freeburg has seven residential and no commercial relocations, Vienna has three residential and no commercial relocations, and Vichy has a total of 15 residential and 14 commercial relocations. It could possibly require the acquisition of the Lions Club building which serves as a community facility in Westphalia. With this alternative the existing route through Westphalia, Vichy, and other sections of Route 63 are widened. As such, when compared to the other build alternatives, relocations are higher and safe travel for local travelers and the public school bus service may be lessened as traffic increases on a widened facility through these areas.

What are Travel-Oriented Businesses?
Travel oriented businesses include gas stations, restaurants, and hotels. Most travel-oriented businesses also serve local customers. Customers tend to shop at travel-oriented businesses because of their convenient location, not because they provide unique goods or services.

This alternative would also have greater construction impacts on residents than the Preferred Alternative, as it would use more of the existing alignment near established residences. Relocating Route 63 away from the existing alignment through Freeburg and Vienna would also have some impact to businesses that have developed along the existing route. The business impact study found in Appendix D shows that the effect should be modest to those businesses that are travel-oriented. Local residents would continue to have access to local businesses without any delays. This alternative would also have potential noise and visual impacts on residents now closer to the new highway.

How would the alternatives affect community services and facilities?

Community services and facilities serve the general public with regards to health, spiritual well-being, recreation, and entertainment. The alternatives would have little effect on community services. There are no community agencies located in the area and no community service providers would be relocated. Facilities and community services located in the study corridor include public and privately owned facilities, schools, and churches.

There are four privately owned properties with recreational facilities that are located in the study corridor. Westphalia contains two of these properties, the Knights of Columbus located north of Westphalia on the west side of Route 63 and the Westphalia Lions Club located within the city limits on the west side of Route 63. Both of these facilities serve as community centers for various events. Also located in the study corridor is the Freeburg Lions Club, located just south of Freeburg on the west side of Route 63 and the Visitation Inter-Parish School and Visitation Catholic Church in Vienna.

As well as privately owned properties located in the study corridor, there are also ten publicly owned properties. The two properties located near Westphalia are; the Dr. Bernard Bruns Access on the Maries River east of Westphalia, and Painted Rock Conservation Area located seven miles west of Westphalia on Route 133.

Three of these properties are located in the city of Freeburg and the surrounding area. The Msgr. Bernard S. Groner Memorial Park in Freeburg, the Freeburg tower site located on County Road 209, and Paydown River Access located down County Road 302 all have the potential to be impacted by the build alternatives.

In Vienna and the surrounding area there are four publicly owned properties. Two of these contain recreation facilities: Vienna Park, which contains a community center called the Youth Building is located on the east side of Route 63, and the Vienna Public School Complex, located west of Route 63 on Route 42. There are two other properties south of Vienna on Route 63, Spring Creek Gap Conservation Area, located on the east side of Route 63, and Scenic View Park, which is located on the west side of Route 63.

The one publicly owned property in Vichy area is the Vichy Public Park, administered by Maries County and located on the west side of Route 63 at the juncture of Route 68. There are no publicly owned properties in the corridor area in Phelps County.

There are four schools that serve the study corridor: Osage County R-III, Saint Joseph Elementary, Maries County R-I, and Visitation Inter-Parish School. Higher education institutions are available in Linn, Jefferson City, Rolla, and Columbia.

The Osage County R-III district operates the local elementary and secondary school systems. The school district has two schools with an enrollment of 776 students. Fatima Elementary serves students from kindergarten to sixth grade and Fatima High School serves students from seventh to twelfth grade. Both schools are located on Main Street in Westphalia.

The Maries County R-1 School district operates the local elementary and secondary school systems. The school district has two schools consisting of 298 students, kindergarten through sixth grade, and 279 students in the high school that serves seventh to twelfth grade. Vehicles operated by the public school districts use Route 63 extensively for transportation of students to and from the schools in the morning and afternoon.

Two private schools are located in the study corridor, Saint Joseph Elementary School and Visitation Inter-Parish School. Saint Joseph Elementary School is for students from first to eighth grade and has an enrollment of 112. Visitation Inter-Parish School is for students from kindergarten to eighth grade, enrollment unknown.

There are a total of eight churches located in study corridor: the Saint Joseph Catholic Church in Westphalia, The Church of the Holy Family in Freeburg, Visitation Catholic Church, First Baptist Church, United Methodist Church, First Christian Catholic Church, First Baptist Church, United Methodist Church, First Christian Church, Church of Christ all located in Vienna, and Vichy Community Church.

The No-Build Alternative would not affect any of the schools, churches, parks, or public or private community facilities. The expected increase in traffic would negatively affect school bus safety and time to deliver students to the school.

Construction of the Preferred Alternative would lead to short-term traffic congestion and detours that would affect school bus traffic and emergency services. All detours would be discussed with local officials before they are put in place. The Preferred Alternative would improve the flow of local traffic, including school bus safety, on the existing route, as it would separate local traffic from through traffic.

Alternative 1 would cause no relocations of any the described community facilities. Construction of this alternative would lead to short-term traffic congestion and detours that would affect school bus traffic and emergency services. The Alternative would improve the flow of local traffic, including school bus safety, on the existing route, as it would separate local traffic from through traffic.

Alternative 2, which widens the existing route through Westphalia and Vichy, would have direct impacts to community facilities. The fire station and the Lions Club buildings in Westphalia could likely be impacted, depending upon design constraints, the church in Vichy, and the Vichy fire department/community center also has the potential to be impacted. However, during design an attempt to avoid impacts to this side of Vichy would be a primary objective given the historical architectural resources located in the corridor. Further, increased lanes and traffic could hamper their operations to some extent.

Construction of this alternative would lead to short-term traffic congestion and detours that would affect school bus traffic and emergency services. This alternative would improve the flow of local traffic since it would add traffic capacity with additional lanes. School bus safety should improve along most of this alternative since a majority of Route 63 would be on new location. Vichy would be a notable exception.

What are the economic characteristics of the residents?

The economic characteristics of residents in the area are described in terms of income levels, home ownership rates, and the values of homes in the area. Table 4 includes income levels, home ownership rates, and the values of homes for the counties and cities in the study corridor.

Table 4. Income Levels and Home Ownership Data					
	Median Household Income	Per Capita Income	Average Median House Values	Average Monthly Rent	Owner Occupied Rate
Osage County	\$39,565	\$17,343	\$81,400	\$343	82.9%
Maries County	\$31,925	\$15,753	\$72,900	\$347	81.7%
City of Westphalia	\$35,833	\$18,496	\$87,100	\$347	71.5%
City of Freeburg	\$31,429	\$20,071	\$64,400	\$275	74.0%
City of Vienna	\$23,456	\$13,682	\$56,800	\$353	51.0%
Table Source: Missouri Census Data Center Data not available for Vichy					

What are the existing local economic conditions?

The movement of people and goods through the area affects local, regional, state markets and economic conditions. The location of Route 63 and its ability to efficiently and securely transport people and goods would impact markets beyond the area. The presence of the route also affects local businesses by bringing people through the local communities. This section discusses the impacts of the build alternatives on local businesses and jobs. An assessment of the impacts to the tax base of each county is discussed at the end of the chapter.

Travel oriented businesses are a small portion of the total number of businesses. Additional businesses include professional offices, service providers, and private recreation facilities. The city of Westphalia, the only community with an adopted zoning law, has a designated highway commercial sector within the city boundaries along Route 63. This is the only such designated area in the study corridor. The primary business corridor for Westphalia, Freeburg, Vienna, and Vichy is along Route 63 where retail, professional and service establishments are located.

Major employers near the study corridor include Quaker Window Products Inc., El Sevier Distribution Center and Osage Industries, Diamond Pet Foods, Play-Mor Trailers, Osage County Government; Osage County Schools; Osage County Ambulance District; Linn State Technical College, Kingsford Manufacturing, Maries Manor Nursing Home, Maries County Government, Maries County Schools, Bloomsdale Excavating, Brewer Science, Briggs & Stratton, CanTex, Country Mart, Lowe’s Home Center, Ozark Health Services, Pet Products Plus Inc., Wal-Mart, Zeno’s, Phelps County Regional Medical Center, City of Rolla, banks, and Rolla Public Schools.

What does the term workforce mean?
The workforce consists of all people 16 and over who are working or are actively looking for work.

Unemployment in Osage County is lower than the average unemployment rate for the state, 6.0 percent, while Maries County and Phelps County have unemployment rates higher than the average unemployment rate for the state (Table 5).

Table 5. Unemployment and Workforce Data – February 2008			
Workforce Characteristics	Osage County	Maries County	Phelps County
2008 Average Unemployment Rate	5.2%	6.5%	6.2%
2008 Average Workforce Size	7,395	4,737	22,405
Source: MERIC in cooperation with the U.S. Department of Labor, Bureau of Labor Statistics			

The percentage of county residents living and working in Osage County is 41.3 percent. For Maries County, residents living and working in their county of residence is 34.5 percent. In Phelps County, only 15.5% of workers commute outside the county. However, the majority of workers from both counties; Osage County, 58.7 percent; and Maries County, 65.5 percent, commute to work outside of the county in which they live. The mean travel time to work is nearly the same for residents in each county. Osage County residents travel 28 minutes on the average, while Maries County residents travel 34 minutes. These commuting rates are some of the highest in the state, thus the users of the route will benefit more than most from improvements to safety, efficiency, and shorter commutes.

Economic impacts to the residents and businesses located in the study corridor are further expanded upon at the end of this chapter in the economic impacts of the investment of construction dollars section.

How would the No-Build Alternative affect businesses and jobs within each of the study sections?

The No-Build Alternative would have minimal effects on existing local businesses and local tax bases. No businesses would be relocated and there are no access changes affecting existing business patterns. New right-of-way would not be required, thus there would be no direct impacts to the property tax base for any of the communities in the study corridor.

As the No-Build Alternative does not involve property acquisition or changes in access, it is unlikely to have any direct impacts on local employment. Many residents work outside of Osage and Maries Counties and use the existing roadway as part of their commute to and from work.

The No-Build Alternative could negatively affect jobs related to the trucking industry and businesses in general that rely on Route 63 for product delivery. Periodic congestion and travel-time delays in stretches of the existing route, particularly in Westphalia, Freeburg and Vienna, is costly for businesses and also for both local commuters and through travelers. The costs include increased fuel usage, wages for drivers, lost productivity of trucks, and a reduction in the number of daily trips drivers can make. Congestion also costs trucking firms and manufacturers because of the uncertainty they create in the delivery process.

These costs are felt directly by trucking companies, manufacturers, and individuals passing through the area. Affects to jobs will be minimal, but the business costs are ultimately passed on to consumers in the form of higher prices to account for higher transportation and inventory storage costs. While an analysis was not directly performed to estimate costs for this project, other studies were used to infer the principles of cost related to congestion and travel-time delays to Route 63. One study showed that an improved road system produced a substantial traveler savings to both households and businesses by reducing travel time and mileage, vehicle operation costs and lower accident costs. The MoDOT Freight Study reports, “In the freight industry, retail marketers (e.g.-Wal-Mart) are the influencing parties of how freight moves upon the national and international transportation system. To them, reliability and dependability of the logistics chain and how dollar investment impacts trip time to speed the delivery process from production to customer represents the key critical component to their industry. Therefore any freight investment consideration made by the public sector, should in some way positively impact private freight transport reliability, shorten trip time, and/or minimize loss and damage for the retail distribution chain. Trip time variance may be a key performance metric for future freight planning efforts.”

Fuel consumption would also increase for both those traveling through the area and local traffic caught in related congestion and backups. This would increase the cost of transporting goods and costs for commuters to get to work.

How would the build alternatives affect businesses and jobs within each of the study sections?

Since approval of the DEIS, additional research of impacts to communities of comparable size has taken place. See Appendix D for these research papers. The research revealed that all of these communities experienced increased taxable sales after the highway relocation. Only St. Martins had a loss of sales in recent years, but has shown increases ever since the relocation occurred in the late 1980’s.

In addition, a 2007 in-house study by MoDOT, see Appendix D, found that for non-urbanized counties in Missouri, the highest rates of economic and community growth tend to occur in counties with more miles of four-lane highway. An analysis of counties found that those with more than 15 miles of four-lane highway scored higher on all seven economic indicators included in the study. The counties with 15 or more miles of four-lane highway scored from 9 to 183 percent higher on these measures than did counties with less than 15 miles. Counties with more than 15 miles of four-lane highways had over a 124 percent greater population level, 11 percent greater annual wage, nearly 14 percent greater household income, 118 percent greater number of business firms, 182 percent greater gross sales tax, 125 percent greater real estate valuations and over 9 percent greater per capita income. This increase in connectivity and access, reflected in more miles of four-lanes highway, demonstrates that the transportation system strongly supports economic development.

Westphalia Section:

Economic effects of any of the build alternatives would include the relocation of local businesses, changes in access for local businesses, and impacts to the local tax base. The Preferred Alternative and Alternative 1 would be more effective at reducing the potential for future congestion and providing positive economic benefits to trucking firms, other companies, and individuals. Alternative 2 would be hampered somewhat in this regard with the widening of the existing highway through Westphalia. There would be impacts to existing businesses since all of the build alternatives will relocate businesses. It is assumed that the majority of the relocated businesses own their site while the others lease their business location. These businesses may choose to relocate to a different part of the community, or remain close to their existing location if possible. Some changes in existing business patterns for residents and business owners in the vicinity are inevitable with any of the build alternatives.

Some of the potential relocations are due in part to the need to acquire a portion of a business property but not the whole property. In these cases MoDOT may be able to work out an agreement so that the business can remain in its existing location if the property owner is interested.

Access to businesses in Westphalia and south of Westphalia would change with either the Preferred Alternative or Alternative 1, thus increasing the travel times to these businesses from surrounding communities. Alternative 1 would cause the greatest change and impact with its separation distance of 0.68 miles from existing Route 63. Alternative 1 also has the disadvantage of being separated from Westphalia by the Maries River. The Preferred Alternative would cause changes in access to most businesses, but it is closer than Alternative 1 without a separation by the Maries River. Business impacts would be minor compared to Alternative 1. With either alternative, directional signing to these businesses would be important for their continued operation. MoDOT will provide guide signs to communities, however business signing must be purchased by the company.

A study by the Missouri Economic Research and Information Center (MERIC), in partnership with MoDOT, was conducted to determine business impacts in the study corridor. The study, found in Appendix D, concluded that:

- The drive time between area cities would improve for work commuters and other travelers.
- Shortening commute times will make living in Westphalia more appealing.
- Access to Interstates 44 and 70, and Routes 50 and 54 would also be improved.
- Current economic activity is primarily regional, within 30 miles, with regard to customer base.

With access roads being less than a mile from Westphalia from Route 63 and close to five miles from Route 50, the current local market can continue to be served as drive times to the city would increase by less than a minute. Road improvements, however, would lessen the drive time on Route 63, which in most cases would offset any increase caused by the relocation away from the city of Westphalia. Based on previous relocation studies, noted in the MERIC study, Westphalia exhibits all the characteristics that can contribute to further economic growth in a community following relocation.

The Build Alternatives would impact jobs that are connected with businesses that would be relocated. All of the businesses impacted by any of the alternatives are small in nature regarding employment numbers. Therefore, Alternative 2 has the most likelihood of creating job loss impacts by the mere fact that it has the potential to relocate the most businesses. The Preferred Alternative and Alternative 1 only relocate one and two businesses, respectively. All of the businesses relocated by any of the build alternatives are small sized establishments, generally 25 or fewer employees. These businesses should be able to find comparable new locations relatively easily, since there is an abundance of undeveloped property and commercial zoning through Westphalia. Nonetheless, the business may choose to shut down or move outside of the area, as such there would be a loss of local jobs.

Freeburg Section:

Economic effects of any of the build alternatives for this area would include changes in access for local businesses and impacts to the local tax bases for local governments. Each of the build alternatives would reduce the potential for congestion, providing positive economic benefits to trucking firms, other companies, and individuals. Some changes in existing business patterns for residents and business owners in the vicinity are inevitable with any of the build alternatives.

With any of the build alternatives there would be indirect effects to some businesses since the highway would be on a new location. Access to Freeburg and its businesses would be provided. The Preferred Alternative has an advantage of access from an intersection with Route P (Appendix C). Travel times to businesses would change with either one of the build alternatives. But the Preferred Alternative would again have an advantage with the Route P connection. Some travel-oriented businesses may decide to move near this intersection to catch through travelers. Alternatives 1 and 2 would likely cause the greatest change and impact to businesses along existing Route 63 since these alternatives are placed on the east side of Freeburg where access to the city is less favorable.

The MERIC business impact study in Appendix D showed that:

- Drive times would improve access to the cities of Linn, Rolla, and Jefferson City.
- Access to Interstate 44 and Highways 50 and 54, would also be improved.
- A majority of Freeburg residents commute to the surrounding cities for work.
- The population of Freeburg nearly doubles in size during the working hours because of a substantial amount of employees commuting from communities outside of the Freeburg area.
- Shortening the drive time between area cities would make it more attractive for residents to continue to live and work in Freeburg.

Current economic activity is primarily regional with regard to customer base. With access roads being less than a mile to Freeburg from Route 63, the current local market can continue to be served as drive times to the city would increase by less than a minute. Road improvements would lessen the drive time on Route 63, which in most cases would offset any increase caused by the relocation away from the city of Freeburg. Based on previous relocation studies, Freeburg also exhibits characteristics that can contribute to further economic growth in a community following relocation. The new roadway would offer access to the city and be a short distance away from local businesses. Certain strategies can encourage growth in the community and keep existing businesses from relocating. Freeburg could benefit from signage along the new highway, marketing campaigns for tourism and local businesses, and recruitment of new firms because of improved drive times to interstates, highways, and metropolitan areas.

Vienna Section:

Economic effects of any of the build alternatives would include changes in access for local businesses, and impacts to the local tax bases for local governments. In this study area each of the build alternatives would reduce future congestion, providing positive economic benefits to trucking firms and other companies and individuals. Some changes in existing business patterns for residents and business owners in the vicinity are inevitable with any of the build alternatives.

With any of the build alternatives there would be indirect effects since the new Route 63 would be on new location from the existing location. Access to Vienna and its businesses would be provided. The Preferred Alternative may have an advantage of access into Vienna on the north with an intersection with existing Route 42.

Travel times to businesses would obviously change with any of the build alternatives. Some travel-oriented businesses may decide to move near intersections to catch through travelers. Signing and advertisement to businesses in Vienna and Lake of the Ozarks would be important with any of the alternatives.

The MERIC business impact study in Appendix D showed that:

- Drive times would improve access to Rolla, Linn, and Jefferson City.
- Access to Interstate 44 and Highways 50 and 54 would also be improved.
- An hour drive time distance would expand to include Fort Leonard Wood, Sullivan, and nearly reach the boundary of Fulton.
- A majority of residents commute to the surrounding cities for work. Although nearly 70 percent of Vienna residents leave the city to work elsewhere, it should be noted that the day employee population changes very little.
- Commuters outside the area travel to Vienna for work. Shortening the drive time between area cities would make it more attractive for residents to continue to live in Vienna and make it easier for others to visit and work in Vienna.

Current economic activity is primarily regional with regard to customer base. The study has specific percentages related to customer patronage. With access roads being approximately a mile and a half from Vienna from the Route 63 intersection, the current local market can continue to be served as drive times to the city would increase by less than a minute.

Based on previous relocation studies, noted in the MERIC study, Vienna exhibits all the characteristics that can contribute to further economic growth in a community following highway relocation. The roadway would offer access to the city and be a short distance away from local businesses. Certain strategies can encourage growth in the community and keep existing businesses from relocating. Vienna could benefit from signage along the new highway, marketing campaigns for tourism and local businesses, and recruitment of new firms because of improved drive times to the interstate and metro areas.

Even though there are no business relocations there may be minor job impacts if a business experiences diminished sales or goes out of business with the relocation of Route 63.

Vichy Section:

Some changes in existing business patterns for residents and business owners in the vicinity are inevitable with any of the build alternatives. Economic affects of the Preferred Alternative would include the relocation of local businesses, changes in access for local businesses, and impacts to the tax base. On the positive side each of the build alternatives would reduce future congestion, providing positive economic benefits to trucking firms and other companies and individuals.

With Alternative 1 there would be indirect effects since it relocates the highway from the existing location. Access to Vichy and its businesses would be provided, however, travel times to access these businesses would change with Alternative 1. With this alternative some travel-oriented businesses may decide to move near intersections to catch through travelers.

The MERIC business impact study in Appendix D showed that:

- Drive times would improve access to the cities of Rolla, Licking, Sullivan, and Fort Leonard Wood.
- Access to Interstate 44 and Highways 50 and 54 would also be improved.
- An hour drive time distance would expand to include Linn, Jefferson City, Lebanon, Salem, and Union.
- Nearly all of the residents commute to the surrounding cities for work. Shortening the drive time between area cities would make it more attractive for residents to continue to live in Vichy and would make it easier for others to work in Vichy.
- Traffic flows are expected to increase to over 9,400 vehicles by 2035. With improved connection to interstates, the local airport could also play a role in future economic growth. All of these factors are positive aspects for this community.
- Certain strategies can encourage growth in the community. Vichy could benefit from signage along the new highway, marketing campaigns for local businesses, and recruitment of new firms because of improved drive times to the interstate, highways, and metro areas.

The Preferred Alternative would have job impacts. During design the number of business relocations should be able to be minimized. In the end job losses would be minimal or none depending upon whether or not a business reestablishes in the community. Given the small size of Vichy, even Alternative 1, which relocates the highway from Vichy, would likely cause diminished sales for some of the Vichy businesses or ultimately their closure.

What are the common modes of transportation used by residents in the corridor?

Personal vehicles-cars, trucks, and vans- are by far the most common sources of transportation to work for residents along the area. There is not a mass public transit system available for work transportation. Older Adult Transportation Service (OATS) is available for eligible participants to use as a means to travel to work on a limited basis.

Based on census data, it was found that the vast majority of the area workers, over 60 percent, drive alone to get to work. The census data also revealed that slightly over 25 percent of the area workers carpool to work. The commute time to work for residents in the corridor is a minimum of 25 minutes and as much as 40 minutes.

How important is Route 63 to businesses and communities in the corridor?

Route 63, which is an important north-south route for the movement of commerce as evidenced by the percent of trucks, is also an important part of the local economy. There are two major ways that the presence of Route 63 helps the local economy. First, there are area businesses that use the route to transport goods to points north and south within Missouri and beyond.

They benefit from the route the same way as businesses outside the area do. Secondly, travelers that use the route also visit local businesses. Up to 6,000 cars and trucks pass through the area on an average day. A portion of those vehicles would be from other places in Missouri that pass through or stop in the area. Some of the drivers and passengers of these vehicles would stop for food, gasoline, supplies, and other business reasons in the area.

In response to concerns by cities along the corridor, MoDOT worked together with the Missouri Department of Economic Development to assess impacts to local business within these cities. This study in its entirety is located in Appendix D. One conclusion from the study was that the vast majority of the customers of retail establishments in each city reside within 30 miles of the city.

What are the tax base impacts to the communities?

Local property tax base impacts are discussed based on the taxable value of parcels that would be acquired for right-of-way by the alternatives. Taxable assessed value of real estate was collected from the county assessor’s office in Osage and Maries Counties. Right-of-way would not be needed in Phelps County; therefore, a tax base impact to that county was not performed.

What is the Property Tax Base?

The property tax base of a community is the combined taxable value of all properties or real estate in the community. This tax base is an analysis of the impact to tax revenues to the government entity due to the property removed from the tax roles. The impact to property tax revenues is based on the value of those properties that would be potentially acquired for the project. These impacts are shown as a percentage of the total taxable property value in the county.

Future changes in taxable value because of the impacts of a particular alternative on neighboring parcels are not accounted for in the assessment, as it is extremely difficult to forecast the impacts of a transportation project on the taxable value of a property. Local property tax base impacts by build alternative for Osage and Maries Counties are listed in Table 6.

Table 6. Local Property Tax Base Impacts – 2008 Dollars

	Osage County			Maries County		
	Taxable Value* Lost (in millions)	Total Taxable Value* (in millions)	Percent of Total Taxable Lost	Taxable Value* Lost (in millions)	Total Taxable* Value (in millions)	Percent of Total Taxable Lost
No-Build	\$0.0	\$109.3	0.0%	\$0.0	\$61.5	0.0%
Preferred Alternative	\$1.2	\$109.3	1.1%	\$2.0	\$61.5	3.3%
Alternative 1	\$1.4	\$109.3	1.3%	\$2.1	\$61.5	3.4%
Alternative 2	\$1.7	\$109.3	1.6%	\$2.2	\$61.5	3.6%

Sources: State Tax Commission of Missouri, County Assessors, Raw property values from MoDOT Right-of-Way Agent
 * Taxable Value is assessed valuations for real estate

Depending upon the alternative built, Osage County would forego approximately 1.1 to 1.6 percent of its existing taxable value. In Maries County, the range is 3.3 to 3.6 percent of the total taxable value. This loss of taxable value would represent a permanent reduction in the taxable property to the governmental revenues and thus would affect budgets and programs. The local public school district would also lose tax base as a result of taxable property taken off the rolls. However, a better facility would make the area more attractive and contribute to an increased tax base. It should also be noted that the improvements would be built in stages so that the government entities would not experience a sudden large decrease to their budget.

Residents may experience changes in their property values and property taxes. It is very difficult to isolate the effect of transportation improvements on the value of particular parcels of lands. Some parcels may increase in value because of improved access while other properties may lose value due to noise or visual impacts. A property, which may have lower value as a residential property, may also have a much greater value as a potential business site.

It is also difficult to differentiate between the effects of the new highway and changes in values because of property improvements or changes in the local market. As a result, MoDOT does not attempt to assess the potential changes in value for individual properties that do not need to be purchased for the project. MoDOT does not directly compensate property owners for potential losses in property values because of their proximity to the new highway nor does MoDOT charge property owners for any potential additional value created by the project. Lastly, with any one of the alternatives there could be local income tax revenue reductions if businesses and residents who must relocate choose to move to other communities.

What are the economic impacts of the investment of construction dollars?

The investment of construction dollars for the project would result in the creation of new jobs. When an investment is made in the construction of a new facility, the companies and individuals receiving payment for building the project would in turn spend the money they receive on other goods and services. Companies and individuals receiving the benefits of reduced travel time and crash costs would also invest portions of these savings in the local and state economies.

Based on the estimated construction cost range for the build alternatives of \$147 million to \$195 million, the study team estimates that between 5,113 and 6,782 jobs would be created over a five-year construction period. These job estimates are based on the standard ratio used by FHWA that for every \$1 billion of federal money invested, plus the state match, supports 34,779 jobs. Most of these jobs would be short-term construction related positions. Local job benefits from construction would depend in part on the availability of local materials and workers. MoDOT seeks the best possible value from its investments when tendering construction projects and, like any other project, there is no guarantee local firms would be selected or local materials used.

Relocations

What relocations are required for the build alternatives?

All of the build alternatives would require MoDOT to purchase existing homes and businesses in the study corridor. The action of moving these homes or businesses to a new place is referred to as relocations. Residential relocations are homes that must be purchased including single-family homes, duplexes, apartments, and condominiums. Commercial relocations are businesses that must be purchased including stores, offices and restaurants. Relocations would only be necessary if a build alternative directly impacts a home or business. The right of way and relocation analysis used the corridor width along the length of the study area to determine the amount of relocations. However, the actual corridor width varies because of terrain and steep topography.

The residential relocations of each build alternative consist of single-family homes and are representative of the overall housing stock within the study corridor. As shown in Tables 7 and 8, the build alternatives are similar in the number of relocations and impact costs. Most of the homes that may be relocated are owner occupied. No multi-unit rental property relocations are required; a few of the relocations are assumed to be single-family home rentals. Analysis of census data indicates that the residential relocations would include a very small percentage of minority and low-income households.

Table 7. Right of Way and Relocation Impacts by Alternative and Region

Section/ Alternative	Right of Way			Parcels			Relocations	
	New	Full Acquisition	Partial Acquisition	Total	Full Acquisition	Partial Acquisition	Residential	Commercial
	Acres	Acres	Acres	#	#	#	#	#
Westphalia								
Preferred Alt.	474	152	322	38	13	25	2	1
Alternative 1	304	83	221	33	9	24	9	2
Alternative 2	305	98	207	25	24	24	6	12
South of Westphalia								
Preferred Alt.	534	65	469	25	3	22	3	0
Alternative 1	455	73	382	19	3	16	3	0
Alternative 2	589	235	354	35	14	21	8	3
Freeburg								
Preferred Alt.	820	189	631	43	10	33	6	0
Alternative 1	870	44	826	39	2	37	7	0
Alternative 2	777	70	707	43	4	39	7	0
Vienna								
Preferred Alt.	691	201	490	69	20	49	1	0
Alternative 1	734	155	579	90	19	71	8	0
Alternative 2	655	92	563	63	9	54	2	0
Vichy								
Preferred Alt.	277	64	213	131	30	101	15	14
Alternative 1	464	84	380	117	20	96	1	0
Alternative 2	277	64	213	131	30	101	15	9
Total								
Preferred Alt.	2,796	671	2,125	306	76	230	27	15
Alternative 1	2,827	439	2,388	298	54	244	28	2
Alternative 2	2,603	559	2,044	297	81	239	38	24

- The Preferred Alternative would require the relocation of 27 residential units and 15 businesses.
- Alternative 1 would require the relocation of 28 residential units and two businesses.
- Alternative 2 would require the relocation of 38 residential units and 33 businesses.

No community facilities would be impacted or relocated by any of the alternatives. At this time, all residential and commercial relocations are considered full acquisitions. The opportunity to decrease the relocation numbers for both residential and commercial would be possible and likely during design.

Table 8. Right of Way and Relocation Impact Costs

Section/Alternative	Right of Way Costs	Relocation Costs	Total Costs
Westphalia			
Preferred Alternative	\$3.5 million	\$200,000	\$3.7 million
Alternative 1	\$4.2 million	\$200,000	\$4.4 million
Alternative 2	\$8.8 million	\$500,000	\$9.3 million
South of Westphalia			
Preferred Alternative	\$3.3 million	\$200,000	\$3.5 million
Alternative 1	\$3.7 million	\$200,000	\$3.9 million
Alternative 2	\$5.6 million	\$300,000	\$5.9 million
Freeburg			
Preferred Alternative	\$5.3 million	\$300,000	\$5.6 million
Alternative 1	\$5.8 million	\$300,000	\$6.1 million
Alternative 2	\$5.7 million	\$300,000	\$6 million
Vienna			
Preferred Alternative	\$6.3 million	\$300,000	\$6.6 million
Alternative 1	\$7.8 million	\$400,000	\$8.2 million
Alternative 2	\$6.2 million	\$300,000	\$6.5 million
Vichy			
Preferred Alternative	\$9.1 million	\$500,000	\$9.6 million
Alternative 1	\$5.6 million	\$300,000	\$5.9 million
Alternative 2	\$7.5 million	\$400,000	\$7.9 million
Totals			
Preferred Alternative	\$27.5 million	\$1.5 million	\$29 million
Alternative 1	\$27.1 million	\$1.4 million	\$28.5 million
Alternative 2	\$33.8 million	\$1.8 million	\$35.6 million

How were relocations considered during the study and how would property owners be compensated?

The relocations identified for each alternative represent the worst-case scenario of using the entire width of the alternative corridor. Primarily, if the corridor crossed over the residence or business building it was counted as relocation. Through engineering refinements in the design phase of the project, there may be opportunities to reduce the number of relocations needed for each alternative. To determine the availability of replacement housing and commercial property, 2000 census data for the affected communities was reviewed and local realtors serving the study area were contacted.

MoDOT will compensate homeowners that are relocated and assist with the relocation process. All relocation assistance would be provided in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended (49 CFR Part 24). Resources would be made available without discrimination to all residential and business owners who are relocated. Under the requirements of the Uniform Act, no relocations can occur until it is shown that comparable housing is available in the area for relocation purposes. Replacement housing must be similar both in type and price range. Typically, community facilities that are relocated by a project require rebuilding rather than relocation.

The Uniform Act, as well as Missouri state laws, requires that just compensation be paid to the owner of private property taken for public use. The appraisal of fair market value is the basis of determining just compensation to be offered the owner for the property to be acquired.

Any relocated owner-occupant or tenant of a dwelling who qualifies as a relocated person is entitled to payment of his or her actual moving and related expenses, as MoDOT determines to be reasonable and necessary. A relocated owner-occupant who has occupied a relocated dwelling for at least 180 days is also eligible to receive up to \$22,500 for a replacement housing payment. This includes the amount by which the cost of a replacement dwelling exceeds the acquisition cost of the relocation dwelling, increased interest costs and incidental costs. A relocated owner-occupant who has occupied a relocated dwelling for at least 90 days but less than 180 days and a tenant who has occupied a relocated dwelling for at least 90 days, is entitled to a payment not to exceed \$5,250 for either rental or down payment assistance.

What is an appraisal?

An appraisal is defined in the Uniform Act (49 CFR Part 24) as a written statement independently and impartially prepared by a qualified appraiser setting forth an opinion of defined value of an adequately described property as of a specific date, supported by the presentation and analysis of relevant market information.

Any relocated business, farm operations, or nonprofit organizations, which qualifies as a relocated person is entitled to payment of their actual moving and related expenses, as MoDOT determines to be reasonable and necessary. In addition, a business, farm, or nonprofit organization may be eligible to receive a payment, not to exceed \$10,000, for expenses incurred in reestablishing their business, farm operation, or nonprofit organization at a replacement site.

A relocated business may be eligible to choose to receive a fixed payment instead of the payments for actual moving and related expenses, and actual reasonable reestablishment expenses. The payment amount for this entitlement alternative is based on the average net earnings of the business. This fixed payment amount cannot be less than \$1,000 or more than \$20,000.

The business relocations for each build alternative would also require the relocation of a number of jobs. An estimate of the jobs connected with the business relocations is presented in Table 9. These estimates were made by knowledge of the businesses that would be potentially relocated. In instances where an employment count for a business was unavailable, an estimate was made based on similar businesses in the study corridor.

Table 9. Estimated Job Relocations

	Number of Estimated Commercial Relocations	Estimated Total Jobs Relocated
Preferred Alternative	15	40
Alternative 1	2	4
Alternative 2	33	75

Commercial relocations based on a wider than needed alternative width.
Relocation numbers would be reduced during highway design.

The No-Build Alternative will not require any relocations.

The Preferred Alternative has the smallest number of relocations of the build alternatives in each area except Vichy, which accounts for over half of the total number of relocations. Through engineering refinements in the design phase of the project, there may be opportunities to reduce acquisitions and relocations. Preliminary engineering was performed in the area to determine if the NRHP eligible structures on the east side could be avoided and the city park on the west side. Both are Section 4(f) properties. It was determined that it would be possible to widen (add lanes) to the west side only to avoid the NRHP eligible structures and the park. For this reason the number of relocations would drop drastically. This would be the same case with commercial business relocations in Vichy.

Alternative 1 contains a large number of relocations at the Westphalia, Freeburg, and Vienna areas where the proposed route crosses county roads and state routes. The residential properties along these roads, especially those near Route 63, have generally developed into smaller tracts with houses in close vicinity. This alternative has only two commercial business relocations, which is the least among the build alternatives.

Alternative 2 includes using the most length of existing Route 63. Therefore, this alternative has the greatest amount of commercial and residential relocations of the three build alternatives.

All of the businesses relocated by these alternatives are small-sized establishments (generally 25 people or fewer). The retail/service businesses are typical of those in most communities similar in size in the study area. These businesses should be able to find comparable new locations relatively easily, especially since there is plenty of undeveloped property. Few long-term job losses are expected with these alternatives as it relocates businesses that are not highly dependent on their current locations.

Those travel-oriented businesses may want to relocate if they believe it is necessary. Appendix D, Preconstruction Community and Business Impact Study, shows the majority of retail customers in each city along the route are within 30 miles of the town.

Current market data (internet real estate search) revealed that there are very few replacement properties along the corridor in terms of number or type of residential dwellings or business relocations. Replacement property should be of a similar size and pricing of the original home. No relocations can occur until it is shown that comparable housing is available. Those being relocated near the communities of Westphalia, Freeburg, Vienna and Vichy have limited residential areas to move to, but do have more homes with a range of values that should provide adequate housing for those that are required to relocate. Available housing for those in the more rural portions would be limited in number and price range.

In addition to property acquisition, any normal construction project of this size would have permanent easements either for utilities or drainage. Wherever there is a large drainage structure a permanent easement is usually purchased for maintenance of the structure and cleaning lodged debris after major storm events. Along the Route 63 corridor permanent easements for utilities will likely be needed as well. Temporary Construction Easements are also common and used when there is no need to absorb the property into the right of way after construction is complete. Property owners will be compensated for easements.

Noise Impacts

Sound is an element of daily life that we call noise when we perceive it as unpleasant, unwanted, or disturbingly loud. We analyze noise to understand the potential effect of traffic and construction noise on public health and welfare. As part of the study we consider how different project alternatives would cause traffic noise changes, and the noise caused by construction. We also consider whether it is likely the project would include mitigation measures, such as noise barriers, to buffer noise-sensitive areas from the roadway.

How do we describe noise?

Noise is unwanted sound. Sound is the result of vibrations in the air that travel as a wave at different frequencies. The frequency is commonly referred to as the pitch of a sound. A high pitch sound corresponds to a high frequency sound wave and a low pitch sound corresponds to a low frequency sound wave.

A meter measures sound electronically and combines all the frequencies of sound into one overall level that simulates how a typical person hears sound. Environmental noise is often measured and described in terms of A-weighted decibels (dBA). The A-weighting is a filtering system that helps to present information about sound in a way that is similar to the way the human ear works.

What are A-weighted decibels (dBA)?

A-weighted decibels are an expression of the relative loudness of sounds in air as perceived by the human ear.

Loudness, in contrast to sound level, refers to how people subjectively perceive a sound. This varies from person to person, but most people judge relative loudness between sound levels similarly. The human ear can barely perceive a 3 dBA increase, but a 5 or 6 dBA increase is readily noticeable and seems as if the sound is about one and a half times as loud. A 10-dBA increase seems to be twice as loud to most people.

The human ear is less sensitive to higher and lower sound frequencies than to mid-range frequencies. Therefore, sound level meters used to measure environmental noise generally use a filtering system that cuts out higher and lower frequencies in a similar way to how the ear works. This produces noise measurements that approximate normal human hearing. Table 10 shows the noise levels commonly associated with different types of noise sources.

Table 10. Common Sources of Noise (dBA)

Thresholds/Noise Sources	Sound Level (dBA)	Subjective Evaluations	Possible Effects on Humans	
Human threshold of pain Carrier jet takeoff (50 feet)	140	Deafening	Continuous exposure can cause hearing damage	
Siren (100 feet) Jackhammer, power drill	130			
Loud rock band Auto horn (3 feet)	120			
Busy video arcade Baby crying	110			
Lawn mower (3 feet) Noisy motorcycle (50 feet)	100	Very Loud		
Heavy truck at 40 mph (50 feet) Shouted conversation	90			
Kitchen garbage disposal (3 feet) Busy urban street, daytime	80	Loud		Speech interference
Normal automobile at 65 mph (25 feet) Vacuum cleaner (3 feet)	70			
Large air conditioning unit (20 feet) Normal conversation (3 feet)	60	Moderate		
Quiet residential area Light auto traffic (100 feet)	50			
Library Quiet home	40	Faint	Sleep interference	
Soft whisper (15 feet)	30			
Broadcasting studio	20	Very Faint		
Threshold of human hearing	0-10			

Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Report No. 550/9-74-004. U.S. Environmental Protection Agency, Washington, DC: March 1974

How did we evaluate existing and future noise levels?

Existing noise levels were measured at nine locations in the study corridor. Figures 24 through 26 show the noise measurement locations. Measurements were taken to find the average noise levels (Leq(h)) during the loudest hour of the day at locations next to the existing Route 63 highway, and further away from the current highway in quieter areas closer to one or more of the proposed alternative locations.

What is Leq(h)?
Leq(h) is the equivalent sound level widely used to describe environmental noise. It is the average sound level measured during an hour.

Figure 24. Existing Noise Monitoring Locations - North Portion

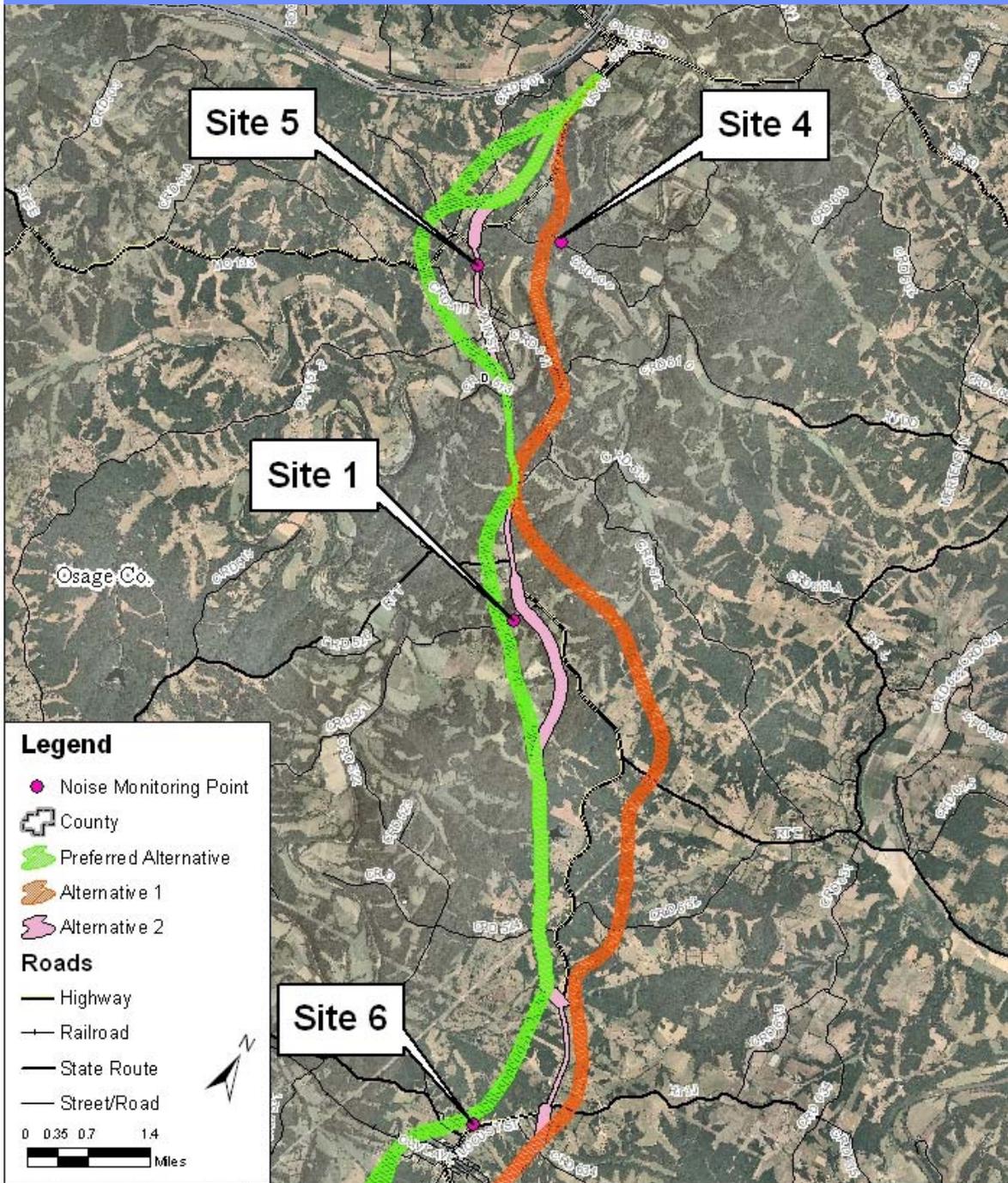


Figure 25. Existing Noise Monitoring Locations - Central Portion

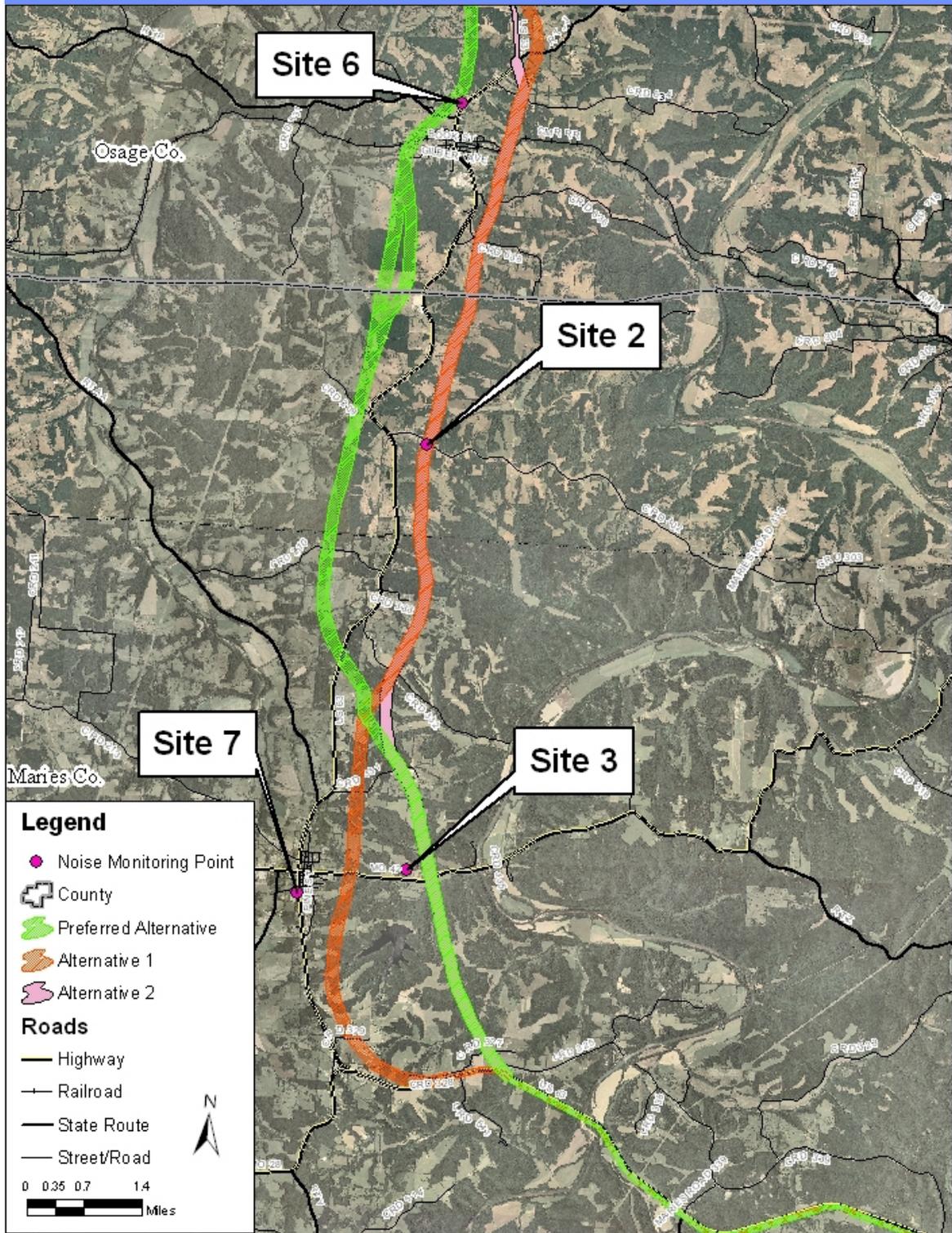
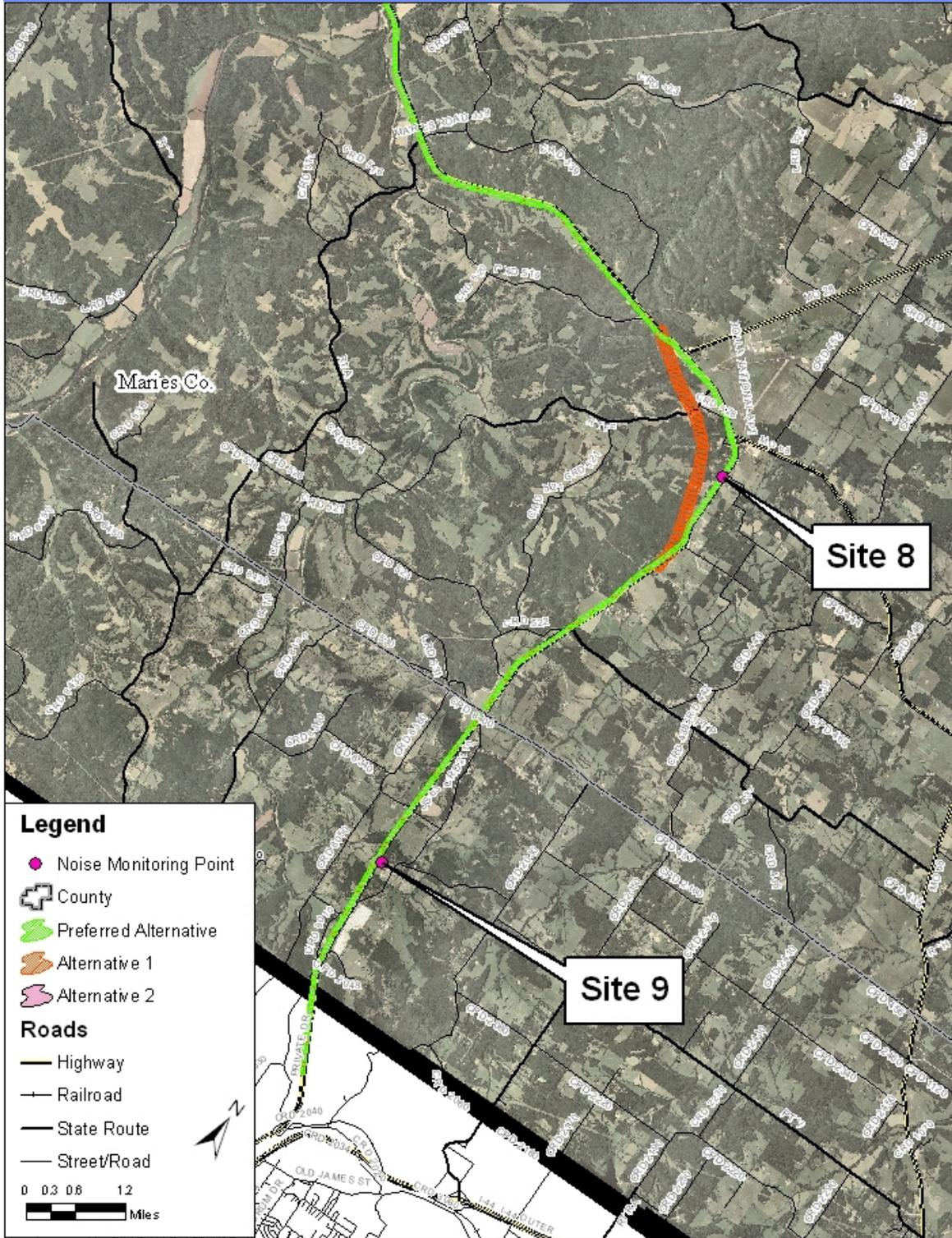


Figure 26. Existing Noise Monitoring Locations - South Portion



In the analysis, we look at noise levels at different land uses in the study corridor. The land uses in this area are primarily residential (homes) and small businesses (commercial). Land uses in the towns (Westphalia, Freeburg, Vienna, and Vichy) are a mixture of commercial and residential properties. The areas between the towns are predominantly residential.

Noise levels are compared to the MoDOT noise impact criteria, which have been approved by FHWA, and are based on the FHWA noise abatement criteria (NAC), for different types of properties. Table 11 lists the MoDOT noise impact criteria. An impact occurs when the predicted traffic noise levels approach or exceed the MoDOT noise impact criteria, or when the predicted traffic noise levels substantially exceed the existing noise levels.

Table 11. Noise Abatement/Impact Criteria by Land Use - Leq(h) - dBA	
Land Use - Primary Activity	MoDOT Noise Impact Criteria
Residential, Recreation, Churches, Schools, Hotels (Exterior Levels)	66
Commercial, Industrial (Exterior Levels)	71
Residential, Recreation, Churches, Schools, Hotels (Interior Levels)	51

MoDOT is responsible for implementing the FHWA regulations in Missouri and is required to define the terms “approach” and “substantially exceed” in order to apply the FHWA regulations locally through the *MoDOT Traffic Noise Policy* (MoDOT, 1997). MoDOT has determined that a traffic noise impact occurs if predicted noise levels are predicted to be within 1 dBA of the FHWA criteria. MoDOT has also determined that a substantial excess of existing noise levels is an increase of 15 dBA.

What are noise abatement criteria (NAC)?

For residential and public use buildings or outdoor recreational areas, FHWA defines the NAC at 67 dBA. MoDOT has adopted the NAC and sets its own criteria at 66 dBA for residential land uses, public use buildings and outdoor recreational areas. If the NAC is approached, met, or exceeded, noise mitigation must be evaluated.

The noise analysis we performed for this study is intended to provide a simplified or “broad brush” evaluation of the proposed alternatives to help decide between the alternatives. As such, this noise analysis does not include detailed modeling of noise impacts or final noise wall locations.

The noise analysis used a simplified screening approach in conjunction with FHWA’s Traffic Noise Model. The simplified screening analysis assumes the study area is completely flat, and calculates noise levels at certain distances from the roadway. The simplified screening analysis does not take into account hills and other features that can block noise.

The screening analysis is designed to help understand study area noise levels, provide a method of determining the potential for noise impacts, and allow us to make a side-by-side comparison of alternatives. Calculating the distance from the roadway to the residential (66 dBA) and commercial (71 dBA) noise impact “contour” for each alternative, and estimating the number of properties that are between the road and the contours, shows the range of potential noise impacts for each alternative. The distance from the roadway centerline to the point where traffic noise levels declines to below the noise impact criteria was calculated for nine sections of each highway alternative alignment, including the No Build Alternative.

The nine sections were calculated separately to take account of changes in the general amount of traffic in different sections, and changes in the posted speed limits, both of which would affect how much traffic noise is generated.

The screening analysis is not intended to provide accurate noise level predictions at each property, but allows us to compare the range of potentially noise-impacted properties under each alternative.

How noisy is the study area?

Table 12 shows the daily peak hour noise levels for each of the nine locations where noise was measured, and the distance of that location from the existing highway. Currently, the existing highway is the main source of noise in the area. The results show that noise levels at locations within approximately 250 feet of Route 63 are currently between 63 dBA and 71 dBA during the loudest hour of the day. Locations further away from the existing highway have noise levels between 50 dBA and 56 dBA during the loudest hour of the day. The results in Table 12 show how the highest average noise levels generally decrease as you move farther from the existing highway.

Monitoring Location	Distance from Route 63 (feet)	Morning Peak Hourly Noise Level (dBA)	Afternoon Peak Hourly Noise Level (dBA)
Site #5	75	71	70
Site #8	75	61	62
Site #7	80	68	68
Site #6	80	66	65
Site #9	250	59	63
Site #1	1,700	54	52
Site #2	2,150	54	56
Site #4	3,250	50	50
Site #3	6,900	49	51

What would future noise levels be if we do not build the project?

Numbers of potentially noise-impacted homes and businesses between the highway and the calculated noise contours were counted for each study alternative, including the No Build Alternative. Table 13 shows the range of calculated distances in feet from the highway to the different noise impact contours. The distance changes depending on future projected traffic volume and on the speed limit in different sections of the highway.

Table 14 shows the estimated number of impacted properties for each of the project alternatives. Note that the No Build Alternative has the greatest potential to cause noise impacts at both residential and commercial properties. This is because traffic volumes would continue to grow each year and the majority of homes and businesses are located close to the current highway.

How would noise levels change after the project is completed?

As illustrated in Table 13, the range of calculated distances in feet from the centerline highway to the different noise impact contours in each of the nine sections of Route 63 is included in the analysis. Numbers of potentially noise-impacted homes and businesses between the highway and the calculated noise contours were counted for each study alternative.

A Noise Contour is a line on a map that represents equal levels of noise exposure.

Table 13. Range of Distances to Noise Impact Contours from the Highway Centerline (feet)

Route 63 Analysis Section	No Build Alternative		Build Alternatives 1, 2 and the Preferred Alternative	
	Distance to Residential Noise Impact Contour (feet)	Distance to Commercial Noise Impact Contour (feet)	Distance to Residential Noise Impact Contour (feet)	Distance to Commercial Noise Impact Contour (feet)
Northern Project Limits to Westphalia City Limits (north end)	200	115	215	110
Westphalia City Limits (north end) to Westphalia City Limits (south end)	160	65	220*	115*
			130**	45**
Westphalia City Limits (south end) to Freeburg City Limits (north end)	190	105	205	100
Freeburg City Limits (north end) to Freeburg City Limits (south end)	125	45	190	85
Freeburg City Limits (south end) to Vienna City Limits (north end)	185	95	195	95
Vienna City Limits (north end) to Vienna City Limits (south end)	145	55	210	105
Vienna City Limits (south end) to Missouri Route 68	215	130	210	105
Missouri Route 68 to Phelps County Line	210	125	205	100
Phelps County Line to Southern Project Limits	205	125	200	95
* Distance for Alternative 1 and the Preferred Alternative ** Distance for Alternative 2				

Table 14 shows that among the proposed alternatives, the No Build Alternative has the greatest potential to cause noise impacts, and Alternative 1 has the smallest potential. The number of properties affected under Alternatives 1, 2, and the Preferred Alternative is much less than under the No Build Alternative because the new highway would be located in areas where there are currently far fewer homes and businesses compared to the existing highway location.

Table 14. Estimated Number of Impacts Under Each Alternative		
Project Alternative	Number of Residential Noise Impacts	Number of Commercial Noise Impacts
No Build Alternative	234	16
Alternative 1	43	1
Alternative 2	77	5
Preferred Alternative	53	0

Sections of the new highway alignment options are located in areas where there is currently little road noise. These areas, as shown in Table 12, have lower ambient noise levels than areas close to the existing highway. Properties in these quieter areas have the potential to be impacted by a substantial increase in noise. A substantial increase is defined by MoDOT, as an increase of 15 dBA over existing noise levels. Depending on how close the future highway comes to properties in these quieter areas, substantial increase impacts are possible. More detailed analysis of existing and future levels of noise would need to be performed in order to say where these impacts could occur and how many there would be.

How would we minimize the effects of traffic noise?

FHWA regulations (23 CFR 772) require MoDOT to evaluate measures to reduce noise, known as “noise abatement measures” when project-related noise impacts are identified. Usually, noise walls are the most effective noise abatement measures, however earth berms can be just as effective where there is enough room to accommodate them. Noise abatement measures that are determined to be “feasible and reasonable,” must be incorporated into our project design.

What do the terms feasible and reasonable mean?

MoDOT evaluates many factors to determine whether barriers will be feasible and/or reasonable. To be feasible, a barrier must be constructible where noise levels will be reduced at least 5 dBA for one or more first row properties. MoDOT determines reasonableness based on how many properties are benefited by a reduction in noise of at least 5 dBA, the cost effectiveness of the barriers, and concerns such as aesthetics, safety, and the desires of nearby residents.

Evaluating the reasonableness of proposed noise abatement mitigation measures is more subjective than evaluating the feasibility. Reasonable implies use of common sense and good judgment and is based on a number of factors. These factors include, but are not limited to the following:

- Noise wall must provide noise reduction of at least 5 dBA at properties closest to the highway.
- Noise wall must provide a benefit of at least 5 dBA for more than one property.
- Noise wall must not interfere with normal access to the property.
- Noise wall must not exceed a cost of \$30,000 per property that receives a noise reduction of 5 dBA or more.
- The majority of the affected property owners (primary and benefited properties) must agree that a noise wall is desired.

For noise mitigation to be considered cost effective (reasonable) under the MoDOT policy, it must be able to benefit more than one property, with no direct access (such as driveways) onto the highway dividing benefited properties. Walls with gaps to allow access are not effective at blocking noise and so are usually not able provide the minimum noise reduction needed to be considered reasonable. Alternatives 1, 2, and the Preferred Alternative are located in areas with a small number residence that are widely scattered throughout the proposed corridors. In these areas, individual residences would still require access to the highway. As a result, the noise impact analysis did not identify areas where noise walls would be both effective and reasonable.

How would construction activities affect noise levels?

Roadway construction activities that generate noise include clearing, cut-and-fill (grading) activities, removing old roadways, importing fill, and paving. These activities would result in unavoidable short-term increases in noise levels.

During the construction phase of the project, operating vehicles and equipment engines generate the most noise. Engine-powered equipment includes earthmoving, material-handling, and stationary equipment. Truck noise could also affect area residents because trucks would operate outside the project site. Other construction noise sources would include impact equipment and tools such as pile drivers.

Construction noise will be intermittent and construction noise levels would depend on the type, amount, and location of construction activities. The types of construction activities, when they occur, as well as their duration, will ultimately determine the noise levels associated with the construction activity. In addition, the proximity of individual properties to the construction activity will determine the degree of construction noise experienced. Maximum noise levels of construction equipment, for the project, would be similar to typical maximum levels presented in Table 15.

Table 15. Typical Construction Equipment Noise (dBA)

Types of Activities	Types of Equipment	Range of Noise Levels at 50 feet
Material Handling	Concrete mixer	75-87
	Concrete pump	81-83
	Crane (movable)	76-87
	Crane (derrick)	86-88
Stationary Equipment	Pump	69-71
	Generator	71-82
	Compressor	74-87
Impact Equipment	Pneumatic wrench	83-88
	Rock drill	81-98
Land Clearing	Bulldozer	77-96
	Dump truck	82-94
Grading	Scraper	80-93
	Bulldozer	77-96
Paving	Paver	86-88
	Dump truck	82-94

Source: U. S. Environmental Protection Agency, 1971.

How can we minimize effects from construction noise?

Analysis results indicate that fifty-three traffic-related noise impacts were predicted to occur at residential land uses, and no traffic noise impacts were predicted to occur at commercial land uses. To reduce the impacts of construction noise, MoDOT requires all contractors comply with applicable local, state, and federal laws and regulations relating to construction noise levels.

In an effort to reduce impacts during construction, MoDOT may require contractors to equip and maintain muffling equipment for trucks and other machinery to minimize noise levels. Contract specifications may also restrict excessively noisy construction activities to daytime working hours. Further, MoDOT would monitor project construction noise and may require extra measures to reduce noise in cases where noise standards are exceeded.

A number of noise reduction measures are available for consideration. Construction noise strategies that could be implemented may include:

- Wherever possible, sound walls and retaining walls would be built in their final locations as soon as possible to help mitigate the temporary noise impacts from construction.
- Restricting night operations for particularly loud construction operations.
- Using temporary noise mitigation screens in residential area impacts to reduce noise levels.

Figures 27 through 31 show locations of noise receptors associated with the Preferred Alternative along with potential noise abatement locations. Receptors that were assumed to be acquisitions associated with the project were not included in the noise study.

A copy of the Noise Analysis report is available upon request.

Figure 27. Noise Abatement Analysis

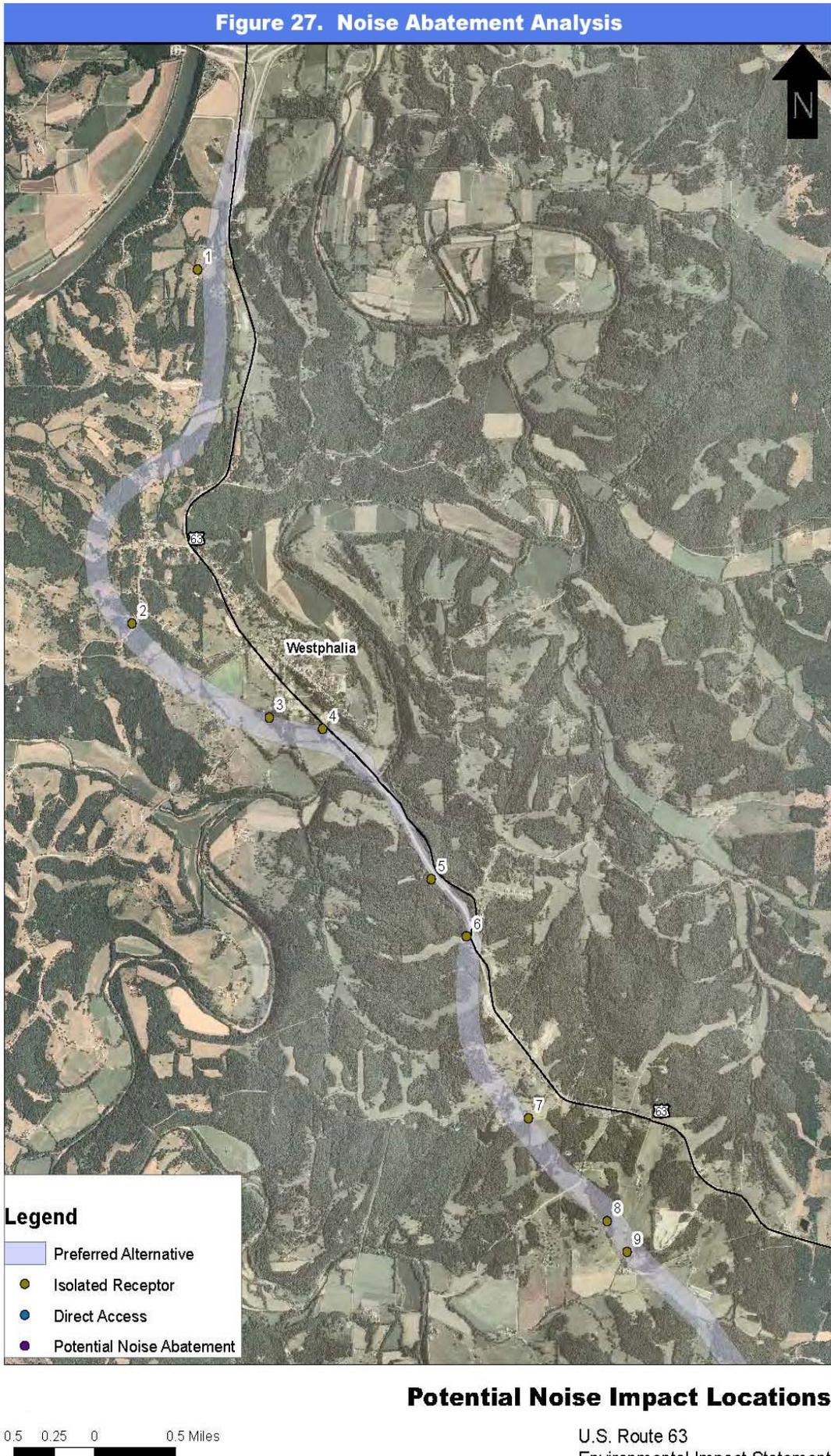
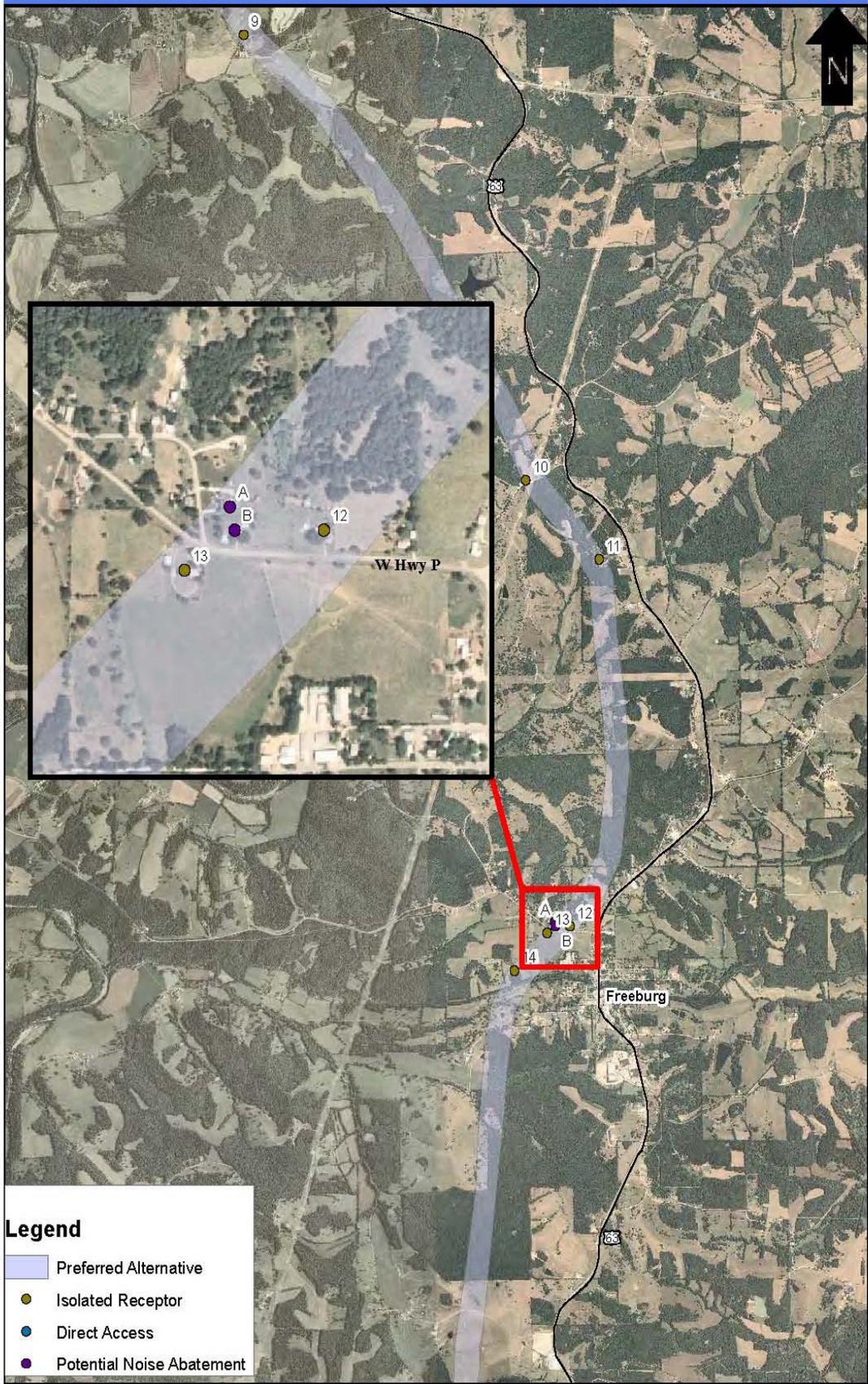


Figure 28. Noise Abatement Analysis



Potential Noise Impact Locations

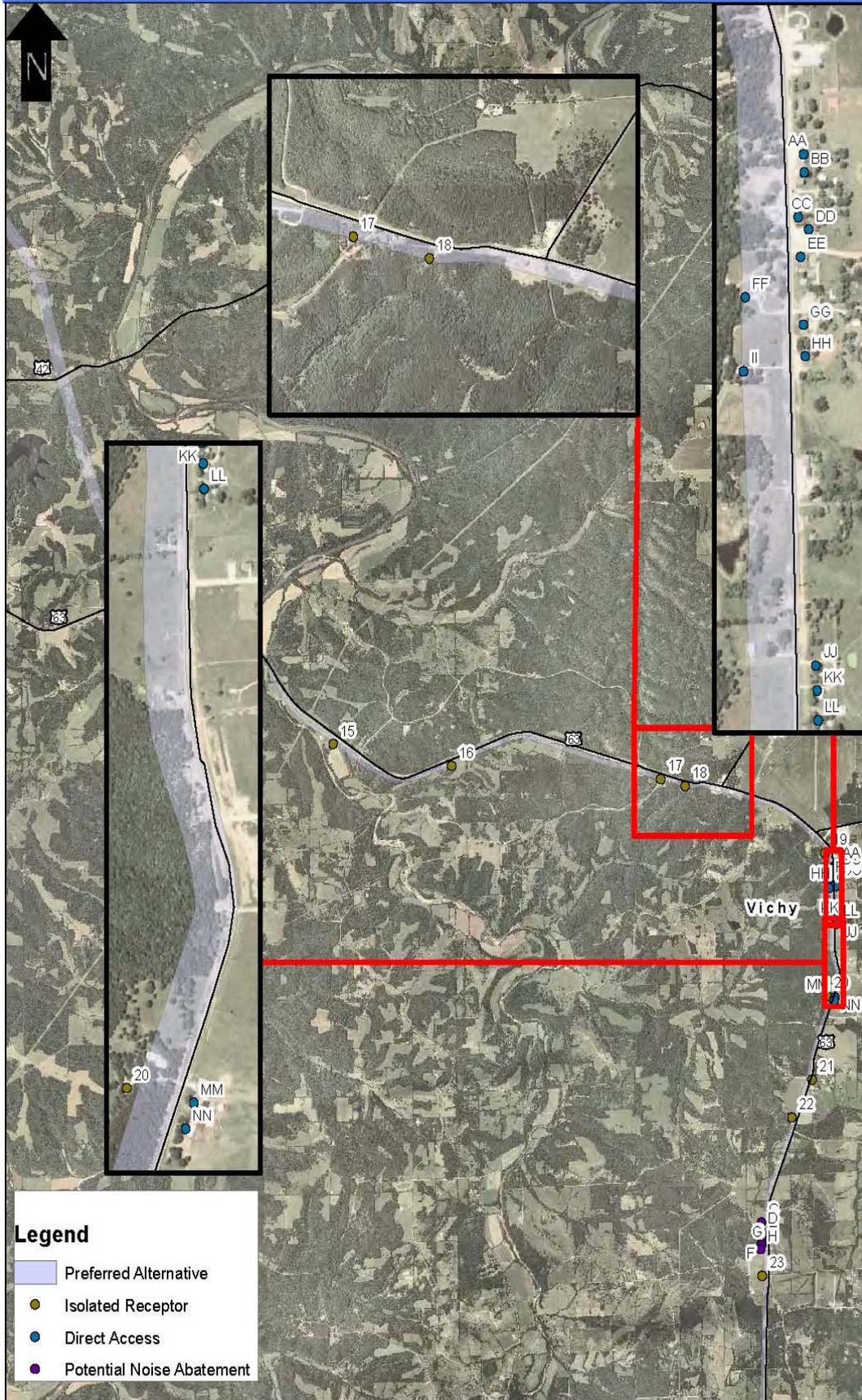
Figure 29. Noise Abatement Analysis



Potential Noise Impact Locations

0.5 0.25 0 0.5 Miles

Figure 30. Noise Abatement Analysis



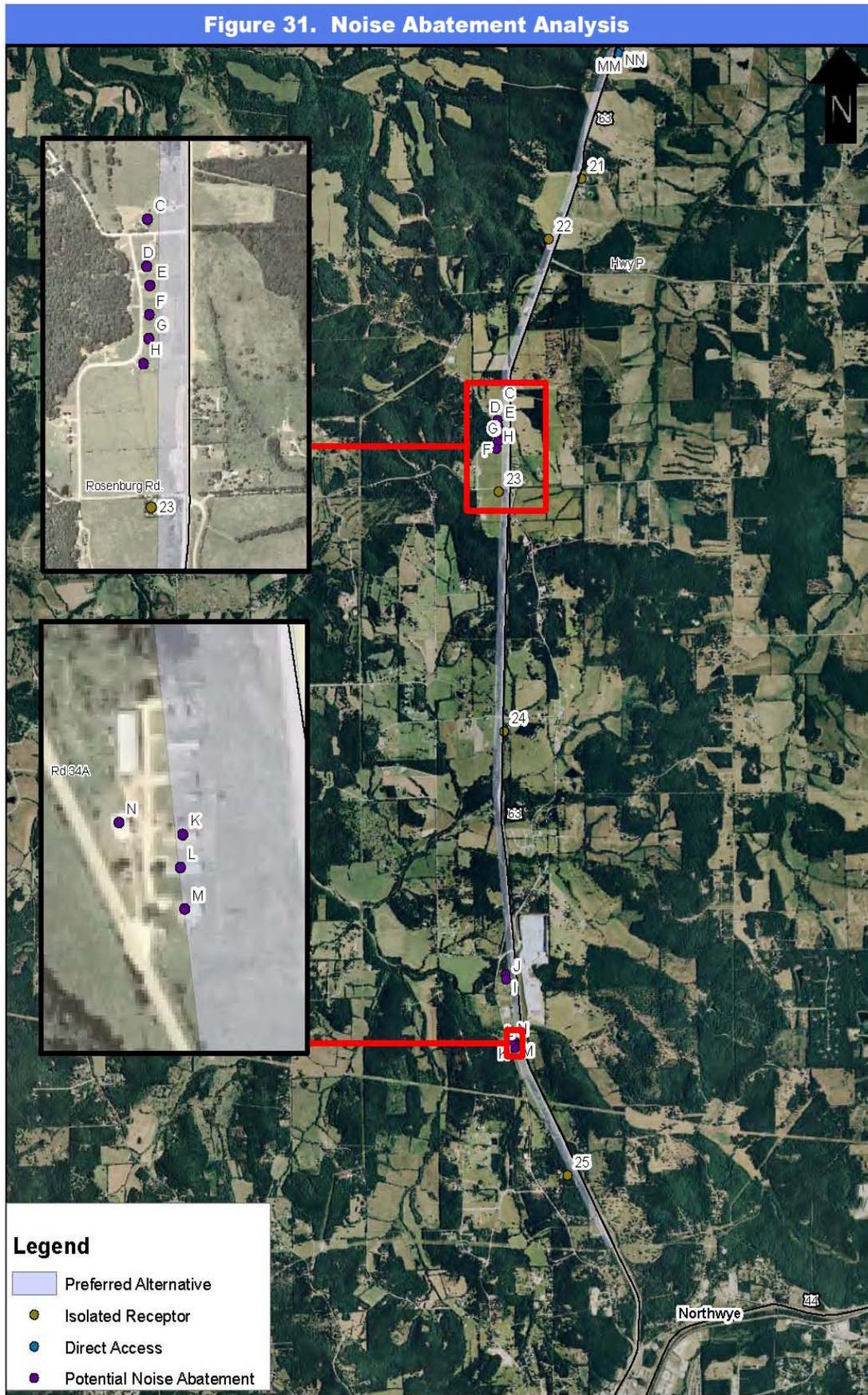
- Legend**
- Preferred Alternative
 - Isolated Receptor
 - Direct Access
 - Potential Noise Abatement

Potential Noise Impact Locations

1 0.5 0 1 Miles

U.S. Route 63
Environmental Impact Statement

Figure 31. Noise Abatement Analysis



Legend

- Preferred Alternative
- Isolated Receptor
- Direct Access
- Potential Noise Abatement

Potential Noise Impact Locations

Hazardous Waste Impacts

What is hazardous waste?

An assessment of the proposed Route 63 corridor was conducted to identify any hazardous waste concerns in the study area. Hazardous wastes as regulated by the Environmental Protection Agency (EPA) are defined as “waste with properties that make it dangerous or potentially harmful to human health or the environment. Hazardous wastes can be liquids, solids, contained gases, or sludges. They can be the by-products of manufacturing processes or simply discarded commercial products, like cleaning fluids or pesticides.” In order for a waste to be considered hazardous, a waste must exhibit at least one of the the four characteristics of hazardous waste; ignitability, corrosivity, reactivity, or toxicity. If the waste exhibits just one of these characteristics, it is given the title of a hazardous waste.

What resources were used to search for hazardous waste data?

The following sources were searched for potential hazardous and solid waste concerns, in the study area: Federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS); Environmental Protection Agency (EPA) Emergency Response Notification System (ERNS); Missouri Department of Natural Resources (DNR) Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites in Missouri, Fiscal Year 2007; DNR Missouri Hazardous Waste Treatment, Storage, and Disposal Facilities List; DNR Solid Waste Facilities List; and DNR Underground Storage Tank database.

These information sources were used to identify listed hazardous waste sites such as underground and above ground petroleum storage tanks (UST’s and AST’s), that could cause an environmental impact in the projected right of way. After reviewing the site databases, a field check of the study area was conducted by MoDOT environmental specialists to identify listed and any other additional hazardous waste sites that may be of concern. Any unknown sites that are encountered during project construction would be handled in accordance with federal and state laws and regulations. See Appendix H, Plates 1-9 for location of all identified hazardous waste sites. Waste can also be hazardous by being identified as a “listed waste” in state and federal regulations.

An evaluation of the study corridor for possible hazardous waste impacts found that there is a possibility for site impacts on each of the three alternatives being considered, the majority being along the existing route. Throughout the corridor there are sites that include petroleum storage tanks, (gasoline, diesel, etc.) these sites are listed as “Tank Sites” in Table 16. Petroleum storage tanks have the potential to cause problems because of releases that contaminate the surrounding soil and groundwater. Other sites of concern in the proposed Route 63 corridor are things such as automobile repair facilities and equipment dealers, listed as “Other Concerns” in Table 16. Facilities of this nature have the potential to contaminate soils and groundwater due to the oil, fuel, solvents and other chemicals that could be released into the environment and cause need for cleanup. A short description of each of the sites is also included with approximate location.

Table 16. Potential Hazardous Waste Sites

Facility Name	ID#	Preferred Alternate	Alternative 1	Alternative 2
Weber Equipment	1	OC	OC	OC
Fritz's Auto Body	2			OC
CSH Automotive	3			OC
Leroy's 63 Mini Mart (CNEX)	4			T
Shelter Insurance	5			T
Rehagen HT/AC	6			OC
Delbert Wieberg DumpTruck Service	7			T
Play Mor Trailers	8		OC	
Skidmore Lumber	9		OC	
Luecke's Roofing	10		OC	
MFA Bulk Storage	14		T	
Dickneite Oil	15		OC	
Vichy Café	59	T	T	
Suspect Gas Station	60	T	T	
Suspect Gas Station	61	T	T	
Vichy Store, Tire & Deli	63	T	T	
J & M Feed	64	T	T	
Auto Repair	65	OC	OC	
Abandoned Trailer Park	66	OC	OC	
Dump Site	67	OC	OC	
T = Tank Site				
OC = Other Concerns				

Weber Equipment is located on the east side of Route 63 approximately 4,000 feet south of the Route 50/63 junction. The site is currently used as a farm implement dealer and farm equipment repair facility. No commercial sales of petroleum products are known to have occurred at the facility.

Fritz's Auto Body is located on the west side of Route 63 approximately 250 feet south of Route 133. The site is currently used as an auto repair facility. No commercial sales of petroleum products are known to have occurred at the facility.

CSH Automotive is located on the west side of Route 63 approximately 500 feet north of County Road 511. The site is currently used as an auto repair facility and trailer sales. No commercial sales of petroleum products are known to have occurred at the facility.

Leroy's 63 Mini Mart is located on the west side of Route 63 approximately 1,300 feet south of County Road 511. The site is currently being used as an active gas station. Currently the site has three AST's in use.

Shelter Insurance is located on the east side of Route 63 approximately 1,600 feet south of County Road 511 and is the site of a former gas station. Three UST's were removed from the site and the site was closed on August 30, 1996.

Rehagen Heating and A/C is located on the west side of Route 63 approximately 2,000 feet south of County Road 511. This site is the former location of Weber Equipment, a farm implement dealer and repair facility. No commercial sales of petroleum products are known to have occurred at the facility.

Delbert Wieberg Dump Truck Service is located on the east side of Route 63 approximately 1,300 feet north of County Road 615. The facility currently has two AST's in use. Minor auto repair may also be performed at the site. No commercial sales of petroleum products are known to have occurred at the facility.

Play-Mor Trailers is located on the west side of Route 63 approximately 1,800 feet north of Route T. This site is currently used as a manufacturer of trailers. No known UST's or AST's are present at the site. No commercial sales of petroleum products are known to have occurred at the facility.

Skidmore Lumber is located on the east side of Route 63 directly across from the junction of Route T and Route 63. This site is currently used as a sawmill. There are field mounted AST's present at the site. At this time it is not known if any wood treatment is done onsite. No commercial sales of petroleum products are known to have occurred at the facility.

Luecke's Roofing is located on the west side of Route 63 approximately 1,500 feet south of Route T. Now used as a roofing company, this site was formerly Bray's Auto Sales. Minor auto repair may also have been performed at the site. No commercial sales of petroleum products are known to have occurred at the facility.

MFA Bulk Storage is located on the east side of Route 63 approximately 400 feet north of Route JJ. This site is currently used as a bulk storage facility of petroleum products. Several AST's are located at this site.

Dickneite Oil is located on the west side of Route 63 approximately 800 feet south of Route JJ. This site is currently used as a bulk storage facility of propane and propane accessories. Several tanks are located on this property.

Vichy Cafe is located on the east side of Route 63 approximately 450 feet north of Route 28. This site is currently used as a restaurant but was the site of a former gas station. Pump islands are present at the site. The presence or absence of tanks is not yet confirmed.

Suspect Gas Station is located on the west side of Route 63 approximately 450 feet north of Route 28. This site is currently abandoned. A structure resembling a station remains at the location. It is not yet determined if the structure was at one time a gas station. The presence or absence of tanks is not yet confirmed.

Suspect Gas Station is located on the west side of Route 63 approximately 575 feet south of Route 28. This site is currently abandoned. Concrete resembling pump islands remain at the site. The presence or absence of tanks is not yet confirmed.

Vichy Store, Tire, and Deli is located on the east side of Route 63 approximately 500 feet north of County Road 444. This site is currently used as a tire change facility and formerly was used as a gas station. Two underground storage tanks are on site and remain temporarily closed since about December 14, 2005. Tanks deemed beyond repair.

J & M Feed is located on the east side of Route 63 approximately 1,300 feet south of County Road 444. This site is currently vacant. The site was once used as a gas station and AST's still remain onsite. The conditions of the tanks are unknown at this time.

Auto Repair is located on the west side of Route 63 approximately 1,200 feet north of County Road 443. This site is currently used as an auto repair facility. No commercial sales of petroleum products are known to have occurred at the facility.

Abandoned Trailer Park is located on the west side of Route 63 approximately 500 feet north of County Road 443. The site is currently abandoned and contains many abandoned house trailers that are in disrepair.

Dump Site is located on the west side of Route 63 approximately 150 feet north of County Road 443. This site is currently being used as a dumpsite for an unknown party or parties. Significant amounts of solid waste have been dumped at this site.

Until the sites are acquired by MoDOT, and sufficient sampling and/or a Phase I/II Environmental Site Assessment is conducted to determine if the site is contaminated, MoDOT can not determine the amount of effort and cost it would take to clean up a potentially contaminated site.

What happens if an unknown hazardous waste site is discovered?

If regulated solid or hazardous wastes are found unexpectedly during construction activities, the MoDOT construction inspector would direct the contractor to cease work at the suspect site. The construction inspector would contact the appropriate environmental specialist to discuss options for remediation. The environmental specialist, the construction office, and the contractor would develop a plan for sampling, remediation if necessary, and continuing project construction.

Environmental Justice

This section analyzes the potential adverse and excessive environmental and human health impacts the proposed project may have on low income and minority communities. The area of analysis includes the entire length of the study corridor since a regional view, as performed for community impacts, would not produce substantive differences for the analysis.

Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

What is environmental justice?

In early transportation projects, many of the impacts affected minority and low-income populations in greater ways than other groups. This has been partly attributed to low-income populations and neighborhoods being located near downtowns and other common destinations, which were the target of transportation projects.

These neighborhoods typically had low value properties and perceived to have a lack of political power and representation. As a result, low income and minority populations and neighborhoods were impacted more often than other populations and neighborhoods. Environmental justice is an attempt to address disproportionately high and adverse human health or environmental impacts that projects funded by the federal government may have on minority and low-income populations.

The President of the United States created the current environmental justice analysis requirements through Executive Order 12898 in 1994. The President directed all federal agencies to make environmental justice part of their missions and to identify and address the effects of their programs, policies and activities on minority and low-income populations.

Environmental justice was built on Title VI of the 1964 Civil Rights Act, which prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance.

Title VI of the 1964 Civil Rights Act:
Prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance.

Environmental justice is a policy that has three major parts:

1. Avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects of the project, on minority populations and low-income populations,
2. Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process, and
3. Ensure minority and low-income populations receive their equal share of the benefits from the project.

What groups are included in environmental justice analysis?

For the analysis of environmental justice, minority persons are defined as any person who is African American, Hispanic, Asian American, American Indian, or Alaskan Native. Low-income populations are those households with incomes at or below the Department of Health and Human Services poverty guidelines of \$22,050 for a family of four.

Low-Income Populations Defined:

Low-income households are those with annual incomes at or below the Department of Health and Human Services poverty guidelines of \$22,050 for a family of four.

Whether or not they fit the definition of an environmental justice population, all groups and individuals have the right to access and participate in the transportation decision-making process as protected by Title VI of the Civil Rights Act. The environmental justice analysis for this project was performed using a set of guidelines provided by the Federal Highway Administration (FHWA).

The environmental justice analysis included all of the census tracts and block groups that are associated with the study corridor. Eight census block groups, made up of 10,313 residents, were used to determine the environmental justice population. However, since this is a rural, low-populated region, the eight census block groups encompass more geographical area than is necessary. Census block data for low-income populations indicates no more than 9.87 percent of the residents along the entire corridor live at or below the poverty rate, while the total for any of the cities (Westphalia, Freeburg, Vienna) was no greater than approximately 2.8 percent.

There are low-income housing units and Section 8 HUD Rental Assistance located in Vienna near Route 63. Neither would be relocated as a result of this project since the alternative on existing Route 63 through Vienna was eliminated partially because of the excessive residential and business relocations.

Rural housing supply, in general for any income group, is typically lower than a large metropolitan area; therefore sufficient housing replacement may not be available if in the future a family who receives a housing subsidy is relocated. According to the Phelps County Public Housing Authority, it would not be difficult to relocate families with the program. The Housing Choice Voucher program gives the family its choice of where they would like to live. No families participating in this program would be relocated by the transportation improvement.

How did MoDOT ensure full and fair participation by minority and low-income communities?

Both Federal and MoDOT policies stress that early and ongoing public outreach is a vital component of the environmental justice process. While the study team did not specifically seek out and solicit information from potentially low-income and/or minority individuals who live and work in the area, many opportunities were provided to have full and fair participation in the decision making process. Various public outreach efforts, including meetings held in local area facilities accessible to low-income and minority populations, were available.

The strategy used for effective public participation included a series of well-advertised public meetings, held at convenient times in two locations along the corridor, Westphalia and Vienna, at strategic points in the study process. The public involvement chapter outlines all of the efforts taken to acquire public comment.

The study team encouraged the public to comment on the study and alternatives at all meetings. Newsletters, including meeting notices and study updates, were sent to homes and businesses within the study corridor that would have included any minority and lower income households. Several hundred copies of the newsletters also were provided at local gathering places, including churches, to be distributed to concerned citizens who may not have received the newsletter through other sources. All low-income, minority, and other community members will have further chances to comment on the project through a well-advertised public hearing process and public comment period of the Environmental Impact Statement.

What are the minority groups in the study corridor?

Based on information obtained from the 2000 United States Census, the study team compared the populations affected by the alternatives. As previously mentioned, the environmental justice analysis included all of the census tracts and block groups that covered the impact area of the reasonable alternatives in the study area. The resulting analysis identified that there is a higher percentage of minorities in the census block adjacent to the city of Rolla in Phelps County. No other parts of the study corridor contained a larger percentage of minority populations.

Within the study corridor the two largest minority groups are African American and Hispanic. Other groups in the study corridor include White (Non-Hispanics), American Indian, and Asian populations. The study team did not identify any concentrations of other populations or ethnic groups that would be protected under Title VI and fit the specific criteria of environmental justice populations.

Of the 10,313 residents found in the study corridor, 98 percent of the residents are identified as white (non-Hispanic). African-Americans and Hispanic are the two largest minority groups at 0.2 percent each of the total population in the analysis area.

A summary of the racial makeup of the cities located in the study corridor follows. The exception is at Vichy, where no specific demographic data is available.

- The city of Westphalia had a residency of 320 people and 137 households. The racial makeup of the city is 97.81 percent white, 0.31 percent African-American, and 0.62 percent Hispanic.
- The city of Freeburg had a population of 414 people and 345 households. The racial makeup of the city is 99.3 percent white and 0.7 percent Hispanic.
- The city of Vienna had a population of 630 people and 545 households. The racial makeup of the city is 98.7 percent white and 1.0 percent American Indian.

What are the effects of each alternative on environmental justice populations?

Potential environmental justice impacts are defined as the unavoidable negative effects of the project that would be mostly experienced by minority and low-income populations or are higher than the negative effects that would be suffered by non-minority and/or non-low-income populations. The analysis has determined that there are no disproportionately high and adverse human health or environmental impacts on minorities and/or low-income populations by any of the Reasonable Alternatives.

Impacts from any Reasonable Alternative would be similar for all groups regardless of the demographic or socioeconomic characteristics of the community. All negative impacts to environmental resources, such as water quality, noise, and public services would be avoided, minimized, or rectified to the highest extent possible.

MoDOT would provide purchasing and relocation assistance and advisory services, as stated by the Uniform Relocation Act, for any member of the community whose property is needed for the project. MoDOT would inform individuals, businesses, and non-profit organizations of the impacts of the project on their property to the highest extent possible.

All residents of the study corridor, including minorities and lower income groups, would benefit from positive impacts of an improved Route 63. Potential beneficial impacts include relief of local traffic congestion, increased safety, potential job creation, and improved economic conditions for businesses.

The No-Build Alternative would have no disproportionate impacts on any segment of the population including minorities and low-income persons. However, the potential benefits of the build alternatives mentioned above would be lost.

Given the homogenous demographic nature of the study corridor, the effects of any of the build alternatives on environmental justice populations are considered nearly the same. Therefore, the discussions of the effects by each build alternative are combined.

Approximately two percent of the residents in the census blocks encompassing the corridor study area would be considered part of a minority group. The census blocks located at the south end of the corridor study area are the only ones that contain greater than three percent minority population. However, MoDOT already owns adequate right of way along stretches of that section. Therefore, limited property acquisition would be needed and thus there would be only limited residential relocations. The village of Vichy is the exception. Concentrated relocations would occur here with the Preferred Alternative. However, using previously mentioned project experience in Vichy, the residents are known to be non-minority.

The total number of relocations for any of the build alternatives is low given the length of the corridor. The greatest concentration of relocations is at Vichy. Any cohesion of the city, given the division by the highway, would be further damaged as a result of expansion at this location.

The potential relocation of businesses currently operating in the corridor could also affect low-income and minority households. The Preferred Alternative has 13 commercial relocations and Alternative 2 has 16. Alternative 1 was well below these numbers with only two potential commercial relocations. As with residential relocations, the opportunity to decrease the numbers would likely be possible during the design process. If local retail businesses would be relocated, this could present a challenge to the local low-income population to find sufficient alternatives to these businesses. Similar businesses to the relocated businesses, such as gas stations and restaurants, would still exist in the study corridor. However, for some unique businesses such as medical offices the effect would increase if these or similar businesses do not relocate at the other sites near the study corridor.

It is likely that minorities and/or low-income families would be relocated by any one of the build alternatives. However, the low minority and poverty rate percentages and relocation numbers discussed above are strong evidence that there are no disproportionately high and adverse human health or environmental impacts on minorities and/or low-income populations by any of the build alternatives.

All of the impacts by any of the build alternatives discussed in sections of this document would affect various segments of the general population based on their proximity to the project and their use of the existing roads in the study corridor. Neighborhood effects or effects to residences created by a build alternative would be the same for all persons regardless of race or income. Environmental justice populations would experience the same changes in access, emergency service routes as the entire population. Changes in noise levels, would affect all community groups in a similar manner, and not disproportionately affect low income and minority households. In addition the noise levels, aesthetic and visual impacts of a new route, would also affect environmental justice populations in the same manner as the general population. All of the alternatives would result in the reduction of the local tax base, which would be felt by all residents regardless of income or race.

Environmental justice populations would share the potential benefits of any of the build alternatives. Reduced congestion, improved safety, and reduced travel times on the new Route 63 and on local roads would benefit all users. Congestion is costly to local and state economies and individuals. The improvement may lead to more jobs and reduced transportation costs, with widespread benefits to general population including low income and minority populations.

Bicycle and Pedestrian Concerns

How would the alternatives affect pedestrians and bicyclists?

Since the study corridor has no known extensive pedestrian and bicycle use, none of the alternatives would have a negative effect on bicycle or pedestrian use. Further, there are no designated bicycle routes or documented extensive use of either existing Route 63 or the connecting road network by bicyclists. The alternatives do not improve access for pedestrians or bicyclists. However, long distance bicyclists would likely find a geometrically improved Route 63, an attractive north-south route through Missouri.

In accordance with the American Disabilities Act (ADA), sidewalk ramps would be upgraded to current ADA standards on roadways that are altered as part of this project. Sidewalks would be maintained on roadways, which currently feature sidewalks. New sidewalks would be provided on affected roadways that do not currently have sidewalks if there is a demonstrated need for pedestrian accommodation and/or a need to maintain or improve pedestrian connectivity between the neighborhoods affected by the proposed project.

There are sidewalks within MoDOT right of way within the commercial section of Route 63 through the city of Freeburg (north and south lanes). These sidewalks start at Beck Motors and run approximately 0.75 miles to Holy Family Catholic Church. This is the only location where MoDOT owns and is responsible for maintenance of sidewalks along Route 63. These sidewalks would not be affected since the preliminary alternative along existing Route 63 in Freeburg was eliminated. There are no MoDOT proposed pedestrian or bicycle facilities in the corridor.

New sidewalks or upgrades are not anticipated in the communities of Westphalia, Freeburg or Vienna, since the Preferred Alternative relocates the roadway outside of these communities. Pedestrians and bicyclists would benefit from improved safety from the reduced vehicle movements through these communities. Conversely, the Preferred Alternative would continue on the existing alignment through Vichy. Sidewalks through Vichy will be provided if there is demonstrated need for pedestrian accommodation.

Currently, there are no barriers to pedestrian travel in Vichy except the roadways. There are also no existing sidewalks or other pedestrian improvements adjacent to or connecting to Route 63. At this time Vichy does not have any major pedestrian generators such as schools or major businesses in the town. There were no comments generated from the public meetings on pedestrian facilities from city residents, although the Missouri Bicycle Federation did provide written comments encouraging MoDOT to provide pedestrian facilities in Vichy. Therefore, further need for pedestrian accommodation will be evaluated and prioritized during the design phase of the proposed project. If it is found that there is not a need for pedestrian concerns, the new roadway with wider shoulders will give both bicyclists and pedestrians' adequate room for travel.

Land Use and Zoning

The study corridor is located in east-central Missouri on the northern edge of the Ozark region. The landscape patterns in Osage and Maries Counties are highly diverse. Route 63 closely approximates the location of a winding ridge top that divides the major watersheds in the counties. To the west, tributaries flow to the Maries River or other smaller tributaries that drain to the Osage River in neighboring counties. On the eastern side, most of the drainage flows toward the Gasconade River.

The dominant landscape configuration between these rivers consists of moderately sloping to steep uplands dissected by flood plains along small streams. In the south portion of Maries County and into Phelps County, broad plateaus occur on the crests of the major divides. The major flood plains in Osage and Maries Counties are along the Gasconade River and Maries River and their tributaries.

Each of the build alternatives would mostly affect land uses in the rural, agricultural portion of the counties. Land uses in Phelps County would not be impacted since the Preferred Alternative, the only alternative in the county, provides lane additions adjacent to the existing lanes on existing right of way.

The Preferred Alternative would affect land uses in Vichy, while Alternative 2 would affect the land uses of Westphalia. Both of these alternatives make improvements on existing Route 63 through each respective city. Land uses would not be impacted in either Freeburg or Vienna. Alternatives through Freeburg and Vienna were eliminated partly due to a large number of relocations.

What are the land uses in the study area?

There are various land uses within the entire corridor study area. These land uses include farms, single-family residential, multiple family residential, commercial, and public facilities. The following sections describe the study area land uses.

Both developed and undeveloped land can be found in the study area. Developed lands are primarily found in the cities established in the study corridor. These developed lands include various uses typical of cities, such as residential, commercial, and recreational.

Undeveloped lands are generally found in the primarily rural and agriculture portion of Osage and Maries Counties. Existing undeveloped lands are either open fields of pasture or hay, limited tillable fields or wooded tracts.

How would the alternatives affect land use?

Discussed in the following sections are the impacts of the alternatives on land uses within and adjacent to the study corridor. The compatibility of the alternatives with local zoning ordinances, if applicable, is also discussed. Potential impacts to land uses in communities outside the study corridor are discussed in the Indirect and Cumulative Impacts section of this chapter.

The study team analyzed all of the local land use plans and zoning ordinances for the communities located in the study corridor. The Westphalia Planning and Zoning Code, the only city with an ordinance, was obtained from the City Clerk of Westphalia, for the analysis. Officials from the Meramec Regional Planning Commission (MRPC) were contacted to discuss any known land use plans and zoning impacts of the alternatives. Members on the Route 63 Advisory Committee were also consulted.

The discussion of land use and zoning compatibility is based on the planning and development data and future land use plans available at the time of the analysis. At this time there are no county or city comprehensive land use plans.

The No-Build Alternative would have few impacts on land use policies and decisions within the study area. Any future land use plans would have to acknowledge Route 63 in its existing location and plan land use development accordingly.

With the No-Build Alternative, existing land uses would not be impacted because Route 63 would maintain its current footprint and would not encroach upon adjacent development. Increased congestion along with the associated safety reduction and potential noise issues may impact adjacent residential areas but are unlikely to cause widespread conversion to other land uses. The increases in traffic expected by 2030 would likely result in some bottlenecks and backups at several intersections. This could impact access to local businesses and change land uses.

Primarily due to the principally rural, undeveloped nature of the corridor, the build alternatives would have similar impacts to all of the land use categories regardless of the location of the alternative in relation to the existing route or city.

The majority of the Preferred Alternative and Alternatives 1 and 2 are on new location in land use designated as agriculture. These undeveloped, rural areas would not change. However, the alternatives would influence land use development patterns, and population density at the location of the corridor communities. The magnitude of that influence would be a function of where and how close the alternative is in relation to the cities. Likewise, the access provided to the city from the relocated route would influence land use change and be the cause of indirect or secondary impacts. Further influences of change, discussed by city, are given in the following paragraphs.

At the Westphalia section, the Preferred Alternative would have the most likely influence on land use development patterns in comparison to Alternative 1. That is due to its desirable proximity and location in developable landscape. The location of Alternative 1 to the east creates a barrier with Westphalia by more distance and the Maries River. Hence, the influence to cause land use changes would be little or nonexistent. As with the Preferred Alternative in Vichy, Alternative 2 would impact land uses along the existing route. Minimum relocations would occur, but businesses and the Lions Club recreational facility would likely be negatively impacted by increased traffic. Any businesses relocated may be interested in moving as close as possible to the widened route to remain within or near Westphalia's designated business districts. This in turn could cause the conversion of residences to businesses in the immediate surrounding location of the widened highway.

By Freeburg, the same situation with the Preferred Alternative would exist. The western location of the Preferred Alternative, especially at the intersection with Route P, makes it more favorable to influence increased development. Without access to Alternative 1 on the east side of Freeburg, land use changes would be gradual.

With the Vienna section, both the Preferred and Alternative 1 relocate Route 63 to the east side of Vienna. However, using proximity as a basis for influence, Alternative 1 would be more likely to cause a change in land use patterns and population density. The Preferred Alternative is approximately 1.5 miles from Vienna, at this distance it could be speculated there would be changes to commercial land use and development patterns. However, as discovered in the *Pre-Construction Community and Business Impact Study, Hwy 63 Route Relocation Report* (Appendix E), 91 percent of Vienna retail customers are within 30 miles of the town. Therefore, with that percent of a local customer base a relocated Route 63 would not cause a commercial land use change within Vienna.

In Vichy, an expanded highway would greatly influence land use decisions. This will be the situation with the Preferred Alternative in Vichy, as relocations will result from lane additions on the west. This in turn will open up agriculture or undeveloped property to the possibility of development. On the converse, Alternative 1 in the Vichy section would not cause land use changes.

Are the alternatives consistent with local zoning and ordinances?

Westphalia is the only community in the study corridor with land use zoning plans. The No-Build Alternative would be consistent with local planning in Westphalia. This alternative would have no impacts on land use policies and zoning within the city.

Only a small portion of the Preferred Alternative passes through the city limits on the south side of the city. It would impact rural residential zoned land and therefore would not be consistent with the planned zoning and land uses within Westphalia. This area may be rezoned to accommodate the new highway location.

Alternative 2 improves existing Route 63 through the city of Westphalia. Most of the adjoining zones are categorized as highway commercial making Alternative 2 consistent the zoning plan. The other areas are zoned rural residential and multi-family residential. The widening of Route 63 would not be entirely consistent with these planned uses. The widening is not anticipated to relocate these multi-family residential facilities. Therefore, this land would not require rezoning.

Farmland Impacts

Missouri has a long history of farming, especially in the project vicinity. Farming, a \$5 billion per year industry in Missouri, produces approximately \$78 million in agricultural revenue each year in Osage, Maries, and Phelps Counties.



Study Corridor Farmland

How is farmland impact evaluated?

Recognizing the importance of protecting farmland from conversion to non-agricultural uses by minimizing the impacts to it from federally funded programs, Congress passed the Farmland Protection Policy Act (FPPA) in 1981. Before farmland can be used by a federal project, it must be determined if prime, unique, statewide, or locally important farmland would be converted to non-agricultural uses. This assessment is a collaborative process with the Natural Resources Conservation Service (NRCS). If farmland is used in excess of parameters developed by NRCS, then the federal agency must take measures to minimize farmland impact.

How is farmland classified?

NRCS classifies farmland as prime, unique, or of statewide or local importance based on soil type. Prime farmland has the best blend of physical and chemical characteristics for producing normal crops while requiring less human labor and less assistance from pesticides and fertilizer than farmland of statewide or local importance. Unique farmland is used for the production of specific high-value food items such as nuts and certain fruit or vegetables, and usually has the special combination of soil characteristics, moisture, and location needed to produce high quality and high yields.

Statewide or locally important farmland is designated by state or local agencies for the production of crops in a specific area, but is not of national significance.

How were the project alternatives rated?

Statewide or locally important farmland is common throughout the area of the proposed project, as is, to a lesser extent, prime and unique farmland (Appendix I, Plates 1-9). The average farm size in Osage County is 258 acres, in Maries County it is 265 acres, and Phelps County is 244 acres.

Agricultural enterprise in the study vicinity is primarily devoted to pasture and livestock; pigs, hogs, and cattle provide much of the area's agricultural income. Row crops, primarily soybeans and corn, also provide income to area farmers. The study area has been evaluated (Appendix F) using the Farmland Conversion Impact Rating Form (SCS-CPA-106). Because ratings were determined by NRCS before the final alternatives were picked, the following are approximates of the final ratings. Four alternatives were evaluated: 1) Alternate A (nearly identical to the Preferred Alternative), 2) Alternate B (or the current Alternative 1), 3) connectors between the two, and 4) expanded acreage surrounding existing Route 63 (closely aligned with Alternative 2).

Alternate A required approximately 2,609 acres of new right of way, Alternate B required about 2,278 acres, the connectors required approximately 496 acres, and 953 acres were required for improvements along existing Route 63. The recorded Part V Relative Value of Farmland to be converted totaled 63.1 points out of a possible 100 for Alternate A, 65.3 points for Alternate B, 62.2 points for the connectors, and 58.4 points for land along existing Route 63.

The Part VI Site Assessment Criteria rating scored 64 points out of a possible 160 for Alternates A and B, 51 points for the connectors, and 52 points for land along the existing route. The total conversion impact ratings were 127.1 points, 129.3 points, 113.2 points and 109.4 points respectively, which is well below the 160-point threshold established by NRCS for consideration of farmland protection.

The proposed alternatives are primarily located east and west of Route 63's existing alignment, with links between the two or expanded acreage along existing Route 63 as additional options. The project is not protected from conversion by any state, local government, or private nonprofit policy or program. Any project impacts to on-farm investments, such as water diversion systems or terracing, would be minimized as design is further refined.

Severances to farmland will be avoided to the extent possible. After project completion, any farms with uneconomic remnants would be compensated at prevailing market rates. All farm support services are available to the area and would not be negatively impacted by the project. The project would be fully compatible with existing agriculture.

Threatened and Endangered Species and Unique Natural Communities

The Endangered Species Act of 1973 provides for the protection of threatened and endangered species, both plants and animals, and the habitats that are considered critical to the survival of these species, e.g., breeding, nesting, roosting, and foraging areas.

The U.S. Fish and Wildlife Service (USFWS) is empowered as the chief administrative, regulatory, and enforcement agency regarding threatened and endangered species and their critical habitats. The State of Missouri also maintains endangered species legislation that protects those species, which have been determined to be endangered in the state.

What is an endangered species?
An endangered species is a species that is in danger of extinction throughout all or a significant portion of its range.

The Missouri Department of Conservation (MDC) is the administrative, regulatory, and enforcement agency for state sensitive species. The following sections explain the potential impacts that this project could have on threatened or endangered species, designated critical habitat, and unique natural communities.

What methods were used to assess potential impacts?

MDC maintains a Natural Heritage Database (NHD) that tracks known locations of all rare species (state and federal) and sensitive habitats in the state as well as significant or unique natural communities. The NHD database was used to determine if there are any known locations of rare species or unique natural communities within the corridor of the three alternatives.

Caves are one of the unique natural communities found in Missouri. The NHD lists some of the cave locations in Missouri. However, the Missouri Speleological Survey maintains a database of all known cave locations in the state of Missouri. This database was used to determine if any caves would be directly impacted by any of the alternatives for this project.

MoDOT also corresponded with the USFWS and MDC to obtain any information they may have regarding rare species or communities within the project corridor. Finally, a MoDOT biologist conducted field observations. Information from all of these sources was used to determine the projects potential impacts to threatened or endangered species and unique natural communities.

Would the project impact any threatened or endangered species?

A review of the NHD revealed that the Niangua darters (*Etheostoma nianguae*) are known to occur throughout this entire stretch of the Maries River. There are also numerous records of this species in the Maries River near the existing bridge.

The NHD also indicates that the Gasconade River supports populations of two federally endangered species, the pink mucket (*Lampsilis abrupta*) and scaleshell (*Leptodea leptodon*), one federal candidate, the spectaclecase (*Cumberlandia monodonta*), and one state endangered amphibian, the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*). It is unknown if there are any populations of these species in the immediate vicinity of the existing bridge.

Although there are no known records of these species within the corridor of any of the alternatives for this project, correspondence from the USFWS indicates that the following federally listed species could also occur in the area: Indiana bat (*Myotis sodalis*), gray bat (*Myotis grisescens*), running buffalo clover (*Trifolium stoloniferum*), and Hine's emerald dragonfly (*Somatochlora hineana*). Besides the potential for the project to directly impact these species, it could also have indirect impacts to these and other species by impacting water quality and riparian habitat.

What is a threatened species?
A threatened species is a species that is likely to become endangered within the foreseeable future.

Finally, during field investigations, stains left by roosting bats were observed under the existing Gasconade River Bridge. At this point it is unknown what species of bat is roosting under the bridge. Further field investigations would be necessary to identify what species left these stains. The potential impacts the project could have on each of these species are discussed below.

Niangua Darter: The Niangua darter is a federally threatened fish endemic to Missouri. It is a small fish, 2 to 4 inches long, that lives in clear upland creeks and small to medium sized rivers with slight to moderate currents. The species requires continuously flowing streams with silt-free gravel or rock bottoms. The species survival is threatened by deterioration of stream quality, loss of habitat because of reservoir and bridge construction, stream channelization, loss of streamside vegetation, and unrestricted sand and gravel removal.

What is an endemic species?
An endemic species only occurs in a particular area. Species that are endemic to Missouri *only* occur in Missouri.

All three alternatives involve constructing a new bridge across the Maries River within a stretch that MDC considers important for the Niangua darter. There are numerous known locations of the species upstream and downstream of the existing bridge. Therefore, all three alternatives could have some impact on this species.



Niangua darter. Courtesy of Craig Fuller, Missouri Department of Conservation

Alternative 2 and the Preferred Alternative both cross the river at the same location. Both of these alternatives could result in direct impact to important habitat for the species as well as temporary impacts from sedimentation that results from construction of the bridge.

Alternative 1 would have the least potential for direct impacts to the species or its habitat. However, Alternative 1 would have more indirect impacts because it follows close to the stream for some distance and thus would involve clearing more riparian vegetation. Loss of streamside vegetation is considered one of the major threats to this species survival.

Pink Mucket: The pink mucket is a federally listed endangered freshwater mussel. Freshwater mussels live on the bottom of streams or ponds. This species is found in mud, sand and in shallow riffles and shoals in major rivers and tributaries. They move very little and they depend on water current to bring them oxygen and food.



Pink Mucket mussel. Photo courtesy of the Missouri Dept. of Conservation.

Most species of mussels burrow into the bottom of the stream, leaving the upper edge of the shell exposed to the current. As river currents flow over the animals, they siphon the water for food, which includes different types of microorganisms such as plankton. They need a stable river bottom to survive. If the river bottom they are living in is washed away, they get washed away with it. Freshwater mussels provide food for wildlife like muskrats, otters, and raccoons and act as filters that improve water quality.

Dredging and in-stream sand and gravel mining are threats to this species. Besides directly killing individual mussels, these activities disturb and destabilize the river bottom resulting in mortality for large numbers of individuals.

Since it is difficult for freshwater mussels to move, sediment is also a threat because it can suffocate them. Increased sediment levels may also make it difficult for them to feed, which can lead to decreased growth, reproduction, and survival. Diminishing water quality is a concern for all aquatic species. Because mussels are sedentary (stay in one place), they are especially sensitive to any kind of contamination, including pesticides and agricultural runoff.

This species could occur in the Gasconade River. There is only one proposed option for this project at the Gasconade River crossing. Therefore, the impacts of the three alternatives on this species would be the same.

Scaleshell: This species is also a federally listed endangered freshwater mussel. Scaleshells live in medium-sized and large rivers with stable channels and good water quality. They bury themselves in sand and gravel on the bottom with only the edge of their partially opened shells exposed. All other life history information and threats are very similar to those discussed for the pink mucket.



Scaleshell mussel. Photo courtesy of Dr. M.C. Barnhart

This species could also occur in the Gasconade River. There is only one proposed option for this project at the Gasconade River crossing. Therefore, the impacts of the three alternatives on this species would be the same.

Eastern Hellbender: The eastern hellbender is state listed as an endangered species. Hellbenders are aquatic throughout their life and remain active year-round. They generally spend the daylight hours in a natural or self-excavated den beneath large slabs of rock or other shelter-providing objects (logs and boards) on the bottom of streams or rivers.

Hellbenders become active after dark, leaving shelter to forage, feeding primarily on crayfish, fish, frogs and a variety of invertebrates.



Eastern hellbender. Photo courtesy of the Marshall University Web site.

Hellbenders prefer swift running, well oxygenated, unpolluted streams and rivers. An important physical characteristic of these habitats is the presence of riffle areas and abundant large flat rocks, logs or boards which are used for cover and nesting sites.

This species is found in the Gasconade River. However, there are no known locations of this species in the immediate area of the existing bridge and that area does not appear to be suitable habitat for this species. Therefore, none of the alternatives should have a direct impact on this species. There could be indirect impacts caused by sedimentation entering the stream and other temporary impacts to water quality.



Hibernating Indiana bats. Photo courtesy of Bill Elliott.

Indiana Bat: The Indiana bat is a federally listed endangered species that hibernates in caves during the winter months and roosts in trees during the summer months.

Individuals begin congregating around the caves where they will hibernate in early fall. They emerge from hibernation in early spring and begin migrating to their summer roosting and foraging areas.

Indiana bats are entirely insectivorous, eating primarily moths, but also mosquitoes and aquatic insects. In the summer, females gather beneath the loose bark of living and dead trees in maternity colonies of 50 to 100 individuals.

Indiana bats exhibit strong loyalty to their roosting and hibernating sites and will return to the same locations year after year. Current threats to the species include stream channelization, bank modification, agricultural development, and conversion of forested land, which has affected the amount and quality of habitat available to the species.

Harvesting suitable live trees and removing dead trees reduces the amount of available habitat and forces the bats to utilize areas where the potential for disturbance or predation may be higher. Pesticide contamination is another threat to this species. Contamination of waterways that eliminates aquatic insects may hurt local populations of Indiana bats.

The USFWS considers the entire state of Missouri to be within the breeding range of this species. Therefore, any project that involves tree clearing in Missouri could impact this species by removing potential roosting habitat.

All three alternatives involve tree clearing so they could potentially impact this species. At this time it is estimated that Alternative 1 would require clearing 1,686 acres of trees. It is estimated that Alternative 2 would require clearing 1,402 acres of trees. It is estimated that the Preferred Alternative would involve clearing 1,475 acres of trees. Alternative 1 requires the greatest amount of tree clearing, so it has the greatest potential to impact this species. Alternative 1 also involves clearing more forested riparian habitat than the other alternatives. This could also impact the Indiana bat because it removes foraging habitat.

Gray Bat: The gray bat is federally listed as an endangered species that uses caves year round. They roost, breed, rear young, and hibernate in caves. Unfortunately, few caves meet their specific roost requirements. Most of the caves used by gray bats for hibernation have deep vertical passages with large rooms that function as cold air traps. Summer caves must be warm or have small rooms or domes that can trap the body heat of roosting bats.



Gray bat. Photo courtesy of Adam Mann, Environmental Solutions and Innovations.

Individuals migrate between summer and winter caves and will use transient or stopover caves along the way. Summer caves are normally located close to rivers or lakes where the bats feed. A few hundred to many thousands of pregnant females congregate to form maternity colonies. Males and nonreproductive females gather in smaller groups to form what are known as bachelor colonies.

Gray bats feed primarily on flying insects over rivers and lakes. Aquatic insects, particularly mayflies, make up most of their diet. Threats to this species include human disturbance of caves that the bats are using, alterations of caves and cave entrances, e.g., commercialization and improper gating, and overuse of pesticides. Gray bats have also been killed during natural flooding and flooding caused by manmade reservoirs. Pollution and siltation of streams causing a reduction in aquatic insects may also affect gray bat populations.

Although none of the alternatives would directly impact any known gray bat caves, they all could still have indirect impacts to this species. Gray bats forage in riparian areas along wadeable streams. They have been known to fly as far as 12 miles from their colony to feed, so clearing riparian habitat within 12 miles of a gray bat colony could have an indirect impact on the species by removing potential foraging habitat.

There is a known gray bat maternity cave approximately 10 miles from the proposed Maries River crossings and one approximately 12.5 miles from the proposed Gasconade River crossing. In addition, gray bats have been found using the underside of concrete bridges for night roosts.

Alternative 1 is likely to have the greatest impact on this species because it would require clearing more riparian habitat along the Maries River than the other alternatives. There is also a transient gray bat cave within two miles of all three alternatives. However, the project should not have an impact on this resource.

Running Buffalo Clover: Running buffalo clover is a native plant of Missouri that is on the federal list of endangered species. At one time it was thought to be extirpated from the state until 1989 when it was rediscovered in St. Louis. It is a perennial that grows from 4 to 20 inches tall, blooming generally from mid-May through June. It is called *running* buffalo clover because it produces runners similar to stolons that extend from

Extirpated: extinct or gone from a particular area but surviving in other places.



Running Buffalo Clover. Photo courtesy of the U.S. Forest Service.

the base of erect stems and run along the surface of the ground.

Running buffalo clover grows in rich moist soils on areas that have a pattern of periodic disturbance such as mowing, trampling, grazing, or light bank scouring. At one time buffalo and other large herbivores probably dispersed the seeds. These same animals may have also created habitat for this species by periodically disturbing areas.

In Missouri the species is generally found in riverine settings, along the first wooded terrace or bench above the river. Threats to the species include habitat loss and competition with introduced clover species. A lack of prescribed fire or other regular disturbances has resulted in a loss of open woodlands and a reduction in

running buffalo clover habitat. Mowing may remove seed heads before seeds are mature but may help the clover by controlling competing vegetation.

At this time there are no known locations of running buffalo clover within the corridor for any of the three alternatives. Therefore, none of the alternatives should impact this species.



Hine's emerald dragonfly. Photo courtesy of the Illinois Natural History Web site.

Hine's Emerald Dragonfly: This federally listed endangered species lives in calcareous (high in calcium carbonate), spring-fed marshes and sedge meadows overlaying dolomite bedrock, called fens. This dragonfly has brilliant emerald-green eyes and a dark brown and metallic green body, with yellow stripes on its sides. Its body is about 2.5 inches long; its wingspan reaches about 3.3 inches.

The greatest threat to the Hine’s emerald dragonfly is habitat destruction. Most of the fen habitat that this dragonfly depends on for survival has been drained and filled to make way for urban and industrial development. Contamination of fens by pesticides or other pollutants also poses a threat to this species.

The dragonfly depends on fens with good water quality for growth and development. Development that decreases the amount or quality of ground water flowing to the dragonfly’s habitat threatens its survival because it depends on spring-fed shallow water to breed.

There are no known locations of the species within the corridor for any of the three alternatives and there are no known fens in any of the corridors. Therefore, none of the alternatives would likely impact this species.

This section described the project’s potential impacts to rare species that could occur in the study area. However, the true extent of these impacts cannot be determined until plans for the project have been completed. MoDOT will conduct periodic reviews of the NHD and coordinate with the USFWS and MDC throughout the design phase of the project to track new locations and further analyze the projects impacts to these species.

If it is deemed necessary, MoDOT will have qualified biologists conduct surveys for individual species. If it is determined that the project may impact one of these species, MoDOT and FHWA would conduct the necessary consultation with the USFWS to comply with the Endangered Species Act and to determine what measures can be implemented to eliminate or reduce the projects impacts to these species.

Will the project impact any unique natural communities?

A review of the NHD and the cave database did not reveal any unique natural communities within the corridor for any of the three alternatives. Initial field investigations verified these findings. However, it is possible that unique natural communities do exist in the study area, but to date they have not been identified. Further field investigations will be conducted during the design phase of the project.

What are unique natural communities?
Natural communities are recurring groupings of plants and animals found in a particular physical environment. Unique natural communities include all examples of rare types and high quality examples of more common types. These are often difficult or impossible to replace, such as a cave or prairie.

Wildlife

How would the project affect more common wildlife and their habitats?

The variety of wetland and terrestrial ecosystems in the study area provide habitat for a diverse mix of wildlife species. White-tailed deer, wild turkeys, rabbits, and squirrels are known to frequent forests, cutover forests, and open areas. These species seem to have adapted well to the fragmented landscape created by humans.

Upland woods may support wildlife such as fox, deer, raccoon, opossums and many other species. Woodlands interspersed with old field or overgrown lots favor species such as skunk, woodchuck, rabbit, squirrel, red-tailed hawk, turkey vulture, and a variety of songbirds and small mammals.

The wetlands found in the vicinity of the study area are used by a variety of reptiles and amphibians and provide valuable foraging areas for numerous species of wading and shorebirds. Other species such as muskrats, beavers, otters, kingfishers, blackbirds, wood ducks, and numerous insects also use wetland areas.

There are two perennial streams/rivers within the study corridor, the Maries River and the Gasconade River. Both of these waterways are home to numerous species of fish and other aquatic species. The project will have minimal direct impacts to habitat for these species where construction activities occur within the waterway and where bridge piers are placed in the waterways. The project may also have temporary indirect impacts from sedimentation in these waterways.

Species such as robins, starlings, house sparrows, house wrens, cardinals, mockingbirds, squirrels, and many rodents are commonly found in developed residential areas. These species have adapted to human disturbance and seem to thrive in these areas. Several communities, which provide this type of habitat, are located in the study area.

Clearing and grading operations during construction of the project might temporarily affect the flora and fauna within the study corridor. Nearby areas of habitat similar to that within the limits of construction for this project are expected to support indigenous wildlife potentially relocated by the project. Some initial stress on the carrying capacity of the ecosystem may occur, but the impact should be minimal because of to the relatively small scope of the project in relation to the amount of similar habitat in the area. Clearing of trees and other vegetation would be confined to construction limits to preserve as much existing natural growth as possible.

Clearing of a highway corridor such as this one does fragment existing habitat. Habitat fragmentation occurs as the result of subdividing larger parcels of habitat into smaller parcels. Habitat fragmentation has varying degrees of impact on different species.

Fragmentation of forested habitat tends to be more detrimental than other types of habitat. Larger species such as deer, raccoons, and coyotes may be able to cross the barrier created by a roadway with little or no impact. Some would not be impacted but others may be if the width of the corridor exceeds the distance that they are willing to travel between forested areas. However, for smaller species that cannot cross wide stretches of hot pavement, such as amphibians, the potential impact due to fragmentation is greater. For these species, the roadway may be a complete barrier, in effect confining them to the remaining habitat on one side of the road. The remaining habitat may not supply all of the resources necessary to support the population.

Forest fragmentation can also impact migratory birds by creating more edge habitat. Predators such as skunks, raccoons, foxes, etc. tend to follow forest edges looking for food and thus bird nests that are constructed close to forest edges are more commonly predated and are overall less successful than those built farther from the edge of a forested tract.

If habitat is fragmented to the point that it no longer supports viable populations of certain species, species diversity can be lowered to the point that only species with a high tolerance human development can survive. Or, as in the case of many amphibians, the adults live in upland drier habitats but must return to wetland habitats to breed. If the barrier prevents access to the breeding habitat, the adults would be unable to reproduce. Ultimately, barriers to movement may reduce gene flow between individual populations and cause genetic defects, further impacting species.

It is difficult to analyze the impact of habitat for a long corridor such as this one because it touches so many forested patches but impacts them each in a different way. Some are cut through the middle, in other patches a small area may be isolated by the road alignment, and still others the roadway may parallel the forested area for some distance and just remove a narrow edge.

Also, different species of wildlife need different sized patches to satisfy all of their requirements and, as mentioned above, for some species the size of the patch isn't as important as what the particular patch of forest contains. For example, some amphibians need a wetland surrounded by some forest; a highway cannot separate these two components without affecting the life cycle of individual animals.

Aerial photographs and GIS data on forest patch size, provided by MDC, were used to evaluate fragmentation. All three alternatives do result in some fragmentation of forested habitat, however, Osage, Maries, and Phelps counties are largely agricultural and most of the forested areas are already heavily fragmented. There is no distinct difference between the three alternatives in the amount of fragmentation that they create. Aerial photographs were used to alter the alignment of the Preferred Alternative in some places to reduce fragmentation.