

CHAPTER IV

Environmental Consequences

A. Introduction

This chapter describes the beneficial and adverse social, economic and environmental impacts of the reasonable strategies, the preferred strategy and the conceptual corridors of the preferred strategy. The information presented in this chapter is intended to allow the reader to compare the environmental and socio-economic impacts of the strategies and conceptual corridors within the preferred strategy.

The reasonable strategies carried forward include Widening Existing I-70 and the New Parallel Facility (includes both toll road and non-toll road). The recommended preferred strategy is to Widen Existing I-70 and its conceptual options in the rural areas include, in general: widen adjacent to the north or widen adjacent to the south. In the urban areas, (Columbia and the three W's - Warrenton, Wright City and Wentzville), the preferred strategy's conceptual corridors include relocations on new alignment and rebuilding I-70 within the existing roadway alignment. Chapter II – Strategies and Conceptual Corridors provides information about the strategies and their conceptual options.

Section B of this chapter describes the overall social, economic, and environmental impacts of the Reasonable Strategies. Section C describes the environmental impacts of the Widening Existing I-70 Rural Area Options. Section D describes the social and economic impacts of Widening Existing I-70 in both rural and urban areas plus the corridor options in the urban areas. Section E describes the natural environmental impacts of Widening Existing I-70 in both rural and urban areas plus the corridor options in the urban areas. Sections F through K discuss impacts to the I-70 Corridor in total.

B. Evaluation of Reasonable Strategies

1. OVERALL SUMMARY AND COMPARISON

In order to determine the environmental feasibility of improving I-70 between Kansas City and St. Louis, previously recorded environmental constraints and issues were inventoried and reviewed within the study corridor. For the purposes of evaluating and assessing the potential impacts of the reasonable strategies, data were collected and reviewed within a 10-mile wide (16.1 km) band centered along the existing I-70 roadway extending from the study termini in the Kansas City and St. Louis metro areas. As defined in Chapter II – Strategies and Conceptual Corridors, the reasonable strategies include: Strategy No. 1 ("No-Build"), Strategy No. 3 (Widen Existing I-70), Strategy No. 4 (New Parallel Facility), and Strategy No. 5 (New Parallel Toll Road). Inventoried sites and known constraints are shown in Chapter III – Affected Environment.

A review of the environmental data suggests that no known sites, controls or constraints would preclude or prevent the construction of the parallel route concepts. Through ongoing discussions with the various resource agencies, including the U.S. Army Corps of Engineers,

the U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency, the Missouri Department of Natural Resources, the Missouri Department of Conservation and others, a number of important environmental impact issues have been identified that will need to be addressed through the EIS process, but none that would affect the feasibility of constructing the improvements. Should the New Parallel Facility Strategy be recommended, specific route alternatives would need to be evaluated. In the case of the Widen I-70 Strategy, which would have a more fixed location with less maneuverability to avoid constraints, no known environmental constraints were identified that would prevent the widening of the existing I-70 right-of-way.

Given the abstract nature of the environmental impact assessment for the reasonable strategies, quantification of the impacts to the natural environment was not possible at this stage of the study. However, through geographic information systems analyses of the study corridor, estimates of probable impacts based on typical surface area percentages were developed for some of the more important impact factors. The following table presents the likely range of impacts for the reasonable strategies to provide a sense of relative impact potential in order-of-magnitude terms.

Table IV-1: Reasonable Strategies Impacts

Natural Environment Impact Issue	Widen I-70 Strategy	Parallel Route Strategies
Forests	230 Acres	1,700 to 2,800 Acres
Wetlands	80 Acres	400 to 430 Acres
Farmland	1,300 Acres	3,000 to 3,700 Acres

As is evident in the preceding summary, the parallel route strategies would have a greater probability of impacting the forest, wetland and farmland resources in the study corridor. Some of the findings of the environmental review of the study corridor are as follows:

- **Natural Resources and Other Impacts** - There are a number of parkland and natural feature issues on the south side of Columbia that could preclude the construction of the I-70 improvements to the south of Columbia.
- **Missouri River Impacts** - Regardless of the chosen strategy, the crossing of the Missouri River would likely need to occur in the vicinity of the existing I-70 bridge at Rocheport. As part of the current and ongoing planning for the reclamation of the Missouri River floodplain area, being performed jointly by the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service and Missouri Department of Conservation, provisions have been planned for the eventual expansion of the existing I-70 right-of-way to either the north or south of existing I-70.
- **Secondary Impacts** – Secondary impacts are not expected to be a differentiating factor between the various strategies. With the Widen I-70 Strategy, the existing I-70 development trends would continue. Similarly, due to some mitigating factors relating to the very limited access of the parallel route strategies, it is not anticipated that these strategies would measurably shift the current development trends.
- **Joint Development Opportunities** – With the new construction, each of the reasonable strategies would provide relatively equal opportunities to combine the development of the I-70 improvements with other initiatives. Other initiatives could include system enhancement measures, recreational trail improvements, or linear parks.

- **Impacts to Existing Structures** – Due to the dependency of the widening strategy to the existing I-70 alignment and the relatively built-up character of the adjacent land use at the interchange areas, this strategy would likely have greater impacts to existing structures than the other strategies. The parallel route strategies would have greater alignment flexibility and maneuverability to avoid direct impacts to dwellings and businesses. It is estimated that a maximum of 120 - 150 businesses and residences could be impacted by the Widen I-70 Strategy.
- **Noise Impacts** – Each of the strategies would have noise impacts that would require the consideration of noise abatement. Due to the built-up nature of the existing I-70 right-of-way and the higher concentration of receptors, it is estimated that the Widen I-70 Strategy would have greater impacts to the aural environment.
- **Compatibility of Land Use** – Existing I-70 has created a development spine across the state that has over the years grown in intensity and breadth. It is anticipated that the Widen I-70 Strategy would continue this development trend, and to some extent, accelerate its growth due to the improved access provided at the interchanges and the slightly higher traffic volumes. The new parallel route strategies would be predominately located in farming and agricultural land uses. Consequently, the Widen I-70 Strategy would best match existing land use.
- **Impacts to Existing I-70 Business Operations** – During construction, any loss of business caused by the construction would be mitigated by the temporary nature of the impacts and the fact that directional signage and access would be maintained. However, in the urban areas such as Columbia, these impacts may be more noticeable given the higher amount of local patronage and nearby business competition that would not be impacted by the construction. From a long-term perspective, case studies have suggested that population centers of 2,000 persons or more typically do not experience long-term losses of business due to bypass improvements. Based on an inventory of existing businesses along existing I-70, it is estimated that 130 - 150 businesses could experience a loss of income should the New Parallel Facility Strategy be constructed. However, the degree of this impact, if at all, would depend on a number of factors, including the amount of traffic that would remain on the existing facility and the spatial relationship of the existing and new facilities to aid in access and visibility. Regardless of the degree of impact, the Widen I-70 Strategy would have the additional benefit of promoting the growth of existing I-70 businesses through higher traffic volumes and improved access, at least for those business that would not be displaced by the improvements.
- **Environmental Justice** – Based on field reviews, analyses of census data, and input from the public received at public meetings and through public comment, no areas of minority or low income populations have been identified that could be potentially impacted, either directly or indirectly, by the improvements to I-70 within the study corridor.

2. ENVIRONMENTAL ISSUES

a. Natural Resources Impacts

The vegetated wetlands that exist throughout the study corridor are concentrated along the streams. The extent and distribution of the streams and adjacent wetland areas are relatively

similar in both halves of the study corridor, and would not preclude the location of a new parallel strategy on one side or the other.

Previously recorded and known locations of federal threatened and endangered species, and statewide sensitive biological resources are scattered throughout the study corridor. Throughout most of the corridor, there are no concentrations of these that would solely prohibit the location of a new parallel strategy on one side or the other. However, in the south part of Columbia, there are several sensitive biological resource sites that could make it difficult to locate a bypass or new parallel facility through this area.

The area where the most concentrated contiguous forestland occurs is in the south half of the study corridor between New Florence and Warrenton. Although these forested areas would not preclude the location of a new parallel facility in the south half, in comparison, there is relatively little forestland in the north half of the study corridor between those two towns, which would result in far less impacts.

The extent and distribution of prime farmland within the rural areas is relatively similar in each half of the study corridor, and would not prohibit the location of a new parallel strategy on one side or the other.

b. Missouri River Impacts

Regardless of the chosen strategy, the crossing of the Missouri River would need to occur in the vicinity of the existing I-70 bridge at Rocheport. As part of the current and ongoing planning for the reclamation of the Missouri River floodplain area, being performed jointly by the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service and Missouri Department of Conservation, provisions have been planned for the eventual expansion of the existing I-70 right-of-way to either the north or south of existing I-70, within a 300-foot (91.4 meters) wide reserved corridor outside of existing right-of-way.

c. Cultural Resources Impacts

In terms of the reasonable strategies, the no-build concept would have the least direct impact on cultural resources that may exist along Interstate 70. These resources, however, could be impacted by new development along the existing interstate. The vast majority of those projects would probably be built using private funding and would not require federal permits, cultural resource management studies would not be required and a valuable portion of Missouri's cultural heritage could be destroyed without being documented.

The construction of a new parallel facility or parallel toll roads, would probably have the greatest direct impact on cultural resources. These strategies would require disturbing an area at least 500 feet (152.4 m) wide, with an additional area of 1,320 feet (402.3 m) from the centerline disturbed by the construction of new interchanges. It is likely that previously undisturbed sites would lie within the construction corridor. Although cultural resource investigations would be performed prior to construction in order to identify and develop preservation strategies, the studies would be more costly in terms of identifying, documenting and mitigating adverse effects on significant cultural resources.

Widening the existing interstate would seem to be the preferred strategy. Fewer cultural resources would be impacted due to the narrower construction corridor. Although, Slave Rock, located in the Mineola Hill area, is a feature of special concern. It is likely that many of the resources adjacent to the existing interstate have been severely impacted by construction of Highway 40 and Interstate 70, and by development alongside the road. Documenting the

remaining, undisturbed portions of significant cultural resources would be less expensive than documenting the greater number of undisturbed sites threatened by parallel facilities. Secondary impact to cultural resources by new development could still occur, but cultural resource studies performed in conjunction with the widening of I-70 would provide a documented sample of resources across the state.

d. Hazardous Wastes Impacts

Hazardous waste impacts were a neutral factor in the evaluation and assessment of the reasonable strategies. Refer to Chapter III – Affected Environment, Section 8 for summary listing of 22 sites identified. None of these sites would be impacted by any of the strategy improvement concepts.

e. Parklands Impacts

Although there are some existing parklands adjacent to the existing I-70 right-of-way, widening to the opposite side in the Widen I-70 Strategy can avoid most of these parklands. Any unavoidable impacts to existing parklands adjacent to I-70 would most likely impact only a small portion of parkland. There are also some additional parklands and conservation areas scattered throughout the study corridor, in the rural areas, however none of these would preclude the location of a new parallel strategy on either the north or south half of most of the corridor, with two exceptions. One is on the south side of Columbia where there is a concentration of several parklands that could preclude the location of a new parallel strategy or a bypass in this area. The other exception is along the Missouri River where there is a wildlife refuge and a concentration of several conservation areas, making it more feasible to utilize the existing crossing location as discussed below.

The crossing of the Missouri River would occur at the location of the existing bridge. Although the Big Muddy National Wildlife Refuge is on the north, and the Overton Bottoms Conservation Area is on the south, there is a 300-foot (91.4 m) wide reserved corridor on each side of the existing right-of-way dedicated to the expansion of I-70. The reserved corridor will allow the widening of I-70 to take place in the Overton Bottoms area with advanced agency cooperation and agreement.

The Katy Trail State Park travels under existing I-70 at the Missouri River, and travels over I-70 southwest of Boonville. These grade separations can be maintained and extended in order to avoid or minimize the impacts of widening. A new parallel strategy would also have to cross the Katy Trail State Park twice and would have to utilize grade separation in order to avoid impacts.

f. Floodplains

Interstate 70 crosses numerous major waterways and their floodplains as it crosses Missouri. Impacts to floodplains would not preclude the construction of any of the build strategies. Some of the major crossing areas include the Blackwater, Lamine, Missouri, and Loutre floodplain locations. These crossing areas will be evaluated further for the selected corridor in order to minimize impacts and reduce floodplain intrusion.

g. Secondary and Cumulative Impacts

The consideration of possible secondary or cumulative effects should begin in the planning stages of the highway project development process. Secondary impacts are those that are "caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable" (40 CFR 1508.8). Under normal circumstances, these impacts are stimulated by

the initial action. They encompass a multiplicity of secondary effects such as land-use changes, and shifts in water quality, economic vitality and population density.

Cumulative impacts are the outcome of incremental consequences of an action when added to other past and projected future-actions (40 CFR 1508.7). These impacts are less distinct than secondary impacts.

The potential for secondary and cumulative impacts, and accordingly the need to carry out analyses to establish the probability of impacts, also depends upon the type of project being considered. Within the concept to widen the existing highway, the development trends and environmental modifications already in place would likely continue. Within the bypass conceptual corridors in both Columbia and the Warrenton, Wright City and Wentzville area, secondary impacts are not expected to vary much by concept. New access into undeveloped locations can be an issue in successive development activity. For the I-70 project, improvements to expand capacity, add additional interchanges and construct a new highway in a new setting will have a greater potential for indirect effects than the concept to upgrade the existing I-70.

h. Joint Development Opportunities

With new construction, each of the reasonable strategies would provide relatively equal opportunities to combine the development of the I-70 improvements with other initiatives. Other initiatives could include system and transportation enhancement measures, recreational trail improvements or linear parks. All the strategies, with the exception of the no-build, would offer joint development opportunities with other resource agency initiatives in two prominent natural areas within the project corridor. These areas are the Overton Bottoms Missouri River crossing area located in Cooper and Boone Counties, and the Mineola Hill Loutre River valley crossing area located in Montgomery County. Possible joint development opportunities in these two areas are discussed in greater detail later in Section F of this chapter.

3. SOCIAL AND ECONOMIC ISSUES

a. Impacts to Existing Structures

Due to the dependency of the widening strategy to the existing I-70 alignment and the relatively built-up character of the adjacent land use at the interchange areas, this strategy would likely have greater impacts to existing structures than the other strategies. The parallel route strategies would have greater alignment flexibility and maneuverability to avoid direct impacts to dwellings and businesses. It is estimated that a maximum of approximately 600 businesses and residences could be impacted by the Widen I-70 Strategy.

b. Noise Impacts

Each of the strategies would have noise impacts that would require the consideration of noise abatement. Due to the built-up nature of the existing I-70 right-of-way and the higher concentration of receptors, it is estimated that the Widen I-70 Strategy would have greater impacts to the aural environment.

c. Compatibility with Land Use

Existing I-70 has created a development spine across the state that has over the years grown in intensity and breadth. It is anticipated that the Widen I-70 Strategy would continue this development trend, and to some extent, accelerate its growth due to the improved access

provided at the interchanges and the slightly higher traffic volumes. The new parallel route strategies would be predominately located in farming and agricultural land uses. Consequently, the Widen I-70 Strategy would best match existing land use.

Changes in *a priori* land use and development patterns within the boundaries of this study will occur both autonomously and dependently based on changes in the character of this section of I-70. At present, there are numerous land uses which when combined create the character of I-70. How the various uses are balanced and the intensity to which each land use is developed will determine the future character of the study corridor.

It may be instructive to begin by looking at the primary land use categories. These encompass such basic functions as residential, commercial, industrial, recreational, institutional and agricultural uses. There are some general characteristics of each of these uses that define their environmental impacts as well as potential compatibility issues. In addition, there are some commonalities of physical elements or facilities, and the environmental impacts of the different land uses, that manifest themselves in the resultant physical site planning and design development requirements within each use category.

Many land use decisions are influenced by I-70, which cuts through or borders the communities along the adjacent landscape. It provides easy access to, from and throughout these communities and will continue to enhance their attractiveness as essential commercial and service locations. The heavy traffic volumes along I-70 make these areas more appropriate for intense forms of development such as commercial, office/service or industrial uses. The less intense forms of development such as residential areas are usually located away from these existing transportation corridors. In addition, these communities are generally located at or near major intersections of the study corridor. It is anticipated that the Widen I-70 Strategy would continue this development trend, and to some extent, accelerate its growth due to the improved access provided at the interchanges and the slightly higher traffic volumes. The new parallel route strategies would be predominantly located in farming and agricultural land uses. Consequently, the Widen I-70 Strategy would best match existing land use and future growth patterns.

Any physical development is going to have some impact on land use. The degree or extent of that impact is dependent upon such factors as the type of use, the intensity of the development and the physical characteristics of the site. Once again, the new parallel route strategies would alter these factors of land use and create future conflicts with existing community comprehensive plans. However, after analyzing the Widen I-70 Strategy the connections, transitions and buffers between established land uses will ensure compatibility with those land uses allowed by community's specific plans and have less of an impact on the previously mentioned factors.

Consequently, after looking at several aspects of each strategy compared to the existing land uses and trying to keep uniform with those uses, the widening improvements to I-70 are the most compatible.

d. Impacts to Existing I-70 Business Operations

This factor is a subjective rating of how the existing I-70 businesses would be impacted by each of the strategies. During construction, any loss of business caused by the construction would be mitigated by the temporary nature of the impacts and the fact that directional signage and access would be maintained. However, in the urban areas such as Columbia, these impacts may be more noticeable given the higher amount of local patronage and nearby business competition that would not be impacted by the construction. From a long-term perspective,

case studies have suggested that population centers of 2,000 persons or more typically do not experience long-term losses of business due to bypass improvements. Based on an inventory of existing businesses along existing I-70, it is estimated that 130 - 150 businesses could experience a loss of income should the New Parallel Facility Strategy be constructed. However, the degree of this impact, if at all, would depend on a number of factors, including the amount of traffic that would remain on the existing facility and the spatial relationship of the existing and new facilities to aid in access and visibility. Regardless of the degree of impact, the Widen I-70 Strategy would have the additional benefit of promoting the growth of existing I-70 businesses through higher traffic volumes and improved access, at least for those business that would not be displaced by the improvements.

e. Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* was the recognition that some federal action could have or were having a disproportional adverse effect on certain designated population groups. This executive order was signed February 11, 1994 and since that time, federal agencies have developed guidelines and policy guidance to evaluate federal actions for compliance with the intent of EO 12898.

The Federal Highway Administration has issued technical guidance and policy papers on implementing the National Environmental Policy Act associated regulations and various executive orders. MoDOT has followed these regulations, guidance and policy papers in the preparation of this Draft First Tier Environmental Impact Statement. The First Tier NEPA EIS document does not contain the detail that is normally found in a second tier environmental document. The second tier document is the one most agencies, departments, local jurisdictions and the public are accustomed to reviewing. These second tier documents will be forthcoming as the I-70 improvement project develops and is subdivided into sections of independent utility.

The intent of EO 12898 is to review proposed actions for disproportionate effects on minority populations and low-income populations. This is most readily accomplished by the review of the demographic baseline conditions within the project's area of effect and examination of social impacts to determine if a disproportionate impact is present. The initial review of the minority demographics of the I-70 improvement study area was shown in Table III-14. Since the 2000 Census the racial composition and total population numbers for states, counties and places, is now available. It was reviewed at both the county and place levels. As the second tier environmental documents are prepared the studies will be refined.

During the field reviews of the study corridor, there were no identifiable minority neighborhoods, or areas of low income noted in the areas that were likely to be directly impacted by the widening or conceptual corridors. As the projects move into second tier documentation, more discrete studies will be undertaken that would address minority business ownership, minority customer base and minority employment in non-minority businesses which may be impacted by the widening or conceptual corridors developed further in these documents.

C. Evaluation of Widening Existing I-70 in Rural Areas

1. OVERALL SUMMARY AND COMPARISON

Based on the recommendation of Strategy No. 3 (Widen Existing I-70) as the preferred strategy, an overall evaluation and assessment of the natural and manmade environments immediately adjacent to the existing I-70 right-of-way was performed to provide recommendations regarding the configuration of the roadway widening – to the north or to the south. Appendix B presents a

summary table of the evaluation of the I-70 sections from Kansas City to St. Louis. This summary table presents the recommendation configuration of the roadway widening, whether in an urban section or a rural section to the north or to the south. The definitions of these widening configurations are presented in Chapter II – Strategies and Conceptual Corridors. Environmental considerations included wetlands, threatened and endangered species, natural communities, floodplains, parklands, hazardous waste sites, cultural resources and displacements. Engineering considerations are presented in Chapter II. The following sections describe the potential environmental impacts in the rural I-70 areas, as defined in Chapter II, for the implementation of the Widen Existing I-70 Strategy.

2. ENVIRONMENTAL ISSUES

a. Natural Resources and Wetlands

The extent and distribution of streams within the rural areas of the I-70 corridor is very similar on each side of the roadway. Therefore, the impacts to streams would be similar regardless of which side is used for the widening.

The vegetated wetlands have a relatively similar distribution and extent on each side of the roadway. The most extensive mapped wetlands occur mainly at the floodplains of the larger streams. Although there are some areas that contain more wetland area on one side than the other, the difference is not substantial enough to preclude widening on a particular side, as the impacts would equalize in other areas.

At the Missouri River crossing, more adverse impacts would most likely occur if widening were to take place on the south side of the existing bridge than on the north side. On the south side, a portion of the Manitou bluffs, which contribute to the visual quality and natural beauty of the area, would have to be removed.

The extent and distribution of prime farmland within the rural areas of the I-70 corridor is very similar on each side of the roadway. Therefore, the impacts to prime farmland would be similar regardless of which side is used for the widening.

b. Threatened and Endangered Species

There are no previously recorded or known locations of federally listed threatened or endangered species habitat still intact along the I-70 corridor in the rural areas. However, there is a candidate species (the sturgeon chub) site north of the existing bridge over the Missouri River, at the previous location of Taylor's Landing, which was destroyed by the 1993 flood. It is possible that the federally endangered pallid sturgeon may occur in the river, but it would make no difference on which side the new bridge is located. South of the Missouri River bridge are the Manitou Bluffs, which are part of the same geologic formation that contains nearby caves. There are two caves existing in this area, about two miles (3.2 km) south of the bridge, that have had occurrences of the federally endangered gray bat and Indiana bat. Although not directly impacting the caves, it is possible that if the new bridge were to be located on the south side, blasting activities to cut through the bluffs could cause some disturbance to the bat populations.

A natural community called Tucker's Prairie is located east of Kingdom City, on the south side of I-70, and should be avoided. The area contains some species listed by the state as "imperiled" and "critically imperiled".

c. Natural Communities

The natural community called Tucker's Prairie is located east of Kingdom City on the south side of I-70. It is a sensitive biological resource listed in the Missouri Department of Conservation's natural heritage database. It is a unique hardpan prairie, considered threatened because this type of community has almost been eliminated throughout the state.

The Graham Cave State Park, located on the north side of I-70 in the Mineola Hill area, should be avoided. It contains the Graham Cave Glades Natural Area, a complex of sandstone and limestone glade communities, a dry sandstone forest community and dry sandstone cliff communities.

The extent and distribution of forested areas within the rural areas of the I-70 corridor are relatively similar on each side of the roadway. Therefore, there would be no substantial difference in impacts to forest communities, regardless of which side is used for the widening.

The extent and distribution of streams, ponds and lakes within the rural areas of the I-70 corridor are very similar on each side of the roadway. Therefore, the impacts to these aquatic communities would be similar regardless of which side is used for the widening.

d. Floodplains

Interstate 70 crosses numerous major waterways and their floodplains as it crosses Missouri. Most stream crossings are designed to be perpendicular with the roadway, and the choice of widening the highway to the north or south is not an issue. However, there are several exceptions, as noted below.

Immediately east of the Lafayette-Saline County line, Davis Creek closely parallels existing I-70 to the north for about 3 miles (4.8 km) before crossing to the south and its confluence with the Blackwater River. Widening of the roadway to the north could encroach on this mile (1.6 km) wide floodplain.

Seven miles to the east, the Blackwater River floodplain parallels the roadway to the south for approximately 7.5 miles (12.1 km). Widening I-70 to the south in this area would have greater floodplain impacts. This floodplain is approximately 0.75 miles (1.2 km) wide. Two major Blackwater tributaries (Coppers Creek and Long Branch) cross the highway from north to south in the area, exacerbating possible floodplain encroachment to the south.

The Lamine River crosses existing I-70, 6.2 miles (10.0 km) east of the Saline-Cooper County line, then flows eastward for more than four miles, immediately north of the highway. The floodplain is 0.6 miles (1.0 km) wide. Also, a significant tributary, Chouteau Branch, crosses from south to north in this section.

Directly south of Boonville, and continuing east for nearly eight miles, I-70 lies on the north edge of the Petite Saline Creek floodplain. Four or five tributaries cross I-70 from the north to the 0.5-mile (0.8 km) wide floodplain, making widening to the south a difficult concept.

East of the Missouri River, in Boone County, the confluence of Perche Creek with Sugar Branch occurs immediately south of the existing highway. West of this confluence, the Sugar Branch floodplain parallels the south I-70 right-of-way.

Approximately 2.6 miles (4.2 km) east of the Boone-Callaway County line, a tributary to Cedar Creek parallels I-70 directly to the south for 0.75 miles (1.2 km), before crossing and joining with Cedar Creek. The floodplain is 125 feet (38.1 m) wide.

On the eastern edge of Kingdom City, in Callaway County, the floodplain of a Maddox Branch tributary lies on the north right-of-way of the highway. Widening to the south would be advisable at this section. Five miles farther to the east, Auxvasse Creek crosses from the north and loops to the west immediately downstream of the roadway. The floodplain averages about 600 feet (182.9 m) wide at this point, and would interfere with widening to the south.

At New Florence, in Montgomery County, the floodplain of the upper reaches of Clear Fork (a Loutre River tributary) is adjacent to the north of the roadway right-of-way and to the access road in the northeast quadrant of the interchange.

At the far eastern end of the project, west of Highway 40, the Peruque Creek floodplain parallels I-70 to the south for nearly 20 miles (32.2 km). It would be advisable to widen the roadway to the north along this stretch.

e. Parklands

Throughout the rural areas of the I-70 corridor there are some parklands/public lands that are immediately adjacent to the existing right-of-way, and would be affected by widening. They are as follows:

The Maple Leaf Conservation Area is located on the south side of I-70 near Higginsville, and should be avoided.

The Harriman Hill Access Area, an MDC owned public boat ramp area, is located on the north side of I-70 at the Lamine River crossing, and should be avoided, if possible.

The Cosmopolitan Recreation Area, a city park located on the north side of I-70 at the I-70/Stadium Drive interchange in Columbia, should be avoided, if possible. In addition to being a Section 4(f) property, it is also subject to the provisions of Section 6(f).

The Graham Cave State Park is located on the north side of I-70 at Mineola Hill, and should be avoided, if possible. It would require both a Section 4(f) and Section 6(f) evaluation.

The Diekroger Brothers Park is a city-owned park located on the south side of I-70 in Wright City, and should be avoided, if possible.

The Quail Ridge Park is a St. Charles County park located on the southwest side of the I-70/US 61 interchange at Wentzville, and should be avoided, if possible.

f. Hazardous Waste Sites

The identification of potential hazardous waste site locations was accomplished during the initial corridor screening (Chapter III, Hazardous Waste Sites) through the review of environmental regulatory records and visual survey from publicly accessible rights of way and applied to the proposed widening concept.

No sites that would pose a high risk of contamination or cause a considerable amount of expense or time to remediate were found to impact the widening concept in the rural areas.

g. Cultural Resources

Widening of the existing interstate could result in impact to 140 known archaeological sites, 15 cemeteries, and two National Register properties. No known historic bridges or shipwreck sites would be threatened.

D. Social and Economic Impacts

1. LAND USE IMPACTS

Land use impacts naturally vary by the intensity or degree of development that is affected by the Improvement to I-70 project. Two types of improvements are contemplated with this proposed action. First there is the widening of the existing facility itself and associated replacement or relocation of frontage roads, and the reconstruction of each of the interchanges within the project limits. The access control component of the interchange reconstruction will necessitate redirecting access from its existing on the overpass/underpass roadway location to the frontage roads. In areas where frontage roads are not present, they will be constructed to provide for access to adjacent properties. In some cases, the residence or business would be taken, as it would be inside the rebuilt or relocated interchange and ramps. This is addressed in the displacement section of this chapter as well.

a. “No-Build” Strategy

The “No-Build” Strategy would have some direct impacts on the existing land use patterns along the I-70 corridor. Development would continue at its present pace and site specific modifications of I-70 access control locations would likely continue as well. Recent developments, such as the Factory Outlet Mall in Odessa, have necessitated such spot improvements, in this case, the provision of a slip-ramp to the frontage road. It is likely that other spot improvements in traffic and access control would be necessitated to maintain operation integrity and safety on the interstate highway.

b. Widen Existing I-70 (Preferred Strategy)

The Widen Existing I-70 (preferred strategy) recognizes the value and investment of improving I-70 at its present location. Cities, communities and even crossroads have become oriented to I-70 for access to their areas. It provides a conduit to allow easy access to goods and services by the motoring public as well as the residents of the area and having access to employment opportunities, goods and services in nearby or distant locations along the I-70 corridor. Recognizing the real estate axiom of location, location, location, many of the interchanges along I-70 have become developmental nodes for both the motoring public and local residents.

The same development density patterns that allow for choice among the goods and services also provide the elements for the traffic congestion that is evident at many of the highly developed interchanges along I-70. Access management to adjacent land use, while conceded to be initially disruptive to established travel patterns and traffic flows, will increase the efficiency of the interchange in handling both through trips and destination trips. Frontage roads between interchanges can reduce the number of trips made on I-70, which are of limited distance in nature. The frontage road also allows for some dispersion of the development that presently is located in the immediate vicinity of the interchange location. Cross traffic and return traffic turning movements can interrupt the traffic flow, lowering overall efficiency of the interchange to accommodate a variety of users. Unless the residence or business needs to be acquired for the reconstruction of the interchange itself, access will be maintained although it will likely be from the new or relocated frontage roads. In some areas that are highly developed, it will likely be

more feasible to route the frontage road around the development, rather than removing the development to put in or improve a frontage road interchange connection.

Rural I-70 Areas

The widening of I-70 will affect both the interchanges as well as the main lanes. And since the highway will be widened, one or both sides of the existing highway will be affected.

There is a wide range of roadside development along the interstate corridor, these include but are not limited to:

- Sections that have no frontage roads, agriculture or woodlands extend all the way to the highway right-of-way line,
- Sections where there are limited or dead-end frontage roads, accessing only one or several farms or residences.
- Sections that have frontage roads on one or both sides that are continuous between interchanges and are developed with residences and businesses.

The residential and commercial development that has occurred along the existing frontage roads has used variable amounts of setback from the roadways. As the frontage road is moved, to allow for the I-70 widening, there will be residential and business relocations. The design of the frontage roads will be such that local trips and property access may be more efficiently accomplished by utilizing the frontage road system. Design standards have evolved over the years and these concepts recognize the need to reexamine the current developments to more efficiently serve the motorist and property owner.

When a new highway is built at a new location, the issue of property severance is one of the more divisive issues. Parcel severance is not anticipated to be a critical issue as the interstate highway has been in place for many years. Interchange reconstruction and frontage road construction will have some severance issues but they are anticipated to be localized in nature and limited in scope.

Columbia Area

The Columbia Urban Area is considered to be that area between the US 40/I-70 interchange on the west to the Route Z/I-70 interchange on the east. These are also referred to as interchange numbers 121 and 133, respectively.

Columbia is located both north and south of I-70, and until recently the main growth areas of the city have been primarily to the south of I-70. Recently there has been a shift in development to the northern portions of the city.

Columbia recently, (February 5, 2001) adopted the Metro 2020 Columbia Land Use Plan. The plan was innovative as it has only five land-use categories; open space/greenbelt; neighborhoods; city center; employment district; commercial district. The commercial districts tend to be along I-70 and Route 63 and employment districts tend to be along Routes 763, 63 and B north of I-70 and along Route 63 south of I-70. Neighborhood districts are shown throughout the planning area. Open space/greenbelt tend to be in the western half of the Columbia planning area, both north and south of I-70.

The major thoroughfare plan for the Columbia metropolitan area utilizes a collector and arterial roadway network, largely following the major existing road pattern with linkages provided for route continuity. No expressways are proposed for the area north of I-70. Expressways are limited to Stadium Blvd. and S. Providence, south of Stadium Blvd.

The Metro 2020 Columbia Land Use Plan and the major thoroughfare plan for the Columbia metropolitan area do not include any I-70 bypass conceptual corridors.

Near North Conceptual Corridor - The Near North Conceptual Corridor would commence west of Midway, the US 40/I-70 interchange. This is in the vicinity of the Rolling Woods Estates and Trails West subdivisions. Between US 40 and Route E, the development pattern is agriculture and low-density rural residential. An interchange is proposed in the vicinity of Blackfoot Road, Obermiller Road and Wilcox Roads, east of Route E. Several new residential subdivisions are under construction between Blackfoot Road and Route 763, although the area is still largely in agriculture uses.

The Near North Conceptual Corridor has a proposed interchange with US 63 in the vicinity of the Boone County Fairgrounds. Residential subdivisions are being developed in this area, which include Crescent Meadows and Capri Estates. Older residential areas are located between Brown Station Road and the Norfolk and Western railroad tracks, west of Route B (Paris Road). Route B has developed as an industrial corridor.

The Near North Conceptual Corridor continues east, crossing Hinkson Creek, and has a proposed interchange with Route PP and Mexico Gravel Road. Low-density suburban residential development such as Wellington Estates, Wyatt Lane Acres and Martins Crossing are in or near the area, although agriculture is the dominant land use. From this proposed interchange to the interchange east of Route Z (No. 133), the area is primarily agriculture with rural residential development although residential subdivisions are being developed, such as Copper Creek.

Far North Conceptual Corridor - The Far North Conceptual Corridor would commence west of Midway Interchange, the US 40/I-70 Interchange, and proceed in a north-east direction, crossing US 40 near Midway. There is limited commercial development along old US 40 as well as residences. Agriculture is the predominant land use. An interchange is proposed with Route E, near the junction with Hatton Chapel Road. There is rural residential density development along the existing road system.

The Far North Conceptual Corridor would continue east, crossing Perche Creek and across agriculture lands to about one mile east of Routes VV and 763. Several residential developments are in this vicinity, which include Chalet Subdivision, Bon-Gor Estates and County Downes. An interchange is proposed with US 63 near Rocky Creek.

East of the proposed interchange with US 63, to the proposed interchange with Route B, the Far North Conceptual Corridor would traverse areas that were formerly strip mines and have limited rural residential development along the area roads. There is some industrial and residential development along Heller Road.

The Far North Conceptual Corridor commences southeast from the proposed interchange with Route B to another interchange in the vicinity of Route PP, Palmer Road and Dusty Rhodes Lane. There is very limited residential development between these interchanges, agriculture being the primary land use. The alignment would also cross Hinkson Creek, north of the Columbia landfill.

From the interchange with Route PP to I-70, east of Route Z, land use is primarily agriculture with rural residential development. One subdivision, mentioned previously, Copper Creek, is in the vicinity of the Far North Conceptual Corridor. This concept would interchange with I-70 near Dozier's Station Road. There is rural residential as well as business development along the frontage road and Dozier's Station Road.

Widen Existing I-70 - The I-70 widening through the Columbia Urban Section (Exits 121 to 133) has two primary cross-section concepts, one is called I-70 Widening with Bypass and the other is called I-70 Widening without Bypass. The bypass refers to both the Far North Conceptual Corridor and the Near North Conceptual Corridor, as both concepts have common starting and ending points on I-70.

The I-70 Widening with Bypass is designed to minimize residential and commercial impacts adjacent to the interstate by splitting the traffic into two highways of similar capacity. Access to individual properties and commercial establishments would be altered in the vicinity of the interchanges. For example, a new access road and intersection would be constructed west of the Columbia Mall at the frontage road. Most land use impacts would be concentrated between Providence Road and Rangeline Road interchanges, as collector-distributor roads would be constructed to increase the efficiency and safety of these interchanges. A mobile home park and several commercial establishments would be impacted by the proposed collector-distributor interchange improvement. The interchange of I-70 and US 63 would be improved, as would the Business I-70 (old Highway 40) interchange. Those businesses and residences east of the Business 70 interchange would be affected by either displacement or access modification since the present frontage road would be removed and modified access would need to be designed.

The I-70 Widening without Bypass is designed to provide the improvement to I-70 at its present location. Virtually all of the businesses or residences adjacent to I-70 at this time would be affected, either by access modification or by acquisition. New two-way continuous parallel frontage roads would be included in this widening concept. This will require some parking spaces from some businesses that presently front the existing frontage road. Other businesses without sufficient setback would be acquired. This would occur south of I-70 between Stadium Blvd. and West Blvd. Creasy Springs Road would be terminated on the north side of I-70. Widening between West Blvd. and Providence Road would impact residences more than commercial businesses through acquisition. Commercial sites would be affected on the north side of I-70 at the Providence Road interchange improvement. The mobile home park, mostly vacant, on the south side of I-70 between Providence Road and Rangeline Road would be taken. Additional residences on the east side of Rangeline Road would be taken as well. Commercial impacts through this section are limited. The interchange with US 63 would be improved as a part of this project, impacting commercial structures and residences with new ramps and frontage roads. This impact would extend westward to the interchange with Paris Road (Old 63). Displacements would be limited but access would be altered. A portion of the private golf course would be impacted by the ramp from I-70 to US 63 South as well as the frontage road.

Warrenton, Wright City, Wentzville Area

The Warrenton, Wright City, Wentzville area is one of the fastest growing areas in the study corridor. This portion of the study corridor commences in Jonesburg at the interchange of I-70/Routes E and Y, to the terminus in Lake St. Louis, near the US 61/I-70 interchange. The Warrenton to Wentzville area consists of portions of Montgomery, Warren and St. Charles Counties along the eastern portion of the full study corridor. This area is represented on both the north and south sides of I-70, predominantly though to the north. The Warrenton to

Wentzville area economy represents a diverse mixture of agriculture, retail, commercial, industry and education.

Due to the highly dense land uses found within the Warrenton to Wentzville areas, three concepts were developed through this portion of the study corridor. These concepts were designed to bypass a majority of the current developed land along I-70.

Near North Conceptual Corridor - This concept has a wide array of land uses, ranging from agricultural, residential, highway commercial, general commercial and industrial. The location of this concept will impact and stimulate land use development in its immediate area and also influence the future growth direction of Warrenton, Wright City and Wentzville to the north.

The Warrenton to Wentzville area Near North Conceptual Corridor would begin in Lake St. Louis near the interchange of I-70/Route A. This is in the vicinity of a heavily dense growing community. Subdivisions, as well as small commercial developments, are being constructed at a fast pace. A new interchange is proposed where I-70 and Route A intersect, creating access to the Near North Corridor Concept. The largest subdivision affected in the vicinity of this interchange is Lake St. Louis on the south side of I-70.

From the Lake St. Louis interchange going north on the Near North Conceptual Corridor, the southern portion of the town of Flint Hill will be affected. In the vicinity around this concept no major subdivisions or development patterns should be affected. However, the proposed interchange near Flint Hill with US 61 will have an impact on several commercial and service developments and sparse rural residential development.

From this interchange the concept continues west directly north of Wentzville, Wright City and Warrenton. Along this portion of the Near North Conceptual Corridor are two proposed interchanges. Several service and commercial businesses would be affected, yet no large residential developments. The location of each of the proposed interchanges is well suited to act as a stimulus to future development growth in all three communities. However, the existing commercial/industrial land uses located in the areas adjacent to the interchanges will likely consider their location an advantage and therefore have an influence on development stability.

Far North Conceptual Corridor - The Far North Conceptual Corridor is predominantly agriculture and open space. This concept will affect institutional uses (four schools) and a limited number of rural residential and commercial uses.

The Warrenton to Wentzville area Far North Conceptual Corridor would also commence in Lake St. Louis at the I-70/Route A interchange. Once again, the previously mentioned land uses in the Near North Corridor Concept will be affected.

Proceeding north along the Far North Conceptual Corridor the area east of Flint Hill would be impacted. Yet, once again no major subdivision or development pattern is effected.

The Far North Conceptual Corridor continues west across predominantly agricultural land and open space to the terminus in Jonesburg, an area primarily agriculture with rural residential development. As this concept continues west there are three proposed interchanges that would influence development in the immediate areas, specifically the proposed interchange at US 61/I-70. The remaining interchanges will have a small impact on the surrounding land uses, as they are predominantly agricultural and open space.

South Conceptual Corridor - The South Conceptual Corridor will affect agricultural, residential, commercial and institutional (three schools) land uses, and one hazardous material site. Due to the proximity of the South Conceptual Corridor to the existing I-70 corridor, many land uses within this corridor are trickle-over effects from development occurring in the communities in the Warrenton to Wentzville area.

The South Conceptual Corridor commences in two distinct areas of west St. Charles County. The north beginning of the South Conceptual Corridor is in the city of Wentzville near the intersection of I-70/Route Z. This area is very dense, with residential subdivisions and commercial development located on the north and south side of the interstate. The other beginning of the South Conceptual Corridor is to the south of I-70 on US 61 in southern Lake St. Louis. Once again, this area is in the vicinity of dense residential subdivisions. However, there is less commercial development.

The South Conceptual Corridor then continues west directly south of I-70 and Foristell, and through a southern portion of Truesdale. This portion of the area is classified as mixed-use urban, which would include such uses as residential, commercial and institutional. However, with adjustments to this alignment, many uses could be avoided. This portion of the South Conceptual Corridor proposes only new interchanges, as opposed to the three along the Far North and Near North Conceptual Corridors. Yet, the impact of these interchanges remains the same as in the previous concepts.

This concept then terminates west of Warrenton on I-70 near the existing interchange of I-70/Route B. Open space and agriculture are once again the predominant land uses in the vicinity of this interchange.

Existing Conceptual Corridor - Land use along the Existing Conceptual Corridor is a mixture of zoned and unzoned areas, creating a variety of uses within this section. Throughout this portion of the study corridor, general commercial, highway commercial, residential, agricultural and industrial uses are scattered and intermixed along the north and south sides of I-70. This Existing Conceptual Corridor also proves to be the most urban, with sprawling residential development occurring around Warrenton, Wright City and Wentzville at an increasing rate.

The Existing Conceptual Corridor proposes five new or re-designed interchanges. Due to the already developed nature of the area surrounding these five interchange locations, it is not expected they will stimulate significant new development. However, the existing commercial/industrial land uses located in the area adjacent to these interchanges will likely consider their location an advantage and therefore have an influence on development stability in the Warrenton to Wentzville area. Nonetheless, local zoning control will need to be re-evaluated in order to control the type of future development and minimize impacts to potentially affected sensitive resources.

Total Project Impacts

There are four main categories of land use affected throughout the study corridor; agricultural, residential, institutional and service/retail commercial uses. Any of the concept segments would likely stimulate and accelerate development opportunities in their immediate area by improving access. This is particularly true where concept segments are located adjacent to areas currently in transition, or planned development areas. In areas where future development is not expected, a new highway could stimulate investment in areas currently considered too remote for development. Local and state land use and environmental regulations, including zoning ordinances, will aid in directing and controlling the type of future development and minimize impacts on potentially affected sensitive resources.

Mitigation

Any of the proposed segment conceptual corridors would result in the conversion of land uses from existing conditions to that of a transportation facility. One form of mitigation for impacts to this conversion would be selection of a preferred concept that minimizes the total amount of land converted to transportation use. In addition, once a preferred concept is selected, counties, and townships should be encouraged to develop zoning regulations near and around the transportation facility that minimizes undesired or unregulated development and enhance protection of natural resources, cultural resources and important community resources located in areas adjacent to the project area.

2. DEMOGRAPHICS AND SOCIAL IMPACTS

The First Tier EIS addresses the order of magnitude of impacts for social impacts, which focuses primarily on the developed land impacts (the residences, businesses and other facilities which could be acquired by the I-70 improvement project). These potential displacements were classed as a residence if it contained a residential unit, which includes conventional single-family dwelling unit, a modular single-family dwelling unit, a mobile home or an apartment in a multi-family structure. Businesses included retail commercial, service commercial and manufacturing operations. Several churches were also identified. Impacts to agricultural operations such as property severance were not included due to the extent of the corridors under consideration, the corridor being one mile wide. Generally, displacements were noted as being a structure present during field reviews during the spring of 2001. The development community is dynamic and new residences and businesses are being constructed continuously. This displacement count should be considered an order of magnitude at a point in time. The field reviews were to verify the absence or presence of structures noted from aerial photography. The numbers of displacements therefore should be used to compare conceptual corridors and provide an order of magnitude estimate for this document. The corridors being evaluated on the bypass concepts were one mile wide and the typical right-of-way requirement being 500 feet (152.4 m). Therefore, each one mile wide conceptual corridor could contain 10 separate 500-foot (152.4 m) wide alignments, each of which could give different albeit demonstrable levels of impact to the residential neighborhoods, businesses and agriculture operations. Any assistance to displacees as a result of this project will be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, As Amended.

a. “No-Build” Concept

The “No-Build” Concept would have no impacts to existing residences, businesses, schools or churches beyond those impacts that might occur during the course of planned interchange improvements or minor highway upgrades.

b. Widen I-70

Rural I-70 Areas

The rural I-70 areas of the project area would impact agriculture areas, residences, commercial and industrial establishments, churches and schools. The improvements noted are conceptual, meeting the current design standards for interstate highway interchanges and access control. The provision of continuous two-way frontage roads is also proposed. Alignment studies associated with second tier EIS projects would refine the conceptual alignments and likely alter the final number of displacements.

Jackson County - Displacements associated with widening, interchange redesign and continuous frontage roads would include 19 residences, 14 businesses, three churches and one school. The two communities involved are Grain Valley and Oak Grove.

Lafayette County - The widening of I-70 would impact 30 residences and 17 businesses. The communities effected are Bates City, Odessa, Higginsville, Aullville, Concordia and Emma.

Saline County - The I-70 improvement project would impact 29 residences, 13 businesses and one church. Sweet Springs would be the only community effected.

Cooper County - The widening of I-70 project would impact 37 residences and 14 businesses. Boonville is the only city affected by the widening project.

Boone County - The Columbia urban section is in this county and displacements associated with that section are presented in the following section. The displacements noted are for the rural section to the west and east of the Columbia urban section. There are five residences and eight businesses potentially impacted in the rural section.

Callaway County - The widening of I-70 project would impact 11 residences and 10 businesses. Kingdom City is the only city affected by the widening project.

Montgomery County - Portions of Montgomery County are included within the Warrenton to Wentzville area concepts (presented in the following section) and portions are considered rural in character. Within the rural portion of this corridor, 21 residences and 19 businesses may be impacted.

Warren County - Warren County is wholly included within the Warrenton to Wentzville area concepts.

St. Charles County - St. Charles County is wholly included within the Warrenton to Wentzville area concepts.

Columbia Area

Columbia Near North Conceptual Corridor - The Near North Conceptual Corridor of Columbia commences just west of Exit 121 and terminates just east of Exit 133. This concept would impact 197 residences, four businesses and one church. The area north of I-70 is rapidly developing and additional subdivisions could be in place by the time the second tier environmental document is commenced.

Columbia Far North Conceptual Corridor - The Far North Conceptual Corridor of Columbia would use the same departure points as the Near North Conceptual Corridor noted above. Approximately 187 residences and two businesses would be impacted by this concept. As with the Near North Conceptual Corridor, the area is rapidly developing with rural residential and suburban residential subdivisions.

Columbia Urban Section (without bypass) - This Columbia Urban Section concept provides for all the improvements to take place along existing I-70, widening to accommodate design-year traffic and providing continuous frontage roads. The urban section includes the area between US 40 on the west and Route Z on the east. The impacts include 254 residences, 70 businesses and two churches.

Columbia Urban Section (with bypass) - This Columbia Urban Section concept provides for some improvements to be made to existing I-70 with either the Near North or Far North Conceptual Corridors. This concept, not counting displacements associated with Near North or Far North Conceptual Corridor, would impact 92 residences, 15 businesses and two churches.

Warrenton, Wright City and Wentzville Area

Near North Conceptual Corridor - The Near North Conceptual Corridor in the Warrenton to Wentzville corridor includes two concepts for the eastern terminus. One of these concepts incorporates a bypass that connects to existing I-70. The second concept includes a bypass that terminates at US 61 and involves widening of US 61 south to I-70. The Warrenton to Wentzville area Near North Conceptual Corridor is split between Warren and St. Charles Counties. Within the Warren County portion of this concept, 35 residences, three businesses and three schools may be impacted. Within the St. Charles County portion of this concept, 141 residences, nine businesses and one school may be impacted.

Far North Conceptual Corridor - The Far North Conceptual Corridor in the Warrenton to Wentzville area includes two concepts for the eastern terminus. One of these concepts consists of an all-bypass alignment that terminates at existing I-70. The second concept includes a bypass that terminates at US 61 and incorporates widening of US 61 south to I-70. The Warrenton to Wentzville area Far North Conceptual Corridor is split between Montgomery, Warren and St. Charles Counties. Within the Montgomery County portion of this concept three residences and one business may be displaced or impacted. Within the Warren County portion of this concept, 14 residences and five businesses may be impacted. Within the St. Charles County portion of this concept, 67 residences, 20 businesses and one school may be impacted.

South Conceptual Corridor - The South Conceptual Corridor in the Warrenton to Wentzville area includes two concepts for the eastern terminus. One of these concepts connects to existing I-70 at Exit 209. The second concept terminates on the east at US 40. The Warrenton to Wentzville South Conceptual Corridor is split between Warren and St. Charles Counties. Within the Warren County portion of this concept, 69 residences and ten businesses may be impacted. Within the St. Charles County portion of this concept 46 residences and seven businesses may be impacted.

Existing Conceptual Corridor - The Warrenton to Wentzville area Existing Conceptual Corridor is split between Montgomery, Warren and St. Charles Counties. Within the Montgomery County portion of this concept two residences and two businesses may be displaced or impacted. Within the Warren County portion of this concept, five residences and two businesses may be impacted. Within the St. Charles County portion of this concept, 20 residences, nine businesses and one school may be impacted.

Total Project Impacts

As mentioned previously, at this level of study, total project impacts should be regarded as a guideline to determine the order of magnitude between various concepts. Totaling the number of displacements proves of little use as within each conceptual corridor, a potential future alignment could shift the numbers dramatically. As the study progresses and specific alignments begin to form, the precise number of relocation impacts can be calculated.

Mitigation

When specific alternatives are developed further along in the study process, acquisition will offer the most reliable mitigation measure available, particularly for residents, businesses or other facilities facing relocation.

E. Natural Environment Impacts

1. AIR QUALITY IMPACTS

In accordance with the agreement executed in March 1988 between the parties of the Federal Highway Administration, Missouri Department of Natural Resources, and the Missouri Department of Transportation; a detailed air quality analysis for inclusion in an environmental document will only be prepared on federally funded projects, when the present or predicted average daily traffic volume on the project exceeds 54,000 vehicles in the year of project construction or 72,700 vehicles in the twentieth year following the project construction.

Project design year volumes along the I-70 corridor do exceed the above criteria in a number of locations. During the next phase of the environmental process a carbon monoxide analysis will be prepared. Emissions are projected to decrease in the next 20 to 30 years. These reductions in emission will offset the increase in free-flow traffic volumes along the study corridor. A violation of the CO NAAQS is extremely unlikely.

Changes in HC and NO_x emission rates when combined with the projected changes in traffic will require regional modeling. At the western and eastern termini conformity statements may be required from the local MPOs.

a. Construction

During construction of the project construction methods and operations will be conducted in accordance with MDNR and MoDOT regulations, particularly concerning batch plant operations and clearing and grubbing functions. Standard construction specifications incorporate provisions for minimizing air quality impacts during construction.

Measures will be taken to reduce fugitive dust and other emissions generated during construction. Emissions from construction equipment would be controlled in accordance with emission standards prescribed under state and federal regulations. Materials resulting from clearing and grubbing, demolition, or other operations (except materials to be retained) would be removed from the project, burned, or otherwise disposed of by the contractor. Any burning, when permitted, would be conducted in accordance with applicable local laws and state regulations.

b. Impacts

The proposed project falls within the Metropolitan Kansas City Interstate Air Quality Control Region (AQCR #94), the Southwest Missouri Intrastate Air Quality Control Region (AQCR #139), the Northern Missouri Intrastate Air Quality Control Region (AQCR #137) and the Metropolitan St. Louis Interstate Air Quality Control Region (AQCR #70). The Metropolitan Kansas City Interstate Air Quality Control Region is classified as a maintenance area for O₃, while the Metropolitan St. Louis Interstate Air Quality Control Region is classified as non-attainment for O₃. This project is not anticipated to cause a violation of the National Ambient Air Quality Standards.

2. NOISE

a. Noise Abatement Criteria

The FHWA's Noise Abatement Criteria and the Missouri Department of Transportation Traffic Noise Policy revised September, 1997, were the criteria used to determine the range of the

acoustical impact of the proposed project. The analysis was conducted according to the basic guidelines as presented in the Code of Regulations, Title 23 Part 772. These guidelines provide procedures whereby the acoustic impact of the proposed action can be assessed and the needs for abatement measures can be determined when the noise levels approach or exceed the FHWA Noise Abatement Criteria for various land uses as presented in Table IV-2. The noise level descriptor is the equivalent sound level, $L_{eq}(h)$, defined as the steady state sound level which, in stated time period (usually one hour), contains the same sound energy as the actual time-varying sound.

Specific noise abatement measures for traffic noise impacts will be considered when the predicted noise levels approach or exceed those values shown for the appropriate activity category of the FHWA Noise Abatement Criteria, Table IV-2, or when the predicted traffic noise levels substantially exceed the existing noise levels. This process will occur during the next phase of the environmental process. MoDOT's Traffic Noise Policy is summarized in the next few paragraphs.¹⁾

MoDOT has defined the noise abatement criteria approach or exceed criteria for activity category "B" as being equal to or greater than 66 dBA $L_{eq}(h)$ for noise sensitive receptors such as residences, churches, schools, libraries, hospitals, nursing homes, apartment buildings, condominiums, etc. The criteria for activity category "C" is 71 dBA $L_{eq}(h)$ or greater. MoDOT has defined an increase of 15 decibels or more over the existing noise as being substantial.

Table IV-2: Noise Abatement Criteria
Hourly A-Weighted Sound Level-Decibels (dBA)

Activity Category	$L_{eq}(h)$ (1 Hr)	Description of Activity Category / Land Uses
A	57 dBA (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the lands are to continue to serve their intended purpose.
B	67 dBA (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	72 dBA (Exterior)	Developed lands, properties or activities not included in Categories A or B above.
D	---	Undeveloped lands.
E	52 dBA (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

Source: Code of Federal Regulations, Title 23 Part 772, Revised August 1996.

When the criterion is exceeded or a substantial increase occurs, noise abatement procedures are to be reviewed to determine if they are feasible and reasonable.

Feasibility deals with the engineering considerations of noise abatement, for example, topography, access, drainage, safety, maintenance and if other noise sources are present. MoDOT requires at least a five dBA insertion loss for first-row receivers for noise abatement to be considered feasible.

Reasonability of proposed noise abatement mitigation measures is more subjective than evaluation of feasibility. It implies use of common sense and good judgement and is based on a number of factors. These factors include, but are not limited to:

- Noise wall must provide noise reduction of at least five dBA for all primary receptors. Primary receptors are those which are closest to the highway.
- Noise wall must provide attenuation for more than one receptor.
- Noise wall must be 18 feet (5.5 m) or less in height above normal grade.
- Noise wall must not interfere with normal access to the property.
- Noise wall must not pose a traffic safety hazard.
- Noise wall must not exceed a cost of \$30,000 per benefited receptor. A benefited receptor is defined as a receptor, which receives a noise reduction of five dBA or more.
- The majority of the affected residents (primary and benefited receptors) must concur that a noise wall is desired.

b. Noise Impact Prediction

The FHWA highway traffic noise prediction computer program STAMINA 2.0/OPTIMA²⁾ was used to project the distance to 66 dBA L_{eq} and the distance at which a 15 dBA increase would occur for future 2030 design-hour traffic noise levels within the study area. The following parameters are used in this model to calculate an hourly $L_{eq}(h)$ at a specified receiver location.

- Distance between roadway and receiver;
- Relative elevations of roadway and receiver;
- Hourly traffic volumes in light-duty (two axles, four tires), medium-duty (two axles, six tires) and heavy duty (three or more axles) vehicles;
- Vehicle speed; and
- Noise source height of the vehicles (light-duty 0.0 feet [0.0 m], medium-duty 2.3 feet [0.7 m], and heavy-duty 8.0 feet [2.4 m]).

The study corridor was divided into sections based on changes in traffic volumes and upon the proposed locations for the urban and rural cross sections. Base year 1997 design hour along with “No-Build” and Build design year traffic volumes for the year 2030 were used in this analysis. The distance from the corridor centerline to 66 dBA L_{eq} along the existing and proposed I-70 mainline is presented in Table IV-3. The various bypass conceptual corridors are presented in Tables IV-4 and IV-5. Residences, schools, churches, etc., that exist within the distances shown in the tables would be exposed to a noise impact.

Along the existing I-70 corridor the change in alignment and increased traffic are not sufficient enough to create a 15 dBA increase. However, in the areas of the proposed bypasses, where the project may be on new alignment, the potential to have a 15 dBA increase is greater. The distances from the corridor centerline to the 15 dBA increase are presented in Tables IV-6, IV-7 and IV-8. Residences, schools, churches, etc., that exist within the distances shown in the tables would be exposed to a noise impact.

Table IV-3: I-70 Noise Level (66dBA) Distances – Existing Location

Section	Location	County	Exit		Distance from Center Line to 66 dBA L _{eq} (ft)		
			From	To	1997 Base	2030 No-Build	2030 Build Dist.
	West of I-470		--	15	669	787	793
	I-70 to Woods Chapel		15	18			
	Woods Chapel to MO-7		18	20	624	780	792
1	MO-7 to Adams Dairy		20	21			
2	Adams Dairy to MO-AA/MO-BB		21	24			
3	MO-AA/MO-BB to MO-H/MO-F		24	28			
4	MO-H/MO-F to MO-D/MO-Z		28	31			
5	MO-D/MO-Z to MO-131		31	37			
6	MO-131 to Exit 38		37	38			
7	Exit 38 to MO-M/MO-O		38	41			
8	MO-M/MO-O to MO-H/MO-MM		41	45			
9	MO-H/MO-MM to MO-13		45	49			
10	MO-13 to MO-T		49	52			
11	MO-T to MO-23		52	58			
12	MO-23 to MO-VV/MO-Y		58	62			
13	MO-VV/MO-Y to MO-127/MO-ZZ		62	66			
14	MO-127/MO-ZZ to MO-EE/MO-K		66	71			
15	MO-EE/MO-K to MO-YY		71	74			
16	MO-YY to US-65		74	78			
17	US-65 to MO-J		78	84			
18	MO-J to MO-Z/MO-K/MO-M		84	89			
19	MO-Z/MO-K/MO-M to MO-41/MO-135		89	98			
20	MO-41/MO-135 to MO-5		98	101			
21	MO-5 to MO-B		101	103			
22	MO-B to MO-87		103	106			
23	MO-87 to MO-179		106	111			
24	MO-179 to MO-BB		111	115			
25	MO-BB to MO-J/MO-O		115	117	597	753	783
26	MO-J/MO-O to US-40/MO-UU		117	121			
27	US-40/MO-UU to MO-E/MO-740		121	124			
28	MO-E/MO-740 to Loop 70 W		124	125			
29	Loop 70 W to MO-163		125	126	532	686	722
30	MO-163 to MO-763		126	127			
31	MO-763 to Loop 70 E		127	128			
32	Loop 70 E to US-63		128	128A			
33	US-63 to St. Charles Rd.		128A	131			
34	St. Charles Rd. to MO-Z		131	133			
35	MO-Z to MO-J		133	137			
36	MO-J to MO-M/MO-HH		137	144			
37	MO-M/MO-HH to US-54		144	148			
38	US-54 to MO-A/MO-Z		148	155			
39	MO-A/MO-Z to MO-D		155	161	489	665	689
40	MO-D to MO-161/MO-TT		161	170			
41	MO-161/MO-TT to MO-19		170	175			
42	MO-19 to MO-F		175	179			
43	MO-F to MO-E/MO-NN/MO-Y		179	183			
44	MO-E/MO-NN/MO-Y to MO-A/MO-B		183	188			
45	MO-A/MO-B to MO-47		188	193			
46	MO-47 to MO-H		193	199			
47	MO-H to MO-J/MO-F		199	200			
48	MO-J/MO-F to MO-W/MO-T		200	203	513	721	746
49	MO-W/MO-T to Exit 208		203	208			
50	Exit 208 to MO-Z		208	209			
51	MO-Z to US-61		209	210	648	873	985
52	US-61 to MO-A		210	212			
53	MO-A to Exit 214		212	214			

Based upon the data presented in Tables IV-3 through IV-8, the proposed project has the potential to create a traffic noise impact. With potential for a traffic noise impact, the following noise abatement measures would need to be considered during the next phase of the environmental process: traffic management, alteration of horizontal and/or vertical alignments, acquisition of undeveloped property to act as a buffer zone and the construction of noise barriers.

Traffic management, such as the restriction or prohibition of trucks is adverse to the project purpose. Reductions of speed limits, although acoustically beneficial, are seldom practical unless the design speed of the proposed roadway is also reduced.

Alteration of horizontal and/or vertical alignments should still be considered if these changes could eliminate a noise impact. Noise berms and noise barriers could be a viable mitigation measure if they would meet all of MoDOT's criteria. In the sparsely populated areas along the existing rural sections of the I-70 corridor, mitigation is rather improbable. In the more densely populated urban areas the potential to identify feasible and reasonable noise mitigation measures are more probable.

c. Construction Noise

The major construction elements of this project are expected to be clearing, earth moving, hauling, grading, paving and bridge construction. General construction noise impacts for passersby and those individuals living or working near the project, can be expected particularly from clearing, earth moving and paving operations. Table IV-9 lists some typical peak operating noise levels at a distance of 50 feet (15.2 m), grouping construction equipment according to mobility and operating characteristics. Considering the relatively short-term nature of construction noise, impacts are not expected to be substantial. Also, nearby structures will moderate the effects of intrusive construction noise.

Table IV-4: I-70 Noise Level (66 dBA) Distances - Columbia

Section	Location	County	Exit		Distance from Centerline to 66 dBA L_{eq} (ft)			
					2030 Columbia 1 Mainline (ft)	2030 Columbia 1 Bypass (ft)	2030 Columbia 2 Mainline (ft)	2030 Columbia 2 Bypass (ft)
			From	To				
28	MO-J/MO-O to Bypass 1	Boone	117	Byp	583		585	
28A	Bypass 1 to US-40/MO-UU		Byp	121	282		525	
29	US-40/MO-UU to MO-E/MO-740		121	124				
30	MO-E/MO-740 to Loop 70		124	125				
31	Loop 70 to MO-163		125	126	511		635	
32	MO-163 to MO-763		126	127		519		266
33	MO-763 to Loop 70		127	128				
34	Loop 70 to US-63		128	128A				
35	US-63 to St. Charles		128A	131	437		588	
36	St. Charles to MO-Z		131	133				
37	MO-Z to Bypass 1		133	137	216		490	
37A	Bypass 1 to MO-DD/MO-J		137	Byp	506		565	

Urban Areas are Shaded

**Table IV-5: I-70 Noise Level (66 dBA) Distances –
Warrenton, Wright City & Wentzville Area (South)**

Section	Location	County	Exit		Distance from center Line to 66 dBA L _{eq} (ft)				
			From	To	South A Mainline Distance (ft)	South A Bypass Distance (ft)	South B Mainline distance (ft)	South B Bypass Distance (ft)	
45	MO-A/MO-B to Bypass	Warren	188	Byp	648	380	420	533	
45A	Bypass to MO-47		Byp	193					472
46	MO-47 to MO-H		193	199	570				
47	MO-H to MO-J/MO-F		199	200					
48	MO-J/MO-F to MO-W/MO-TT		200	203	662				
49	MO-W/MO-TT to Exit 208		203	208			554		
50	Exit 208 to Bypass	208	Byp	760	678				
50A	Bypass to MO-Z	Byp	209	850		583			
51	MO-Z to US-61	209	210			1,027	667		
52	US-61 to MO-A	210	212						
53	MO-A to Bypass	212	Byp						
53A	Bypass to Exit 214	Byp	214						

Urban Areas are Shaded

Table IV-6: I-70 Noise Level (55 dBA) – Columbia*

Section	Location	County	Exit		55 dBA	
			From	To	2030 Columbia 1 Bypass	2030 Columbia 2 Bypass
26	MO-J/MO-O Bypass 1	Boone	117	Byp		
26A	Bypass 1 to US-40/MO-UU		Byp	121		
27	US-40/MO-UU to MO-E/MO-740		121	124	1,620	940
28	MO-E/MO-740 to Loop 70 W		124	125		
29	Loop 70 W to MO-163		125	126		
30	MO-163 to MO-763		126	127		
31	MO-763 to Loop 70 E		127	128		
32	Loop 70 E to US-63		128	128A		
33	US-63 to St. Charles Rd.		128A	131		
34	St. Charles Rd. to MO-Z		131	133		
35	MO-Z to Bypass 1		133	137		
35A	Bypass 1 to MO-DD/MO-J		137	Byp		

**Table IV-7: I-70 Noise Level (55 dBA) Distances –
Warrenton, Wright City & Wentzville Area (North)***

Section	Location	County	Exit		55 dBA		
			From	To	2030 North 1A	2030 North 1B	2030 North 1C
43	MO-F to Bypass	Mont.	179	Byp			
43A	Bypass to MO-E/MO-Y		Byp	183			
44	MO-E/MO-Y to MO-A/MO-B		183	188			
45	MO-A/MO-B to MO-47	Warren	188	193	1,143	1,460	1,361
46	MO-47 to MO-H		193	199			
47	MO-H to MO-J/MO-F		199	200			
48	MO-J/MO-F to MO-W/MO-T		200	203			
49	MO-W/MO-T to Exit 208	St. Charles	203	208	1,143	1,460	1,361
50	Exit 208 to MO-Z		208	209			
51	MO-Z to US-61		209	210			
52	US-61 to MO-A		210	212			
53	MO-A to Exit 214		212	214			

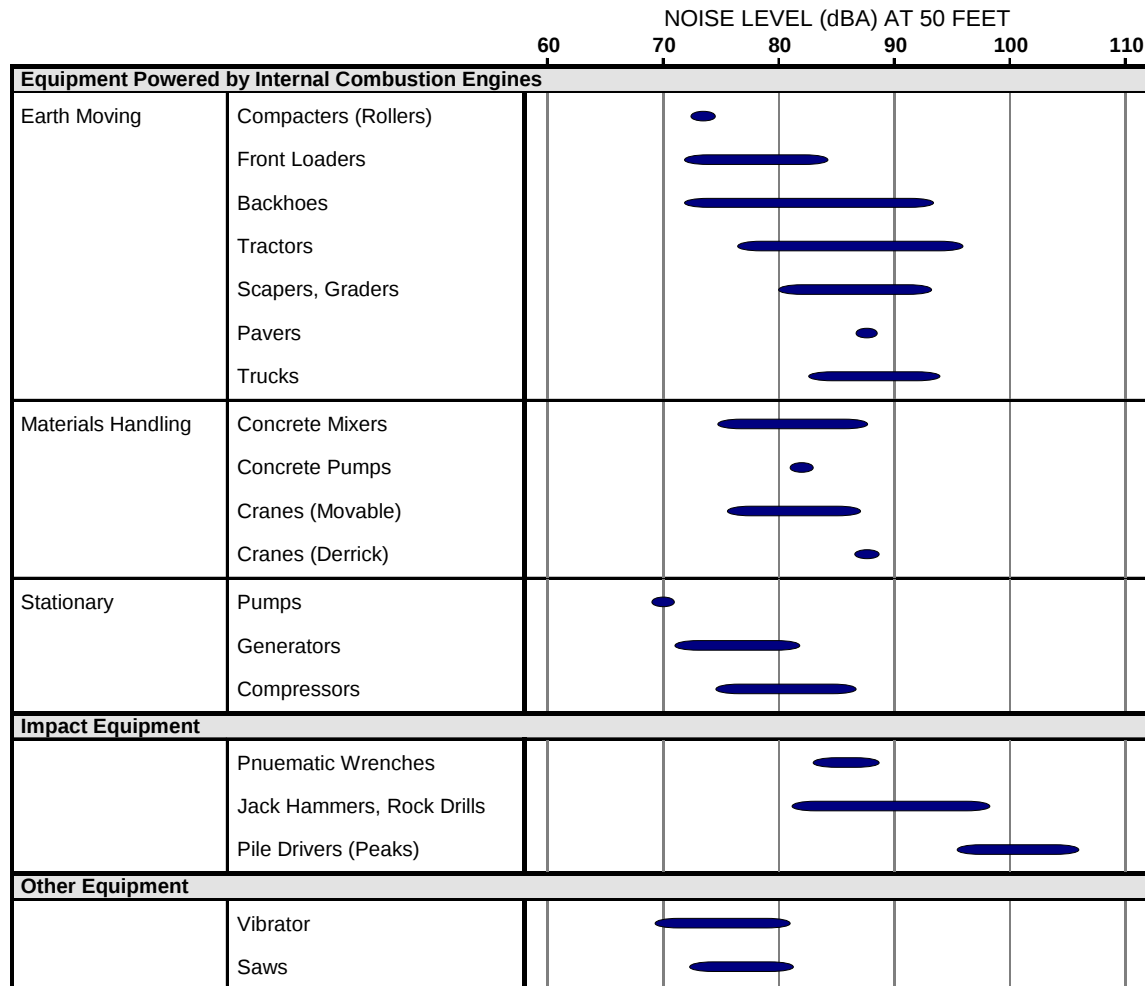
*An existing ambient L_{eq} Noise Level of 40 dBA was assumed. Urban Areas are Shaded

**Table IV-8: I-70 Noise Level (55 dBA) Distances –
Warrenton, Wright City & Wentzville Area (South)**

Section	Location	County	Exit		55 dB	
			From	To	2030 South A Bypass	2030 South B Bypass
45	MO-A/MO-B to Bypass	Warren	188	Byp	1,277	1,683
45A	Bypass to MO-47		Byp	193		
46	MO-47 to MO-H		193	199		
47	MO-H to MO-J/MO-F		199	200		
48	MO-J/MO-F to MO-W/MO-TT		200	203		
49	MO-W/MO-TT to Exit 208		203	208		
50	Exit 208 to Bypass	St. Charles	208	Byp	1,988	1,988
50A	Bypass to MO-Z		Byp	209		
51	MO-Z to US-61		209	210		
52	US-61 to MO-A		210	212		
53	MO-A to Bypass		212	Byp		
53A	Bypass to Exit 214		Byp	214		

1) An existing ambient L_{eq} Noise Level of 40 dBA was assumed. Urban Areas are Shaded

Table IV-9: Construction Equipment Sound Levels



SOURCE: U.S. Report to the President and Congress on Noise, February, 1972.

d. Project Impacts and Mitigation

Based on the study completed, traffic noise impacts would occur from the proposed project for any activity category B developments that exist within the distances shown in Tables IV-3 through IV-8. Mitigation of these impacts along the rural sections of the corridor is unlikely. The urban areas adjacent to the study corridors are more likely to be better candidates for noise mitigation measures. However, during this First Tier EIS, no mitigation measures, other than traffic management, have been determined to be feasible or reasonable.

3. PARKLANDS, WILDLIFE REFUGES, RECREATION AREAS, AND PUBLIC LANDS

The parklands, wildlife refuges, recreation areas and other public lands within the study area were listed and discussed in Chapter III B 3.

a. “No-Build” Strategy

The “No-Build” Strategy would have no direct impacts to existing parklands, wildlife refuges, recreation areas or other public lands.

b. Widen Existing I-70 (Preferred Strategy)***Rural I-70 Areas***

The rural areas of the project include the lengths of existing I-70 outside the major metropolitan areas. The Widen Existing I-70 Strategy in the rural areas would consist of obtaining additional right-of-way on either the north or south side of the existing roadway to allow for additional lanes.

This strategy, excluding Overton Bottoms and Mineola Hill, which are discussed separately below, would impact the KATY Trail State Park west of Boonville as the trail passes over I-70, and would also impact the Cooper County Fairgrounds at this same location. Also in Cooper County, the widening strategy would impact a small portion of the Harriman Hill access area on the Lamine River. This boat ramp area is also subject to the provisions of Section 6(f).

Overton Bottoms

The Widen Existing I-70 Strategy would cross the Missouri River at the existing bridge location in the area called Overton Bottoms. The U.S. Army Corps of Engineers owns the property on each side of existing I-70. The north side is the Big Muddy National Wildlife Refuge, managed by the U.S. Fish and Wildlife Service, and the south side is the Overton Bottoms Conservation Area, managed by the Missouri Department of Conservation. However, the Corps has agreed to reserve a 300-foot (91.4 m) wide corridor, parallel to both the north and south side of the existing I-70 right-of-way, for the purpose of expanding I-70.

With the Widen Existing I-70 Strategy, the existing bridge would remain and would be used for the eastbound lanes. In addition, construction of the new eastbound lanes on embankment would not require additional right-of-way on the south side, thus avoiding the conservation area. A new bridge structure and new westbound lanes would be located north of the existing bridge and roadway, but within the 300-foot (91.4 m) reserved corridor. Additional right-of-way would be required for the new westbound lanes, thus impacting the wildlife refuge. Although the Corps, the MDC and the USFWS have indicated that widening I-70 through this area would be acceptable, it is still possible that a Section 4(f) evaluation would have to be conducted.

The new bridge structure crossing the Missouri River would also cross over the KATY Trail State Park located at the east edge of the Overton Bottoms area. The new bridge would span the park without locating piers inside the park boundary, thereby avoiding direct impacts. As a positive impact, the additional bridge structure over the KATY Trail would provide another shaded resting area for trail users.

Mineola Hill

In the Mineola Hill area there are two concepts: the 500-foot (152.4 m) wide North Conceptual Corridor, which travels to the north of existing I-70 and Graham Cave State Park and the Existing Conceptual Corridor.

North Conceptual Corridor – This 500-foot (152.4 m) wide alignment would avoid Graham Cave State Park and thus would have no direct impacts to parklands, wildlife refuges, recreation areas or other public lands.

Existing Conceptual Corridor - This concept could impact the southern edge of Graham Cave State Park, which would require a Section 4(f) evaluation. In addition, a Section 6(f) evaluation would be required, as the park has been developed with Land and Water Conservation Funds.

Columbia Area

In the Columbia area there are three concepts: the Near North Conceptual Corridor, the Far North Conceptual Corridor and the Existing Conceptual Corridor. In addition, the Near North and Far North Conceptual Corridors would also include some improvements to existing I-70 through Columbia, but with very little additional right-of-way needed.

Near North Conceptual Corridor - The one-mile (1.6 km) wide Near North Conceptual Corridor contains the northernmost portion of the Columbia Cosmopolitan Recreation Area (city owned, and 6[f] property), the Boone County Fairgrounds, Brown Station Park (city owned, and 6[f] property), the south half of Turkey Farm Lake (owned by the University of Missouri, also a Community Assistance Program area), the southern edge of the Jeff Smith property (a planned park), an area of the planned Bear Creek Greenway and an area of the planned Hinkson Creek Greenway.

The 500-foot (152.4 m) wide alignment in the center of this corridor would impact the northern edge of Brown Station Park. However, it could be possible to avoid this park with minor adjustments to the alignment. This alignment would also impact the south end of the Boone County Fairgrounds.

In addition, this alignment would cross Hinkson Creek, which is a planned greenway according to Columbia's Parks, Recreation and Open Space Master Plan, prepared in 1994. It is also shown on the city's 1998 land use plan map as "open space, parks". Although the greenway is still in the planning stage, subsequent I-70 planning and design studies should include coordination with the city's department of planning and development and the parks and recreation department. This represents a joint development opportunity.

Far North Conceptual Corridor - The one-mile (1.6 km) wide Far North Conceptual Corridor contains only one parkland -- the south half of Turkey Farm Lake (owned by the University of Missouri, also a Community Assistance Program area).

The 500-foot (152.4 m) wide alignment in the center of this corridor would have no impact on existing parklands, nor would it affect any areas of planned parks or greenways.

Existing Conceptual Corridor - The Existing Conceptual Corridor would impact a small portion of the southwest corner of the Columbia Cosmopolitan Recreation Area (city owned, and 6[f] property). A Section 4(f) evaluation would need to be performed to determine whether or not a feasible and prudent alternative to impacting the park exists. In addition, a Section 6(f) evaluation must be conducted if the portion of the property impacted was purchased or developed with Land and Water Conservation Funds.

There are also four areas of planned greenways/trails that could be affected by this strategy. The Harmony Creek Greenway (adjacent to I-70), the Hinkson Creek Greenway (under I-70), the Hominy Creek Greenway (under I-70) and the MKT Trail Extension (bridging over I-70) are discussed in Columbia's Parks, Recreation and Open Space Master Plan, which was prepared in 1994. The greenways are also shown on the city's 1998 land use plan map as "open space, parks". Although these trails are still in the planning stage, subsequent I-70 planning should include coordination with the city's department of planning and development, and the parks and recreation department.

Warrenton, Wright City, Wentzville Area

In the Warrenton, Wright City and Wentzville area there are four conceptual options: the Near North Conceptual Corridor, the Far North Conceptual Corridor, the South Conceptual Corridor and the Widen Existing Conceptual Corridor.

Near North Conceptual Corridor – The one-mile (1.6 km) wide Near North Conceptual Corridor contains only one parkland -- Neighborhood Park in the north part of Warrenton.

The 500-foot (152.4 m) wide alignment in the center of this corridor would have no impact on existing parklands.

Far North Conceptual Corridor – The one-mile wide Far North Conceptual Corridor contains no existing parklands, therefore the 500-foot (152.4 m) wide alignment in the center of this corridor would have no parkland impacts.

South Conceptual Corridor – The one-mile (1.6 km) wide South Conceptual Corridor contains the northernmost section of the Frank Reifsnider State Forest public land (MDC conservation area), a large southern portion of Warrenton Park (4[f] and 6[f] property), almost the entire area of Brinkley Park in Warrenton and the northern half of the Warrenton Towersite (MDC).

The 500-foot (152.4 m) wide alignment in the center of this corridor would have no impact on existing parklands, wildlife refuges, recreation areas or other public lands.

Existing Conceptual Corridor – The Existing Conceptual Corridor, could impact two parklands: Dyer Park in Warrenton, and the northeastern corner of Quail Ridge Park (6[f] property) in St. Charles County at Wentzville, located on the southwest side of the I-70/US 61 interchange. However, with slight adjustments, it could be possible to avoid impacts to both of these parks. If not, a Section 4(f) evaluation would need to be performed to determine whether or not a feasible and prudent alternative exists that avoids impacts to both these parks. In addition, a section 6(f) evaluation must be conducted if the portion of the properties impacted were purchased or developed with Land and Water Conservation funds.

Project Impacts and Mitigation

As subsequent environmental documents are prepared for individual sections of I-70 improvements, specific decisions regarding Section 4(f) and 6(f) eligibility of parklands can be made based on ownership, the extent and nature of public use and utilization of 6(f) funds.

If a Section 4(f) evaluation leads to a finding that there is no feasible and prudent concept to the taking of a parkland, then it must be demonstrated that all possible planning to minimize harm to the resource has been undertaken. This includes coordination and cooperation with the officials having jurisdiction over the parkland in order to reach a definitive agreement and approved plan concerning mitigation measures, such as monetary compensation for loss of property, replacement land or funding for the construction of new facilities.

Similar coordination with jurisdictional entities must also be conducted if impacted parkland was the recipient of 6(f) funding. The provisions of Section 6(f) state that the impacted parkland must be replaced with land of at least equal recreational utility and monetary value, and is subject to approval by the U.S. Department of the Interior.

4. PRIME FARMLAND

The analysis of impacts to prime farmland in this section is presented as an estimate of acres (hectares), which is based on the percent of prime farmland within each general soil association as described in Chapter III. These percentages were derived from information contained in the Natural Resources Conservation Service soil survey report of each county.

a. “No-Build” Strategy

The “No-Build” Strategy would have no direct impacts to prime farmland. Development pressures and other sources of degradation could continue to act on the natural environment independent of transportation improvements.

b. Widen Existing I-70 (Preferred Strategy)

Rural I-70 Areas

The rural areas of the project include the lengths of existing I-70 outside the major metropolitan areas. The Widen Existing I-70 Strategy in the rural areas would consist of obtaining additional right-of-way on either the north or south side of the existing roadway to allow for additional lanes. The Widen Existing I-70 Strategy in the rural areas, excluding Overton Bottoms and Mineola Hill, which are discussed separately below, would impact an estimated 1,314 acres (532 hectares) of prime farmland.

Overton Bottoms

The Widen Existing I-70 Strategy would cross the Missouri River at the existing bridge location in the area called Overton Bottoms. The U.S. Army Corps of Engineers now owns the property on each side of existing I-70. The north side is the Big Muddy National Wildlife Refuge, managed by the U.S. Fish and Wildlife Service, and the south side is the Overton Bottoms Conservation Area, managed by the Missouri Department of Conservation.

The land on each side of I-70 was previously (before the floods of 1993 and 1995) privately owned and used as agricultural cropland. The soils were designated as prime farmland because they were protected from flooding by the levees. However, since the Corps of Engineers has purchased the land, which is being managed by resource agencies, the area is being restored to native habitats and allowed to revert back to natural floodplain conditions. With the Widen Existing I-70 Strategy, additional right-of-way at this location would be required on only the north side of existing I-70. The land within the additional right-of-way, of which 27 acres (10.9 hectares) was estimated to be prime farmland and previously cultivated, is no longer

in agricultural use. However, it is still classified as prime farmland, and would therefore be impacted by the new widening procedures in the Overton Bottoms area.

Mineola Hill

In the Mineola Hill area there are two conceptual options: the 500-foot (152.4 meters) wide North Conceptual Corridor, which travels to the north of existing I-70 and Graham Cave State Park, and the Existing Conceptual Corridor.

North Conceptual Corridor - The 500-foot (152.4 m) wide North Conceptual Corridor alignment would impact an estimated 175 acres (70.8 hectares) of prime farmland.

Existing Conceptual Corridor - The Existing Conceptual Corridor would impact an estimated one acre (0.4 hectares) of prime farmland.

Columbia Area

In the Columbia area there are three concepts: the Near North Conceptual Corridor, the Far North Conceptual Corridor, and the Existing Conceptual Corridor. In addition, the Near North and Far North Conceptual Corridors would also include some improvements to existing I-70 through Columbia, but with very little additional right-of-way needed.

Near North Conceptual Corridor - The one-mile (1.6 km) wide Near North Conceptual Corridor was estimated to contain approximately 1,792 acres (725.2 hectares) of designated prime farmland.

The 500-foot (152.4 m) wide alignment in the center of this corridor would impact an estimated 174 acres (70.4 hectares) of designated prime farmland.

Far North Conceptual Corridor - The one-mile (1.6 km) wide Far North Conceptual Corridor was estimated to contain approximately 2,296 acres (929.1 hectares) of designated prime farmland.

The 500-foot (152.4 m) wide alignment in the center of this corridor would impact an estimated 224 acres (90.6 hectares) of designated prime farmland.

Existing Conceptual Corridor - The Existing Conceptual Corridor through Columbia would impact an estimated 27 acres (10.9 hectares) of designated prime farmland.

Warrenton, Wright City, Wentzville Area

In the Warrenton, Wright City and Wentzville area there are four concepts: the Near North Conceptual Corridor, the Far North Conceptual Corridor, the South Conceptual Corridor and the Existing Conceptual Corridor.

Near North Conceptual Corridor - The Near North Conceptual Corridor is a bypass with a west terminus located three miles (4.8 km) east of Jonesburg, then diverging from existing I-70 to the north and reconnecting with I-70 at an east terminus two miles (3.2 km) east of the I-70/US 61 interchange. A concept within this corridor is to terminate at existing US 61 and widen US 61 south to I-70.

The one-mile (1.6 km) wide Near North Conceptual Corridor, reconnecting with I-70, was estimated to contain approximately 4,272 acres (1,728.8 hectares) of prime farmland.

The 500-foot (152.4 m) wide alignment in the center of this corridor, reconnecting with I-70, would impact an estimated 420 acres (170.0 hectares) of prime farmland.

The concept to terminate the bypass at US 61 and widen US 61 to I-70 would result in a lesser amount of impacts than those described above.

Far North Conceptual Corridor - The Far North Conceptual Corridor is a bypass with a west terminus located at Jonesburg, then diverging from existing I-70 to the north and reconnecting with I-70 at an east terminus two miles (3.2 km) east of the I-70/US 61 interchange. A concept within this corridor is to terminate at existing US 61 and widen US 61 south to I-70.

The one-mile (1.6 km) wide Far North Conceptual Corridor, reconnecting with I-70, was estimated to contain approximately 5,063 acres (2,048.9 hectares) of prime farmland.

The 500-foot (152.4 m) wide alignment in the center of this corridor, reconnecting with I-70, would impact an estimated 399 acres (161.5 hectares) of prime farmland.

The concept to terminate the bypass at US 61 and widen US 61 to I-70 would result in a lesser amount of impacts than those described above.

South Conceptual Corridor - The South Conceptual Corridor is a bypass with a west terminus located five miles (8 km) east of Jonesburg, then diverging from existing I-70 to the south and connecting with US 40 at an east terminus 3.5 miles (5.6 km) south of the I-70/US 61 interchange. A concept within this corridor is to reconnect with I-70 at Exit 209, one mile (1.6 km) west of the I-70/US 61 interchange.

The one-mile (1.6 km) wide South Conceptual Corridor, connecting with US 40, was estimated to contain approximately 6,278 acres (2,540.6 hectares) of prime farmland.

The 500-foot (152.4 m) wide alignment in the center of this corridor, connecting with US 40, would impact an estimated 624 acres (252.5 hectares) of prime farmland.

The concept to reconnect to I-70 at Exit 209 would result in a lesser amount of impacts than those described above.

Existing Conceptual Corridor - The Existing Conceptual Corridor would consist of a widening of the existing I-70 roadway with frontage roads in some areas, and loop roads at some of the interchanges.

The Existing Conceptual Corridor through the Warrenton to Wentzville area would impact an estimated 130 acres (52.6 hectares) of designated prime farmland.

Project Impacts and Mitigation

In subsequent environmental documents prepared for each individual portion of I-70 improvements, a more detailed analysis of prime farmland will be performed, in which the detailed soil series map units (rather than the general soil association units) designated as prime farmland will be used for impact analysis.

Impacts to prime farmland will be analyzed and compared through a process called the Farmland Conversion Impact Rating for Corridor Type Projects. Form SCS-CPA-106 is the documentation for this rating. On this form, land along each alternative is evaluated, based on a set of assessment criteria, to determine the magnitude of impacts for each alternative. If the

total points scored for the preferred alternative exceeds the 160-point threshold, farmland protection measures should be considered.

5. WATER QUALITY

a. “No-Build” Strategy

The present condition would continue under the “No-Build” Strategy. Increases in projected traffic would contribute to the runoff pollutant load.

b. Widen Existing I-70 (Preferred Strategy), Overton Bottoms, Mineola Hill

Rural I-70 Areas

Surface Water - A near present condition would continue under the widening concept. Increases in projected traffic would contribute to the runoff pollutant load.

Standard measures currently in place would be implemented to reduce impact to receiving waters during construction. The rebuild of the present facility would be favorable for the implementation of present day best management practices regarding control and treatment of highway runoff to receiving waters. Grassy swales, detention basins and passive treatment systems may be implemented in the new design. Systems such as these may be placed in designated sensitive receptor areas.

Groundwater - The widening concept is not thought to have an impact over the present condition of groundwater.

Caves - The widening concept is not thought to have an impact on any known cave resource, although the facility traverses karstic areas.

Columbia Area

Far North Conceptual Corridor - The Far North Conceptual Corridor crosses Callahan Creek, Perche Creek and Hinson Creek. Perche Creek is included in the MDNR 1996 impaired waters list for adverse effects from wastewater treatment effluent. Additionally, drainage from coal mining in Boone County has contributed large amounts of iron precipitates to the basin.

Near North Conceptual Corridor - As the drainage runs north and south, the Near North Conceptual Corridor crosses the same drainages as the Far North Conceptual Corridor.

Highway facilities which pass through abandoned coal strip mines will be designed according to MDNR as to prevent the occurrence of acid mine drainage.

Groundwater - The construction and operation of both the Near North and Far North Conceptual Corridors are not thought to have an impact on groundwater.

Caves - The Far North Conceptual Corridor traverses a karstic area in the middle of the west leg. The alignment of the Far North Conceptual Corridor is near Holton Cave at NE NE SW Sec 30, T49 R13. The cave is reported to be 8,000 feet in length and a possible bat habitat.

Warrenton, Wright City, Wentzville Area

Far North Conceptual Corridor - The Far North Conceptual Corridor crosses four creeks including the Big Creek, Hickory Lick Creek, Indian Camp Creek and McCoy Creek. The Big

Creek is 0.13 miles (0.2 km) wide at the center of the one-mile (1.6 km) corridor. Hickory Lick Creek is 0.06 miles (0.1 km) wide at the center of the one-mile (1.6 km) corridor. Indian Camp Creek is 0.06 miles (0.1 km) at the center of the one-mile (1.6 km) corridor. McCoy Creek is 0.06 miles (0.1 km) at the center of the one-mile (1.6 km) corridor.

Indian Camp Creek is affected with ammonia and sediment from a landfill. This creek is on the list of recommended section 303(d) waters requiring total maximum daily loads; priority for analysis of this creek is high.

Near North Conceptual Corridor - The Near North Conceptual Corridor crosses three creeks; in addition each creek has a tributary that crosses the corridor. The creeks within the corridor include the Big Creek, Indian Camp Creek and McCoy Creek. The Big Creek is 0.06 miles (0.1 km) wide at the center of the one-mile (1.6 km) corridor. Its tributary is also 0.06 miles (0.1 km) wide at this point. Indian Camp Creek is 0.1 miles (0.2 km) wide at the center of the one-mile (1.6 km) corridor. Its tributary is also 0.1 miles (0.2 km) wide at this point. The McCoy Creek is 0.3 miles (0.4 km) at the center of the one-mile (1.6 km) corridor. Its tributary is 0.13 miles (0.2 km) at this point.

Indian Camp Creek is affected with ammonia and sediment from a landfill. This creek is on the list of recommended section 303(d) waters requiring Total maximum daily loads; priority for analysis of this creek is high.

Existing Conceptual Corridor - The existing corridor crosses the Big Creek and a tributary to Indian Camp Creek. The Big Creek is 0.06 miles (0.1 km) wide at the center of the one-mile (1.6 km) corridor. The tributary to Indian Camp Creek is 0.13 miles (0.2 km) wide at the center of the one-mile (1.6 km) corridor.

Indian Camp Creek is affected with ammonia and sediment from a landfill. This creek is on the list of recommended section 303(d) waters requiring total maximum daily loads; priority for analysis of this creek is high.

South Conceptual Corridor - The South Conceptual Corridor crosses three tributaries to the Perdue Creek. Two of the tributaries are each 0.13 miles (0.2 km) wide at the center of the one-mile (1.6 km) corridor. The third tributary crosses the corridor between Wentzville and Lake St. Louis. If the South Conceptual Corridor joins I-70 near Wentzville, the tributary is 0.06 miles (0.1 km) wide (0.1 km) when crossed. If the South Conceptual Corridor continues along the southern half of the corridor and joins US 40 south of Lake St. Louis the tributary is 0.25 miles (0.4 km) wide when crossed. If the South Conceptual Corridor continues along the northern half of the corridor and joins US 40 south of Lake St. Louis, the 0.3 miles (0.4 km) from above has potential to be affected, and an additional 1.4 miles (2.2 km) of the tributary has the potential to be affected.

6. FLOODPLAINS

a. “No-Build” Strategy

As part of the National Flood Insurance Program, many communities and counties have performed flood insurance studies to identify flood hazards for floodplain management and flood insurance purposes. The administration of the NFIP, performed by the Federal Emergency Management Agency, entails detailed studies of flood-prone streams and rivers for the determination of flood boundaries and flood hazards. The level of detail for the studies varies depending on the severity of the flooding hazards and other factors. Maps showing the

floodplains of the regulatory streams within the I-70 Study Corridor are included in Exhibits III-1 to III-9.

The data used to determine the floodplain impacts was derived from flood insurance studies, flood boundary and floodway maps, flood insurance rate maps and flood hazard boundary maps, published by FEMA. Some of the data was acquired from GIS data available on the internet, FEMA Q3 Flood Data. The specifications for the horizontal control of Q3 flood data files are consistent with those required for mapping at scale of 1:24,000. The Q3 flood data are developed by electronically scanning the current effective map panels of existing paper flood insurance rate maps. Certain key features are digitally captured and then converted into area features (floodplain boundaries, flood insurance zones, political boundaries).

Missouri River

The Missouri River and several of its major tributary watersheds are the dominant features of the I-70 corridor as it crosses through the state. In the western section of the corridor, the roadway generally parallels the Missouri's southern bank. The roadway crosses the river where Cooper, Howard and Boone Counties adjoin, west of Columbia. East of Columbia, I-70 generally parallels the northern bank.

The soil beneath the floodplain of the Missouri River is composed primarily of Quaternary alluvial sand and gravel. These deposits are generally less than 100 feet thick and consist primarily of fine- to medium-grained sand and fine-grained gravel inter-layered with lesser amounts of silt and clay. In some areas, deposits associated with glacial activity occur beneath the more recent river deposits. These mostly consist of clay-rich glacial till and fine- to coarse-grained sediments washed out of glaciers and/or alluvium.

In 1993, record precipitation caused flooding along the Missouri River floodplain. The flood was an unprecedented event exceeding 100-year flood predictions for the lower Missouri River. The force of flood waters moving downstream breached levees, eroded the adjacent land creating large depressions and deposited silt and sand throughout the floodplain. Reportedly, the flood affected several areas of existing I-70, however the grade has been raised in most of the problem areas. There are a few places where water reached the shoulder of the highway, but these areas were easily controlled with sandbagging. The problematic areas that remain are: Davis Creek in Saline County, one mile (1.6 km) west of Sweet Springs; the Blackwater River in Saline County, one mile (1.6 km) west of Hwy 65; the Missouri River Bottom in Cooper County; and the Loutre River in Montgomery County.

The "No-Build" Strategy would have no additional impact on the floodplain crossings.

b. Widen Existing I-70 (Preferred Strategy)

Rural I-70 Areas

Jackson County - Sni-A-Bar Creek flows from south to north, along the western edge of Jackson County, just east of Grain Valley. At the I-70 crossing, the floodplain is generally 0.6 miles (0.9 km) wide. The drainage area is approximately 100 square miles (256 km²). After crossing I-70, the stream parallels the highway about a mile to the north for nearly four miles before turning northeast to join the Missouri River.

Sni-A-Bar Creek is a recognized flooding source and its tributaries can experience flooding caused by locally intense rainfall. The watershed is mainly farmland with some suburban

development; the most prominent obstructions within floodplains in this watershed are road fills and bridges.

Lafayette County - Tributaries of Sni-A-Bar Creek (Horseshoe Creek and Little Horseshoe Creek) cross I-70 near the Jackson-Lafayette County line. Horseshoe Creek has a floodplain width of 175 feet (54 m), 525 feet (160 m) at the diagonal roadway crossing. The contributing drainage area is 13.2 square miles (33.8 km²). Little Horseshoe Creek has a drainage area half that size and a floodplain width of 150 feet (50 m) at the I-70 crossing.

Approximately 4.3 miles (6.8 km) east of the Jackson-Lafayette County line, East Fork Sni-A-Bar Creek crosses I-70, with a drainage area of about 40 square miles (102.4 km²). The floodplain is generally 0.3-0.5 miles (0.5-0.7 km) wide. Land use in this watershed is agricultural. With a drainage area of over 250 square miles (640 km²), Davis Creek is a main tributary to the Blackwater River, crossing I-70 in the middle of Lafayette County. At the crossing, the creek drains approximately 100 square miles (260 km²), and the floodplain is 0.2 miles (0.3 km) wide. This stream flows west to east, generally paralleling I-70 for nearly 30 miles (47.5 km), to its confluence with the Blackwater River.

Saline County - The Blackwater River crosses I-70 immediately downstream from its confluence with Davis Creek, just east of the Lafayette-Saline County line. At this point, the floodplain is 0.5 miles (0.8 km) wide, over a mile wide (1.6 km) on the diagonal roadway crossing.

The Blackwater then flows eastward, paralleling I-70 to the north, for approximately 13 miles (21 km), into Cooper County where it joins the Lamine River. The Blackwater River watershed covers the eastern half of Lafayette County, western Pettis County and Saline County in the vicinity of I-70. This watershed drains nearly 1,550 square miles (3,970 km²) of farm and pasture land, and is the major component of the Lamine River watershed.

Cooper County - East of the Saline-Cooper County line, the Lamine River parallels I-70 to the south for nearly four miles (6.4 km) before crossing to the north. In this area, the Lamine floodplain is about 0.5 miles (0.8 km) wide. North of the highway, the floodplain widens to nearly one mile (1.6 km) and the river flows to the east for another four miles before turning north toward its confluence with the Missouri River. The Lamine River drains approximately 1,090 square miles (2,790 km²) of agricultural land.

The Lamine River (41 percent of the watershed) and the Blackwater River (59 percent) combine to form the Lamine River watershed, which encompasses all of Pettis County, most of Johnson and Saline Counties, and portions of Lafayette, Cooper, Benton, Morgan and Moniteau Counties.

East from the county line, the Missouri River flows generally west to east, just north of I-70, for a distance of 16.5 miles (26.6 km). The Missouri River floodplain is 2.2-2.8 miles (3.6-4.5 km) wide along this section. As the river angles to the southeast along the Cooper-Boone County line and crosses I-70, the floodplain is generally confined to two miles (3.2 km). The floodway width is one mile (1.6 km). The floodplain is defined by high bluffs, especially prominent to the north and east. A levee system protects farm lands between the bluffs. However, in the floods of 1993 and 1995, many of the levees failed and the floodplain was completely inundated, as well as lower areas behind the bluffs. The Missouri River has a drainage area of over 500,000 square miles (1.3 million km²) at the I-70 Rocheport bridge.

Boone County - Interstate 70 crosses three major streams within the city of Columbia: Perche Creek, Hinkson Creek and Hominy Branch. The Perche Creek and Hinkson Creek crossings are discussed in the Columbia bypass conceptual corridors. Hominy Branch, a tributary of Hinkson Creek, crosses I-70 near the eastern city limits. The drainage area is 4.8 square miles (12.3 km²), and the floodplain is 475 feet (143 m) wide, with no defined floodway.

Near the eastern Boone County Line, Little Cedar Creek has a floodplain that is 900 feet (270 m) wide. This Cedar Creek tributary has a drainage area of about 13 square miles (34 km²).

Callaway County - There are eight floodplain crossings in Callaway County. Cedar Creek flows north to south across I-70 and defines the Boone-Callaway County line. Its floodplain is 700 feet (206 m) wide. The Cedar Creek watershed covers approximately 200 square miles (512 km²) of agricultural and pasture land.

Auxvasse Creek drains most of eastern Callaway County and the southwest corner of Audrain County—a 220 square mile (570 km²) area. Bynum Creek is a major tributary in this watershed. A Bynum Creek tributary crosses I-70 with a floodplain of 500 feet (152.4 m). Several miles to the east, a tributary to Maddox Branch of Bynum Creek has a floodplain with a 0.3 miles (0.5 km) width at the existing highway. Another Maddox Branch tributary has a floodplain with a 320 feet (95 m) width at the existing highway. At the Maddox Branch crossing, the floodplain is 580 feet (174 m) wide.

About seven miles (11.2 km) east of the Hwy 54 interchange, Auxvasse Creek crosses I-70 with a floodplain that is 790 feet (240 m) wide.

On the eastern edge of Callaway County, a tributary to the Loutre has a floodplain with a 0.9 miles (1.5 km) width at the existing highway.

Montgomery County - Montgomery County has only one major floodplain crossing—the Loutre River. The Loutre River crosses I-70 just west of the Callaway-Montgomery County line, and has a 1.1-mile (1.7-km) wide floodplain. The watershed drains parts of Audrain, Callaway, Montgomery, and Warren Counties, an area of approximately 270 square miles (700 km²).

Near New Florence, the floodplain of a Loutre River tributary may be affected by the proposed frontage road, for about 0.3 miles (0.5 km). A tributary of the Cuivre River, near Jonesburg, may also be affected by frontage road construction.

Columbia Area

There are four conceptual corridors for the Columbia area: “no-build”, near north, far north and widening of the existing roadway. A 500-foot (152.4 m) wide corridor was considered for comparison of the two northern corridors.

“No-Build” Strategy - Additional floodplain impacts would not be involved in the “No-Build” Strategy.

Near North Conceptual Corridor – The western end of the Near North Conceptual Corridor crosses through the half-mile (0.8 km) wide floodplain created by the confluence of Perche Creek with its tributary to the west, Callahan Creek. Perche Creek is crossed again, less than a mile to the east, just downstream of the Rocky Fork confluence. About 1.5 miles (2.4 km) to the east, the proposed corridor crosses a Rocky Fork tributary, Bear Creek, immediately downstream of its confluence with Cow Branch. Bear Creek has a drainage area of 8.3 square miles (21.2 km²) and the floodplain is 790 feet (240 m) wide. The corridor then parallels Cow

Branch for nearly two miles (3.2 km), moving in and out of the 530-feet (160 m) wide floodplain, possibly crossing the stream as many as four times. Cow Branch has a drainage area of 2.7 square miles (6.9 km²) at the downstream crossing.

Toward the east, the corridor crosses the upstream reaches of Bear Creek; the contributing drainage area at this point is four square miles (10.4 km²), and the floodplain is 315 feet (95 m) wide.

As the corridor begins to angle southeast toward existing I-70, it crosses Hinkson Creek. The floodplain is 800 feet (240 m) wide, but the skewed proposed corridor crossing width is 1,110 feet (333 m). The drainage area is 37.5 square miles (96.0 km²). Approximately two miles (3.6 km) to the southeast, the corridor crosses the upstream reaches of Hominy Creek, which has a contributing drainage area of 3.3 square miles (8.4 km²). This floodplain is 160 feet (48 m) wide. The corridor then crosses Little Cedar Creek, just before connecting with existing I-70. The floodplain of Little Cedar Creek is 790 feet (240 m) wide for the diagonal crossing. Little Cedar Creek is part of the Cedar Creek watershed.

Far North Conceptual Corridor - Departing from existing I-70 toward the northeast, the Far North Conceptual Corridor crosses Midway Branch and Callahan Creek just upstream of their confluence. Midway Branch drains less than two square miles (5 km²). The proposed corridor runs along the 130-foot wide floodplain for about 0.5 miles (0.78 km). Callahan Creek drains 32 square miles (82 km²). This floodplain is 0.4 miles (0.63 km) wide at the slightly skewed corridor crossing.

Perche Creek is the next major crossing, about 2.7 miles (4.3 km) to the northeast. The contributing drainage area is 165 square miles (422 km²), and the floodway is 0.23 miles (0.36 km) wide. Slacks Branch, a tributary of Perche Creek, falls within the corridor approximately one mile (1.6 km) to the east. The floodplain is about 300 feet (95 m) wide at the crossing, and the drainage area is 3.8 square miles (9.7 km²).

About 2.5 miles (4.0 km) to the east, the corridor crosses Rocky Fork, immediately upstream of its confluence with the Clay's Fork tributary. At this point, Rocky Fork drains approximately 23 square miles (59 km²), and the floodplain is 580 feet (174 m) wide. Clay's Fork flows parallel to the proposed corridor for 0.7 miles (1.1 km). Clay's Fork has a drainage area of 4.5 square miles (11.5 km²), and the floodplain is about 750 feet (225 m) wide at the skewed crossing.

The corridor crosses Hinkson Creek, four miles (6.4 km) to the east, as it begins to turn south to join existing I-70. At this skewed crossing, the floodplain is approximately 800 feet (240 m) wide and the contributing drainage area is about 31.5 square miles (80.6 km²).

Existing Conceptual Corridor - Proposed widening of existing I-70 as a conceptual corridor would impact Perche Creek and Hinkson Creek. On the western edge of Columbia, Perche Creek crosses I-70 flowing north to south to join the Missouri River. The Perche Creek watershed covers 390 square miles (998 km²) in Boone County. At the I-70 crossing, the floodplain is 0.56 miles (0.90 km) wide, with a 0.4 miles (0.61.0km) floodway. At the roadway, the drainage area is about 300 square miles (770 km²).

Hinkson Creek, the main Perche tributary, crosses I-70 on the east side of Columbia, then turns to flow westward to their confluence. At I-70, Hinkson Creek drains 41.0 square miles (105 km²), has a floodplain that is 500 feet (152.4 m) wide, with no available floodway information. Most of the Hinkson Creek watershed is within the urban development of the city of Columbia, and portions of the floodplain have been urbanized and are impacted by levees.

Warrenton, Wright City, Wentzville Area

At the eastern end of the project, I-70 passes through Warrenton, Wright City and Wentzville. Four concepts are considered for this area. A 500-foot (152.4 m) wide corridor was considered for comparison of the far north, near north and south bypass conceptual corridors. The fourth concept is widening of the existing corridor, consistent with the proposed changes to the west.

Near North Conceptual Corridor - The Near North Conceptual Corridor crosses Big Creek, Indian Camp Creek and McCoy Creek. In addition, each of the three creeks has a tributary that crosses the corridor.

Big Creek crosses the proposed corridor about 6.7 miles (10.6 km) east of the Montgomery-Warren County line. It has a drainage area of 7.4 square miles (18.9 km²) at the corridor crossing, and its floodplain is 315 feet (95 m) wide. Its tributary, 1.3 miles (2.1 km) to the west, drains 4.4 square miles (11.3 km²). The floodplain is also 315 feet (95 m) wide.

About five miles (8 km) to the east, the corridor crosses the upper reaches of Indian Camp Creek and its tributary. Both streams drain about 4.3 square miles (11.0 km²), and their floodplains are 685 feet (206 m) wide at the point of crossing.

McCoy Creek crosses the proposed corridor about 1.6 miles (2.5 km) east of the Warren-St. Charles County Line. Its drainage area is 5.2 square miles (11.0 km²), and the floodplain is 0.25 miles (0.4 km) wide. Less than three miles (4.5 km) to the east, the McCoy Creek tributary drains six square miles (15.4 km²) and has a 685-foot (206 m) wide floodplain.

Far North Conceptual Corridor - The Far North Conceptual Corridor crosses four floodplains, including Big Creek and three of its tributaries, Hickory Lick Creek, Indian Camp Creek and McCoy Creek, all in the Cuivre River watershed. This watershed drains portions of Lincoln, Montgomery, Warren and St. Charles Counties, as part of this study—as well as portions of Audrain and Pike Counties, outside of the study area.

The corridor crosses Big Creek about 1.5 miles (2.4 km) west of the Warren-Lincoln County line. The contributing drainage area is 17.5 square miles (44.8 km²) and the floodplain is 685 feet (206 m) wide at this point. Less than a mile east of the county line, the corridor crosses Hickory Lick Creek, which has a drainage area of 7.8 square miles (20.0 km²) and a 320-foot (95 m) wide floodplain.

Indian Camp Creek parallels the corridor to the south for about 7.5 miles (12.0 km), before crossing to the north, approximately 1.4 miles (2.3 km) east into Lincoln County, draining 30 square miles (76.8 km²). The floodplain at the crossing is 0.38 miles (0.60 km) wide.

As the corridor turns southeast to rejoin existing I-70, it crosses McCoy Creek, with a floodplain that is 0.5 miles (0.8 km) wide, draining 19.0 square miles (48.6 km²).

South Conceptual Corridor - The South Conceptual Corridor is impacted by Peruque Creek and several of its tributaries. There are two concepts for connection to existing roadways at the east end of the corridor. The Peruque Creek watershed drains approximately 35 square miles (90 km²) to the Mississippi River.

The westernmost tributary is three miles west of the Warren-St. Charles County line, just south of Wright City. The middle tributary is 0.7 miles (1.1 km) east of the county line, along the proposed corridor. The contributing drainage areas are 1.1 square miles (2.8 km²) and 2.6

square miles (6.7 km²). Floodplains at the crossings are the same for both tributaries—0.13 miles (0.2 km).

For the first concept, the corridor turns northeast about 1.3 miles (2.1 km) east of the St. Charles County line, to join existing I-70 near Wentzville. Peruque Creek parallels the corridor to the north, for about 6.5 miles (10.3 km). The proposed corridor crosses the creek as it turns to the northeast. The contributing drainage area at this point is about 30 square miles (77 km²), and the floodplain is approximately one mile (1.6 km) wide.

The second concept swings slightly to the southeast and joins US 40 at Lake St. Louis, about 2.3 miles (3.7 km) south of existing I-70. The corridor crosses the third Peruque Creek tributary 3.4 miles (5.4 km), west of the county line. The contributing drainage area is 7.1 square miles (18.2 km²), and the floodplain is 0.25 miles (0.40 km) wide.

Existing Conceptual Corridor - In the limits of the bypass concepts, the existing route crosses Big Creek and a tributary to Indian Camp Creek. The Big Creek crossing, just west of Truesdale, is 0.06 miles (0.1 km) wide and the drainage area is 3.5 square miles (9.0 km²).

Approximately five miles (13 km) to the east, the upland tributary to Indian Camp Creek is 690 feet (206 m) wide at the corridor crossing. This tributary drains about 2.4 square miles (6.2 km²) south of I-70.

7. WETLANDS

Section 404 of the Clean Water Act regulates discharges of dredged or fill materials into Waters of the U.S., which includes jurisdictional wetlands and other special aquatic sites. The analysis of impacts to wetlands is based on the types and extent of vegetated wetlands shown on the National Wetlands Inventory maps. From a jurisdictional perspective, these mapped wetland areas are considered to be potential because they have not been field checked and delineated according to the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.

Other Waters of the U.S. in the conceptual corridors, that are subject to Section 404 regulation, include lakes, perennial streams and intermittent streams having an ordinary high-water mark. The analysis of the perennial streams is based on the extent shown on the USGS 7.5' quadrangle maps. The intermittent streams in the study area are numerous, and their extent is relatively similar throughout the optional corridors, therefore there is no specific analysis of intermittent stream impacts included in this document.

a. “No-Build” Strategy

The “No-Build” Strategy would have no direct impacts to existing wetland areas or other Waters of the U.S. Development pressures and other sources of degradation could continue to act on the natural environment independent of transportation improvements.

b. Widen Existing I-70 (Preferred Strategy)

Rural I-70 Areas

The rural areas of the project include the lengths of existing I-70 outside the major metropolitan areas. The Widen Existing I-70 Strategy in the rural areas would consist of obtaining additional right-of-way on either the north or south side of the existing roadway to allow for additional lanes.

This strategy, excluding Overton Bottoms and Mineola Hill which are discussed separately below, would impact 22.0 acres (8.9 hectares) of mapped vegetated wetlands consisting of the following types: Palustrine Emergent 6.9 acres (2.8 hectares); Palustrine Scrub-Shrub 1.4 acres (0.6 hectares); and Palustrine Forested 13.7 acres (5.5 hectares). There are no Palustrine Aquatic Bed wetlands impacted in the rural areas.

There would also be 13 perennial stream crossings in the rural areas, impacting a total length of 2,416 linear feet (736.4 m) of streams.

Overton Bottoms

The Widen Existing I-70 Strategy would cross the Missouri River at the existing bridge location, in the floodplain area called Overton Bottoms. The Big Muddy National Wildlife Refuge is located on the north side of the roadway, and the Overton Bottoms Conservation Area is located on the south side. The USACE owns the property on each side of existing I-70, and has reserved a 300-foot (91.4 m) wide corridor on each side of existing right-of-way for the expansion of the roadway. Within the reserved corridor there are vegetated wetlands mapped as Palustrine Emergent, Palustrine Scrub-shrub and Palustrine Forested. There is also a scour hole (or "blew hole") that was produced by the floodwaters of 1993. It is filled with water and located below, and on each side of the bridge at the bridge's west end.

With the Widen Existing I-70 Strategy, the existing bridge would remain and would be used for the eastbound lanes. In addition, construction of the new, wider eastbound lanes on embankment on the south side would not require additional right-of-way, and no impacts to wetlands and Waters of the U.S. would occur on the south side.

A new bridge structure and new westbound lanes would be located north of the existing bridge and roadway, requiring additional right-of-way. The embankment for the new westbound lanes would impact 0.5 acres (0.2 hectares) of Palustrine Emergent wetlands and 1.5 acres (0.6 hectares) of the scour hole. Impacts caused by the new bridge structure would include 1.1 acres (0.4 hectares) of wetlands classified as Palustrine Forested. Other impacts caused by the bridge would be minimal, since only the piers would be located in Waters of the U.S., including the Missouri River, the scour hole and the emergent wetlands mapped adjacent to the river. The length of the Missouri River in additional right-of-way would be approximately 100 feet (30.5 m).

Mineola Hill

In the Mineola Hill area there are two concepts: the 500-foot (152.4 m) wide North Conceptual Corridor, which travels to the north of existing I-70 and Graham Cave State Park, and the Existing Conceptual Corridor.

North Conceptual Corridor - This 500-foot (152.4 m) wide alignment would impact 6.5 acres (2.6 hectares) of mapped vegetated wetlands consisting of the following types: Palustrine Emergent 0.3 acres (0.1 hectares); and Palustrine Forested 6.2 acres (2.5 hectares). There are no Palustrine Aquatic Bed nor Palustrine Scrub-shrub wetlands impacted in this concept. It would also cross one perennial stream, the Loutre River, impacting a total length of 581 linear feet (177.1 m) of stream.

Existing Conceptual Corridor - This widening concept would impact 1.7 acres (0.7 hectares) of mapped vegetated wetlands, all of which are the Palustrine Forested type. It would also cross one perennial stream, the Loutre River, impacting a total length of 50 linear feet (15.2 m) of stream.

The perennial stream located in this corridor consists of the Loutre River. There is a total of approximately 0.009 miles (0.01 km) of perennial streams in this corridor.

Columbia Area

In the Columbia area there are three conceptual corridors: the Near North Conceptual Corridor bypass, the Far North Conceptual Corridor bypass and the Widen Existing Conceptual Corridor, which is a widening of the existing I-70 alignment. In addition, the Near North and Far North Conceptual Corridors would also include some improvements to existing I-70 through Columbia, but with very little additional right-of-way needed.

Near North Conceptual Corridor - The one-mile (1.6 km) wide Near North Conceptual Corridor contains a total of 151.4 acres (61.3 hectares) of mapped vegetated wetlands consisting of the following types: Palustrine Emergent 32.8 acres (13.3 hectares); Palustrine Scrub-Shrub 7.5 acres (3.0 hectares); and Palustrine Forested 111.1 acres (45 hectares). There are no wetlands mapped as Palustrine Aquatic Bed in this corridor.

The perennial streams located in the one-mile (1.6 km) wide corridor include Callahan Creek, Midway Branch of Callahan Creek, Perche Creek, Rocky Fork Creek, Bear Creek (occurs in two different locations), Cow Branch of Bear Creek, Hinkson Creek and Little Cedar Creek. There is a total of approximately 14.2 miles (22.8 km) of perennial streams in this corridor.

The 500-foot (152.4 m) wide alignment in the center of this corridor would impact a total of 12.2 acres (4.9 hectares) of vegetated wetland areas, including Palustrine Emergent wetlands totaling 4.9 acres (2.0 hectares); Palustrine Scrub-shrub wetlands totaling 2.8 acres (1.1 hectares); and Palustrine Forested wetlands totaling 4.5 acres (1.8 hectares). It would also cross nine perennial streams, impacting a total length of 8,112 linear feet (2,472.5 m) of streams. The streams crossed would be Callahan Creek, Bear Creek (3 times), the Cow Branch (3 times), Hinkson Creek and Little Cedar Creek.

Far North Conceptual Corridor - The one-mile (1.6 km) wide Far North Conceptual Corridor contains a total of 189.3 acres (76.6 hectares) of mapped vegetated wetlands consisting of the following types: Palustrine Emergent 22.2 acres (9.0 hectares); Palustrine Scrub-Shrub 12.4 acres (5.0 hectares); and Palustrine Forested 154.7 acres (62.6 hectares). There are no wetlands mapped as Palustrine Aquatic Bed in this corridor.

The perennial streams located in the one-mile (1.6 km) wide corridor include Callahan Creek, Midway Branch of Callahan Creek, Perche Creek, Slacks Branch of Perche Creek, Rocky Fork Creek, Clays Fork of Rocky Fork Creek, Hinkson Creek and Little Cedar Creek. There is a total of approximately 11.7 miles (18.8 km) of perennial streams in this corridor.

The 500-foot (152.4 m) wide alignment in the center of this corridor would impact a total of 19.5 acres (7.9 hectares) of vegetated wetland areas, including Palustrine Emergent wetlands totaling 1.2 acres (0.5 hectares), and Palustrine Forested wetlands totaling 18.3 acres (7.4 hectares). There are no PSS wetlands impacted by this 500-foot wide alignment. It would also cross nine perennial streams, impacting a total length of 7,129 linear feet (2,172.9 m) of streams. The streams crossed would be the Midway Branch, Callahan Creek, Perche Creek, Slacks Branch, Rocky Fork Creek, Clays Fork (two times), Hinkson Creek and Little Cedar Creek.

Existing Conceptual Corridor - The widening of the Existing Alignment Concept through Columbia would impact a total of two acres (0.8 hectares) of vegetated wetland areas, all of which are classified as Palustrine Forested. It would also cross five perennial streams,

impacting a total length of 1,143 linear feet (348.4 m) of streams. The streams crossed would be Perche Creek, Harmony Creek, Hinkson Creek, Hominy Creek and Little Cedar Creek.

Warrenton, Wright City, Wentzville Area

In the Warrenton, Wright City and Wentzville area there are four options: the Near North Conceptual Corridor, the Far North Conceptual Corridor, the South Conceptual Corridor and the Widen Existing Conceptual Corridor.

Near North Conceptual Corridor - The Near North Conceptual Corridor is a bypass with a west terminus located three miles (4.8 km) east of Jonesburg, then diverging from existing I-70 to the north and reconnecting with I-70 at an east terminus two miles (3.2 km) east of the I-70/US 61 interchange. A concept within this corridor is to terminate at existing US 61 and widen US 61 south to I-70.

The one-mile (1.6 km) wide Near North Conceptual Corridor, reconnecting with I-70, contains a total of 103.2 acres (41.8 hectares) of mapped vegetated wetlands consisting of the following types: Palustrine Emergent 2.4 acres (1.0 hectares); Palustrine Scrub-Shrub 3.3 acres (1.3 hectares); and Palustrine Forested 97.2 acres (39.3 hectares).

The perennial streams located in this corridor include Big Creek, Hickory Lick Creek, Indian Camp Creek, McCoy Creek and the Enon Branch. There is a total of approximately 5.3 miles (8.5 km) of perennial streams in this corridor.

The 500-foot (152.4 m) wide alignment in the center of this corridor, reconnecting with I-70, would impact a total of 6.2 acres (2.5 hectares) of vegetated wetlands, including Palustrine Emergent wetlands totaling 0.1 acre (0.06 hectare), and Palustrine Forested wetlands totaling 6.1 acres (2.5 hectares). It would also cross the five perennial streams listed above, impacting a total length of 1954 linear feet (595.6 m) of streams.

The concept to terminate the bypass at US 61 and widen US 61 to I-70 would result in a slightly lesser amount of impacts than those described above.

Far North Conceptual Corridor - The Far North Conceptual Corridor is a bypass with a west terminus located at Jonesburg, then diverging from existing I-70 to the north and reconnecting with I-70 at an east terminus two miles (3.2 km) east of the I-70/US 61 interchange. A concept within this corridor is to terminate at existing US 61 and widen US 61 south to I-70.

The one-mile (1.6 km) wide Far North Conceptual Corridor, reconnecting with I-70, contains a total of 156.2 acres (63.2 hectares) of mapped vegetated wetlands consisting of the following types: Palustrine Emergent 8.5 acres (3.4 hectares); Palustrine Scrub-Shrub 18.0 acres (7.3 hectares); and Palustrine Forested 129.8 acres (52.5 hectares).

The perennial streams located in the Far North Conceptual Corridor include Big Creek, Schlanker Branch, Hickory Lick Creek, Indian Camp Creek (two locations), McCoy Creek and the Enon Branch. There is a total of approximately 9.6 miles (15.5 km) of perennial streams in this corridor.

The 500-foot (152.4 m) wide alignment in the center of this corridor, reconnecting with I-70, would impact a total of 5.1 acres (2.1 hectares) of vegetated wetlands including Palustrine Emergent wetlands totaling 0.5 acre (0.2 hectare), Palustrine Scrub-shrub wetlands totaling 0.05 acre (0.02 hectare), and Palustrine Forested wetlands totaling 4.5 acres (1.8 hectares). It would also cross five perennial streams, impacting a total length of 2,798 linear feet (852.8 m) of

streams. The streams crossed would be Big Creek, Hickory Lick Creek, Indian Camp Creek, McCoy Creek and the Enon Branch.

The concept to terminate the bypass at US 61 and widen US 61 to I-70, would result in a slightly lesser amount of impacts than those described above.

South Conceptual Corridor - The South Conceptual Corridor is a bypass with a west terminus located five miles (8 km) east of Jonesburg, then diverging from existing I-70 to the south and connecting with US 40 at an east terminus 3.5 miles (5.6 km) south of the I-70/US 61 interchange. A concept within this corridor is to reconnect with I-70 at Exit 209, one mile (1.6 km) west of the I-70/US 61 interchange.

The one-mile (1.6 km) wide South Conceptual Corridor, connecting with US 40, contains a total of 133.7 acres (54.1 hectares) of mapped vegetated wetlands consisting of the following types: Palustrine Emergent 0.5 acre (0.2 hectare); Palustrine Scrub-Shrub 1.6 acres (0.6 hectares); and Palustrine Forested 131.6 acres (53.3 hectares).

The perennial streams located in this corridor include Peruque Creek and Sam's Creek, totaling approximately 5.7 miles (9.2 km) of streams.

The 500-foot (152.4 m) wide alignment in the center of this corridor, connecting with US 40, would impact a total of 40.6 acres (16.4 hectares) of vegetated wetlands, including Palustrine Emergent wetlands totaling 0.4 acre (0.2 hectare); Palustrine Scrub-shrub wetlands totaling 0.2 acre (0.1 hectare); and Palustrine Forested wetlands totaling 40.0 acres (16.2 hectares). It would also cross the two perennial streams listed above, impacting a total length of 4,488 linear feet (1,367.9 m) of streams.

The concept to reconnect to I-70 at Exit 209 would result in a slightly lesser amount of impacts than those described above.

Existing Conceptual Corridor - The Existing Conceptual Corridor would consist of a widening of the existing I-70 roadway with frontage roads in some areas, and loop roads at some of the interchanges.

The Existing Conceptual Corridor in the Warrenton to Wentzville area would impact a total of two acres (0.8 hectares) of mapped vegetated wetlands consisting of the following types: Palustrine Emergent 0.3 acres (0.1 hectares); and Palustrine Forested 1.7 acres (0.7 hectares). The one perennial stream being crossed is Big Creek, with a total of 100 linear feet (30.5 m) of stream impacts.

Total Project Impacts

The potential project impacts to wetlands and Waters of the U.S. are shown in Table IV-10.

Table IV-10: Wetlands and Waters of the U.S. Potential Impacts

Conceptual Corridors	Vegetated Wetland Types In acres (hectares)				Total Vegetated Wetlands Ac (Ha)	Perennial Streams In feet (meters)	
	PAB	PEM	PSS	PFO		No. of Crossings	Total Length
Rural Widening	0	6.9 (2.8)	1.4 (0.6)	13.7 (5.5)	22.0 (8.9)	13	2516 (736.4)
Overton Bottoms	0	0.5 (0.2)	0	1.1 (0.4)	1.6 (0.6)	1	100 (30.5)
Mineola Hill - North	0	0.3 (0.1)	0	6.2 (2.5)	6.5 (2.6)	1	581 (177.1)

Mineola Hill - Widen Existing	0	0	0	1.7 (0.7)	1.7 (0.7)	1	50 (15.2)
Columbia - Near North	0	4.9 (2.0)	2.8 (1.1)	4.5 (1.8)	12.2 (4.9)	9	8112 (2472.5)
Columbia - Far North	0	1.2 (0.5)	0	18.3 (7.4)	19.5 (7.9)	9	7129 (2172.9)
Columbia - Widen Existing	0	0	0	2.0 (0.8)	2.0 (0.8)	5	1143 (348.4)
Warrenton to Wentzville Area - Near North	0	0.1 (0.06)	0	6.1 (2.5)	6.2 (2.5)	5	1954 (595.6)
Warrenton to Wentzville Area - Far North	0	0.5 (0.2)	0.05 (0.02)	4.5 (1.8)	5.1 (2.1)	5	2798 (852.8)
Warrenton to Wentzville Area - South	0	0.4 (0.2)	0.2 (0.1)	40.0 (16.2)	40.6 (16.4)	2	4488 (1367.9)
Warrenton to Wentzville Area - Widen Existing	0	0.3 (0.1)	0	1.7 (0.7)	2.0 (0.8)	1	100 (30.5)

Mitigation

Subsequent environmental documents for specific portions of I-70 improvements will more specifically analyze impacts to wetlands, perennial streams, intermittent streams and any other water resources determined to be classified as Waters of the U.S. Wetlands will be delineated, and streams will be field-checked and measured for ordinary high water marks in order to determine impacts.

During the project design phase when right-of-way requirements have been determined, specific impacts to wetlands and other Waters of the U.S. will be assessed to determine if those impacts can be avoided or minimized. The perennial streams would most likely be bridged, thus minimizing impacts, or avoiding them if support structures and fill are located above the ordinary high-water mark. A Section 404 permit application, specifying impact areas and quantities, will be submitted to the USACE. MoDOT will coordinate with the USACE and appropriate resource agencies during the project design process to develop appropriate mitigation strategies, based on the quality of wetlands and Waters of the U.S., and the degree of impact. This would include consideration of bridge construction techniques and design of any mitigation the USACE deems necessary as compensation for project impacts.

Secondary and Cumulative Impacts

There is potential for the widening of I-70 to contribute to secondary impacts to wetlands and other waters of the U. S. During the construction phase, activities that impact these sites through sedimentation, changes in the nature of stream hydraulics, or clearing of vegetation in riparian habitat, are likely to have adverse effects on the typical wetland functions and values of downstream or downslope Waters of the U.S., including wetlands. Care must be taken during the planning and construction phases to effectively predict these types of impacts and avoid or minimize them.

Improvements to an existing roadway and/or a new roadway, built to current design standards, will likely reduce the number of accidents. This in turn would reduce the potential for the by-products and chemical contaminants that could run off the road. However, a new or widened roadway adds to the amount of pavement area that must be maintained, resulting in a cumulative increase in the amount of run-off from salt, de-icing agents and automotive by-products. Eventually those wetlands and other waters that are affected by a prolonged

concentration of sedimentation or contaminant run-off could suffer from diminished function and value.

The I-70 widening and bypass conceptual corridors may also, at some time in the future, act as a catalyst for increased growth, relocated development and expansion in the region. New development along a new or improved roadway can result in more wetlands or waters being filled or impacted either with or without permits. New development that takes place, without due consideration being given to the run-off potential, can also result in increased erosion and sedimentation that can reach existing wetlands and waters of the U. S.

8. TERRESTRIAL AND AQUATIC COMMUNITIES

The terrestrial and aquatic communities in the study corridor, including designated natural areas, and some conservation areas, were discussed in Chapter III, Section C. 7. The natural heritage database information from the Missouri Department of Conservation also included several records for sensitive biological resources, located in the study corridor. These were reviewed and mapped as environmental control points. The biological resource records that pertain to federally listed threatened or endangered species are discussed in Section E.9 of this chapter. Additional base information that was used for terrestrial and aquatic analysis included perennial streams, ponds, lakes and forested areas.

Consideration of forested areas includes contiguous forest blocks of at least 500 acres (202.3 hectares), which are important habitat tracts that are beneficial to many species of birds including neo-tropical forest interior birds. Many of the wooded areas within the study corridor have already been subjected to disturbance and alteration through logging, grazing and agricultural practices, but still continue to provide food, cover and habitat for wildlife. However, some large contiguous tracts of forest still exist in the far east end of the study corridor, particularly between New Florence and Warrenton, south of I-70. The remainder of the forested areas are smaller tracts that are the result of previous fragmentation or alteration.

a. “No-Build” Strategy

The “No-Build” Strategy would allow terrestrial and aquatic communities to remain constant with regard to project impacts. Development pressures, grazing, logging and other sources of degradation could continue to act on the natural environment independent of transportation improvements.

b. Widen Existing I-70 (Preferred Strategy)

Rural I-70 Areas

The rural areas of the project include the lengths of existing I-70 outside the major metropolitan areas. The Widen Existing I-70 Strategy in the rural areas would consist of obtaining additional right-of-way on either the north or south side of the existing roadway to allow for additional lanes. This strategy, excluding Overton Bottoms and Mineola Hill, which are discussed separately below, would have no impact on designated natural areas or conservation areas.

Two sensitive biological resources would be impacted in the rural areas. One is an area of buffalo grass (*Buchloe dactyloides*), ranked as S1, defined as “critically imperiled” in the state. It is located in a field and adjacent lawn area at the eastbound rest area south of Boonville. The other is the blacknose shiner (*notropis heterolepis*), located in the vicinity of the Whetstone Creek I-70 crossing in Callaway County. This species is ranked as S2, defined as “imperiled” in

the state. However, this stream is currently bridged and would continue to be bridged if additional lanes are added, thus minimizing or avoiding impacts.

The rural widening of I-70, excluding the Overton Bottoms and Mineola Hill areas, would not fragment any contiguous forest blocks beyond what has already been split by the existing roadway. However, there would be a total of approximately 155.3 acres (62.8 hectares) of forested areas impacted.

Aquatic community impacts in the rural areas would include perennial streams totaling 2,416 linear feet (736.4 m); and 97 ponds totaling 13.2 acres (5.3 hectares). One lake, with impacts totaling 0.1 acres (0.04 hectares), would be impacted in the rural widening strategy.

Overton Bottoms

The Widen Existing I-70 Strategy would cross the Missouri River at the existing bridge location in the area called Overton Bottoms, which was previously used as agricultural cropland. After the floods of 1993 and 1995, the USACE purchased land on each side of I-70 in the Overton Bottoms area. The north side is now the Big Muddy National Wildlife Refuge, managed by the U.S. Fish and Wildlife Service, and the south side is the Overton Bottoms Conservation Area, managed by the Missouri Department of Conservation. The area is now being restored to native habitats and allowed to revert back to natural floodplain conditions, which will result in increased populations of wildlife. A new bridge structure and new westbound lanes would be located north of the existing bridge and roadway, but within a 300-foot (91.4 m) reserved corridor. Additional right-of-way would be required for the new westbound lanes, thus impacting the vegetative communities of the wildlife refuge.

Impacts to aquatic communities would include one pond, the scour hole (or blew hole), totaling 1.5 acres (0.6 hectares). The impacts to the Missouri River would be minimal since it would be bridged, with only the piers being located in the river channel.

There would also be a total of 1.1 acres (0.4 hectares) of riparian forest areas impacted, and no contiguous forest blocks impacted.

Mineola Hill

In the Mineola Hill area there are two options: the 500-foot (152.4 m) wide North Conceptual Corridor, which travels to the north of existing I-70 and Graham Cave State Park, and the Existing Conceptual Corridor.

North Conceptual Corridor - This 500-foot (152.4 m) wide North Conceptual Corridor for the Mineola Hill area would impact 208.2 acres (84.3 hectares) of forested area. This concept could result in fragmentation of two contiguous forest blocks over 500 acres (202.3 hectares) in size.

Impacts to aquatic communities would include 581 linear feet (177.1 m) of one perennial stream, the Loutre River, and 12 ponds totaling 2.2 acres (0.9 hectares).

Existing Conceptual Corridor - The Existing Conceptual Corridor would not fragment any contiguous forest blocks beyond what has already been split by the existing roadway, but would impact a total of 3.6 acres (1.5 hectares) of smaller forested areas.

Impacts to aquatic communities would include 50 linear feet (15.2 m) of one perennial stream, the Loutre River, and three ponds totaling 1.1 acres (0.4 hectares).

This existing alignment concept in the Mineola Hill area would not fragment any additional forested areas providing cover and habitat for wildlife that are not already split by the existing highway. The proposed right-of-way for the widening would contain a total of 28.60 acres (11.57 hectares) of forested area, and the additional right-of-way required for the project would include 3.63 acres (1.47 hectares) of forest.

The perennial stream located in this corridor consists of the Loutre River. The corridor contains a total of approximately 0.009 miles (0.01 km) of perennial streams providing aquatic habitat.

There are a total of three ponds within the widening corridor. The total acreage of ponds impacted would be 1.06 acres (0.4 hectares).

Columbia Area

In the Columbia area there are three options: the Near North Conceptual Corridor, the Far North Conceptual Corridor, and the Widen Existing Conceptual Corridor. In addition, the Near North and Far North Conceptual Corridors would also include some improvements to existing I-70 through Columbia, but with very little additional right-of-way needed.

Near North Conceptual Corridor - The one-mile (1.6 km) wide Near North Conceptual Corridor contains no designated natural areas, conservation areas, or sensitive biological resources. It contains 14.2 miles (22.8 km) of perennial streams, 219 ponds totaling 121.9 acres (49.3 hectares), and one lake totaling 27.1 acres (10.9 hectares).

The 500-foot (152.4 m) wide alignment in the center of this corridor would have no impacts to contiguous forest blocks over 500 acres (202.3 hectares), however, there would be a total of approximately 177 acres (71.6 hectares) of forested areas impacted.

Aquatic community impacts would include 8,112 linear feet (2,472.5 m) of perennial streams, and 29 ponds totaling 10.7 acres (4.3 hectares). No lakes would be impacted.

Far North Conceptual Corridor - The one-mile (1.6 km) wide Far North Conceptual Corridor contains no designated natural areas, conservation areas or sensitive biological resources. It contains 11.7 miles (18.8 km) of perennial streams, 388 ponds totaling 184.1 acres (73.4 hectares), and one lake totaling 30 acres (12.1 hectares).

The 500-foot (152.4 m) wide alignment in the center of this corridor would have no impacts to contiguous forest blocks over 500 acres (202.3 hectares), however, there would be a total of approximately 314.2 acres (127.2 hectares) of forested areas impacted.

Aquatic community impacts would include 7,129 linear feet (2,172.9 m) of perennial streams, and 42 ponds 13 acres (5.3 hectares). No lakes would be impacted.

Existing Conceptual Corridor - The Existing Conceptual Corridor would have no impacts to designated natural areas, conservation areas or sensitive biological resources. It would have no impacts to contiguous forest blocks over 500 acres (202.3 hectares), however, there would be a total of approximately 24.8 acres (10.0 hectares) of forested areas impacted.

Aquatic community impacts would include 1,143 linear feet (348.4 m) of perennial streams, and six ponds totaling 1.0 acres (0.4 hectares). No lakes would be impacted.

Warrenton, Wright City, Wentzville Area

In the Warrenton, Wright City and Wentzville area there are four concepts: the Near North Conceptual Corridor, the Far North Conceptual Corridor, the South Conceptual Corridor, and the Existing Conceptual Corridor.

Near North Conceptual Corridor - The Near North Conceptual Corridor is a bypass with a west terminus located three miles (4.8 km) east of Jonesburg, then diverging from existing I-70 to the north and reconnecting with I-70 at an east terminus two miles (3.2 km) east of the I-70/US 61 interchange. A concept within this corridor is to terminate at existing US 61 and widen US 61 south to I-70.

The one-mile (1.6 km) wide Near North Conceptual Corridor contains no designated natural areas, conservation areas or sensitive biological resources. It contains 5.3 miles (8.5 km) of perennial streams, and 283 ponds totaling 156.9 acres (63.5 hectares). This corridor does not include any lakes.

The 500-foot (152.4 m) wide alignment in the center of this corridor would have no impacts to contiguous forest blocks over 500 acres (202.3 hectares), however, there would be a total of approximately 490.8 acres (198.6 hectares) of forested areas impacted.

Aquatic community impacts would include 1954 linear feet (595.6 m) of perennial streams, and 43 ponds totaling 11.6 acres (4.7 hectares).

The concept to terminate the bypass at US 61 and widen US 61 to I-70 would result in a slightly lesser amount of impacts than those described above.

Far North Conceptual Corridor - The Far North Conceptual Corridor is a bypass with a west terminus located at Jonesburg, then diverging from existing I-70 to the north and reconnecting with I-70 at an east terminus two miles (3.2 km) east of the I-70/US 61 interchange. A concept within this corridor is to terminate at existing US 61 and widen US 61 south to I-70.

The one-mile (1.6 km) wide Far North Conceptual Corridor contains no designated natural areas, conservation areas or sensitive biological resources. It contains 9.6 miles (15.4 km) of perennial streams, 288 ponds totaling 146.6 acres (59.3 hectares), and one lake totaling 16.5 acres (6.7 hectares).

The 500-foot (152.4 m) wide alignment in the center of this corridor could impact one contiguous forest block over 500 acres (202.3 hectares), and there would be a total of approximately 548.6 acres (222 hectares) of forested areas impacted.

Aquatic community impacts would include 2,798 linear feet (852.8 m) of perennial streams, 48 ponds totaling 20.9 acres (8.5 hectares) and a small portion of one lake totaling 0.5 acres (0.2 hectares).

The concept to terminate the bypass at US 61 and widen US 61 to I-70 would result in a slightly lesser amount of impacts than those described above.

South Conceptual Corridor - The South Conceptual Corridor is a bypass with a west terminus located five miles (8 km) east of Jonesburg, then diverging from existing I-70 to the south and connecting with US 40 at an east terminus 3.5 miles (5.6 km) south of the I-70/US 61 interchange. A concept within this corridor is to reconnect with I-70 at Exit 209, one mile (1.6 km) west of the I-70/US 61 interchange.

The one-mile (1.6 km) wide South Conceptual Corridor contains the Frank Reifsnider State Forest Conservation Area and one sensitive biological resource, the Cooper's Hawk (*Accipiter cooperii*), which is ranked as S3, "rare and uncommon" in the state. This corridor also contains 5.7 miles (9.2 km) of perennial streams, and 317 ponds totaling 270.3 acres (109.4 hectares). There are no lakes in this corridor.

The 500-foot (152.4 m) wide alignment in the center of this corridor would have no impacts to the conservation area or the sensitive biological resource site mentioned above. However, it could impact one contiguous forest block over 500 acres (202.3 hectares), and there would be a total of approximately 453.8 acres (183.6 hectares) of forested areas impacted.

Aquatic community impacts would include 4,488 linear feet (1,367.9 m) of perennial streams, and 40 ponds totaling 25.5 acres (10.3 hectares).

The concept to reconnect to I-70 at Exit 209 would result in a slightly lesser amount of impacts than those described above.

Existing Conceptual Corridor - The Existing Conceptual Corridor would consist of a widening of the existing I-70 roadway with frontage roads in some areas, and loop roads at some of the interchanges.

This widening concept would have no impacts to designated natural areas, conservation areas, sensitive biological resources or contiguous forest blocks. However, there would be impacts to smaller forested areas totaling 31.2 acres (12.6 hectares).

Aquatic community impacts would include 100 linear feet (30.5 m) of one perennial stream, Big Creek, and 11 ponds totaling 3.1 acres (1.3 hectares).

Project Impacts and Mitigation

If it is likely that a recorded sensitive biological resource site would be adversely impacted, advance coordination with the MDC should take place during subsequent (second tier) environmental planning.

In addition to bridging perennial streams, other measures to minimize harm to aquatic species will include the management practices outlined by the MDC, such as: avoiding or minimizing disturbance to the stream banks and riparian zones; avoiding work in the stream channel, to the extent possible, between March 15 and June 15 (spawning); installing all standard erosion protection devices, such as ditch checks and silt fences, at the outset of construction and maintaining them throughout the period; seeding and mulching graded areas as soon as possible using MDC planting and seeding recommendations; and taking all necessary precautions to prevent petroleum products from entering streams.

Other mitigation measures include re-vegetation with native grasses, forbs and wildflowers along the right-of-way; and MoDOT's tree replacement program, approved in 1991. Rather than upland woodlands mitigation based on acreage, the MoDOT tree replacement policy states that two trees will be planted for every one tree greater than six inches dbh (diameter breast height) that is removed.

9. THREATENED AND ENDANGERED SPECIES

The species within the study corridor that are listed as federally threatened or endangered, and state endangered, were discussed in Chapter III, Section C. 7. Information obtained from the

U.S. Fish and Wildlife Service (USFWS) and the Missouri Fish and Wildlife Information System was reviewed, and designated critical habitat areas were mapped as environmental control points.

a. “No-Build” Strategy

The “No-Build” Strategy would allow designated critical habitat to remain constant with regard to project impacts, and would have no direct impact on threatened or endangered species.

b. Widen Existing I-70 (Preferred Strategy)

Rural I-70 Areas

The rural areas of the project include the lengths of existing I-70 outside the major metropolitan areas. The Widen Existing I-70 Strategy in the rural areas would consist of obtaining additional right-of-way on either the north or south side of the existing roadway to allow for additional lanes. This strategy, excluding Overton Bottoms and Mineola Hill, which are discussed separately below, would most likely have no direct impacts to threatened or endangered species based on current recorded data.

Although there are currently no recorded occurrences of threatened or endangered species within the rural widening areas of the I-70 corridor, the following species, described below, could occur in certain areas of the I-70 corridor, and should be given careful consideration as planning proceeds into subsequent (second tier) environmental analysis.

The federally threatened bald eagle (*Haliaeetus leucocephalus alasensis*) is a common summer migrant and winter resident throughout the state. Wintering bald eagles are common along the Missouri River and its tributaries, and around larger reservoirs, occupying large trees between November 15th and March 1st. The period between January 1st and March 1st is important for initiating nesting activity, and March 1st to May 15th is the most critical time for incubation and rearing young.

The gray bat (*Myotis grisescens*) occupies caves for maternity/transient purposes, and the Indiana bat (*Myotis sodalis*), occupies caves for hibernation in winter. However, the Indiana bat's maternity roost sites tend to be in dead or dying trees, greater than nine inches (22.9 cm) diameter at breast height, under loose exfoliating bark. The roost trees are generally within wooded riparian areas, floodplain forests or upland wood lots, and within 0.6 miles (1 km) of water.

The federally endangered Topeka Shiner (*Notropis topeka*) has been known to occur in small, clear, low-order prairie streams in Pettis, Cooper and Boone counties.

Overton Bottoms

The Widen Existing I-70 Strategy would cross the Missouri River at the existing bridge location in the area called Overton Bottoms, which was previously used as agricultural cropland. After the floods of 1993 and 1995, the USACE purchased land on each side of I-70 in the Overton Bottoms area. The north side is now the Big Muddy National Wildlife Refuge, managed by the U.S. Fish and Wildlife Service, and the south side is the Overton Bottoms Conservation Area, managed by the Missouri Department of Conservation. The USACE has agreed to reserve a 300-foot (91.44 m) wide corridor, parallel to both the north and south side of the existing I-70 right-of-way, for the purpose of expanding I-70.

There are currently no recorded locations of designated critical habitat or recorded occurrences of threatened or endangered species within the reserved corridor through the Overton Bottoms area. However, the large trees, being adjacent to a major river can be considered habitat of the federally threatened bald eagle. Construction of a new bridge in this area would impact some of these potential nesting and roosting trees. (A bald eagle nest was recorded in 1998, about six miles [9.6 km] upstream from the existing I-70 river crossing.)

In the Overton Bottoms area, it is possible that other threatened and endangered species could be present in the river and its environs. These species, listed below, should be carefully considered as planning proceeds to subsequent phases/tiers of environmental analysis.

The federally endangered pallid sturgeon is known to occur in the Missouri River, however limited data is available concerning preferred habitats in Missouri. It has been found in tributary mouths, over sandbars, along main channel borders and in deep holes in the river. The nearest and most recent occurrence of the pallid sturgeon in the Missouri River was recorded near the Lisbon bottoms in Howard County, 27 miles (43.5 km) upstream from the existing I-70 crossing.

The gray bat (*Myotis grisescens*) and the Indiana bat (*Myotis sodalis*), both federally endangered, have been on record as occupying two caves, Boone Cave and Lewis & Clark Cave, along the bluffs in the Overton Bottoms area, 1.5 - 2.5 miles (2.4 to 4 km) south of the existing I-70 crossing. The gray bat occupies the caves for maternity/transient purposes, and the Indiana bat occupies the caves for hibernation in winter. However, the Indiana bat's maternity roost sites tend to be in dead or dying trees, greater than nine inches (22.9 centimeters) diameter at breast height, under loose exfoliating bark. The roost trees are generally within wooded riparian areas, floodplain forests or upland wood lots, and within 0.6 miles (1 km) of water.

Two native Missouri River minnows, the sturgeon chub (*Macrhybopsis gelida*) and the sicklefin chub (*Macrhybopsis meeki*), are both federal candidate species. They occur along and over sandbars, in main channel border areas and chutes between the mainland and sandbar islands. There was a recorded occurrence in 1990 at what was once Taylor's Landing, just north of the existing I-70 bridge. Taylor's Landing, which was a boat ramp area, no longer exists, as it was destroyed by the flood of 1993.

In summary, the Overton Bottoms area is now being restored to native habitats and allowed to revert back to natural floodplain conditions. This will encourage wildlife populations and, in turn, could increase the chances of bald eagle and bat activity.

Mineola Hill

In the Mineola Hill area there are no designated critical habitats or previously recorded occurrences of federally listed threatened or endangered species. However, it is possible that the bald eagle, the gray bat and the Indiana bat could be present in this part of the I-70 corridor, as described for the rural areas above, and should be given careful consideration as planning proceeds into subsequent (second tier) environmental analysis.

The North Conceptual Corridor and the Existing Conceptual Corridor would have no direct impacts to currently known locations of threatened or endangered species.

Columbia Area

In the Columbia area there are three options: the Near North Conceptual Corridor, the Far North Conceptual Corridor, and the Existing Conceptual Corridor. In addition, the Near North and Far North Conceptual Corridors would also include some improvements to existing I-70 through Columbia, but with very little additional right-of-way needed.

Near North Conceptual Corridor - Within the one-mile (1.6 km) wide corridor there are no designated critical habitats or previously recorded occurrences of federally listed threatened or endangered species. This concept would have no direct impacts to current known locations of threatened or endangered species. However, it is possible that the bald eagle, the gray bat and the Indiana bat could be present in this part of the I-70 corridor, as described for the rural areas above, and should be given careful consideration as planning proceeds into subsequent (second tier) environmental analysis.

Far North Conceptual Corridor - (Same impacts and considerations as the Near North Conceptual Corridor.)

Existing Conceptual Corridor - The Existing Conceptual Corridor would have no direct impacts to current known locations of threatened or endangered species. Because this concept involves the existing I-70 roadway in and near an urban area, there is most likely no threatened or endangered species present within the additional right-of-way areas.

Warrenton, Wright City, Wentzville Area

In the Warrenton, Wright City and Wentzville area there are four options: the Near North Conceptual Corridor, the Far North Conceptual Corridor, the South Conceptual Corridor and the Existing Conceptual Corridor.

Near North Conceptual Corridor - Within the one-mile (1.6 km) wide corridor there are no designated critical habitats or previously recorded occurrences of federally listed threatened or endangered species. This concept would have no direct impacts to current known locations of threatened or endangered species. However, it is possible that the bald eagle, the gray bat and the Indiana bat could be present in this part of the I-70 corridor, as described for the rural areas above, and should be given careful consideration as planning proceeds into subsequent (second tier) environmental analysis.

Far North Conceptual Corridor - (Same impacts and considerations as the Near North Conceptual Corridor.)

South Conceptual Corridor - (Same impacts and considerations as the Near North Conceptual Corridor.)

Existing Conceptual Corridor - The Existing Conceptual Corridor would have no direct impacts to current known locations of threatened or endangered species. Because this concept involves the existing I-70 roadway, and is near urban areas, there is most likely no threatened or endangered species present within the additional right-of-way areas.

Project Impacts and Mitigation

In subsequent (second tier) environmental documents, informal consultation with the USFWS will be required to update threatened and endangered species information, and to determine whether or not impacts by the proposed I-70 improvements are likely to occur. If it is found that adverse impacts are likely to occur, measures to avoid or minimize harm to the species and their habitats will be developed. If the USFWS can concur that the species are not likely to be adversely affected, the formal consultation process can be avoided.

Although no known bald eagle nesting currently occurs near the I-70 corridor, should nesting eagles be found within a mile of the improvements prior to construction, appropriate action will be taken to minimize impacts to the nest site. This would include limiting construction activity within a mile of the nest from January 1 to May 15.

It is possible that the Indiana bat could occur anywhere in the I-70 corridor where there is suitable habitat. During the construction of the I-70 improvements, efforts will be made to avoid removing potential roost trees in probable habitat areas of the Indiana bat during the range-wide maternity period of April 1 through September 30.

Known locations of the pallid sturgeon, the sturgeon chub, the sicklefin chub, and the Topeka shiner are being avoided, and it is most likely that their critical habitat is not being impacted. However, efforts will be made to minimize harm to these aquatic species, since there is a potential for their occurrence in the I-70 corridor. In addition to bridging streams, other measures to minimize harm to aquatic species will include the management practices outlined by the MDC, such as: avoiding or minimizing disturbance to the stream banks and riparian zones; avoiding work in the stream channel, to the extent possible, between March 15 and June 15 (spawning); installing all standard erosion protection devices, such as ditch checks and silt fences, at the outset of construction and maintaining them throughout the period; seeding and mulching graded areas as soon as possible using MDC planting and seeding recommendations; and taking all necessary precautions to prevent petroleum products from entering streams.

10. HISTORIC AND ARCHEOLOGICAL RESOURCES

Historic bridges were researched at the Missouri Department of Transportation. MoDOT bridge maps (1995) were first used to identify all bridges within the (area of potential effect). Bridges determined to be over 50 years of age, according to the 1995 Service Rating for Bridges, were looked up in the *Missouri Historic Bridge Inventory, v. I-V* (Fraser design 1996). Of the seven known historic bridges identified within the area of potential effect, none were determined eligible for the National Register of Historic Places (Fraser 1996). National Register properties and cemeteries were field checked, so as to verify their present conditions and recorded locations. Of the 35 known cemeteries, four were not accessible and eight were not visible at the time of the field check. Despite the fact that these cemeteries could not be located, it remains possible that subsurface remains could be intact. The two National Register properties located in the Mineola Hill area, and known archaeological sites and cemeteries have been listed in Tables IV-11 through IV-26 accompanying the summary for each concept. Tabular information, when available, includes name or site number, location, cultural affiliation, type and potential for significance.

All cemeteries are protected by Missouri statutes. Archaeology sites considered highly significant include mounds, villages/habitations, caves/rock shelters and due to recent state reassessment, quarries. Sites designated as villages or habitations represent long term occupations that could contain intact subsurface deposits and burials. Caves and rock shelters, when undisturbed, frequently contain stratified deposits. Quarry sites have recently been determined significant because so few have been investigated and their potential remains unknown.

Lithic scatters are considered moderately significant. Usually, the temporal affiliation of such sites has not been determined. While they may be shallow surface scatters or short term occupations with little potential for new information, lithic scatters could also be the surface manifestation of larger village sites with intact features.

Camps have been considered low potential sites. Usually, few artifacts have been found and cultural affiliation is unknown. They are most likely short-term use sites with little potential for intact subsurface remains.

The potential of historic sites varies considerably, depending upon site type, date of occupation and condition. Significant sites should be associated with a person or event that is of local or national importance, or that can provide important historical information.

Rural I-70 Areas

There are 20 archaeological sites, two National Register properties and ten cemeteries within the rural sections of the proposed area of potential effect that could be affected by the proposed widening of I-70. In addition, three mounds were reported at site 23CP48 in Cooper County.

Table IV-11: Summary of Cemeteries and National Register Properties within Rural I-70 Areas

Cemetery/NRHP Name	County	Quadrangle	T'ship	Range	Section	Northing	Easting
Douglas Cemetery	Boone	Huntsdale	48N	14W	10	4313520	545050
Eliot Cemetery	Boone	Huntsdale	48N	14W	10	4313600	544300
Unknown Cemetery	Cooper	Boonville	48N	16W	8	4309900	526540
Hail Ridge Cemetery	Cooper	Boonville	48N	16W	8	4309880	526540
Unknown Cemetery	Lafayette	Mayview	49N	26W	34	4317100	433600
Unknown Cemetery	Lafayette	Mayview	49N	26W	34	4317140	432800
St. Paul's Lutheran Cemetery	Lafayette	Concordia	49N	24W	33	4315600	451250
Holy Cross Cemetery	Lafayette	Sweet Springs	48N	24W	1	4314780	457140
Fairview Cemetery	Saline	Sweet Springs	48N	21W	2	4313450	464150
Conley Cemetery	Montgomery	Montgomery City	48N	6W	20	4308100	620300
Baker House-NRHP	Montgomery	Montgomery City	48N	6W	24	4307450	627650
Graham Farmstead-NRHP	Montgomery	Montgomery City	48N	6W	27	4306500	623500

Table IV-12: Summary of Archaeological Sites within Rural I-70 Areas

ASM Site Number	Topographic Location	Site Size (sq. meters)	Cultural Affiliation	Site Type	Potential
23JA0054	2nd terrace		L. Archaic, Miss	village	H
23JA0133				lithic scatter	M
23LF0035	hill top		L. Archaic	habitation	H
23LF0142	ridge top		L. Archaic	lithic scatter	M
23SA0159	bluff top			lithic scatter	M
23SA0169/450	floodplain		Dalton, L. Archaic, E. Woodland	village	H
223SA0237	bluff top			camp	L
23CP0048	ridge top			3 mounds	H
23CP0054	No ASM Form				
23CP0056	No ASM Form				
23CP0057	No ASM Form				
23CP0058	No ASM Form		Felton Farm Mound		H
23CO0062	No ASM Form				
23CP0281	bluff top	25000		camp	L
23CP0282	bluff top	45000		camp	L
23CP0319	2nd terrace	16000	L. Archaic, L. Woodland-Miss.	villages	H
23BO1255/57	ridge top	12000		lithic scatter	M
23BO1256	bluff top	1200		lithic scatter	M
23MT0002	bluff slope	2000	Dalton - Late Woodland	Graham Cave	H
23MT0057	2nd terrace		M.-L. Archaic	lithic scatter	M

Overton Bottoms

The one crossing of the Missouri River occurs at Overton Bottoms. Numerous archaeological sites have been identified on the bluff top and at the base of the bluffs. Only two of these sites - 23BO1255/57 and 23BO1256- have been identified within the proposed corridor, but it is likely that others, as yet unidentified, could exist within the area of potential effect. In addition, a

number of caves and rock shelters utilized by prehistoric groups could exist along the bluff edge. The broad bottoms west of the bridge crossing have few reported archaeological sites. The Missouri River has been very active within its floodplain, destroying many sites. It is likely, however, that some prehistoric and early historic sites escaped destruction and lie buried beneath alluvial deposits.

Mineola Hill

The Mineola Hill region contains the only two National Register properties within the proposed area of potential effect. Graham Cave, one of the first archaeological sites nominated to the National Register, contains stratified cultural deposits. The earliest deposits date from its use as a shelter by some of the region's earliest residents during the Dalton Period (8500 - 7900 B.C.) It was used periodically into the 19th century when the Graham family, early American settlers in the region, procured saltpeter from the cave. Their farmstead, the second National Register property, is still standing just south of the interstate. It consists of their residence constructed in the 1820s and several outbuildings. Although the Grahams were only minor slaveholders, according to local folklore, slaves were sold from their property at the large rock formation, which is now in the median of the interstate. However, no supporting archival evidence has been found. Slave auctions were typically held at central locations in established communities. It is extremely unlikely that slave sales would have been conducted from a rock in an isolated rural setting. The rock did become a popular picnic area during the late 19th century, used by many visitors who came to Mineola for its therapeutic springs.

In addition to these places, it is likely that other unrecorded cultural resources exist on the bluffs or within the Loutre River bottoms.

Due to the significance of cultural resources within this portion of the Loutre Valley, widening the existing interstate would be problematic.

Columbia Area

Near North Conceptual Corridor - Two cemeteries and 33 archaeological sites are located within the Near North Conceptual Corridor. Sites 23BO336, 23BO343, and 23BO861 have burial mounds or graves. Eleven additional sites represent long-term residential settlements.

**Table IV-13: Summary of Cemeteries within the Columbia
Near North Conceptual Corridor**

Cemetery/NRHP Name	County	Quadrangle	T'ship	Range	Section	Northing	Easting
Prairie Grove Methodist Cemetery	Boone	Millersburg	48N	11W	6	4314100	568950
William Methodist Cemetery	Boone	Millersburg	48N	11W	6	4313860	569050

**Table IV-14: Summary of Archaeological Sites within the Columbia
Near North Conceptual Corridor**

ASM Site Number	Topographic Location	Site Size (sq. meters)	Cultural Affiliation	Site Type	Potential
23BO0332	ridge top			camp	L
23BO0334	1st terrace			village	H
23BO0335	1st terrace			camp	L
23BO0336	ridge top		M.-L. Archaic, L.Woodland (or Em. Miss.)	village, 2 mounds	H
23BO0337	1st terrace			camp	L
23BO0338	1st terrace			camp	L
23BO0339	ridge top			village	H
23BO0340	ridge top			village	H

23BO0341	ridge top		L. Archaic	camp	L
23BO0343	ridge top			village, graves, mound	H
23BO0398	1st terrace			village	H
23BO0423	ridge top	1600		camp	L
23BO433/1258	ridge top			village	H
23BO0434	ridge top			village	H
23BO0436	ridge top			village	H
23BO0441	ridge top			village	H
23BO0496	1st terrace			camp	L
23BO0500	1st terrace			camp	L
23BO0541	No ASM Form				
23BO0545	No ASM Form				
23BO0548	No ASM Form				
23BO0553	No ASM Form				
23BO0555	No ASM Form				
23BO0556	No ASM Form				
23BO0557	No ASM Form				
23BO0559	No ASM Form				
23BO0560	No ASM Form				
23BO0564	ridge top			village	H
23BO0859	floodplain		L. Archaic	village	H
23BO0861	ridge top			mound	H
23BO0865	ridge top	1600		camp	L
23BO1254	ridge top	400		lithic scatter	M
23BO1252	ridge top	10000		habitation	H

Far North Conceptual Corridor - This concept has seven cemeteries and 43 archaeological sites within the APE. Five sites -23BO532, 23BO561, 23BO563, 23BO814, and 23BO861- contain mounds or graves. Another 16 sites represent residential settlements. In addition, a possible Burlington chert quarry was identified at site 23BO883.

Table IV-15: Summary of Cemeteries within the Columbia Far North Conceptual Corridor

Cemetery/NRHP Name	County	Quadrangle	T'ship	Range	Section	Northing	Easting
Oakland Cemetery	Boone	Browns	49N	12W	17	4320150	561160
Unknown Cemetery	Boone	Browns	49N	12W	15	4320900	563780
Mt. Hope Cemetery	Boone	Hallsville	49N	12W	14	4319300	566550
Locust Grove Methodist Cemetery	Boone	Huntsdale	48N	14W	1	4315200	547810
Prairie Grove Methodist Cemetery	Boone	Millersburg	48N	11W	6	4314100	568950
New Providence Cemetery	Boone	Sturgeon SW	49N	13W	29	4317520	551800
William Methodist Cemetery	Boone	Millersburg	48N	11W	6	4313860	569050

Table IV-16: Summary of Archaeological Sites within the Columbia Far North Conceptual Corridor

ASM Site Number	Topographic Location	Site Size (sq. meters)	Cultural Affiliation	Site Type	Potential
23BO0100				lithic scatter	M
23BO338	1st terrace			camp	L
23BO423	ridge top			camp	L
23BO433/1258	ridge top			village	H
23BO434	ridge top			village	H
23BO436	ridge top			village	H
23BO441	ridge top			village	H
23BO0491	1st terrace		Miss	lithic scatter	M
23BO0493	1st terrace			camp	L
23BO0520	ridge top			village	H

23BO0522	ridge slope			lithic scatter	M
23BO0523	2nd terrace			camp	L
23BO0524	ridge top			camp	L
23BO0525	ridge top			village	H
23BO0527	ridge top			village	H
23BO0528	ridge top			village	H
23BO0531	floodplain			lithic scatter	M
23BO0532	ridge top			village, 3 mounds	H
23BO0546	No ASM Form				
23BO0553	No ASM Form				
23BO0561	ridge top			2 mounds	H
23BO0562	ridge top			camp	L
23BO0563	ridge top			village, 2 mounds	H
23BO0565	ridge top			village	H
23BO0814	ridge top		M. Archaic, Em. Miss. or Miss.	village, cairn	H
23BO0822	1st terrace			lithic scatter	M
23BO0823	1st terrace		L. Archaic	village	H
23BO0847	2nd terrace		M.-L. Archaic	village	H
23BO0861	ridge top			mound	H
23BO0877	1st terrace			lithic scatter	M
23BO0883	creek bank			quarry	H
23BO0884	slope base			camp	L
23BO0885	2nd terrace			camp	L
23BO0940	1st terrace			lithic scatter	M
23BO1039	No ASM Form				
23BO1183	ridge top	11827	M. or L. Woodland	habitation	H
23BO1222	ridge top	7500		habitation	H
23BO1252	ridge top			habitation	H
23BO1254	ridge top	400		lithic scatter	H
23BO1259	2nd terrace	10000		habitation	H
23BO1260	ridge top	30000		camp	L
23BO1261	ridge top	60000		habitation	H

Existing Conceptual Corridor - One cemetery is located within the Existing Conceptual Corridor. Of the 17 recorded archaeological sites in the APE, ten are villages; none are reported mounds or graves.

**Table IV-17: Summary of Cemeteries within the Columbia
Existing Conceptual Corridor**

Cemetery/NRHP Name	County	Quadrangle	T'ship	Range	Section	Northing	Easting
Memorial Park Cemetery	Boone	Columbia	48N	13W	2	4313400	556050

**Table IV-18: Summary of Archaeological Sites within the Columbia
Existing Conceptual Corridor**

ASM Site Number	Topographic Location	Site Size (sq. meters)	Cultural Affiliation	Site Type	Potential
23BO0100				lithic scatter	M
23BO338	1st terrace			camp	L
23BO423	ridge top			camp	L
23BO433/1258	ridge top			village	H
23BO434	ridge top			village	H
23BO436	ridge top			village	H
23BO441	ridge top			village	H
23BO0491	1st terrace		Miss	lithic scatter	M

23BO0493	1st terrace			camp	L
23BO0520	ridge top			village	H
23BO0522	ridge slope			lithic scatter	M
23BO0523	2nd terrace			camp	L
23BO0524	ridge top			camp	L
23BO0525	ridge top			village	H
23BO0527	ridge top			village	H
23BO0528	ridge top			village	H
23BO0531	floodplain			lithic scatter	M
23BO0532	ridge top			village, 3 mounds	H
23BO0546	No ASM Form				
23BO0553	No ASM Form				
23BO0561	ridge top			2 mounds	H
23BO0562	ridge top			camp	L
23BO0563	ridge top			village, 2 mounds	H
23BO0565	ridge top			village	H
23BO0814	ridge top		M. Archaic, Em. Miss. or Miss.	village, cairn	H
23BO0822	1st terrace			lithic scatter	M
23BO0823	1st terrace		L. Archaic	village	H
23BO0847	2nd terrace		M.-L. Archaic	village	H
23BO0861	ridge top			mound	H
23BO0877	1st terrace			lithic scatter	M
23BO0883	creek bank			quarry	H
23BO0884	slope base			camp	L
23BO0885	2nd terrace			camp	L
23BO0940	1st terrace			lithic scatter	M
23BO1039	No ASM Form				
23BO1183	ridge top	11827	M. or L. Woodland	habitation	H
23BO1222	ridge top	7500		habitation	H
23BO1252	ridge top			habitation	H
23BO1254	ridge top	400		lithic scatter	H
23BO1259	2nd terrace	10000		habitation	H
23BO1260	ridge top	30000		camp	L
23BO1261	ridge top	60000		habitation	H

Warrenton, Wright City, and Wentzville Area

Near North Conceptual Corridor - Six archaeological sites and eight cemeteries lie within the Near North Conceptual Corridor APE. Site 23SC28 is a reported mound and 23WN575 contains a Late Archaic village.

**Table IV-19: Summary of Cemeteries within the Warrenton to Wentzville Area
Near North Conceptual Corridor**

Cemetery/NRHP Name	County	Quadrangle	T'ship	Range	Section	Northing	Easting
Unknown Cemetery	St. Charles	Foristell	47N	1E	15	4300480	681810
Wright Cemetery	St. Charles	Wentzville	47N	2E	18	4300840	687320
Camp Branch Cemetery	Warren	Warrenton	47N	3W	10	4300840	653080
Wright City Memorial Cemetery	Warren	Wright City	47N	1W	16	4299800	672800
Unknown Cemetery 1	Warren	Warrenton	47N	2W	9	4302520	661780
Unknown Cemetery 2	Warren	Warrenton	47N	2W	9	4301670	661330
Unknown Cemetery 3	Warren	Warrenton	47N	2W	9	4301330	660520
Unknown Graves	Warren	Wright City	47N	2W	11	4301340	664620
Wesley Church Cemetery	Warren	Wright City	47N	1W	15	4300220	672360

Table IV-20: Summary of Archaeological Sites within the Warrenton to Wentzville Area Near North Conceptual Corridor

ASM Site Number	Topographic Location	Site Size (sq. meters)	Cultural Affiliation	Site Type	Potential
23SC0028	ridge slope	2		mound	H
23SC0040	floodplain			axe	L
23SC0981	hill top	6000	Historic	residence	L
23WN0077	hill top	7200	Historic	residence	L
23WN0078	hill top	70000		camp	L
23WN0575	hill top		Late Archaic	village	H

Far North Conceptual Corridor - Four cemeteries and six archaeological sites are encompassed within the Far North Conceptual Corridor. Four of the six sites are significant. Site 23SC28, also within the Near North Conceptual Corridor APE, is a reported mound. A Mississippian effigy pipe was found at 23SC73. Village sites include 23SC575 and 23SC579, with burials reported at the latter site.

Table IV-21: Summary of Cemeteries within the Warrenton to Wentzville Area Far North Conceptual Corridor

Cemetery/NRHP Name	County	Quadrangle	T'ship	Range	Section	Northing	Easting
Unknown Cemetery	St. Charles	Troy	48N	1E	32	4302740	679600
Unknown Cemetery (23SC759)	St. Charles	Troy	48N	1E	32	4305440	679920
Steinhagen Church Cemetery	Warren	Warrenton	47N	2W	4	4303420	653080
Unknown Cemetery	Lincoln	Warrenton NE	48N	1W	32	4304900	670520

Table IV-22: Summary of Archaeological Sites within the Warrenton to Wentzville Area Far North Conceptual Corridor

ASM Site Number	Topographic Location	Site Size (sq. meters)	Cultural Affiliation	Site Type	Potential
23SC0028	ridge top			mound	H
23SC0040	floodplain			axe	L
23SC0072				lithic scatter	M
23SC0073	bluff top		Miss	bird effigy pipe	H
23SC0575	hill top		Late Archaic	village	H
23SC0759	2nd terrace	165000	L. Woodland or Em. Miss.	village & burials	H

South Conceptual Corridor - The South Conceptual Corridor contains three cemeteries and 12 archaeological sites. Only one, 23SC836, a reported midden, is considered high potential.

Table IV-23: Summary of Cemeteries within the Warrenton to Wentzville Area South Conceptual Corridor

Cemetery/NRHP Name	County	Quadrangle	T'ship	Range	Section	Northing	Easting
Oak Grove Cemetery	St. Charles	Foristell	47N	1W	36	4295250	676300
Linn Cemetery	St. Charles	Wentzville	47N	1E	25	4292000	686400
Park Cemetery	St. Charles	Wentzville	47N	1E	25	4297460	686300

**Table IV-24: Summary of Archaeological Sites within the Warrenton to Wentzville Area
South Conceptual Corridor**

ASM Site Number	Topographic Location	Site Size (sq. meters)	Cultural Affiliation	Site Type	Potential
23SC0438	hill top	5000		lithic scatter	M
23SC0726	ridge slope	5000		lithic scatter	M
23SC0727	ridge slope	1600		camp	L
23SC0728	2nd terrace	3500		camp	L
23SC0832	hill top	6250		lithic scatter	M
23SC0834	hill top	625		camp	L
23SC0835	hill top	100		camp	L
23SC0836	hill top	900		midden	H
23SC0837	hill top	2500	Historic	residence	L
23SC0845	hill top	50		camp	L
23SC0894	hill top	225		camp	L
23SC0943	1st terrace	20000		lithic scatter	M

Existing Conceptual Corridor - Of the three archaeological sites within this alternate, only one is considered high potential, 23SC575, a Late Archaic village site. There are also four cemeteries within the APE.

**Table IV-25: Summary of Cemeteries within the Warrenton to Wentzville Area
Existing Conceptual Corridor**

Cemetery/NRHP Name	County	Quadrangle	T'ship	Range	Section	Northing	Easting
Smith Chapel Cemetery	St. Charles	Forstell	47N	1E	19	4298640	678030
Camp Branch Cemetery	Warren	Warrenton	47N	3W	10	4300840	653080
Unknown Graves	Warren	Warrenton	47N	3W	14	4300840	654300
Wright City Memorial Cemetery	Warren	Wright City	47N	1W	16	4299800	672800

**Table IV-26: Summary of Archaeological Sites within the Warrenton to Wentzville Area
Existing Conceptual Corridor**

ASM Site Number	Topographic Location	Site Size (sq. meters)	Cultural Affiliation	Site Type	Potential
23SC0575	hill top		L. Archaic	village	H
23SC0906	hill top	900	Historic	residence	L
23SC0907	hill top	625	Historic	refuse dump	L

Mitigation

Future work should include an architectural survey and a Phase I archaeological survey to identify historic buildings, bridges, districts, cultural landscapes and archaeological sites that meet National Register of Historic Places eligibility criteria. The location and description of previously recorded archaeological sites should be verified, and their present condition assessed. All cemeteries and mound sites should be avoided, if at all possible. Archaeological

sites with moderate to high potential should also be avoided. If avoidance is not feasible, plans should be made to either test the sites for significance or mitigate impact.

11. HAZARDOUS WASTE SITES

a. “No-Build” Strategy

The existing conditions would remain.

b. Build Strategies

No hazardous waste sites which would cause considerable cost and time to remediate were impacted by any of the concepts.

12. VISUAL QUALITY

Visual quality impacts are determined by the degree of change in the visual environment as related to viewer response. There are two distinct categories of viewers, or viewer response, to be considered: (1) viewers who are users of the project facility (i.e. views from the road); and (2) the "visual receptors", or people who can observe the roadway from an adjacent vantage point (i.e. views of the road). The most "sensitive" visual receptors are those individuals in residential areas who would have the potential for undesirable views of the road. Although the notable visual resources along the corridor possess the high visual quality that provides scenic viewing opportunities for users of the roadway, they are also potentially sensitive to the visual impacts resulting from encroachment of the roadway.

a. “No-Build” Strategy

The “No-Build” Strategy would not physically alter the existing environment through which the I-70 corridor travels. The existing visual environment is currently of low to moderate quality, caused by numerous billboards, poor pavement conditions and high traffic volumes. However, with little or no improvements, and the billboards remaining, the inevitable increase in traffic volumes (and the resulting congestion) could be perceived by visual receptors as an additional decrease in the visual quality of the existing environment.

c. Widen Existing I-70 (Preferred Strategy)

Rural I-70 Areas

The rural areas of the project include the lengths of existing I-70 outside the major metropolitan areas. The Widen Existing I-70 Strategy in the rural areas would consist of obtaining additional right-of-way on either the north or south side of the existing roadway to allow for additional lanes. This strategy, excluding Overton Bottoms and Mineola Hill, which are discussed separately below, would have a positive visual impact in the rural areas. The widening would result in the removal of several billboards, and would "clean-up" the corridor with new pavement, providing a perception of less traffic congestion.

Some residents adjacent to the facility may be subject to a view of the wider roadway. In this regard, since there is already an existing roadway in place, the "change" that would occur to the visual environment would be minimal. In addition, the adjacent visual receptors would be accustomed to the proximity of an interstate highway facility. As an exception, however, some of the new loop roads at the interchanges could bring the roadway system closer to some residences that are located nearby, thus resulting in a visual intrusion and a moderate to high degree of visual impact in specific areas.

Some of the rural areas possess scenic qualities that can provide travelers with some interesting views *from* the road. For example, several of the larger streams contain wooded riparian environments that could be viewed from the roadway's higher embankment or bridge elevations as the stream is crossed. There are also forested areas and small lakes that could provide viewing opportunities to roadway users.

Overton Bottoms

The Widen Existing I-70 Strategy would cross the Missouri River at the existing bridge location in the area called Overton Bottoms, which was previously used as agricultural cropland. After the floods of 1993 and 1995, the USACE purchased land on each side of I-70 in the Overton Bottoms area. The north side is now the Big Muddy National Wildlife Refuge, managed by the U.S. Fish and Wildlife Service, and the south side is the Overton Bottoms Conservation Area, managed by the Missouri Department of Conservation.

The area is now being restored to native habitats and allowed to revert back to natural floodplain conditions, thus increasing the area's degree of visual quality. What was once agricultural land with a low to moderate degree of visual quality, is now a natural area with a high degree of visual quality. Since this change in land use has occurred, the roadway is less visually compatible with the surrounding environment than it had been when the land was used for agricultural cropland. However, the fact that there is already an existing roadway and bridge in this location minimizes the "change" that would occur to the visual environment in this area. Therefore, the widening of existing I-70, and an additional bridge, would have a moderate degree of visual impact in the Overton Bottoms area.

Users of the KATY Trail State Park would have views of the new bridge and new lanes, but it would be similar to the views to which they are now accustomed.

The Missouri River and the Overton Bottoms area are two of the most notable scenic resources in the I-70 corridor. These areas would provide excellent views, *from* the road, of the river, riparian forests, wetlands, wildlife and limestone bluffs. There is also the potential for the development of scenic overlooks on the highpoints at the west end of the bottoms area.

Mineola Hill

The Mineola Hill area is another notable visual resource in the I-70 corridor. This scenic area contains the Loutre River and its wooded riparian environment, the forests and bluffs of Graham Cave State Park, an historic farmstead and a natural rock formation in the median of I-70. Adjacent landowners in this area are very interested in preserving the existing visual quality.

North Conceptual Corridor - This concept, being on new alignment and diverging from the existing roadway, would travel through forested areas and the Loutre River riparian environment, both of which possess a high degree of visual quality. This would result in a high degree of visual impact to the environment. It would also travel to the north of the Graham Cave State Park where it could become visible from certain areas of the park. Even though this new alignment would have a negative impact on the environment, it would provide the users of the roadway with interesting views of the forested areas and the Loutre River riparian environment.

Existing Conceptual Corridor - The Existing Conceptual Corridor would have a low degree of visual impact to the environment in this area. Since there is already an existing roadway in place, the "change" that would occur to the visual environment would be minimal, and the adjacent visual receptors would be accustomed to the proximity of an interstate highway facility.

The views *from* the road would essentially remain the same, consisting of forested areas, the Loutre River riparian environment, an historic farmstead and a natural rock formation in the median.

Columbia Area

In the Columbia area there are three concepts: the Near North Conceptual Corridor, the Far North Conceptual Corridor, and the Existing Conceptual Corridor. In addition, the Near North and Far North Conceptual Corridors would also include some improvements to existing I-70 through Columbia, but with very little additional right-of-way needed.

Near North Conceptual Corridor - The Near North Conceptual Corridor, being on new alignment and diverging from the existing roadway, would travel through agricultural pasture land where it would have a moderate degree of visual impact; and through several wooded areas, riparian environments and some residential areas where it would have a high degree of visual impact. Interesting views *from* the road would be possible at the wooded areas, and at the stream crossings where riparian environments could be viewed from the elevated roadway.

Far North Conceptual Corridor - The Far North Conceptual Corridor, also being on new alignment and diverging from the existing roadway, would travel through the same types of landscape, and have the same degree of visual impacts and viewing opportunities as those described for the Near North Conceptual Corridor above.

Existing Conceptual Corridor - The Existing Conceptual Corridor would consist of widening the existing roadway and adding frontage roads in some areas. The existing visual environment along the I-70 corridor through Columbia is currently of low to moderate quality. Much of the corridor is lined with development that lacks harmonious or cohesive aesthetic relationships. The widening of existing I-70 through the Columbia area would provide somewhat of a "clean-up" effect, and have a positive impact on visual quality.

Some residents adjacent to the facility may be subjected to a view of the wider roadway. In this regard, since the existing roadway is currently visible from these areas, the "change" that would occur to the visual environment, throughout most of the alignment, would be minimal, and the degree of visual impact would be low to moderate. In some areas, however, the new frontage roads would bring the roadway closer to residential areas, and become more visible to some of those that had not previously had a view of the road, resulting in a high degree of visual impact. The views *from* the road would essentially remain the same as those that currently exist.

Warrenton, Wright City, Wentzville Area

In the Warrenton, Wright City and Wentzville area there are four concepts: the Near North Conceptual Corridor, the Far North Conceptual Corridor, the South Conceptual Corridor, and the Existing Conceptual Corridor.

Near North Conceptual Corridor - The Near North Conceptual Corridor, being on new alignment and diverging from the existing roadway, would travel through agricultural land where it would have a moderate degree of visual impact; and through several wooded areas, riparian environments and a few residential areas where it would have a high degree of visual impact. Interesting views *from* the road would be possible at the wooded areas, and at the stream crossings where riparian environments could be viewed from the elevated roadway.

Far North Conceptual Corridor - The Far North Conceptual Corridor, also being on new alignment and diverging from the existing roadway, would travel through the same types of

landscape, and have the same degree of visual impacts and viewing opportunities as those described for the Near North Conceptual Corridor above.

South Conceptual Corridor - The South Conceptual Corridor, also being on new alignment and diverging from the existing roadway, would travel through the same types of landscape, and have the same degree of visual impacts and viewing opportunities as those described for the Near North Conceptual Corridor above.

Existing Conceptual Corridor - The Existing Conceptual Corridor would consist of a widening of the existing I-70 roadway with frontage roads in some areas, and loop roads at some of the interchanges. This widening would require less additional right-of-way than the rural area widening, because there would be a narrow concrete barrier median rather than a much wider grassed median that would be used in the rural areas. Since there is already an existing roadway in place, the "change" that would occur to the visual environment would be minimal. In addition, the adjacent visual receptors would be accustomed to the proximity of an interstate highway facility. The result would be a low degree of visual impact throughout most of this corridor. As an exception, however, some of the new loop roads at the interchanges could bring the roadway system closer to some residences that are located nearby, thus resulting in a visual intrusion and a moderate to high degree of visual impact in specific areas. The views *from* the road would essentially remain the same as those that currently exist.

Mitigation

The single most important factor in determining visual compatibility of the roadway is the relative integration of the roadway with existing topography. Visual impacts can be minimized in cut and fill areas by "benching" rock cuts, utilizing retaining walls and by re-vegetating soil slopes with native plants in the rural areas. These measures serve to somewhat mitigate the views *of* the roadway and reinforce the natural beauty of the area. In urban areas, and in areas where the roadway is visible to residences, landscaping with evergreen trees and shrubs can help to screen and soften the views of the road.

Mitigation could also involve the removal of billboards in the scenic areas of Mineola Hill and the Overton Bottoms area.

F. Joint Development and Transportation Enhancements

1. "NO-BUILD" STRATEGY

The "No-Build" Strategy would offer very limited, if any, joint development opportunities within the I-70 Corridor.

2. BUILD STRATEGIES

The build strategies however, with their possible conceptual corridors, would provide opportunities for joint development within the entire I-70 Corridor. These build strategies include the preferred Widen Existing, New Parallel Facility, and New Parallel Toll Road. The two aforementioned areas (in Section B.2.h.) of Overton Bottoms and Mineola Hill provide the greatest opportunities for joint development. Special meetings were held specifically addressing these two areas and the content and ideas expressed at those meetings are described below.

a. Overton Bottoms

Overton Bottoms is the area where existing I-70 crosses the Missouri River. An approximate 300-foot section of right-of-way has been reserved on either side of the existing bridge for the future transportation improvements to the I-70 Corridor. The preferred strategy of widening to the north of the existing bridge and some transportation enhancements and joint development concepts are shown in Appendix D. An on-site meeting was held near Rocheport with the appropriate resource agencies on February 22, 2001, to discuss joint development and enhancement possibilities and future partnering potential. Resource agency and meeting participants included: U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, Federal Highway Administration, Missouri Department of Natural Resources, Missouri Department of Conservation, Missouri Department of Tourism, Missouri Department of Transportation, Missouri River Communities Network, Overton Wooldridge Levee District and the University of Missouri. A summary of the meeting follows:

- There are many possible joint development and enhancement opportunities in this area. A multi-agency effort would be best with regard to support and ownership of possible endeavors. The agencies in this meeting should strive to work together and this project affords an opportunity to make a new river crossing compatible with resource agencies' plans and visions. This group of agencies should consider the possible formation of a consortium of agencies to work together in this geographic area. This consortium could be together for the long-term.
- The highway construction activities could be coupled with wetland creation or re-creation (borrow areas). There is a need to consider the Overton Bottoms area and its visual character. This area would be a natural for enhancements possibly funded by transportation enhancement funds administered by the Missouri Department of Transportation and the Federal Highway Administration.
- The U.S. Army Corps of Engineers has been doing habitat mitigation in the area since 1986. The Corps goal is to construct mitigation sites with a minimum of impact and not encourage a lot of public recreation. The Corps will also restore the boat ramp just north of the existing bridge.
- The U.S. Fish and Wildlife Service indicated that Congress had authorized the purchase of 60,000 acres of bottomland in the Missouri River basin. It is to be used for habitat restoration and is keyed to endangered and other species. It was discussed that the Corps could fund an activity and that the Fish and Wildlife Service could fund the evaluation of that activity (chute construction and evaluation).
- One desire that included considerable discussion was the location of a visitor's center in this area. It would help connect people to the river environment and get them to use it. It was mentioned that historically, the Missouri River was the I-70 (transportation route) in the early days of exploration and settlement. It would be desirable to have a visitors' center constructed because of the upcoming Lewis and Clark celebration. Also, a visitors/interpretive center concept is very appealing to the Missouri Department of Tourism. This would be a good location and tourism could be a key for this area and the State of Missouri as a whole. Various specific location concepts in this area (bluffs, two locations, one location, etc.) were discussed. One location concept was one center location accessible by both east and westbound traffic. Included could be a turn-around area for people to visit local attractions after viewing the visitor/interpretive center. The possibility of using Environmental Protection Agency funds for part of the infrastructure

of a visitors' center was mentioned. The center could illustrate best management practices like improving water quality, for instance. In addition to the travelling public, use of the center could include the local public from the Boonville, Columbia and Rocheport areas. This could include school children from the area.

- Recreational trail enhancement also received a lot of discussion. This area presents the opportunity to tie into the KATY Trail and cross the river by way of a hike-and-bike lane on or attached below a new Missouri River bridge. A recreational trail could be constructed to connect to the visitors/interpretive center. Visitors to the center could use a trail system to get away from the highway and enjoy the Overton Bottoms area.

b. Mineola Hill

Mineola Hill is an area where the existing I-70 crosses the Loutre River valley, located in Montgomery County. Other environmental features located in the Mineola Hill area and adjacent to I-70 include Graham Cave State Park north of I-70, Graham Farmstead south of I-70 and a substantial rock feature located in the median of I-70. This rock feature has been referred to historically as Graham, picnic, or slave rock. All these features and optional concepts within the preferred widening strategy are shown in Appendix E.

A meeting at the Missouri Department of Natural Resources was held with key resource agencies to discuss the importance of the Mineola Hill area and the possible corridor concepts. Resource agency and meeting participants included: Missouri Department of Natural Resources, Missouri Department of Conservation, Missouri Department of Transportation and the Federal Highway Administration. Highlights of the meeting follow:

- There is a lot of history in this area -- US 40 in 1953, and I-70 in 1965, plus the Graham Farmstead considered to be eligible for the National Register of Historic Places. Also, the Graham Cave State Park will be there forever, so we need to think long term with regard to transportation improvements and enhancements.
- Currently there is no outdoor advertising in this area, the Loutre River valley. That is because the landowners do not want it. This area is one of the more aesthetic or positive visual sections of I-70 across the state. It is also one of the few areas with a wide median, that includes 'slave rock,' and this area can show that Missouri values nature. There is a need to protect the viewscape. This could be a multi-agency joint development common goal.
- The Missouri Department of Natural Resources' priority in this area is the cave, the rock and the farmstead. The preference is to stay out of the cave/park and keep the rock in place. Even though the rock may not have legal status, it is viewed by many as a place of historic significance. There was also concern expressed about a conceptual corridor adjacent to the north boundary of the park. This is where camping is provided within the park and the concern is with possible noise impacts. The preference expressed by the Department of Natural Resources was to widen the existing with careful attention given to not impacting the rock.
- The idea of using local architecture in rest areas was discussed, plus the idea of using a low frequency radio transmitter, either from the park or possibly the highway rest areas, to inform the travelling public of the features of interest within the Mineola Hill area.

It was also discussed that perhaps a collective group from the resource agencies could look at and keep track of the scenic aspects of the entire I-70 corridor across the state. Missouri Department of Conservation areas and others could involve joint needs and scenic opportunities between or among state agencies. It was mentioned that the more appropriate time for agency partnering for detailed joint development opportunities would be during the second tier studies.

c. Missouri Department of Conservation Meeting

On April 12, 2001, a presentation of the I-70 project was made to the quarterly meeting of field MDC personnel in the Rocheport City Hall. This presentation included an I-70 project overview that discussed the purpose and need, range of strategies, first tier environmental analysis approach, and the current status of the project. There was a question and answer session that included questions about existing wildlife and highway conflicts, possible mitigation for wildlife crossings along the I-70 Corridor, and possible larger in scope concerns by the MDC for the entire 199 mile (320.3 km) length of the project. It was discussed that this highway projects presents a unique opportunity for comprehensive, whole-corridor joint development among the resource agencies and the Missouri Department of Transportation.

G. Energy and Construction Impacts

1. “NO-BUILD” STRATEGY

The “No-Build” Strategy, due to its very definition, requires no construction along I-70, and thus will have no increased energy impacts.

However, over time, energy use - specifically gasoline and diesel fuel - will increase due to increased travel times along the corridor resulting from congestion.

2. BUILD STRATEGIES

For all build strategies, measures will be taken to reduce energy consumption, including limiting the idling of construction equipment and employee vehicles, encouraging carpools or vanpools among construction workers and locating staging areas as close as possible to work sites.

For any build concept, traffic delays are anticipated during the reconstruction of I-70 along the existing alignment. Reductions in lane widths and shifts in traffic to temporary pavement, particularly in the area of bridges over I-70 and interchange ramps, will reduce traffic speeds and cause delays during peak travel times. To minimize the impacts to traffic, the highway will be widened to one side or the other in the rural areas to allow for the new eastbound or westbound lanes to be completed while traffic utilizes the existing four-lane facility. Traffic can then be shifted, with one direction on new pavement and one direction on old pavement, allowing the construction of the new pavement in the opposite direction. See Chapter II for graphics illustrating this staged approach to construction.

In the urban areas, reconstruction will require extensive traffic control to facilitate the construction. Longer delays are anticipated in these locations. Temporary pavement, narrow lanes and no shoulders characterize some of the measures necessary to facilitate construction within a restricted area.

Delays to traffic on cross roads are also anticipated due to reconstruction of interchanges. Interchange construction will typically be accomplished by offsetting the crossroad to one side or the other of the existing crossroad to allow for construction of a new bridge over I-70 without interrupting traffic on the existing bridge. In some cases, the entire interchange could be moved

away from the existing location by up to ¼-mile (0.4 km) in order to minimize construction delays and allow for implementation of better access management.

Delays to traffic in areas of roadway relocation or bypass construction will have impacts to existing I-70 traffic only at the points they tie to the existing highway. Impacts, including temporary closures and detours, may be required on county and other roads crossing the new alignment.

One location will produce significantly greater delays. At the Mineola Hill area in Montgomery County, construction in the vicinity of the Graham Farmstead, Slave Rock and Graham Cave State Park will not allow for offset construction of the new roadway. Staged construction, temporary widenings and reduced shoulder widths in conjunction with steep grades at this location will reduce speeds and cause backups. This construction will also drastically increase traffic using old US40 through Mineola south of existing I-70, as was the case during the 2000 resurfacing and bridgework done in this location.

It is expected that the various delays for traffic traveling through a construction zone will result in temporary increased use of energy, in this case gasoline and diesel fuel. However, long term, the improvements to I-70 will result in decreased travel time. This will reduce the use of gasoline and diesel fuel required for travel on the highway.

Air quality impacts in the vicinity of construction are localized and temporary. Dust particles stirred up during construction and vehicle emissions from construction equipment and delayed vehicles will temporarily affect air quality.

Construction of bridge piers in streams and rivers will increase both the suspended solids and turbidity of downstream waters. Temporary sediment discharge impacts could include loss of clarity in the water as the river or stream becomes turbid, deposition of sediment in the river or stream bed that may affect fish spawning areas and an increase in soluble constituents that may be attached to the sediment. Appropriate erosion control measures will need to be implemented to minimize these affects.

Wildlife in the immediate vicinity of construction may be affected by the increased noise and activity of construction operations. Impacts are likely to be more severe along any roadway realignment or bypass location because the wildlife is less accustomed to human disturbance factors in these areas. Selective siting and timing of construction operations could help reduce impacts to some wildlife, such as nesting birds.

There could be spills or leaks of chemical substances from construction equipment. The possibility exists for spills directly into streams or rivers, as well as spills occurring on soils nearby that migrate into streams or groundwater.

Individual roadway construction projects in the corridor will attempt to balance the material taken from cuts with the amount used in fills. The selection of borrow sites and waste sites will be the responsibility of the contractor, who will be responsible for obtaining any necessary clearances for their use, and for implementing appropriate erosion control measures on those sites.

Construction in the area of Danville and Mineola Hill may discourage some visitors from utilizing Graham Cave State Park, which sits adjacent to I-70. Delays, noise, dust and other factors could provide a less enjoyable experience for park visitors.

Road construction interferes with the natural movement of water in several ways. Removal of vegetation reduces and changes overland flow characteristics. Embankments may impede the flow of aquifers. Pressure buildup could cause embankment failures, resulting in increased erosion. Cut slopes may intersect and drain aquifers.

Construction of cuts and fills removes vegetation and disturbs soils, intensifying the effects of natural erosion. Before cuts and fills revegetate, increased sedimentation from erosion can be expected. Road construction generally increases yield in the first few years before cut and fill slopes revegetate. Chronic inputs of sediment into stream systems from slopes that do not revegetate can have a detrimental effect on aquatic organisms.

H. Secondary and Cumulative Impacts

Secondary and cumulative impacts may occur outside the right-of-way and are generated as a result of changes in development patterns. Secondary or cumulative impacts may be unintended consequences of roadway improvements. These impacts can include increases in traffic volumes outside the study corridor; or changes in population, housing, employment, tax base or other land use changes.

Regulatory guidelines for evaluating secondary and cumulative effects include NEPA, its related regulations, and FHWA regulations and advisories. The National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347) directs federal agencies to examine the consequences of proposed activities in light of the overall goal to protect and enhance the human environment. The agencies must examine direct and observable impacts (primary effects) in addition to those that may be indeterminate and not easily recognized or quantified (secondary and cumulative effects). NEPA defines secondary and cumulative effects as:

The impact on the environment which results from the incremental impact of an the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7).

The Council on Environmental Quality regulations for implementing the procedural provisions of NEPA with regard to secondary effects are contained in 40 CFR Parts 1508.8 and 1508.25. These guidelines state that secondary effects may include induced changes in the pattern of land use, population density, or growth rate; and related effects on air, water and other natural systems, including ecosystems.

The Federal Highway Administration implements NEPA and CEQ guidelines under 23 CFR Part 771. This regulation provides procedures for the preparation of environmental impact statements and related documentation, including requirements and procedures for environmental approvals for federally funded highway projects, although secondary and cumulative effects are not directly defined or referenced in this regulation.

In April 1992, FHWA prepared a position paper titled “Secondary and Cumulative Impact Assessment in the Highway Impact Development Process.” This paper states that secondary and cumulative effects will become important issues that will temper decisions made by FHWA and state highway administrations on project scope, location and mitigation. The paper further encourages FHWA and the state highway administrations to develop and use techniques to incorporate secondary and cumulative effect issues into the highway development process in order to fulfill the NEPA mandate of environmentally sensitive decision making.

1. LAND USE

Changes in land use can be estimated by applying standard conversion factors, which are generally based on the number of households or employed persons to units of land. These conversion factors vary according to the type of activity, local planning ordinances and guidelines and the economic and social characteristics of the region. Estimates of land use changes are further dependent on the level of detail of available residential and employment data. The most comprehensive available data is at the county level, although county data is not sufficiently precise to reflect the rural nature of the area immediately adjoining the I-70 corridor.

In addition, the existence of adequate utilities and other infrastructure can be an attraction for development. Companies and individuals generally try to focus their investment in new factories or homes, and usually prefer not to invest in roadways, water service or sewer lines. Communities or areas with these types of facilities can often better attract development. Further, development is a generator of tax and rate revenues that contribute to the initial investment in the utilities and infrastructure.

Community bypasses, bypass interchanges and existing highway sections that link the "new" route to the communities, are the most likely areas of a region to attract development. Existing highway sections, which are no longer part of the primary route, but which still function as connectors to the new route are also viable locations for future development, as are the corridors connecting the old and new roadways. The basic infrastructure is already in place, the typical level of traffic is high, and the roadways usually have unrestricted access. These three features are important factors to attract development.

The bypass concepts would provide visible and potentially desirable locations for development. This is especially true if the bypass is a limited or restricted access corridor. Studies indicate that a natural development progression is associated with the creation of a bypass interchange. Gas stations are often the first evidence of increased development. They are followed by fast-food restaurants, motels, sit-down restaurants, truck stops and finally hotels and shopping centers. At each stage, the density of development increases in terms of the number of similar facilities, such as more gas stations, as well as the addition of new types of commercial development.

The level of development is a function of the distance from the interchange to the nearest community, the availability of public water and sewer services, the distance to the nearest interchanges and proximity to a major metropolitan area. Usually, this development uses land that is under-developed or agricultural in character.

The type and amount of development is a function of expected natural (no-build) and stimulated (build) growth in the area. In a narrow sense, natural growth is defined as the growth unrelated to the development of the road system. For example, if there is a high level of in-migration of new companies or the expansion of existing ones, population will be expected to increase, new households form and employment levels increase. Stimulated growth can be related to the expansion of the infrastructure, such as a new or improved highway, extension of water lines or added capacity at a sewage treatment plant.

The type and amount of development usually reflects the existing situation and is often a continuation of past trends. Unless a series of factors emerge to change the developmental structure of the region, the fundamental characteristics of an area tend to be preserved.

Within the I-70 Study Corridor, the location of the development will be highly related to the selected location of the new corridor, as well as the locations of current and future interchanges.

Since the estimated expansion of the population, households and employment is expected to increase the tax base, no additional mitigation measures would be necessary.

2. PARKLANDS

Although a “No-Build” Concept would avoid direct impacts to parklands, joint development opportunities that could have been possible with the build concepts would be lost.

The build concepts, especially the bypass concepts, could result in secondary impacts resulting from improved transportation access. As ensuing development expands around existing parkland facilities, particularly in urban areas, some encroachment could take place because of street widening or changes in land use/zoning. Increased development could also result in increased noise levels and visual impacts in some parklands that were previously somewhat remote.

A positive secondary impact could occur in urban areas in the form of park system expansion. A trend of expanding development in an area can trigger the city to purchase more property to be preserved as parkland or open space corridors -- land that would have otherwise been at the discretion of individual property owners.

3. PRIME FARMLAND

The I-70 widening and bypass concepts may result in secondary impacts to prime farmland due to farmland conversion along the new right-of-way. Farmers affected by the conversion of all or part of their land to the development of a roadway may choose to no longer farm or cultivate their land. As a result, more farmland soils could be taken out of production if farmers choose to sell their land for non-farm uses. If the farmland is sold, it may be subdivided and converted to commercial or residential land use.

A new or improved roadway may, at some time in the future, act as a catalyst for increased growth, relocated development and expansion in the region. New development would depend on the location, and such development would be expected to occur in areas already near the main population centers. With the Widen I-70 Strategy, secondary impacts to the farmland resource are likely to be minimal. However, the bypass concepts may spur enough growth in some areas that large-scale land-use changes may occur. In this case, the cumulative impacts of the new facility on the farmland base may be higher.

4. TERRESTRIAL AND AQUATIC COMMUNITIES

Although the direct loss of forest acreage can eliminate or reduce the size of habitats, secondary and cumulative impacts can also occur as a result of habitat fragmentation, which can have an adverse effect on species diversity. Habitat fragmentation in both terrestrial and aquatic areas can create variable-sized parcels or “islands” of viable habitats that become isolated. Secondary and cumulative impacts could also result by inducing more development within the corridor, especially along the bypass alignments. As more land is encroached upon by private development, the potential for disturbance of natural areas increases.

It also follows that if the roadway is improved so that accidents are reduced, and the chance for unintentional discharges of hazardous or toxic materials is diminished, the potential for impacts to terrestrial and aquatic communities will be reduced.

5. THREATENED AND ENDANGERED SPECIES

Much of the undeveloped land near and adjacent to the I-70 corridor already exhibits substantial amounts of disturbance and/or development, therefore, most of these areas are generally unlikely to harbor listed species that could be impacted by secondary development. Most of the recorded habitat locations are remote and are far enough removed from the I-70 corridor to be secondarily impacted by the I-70 improvements. However, there are two exceptions in the Columbia area relating to the bypass concepts. With the Far North bypass concept, gray bats have been known to occur in Holton Cave, located about one mile (1.6 km) northwest of the 500-foot (152.4 m) wide alignment. With the North bypass concept, Indiana bats have been known to occur in a wooded riparian area along Hinkson Creek, about one mile south of the 500-foot (152.4 m) wide alignment. In either case, induced future development could eventually impact these two habitat areas. The potential for cumulative impacts to listed species is considered low.

In addition, if the roadway is improved so that accidents are reduced, and the chance for unintentional discharges of hazardous or toxic materials is diminished, the potential for these types of impacts to threatened and endangered species will also be reduced.

6. VISUAL QUALITY

The Widen Existing I-70 Strategy and the bypass concepts would secondarily and cumulatively impact the visual quality of the environment as increases in growth, development and traffic volumes occur as a result of the new or improved roadways. New development, in the absence of visual design guidelines and regulations, and increased traffic volumes will contribute to a decline in the visual quality of the environment as open or natural areas become built up.

7. WETLANDS AND WATERS OF THE U.S.

There is the potential for the widening of I-70 to contribute to secondary impacts to wetlands and other waters of the U. S. During the construction phase, activities that impact these sites through sedimentation, changes in the nature of stream hydraulics, or clearing of vegetation in riparian habitat, are likely to have adverse effects on the typical wetland functions and values of downstream or downslope Waters of the U.S., including wetlands. Care must be taken during the planning and construction phases to effectively predict these types of impacts and avoid or minimize them.

Improvements to an existing roadway and/or a new roadway, built to current design standards, will likely reduce the number of accidents. This in turn would reduce the potential for the by-products and chemical contaminants that could run off the road. However, a new or widened roadway adds to the amount of pavement area that must be maintained, resulting in a cumulative increase in the amount of run-off from salt, de-icing agents and automotive by-products. Eventually those wetlands and other waters that are affected by a prolonged concentration of sedimentation or contaminant run-off could suffer from diminished function and value.

The I-70 widening and bypass concepts may also, at some time in the future, act as a catalyst for increased growth, relocated development and expansion in the region. New development along a new or improved roadway can result in more wetlands or waters being filled or impacted either with or without permits. New development that takes place, without due consideration being given to the run-off potential, can also result in increased erosion and sedimentation that can reach existing wetlands and waters of the U. S.

I. Permits

With the “No-Build” Alternative, the planned (and future) interchange improvements would require the usual construction permits, and some may require a Section 404 permit.

Permits applicable to the Widen Existing I-70 Strategy may be categorized into two groups: regulatory permits and construction permits.

1. REGULATORY PERMITS

a. Section 404 of the Clean Water Act (U.S. Army Corps of Engineers)

This act prohibits the discharge of dredged or fill material into “Waters of the U.S.” unless exempted or authorized by the U. S. Army Corps of Engineers. Section 404 is the primary federal statute that implements federal regulatory policies concerning the protection of wetlands as specified in various orders and regulations. Depending upon the extent of impacts to each wetland area and each stream crossing (whether with a bridge or a culvert), specific portions of the I-70 improvement projects could be subject to a nationwide permit or an individual permit. Nationwide permit number 14 may authorize discharges in Waters of the U.S., including wetlands, as a result of linear transportation crossings if the impact to the water of the U.S. is 1/2 acre (0.2 hectare) or less. If this threshold is exceeded, it is likely that the Corps would require an individual permit.

b. Section 9 of the Rivers and Harbors Act (U.S. Coast Guard)

This act regulates the construction of bridges and causeways on navigable waterways of the United States. The Widen Existing I-70 Strategy would require a new bridge structure over the Missouri River near Rocheport, with supports placed in the river. Therefore, a Section 9 permit may be required from the U.S. Coast Guard.

c. Section 10 of the Rivers and Harbors Act (U.S. Army Corps of Engineers)

This act regulates the obstruction or alteration of navigable waters of the United States. The Widen Existing I-70 Strategy would require a new bridge structure over the Missouri River near Rocheport, with supports placed in the river below the ordinary high-water mark. Therefore, a Section 10 permit may be required from the Corps.

2. CONSTRUCTION PERMITS

MoDOT, in coordination with the MDNR, has developed a construction water pollution control program to protect the adjacent environment from sedimentation and construction material pollutants discharged from construction activities. These procedures and specifications will be utilized for the highway construction, and MoDOT is committed to assuring the best management practices by the highway contractor.

Examples of best management practices might include some of the following procedures. Pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage or other harmful material shall not be discharged from the project. Water pollution can be controlled through the use of berms, slope drains, ditch checks, sediment basins, seeding and mulching, straw bales, silt fences and other erosion control devices.

This agreement satisfies the requirement for a National Pollutant Discharge Elimination System (NPDES) permit, Section 402 of the federal Clean Water Act and the Missouri Clean Water Act.

Other construction-related permits could include temporary batch-plant permits issued by MDNR. Mitigation plans will be done to comply with the specific permit requirements. Additional construction permits may be required from local governments.

J. Relationship Between Local Short-term Uses versus Long-term Productivity

All transportation projects require the investment or commitment of some resources found in the existing environment. Short-term refers to the immediate consequences of the project whereas long-term relates to its indirect or secondary effects on future generations.

1. “NO-BUILD” STRATEGY

The “No-Build” Strategy would avoid all of the short-term and localized construction impacts. It would be the continued maintenance of existing I-70. The projected traffic growth for the entire length of the project would further reduce the operation of the existing roadway, resulting in reduced traffic safety, mobility, joint development opportunities and the possible loss of economic growth opportunities.

2. BUILD STRATEGIES

The build strategies for the I-70 corridor would involve some short-term consequences. These consequences would include: relocation of residences and businesses; removal of some private properties from tax rolls; and conversion of agricultural land, woodland, floodplain, wetland and habitat to transportation use. An additional short-term consequence would be the inconvenience to residents, business owners and employees during construction. Some of the long-term benefits that may be realized from the build strategies include: improved motorist safety, convenience and energy use; potential for new tax base; greater potential for area economic development because of improved transportation; and enhanced industrial development and associated employment growth for the region and state. Also, there is the long-term potential for partnering with other resource agencies in providing joint development and enhancement opportunities within the I-70 corridor. This could represent an opportunity to showcase the State of Missouri to the local and non-local travelling public.

Improvements to the I-70 corridor are based on comprehensive transportation planning that considers the need for present and future traffic movement within the context of present and future land use development and the environment. The local short-term impacts and use of resources by the proposed improvements is consistent with the maintenance and enhancement of long-term productivity.

K. Irreversible and Irretrievable Commitment of Resources

The money, time and transportation user hardship related to the anticipated higher rate of accidents associated with the “No-Build” Strategy would be irretrievable. The cost and time associated with the decreasing level of service for both auto and truck traffic would also result in an irretrievable commitment of resources.

The build strategies for the I-70 corridor involve committing a range of natural, physical, human and fiscal resources. Land acquired for constructing or reconstructing the I-70 corridor is considered to be an irreversible commitment during the time period the land is used for transportation purposes. Right-of-way requirements would convert land from residential, agricultural, commercial and natural environmental uses.

Large amounts of fossil fuel, labor and transportation construction materials such as steel, cement, aggregate and asphaltic material would be required. Additionally, considerable labor and natural resources are used in fabricating and preparing construction materials. Those resources are generally not retrievable, but their use will not have a substantial adverse effect on continued availability. Labor and funds are not retrievable, once spent, they are gone regardless of their magnitude.

The commitment of all these resources is to a large part predicated on the basic concept that the transportation systems contribute to health, safety and welfare of local, county and state residents as well as those traveling from other parts of the country.

L. Resources

- ¹⁾ MoDOT Noise Policy, Highway Traffic Noise Analysis and Abatement Guidelines, Missouri Department of Transportation, September, 1997).
- ²⁾ Noise Barrier Cost Reduction Procedure, STAMINA 2.0/OPTIMA: Users Manual, William Bowlby, John Higgins and Jerry Reagan, Federal High Administration, Demonstration Projects Division, Arlington, VA, March, 1983.

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