CHAPTER IV
Environmental Consequences

This chapter describes the potential environmental consequences of the reasonable improvement alternatives discussed in Chapter II. The reasonable alternatives include those alternatives that remain following the initial concept screening and engineering refinements following the initial screening. The baseline conditions enabling the evaluation of the potential social, economic and environmental impacts were established and defined in Chapter III – Affected Environment.

The proposed action is a reconstruction and includes an increase in mainline capacity for a portion of the study corridor. This chapter assesses the impacts of the alternatives, as summarized below. The alternatives are described in detail in Chapter II. Through an evaluation that is described in this chapter, a Preferred Alternative for the entire I-64 study corridor was identified. In this chapter, impacts of the alternatives are described as part of the defined subcorridors. The Preferred Alternative for the study corridor includes a combination of the Preferred Alternatives for each of the subcorridors.

The Build Alternatives analyzed are summarized below:

Greenway Subcorridor (west of Spoede Road to west of McCutcheon Road)

- ***No-Build Alternative*** – This alternative includes only minor short-term activities, including pavement overlays, routine maintenance and bridge repair. Many of the bridges in the I-64 Corridor are 60 years old or more, and this concept would involve maintenance activities required to keep these bridges open for as long of a period as possible.

- ***Build Alternative (Preferred)*** – The Greenway Alternative 1 includes reconstructing the existing I-64, with a widening from six to eight through lanes from west of Spoede Road to west of McCutcheon Road.

Thruway Subcorridor (west of McCutcheon Road to east of Bellevue Avenue)

- ***No-Build Alternative*** – This alternative includes only minor short-term activities, including pavement overlays, routine maintenance and bridge repair. Many of the bridges in the I-64 Corridor are 45 years old or more, and this concept would involve maintenance activities required to keep these bridges open for as long of a period as possible.

- ***Build Alternatives*** – Within this subcorridor, the build alternatives include reconstructing the existing roadway system and widening the I-64 mainline from west of McCutcheon Road to I-170. As previously described in Chapter II, there are four build alternatives for this subcorridor. These include:

  - ***Thruway Alternative 2*** – A depressed collector-distributor (CD) system between Brentwood Boulevard and Hanley Road, with I-64 mainline lanes elevated, and the alignment west of I-170 partially located to the south of existing right-of-way. Eight

mainline lanes are provided west of I-170, and six mainline lanes are provided east of I-170.

- ***Thruway Alternative 2a*** – A depressed CD system between Brentwood Boulevard and Hanley Road, with mainline lanes elevated, and the alignment west of I-170 partially located to the north of existing right-of-way. Eight mainline lanes are provided west of I-170, and six mainline lanes are provided east of I-170.

- ***Thruway Alternative 3 (Preferred)*** – A CD system between Brentwood Boulevard and Hanley Road, located adjacent to the freeway mainlines, and the alignment west of I-170 partially located to the south of existing right-of-way. Eight mainline lanes are provided west of I-170, and six mainline lanes are provided east of I-170.

- ***Thruway Alternative 3a*** – A CD system between Hanley Road and west of Brentwood Boulevard located adjacent to the freeway mainlines, and the alignment west of I-170 partially located to the north of existing right-of-way. Eight mainline lanes are provided west of I-170, and six mainline lanes are provided east of I-170.

Parkway Subcorridor (east of Bellevue Avenue to west of Sarah Street)

- ***No-Build Alternative*** – This alternative includes only minor short-term activities, including pavement overlays, routine maintenance and bridge repair. Many of the bridges in the I-64 Corridor are 40 years old or more, and this concept would involve maintenance activities required to keep these bridges open for as long of a period as possible.

- ***Build Alternatives*** – As previously described in Chapter II, there are two build alternatives for this subcorridor**.** Parkway Alternative 1 in this subcorridor includes a ramp to Oakland Avenue from eastbound I-64 located just east of McCausland Avenue. In Parkway Alternative 2 (Preferred), this ramp is omitted.

The evaluation factors that were used to differentiate the alternatives for each subcorridor are summarized in Exhibits IV-1A, 1B and 1C. The exhibits include engineering and traffic factors described in Chapter II, as well as social, economic, and environmental factors discussed in this chapter.

A. Land Use Impacts

Improvements to I-64 could directly or indirectly impact local land uses and development or redevelopment trends. The corridor is essentially fully developed; there are no large expanses of undeveloped land simply awaiting infrastructure improvements such as water and sewer lines or roadways before the vacant land will develop. There are, however, some parcels that are underutilized from today's development standards or contain structures and uses that are no longer economically viable. In some cases, the land is considered by the development community to be more valuable for redevelopment purposes than in its present form within the I-64 Corridor. Some of those locations are noted below. Municipal governments guide development's location and intensity through their City Master Plans and Development Regulations, such as Zoning Ordinances and Subdivision Regulations. Although the documents go by a variety of names, *Comprehensive Plans, Land Use Plans* or *Neighborhood Plans*, their intent is to provide for a vision of the city and how it is expected to develop or, as appropriate, redevelop in new uses.

1. LAND USE PLANNING IMPACTS

a. Greenway Subcorridor

No-Build Alternative

The No-Build Alternative would not have a land use planning impact.

Greenway Alternative 1 (Preferred)

The Greenway Alternative 1 will displace a small number of both businesses and residences. The corridor is developed with low density, primarily residential uses. No areas are presently undeveloped, and the communities affected have limited areas for new development and redevelopment. The zoning ordinances have relatively high minimum individual lot size requirements, making infill development impractical in most cases. Commercial activities are limited in location and intensity by the land use plans of the cities. The overall land use pattern in the areas adjacent to the project will remain unchanged as the residential areas have developed with the highway in place.

b. Thruway Subcorridor

No-Build Alternative

The No-Build Alternative would not impact existing land use patterns. Development projects that are underway would likely continue in their present form and the remaining land uses would remain.

Thruway Alternative 2

This alternative would impact a high-density residential development located in the southwest quadrant of the I-64 and I-170 interchange. There is no other area identified in the *Richmond Heights Future Land Use Plan* that would be large enough to accommodate relocation of this high-density development. Land uses adjacent to the I-64 and I-170 interchange would be most affected. This alternative impacts the office and commercial area located adjacent to Clayton Road, west of I-170.

There is an existing residential area bound by Galleria Parkway, Brentwood, I-170 and I-64 that is in transition from residential to commercial uses, due to its proximity to the Galleria and Brentwood Square (both new high density retail commercial projects). This alternative impacts the present residential, but has minimal impact to the proposed commercial project. However, the alternative would not likely change existing land use patterns in the Thruway Subcorridor.

Thruway Alternative 2a

This alternative is similar to Thruway Alternative 2 above, however, it would have far less of an effect on the high-density residential in the southwest quadrant of I-64 and I-170 interchange. This alternative would have a higher impact on the existing residential remaining on the north side of I-64 adjacent to the Galleria, and also on the proposed commercial development in this area. The low-density residential east of the I-64 and I-170 interchange would be impacted by the removal of several homes. The number of remaining homes would be sufficient to maintain a neighborhood presence. The older more urban neighborhoods, located further east in the subcorridor, would have more residences impacted by the project as their development pattern is denser. This alternative impacts the office and commercial area located adjacent to Clayton Road, west of I-170. However, the alternative would not likely change existing land use patterns in the Thruway Subcorridor.

Thruway Alternative 3 (Preferred)

This alternative has a larger number of land use impacts in the vicinity of the I-64 and I-170 interchange. It would impact the high-density residential area along Eager Road, west of Brentwood and the lower density neighborhoods north of I-64 and west of Hanley Road. This alternative impacts the office and commercial area located adjacent to Clayton Road, west of I-170. The overall pattern of development is unlikely to change with this alternative as the future land use and zoning are already in place to accommodate a variety of uses among the quadrants of the I-64 and I-170 interchanges. As noted above, the density of residential development and inclusion of higher density residential along the I-64 corridor east of Hanley Road results in higher numbers of residential displacements and neighborhood impacts. However, the alternative would not likely change existing land use patterns in the Thruway Subcorridor.

Thruway Alternative 3a

This alternative reduces the higher density residential impacts along Eager Road, west of Brentwood, and increases the impact on existing residential and commercial remaining on the north side of I-64 adjacent to the Galleria. It maintains the higher levels of low-density residential impacts, north of I-64 and west of Hanley Road. This alternative impacts the office and commercial area located adjacent to Clayton Road, west of I-170. However, the alternative would not likely change existing land use patterns in the Thruway Subcorridor.

c. Parkway Subcorridor

No-Build Alternative

The No-Build Alternative would not impact existing land use patterns. Development projects that are underway would likely continue in their present form and the remaining land uses would remain.

Parkway Alternative 1 and Parkway Alternative 2 (Preferred)

The difference between these two alternatives is the provision of an access ramp from eastbound I-64 to Oakland Avenue. This accounts for the slight difference in residential impacts. The overall land use pattern of the neighborhoods would not be substantially changed, as the displacements are generally located adjacent to the I-64 corridor and include the houses closest to the highway, along the highway-neighborhood interface. Business displacements are the same for both alternatives.

B. Social Impacts

The analysis of social impacts involves the assessment of a variety of factors which act collectively to create or reinforce a sense of community or place. Community is typically formed through associations between residents and key elements such as neighborhoods, places of commerce, schools, and public facilities. The degree to which alternatives would influence or impact these patterns of social interaction and community is detailed in the following text.

1. NEIGHBORHOOD AND COMMUNITY COHESION

This potential impact considers likely changes in neighborhood or community cohesion for various social groups as a result of the proposed action. It also includes considerations of proposed impacts to school districts, recreation areas, churches and businesses. Interstate 64 (then US 40) was constructed over a number of decades and that construction impacted existing neighborhoods. The Build Alternatives do impact some properties located adjacent to

the freeway corridor, however the proposed action will not result in new severances to existing neighborhoods.

a. Greenway Subcorridor

The existing neighborhoods in the Greenway Subcorridor along I-64 are primarily low-density neighborhoods. The municipalities of Frontenac and Ladue do not have officially defined neighborhoods, but include subdivisions that primarily define the neighborhood boundaries.

No-Build Alternative

The No-Build Alternative would not have direct property impacts on existing neighborhoods and community cohesion. The No-Build Alternative would not impact existing schools, churches, or businesses. The No-Build Alternative would result in increased traffic delays. The increase in travel times will lead to a reduction in accessibility to residences, business sites and community facilities. There are no recreational areas located within this subcorridor.

Greenway Alternative 1 (Preferred)

The proposed alignment of Greenway Alternative 1 would have only minor impact to neighborhoods, but would impact some individual residential properties through total and partial acquisitions.

b. Thruway Subcorridor

The existing neighborhoods in the Thruway Subcorridor along I-64 are primarily low-density neighborhoods. The municipalities of Brentwood and Richmond Heights do not have officially defined neighborhoods, but include subdivisions that primarily define the neighborhood boundaries.

No-Build Alternative

The No-Build Alternative would not have direct property impacts on existing neighborhoods and community cohesion. The No-Build Alternative would result in increased traffic delays. The increase in travel times will lead to a reduction in accessibility to residences, business sites and community facilities.

Thruway Alternatives 2 and 2a

The proposed alignments of the I-170/I-64 interchange would displace a number of residences. The portion of the area north of I-64, between I-170 and Brentwood may be converted from residential to commercial uses by a developer in the near future. The Francis Place neighborhood is located between Brentwood Boulevard on the west and I-170 on the east. The neighborhood would experience additional residential impacts. The neighborhood has been steadily losing residences over the years with development of commercial/retail properties along Brentwood Boulevard. This loss of residences is partially due to conversions of residences into commercial establishments and more recently to the construction of I-170. An additional seven residences would be acquired by the Preferred Alternative, approximately half of the residential structures left in the neighborhood.

The Sheridan Hills neighborhood of Richmond Heights is located in the northeast quadrant of the I-64 and I-170 interchange, west of the MetroLink tracks. This neighborhood would experience some impact with the proposed new interchange alignments. The proposed alignment of I-64 and the access ramps to I-170 would require the acquisition of a number of homes along the south and west edges of the neighborhood. Although the neighborhood would

be impacted on the periphery, the neighborhood would not be divided by any proposed road or ramp.

The other neighborhood which would experience some impacts is the Gissler Avenue/Harter Avenue neighborhood, which is located between the Big Bend interchange and the Boland Avenue overpass. Homes along Harter Avenue would be acquired due to the proposed alignment of the Big Bend interchange. The other neighborhoods in the Thruway Subcorridor include Hampton Park, which is east of Hanley Road and north of I-64; Hanley Downs, adjacent to Hanley Road on the west, east of the MetroLink tracks and north of I-64; Brentwood Forest, located in the southwest quadrant of the Brentwood Boulevard and I-64 in Brentwood. The Dale Avenue neighborhood, south of I-64 between Big Bend Boulevard and Bellevue Avenue would experience some property acquisition on the northern periphery directly adjacent to I-64. Since the Draft EIS, impacts to the neighborhood along West Park Drive, in the northeast quadrant of Bellevue Avenue and I-64 have been eliminated.

Thruway Alternatives 2 and 2A have a smaller construction "footprint" than do Thruway Alternatives 3 and 3A. Although there are a number of impacts in the Thruway Subcorridor, the impacts would be on the edges of neighborhoods, directly adjacent to the existing I-64. None of the neighborhoods would be divided by a proposed alignment, roadway or ramp design of the New I-64 project.

Thruway Alternatives 3 (Preferred) and 3a

The impacts to neighborhood cohesion are similar to Thruway Alternatives 2 and 2a, with the exception that the amount of residential takings to the north of I-64 between Hanley Road and I-170 will be greater. This would impact a larger number of residences within the Hanley Downs and Sheridan Hills neighborhoods, although since the Draft EIS, impacts to the Clayton Park Addition (Bennett Avenue) have been eliminated. There are a number of cost implications to the neighborhood associations, as the costs of the associations would be divided by a smaller number of residences. The neighborhood was impacted previously by the construction of I-170 and will be further impacted by the reconstruction of I-64.

c. Parkway Subcorridor

The I-64 corridor traverses numerous neighborhoods in the city of St. Louis. Within this Subcorridor, the neighborhoods include:

- The McCausland Avenue interchange area is in the Hi-Pointe neighborhood.
- The Clayton-Tamm neighborhood is located south of I-64 from Louisville Avenue on the west to Hampton Avenue on the east, an area informally known as Dogtown.
- The Cheltenham Neighborhood is located east of Hampton Avenue to Macklind Avenue, south of I-64. It is located immediately adjacent to I-64 along Oakland Avenue.
- The Kings Oak Neighborhood is located from Macklind Avenue on the west to Kingshighway on the east, south of I-64.
- The Forest Park Southeast Neighborhood is located from Kingshighway on the east to Vandeventer Avenue on the east, south of I-64.
- The Central West End Neighborhood is located north of I-64, east of Kingshighway to Vandeventer Avenue. This neighborhood, immediately adjacent to the I-64 corridor, is comprised of institutional/office/light industrial land uses.

No-Build Alternative

The No-Build Alternative would not have direct property impacts on existing neighborhoods and community cohesion. The No-Build Alternative would result in increased traffic delays. The increase in travel times will lead to a reduction in accessibility to residences, business sites and community facilities.

Parkway Alternative 1

The proposed alignments have minor acquisitions in the neighborhoods, mainly at the new McCausland Avenue interchange, and continuing on the south side of I-64 to Oakland Avenue. The Hi-Pointe neighborhood would experience some property acquisitions between McCausland and Oakland Avenues. These impacts would be along the edges of the neighborhood, fronting I-64. The Parkway Alternative 1 minimizes the impacts to the extent possible.

The impacts to Clayton-Tamm, Cheltenham and Kings Oak neighborhoods should be minor as the neighborhoods are located to the south of Oakland Avenue and there are no partial or full displacements in these neighborhoods. These residential areas are further buffered from any I-64 roadway impacts by numerous public and semi-public located along Oakland Avenue.

The Forest Park Southeast neighborhood would experience some minor impacts due to some non-residential acquisitions directly adjacent to I-64.

The portion of the Central West End neighborhood, immediately adjacent to the I-64 corridor, is comprised of institutional/office/light industrial land uses. There are no impacts to the residential component of the neighborhood located north of the I-64 corridor.

Parkway Alternative 2 (Preferred)

The exclusion of an eastbound off-ramp to Oakland Avenue in this alternative results in fewer acquisitions in the Hi-Pointe neighborhood. The neighborhood and community impacts will be similar to Parkway Alternative 1, with the exception that the Clayton-Tamm neighborhood may experience less traffic impacts due to potentially lower volumes on Oakland Avenue.

2. TRAVEL PATTERNS AND ACCESSIBILITY

The analysis of travel patterns and accessibility impacts involves assessing changes to these factors related to the Build and No-Build Alternatives. There are currently 15 interchange access points to I-64, one to I-170 and access provided between I-64 and I-170 Galleria Parkway and Eager Road located within the 12-mile long study corridor. Currently, half interchanges are located at Clayton Road/Warson Road, Laclede Station Road, Big Bend Boulevard, Bellevue Avenue, Oakland Avenue, Clayton Road/Skinker Boulevard, Boyle Avenue and Galleria Parkway. The I-64/I-170 interchange does not include a ramp connection for the eastbound I-64 to northbound I-170 movement.

The Build Alternatives include retaining full access where it currently exists. In addition, the Build Alternatives include eliminating the half interchange at Laclede Station Road. The Build Alternatives also include adding ramp movements to provide full interchanges at Big Bend Boulevard and the Tower Grove Avenue/Boyle Avenue split diamond interchange. Clayton Road/Warson Road, Bellevue Avenue, Clayton Road/Skinker Boulevard and Galleria Parkway would remain as half interchanges. One Build Alternative eliminates the existing half interchange at Oakland Avenue but provides an eastbound exit ramp at Oakland Avenue just east of McCausland Avenue. Another Build Alternative removes the half interchange at

Oakland Avenue but replaces it with a new eastbound exit ramp to Oakland Avenue located just east of Hampton Avenue. Full system-to-system movements are provided with the Build Alternatives at the I-64/I-170 interchange, utilizing direct ramp connections or CD roads. The changes in travel patterns and accessibility are discussed further in this section.

a. Greenway Subcorridor

No-Build Alternative

The No-Build Alternative would not have an impact on travel patterns and accessibility.

Greenway Alternative 1 (Preferred)

Greenway Alternative 1 would not change the location of access to and from I-64, and as such, there would not be a change in travel patterns. Greenway Alternative 1 would provide improved traffic capacity at the interchanges, thereby enhancing the level of access at each interchange. The interchange designs also accommodate pedestrian and bicycle movements with improved sidewalk connections and striping, leading to an improvement in pedestrian and bicycle accessibility.

b. Thruway Subcorridor

No-Build Alternative

The No-Build Alternative would not have an impact on travel patterns and accessibility.

Thruway Alternatives 2, 2a, 3 (Preferred) and 3a

The Thruway Alternatives would provide improved traffic capacity at the interchanges thereby enhancing the level of access at each interchange. The Thruway Alternatives include an improved system interchange between I-64 and I-170 that would enhance the movement of traffic between these two freeways. Access to Brentwood Boulevard and Hanley Road would also be maintained. Access to and from the east at Laclede Station Road would be removed but the low volume of traffic using this interchange would utilize the new full access at Big Bend, or the continuation of full access at Hanley Road, to complete the traffic movements.

The interchange design accommodates pedestrian and bicycle movements with improved sidewalk connections and striping, leading to an improvement in pedestrian and bicycle accessibility.

c. Parkway Subcorridor

No-Build Alternative

The No-Build Alternative would not have an impact on travel patterns and accessibility.

Parkway Alternative 1

This Parkway Alternative would not change the current location of access to and from I-64, and as such, there would not be a change in travel patterns, except at Tower Grove where ramps to and from the west would be added to provide full interchange access. This Parkway Alternative would provide improved traffic capacity at the interchanges thereby enhancing the level of access at each interchange.

Parkway Alternative 2 (Preferred)

This alternative is the same as Parkway Alternative 1 except that it eliminates the eastbound exit ramp at Oakland Avenue, located less than ¼ mile east of the McCausland Avenue/Skinker

Boulevard interchange and ¼ mile west of the Hampton Avenue interchange. This ramp provides direct access to residents located to the south of Oakland Avenue in this area. The ramp also provides a secondary access point to the St. Louis Zoo for travelers on eastbound I-64. With the elimination of this ramp, those motorists would utilize the nearby adjacent interchanges to access the area from I-64. Future year traffic analysis indicates that the new design of McCausland Avenue/Skinker Boulevard and Hampton Avenue interchanges can accommodate the future year level of traffic, even given the closure of the ramp to Oakland Avenue. The location of other access points would not change, and the traffic operation of these interchanges would improve with the Build Alternative.

3. PUBLIC AND SEMI-PUBLIC FACILITIES/PARKS AND RECREATION AREAS

As discussed in Chapter III, the public and semi-public facilities (a facility includes the property and any buildings and/or uses on the property) include places of worship (churches), hospitals, civic/governmental facilities, schools and school play areas, parks, recreation facilities, and similar uses. These facilities draw clients from a large geographical area and alteration of access or relocation of the facility can affect their ability to provide services. These facilities may also be focus or central points for the community at large or a certain neighborhood. A listing of public and semi-public facilities within the I-64 corridor is provided in Chapter III, Table III-1.

a. Greenway Subcorridor

The Greenway Subcorridor contains schools and school athletic fields, government facilities, and churches in Frontenac and Ladue. No public parks are located in the Greenway.

No-Build Alternative

The No-Build Alternative would not have an impact.

Greenway Alternative 1 (Preferred)

No public or semi-public facility would be totally acquired. This alternative would have right-of-way acquisition impacts on each of the existing public and semi-public properties adjacent to I-64. The R/W impacts would include partial acquisitions from the facilities' grounds. The Frontenac City Complex property would be impacted, as it is immediately adjacent to the I-64 right-of-way.

The public and semi-public facilities affected by partial acquisition of property include the Jewish Reform Academy (no loss of parking); the Church of Jesus Christ of Latter-Day Saints open space soccer practice area; and the Junior League of St. Louis. All of these facilities are located in Frontenac.

One public and semi-public facility would be affected by partial acquisitions of property in Ladue. This is the Salem United Methodist Church (a sign).

b. Thruway Subcorridor

The Thruway Subcorridor contains churches, schools, parks, recreation facilities, and government facilities, all of which are located in Richmond Heights.

No-Build Alternative

There would be no impacts from this alternative.

Thruway Alternatives 2, 2a, 3 (Preferred) and 3a

These alternatives would have impacts on public parks and recreation facilities as follows:

Public Parks and Recreation Facilities – The Heights Community Center property would be impacted by Thruway Alternatives 2 and 2a. Since almost two-thirds of the interior floor space of the building is devoted exclusively to public recreational activities, it was determined to be an eligible Section 4(f) resource. Alternatives 2 and 2a would require the acquisition of 0.1 acre of land from the property adjacent to I-64, which would impact a landscaped area adjacent to the parking lot and two truck parking spaces, at the far northeast corner of the property. These are the only identified truck parking spaces at the facility. No other improvements would be affected. In the DEIS, the Heights Community Center property was impacted by the Preferred Alternative 3. However, adjustments to the vertical and horizontal alignment have been made to Alternatives 3 and 3a and as a result, the Heights property is no longer impacted by these alternatives. It is also not affected by proximal impacts, since it is an indoor recreational facility.

The city of Richmond Height's A. B. Green Athletic Complex, located adjacent to Chaney Elementary School Site, would be impacted, by all of the Thruway Alternatives. Impacts would include the tennis courts, basketball courts, playground, and the parking lot. Right-of-way acquisition impacts would total 0.43 acres, and a temporary construction easement would total 0.08 acres. This public park/recreation area is an eligible Section 4(f) resource, and the description of the facility and a detailed discussion of the impacts can be found in the Section 4(f) Evaluation. The Chaney Elementary School (formerly the A. B. Green School) is located adjacent to the A. B. Green Athletic Complex but would not be impacted. Chaney Elementary held classes until the end of the 2003-2004 school year and then closed. The parking lot of the athletic complex (located north of the school) would be impacted by right-of-way acquisition. Approximately 22 spaces, two-thirds of the lot's capacity, would be affected during construction. It is estimated that 14 spaces would be remaining after construction.

Highland Park (an eligible Section 4(f) and 6(f) park), on the north side of I-64, is adjacent to I-64 but would not be affected by right-of-way requirements. There is no direct conversion of park land from Highland Park, as proposed highway improvements were shifted to the south to avoid Highland Park early in the planning process.

In addition, the Thruway Alternatives would not have a "constructive use" impact on Highland Park. Constructive use occurs when the transportation project does not require land from a 4(f) resource, but the proximity impacts (indirect impacts due to noise, aesthetics, access, land use changes, and impacts to ecological features) are so severe that they cause substantial impairment to the protected activities, features, or attributes that qualify a resource for 4(f) protection (23CFR 771.135.(p)(iii)).

The Thruway Alternatives move the roadway closer to the park by approximately 25 feet. (See Plate P-1 in Appendix C) The Bellevue access ramp would be within 25 feet of the park. The aesthetics would change only slightly for the park since I-64 currently exists adjacent to the park. The proposed grade of I-64 would also be lowered slightly by 0-5 feet (0-1.5 meters). Access to the park would still be available from the neighborhood in which it is located. The street alongside Highland Park which connects Highland Terrace and Hawthorn Place would not be removed. Noise levels generally increase by one decibel as a result of moving at least one travel lane closer to a receiver. Lowering the grade of the roadway facility at this location may negate that effect. A one decibel increase would be an imperceptible change in noise level to the high levels already experienced in this area. Therefore, since the upgraded roadway facility would not substantially impair the utility of the park, there would not be a constructive use impact.

There would be no right-of-way impacts to the Little Flower Catholic Church and School Complex. This is privately-owned and the school playground area is not Section 4(f) eligible.

The Richmond Heights Municipal Complex on the south side of I-64 is adjacent to I-64 but would not be affected by right-of-way requirements.

c. Parkway Subcorridor

The Parkway Subcorridor contains many public and semi-public facility uses including a fire station, schools and school play areas, parks, hospitals and the Science Center.

No-Build Alternative

There would be no impacts from this alternative.

Parkway Alternative 1 and Build Alternative 2 (Preferred)

Both of these alternatives would have similar impacts to public and semi-public facilities. The Dewey School would be impacted by right-of-way requirements in both Parkway Alternatives 1 and 2. The building is very close to I-64 and the widening would bring the top of the retaining wall even closer. Although the road between the school building and the Interstate would be taken in both alternatives, the building would remain. Both Alternatives 1 and 2 would require the acquisition of a small amount of school property adjacent to the existing right-of-way. The Dewey School Play Area (located southwest of the building) would not be impacted, and both the school and play area could continue to fulfill their function. Although the play area may be potentially Section 4(f) eligible, no Section 4(f) evaluation would be required, since no impacts would occur to the play area.

Fire Station Number 22, located next to I-64 would not be impacted by right-of-way requirements.

The Central Institute for the Deaf (CID) building, located on the north side of the existing I-64, would have partial acquisition impacts. This acquisition includes 33 spaces from a parking lot on the north side of I-64. Impacts to CID are to the lot on the north which is accessed from Taylor Avenue and contains about 70 spaces on CID property and 18 spaces on MoDOT right-of-way. Between CID Property and MoDOT right-of-way, sufficient area remains to replace affected parking spaces. The St. Louis College of Health Careers occupies the former CID building south of the existing I-64. There would be partial impacts to this property that include the front entrance circle drive for the building. The impacts are limited to front yard area and circular drive. Sufficient area remains to rebuild the circular drive, closer to the building entrance. The property on the south side does not contain a recreation area and is not subject to the provisions of Section 4(f) in that regard. However, both buildings are eligible for listing on the National Register of Historic Places (NRHP) (see Section O of this chapter).

The Washington University Medical School would be affected by a partial acquisition. The acquisition would include an additional 10 feet of right-of-way from Taylor Avenue to Newstead Avenue and this in turn would affect approximately 70 parking spaces that are adjacent to the existing I-64 right-of-way. It would also affect a metal storage and maintenance building in the parking lot. It would not impact the Medical School Building, located on the corner of Taylor Avenue and Clayton Avenue. The parking lot is very large including most of the entire block. Reorientation of the two lines of parking spaces, from 90 degrees to 45 degrees would cause a total of 30 spaces to be lost. In the vicinity of the parking lot, there appears to be little room available for new parking spaces to be acquired.

There would be partial right-of-way impacts to the William Stix School; a band, approximately 40 feet wide paralleling the existing right-of-way would be acquired. The impacts would include closing or relocating the parking lot's south entrance from Tower Grove, displacing a dozen parking spaces, closing or relocating a service drive from Newstead Avenue on the west side of

the building and two parking spaces. The play areas (one located in the courtyard surrounded by the building and the other located at the northwest corner of the building, 200 feet from the proposed highway ramp) would not be impacted by the build alternative.

Public Parks and School Play Areas – Forest Park, a historic park of regional significance would be directly impacted by the project. Impacts include 6.35 acres of right-of-way acquisition, 5.40 acres of permanent easement on park property, and 0.96 acres of other permanent impacts converting open space to another use, resulting in a total of 12.71 acres of permanent impacts. There would also be 10.07 acres of temporary construction easements. The permanent impacts would be offset by the conversion of right-of-way and other built uses to park open space, totaling 14.38 acres. At the southwest quad of the Kingshighway interchange there is an area of excess right-of-way (formerly park land) containing 1.89 acres; and at the southeast quad of the Kingshighway interchange there is an area of excess right-of-way containing 3.03 acres, 0.80 acres of which was formerly park land. This land was sold to the State Highway Commission in 1962 by warranty deed for highway purposes. The only stipulation was that the money should go into a special park fund for the purpose of replacing in Forest Park the improvements removed with the widening project. There was no stipulation requiring that the land would have to be returned to Forest Park if at some point it was no longer needed for highway purposes. Although there are no encumbrances that require MoDOT to return the land to Forest Park, MoDOT is returning the excess right-of-way to help mitigate for parkland being taken elsewhere. A detailed description of the property impacts (both permanent and temporary), and the proposed mitigation measures (including impacts of mitigation) can be found in the Section 4(f) Evaluation. In a letter dated February 26, 2003, the City of St. Louis Department of Parks, Recreation and Forestry concurred with the impacts and proposed mitigation regarding Forest Park. The letter appears in Chapter VIII, C.3.

As discussed above, neither the Dewey School play area nor the William Stix School play areas would be impacted by the build alternatives. Other school play areas that would not be impacted include the Forest Park Community College baseball/softball field (potential 4[f]) and the St. Louis University High School running track and football/soccer field (potential 4[f]). None of these facilities would be impacted by right-of-way acquisition, nor would constructive use impacts occur to any of the potential 4(f) school play areas since the roadway improvements would not cause substantial impairment to the activities, features, or attributes of these recreation areas.

Other public and semi-public facilities adjacent to the project, but not impacted, include Forest Park Hospital, Forest Park Community College, Drew Middle School, the Science Center, and St. Louis University High School.

Table IV-1 summarizes which public and semi-public facilities within the study corridor are impacted.

Table IV-1
Public/Semi-Public Use Impacts

Name	Location		Ownership/ Potential 4(f)
	Subcorridor	Alternative	
Churches			
Salem United Methodist Church	Greenway	**Build Alt. ***	Private
Civic/Governmet Facilities			
Frontenac City Complex	Greenway	**Build Alt. ***	Public
Schools			
Reform Jewish Academy of St. Louis	Greenway	**Build Alt. ***	Private
Dewey International Studies School	Parkway	Build Alt. 1 & **2***	Public
Central Institute for the Deaf	Parkway	Build Alt. 1 & **2 ***	Private

Name	Location		Ownership/ Potential 4(f)
	Subcorridor	**Alternative**	
St. Louis College of Health Careers	Parkway	Build Alt. 1 & 2*	Private
Washington University Medical School	Parkway	Build Alt. 1 & **2 ***	Private
William Stix School (Early Childhood Center)	Parkway	Build Alt. 1 & **2 ***	Public
Other Semi-Public Use			
Junior League of St. Louis	Greenway	**Build Alt. ***	Private
Parks, Recreation Facilities, School Play Areas			
Church of Jesus Christ of Latter Day Saints Athletic Field	Greenway	**Build Alt. ***	Private
A. B. Green Athletic Complex	Thruway	Build Alt. 2, 2a, **3 ***, 3a	Public 4(f)
Forest Park	Parkway	Build Alt. 1 & **2 ***	Public 4(f)

***** Indicates Preferred Alternative

4. SAFETY ISSUES[1]

Improved safety was identified as part of the purpose and need for the proposed action. The Build Alternatives follow Federal Highway Administration (FHWA) and American Association of State Highway and Transportation Officials (AASHTO) design criteria for an urban freeway.

a. Greenway Subcorridor

No-Build Alternative

The No-Build Alternative would result in a continuation of the existing rate of crashes on I-64. Within the Greenway Subcorridor, the number of annual crashes forecast for the year 2020 for the No-Build Alternative are 262 property damage only, 112 injury, and one fatality.

Greenway Alternative 1 (Preferred)

Greenway Alternative 1 would incorporate improved design features to promote the free and safe flow of traffic leading to a reduction in crash rates that, at a minimum, would be at the statewide average crash rates for urban freeways. The number of annual crashes forecast for the Greenway Alternative 1 for the year 2020 are 175 property damage only, 74 injury, and two fatalities.

b. Thruway Subcorridor

No-Build Alternative

The No-Build Alternative would result in a continuation of the existing rate of crashes on I-64 and I-170. This Subcorridor contains the highest crash rates within the project corridor. Within the Thruway, the number of annual crashes forecast for the year 2020 for the No-Build Alternative are 459 property damage only, 182 injury and no fatalities.

Thruway Alternatives 2, 2a, 3 (Preferred) and 3a

Each of the Thruway Alternatives incorporate similar design standards. None include design exceptions that could impact traffic safety, but instead promote the free and safe flow of traffic. The location of an alignment to the north or south within the corridor or with a depressed CD system or flat at-grade CD system is not expected to impact crash rates.

The Thruway Alternatives would incorporate improved design features that promote the free and safe flow of traffic leading to a reduction in crash rates that, at a minimum, would achieve the statewide average crash rates for urban freeways. The number of annual crashes forecast for the Thruway Alternatives for the year 2020 are 157 property damage only, 59 injury, and no fatalities.

[1] Accident statistics and safety data summarized or presented in this section are protected under federal law. See Appendix AA.

c. Parkway Subcorridor

No-Build Alternative

The No-Build Alternative would result in a continuation of the existing rate of crashes on I-64. Within the Parkway, the number of annual crashes forecast for the year 2020 for the No-Build Alternative are 226 property damage only, 97 injury, and no fatalities.

Parkway Alternative 1 and 2 (Preferred)

Both of the Parkway Alternatives incorporate similar design standards. None include design exceptions that could impact traffic safety, but instead promote the free and safe flow of traffic. The inclusion or exclusion of a ramp at Oakland Avenue is not expected to impact the free and safe flow of traffic.

Both of the Parkway Alternatives would incorporate improved design features that promote the free and safe flow of traffic leading to a reduction in crash rates that, at a minimum, would achieve the statewide average crash rates for urban freeways. The number of annual crashes forecast for the Parkway Alternatives for the year 2020 are 174 property damage only, 64 injury, and no fatalities.

5. ENVIRONMENTAL JUSTICE AND TITLE VI CONSIDERATIONS

a. Introduction

On February 11, 1994, President Clinton issued Executive Order on Environmental Justice 12898. This Executive Order requires all federal agencies to address the impact of their programs with respect to environmental justice. The Executive Order states that, to the extent practicable and permitted by law, neither minority nor low-income populations may receive disproportionately high or adverse impacts as a result of a proposed project. It also requires that those representatives of any low-income or minority population that could be affected by the project be given the opportunity to be included in the impact assessment and public involvement process.

Federal Agencies have developed guidelines and policy guidance to assist in the evaluation of Federal Actions for conformance with the spirit and the intent of E.O. 12898. FHWA has issued technical guidance and developed policy papers on the implementation of the National Environmental Policy Act (NEPA) and its associated regulations as well as various Executive Orders. In April 1997, the U.S. Department of Transportation issued the DOT Order on Environmental Justice to Address Environmental Justice in Minority Populations and Low-Income Populations (DOT Order 5610.2) to summarize and expand on the requirements of E.O. 12898. In December 1998, the FHWA issued FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (DOT Order 6640.23) that requires the FHWA to implement the principles of the DOT Order 5610.2 and E.O. 12898 by incorporating environmental justice principles in all FHWA programs, policies and activities.

The Missouri Department of Transportation (MoDOT) has adhered to these orders in the preparation of this Environmental Impact Statement (EIS). This EIS does review the proposed action and its alternatives in light of E.O. 12898, DOT Order 5610.2 and DOT Order 6640.23.

MoDOT is also committed to the provisions of the Americans with Disabilities Act of 1990 (ADA) and the provisions of Title VI of the Civil Rights Act of 1964. This is to ensure that no person shall, on the grounds of race, color, national origin, age, sex or disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.

To briefly summarize the intent of E.O. 12898, the proposed action is to be reviewed for effects on minority populations and/or low-income populations. This is done by development of demographic baseline conditions, use of field observations, public involvement, contacts with community representatives and by examining the potential disproportionate impacts of the Build Alternatives. Efforts have been made to minimize property impacts through the use of design techniques that require less space and through the use of retaining walls that minimize property impacts, and by preserving neighborhood character through the use of urban design treatments (see Chapter V). The baseline demographic analysis was discussed in Chapter III, Section A and is also included in Appendix G.

The following terms have the following meanings:

Disproportionately high impact means an adverse effect that is predominately borne by a minority and/or low-income population; or will be suffered by the minority and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority and/or non low-income population.

Low-Income means a household income at or below the Department of Health and Human Services poverty guidelines of $18,850 for a family of four (2004).

Minority means a person who is:

1) *Black* (having origins in any of the black racial groups of Africa);

2) *Hispanic* (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);

3) *Asian American* (having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or

4) *American Indian* and *Alaskan Native* (having origin in any of the original people of North America and who maintain cultural identification through tribal affiliation or community recognition).

b. Information Gathering

Demographic

The racial composition, ethnicity, and income levels vary in the study corridor. Year 2000 Census Block Data was utilized to better understand the general socio-economic situation of the area's residents and to provide base information that can be used to further understand and identify potential impacts to low-income and minority populations.

The Census data is available for a number of geographic and political boundaries. These include states, counties, cities, and a number of census-based boundaries, such as census tracts, block groups and blocks. Block data is available for the I-64 study corridor and was employed to illustrate the anticipated impacts to sub neighborhood areas with regard to racial, ethnicity and income considerations. The area studied included a band parallel to I-64 approximately two blocks wide that extended the length of the project. In Exhibit IV-2, the composition of minority population in the area is illustrated and defined using four percentile quadrants as follows:

- between 76 and 100 percent of the Census Block's residents were minority.
- between 51 and 75 percent of Census Block were minority.
- between 26 and 50 percent of Census Block were minority.
- between 0 and 25 percent of the Census Block were minority.

While the racial composition of block groups provides an illustration of minority concentration, each and every neighborhood was addressed in the public involvement process and in the project development process.

The 2000 Census Data for the I-64 study corridor shows that the minority population is approximately 21 percent of the total population. As shown in Exhibit IV-2a, most of the blocks within the study corridor where at least 51 percent of the individuals living there are minority are generally located in the eastern end of the I-64 Corridor. These blocks are located mostly east of the Hampton Avenue interchange, with other blocks located to the east of Hanley Road. Blocks where minority individuals make up between 26 and 50 percent of the population are primarily located in areas southwest of the Brentwood Boulevard interchange. Tabular information related to Exhibit IV-2a is presented in Appendix G.

Census data for 2000 was used to provide base information that can be used to further understand and identify impacts to low-income populations. Exhibit IV-2b shows the percentage of the population below poverty level by block group. Those areas, where more than 25 percent of the population is below the poverty level, are located to the east of Kingshighway and south of I-64. The 2000 Census of Population provided income, auto ownership, housing value and educational attainment information by Census Tract. The tabular information indicating income by Census Tract and a Census Tract reference map are presented in Appendix G. General English proficiency concerns were reviewed using the 2000 census information. The census variable – language spoken at home was used to identify if there were any English proficiency concerns related to environmental justice. There are no discernable areas where English is not spoken.

Field Investigations

Field investigations and outreach efforts were accomplished by having discussions with community leaders, school representatives, and church representatives to help identify any special populations related to race, national origin, income or disability as well as any English proficiency concerns.

MoDOT is committed to addressing concerns regarding access for the disabled and complying with ADA standards. The existing facility does not provide pedestrian access at all of the points where there are cross-over streets. The sidewalks that are in place are narrow, and do not always provide ramps for individuals with disabilities. Substantial emphasis has been placed on improving pedestrian and bicycle access throughout the corridor. As part of the Build Alternatives, all of the cross-access points will be designed with wider sidewalks so that it is safer and more comfortable for those people with wheelchairs or with strollers to pass one another. All sidewalks will include ramps at street crossings. One concern is always whether the project alternatives will impose or create any new barriers to access between the affected neighborhoods and available community resources. In this instance no new barriers are being created by the project and in fact, barriers created when I-64 was originally built are being eliminated or reduced.

Public school information was reviewed and field investigations were made to further identify English proficiency concerns. Of the non-English speaking residents located within the I-64 Corridor, some speak Bosnian and are mainly located in the city of St. Louis in the Cheltenham, Clayton-Tamm, Hi-Pointe, and Franz Park neighborhoods. Other non-English speaking residents include people speaking Spanish, Farsi, Chinese and Vietnamese. Many public schools have English as a Second language (ESL) programs for school children but not for adults. Such programs are present in the city of St. Louis and Clayton school districts which are located within the study corridor.

The Missouri Department of Transportation representatives organized and attended meetings throughout the New I-64 corridor. Neighborhoods containing low-income and minority populations were included in this effort, as were the other neighborhoods in the corridor, and additional efforts were made to ensure local participation by conducting the meetings at residences within the neighborhood or at nearby schools. The majority of these meetings were small, neighborhood-based meetings. At these meetings MoDOT representatives explained the project and solicited the desires, concerns and issues of these communities regarding the project. Each of these minority and/or low-income neighborhoods had a representative on the subcommittees. These subcommittee representatives were active members who attended the majority of the meetings. For a complete list of meetings, see Appendix J.

Public Involvement

E.O. 12898 also addresses the importance of providing affected population the opportunity to be informed of the proposed action and its alternatives. It is likewise important to provide the affected population the opportunity to provide comments throughout the public involvement process.

Some of the key issues heard from representatives of the neighborhoods along the corridor included the importance of pedestrian accommodations, limiting property impacts, and maintaining the character of the neighborhood. MoDOT has actively worked with the neighborhoods on these issues. For example, at the Forest Park Southeast neighborhood, the group voiced strong feelings toward replacing the existing pedestrian bridge with a new pedestrian bridge. The group did not want to replace it with only improved pedestrian accommodations on Kingshighway Boulevard. MoDOT agreed and is proposing a replacement pedestrian bridge near its existing location. MoDOT will also provide improved pedestrian accommodations on Kingshighway Boulevard to further encourage pedestrian movements in the area.

The maintenance of neighborhood character was incorporated into the Build Alternatives. Input received from the Subcorridor Committees and through community leaders indicated a desire to preserve the existing neighborhood character. An example of this includes input from the community to examine ways to preserve existing trees in the vicinity of Spoede Road. These concerns are reflected in the Build Alternatives. Other examples include the McKnight Road and Skinker-Clayton-Oakland interchange areas. In these locations, maintaining an interchange character consistent with the adjacent neighborhoods was achieved by developing build alternatives that maintain the existing access and have similar design characteristics as existing streets.

Two public open house meetings were held in conjunction with the project. The project Public Hearing was held in January 2003. These meetings were advertised by a number of methods, including sending press releases to numerous newspapers including the *St. Louis Post-Dispatch, Suburban Journal, the St. Louis American* (an African-American paper), the *Business Journal* and *Riverfront Times*. Television coverage prior to the meetings was provided by major stations in the St. Louis area and on a number of radio shows. MoDOT has an effective outreach program to involve potentially affected interests in the decision making process and keep them informed of the status of the project, as documented in Chapter VIII, Comments and Coordination.

Public input opportunities were provided to residents living in these neighborhoods at the Advisory Committee Meetings held during the fall of 2000, throughout 2001 and in the spring and summer of 2002. Concerns expressed related primarily to property values and noise. Approaches to mitigate property value impacts through urban design treatments are described in Chapter V and noise impacts are described in Chapter IV, Section H.

There are several newspapers and/or newsletters that were used as resources to advertise the public meetings and increase awareness of opportunities to comment to minority individuals or those with limited English proficiency in the St. Louis area. These publications include: *The St. Louis American; The St. Louis Metro Sentinel; The West End Word; The Scene; St. Louis Chinese American News; St. Louis Chinese Journal; Red Latina; Que Pasa;* and the *St. Louis Post Dispatch*. The International Institute is one organization that is being used as a public outreach resource for those residents that do not speak English or have a limited English proficiency. Future public outreach efforts will be made through a variety of publications to increase awareness of the project and encourage comments from minority communities. For more information on public involvement efforts see Chapter VIII, Comments and Coordination.

c. Environmental Justice and Title VI Impacts

The demographic data, field investigations, community contacts, media and public involvement program provided information on special populations within each subcorridor. The assessment of impacts is described for each of the subcorridors.

Greenway Subcorridor

The households in the Greenway Subcorridor tend to have higher incomes, fewer minority residents and high levels of auto ownership. There was only one block in the Greenway Subcorridor as shown in the Year 2000 Census where 26 to 50 percent of the individuals living there are minority. This block is not impacted by Greenway Alternative 1 (Preferred). All of the other blocks have residential populations where minorities represent between 0 and 25 percent of the total population. In 2000, the percentage of persons below the poverty level for these census tracts ranged from 1.3 percent to 2.4 percent for block groups located within the subcorridor. Field investigations did not result in the identification of any special populations related to race, national origin, income or English proficiency.

There are few residential acquisitions within the Greenway Subcorridor and those properties taken are located in areas shown to have a low concentration of minority or low-income residents.

Highway access for these areas would stay the same under the Greenway Alternative 1, so there would be no adverse impact related to access. The interchanges in the Greenway Subcorridor would not undergo changes in I-64 access, and improvements would be made to promote the free and safe flow of traffic in the area.

Pedestrian access in the Greenway Subcorridor would be enhanced under the Build Alternative in areas within state right-of-way. The Greenway Alternative 1 would promote the safe integration of pedestrian movements on roadways that cross I-64 by providing wider sidewalks and in some cases wider areas to separate pedestrians that would otherwise be adjacent to traffic on the roadway. Discussions regarding pedestrian access in the Greenway were met with little concern and sometimes the desire to eliminate existing pedestrian access, however, pedestrian access treatments will be carried throughout the study corridor.

No adverse impact to transit systems is expected by Greenway Alternative 1, because existing transit access in the Greenway Subcorridor would remain the same under the No-Build and Build Alternatives. The existing transit routes maintained by others would be accommodated as they are today.

Thruway Subcorridor

The households within the Thruway Subcorridor have more diverse characteristics than in the Greenway Subcorridor. The demographic baseline information shows minority or low-income population concentrations within a few distinct locations in the Thruway Subcorridor.

Field investigations verified that there is a concentration of minority individuals living east of Hanley Road. On the north side of I-64 east of Hanley Road, there is a block located along Bennett Avenue which has been identified as having a minority population. To the south of I-64 between Hanley Road and Big Bend Boulevard, there is a grouping of census blocks where minority individuals live.

The census block data shows that there are 20 Census Blocks adjacent to I-64 in the Thruway Subcorridor that have individuals residing within them. The racial distribution of these blocks range from zero percent minority in four of the blocks to 39.7 percent. Five of the blocks located in the Thruway have a resident racial minority population (all non-white persons) exceeding 20 percent of the total block population. Two blocks have a resident Hispanic population (which may be of any race) exceeding ten percent the total block population. In 2000, the percentage of persons below the poverty level for the census tracts located in the Thruway Subcorridor ranged from 5.8 percent to 8.4 percent.

Field investigations were performed in the St. Louis County neighborhoods located within the Thruway in order to identify opportunities for further communication with any special populations. The Chaney School and the Richmond Heights Community Center are non-residential developments that could be used as places of outreach for the neighborhood residents. The Chaney Elementary School administration has identified few students with limited English proficiency. They also indicated that nearly half of the student population is African-American. Between Big Bend Boulevard and McCausland Avenue, the neighborhoods were denser and some small local businesses were present on the north-south collector streets. Public bulletin boards at Richmond Heights City Hall and the Richmond Heights Community Center display local publications and will be used to disseminate project information.

Public involvement activities and discussions with subcorridor committee representatives indicated that Clayton Park Addition (Bennett Avenue), located west of Laclede Station Road in St. Louis County, is a historic African-American neighborhood. Opportunities for project input were provided in numerous ways including a neighborhood meeting held at a Bennett Avenue resident's home to discuss concerns about I-64. Concerns were expressed regarding property impacts to this neighborhood. Households living in the Clayton Park Addition (Bennett Avenue) have incomes above the poverty line. The Clayton Park Addition (Bennett Avenue) was also represented on the Thruway Subcorridor Committee.

The Clayton Park Addition (Bennett Avenue) was severely impacted by previous highway construction projects. Based on these discussions, MoDOT has continued to examine design options to minimize property impacts. For further information on the Bennett Street neighborhood, see Appendix E and the Section 4(f) evaluation. In addition, the three houses potentially impacted by the project are listed in Table III-15a (properties # 298, 299 and 301) as being located within an eligible historic district. Based upon comments received the preferred alternative was adjusted in order to not impact the Bennett Avenue properties.

The Thruway Alternatives do not result in property impacts to identified low-income or minority areas located to the south of I-64 between Hanley Road and Big Bend Boulevard. There will be property impacts to a low-income or minority area located north of I-64. Thruway Alternatives 2

and 2a would result in the acquisition of two or three houses located in the Clayton Park Addition (Bennett Avenue). Thruway Alternatives 2 and 3 (Preferred) would require the acquisition of 48 apartment units located in the southwest quadrant of the Brentwood Boulevard interchange while Alternatives 2a and 3a would require the acquisition of eight units. These apartment units are located in a block where about 13 percent of the population is minority. Another block where acquisitions will be necessary is located on the north side of I-64 just east of I-170, including Everett Avenue. Thruway Alternative 3 and 3a would result in the acquisition of substantially more single-family residences as there would be with Thruway Alternative 2 and 2a. About 28 percent of the individuals living on this block are minority. The impacts at each of these locations could potentially affect low-income or minority households.

There would be changes in access resulting from the Thruway Alternatives. The Thruway Alternatives would:

- remove highway access at the Laclede Station Road interchange,
- increase interstate access at Big Bend Boulevard,
- slightly reduce interstate access at the Galleria Parkway interchange, and
- expand interstate access at the I-64/I-170 interchange,
- remove left turning access at Hanley Road/Eager Boulevard.

The remaining interchanges retain their same interstate access, but undergo improvements to promote the free and safe flow of traffic. Removal of the half access to-and-from the highway at Laclede Station Road changes the highway access patterns in the adjacent neighborhood. It is anticipated that there would be no adverse affect due to the close proximity of the Hanley Road and expanded Big Bend Boulevard interchanges. The reduction of through traffic on Laclede Station Road from the interchange closure was considered by residents as a positive action. Existing roadway infrastructure outside the proposed improvements is in good condition to accommodate the modified highway access patterns from lack of interstate access at Laclede Station Road. Laclede Station Road would remain open as an underpass crossing I-64 thereby not affecting the existing local connections in the area.

Pedestrian access in the Thruway Subcorridor would be enhanced under the Thruway Alternatives in areas within state right-of-way. The Thruway Alternatives would promote the safe integration of pedestrian movements on roadways that cross I-64 by providing wider sidewalks and in some cases wider areas to separate pedestrians that would otherwise be adjacent to traffic on the roadway. The current pedestrian access that crosses over I-170 south of the Galleria Parkway near Antler Drive, would be replaced. Currently, stairs provide access to the bridge. When the bridge is replaced there will be ramps on both sides in order to comply with ADA requirements. Based on public involvement and other input from stakeholders, there has not been strong concern about pedestrian access in the Thruway, however treatments to access will be carried throughout the study corridor.

Existing transit access in the Thruway Subcorridor will be expanded by Bi-State Development Agency (Metro) to include two new light rail transit stations near Hanley Road interchange and Galleria Parkway interchange. Outside of existing state right-of-way, infrastructure to-and-from the new stations is in good condition to accommodate the increased travel from the local neighborhoods. The Thruway Alternatives would further accommodate the new stations by reconstructing the Hanley Road and Galleria Parkway interchanges promoting the safe and free flow of motorized and pedestrian traffic within the area. Access at Hanley Road and Eager Boulevard would be restricted.

Parkway Subcorridor

There is a concentration of low-income and minority population located in the Parkway Subcorridor. The area can also be characterized as having a lower rate of vehicle ownership than the Thruway or Greenway Subcorridors and can be considered more transit dependent than the other subcorridors. The census data verifies the presence of minority populations in the Parkway Subcorridor and reaffirms the focus on concerns and issues related to environmental justice in this portion of the I-64 Corridor.

The census data shows that households located in the eastern portion of the subcorridor (tracts 1042, 1121 and 1186) have lower incomes, fewer automobiles and a lower percentage of completed high school education than for the corridor as a whole and as compared to the St. Louis region. In 2000, the percentage of persons below the poverty level for the census tracts located in the Parkway Subcorridor ranged from seven percent to 26 percent. The highest concentration of low-income population is in Tract 1186, located in the east portion of the subcorridor, where 26 percent of the persons have incomes below poverty level, and these households also have relatively low auto ownership and would be considered to be more transit dependent.

Field investigations were completed for the neighborhoods located in the Parkway Subcorridor. There were also discussions with representatives of the Hi-Pointe, Cheltenham and King's Oak neighborhoods and neighborhood meetings were conducted in order to identify any special issues or populations. Representatives suggested using a newsletter and internet site through the city of St. Louis web site at Stlouis.missouri.org/neighborhoods/index.html as a resource for public outreach.

Other methods for public outreach were identified. The city of St. Louis neighborhoods east of McCausland Avenue include many local businesses and community-based churches. A number of these churches have weekly newsletters for their members and bulletin boards located near the main entry of the churches. Only one church was found offering a service in a language other than English. The St. Peter's Lutheran Church located in the Forest Park Southeast neighborhood on Kingshighway Boulevard holds a service in Vietnamese.

Participating in the Parkway Advisory Committee meetings were representatives of neighborhoods where low-income or minority individuals reside, including Hi-Pointe and Forest Park Southeast. MoDOT staff attended town hall meetings in Hi-Pointe, Clayton/Tamm, Cheltenham and Forest Park Southeast neighborhoods to discuss the I-64 project. Concerns expressed related to bus access on Kingshighway Boulevard, pedestrian access to Forest Park and a desire to retain the current neighborhood character.

While there are a greater number of persons who live in minority and low-income households in the Parkway Subcorridor, there are only a few residential acquisitions within the subcorridor. These are located adjacent to I-64 between Bellevue Avenue and Oakland Avenue. There are two blocks in this area on the south side of I-64 where up to half of the population is shown to be minority, meaning there can be property impacts to minority residents in these blocks. Parkway Alternative 1 includes an eastbound exit ramp to Oakland Avenue. This alternative would result in the acquisition of ten single-family residences on one block that is predominately non-minority. Parkway Alternative 2 (Preferred) would not result in the acquisition of residences in this area.

Other potential impacts include changes in vehicle access, changes in pedestrian access and changes in transit access. The Parkway Alternatives would remove interstate access at Oakland Avenue near McCausland Avenue and replace that access from I-64 to Oakland Avenue near Hampton Avenue. Moving the interstate access near Hampton Avenue mainly aids development east of Hampton Avenue, but it would also be closer for use by individuals

living nearby. In the minority neighborhoods at the eastern end of the I-64 Corridor, the Parkway Alternatives would add interstate access at Tower Grove Avenue creating a full access interchange with the existing Boyle Avenue interchange. The neighborhoods would benefit from this expanded highway access changing from a half interchange to a full interchange. The remaining interchanges in the Parkway Subcorridor would retain their same interstate access, but undergo improvements to promote the free and safe flow of traffic. The existing roadway infrastructure outside the proposed improvements is in fair condition to accommodate the slightly modified highway access patterns from the Parkway Alternatives. No adverse impact is expected to the households under study in this area by the modifications in highway access.

Pedestrian access in the Parkway Subcorridor would be enhanced under the Build Alternative in areas within state right-of-way. Issues regarding access in the Parkway were very important and these concerns were incorporated into the design process. The Build Alternative would promote the safe integration of pedestrian movements on roadways that cross I-64 by providing wider sidewalks and in some cases wider areas to separate pedestrians that would otherwise be adjacent to traffic on the roadway. The existing pedestrian bridges would be rebuilt promoting the safe access to and from Forest Park on Oakland Avenue and east of Kingshighway Boulevard. In relocating the pedestrian bridge near Hampton, the goal was to locate the bridge so that it is still near the MetroLink shuttle bus stop on the north side of I-64 and have a longer more gradual ramp to tie in the Oakland/Highlander intersection on the south side of I-64. The longer ramp was chosen to make the access to the crossing easier for persons with disabilities. The cross walk may then be used to cross Oakland Avenue. The pedestrian tunnel between Oakland Avenue and Forest Park would be rebuilt farther to the east near Kingshighway Boulevard which is closer to neighborhoods where minority and low-income individuals live.

Existing transit access in the Parkway Subcorridor would remain the same under the No-Build and Parkway Alternatives. No proposed improvements between transit systems and households would be needed due to presence of infrastructure outside state right-of-way for such purposes. No adverse impact to transit systems is expected by the Parkway Alternatives. The existing transit routes maintained by others would be accommodated as they are today. Urban design treatments are proposed to improve the access to transit by improving sidewalks and providing space for improved transit amenities such as bus shelters as part of the Parkway Alternatives.

d. ADA Issues

There has not been any indication of a definable segment of the population who are disabled or otherwise are in need of specialized services. However, in planning for improved pedestrian access, MoDOT met with Paraquad, a group concerned with the accessibility of facilities. The meeting was to get an opinion on the minimum ADA standards. The area specifically looked at was the pedestrian bridge near Hampton in the Parkway, but the comments received are applicable to the entire corridor. Paraquad pointed out that in general people with disabilities will look for the shortest route to their destination. However, when given the choice between a shorter ramp with a steeper grade and landing areas to rest, which is the ADA minimum standard, or a longer ramp with a more gradual slope, the representative from Paraquad felt that the latter would be preferred. For all of the pedestrian bridges along the corridor, an effort will be made to minimize the need for ramp systems to approach the bridge. For example, at Kingshighway the ground would be regraded to provide for an at-grade approach to the pedestrian bridge.

Some of the other issues raised by Paraquad related to crosswalks, pavement materials, and seasonal effects on access which create problems for individuals in wheelchairs. Paraquad suggested that cross walks be equipped with an audio device which would notify a blind or sight

impaired person of when it is safe to cross the street. These signals have been installed at the crosswalks on the Saint Louis University Campus. It was also pointed out that consideration should be given to pavement materials because materials like compacted gravel and mulch can cause difficulties for wheelchairs when the materials become wet. These materials can develop channels which inhibit the use of wheelchairs. It was also noted at this meeting that pedestrian bridges should be designed to minimize the buildup of snow and ice in the winter.

e. Summary

During the course of the I-64 Corridor Study, there has been a concerted effort made to minimize residential displacements and other impacts to the adjacent communities and neighborhoods. Public involvement and demographic analysis contributed to identifying and avoiding disproportionate impacts. Efforts have been and will continue to be made to reduce impacts by utilizing interchange designs that utilize less right-of-way than conventional interchanges and by the use of retaining walls to minimize right-of-way needs adjacent to the freeway. Efforts have been made to enhance pedestrian movement across I-64, to minimize the impacts of I-64 as a barrier and improve the pedestrian connections between neighborhoods and activities on each side of I-64 through the improvement of pedestrian bridges and tunnels, improving the accessibility of pedestrian trails and sidewalks, widening sidewalks on bridges. Vehicular access to neighborhoods has been preserved and enhanced through improved interchange design. These components of the project support enhanced neighborhood character and have been developed through a collaborative process between MoDOT, Subcorridor committees, neighborhood representatives and community leaders. The previously mentioned neighborhood contacts will continue to be used throughout the decision-making process to proactively involve the public. Based upon these efforts, disproportionately high impacts to minority or low-income residents in the I-64 Corridor are not expected, at this time.

C. Right-of-Way Impacts

Among the various impacts of the construction of a highway or other major transportation improvement project, the acquisition of real property, including residences and businesses, is the action which engenders the most discussion among those directly affected. In an effort to make the property acquisition process as equitable as possible, regulations including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. 4601) and the Missouri Department of Transportation's relocation program and relocation advisory assistance program which satisfies the requirements of Title VI of the Civil Rights Act of 1964, have been developed to ensure adequate consideration and compensation for the persons whose property is required for the project. It is likely that both long-time residents and those persons who have recently arrived may be affected by the acquisition of their property.

Relocation impacts were evaluated within the categories of residential and business displacements. None of the alignments contained in this study impact cemeteries.

The right-of-way acquisition impacts include land that is acquired for highway construction and operation purposes. Right-of-way impacts also include both total acquisition i.e. the entire tract, parcel or lot is acquired for right-of-way; and partial acquisition i.e. only a portion of the tract, parcel or lot is acquired for right-of-way. With a partial acquisition, a habitable residence or viable commercial business would remain and the primary structure is not acquired. Table IV-2 shows total as well as partial acquisitions by land use category of single-family residential, multi-family residential, business, and public/semi-public for each of the Build Alternatives. The right-of-way impacts are also illustrated in Appendix C. The No-Build Alternative would not have any relocation impacts.

Table IV-2
Right-of-Way Impacts

SUBCORRIDOR & ALTERNATIVES	TOTAL ACQUISITIONS				PARTIAL ACQUISITIONS			
	Single-Family	Multi-Family	Business	Public/ Semi-Public	Single-Family	Multi-Family	Business	Public/ Semi-Public
Greenway Subcorridor								
Build Alternative *	12	0	0	0	87	0	10	5
Thruway Subcorridor								
Build Alternative 2	75	92	43	0	18	1	6	2
Build Alternative 2a	80	52	46	0	24	1	6	2
Build Alternative 3 *	94	92	41	0	21	2	6	1
Build Alternative 3a	99	52	42	0	23	2	6	1
Parkway Subcorridor								
Build Alternative 1	10	8	1	0	17	0	12	6
Build Alternative 2 *	9	8	1	0	12	0	12	6

Source: MoDOT District 6 and HNTB Corporation, 2002.
* Indicates Preferred Alternative

1. RESIDENTIAL ACQUISITION IMPACTS

Residential Impacts discussed below indicate the number of full and partial acquisitions. These acquisitions are based on the conceptual engineering completed as part of this EIS. The number of impacts could be reduced or increased as design details are developed.

a. Greenway Subcorridor

No-Build Alternative

The No-Build Alternative would not require additional right-of-way for minor short-term activities, including pavement overlays, routine maintenance and bridge repair.

Greenway Alternative 1 (Preferred)

This alternative would totally acquire 12 single-family detached residences through total acquisition. These are distributed among the cities as follows: Frontenac, seven; Ladue, two; Brentwood, three. Three of the residences in Frontenac are mobile homes. There would be no multi-family residences acquired in this subcorridor.

There would be an additional 87 single-family detached residences impacted by partial acquisitions. These are distributed as follows: Frontenac, 34; Ladue, 49; Brentwood, two; Richmond Heights, two. These partial acquisitions generally are along rear or front property lines adjacent either to I-64 or frontage roads that parallel I-64. There are no multi-family partial acquisitions in this subcorridor.

b. Thruway Subcorridor

No-Build Alternative

There would be no impacts from this alternative.

Thruway Alternative 2

All of these residential acquisitions and impacts occur in Richmond Heights. There are no residential displacements in Brentwood or Clayton. This alternative would totally acquire 75 single-family residences and 92 multi-family residences. The multi-family units are primarily concentrated in two areas. One apartment complex, Town and Country Apartments has 48 apartments in six, 8-unit buildings. This apartment complex would be totally acquired. There are

an additional 44 multi-family units in the apartment building and the duplexes that would be acquired along Hawthorne Place.

An additional 18 single-family residences would have partial acquisitions, generally along the rear property lines, adjacent to I-64. The Manhasset Apartments would have a partial acquisition, acquiring the two tennis courts, a maintenance building and approximately 30 parking spaces.

Thruway Alternative 2a

All of these residential acquisitions and impacts occur in Richmond Heights. There are no residential displacements in Brentwood or Clayton. The alternative would totally acquire 80 single-family residences and a total of 52 multi-family dwelling units. These multi-family units are located in several multi-family structures. These include an 8-unit building of the Town and Country Apartments, and the total of 44 apartments and duplexes along Hawthorne Place. The impact to the Town and Country apartments would also take approximately 27 parking spaces.

There would be an additional 24 residences that would have partial acquisitions, generally along the rear property lines, adjacent to I-64. The Manhasset Apartments would have a partial acquisition along its rear property line.

Thruway Alternative 3 (Preferred)

All of these residential acquisitions and impacts occur in Richmond Heights. There are no residential displacements in Brentwood or Clayton. This alternative would totally acquire 94 Single-family detached residences. As with Thruway Alternative 2, this alternative would displace 92 multi-family dwelling units. The Town and Country apartment complex, containing a total of 48 apartments in six, 8-unit buildings would be totally acquired. The 44 other multi-family units are as above in Thruway Alternative 2.

There would be an additional 21 residences that would have partial acquisitions, generally along the rear property lines, adjacent to I-64. The Manhasset Apartments would have two partial acquisitions, which includes a maintenance building, two tennis courts and approximately 44 parking spaces.

Thruway Alternative 3a

All of these residential acquisitions and impacts occur in Richmond Heights. There are no residential displacements in Brentwood or Clayton. The alternative would totally acquire 99 single family residences and 52 multi-family dwelling units as already noted in Thruway Alternative 2a.

There would be an additional 23 residences that would have partial acquisitions, generally along the rear property lines, adjacent to I-64. The Manhasset Apartments would have a partial acquisition that would impact 14 parking spaces.

c. Parkway Subcorridor

No-Build Alternative

There would be no impacts from this alternative.

Parkway Alternative 1

This alternative would totally acquire 10 single-family detached residences, four in Richmond Heights and six in the city of St. Louis. In addition there are a total of eight multi-family acquisitions, all in the city of St. Louis

There are 17 partial residential acquisitions with Parkway Alternative 1. These include three from rear yards along Nashville Avenue, five from the front yards along Oakland Avenue and nine from the front yards along Kingshighway Boulevard.

Parkway Alternative 2 (Preferred)

This alternative would totally acquire nine single-family residences. Four are located in Richmond Heights and five in the city of St. Louis. Multi-family residential totally acquired are as in Alternative 1. There are 12 partial acquisitions, three from Nashville Avenue and nine from Kingshighway Boulevard .

2. RELOCATION POLICIES

The Missouri Department of Transportation offers a relocation assistance program to individuals, families, business owners, farm operators, and non-profit organizations that are partially or totally displaced by a state highway project. This program conforms to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. 4601). Relocation assistance under this program will be made available to all relocated persons without discrimination.

The Uniform Act, as well as Missouri state laws, requires that just compensation be paid to the owner of private property taken for public use. The appraisal of fair market value is the basis of determining just compensation to be offered the owner for the property to be acquired. An Appraisal is defined in the Uniform Act as a written statement independently and impartially prepared by a qualified appraiser setting forth an opinion of defined value of an adequately described property as of a specific date, supported by the presentation and analysis of relevant market information.

It is the policy of FHWA and MoDOT that no person be requested to move from their dwelling until at least one comparable replacement dwelling has been made available to that person. A comparable, replacement dwelling is safe, decent, sanitary and functionally similar to the present dwelling and within the financial means of the displaced person. The replacement housing must also be open to persons regardless of race, color, religion or national origin.

A representative of MoDOT will assist each displaced person in securing comparable replacement housing and be sensitive to the special needs of any special group of residents. The relocation coordination office would maintain liaison activities with other agencies rendering services useful to persons who must relocate. The occupants of residences are entitled to receive reasonable and necessary moving costs and related expenses in relocating their personal property.

Displacement and relocation of residences and businesses are often necessary parts of undertaking a transportation improvement when sufficient right-of-way has not been provided to accommodate future needs. In an effort to make the property acquisition process as equitable as possible, the FHWA has established standards to ensure adequate consideration and compensation.

The program is designed to make actual payments available to offset some of the expenses experienced by those who are displaced. The program also provides advisory assistance to owners and tenants who are displaced.

The Missouri Department of Transportation's relocation program is designed to provide uniform and equitable treatment for those persons who are displaced from their residences, businesses,

or farms. The relocation advisory assistance program satisfies the requirements of Title VI of the Civil Rights Act of 1964.The program provides advisory assistance to:

1. Owners and tenants who are displaced

2. Persons occupying real property adjacent to that being acquired who are caused substantial economic injury by the acquisition

3. Persons who, as a result of the project, move personal property from real property not being acquired for the project

4. Persons who move into property after acquisition and are aware that they will have to move due to the project.

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

The Uniform Act requires that comparable, decent, safe, and sanitary replacement housing within a person's financial means be made available before that person may be displaced. Should this project include persons who cannot readily be moved using the regular relocation program benefits and/or procedures, i.e., when there is a unique housing need or when the cost of available comparable housing would result in payments in excess of statutory payment limits ($22,500 or $5,250), the MoDOT's relocation policy commits to utilizing housing of last resort. Housing of last resort involves the use of payments of statutory maximums or the use of other unusual methods of providing comparable housing.

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

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

Relocation resources are available to all residents and business relocated without discrimination. A general information notice in the form of a brochure entitled "Relocation and Assistance and Payments Program" will be provided to persons who may be displaced. This relocation brochure provides general information about the MoDOT's relocation program. A

copy of the MoDOT Relocation Assistance Program brochure is available at the MoDOT District Offices.

3. AVAILABILITY OF HOUSING

The real estate market in the St. Louis Metropolitan Region is dynamic and offers a wide variety of housing styles and prices. The availability of housing can only present a snapshot of the real estate market at one specific time. The day used in this analysis was updated from the DEIS to November 11, 2003. This date provides a current review of real estate market conditions. It also does not include every residential unit that is on the market at a given time, but does include those units that were listed with the National Association of Realtors. The listing did include a wide variety of price ranges noted by zip code and by city. An exhibit showing zip code boundaries is shown in Appendix G. The zip codes used in this presentation of housing availability included the following:

- 63131 – Westwood and Frontenac, as well as Des Peres, Crystal Lake Park, Ladue, Town and Country, Unincorporated St. Louis County. Creve Coeur and Huntleigh.
- 63124 – Ladue, as well as University City.
- 63144 – Brentwood, as well as Richmond Heights and Rock Hill.
- 63117 – St. Louis and Richmond Heights, as well as Maplewood and Ladue.
- 63139 – St. Louis
- 63130 – St. Louis

The real estate data summarized indicates that there is a wide range of replacement housing available.

The right-of-way estimates were used a guideline in comparing residences acquired with the availability of replacement housing. These estimates are not an appraisal but are used only as a guide. Residences listed for sale that were within plus or minus ten percent of the right-of-way estimate were considered as eligible to be considered as appropriate for the replacement housing analysis.

Data for residential units for rent was obtained from StlToday and Realtor which are on line web based sites that have rental listings. Searches were made by zip code, city, and metro area divisions. The rental data was current as of November 16, 2003 and offer a reasonable point in time view of the rental market for the I-64 area. There may be other residential units for rent within the I-64 corridor that do not have listings in the data bases that were searched. As with the residences listed for sale, there were more apartments listed as being for rent at this time than during the September 2002 period, which was used previously.

It should be noted that the purpose of the analysis is to demonstrate that an adequate supply of safe, decent and sanitary replacement housing is presently available or is not presently available in the general area of the acquired property at a specific point in time, during the environmental document preparation. The number of residences for sale within these zip codes has changed from the information first obtained in May of 2002. In summary, it can be said that more residences are for sale now than previously noted and that there are more residences noted as being priced within the estimated construction cost ranges for right-of-way and real estate acquisition.

As with any very large highway project, the right-of-way acquisition process occurs over a period of years and in relatively discrete stages. This process somewhat ameliorates the apparent excess or deficiency in numbers of homes or apartments that will likely be needed to provide safe, decent, and sanitary replacement housing to those whose property is being acquired for the proposed action.

The New I-64 Project is anticipated to have eight construction phases, which are assumed to be completed over a 16 year period; right-of-way acquisition of necessity would be completed in each phase prior to construction. The Greenway Subcorridor is expected to be constructed in Phases 2 and 6; The Thruway Subcorridor in Phases 1, 5 and 8 and the Parkway Subcorridor in Phases 3 and 7. The acquisition of right-of-way would likely occur over a minimum of 16 years, which should allow the local real estate market to absorb those persons that would prefer to remain near their present locale. If an accelerated construction phasing were to occur through the provision of higher funding or from design-build construction, the real estate market may not be able to absorb displacements in the project vicinity. Provisions of the MoDOT relocation program would be employed.

A variety of personal and financial issues come into consideration during discussions of replacement housing. Based on comments received on this and other similar highway improvement projects, it has been noted that some residents prefer to remain near their present location while others prefer to move to another location. Some prefer another type of dwelling unit size or type due to changing family size, age, or health. Others may prefer a completely different setting. Residents of multi-generational neighborhoods, with strong family ties and community commitment generally are reluctant to move any distance from their present surroundings.

a. Greenway Subcorridor

There were a total of 264 residences for sale in zip codes 63131 and 63124, which includes Frontenac and Ladue. In zip code 63124, there were 105 residences, which ranged in price from $105,000 to $11,000,000, with an average price of $1,330,979. For zip code 63131, there were 159 residences for sale, ranging from $159,900 to $3,425,000, and an average price of $945,000. (There was one residence being listed for $3,000 and it was not included in the range as it appeared not to meet basic replacement housing criteria.) It should be noted that zip code 63131 includes a number of cities in addition to the two that contain the residential displacements.

Of these 264 homes for sale, 17 were noted as being within the comparable range of the right-of-way cost estimates. It appears that a sufficient number of residences are available for relocation acquisition purposes, even if they are all acquired within a short period of time.

None of the residences acquired for this project appeared to be rental units.

b. Thruway Subcorridor

A total of 108 residences were for sale in zip codes 63144 and 63117. This area includes Brentwood, Richmond Heights and St. Louis. There were 58 residences in zip code 63144, which varied in price from $99,000 to $599,900 with an average price of $211,138. The price for the 50 residences in zip code 63117 ranged from $79,000 to $1,495,000 with an average price of $325,018. These two zip codes do include two cities that do not have residential displacements, Maplewood and Rock Hill. Of the 108 homes noted for sale, 55 of them are priced within the right-of-way cost estimate ranges. This number of homes for sale does not appear to be sufficient to provide comparable replacement housing in the locations noted if all

the right-of-way was to be acquired at one time. However, it should be noted that right-of-way acquisition is a phased process that is anticipated to occur at different periods of times over 16 years. The residences available prior to Construction Phases 1, 5 and 8 is difficult to determine during the project's duration.

The residences that are on the market tend to sell very quickly. This is characterized as a combination of price, location, housing style and size and neighborhood stability according to real estate professionals contacted during the preparation of this section.

There were 31 rental units listed in zip code 63117 which includes Richmond Heights, an additional 17 rentals listed in zip code 63144, Brentwood. The Richmond Heights rental units varied from $325 to $1,100 per month, averaging $582 and the Brentwood rental units ranged from $625 to $1,100 per month, averaging $844 per month.

The Preferred Alternative would acquire 92 multi-family residential units, approximately one half of the needed rental units are available at this time. Construction Phase 1, the I-64/I-170 Interchange, would result in the need to acquire about one half of the total multi-family units that were identified to be acquired for the project. It appears, therefore, that there is a sufficient number of vacant multi-family units available at this time for the first construction phase. The next construction phases that would require a substantial number of multi-family residential units, would be Phase 5, Hanley Road and Phase 8, the Big Bend Boulevard/Bellevue Avenue. Since these subsequent multi-family residential acquisitions would likely occur over a period of time prior to each construction phase, there may be sufficient time for the real estate rental unit market to respond to these changing conditions and additional multi-family units will be made available by that time through new construction, renovation of existing units or tenant turnover.

c. Parkway Subcorridor

A total of 274 residences were listed for sale in zip codes 63139 and 63130. Both of these zip codes include the St. Louis. The 110 residences for sale in zip code 63139 ranged in price from $29,900 to $329,000. The average asking price was $140,189. There were 164 residences for sale in zip code 63130, priced from $27,300 to $745,000, with an average price of $235,954. There are 19 residences for sale that met the right-of-way cost estimate ranges. For the Parkway Build Alternative 2 (Preferred) there would likely be an adequate supply of replacement housing within or adjacent to the affected neighborhood for right-of-way acquisition in a short period of time.

There were 56 residential units for rent in zip code 63110 and 63139 which include the city of St. Louis. The rental units averaged $632 per month for zip code 63110 and $584 per month for zip code 63139. This appears to be a sufficient number of replacement rental units for the St. Louis portion of this subcorridor. The properties would be acquired prior to Construction Phases 3 and 7.

4. COMMERCIAL DISPLACEMENTS

There are commercial displacements in each of the three sections of the I-64 Corridor. The commercial displacements were counted as commercial structures and the tenant mix was noted.

a. Greenway Subcorridor

No-Build Alternative

The No-Build Alternative would not require additional right-of-way to rebuild bridges or repave the driving lanes.

Greenway Alternative 1 (Preferred)

This alternative would have no total acquisitions.

Partial acquisitions generally impact parking lots of businesses access points or yard areas. Partial acquisitions in Frontenac include the Hilton Hotel, affecting approximately 17 spaces. The Hilton partial acquisition is associated the widening of Lindbergh Blvd. The Expressions Custom Furniture and Edward Jones Investment would have about six spaces affected by the Lindbergh improvement. There will also be partial acquisitions of two properties, the A.G. Edwards and the Allegiant Bancorp properties. Approximately 16 parking spaces would be acquired from the A.G. Edwards property.

In Ladue, the Schnuck's parking lot would be impacted by the widening of Lindbergh Boulevard and approximately 38 spaces would be affected.

Partial acquisitions would also affect the property adjacent to the parking lots associated with the NCR Building and the Custom Industries Building. Approximately 41 spaces are at the NCR Building and 28 spaces are at the Custom Industries Building. Additionally, partial acquisitions would also impact Ladue Place parking lot, affecting approximately 25 spaces. The La Spa property would be affected by a partial acquisition but no impact to structure or parking is anticipated.

In summary, five businesses would have partial acquisitions in Frontenac. Five businesses would have partial acquisitions in Ladue.

b. Thruway Subcorridor

No-Build Alternative

There would be no property impacts from this alternative.

Thruway Alternative 2

Thruway Alternative 2 would totally acquire nine commercial structures. Two of these commercial structures are located in Clayton. The first is a multi-tenant medical office and professional services building, The Medical West Office Building, which includes 35 medical offices of doctors, dentists and associated medical professionals and businesses such as Knot Magic Muscle Therapy, Tocco's Barber Shop, State Farm Insurance, Michel Jams Salon and House of Optics. The second commercial structure is the International House of Pancakes, located adjacent to the Medical West Building.

Seven of the commercial structure total acquisitions are in Richmond Heights. These include four retail and service shop buildings; three of which are occupied, the Olive Branch Florist, Aloyse Design, an interior decorating business, and A-1 Corporate Hardware. One structure was vacant at the time of the survey. Two buildings of a 20 building motel complex, the Residence Inn, would also be acquired. All of these are adjacent to I-170. An office building with attorney's offices would also be acquired at Big Bend Boulevard. There are no commercial structure total acquisitions in Brentwood.

Partial acquisitions are noted in Brentwood and Richmond Heights. Improvements to Brentwood Boulevard would impact Brentwood Square sidewalk but no parking spaces. The H.A. Rothman Building and adjacent office building on the east side of Brentwood Boulevard would have 14 parking spaces impacted by widening.

In Richmond Heights, improvements to Big Bend Boulevard would affect businesses on the north and south of I-64. On the north side of I-64 Clayshire Electric could lose a parking space and some of the sidewalk. On the south side of I-64, the Telle Tire and Telle Tire Engine Diagnostic would be impacted. Approximately 12 spaces would be acquired.

Thruway Alternative 2a

Alternative 2a would totally acquire 12 commercial structures, including all the displacements as noted above. The additional commercial structure is the Shell Service Station. This service station is located in Richmond Heights. Two additional 8-unit motel buildings from the Residence Inn would be acquired by this alignment raising the total to four, 8-unit motel buildings. None of the commercial structure displacements occur in Brentwood.

The partial acquisitions are the same as above.

Thruway Alternative 3 (Preferred)

Thruway Alternative 3 would totally acquire seven commercial structures. These acquisitions include the Medical West Office Building, with its 35 tenants, and the International House of Pancakes in Clayton. Five of the commercial structure total acquisitions are in Richmond Heights. These include four retail and service shop buildings and an office building. The total acquisitions are nearly the same as in Alternative 2 except that there are no acquisitions of buildings at the Residence Inn motel complex.

The partial acquisitions are the same as above.

Thruway Alternative 3a

Thruway Alternative 3a would totally acquire eight commercial structures, including all the displacements as noted in Alternative 3. The additional commercial structure is the Shell Service Station. This service station is located in Richmond Heights.

The partial acquisitions are the same as above.

c. Parkway Subcorridor

No-Build Alternative

There would be no property impacts from this alternative.

Build Alternative 1 and Build Alternative 2 (Preferred)

Both alternatives would have the same commercial business impacts, all of which are in the City of St. Louis. The one business that would be a total acquisition is Imo's Pizza, at Oakland and Hampton Avenue.

Partial acquisitions are associated with Hampton Avenue improvements. On the west side of Hampton, two businesses would be affected, Mobil Mart Service Station five parking spaces and Talayna's Restaurant six parking spaces. Three additional businesses would have partial acquisitions but parking would not be affected. These are Courtesy Diner, Subway and Arena Liquors. On the east side of Hampton Avenue, Fox TV Studios would have a partial acquisition of open space and, south of Berthold Avenue, the Amoco Station would have three spaces affected. South of the Amoco partial acquisitions would not affect parking. These include the American Lung Association, the Salvation Army, an unidentified office and the Miris Dunja Restaurant.

The partial acquisition associated with I-64 ramp to Boyle Avenue is Clearbrook Spring Water. Clearbrook Spring Water would have approximately 10 parking spaces affected by the Boyle Avenue improvements.

In summary one business would be totally acquired and 12 would have partial acquisitions, of which four would affect parking lots.

5. AVAILABILITY OF COMMERCIAL PROPERTY

The availability of commercial replacement buildings or space is more dynamic than residential replacement space. The area around the I-64 and I-170 interchange, where most of the commercial displacements occur, has undergone a major change in recent years. New commercial retail and office developments have been built, are under construction or on the drawing boards. Several of the affected commercial structures have been there for many years, in some cases, as residential structures before conversion to commercial uses; others were built as specialized office or professional space such as the Medical Office building.

There are a number of development projects that are underway at this time, so that those businesses desiring to move into new space may have an opportunity do so. Currently in progress at the Meridian site is a multi-million dollar development that will include over 400,000 square feet of retail and office space. Pace properties, a development corporation, is currently creating site plans for a 14-acre (5.7 hectare) property located on the northwest corner of the I-64/I-170 interchange. The site is planned with over 600,000 square feet (55,741.8 m^2) of commercial, office and dense residential uses. A 26-acre (10.5 hectare) site is being redeveloped as an office park called The Highlands at Forest Park. The first phase of this development consists of two buildings. The first office building, a five-story structure with 150,000 square feet (13,935 m^2) of floor space and an adjacent three-level, 500-car parking garage, is located on the northwest corner of the property facing Oakland Avenue and I-64. The second phase includes two six-level 100 unit apartment buildings. Construction is expected to be finished and taking tenants for the apartments by the end of 2004. Phase three is planned as a four-level 130 room hotel with 100,000 square feet (9,290.3 m^2) of floor space (as per Don Land, Balke Brown). This phase is expected to be under construction by the end of 2004.

D. Economic Impacts

Highways are essentially “tools” used in transporting goods and people from one place to another. Investments in highways contribute to economic development in that they lower transportation and logistics costs. Such changes may be realized in numerous ways, including improved safety, decreased fuel and vehicle operating costs, and improved awareness of the ability to travel to the corridor, as well as revised logistics patterns. These benefits from the highway improvements would accrue to persons or businesses whose vehicles use the area’s roadway system. Lower transportation costs would be passed on to consumers in the form of lower prices for consumer goods; to workers in the form of higher wages; or to owners of businesses in the form of higher profits. As a result, persons could benefit from a transportation investment without actually traveling on the highway.

1. ECONOMIC IMPACTS

The continued increase in economic activity in the region composed of the city of St. Louis and St. Louis County is evidenced by long-time trends in population growth and increased employment. Such growth will place ever-increasing demands on the existing transportation system. The Build Alternatives would have a positive impact on the economic activity in the area.

a. Population

Population trends and economic trends are generally closely related. Growth in population results in more consumers for local businesses, taxpayers to increase the tax base, and available workers improving the available labor force. As indicated in Table IV-1, population trends in St. Louis show a decline since 1900. However, St. Louis County has steadily grown during the same period. The result has been a net growth in the total population of the region. The increase in population in St. Louis County has consistently exceeded the statewide average annual growth rate. For example, between 1990 and 1999 when the average annual growth rate for St. Louis County was two percent, the statewide average annual population growth rate was only 0.79%. Much of the recent growth in St. Louis County has occurred to the west of the I-64 Corridor, as the I-64 Corridor is already developed. The proposed action is not expected to result in an increase in population within the project corridor. The proposed action may contribute to stabilizing the population within the corridor. The proposed action will lead to improved regional accessibility and from that, support the continued population growth of the St. Louis region.

b. Employment

The proposed action will support economic growth in the project corridor. There are a number of major employment centers located along I-64 that will benefit from improved accessibility resulting from the proposed action. The Kingshighway Boulevard interchange area is an important employment center within St. Louis. Improving access to this location will help retain this area's economic viability within a city with declining total employment and population. A large commercial employment center is located adjacent to the I-64/I-170 interchange. Improvements in access to employment located adjacent to I-64 and I-170 will be important to maintaining or increasing economic viability in these locations located in this established suburban location. Likewise, I-64 will help support the economic vitality of other employment locations within the project corridor. The project will also improve the suitability of sites for business expansion and contribute to increased employment from the attraction of new businesses.

c. Access

The Build Alternatives would improve the operational efficiency and capacity of the interchanges serving each of these employment centers. The modification of the existing cloverleaf interchanges to single point urban diamond interchanges at Kingshighway Boulevard and at Hampton Avenue would provide improved access to the medical, office and institutional employment centers located in the Parkway Subcorridor. The retail employment centers located near Brentwood Boulevard would be provided with better access by improved interchange design and the removal of traffic congestion caused by freeway to freeway movements using the local street system. Improved interchange operations at Hanley Road would also support retail activity located on Eager Road between Brentwood Boulevard and Hanley Road. Replacing the existing interchanges at Spoede Road and Lindbergh Boulevard with more efficient interchange designs would improve the capacity and traffic level of service (LOS) serving the existing retail center and other land uses.

d. Local Sales Tax Collections

There are a number of factors that contribute to sales tax revenues. However, by improving access to commercial areas located in the corridor, the proposed action will be a positive factor that may contribute to increased sales tax collections within the corridor and for the St. Louis region.

e. User Costs and Benefits

Economic impacts can be direct or indirect and can be short term or long term in scope. Direct economic impacts decrease or increase the cost of doing business or non-work activities of the general public. Indirect economic impacts include improving access to a business or property, which results in an increase in value. Examples of short-term impacts are the construction jobs created while the road is being built. Long-term benefits include increased employment resulting from businesses deciding to expand or relocate to an area because of improved access.

Economic user benefits that would be experienced by the motoring public were estimated. Dollar costs were assigned based upon current MoDOT methodology for vehicle hours of travel, vehicle miles of travel and crashes. When compared to the No-Build Alternative, the Build Alternatives would produce a present value benefit of $546 million, experienced over a 20-year period. The benefits are attributed to reduced crashes and reduced traffic congestion. These system effects are described in the following sections.

System Performance Effects

System performance effects are primarily experience by the users of the system. These system users receive direct long-term economic impacts. The three traditional system performance effects are: 1) change in travel time; 2) vehicle operating costs; and 3) level of safety. These system performance measures can be quantified by comparing system performance with and without the proposed improvement. The regional travel demand model and traffic simulation model used to estimate future traffic volumes are used as a basis for estimating the changes in system performance. Findings indicate that the design variations for the Oakland Avenue off ramp within the Build Alternative are negligible when forecasting future system measures. As a result, the Build Alternative can be compared to No-Build as two separate alternatives for simplicity. The system performance measure produced by the travel demand model is summarized in Table IV-3.

Table IV-3
Year 2020 Annual Forecasted System Performance Measures in St. Louis Region with No-Build and Build Alternatives

Alternative	Daily Vehicle-hours of Travel (VHT)	Change in VHT from No-Build	Daily Vehicle-miles of Travel (VMT)	Change in VMT from No-Build
Region with No-Build	2,148,772	0	67,025,434	0
Region with Thruway Alternatives 2 and 2a	2,139,417	- 9,355	67,191,053	165,619
Region with Thruway Alternatives 3* and 3a	2,139,402	- 9,370	67,191,484	166,050

Source: East-West Gateway Coordinating Council and HNTB Corporation, 2002.
* Indicates Preferred Alternative

Change in Travel Time

Construction of the Build Alternative will reduce travel time and increase the predictability of travel time. Both of these benefits are reductions in opportunity costs for transportation system users. A business or individual can use the time savings for more productive activities. With available data, an estimate of the reduction in average travel time can be produced, but an estimate of the benefit from reducing the travel time variability cannot.

The direct economic benefit resulting from the reduction in average travel time is estimated using the travel demand model's estimate of vehicle-hours-of-travel (VHT) with and without the Build Alternatives. The methodology used to estimate the monitory value of travel times savings is provided in the *Guidebook for Assessing the Social and Economic Effects of Transportation Projects*[2]. The VHT from the No-Build Alternative is subtracted from the Build Alternative VHT to determine the reduction in VHT resulting from the Build Alternative. The estimated reduction in VHT is then subdivided into passenger vehicle and heavy truck portions based on the truck percentage. The resulting VHT subtotals are then multiplied by an hourly rate that reflects the value of time for the vehicle type and purpose. Truck VHT is valued at $25.13 per hour; passenger vehicle VHT is valued at $10.93 per hour in year 2002 dollars. Trucks are considered to represent an average of six percent of the traffic stream in the urban region.

The resulting direct economic impact resulting from the reduction in travel time under the Build Alternatives is approximately $850 million for a 20-year period in year 2002 dollars. Table IV-4 summarizes the results.

Table IV-4
Change in Travel Time (2012-2032)

Alternative	Change in Vehicle Hours of Travel (Daily VHT)		20-Year Travel Time Savings (millions of 2002 dollars)
	Year 2012	Year 2032	
Region with No-Build	0	0	$ 0.00
Region with Thruway Alternatives 2 and 2a	- 9,170	- 9,633	$848.87
Region with Thruway Alternatives 3* and 3a	- 9,184	- 9,649	$850.24

Source: HNTB Corporation, 2002.
* Indicates Preferred Alternative

Change in Vehicle Operating Costs

The Build Alternative increases capacity on I-64 from I-170 to Spoede Road increasing the amount of traffic and system measured traveled distance. To use the new higher speed facility, drivers travel farther to access the roadway, increasing vehicle miles traveled. The Build Alternative results in an increase in vehicle miles of travel (VMT), which translates into increased vehicle operating costs.

Vehicle miles of travel are not the only variables that can affect vehicle operating costs. Vehicle operating costs are the expenses incurred by drivers to operate their vehicle. Expenses include fuel consumption, tire wear, maintenance and repair, oil consumption, depreciation, license and insurance. The majority of these expenses vary based on the number of miles driven. The exceptions are license and insurance costs and a portion of depreciation. The magnitude of the mileage-based expenses varies based on miles traveled, road geometry, road surface type and condition, grades, environmental factors and operating speed variability.

All of the variables effecting vehicle operating costs cannot be quantified in this analysis, but the increased cost to motorists of the added vehicle miles of travel is estimated. The resulting estimate will tend to overestimate the impact because vehicle operating conditions are not being factored into the analysis. A more free flow of traffic on the Build Alternative at relatively constant speeds would result in generally lower vehicle operating costs than operating costs in

[2] Forkenbrook, David and Glen Weisbrod, *Guidebook for Assessing the Social and Economic Effects of Transportation Projects.* National Cooperative Highway Research Program Report 456. Transportation Research Board, Washington, DC 2001.

traffic along the No-Build Alternative characterized by lower speeds. Because of improved accessibility increased travel more vehicle miles of travel will lead to higher vehicle operating costs.

To estimate the impact on vehicle operating costs resulting from a change in vehicle miles of travel, the change in vehicle miles of travel was determined for the Build Alternative by subtracting the No-Build Alternative results from the Build Alternative results for 2012 and 2032. This change in total vehicle miles of travel was then disaggregated into heavy trucks and other vehicles using truck percentages of six percent for the years 2012 to 2032. A value of $0.66 for trucks and $0.33 for other vehicles was used as the vehicle operating cost per mile in 2002 dollars.

The resulting costs between 2012 and 2032 were then interpolated to develop annual costs for the 20-year analysis period beginning in 2012. The annual costs were then discounted to 2002 dollars using a discount rate of three percent. Table IV-5 summarizes the results. The 20-year increase in vehicle operating cost with the Build Alternative is approximately $460 million in 2002 dollars.

Table IV-5
Change in Operating Cost (2012-2032)

Alternative	Increase in Travel Distance (Daily VMT)		20-Year Savings (millions of 2002 dollars)
	Year 2012	Year 2032	
Region with No-Build	0	0	$ 0.00
Region with Thruway Alternatives 2 and 2a	142,248	204,130	- $458.85
Region with Thruway Alternatives 3* and 3a	142,660	204,591	- $460.01

Source: HNTB Corporation, 2002.
* Indicates Preferred Alternative

Change in Crash Costs[3]

Construction of a Build Alternative will increase safety. Despite the higher speeds on a freeway, the reduction in merge conflicts and improved design standards would result in fewer crashes. The statewide average crash rate on an urban freeway is 146.39 crashes per hundred million vehicle miles (1996-2000) . The actual crash rate on I-64 was much higher than the statewide average. The actual crash rates by mainline section are presented in Chapter I, Purpose and Need.

To quantify some of the economic impact of crash reduction, the monetary savings to through traffic were estimated for a 20-year period beginning in 2012. The annual number of crashes expected to occur on I-64 under the No-Build Alternative was compared with the Build Alternative.

Using forecasted ADTs and the appropriate crash rates, the reduction in through traffic crashes was estimated for the year 2020 for each alternative. To estimate the savings over the 20-year period, the reduction in crashes for each year were interpolated between the years 2012 and 2032. The resulting number of crashes avoided in the years 2012 to 2032 was multiplied by an

[3] Accident statistics and safety data summarized or presented in this Section are protected under federal law. See Appendix AA.

average crash cost calculated by MoDOT based on crash trends and crash cost data provided by MoDOT (see Chapter II.D.2. for additional information). The estimated monetary value of the crashes avoided was then discounted to year 2002 dollars using a discount rate of three percent.

The savings resulting from crashes avoided by through traffic using a safer roadway is estimated at $155.90 million over 20 years in 2002 dollars. Table IV-6 summarizes the resulting savings in crashes avoided by through traffic for each alternative along with the estimated number of crashes avoided in years 2012 and 2032.

Table IV-6
Crash Cost Reduction (2012-2032)

Alternative	Change in Number of Crashes		20-Year Crash Cost Savings (millions of 2002 dollars)
	Year 2012	Year 2032	
Region with No-Build	0	0	$ 0.00
Region with Build (I-170 stacked)	- 607	- 677	$155.90
Region with Build (I-170 flat)	- 607	- 677	$155.90

Source: HNTB Corporation, 2002.

2. ECONOMIC DEVELOPMENT BENEFITS

Economic development results in higher wages, new jobs, more job choices, increased activity choices, increased economic stability through economic diversification and improved public amenities. Economic development includes business startup, expansion, attraction and retention. An efficient transportation system is a key ingredient for economic development. The cost of moving people and goods directly affects the cost of doing business.

Construction of any of the Build Alternatives will improve the efficiency of the transportation system in the central St. Louis region. Regional accessibility for local businesses will be enhanced by improved efficiency and travel times on I-64. Businesses located along the corridor will have improved accessibility an important factor in profitability of businesses.

3. SHORT-TERM ECONOMIC IMPACTS

The two primary short-term economic impacts that can result from a roadway construction project are business disruption caused by temporary traffic control and an increase in construction employment. Efforts will be made to maintain traffic during construction and to reduce the length of the construction period to the extent possible.

Any of the Build Alternatives will increase jobs in construction and related sectors of the economy while the roadway is under construction. The infusion of construction related spending will have local and regional impacts as services and products are purchased to build the roadway. The wages paid to construction workers will be partially spent in local businesses. To provide some perspective on the number of induced jobs generated for each construction job, FHWA estimated that for every on-site construction job 4.3 indirect jobs were created, based on national data[4].

[4] The Federal Highway Administration estimated that a $1 billion investment in the Federal-aid highway program supports approximately 42,100 full-time equivalent jobs. Of this total 7,900 are on-site construction jobs, 19,700 are

E. Joint Development

Among the potential benefits of a transportation investment are opportunities to jointly enhance and/or preserve social, economic, environmental, cultural, or visual values of an area. The National Environmental Policy Act of 1969 (NEPA) declared that it is the "continuous responsibility" of the Federal Government to "use all practical means" to "assure for all Americans, a safe, healthful, productive and aesthetically and culturally pleasing surrounding." It is from this policy that the authority is granted to transportation agencies to utilize traditional improvement projects as means to provide for non-transportation benefits. The following joint development uses are encouraged: bicycle and pedestrian facilities, acquisition of scenic easements, historic sites, beautification, historic preservation and archeological planning and research.

The I-64 Corridor is home to numerous commercial and institutional centers within the St. Louis region. The New I-64 project will have a substantial impact on the future development of these commercial and institutional centers. Efficient and safe highway travel to these centers will be critical for current and future developments. During the public involvement process for the New I-64 project, numerous project developments were discussed and coordinated with the future planning of the New I-64 project.

1. GREENWAY SUBCORRIDOR

There are no proposed or existing developments in the Greenway Subcorridor in which the New I-64 project would assist with future development or enhancement.

2. THRUWAY SUBCORRIDOR

The alternatives make several accommodations for the proposed MetroLink extension in the Thruway Subcorridor. The Galleria Parkway station would be accessed by a cul-de-sac, built by others. The alternatives also coordinate with the Bi-State Development Agency (Metro) relative to the clearance issues encountered where the MetroLink extension passes under I-64 west of Hanley Road. The alternatives would not impact the MetroLink operation when it is planned to open in 2005. A MetroLink transit station is planned just south of I-64 and opportunities to coordinate are being pursued.

Although the improvements to Eager Road are now being constructed by others, the intersection of Eager Road and Hanley Road would be impacted in the future by the Thruway Alternatives. With construction of the Hanley Road interchange, the Eager Road approach on the west side of Hanley Road would become a right-in and right-out only. The improvement of the Hanley Road interchange will support future redevelopment plans along the Hanley corridor. The Build alternatives would assist with the development of this area by allowing for the purchase of former right-of-way in the southeast corner of the Hanley Road interchange. The No-Build Alternative would not allow the right-of-way to be purchased because the Hanley Road interchange would not be rebuilt.

3. PARKWAY SUBCORRIDOR

The Parkway Alternatives would assist in numerous project developments in the Parkway subcorridor. The Highlands Office Park development and the institutions along Oakland Avenue would be enhanced by an exit ramp from eastbound I-64 to eastbound Oakland Avenue, which intersects directly with Oakview Place, east of the Hampton Avenue interchange. Oakland Avenue would also be enhanced as part of the Parkway Alternatives by a streetscape design,

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supply industry jobs and 14,500 are induced jobs supported in the local economy. (*Summary: Economic Impacts of Federal-Aid Highway Investment. U.S. Department of Transportation Web Site. [www.fhwa.dot.gov/policy/empl. htm])*

which would be designed and implemented as part of the Parkway Alternatives. The streetscape would consist of a landscape median, pedestrian lights and street trees. The realignment of the driving lanes, between Highlander Drive and Macklind Avenue, would also be part of the Build Alternatives. The No-Build Alternative would not build the ramp to Oakland Avenue near Hampton Avenue interchange or improve Oakland Avenue with the streetscape plan.

Another joint development of the Parkway Alternatives, which will accommodate the adjacent land uses, is the shifting of the mainline of I-64 to the south in between Kingshighway Boulevard and Hampton Avenue. This alignment would allow for the construction of the Aviation Field athletic complex in Forest Park. The alignment shift would also allow for the trail in the park to be placed near the south edge of the park along the I-64 right-of-way. Also in the park, the trail would be accommodated near Hampton Avenue by building a tunnel underneath Hampton Avenue to allow cyclists and pedestrians to cross under Hampton Avenue and the vehicular traffic. The trail would be further accommodated by building a longer bridge span for the Tamm Avenue overpass, which would allow a pedestrian/cyclist to cross underneath Tamm Avenue.

F. Pedestrian and Bicyclist Considerations

1. OVERVIEW

Pedestrian and bicycle impacts for the alternatives in the study corridor can be categorized according to two types:

- separate pedestrian and bicycle interstate crossings that can not be accessed by vehicular traffic, and

- shared interstate crossings accommodating pedestrians, bicycles and vehicular traffic.

The analysis of pedestrian and bicyclist impacts involves the impacts of the alternatives on pedestrian and bicycle connectivity.

2. NO-BUILD ALTERNATIVE

a. Pedestrian and Bicycle Interstate Crossings (Stand Alone Structures)

There are five existing pedestrian crossings within the I-64 study corridor. Four would remain open in the No-Build Alternative like existing conditions. The crossings would remain as is without reconstruction or improvement. There are no impacts to existing bicycle and pedestrian connectivity from the No-Build Alternative.

b. Pedestrian and Bicycle Interstate Crossings (shared with vehicular crossings)

The No-Build Alternative would leave these current pedestrian and bicycle conditions as is without improvement; however, reconstructed bridges would provide wider sidewalks. Striping or widening the interstate crossings for bicycle routes or pedestrian sidewalks could occur along cross streets with dedicated routes according to MoDOT's current standards at the time of the facilities' design and construction, but the improvements would not occur beyond the limit of the I-64 state right-of-way.

The St. Louis Regional Bicycle Facilities Plan, prepared by EWGCC, has identified a system of bicycle routes and paths. Bellevue Avenue and Tower Grove Avenue crossing I-64 are included as proposed bicycle paths. The design, maintenance and repair of these bridges in the No-Build Alternative has accommodated this designation.

3. BUILD ALTERNATIVES

Input from stakeholders and neighborhood representatives have indicated the importance of maintaining and enhancing pedestrian access particularly in the eastern and central portions of the corridor. These areas are characterized by lower income households and lower rates of vehicle ownership. Attention has been given to improving pedestrian access in these locations. The pedestrian and bicycle improvements described would be utilized in each of the Build Alternatives.

a. Pedestrian and Bicycle Interstate Crossings (Stand Alone Structures)

There are five existing pedestrian crossings within the I-64 study corridor. Four would be reconstructed in the Build Alternatives. All new pedestrian and bicycle facilities would be constructed to current design and ADA standards. The locations are as follows:

- Pedestrian bridge in Richmond Heights, St. Louis County, approximately 1,000 feet (305 meters) south of the Galleria Parkway interchange across I-170. The Build Alternative would remove and reconstruct this bridge near its existing location near Antler Drive to current design and ADA standards.

- Pedestrian bridge in Richmond Heights, St. Louis County, approximately 350 feet (110 meters) west of the Big Bend Boulevard interchange. The Build Alternatives would remove this bridge without replacement, because it is redundant access between the same land uses provided by the adjacent Big Bend Boulevard bridge. The pedestrian and bicycle movements across I-64 would continue to share the adjacent Big Bend Boulevard bridge across I-64 with vehicular traffic. This pedestrian bridge would be removed, as it is close to the Big Bend Bridge. Improvements to the proposed Big Bend Boulevard bridge would be incorporated to enhance pedestrian and bicycle access according to the shared crossing strategy described in upcoming sections.

- Pedestrian bridge at Forest Park Community College in the city of St. Louis, is located approximately 2,200 feet (670 meters) east of the Hampton Avenue interchange. The bridge would be re-built to the west of the existing bridge so that the ramp reaches the ground at Highlander and Oakland Avenues. Access to the new bridge would be improved by incorporating a crosswalk at Highlander Avenue across Oakland Avenue that would provide pedestrian access to the new bridge from the Highlands office park and Forest Park Community College. Within Forest Park, the north terminus of the bridge would be coordinated with the drop off location of the existing Forest Park shuttle bus.

- Pedestrian tunnel underneath I-64 in the city of St. Louis, approximately 1000 feet (305 meters) west of the Science Center overpass. The tunnel would be re-built and would provide a more open, straight crossing with increased visibility and would include the addition of a 10-foot wide path connection from the tunnel to the Forest Park Recreational Path and from the tunnel to Oakland Avenue. The tunnel would extend 270 feet (80 meters) underneath I-64 and connect Oakland Avenue with Forest Park and the park's existing trail system.

- Pedestrian bridge over I-64 in the city of St. Louis, approximately 500 feet (150 meters) east of Kingshighway Boulevard interchange. The Build Alternatives would construct a new pedestrian bridge west of the existing bridge and east of Kingshighway Boulevard.

b. Pedestrian and Bicycle Interstate Crossings (shared with vehicular crossings)

Pedestrians

New bridges or underpasses would accommodate pedestrians with design standards to improve accessibility and safety. The design standards include complying with the ADA design recommendations. A meeting was held with Paraquad, an organization representing persons with disabilities, to discuss additional design considerations beyond those included in AASHTO design standards. These items, such as flatter pedestrian grades and voice activated crossings will be considered in the design process. Circulation and accessibility would be accomplished through defined walks, crosswalks and synchronized signals. Separating walks from traffic by using curbs and vertical edge treatments of railings, and barrier walls would enhance safety. Pedestrian level lighting would supplement street lighting to provide additional security, safety, and enhance the pedestrian environment.

Bicycles

Select vehicular bridges and underpasses would have dedicated bicycle lanes where the improvements by other agencies are planned to continue beyond the limits of existing I-64 right-of-way. These bridges would be connectors for existing or proposed bicycle corridors and trails as identified by local and regional government agencies. Many local and regional proposed bicycle trail plans are in draft stages at the present time and coordination with the regional stakeholders to identify the bridges selected for bicycle path improvements is ongoing. Additional bridges may be included if dedicated trails are further identified during the design process.

Bellevue Avenue and Tower Grove Avenue crossing I-64 are included as proposed bicycle paths in the St. Louis Regional Bicycle Facilities Plan. The design of proposed bridges in the Build Alternatives has accommodated this designation.

G. Air Quality Impacts

1. INTRODUCTION

A detailed air quality analysis for inclusion in an environmental document (EIS) is prepared on federally-funded projects if the project meets the criteria for regional significance as defined by the Clean Air Act Amendments (CAAA). The traffic volumes encountered in the sections of I-64 included in this project meet the criteria of a regionally significant project as defined by the East West Gateway Coordinating Council, FHWA, the Missouri Department of Natural Resources and MoDOT. Therefore an analysis of the air quality impacts was performed.

2. MESOSCALE ANALYSIS

The St. Louis metropolitan area was reclassified by the U.S. Environmental Protection Agency from moderate non-attainment for ozone to a maintenance area for ozone in May, 2003. However, as of April 15, 2004, the USEPA designated the St. Louis areas as a moderate non-attainment area for the new eight-hour ozone standard. As a moderate non-attainment area for ozone, any federally funded or regionally significant highway project must be included in a conforming regional transportation plan. The preferred alternative was part of a conformity determination approved by USDOT and EPA on August 8, 2003. EWGCC will now prepare a new conformity analysis showing how the region will attain the air quality standards by the year 2010. According to the EWGCC, the I-64 project is part of an existing conformity plan and would not be affected by the implementation policy for the eight-hour standard.

In addition, the preferred alternative was included in the long-range transportation plan, Legacy 2025, approved on March 27, 2002. Consequently, for the ozone precursors of volatile organic compounds and nitrogen oxides, the project has been shown to have emission levels that satisfy the emission inventory budgets.

It should be noted that the 7th U.S. Circuit Court of Appeals in Chicago had ruled (Sierra Club and Missouri Coalition for the Environment v. EPA) on November 25, 2002, that the Environmental Protection Agency (EPA) must reclassify the St. Louis area for failing to meet the Clean Air Act's standard for ozone. The court ordered the EPA to bump St. Louis from "moderate non-attainment" status to "serious non-attainment."

The fact that the region has met the ozone level monitoring requirements over the last three years did allow the St. Louis region to ask for reclassification to a maintenance ozone area. The St. Louis area requested such reclassification in 2003 based on compliance with the ozone level monitoring requirements. It was argued that the court decision did not impact the region's demonstration of meeting the ozone level monitoring requirements and thus the region should be reclassified as maintenance. In May 2003, The EPA determined that the St. Louis area met the one-hour ozone standard and approved the request by Missouri and Illinois for the area to be re-designated as in attainment of this standard.

In 1997, the EPA revised the National Ambient Air Quality Standard (NAAQS) for ozone. The change was made to protect the public from adverse health effects resulting from longer periods of exposure to ozone. The EPA is currently finalizing the implementation policy for the eight-hour ozone standard and for the transition from the one-hour ozone standard to the eight-hour standard of 0.08 ppm. Under the new eight-hour standard, a concentration-based measurement approach will replace the current exceedances approach. An area will be considered to attain the eight-hour standard when the three year average of the annual fourth highest daily maximum eight-hour ozone concentration as measured at each monitor is less than or equal to 0.08 ppm. With the implementation of the new eight-hour standard, the St. Louis area will be designated as non-compliant. New control strategies resulting in additional emissions reductions will be studied by EWGCC to examine how to achieve the new national air quality standards. According to the EWGCC, the I-64 project is part of an existing conformity plan and would not be affected by the implementation policy for the eight-hour standard.

3. MICROSCALE ANALYSIS

The carbon monoxide (CO) analysis determines the concentrations of CO emissions in the vicinity of the roadway under examination. This type of analysis is primarily only necessary for conditions where there are several lanes of traffic at intersections and where traffic queues are expected to occur. For the I-64 widening project, the areas under scrutiny are the intersections of I-64 with the main arterials. The intersections were analyzed for the following conditions:

- The existing configurations for the year 2000.
- The No-Build Alternative for the year 2020.
- The Build Alternatives for the year 2020.

The geometric layouts of the interchange areas studied were similar for each of the Build Alternatives, thus the Build results apply to each of the Build Alternatives.

The analysis was carried out using the EPA-approved computer program, CAL3QHC Version 2.0. The CAL3QHC program uses a Gaussian distribution to estimate emissions concentrations resulting from mobile emissions. The program includes a queuing model that can determine the length of a vehicle queue for an intersection, based on the vehicle flow rates and the signal

timing. The length of the queue from the model is then used to determine the number and location of vehicles that are idling at the intersection.

The emission concentrations derived from the CAL3QHC analysis were compared to the National Ambient Air Quality Standards (NAAQS) for CO to assess the impacts of the vehicle emissions at the intersection sites. The NAAQS for CO are a one-hour standard of 35 parts per million (ppm) and an eight-hour standard of nine ppm. The emissions for comparison to the standards will include the ambient emissions levels that would be present in the absence of any vehicles at the intersection.

a. Identification of Analysis Intersections

This analysis was performed in accordance with the "Guideline for Modeling Carbon Monoxide from Roadway Intersections" (EPA-454/R-92-005; November 1992) established by the EPA. In addition, another EPA guidance document, which summarizes the 1997 revised Appendix W of 40 CFR Part 51 - "Guideline on Air Quality Models," was also followed in this air analysis study. These guidelines are applicable for project-level analysis for State Implementation Plans (SIP), conformity analysis, and air analysis for Environmental Impact Statements (EIS) and Environmental Assessments (EA). The guidelines from these documents were followed in the analytical steps listed below:

- The screening of intersections to determine the need for CO modeling.
- The gathering of data related to the project, such as traffic and operating characteristics, roadway configurations and geometry, and required meteorological and emissions modeling data.
- The selection of receptor points.
- The computation of traffic flow conditions and one-hour emissions for intersections requiring CO modeling based on both free-flow (moving without stopping) or queued (delayed and/or stopped) vehicles in all directions at the involved intersections.
- The calculations of eight-hour concentrations from the one-hour concentrations.
- The use of the EPA CAL3QHC Version 2.0 dispersion model to calculate estimated CO concentrations due to roadway and intersection improvements and increased traffic flow.
- The overall tabulation of total concentrations based on the proposed improvements and background conditions.
- Comparison of these concentrations to the NAAQS.

Analyses were performed for the years 2000 and 2020 for selected intersections using projected peak-hour traffic volumes to be applied to the existing, future No-Build and future Build conditions. The selection process for determining the intersections that will be modeled included:

Existing Configurations:

- The LOS was examined at each intersection to determine if it was necessary to evaluate it using a microscale analysis.
- Intersections with a LOS C or better evaluation were not analyzed using CAL3QHC. Experience has shown that intersections at this LOS will not have sufficient CO emissions to violate the NAAQS.

- Intersections of similar configurations were compared to each other to determine the more critical intersection for analysis. If they had similar LOS, then the traffic flows were evaluated to determine the intersection that was analyzed. The proximity of the expected queues to the right-of-way was also included in this evaluation.

- Each intersection was modeled independently except for the Brentwood Boulevard and I-170 intersections, which were modeled together because of their close proximity.

Build Configurations:

- The same intersections analyzed for the existing configurations were analyzed for the new future build configurations.

- In the cases where the build alternative had not been finalized, the proposed options were examined to select the one that will have the greatest impact on CO levels.

b. Carbon Monoxide Emission Factors

The CAL3QHC emissions model uses two types of emissions factors to represent these conditions: free-flow and idle (queuing) factors. Composite emission factors (EF) for free-flow links were generated with Mobile 5b, an EPA-recommended computer program, according to the "Guideline on Air Quality Models." A composite EF is based on vehicle distribution weighted by type, age, and operating mode. The EF for free-flow links is expressed as grams of CO per vehicle-mile (g/mile) and is dependent on vehicle speed, percent hot and cold starts, ambient temperature, vehicle mix, and calendar year. The free-flow emission factor was determined by using a MOBILE5b analysis provided by the East-West Gateway Coordinating Council (EWGCC). The freeway average speeds used to determine the emissions factors were provided using the regional travel forecast model.

Idle EF's were also generated using Mobile 5b. Mobile 5b (March 1993) was released without the capability of estimating idle EF's. EPA suggests running Mobile 5b at a speed of 2.5 mph, which produces an EF in g/mile, then multiplying the results by 2.5 mph to get the idle emission factor in grams per hour (g/hour).

Meteorological Variables

Input for meteorological variables was in accordance with EPA guidance. Meteorological variables and the input for each are as follows:

Averaging Time in Minutes (ATIM)	60
Ambient Background CO Concentration (AMB)	5 ppm 1 hr/3 ppm 8hr
Mixing Height in Meters (MIXH)	1,000
Atmosphere Stability Class (CLAS)	D (4)
Setting Velocity (VS)	0
Deposition Velocity (VD)	0
Wind Speed (U)	1 m/s
Wind Angle Range	Every 10°, from 0°-360°
Surface Roughness Coefficient (Zo)	108 - 175 centimeters

The above values were selected based on the following criteria:

- Since one of the NAAQS for CO is a one-hour time averaged concentration, the sixty-minute value was utilized as the averaging period for this analysis. A persistence of 0.70 will then applied to the predicted CO concentrations to determine the eight-hour average concentration for comparison to the eight-hour NAAQS in accordance with EPA CO Emission Guideline (EPA-454/R-92-005; November 1992).

- The deposition and settling velocities, which do not apply to CO, were assigned a value of zero so no adjustments would be made to the predicted concentrations.
- A wind speed of one meter/second (2.2 mph) was utilized to provide a "worst case" scenario because lower wind speeds produce higher concentrations.
- Every 10 degrees of wind direction from 0 to 360 from due north was analyzed as per EPA guidance.
- The CAL3QHC model is only sensitive to mixing height for extremely low values occurring under parallel wind conditions. The mixing height algorithm is meant primarily for study of nocturnal inversions. Since this analysis focuses on the afternoon or morning peak period (as opposed to a nocturnal condition), a value of 1,000 meters was utilized in accordance with EPA guidance.
- The surface roughness coefficient (Zo) for each intersection was chosen on the basis of surrounding land use. A mixing cell height of 1000 meters was used. Sensitivity analysis has indicated that CAL3QHC is relatively insensitive to the value of Zo.
- Background CO concentration must be considered to determine the total concentrations at a site. The values of 5.0 ppm and 3.0 ppm for the one-hour and the eight-hour conditions were provided by the EWGCC, and were based on actual measurements taken in the city.

c. Intersection Configurations

Each intersection selected for analysis was modeled from either drawings of the existing configurations or from the latest drawings or descriptions of the Build Alternatives for the selected intersections.

Traffic Parameters

The most current traffic flow information along with signal length and timing information for the existing, build, and No-Build conditions was used in this analysis. In some cases, actual observed queue lengths have been provided for the ramps. These observed queue lengths were used instead of computer-generated lengths. Ramps with LOS F have been observed to produce queues along the entire length of the ramp. These ramps were modeled to represent this condition.

Receptor Locations

Receptor site selections were based on criteria in the EPA CO Emission Guideline (EPA-454/R-92-005; November 1992). Receptors were located outside the mixing zone of free-flow links (at least three meters from each traveled roadway) at a breathing height of 1.8 meters. In general, receptors were placed at the approach of each intersection where queues will develop and on the property lines. Drawings of the intersections were used to determine locations along the right-of-way that are closest to the expected location of vehicle queues. Location of the receptors at the project right-of-way is a conservative approach in this case because there are no actual buildings, sidewalks, or other locations along the right-of-way where people would be exposed to these concentrations for the analysis periods of one and eight hours.

d. Results

The seven interchanges listed in Tables IV-7 and IV-8 were analyzed to determine the level of carbon monoxide emissions for the existing, No-Build and Build conditions. The values for the

carbon monoxide levels presented in Tables IV-7 and IV-8 include the ambient concentrations of 5.0 ppm and 3.5 ppm for the one-hour and eight-hour conditions, respectively. The No-Build Alternative year 2020 case has lower CO concentrations than the existing year 2000 case for most of the intersections. This is because of reductions in CO emissions from the vehicle fleet of about 60 percent over this twenty-year period.

Table IV-7
One-Hour Carbon Monoxide Levels (ppm) 35 ppm Standard

Interchange	Existing 2000	No-Build 2020	Build 2020
Spoede	8.7	7.1	6.2
Lindbergh	8.9	6.8	6.8
I-170/Brentwood	10.0	7.0	6.9
Hanley	8.6	7.4	6.9
Bellevue	9.9	10.1	6.7
Hampton	9.8	7.4	6.7
Kingshighway	9.7	6.7	6.2

Source: **The Technology Group and** HNTB Corporation, 2002.

Table IV-8
Eight-Hour Carbon Monoxide Levels (ppm) 9 ppm Standard

Interchange	Existing 2000	No-Build 2020	Build 2020
Spoede	6.1	5.0	4.3
Lindbergh	6.2	4.8	4.8
I-170/Brentwood	7.0	4.9	4.8
Hanley	6.0	5.2	4.8
Bellevue	6.9	7.1	4.7
Hampton	6.9	5.2	4.7
Kingshighway	6.8	4.7	4.3

Source: **The Technology Group and** HNTB Corporation, 2002.

e. Conclusions

In summary, the St. Louis region is currently classified as a moderate non-attainment area for the new eight-hour ozone standard. As part of an existing conformity analysis, it is expected that the I-64 project would not be affected by the new conformity requirements. EWGCC and MoDOT will continue to monitor and adhere to any impacts of conformity requirements.

The determined carbon monoxide levels that are presented in section 4.0 reveal that the Build Alternatives will not result in any new violations of the National Ambient Air Quality Standards. This conclusion can be reached because all of the CO emissions concentrations for the one-hour condition listed in Table IV-7 are less than the NAAQS one-hour standard of 35 ppm, and all of the concentrations for the eight-hour case listed in Table IV-8 are less than the NAAQS eight-hour standard of nine ppm. In addition, the Build Alternative results in lower CO concentrations than the No-Build condition. The finding of no violations of the NAAQS indicates that the project will have no negative significant impact on air quality.

H. Noise Impacts

The analysis contained herein was performed in compliance with 23 USC Section 109(h) and (i), FHWA guidelines for the assessment of highway traffic-generated noise. These guidelines, published as Part 772 of Title 23 of the Code of Federal Regulations, provide procedures to be followed in conducting noise analyses that will protect the public health and welfare. In addition, the analysis was performed and specific abatement considerations were made in accordance with MoDOT "Traffic Noise Policy", dated September 1997. Both 23 CFR 772 and the MoDOT policy require the use of the equivalent sound level, L_{eq}, as the descriptor for highway noise. L_{eq} is an energy average level, and is measured in A-weighted decibels, dBA.

1. IDENTIFICATION OF EXISTING ACTIVITIES OR LAND USES THAT MAY BE AFFECTED BY NOISE FROM THE HIGHWAY

Land use along the proposed project consists primarily of residential units, with scattered commercial activity in the vicinity of the I-64/I-170 interchange, and along Oakland Avenue at the eastern terminus of the corridor. The residential units are a mixture of single-family homes, multi-family apartments or condominium complexes. The modeled receivers are principally located in the first row on both sides of I-64 throughout the corridor. The measurements of existing noise levels show that the I-64 roadway system dominates the existing noise environment for those receptors adjacent to its corridor. Of the 32 noise sites measured, 16 sites were at or above the Noise Abatement Criteria (NAC) established by 23 CFR Part 772. For those receptors close to I-64 and without a significant elevation difference or intervening ground to block noise propagation, the existing L_{eq} values exceed the MoDOT and FHWA criterion for impact. The entire corridor will experience design year (2020) noise levels sufficiently high to be considered as impacted, according to MoDOT policy.

2. NOISE ABATEMENT CRITERIA

Two methods are used for determining a noise impact. The first is a comparison of predicted noise levels with the NAC. A 67 dBA L_{eq} criterion has been established for schools, libraries, residences, churches, playgrounds and recreational areas. Any predicted noise level that "approaches or exceeds" the applicable NAC is considered an impact. MoDOT policy defines "approach" as one dBA below the appropriate NAC, or 66 dBA for residential structures. At sites where no significant exterior human activity occurs, such as most apartment buildings, the interior Noise Abatement Criterion of 52 dBA is to be used. In these cases, an outside-to-inside noise reduction factor of 20 dBA is applied. For apartments, an exterior level of 71 dBA L_{eq} would trigger an interior impact at a level of 51 dBA, which is one dBA below the interior NAC.

The second method of predicting noise impacts involves comparing existing noise levels in the project corridor with predicted levels for the future Build condition. According to 23 CFR 772, an impact results if a "substantial increase" over existing levels occurs. MoDOT policy defines "substantial increase" as 15 dBA or more. Noise levels are already quite high along this corridor and will not increase significantly as a result of the proposed construction. Therefore, the amount of increase over existing noise levels will be small (much less than 15 dBA) and will not be a factor in determining impacts.

Analysis of 2020 "no barrier" L_{eq} values confirms that they will exceed 66 dBA in most locations for the first row. Therefore, noise impacts will exist and abatement must be considered.

MoDOT's Noise Standards and Noise Abatement Policy

The following is reprinted from two sources: a brochure entitled *Sound walls: A Look at Why, When & Where* published by MoDOT in June 1999 and part of the *Noise Standards and Noise*

Abatement section of MoDOT's *Local Public Agency Manual*. The excerpts describe MoDOT's process for identifying the need for noise abatement, how MoDOT's Noise Policy applies and the community's role in the decision to choose or decline noise abatement where it is warranted.

> *Communities are eligible for a sound wall only* if noise *levels are at 66 decibels or above. A sound wall can reduce noise levels from five to ten decibels.*
>
> *MoDOT considers constructing sound walls as part of new road construction projects or in cooperation with cities and counties.*
>
> *New Road Construction*
> *MoDOT will consider new noise reduction whenever through lanes are added or there are changes in the alignment of a roadway.*
>
> *Criteria for New Road Construction Projects*
> - *The sound wall must reduce noise levels by at least five decibels for all benefited homeowners.*
> - *The sound wall must benefit more than one homeowner.*
> - *The sound wall must be 18 feet (5.5 meters) or less in height.*
> - *The sound wall must not pose a traffic safety hazard.*
> - *The majority of the benefited residents must agree that a sound wall is desired.*
>
> *Noise analysis will not be necessary for the following types of projects since they are not likely to result in a significant increase in highway traffic noise:*
>
> - *Minor widening and resurfacing*
> - *Signalization projects including intersection and ramp terminal widening*
> - *Replacement of a bridge in proximity of the existing structure*
>
> *Cooperation with Cities and Counties*
> *MoDOT will also provide noise reduction near existing highways, with the cities and counties participating in the cost of the design and the construction of the wall.*
>
> *Criteria for Cooperative Projects*
> - *The noise reduction must meet all of the new road construction criteria.*
> - *A local government entity must request the project and show a commitment to carry it through to completion. The majority of the benefited residents must agree that a sound wall is desired.*
> - *Any required adjustment to the existing highway will be considered part of the cost of the project.*
> - *The local government agency must provide 50 percent of the design and construction cost. MoDOT will provide the 50 percent matching funds. If the construction cost of the sound wall project exceeds $30,000 per benefited resident, the local government agency must pay 100 percent of the cost above $30,000.*
> - *Although not required, MoDOT and the local government agency will work with East-West Gateway Coordinating Council for inclusion in MoDOT's Transportation Improvement Program (TIP).*
>
> *If the project does not qualify as a cooperative project, the sound wall may still be built on MoDOT property if funded entirely by the local government.*
>
> *When all of the criteria of new road construction or cooperative projects are met, a sound wall must then meet all noise reduction criteria in order to get built. These criteria include sound reduction, cost and resident approval.*
>
> *Sound Reduction*
> *A community would be eligible for a sound wall if noise levels are at 66 decibels or above. As a point of reference: 65 decibels is equal to the sound of normal conversation from three feet away; 70 decibels is equal to the sound of a vacuum cleaner 10 feet away; and 75 decibels is equal to the sound of someone shouting three feet away. A sound wall must reduce noise for an affected home by at least five decibels.*
>
> *Cost*
> *A sound wall cannot exceed $30,000 per benefited home. For a new roadway project, 20 percent comes from the state and 80 percent comes from the federal government. For a cooperative project, 50 percent comes from the local government agency and 50 percent comes from the state government agency.*
>
> Resident *Approval*
> *Just because there may be unacceptable noise levels does not mean a sound wall will automatically be built. Before detailed design begins on the wall, the residents will be contacted to determine if a majority of*

the affected homeowners desire a sound wall. If so, MoDOT will then begin design of the wall. After the wall is designed, MoDOT will contact the residents again to give them more detailed information about the wall. At that time, residents can offer input as to the appearance of the wall, including concrete, brick, and concrete block. MoDOT will use that input to decide what the wall will look like and complete the final design of the wall.

MoDOT's first choice is to locate a sound wall along a highway fence and as far from highway traffic as possible. Sound walls close to the highway create a safety hazard to motorists, especially for those motorists who need to stop on a shoulder. MoDOT will only consider locating a sound wall along the highway if it will not work along the fence.

3. PREDICTION OF FUTURE TRAFFIC NOISE LEVELS

Traffic-generated noise levels under the future build condition along the study corridor were calculated using the FHWA Highway Traffic Noise Prediction Model, STAMINA 2.0/OPTIMA for the design year (2020). Input to the model includes future roadway alignments, traffic volumes, vehicle speed, and truck percentage. Results of the modeling effort are discussed below by analysis area. In general, however, it can be concluded that 2020 L_{eq} values ranged from 62 to 80 dBA for first row residences throughout the corridor.

a. No-Build Alternative

Under the No-Build Alternative, no improvements will be made to the existing I-64 highway besides minor short-term activities, including pavement overlays, routine maintenance and bridge repair. Future (year 2020) No-Build traffic volumes were used to assess the effect of the operation of an un-improved I-64 on the properties adjacent to the interstate. Table IV-9 contains a list of the sites at which existing noise levels were measured, and presents a comparison between future Build and No-Build noise levels. Examination of Table IV-9 demonstrates that future noise levels under the No-Build Alternative would remain essentially the same as existing levels. In addition, Table IV-9 further illustrates that under the No Build Alternative, numerous highway noise impacts would exist throughout the corridor. Since the construction work would be limited to replacement of bridges and pavement in kind with no additional lanes or changes in location or elevation to the roadway, no noise mitigation would be provided.

In 2020, approximately 2,710 receptors would have noise levels exceeding 66dBA L_{eq}.

Table IV-9
Noise Level Comparisons (dBA)

Site	Existing Noise Level	No-Build Noise Level	Build Noise Level, w/o Barrier	Build Noise Level, w/ Barrier
Greenway 1	70	71	71	64
Greenway 2	69	70	74	66
Greenway 3	68	69	72	66
Greenway 4	62	63	67	67
Greenway 5	69	70	76	66
Greenway 6	71	71	70	64
Greenway 7a	62	63	70	64
Greenway 7b	70	70	78	66
Greenway 8a	64	65	71	67
Greenway 8b	67	67	76	66
Greenway 9	73	73	77	68

Site	Existing Noise Level	No-Build Noise Level	Build Noise Level, w/o Barrier	Build Noise Level, w/ Barrier
Greenway 10	65	65	73	67
Thruway 1	64	64	70	65
Thruway 2	71	71	78	70
Thruway 3	63	63	70	64
Thruway 4	75	75	73	64
Thruway 5	53	53	58	58
Thruway 6	65	65	73	64
Thruway 7	63	63	69	63
Thruway 8	75	75	80	67
Thruway 9	65	65	71	65
Thruway 10	58	59	65	64
Parkway 1	67	67	73	69
Parkway 2	69	69	72	72
Parkway 3	72	72	76	69
Parkway 4	65	65	71	66
Parkway 5	70	70	74	66
Parkway 6	62	62	72	72
Parkway 7	61	61	68	62
Parkway 8	67	67	73	66
Parkway 9	61	61	67	63
Parkway 10	61	61	67	63

Site numbers correspond to the locations where existing noise reading were sampled.
Source: The Technology Group and HNTB Corporation, 2002.

b. Build Alternatives

Traffic-generated noise levels under the future Build condition along the study corridor were calculated using the FHWA Highway Traffic Noise Prediction Model, STAMINA 2.0/OPTIMA, for the design year (2020). Input to the model includes future roadway alignments, traffic volumes, vehicle speed, and truck percentage. Results of the modeling effort are discussed below by analysis area. In general, however, it can be concluded that 2020 L_{eq} values ranged from 62 to 80 dBA for first row residences throughout the corridor.

The Build Alternatives will result in increasing the level of noise in the I-64 Corridor as shown by the increase to first row receptors in Table IV-9. This is primarily due to the highway moving closer to the first row receptors. The estimated 66 dBA noise contours for the Build Alternatives and the No-Build Alternative are compared in Exhibit IV-3. The difference between the contours provides an indication of the additional area that may be impacted by the Build Alternatives. However, given the presence of the existing noise environment, the increase in noise levels is not large. It is widely held that a noise level elevated by 3 dBA is barely perceptible to the human ear. Although the noise levels for certain receptors (farther away from I-64) might be considered high, the noise increase may be considered imperceptible or barely perceptible and that is not considered a substantial noise impact caused by the project.

The existing L_{eq} values on the project in the vicinity of I-64 corridor generally exceed the FHWA and MoDOT impact criteria levels throughout the corridor. The Build Alternatives will result in increasing the level of noise in the I-64 Corridor. This is primarily due to the highway moving closer to the first row of residents located adjacent to I-64. Given the presence of the existing noise environment, the increase in noise levels farther away from I-64 is not large. Although the noise levels for certain receptors farther away from I-64 might also be considered high, the

noise increase from the Build Alternatives may be considered imperceptible or barely perceptible and that is not considered a substantial increase in noise caused by the project. Approximately 320 receptors would incur a noise level elevated by over three dBA as a result of the Build Alternatives. Furthermore, it is estimated that 190 new receptors would have noise levels in excess of 66 dBA L_{eq} in 2020.

4. ALTERNATIVE NOISE ABATEMENT MEASURES

In accordance with 23 CFR Part 772, alternative noise abatement measures for reducing or eliminating noise impacts along the proposed corridor were evaluated for all noise sensitive sites that exceed the noise abatement criteria. Several types of abatement were considered, but deemed to be not feasible for the I-64 project. These were:

- ***Acquisition of Rights-of-Way*** – This alternative abatement measure would serve to provide additional property alongside the proposed facility on which noise barriers would be considered for construction, or to provide a buffer zone in which no noise sensitive land use would be permitted. However, due to the residential and other development already existing along the corridor, the acquisition of right-of-way to create buffer zones would result in disruptive relocations, and is therefore not recommended.

- ***Alteration of Horizontal and Vertical Alignments*** – Alignment modifications as a means of noise abatement were not specifically studied.

- ***Traffic Management*** – Measures such as traffic control devices and signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, and modified speed limits would prevent I-64 from serving its intended purpose. Exclusive lane designations would be inappropriate for a project of this scope and would not reduce traffic-generated noise levels. Therefore, traffic management measures are not recommended.

- ***Barrier System*** – One abatement measure is the installation of noise barriers, which would be installed to diffract sound waves and block the line-of-sight between the traffic on I-64 and the sensitive receivers. These barriers would therefore provide a reduction in noise levels. Before discussing the recommended barriers, some background on the US barrier program is presented.

Among the most common barriers are earth berms and free-standing walls. Through 1999, the state highway departments in the US had constructed 1,622 linear miles of noise barriers (*Summary of Noise Barriers Constructed by December 31, 1998*, FHWA Office of Environmental Policy, April 2000). In contrast, 720 linear miles had been constructed through 1989 (FHWA Office of Environmental Policy, July 1990), and 189 linear miles through 1981 (NCHRP Synthesis Report 87, *Highway Noise Barriers*). The first barriers were built in this country in the early 1970s. In this first time period (early 1970s through 1981), the rate of construction was about 20 miles per year; in the second time period (1981-1989), the rate was about 66 miles per year; in the most recent time period (1989-1998), the rate has increased to about 100 miles per year. It may be concluded that barriers are becoming an increasingly integral part of the highway program in the U.S.

To mitigate the year 2020 noise impacts in the I-64 corridor, a barrier system may be considered as part of the project. Because barrier heights are limited by MoDOT policy to 18 feet due to aesthetics, cost, and constructability issues, substantial noise reduction is most likely to be achieved the closer a receptor is to a constructed barrier. Like most states, MoDOT

requires that receptors receive at least a 5 dBA reduction in order to be considered as "benefited", because a change of less than 5 dBA would not be considered as a "substantial reduction" as defined by FHWA. As mentioned earlier, it takes at least a 3 dBA change to be perceptible by the human ear. Those receptors at farther distances into the community and away from I-64 that already have high noise levels will not be affected, and should not notice a significant change in noise level with the Build alternatives. Noise barriers can only address impacts in the area closer to the highway, within the first two or three rows.

The entire corridor was shown to qualify for noise abatement. However, before MoDOT decides on which if any barriers to construct, additional project design will need to take place and the likely noise abatement measures will be presented and discussed at a design public meeting. In addition, as per MoDOT policy, the residents impacted will be contacted to determine if a majority of the affected homeowners desire a noise barrier. Noise abatement measures will be considered that are deemed reasonable and feasible.

5. SUMMARY

In summary, the existing L_{eq} values on the project in the vicinity of I-64 generally exceed the FHWA and MoDOT impact criteria levels throughout the corridor. In the design year 2020, these values are expected to range between 58 and 80 dBA without abatement. In 2020, approximately 2,705 receptors would have noise levels exceeding 66 dBA with the No-Build Alternative. It is estimated that with the Build Alternative, an additional 190 receptors would have noise levels exceeding 66 dBA. In addition, approximately 315 receptors would incur a noise level elevated by over three dBA as a result of the Build Alternatives. With noise abatement, these L_{eq} values will be reduced to 66 dBA or lower in most cases, with reductions of five dBA or greater at the nearest first floor receivers. Heights of the barriers would range up to 18 feet, although the typical height is 10 to 15 feet. The decision to install noise abatement and its location will be made upon completion of detailed design and public involvement process.

I. Water Resources Impacts

Modification to aquatic resources includes culverted stream crossings as well as filled-in wetlands and ponds. As discussed in Chapter III.B.4, data was gathered from USGS quadrangle maps, the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI) maps, aerial photography, and field observations from public right-of-way. The water resources located in the study corridor are shown on Exhibits III-A to III-C, and on the Plan Plates in Appendix C.

In June of 2003, field investigations were performed along the preferred alternative to determine the presence or absence of jurisdictional wetland areas, and to evaluate stream crossings in regard to channel characteristics and adjacent vegetation. After the field work was completed, the proposed right of way/construction area was overlaid onto aerial photos and topographic maps to determine the linear impacts to streams, and the surface impacts to other waters. The details and results of the field investigations were compiled in a technical report titled, *Waters of the U.S. and Preliminary Jurisdictional Wetland Determinations Summary Report*. The text and summary table from this report are located in Appendix L. This project is not using a merged NEPA/Section 404 process due to the minimal impacts on waters of the United States.

1. STREAMS

The number of stream crossings includes both perennial streams (Deer Creek and Black Creek) and intermittent streams (shown as blue lines on USGS maps). Stream impacts occur when fill material (concrete, embankment, etc.) displaces the natural substrate of a stream, or when the

stream channel is otherwise disturbed by construction activities outside of the fill area. In most cases, existing culverts would either be replaced with new longer culverts, or would be extended to accommodate additional roadway width or re-alignment. At culverted stream crossings, the "length" refers to the linear impact to the part of the stream that is outside of the existing culvert. Stream impacts are summarized in Table IV-10 and are indicated by "length" in linear feet. The "length" of stream impacts includes only those that would be culverted rather than bridged. Streams that are currently bridged will continue to be bridged in order to avoid or minimize impacts, such as at the I-64 bridge over Deer Creek.

As a result of a more detailed analysis of impacts to waters after the field investigations were performed, the impact numbers for the preferred alternative have been adjusted from those shown in the Draft EIS. The total length of stream impacts increased due to the discovery of more channel (with an ordinary high water mark) actually being located within the proposed impact area than was previously determined from the mapping. These additional impacts occurred at streams that parallel the roadway. However, the majority of adjustments occur in the Greenway Subcorridor, which applies to all of the alternatives.

Table IV-10 Stream Crossing Impacts

SUBCORRIDOR & ALTERNATIVES	BRIDGED STREAM CROSSINGS (No.)	CULVERTED STREAM CROSSINGS		
		No.	Concrete Channel Length (Ft.)	Natural Channel Length (Ft.)
Greenway Subcorridor				
No Build Alternative	0	0	0	0
Build Alternative *	1	7	1830	1770
Thruway Subcorridor				
No Build Alternative	0	0	0	0
Build Alternative 2	0	1	50	0
Build Alternative 2a	1	1	200	0
Build Alternative 3 *	0	2	200	0
Build Alternative 3a	1	2	340	0
Parkway Subcorridor				
No Build Alternative	0	0	0	0
Build Alternative 1	0	0	0	0
Build Alternative 2 *	0	0	0	0

Source: HNTB Corporation, 2002.
* Indicates Preferred Alternative

Table IV-10 also indicates the type of stream being impacted, i.e. whether the stream channel has a natural substrate or is concrete-lined. Since the project involves improvement of an existing roadway, all of the stream crossings have previously been culverted, relocated, or bridged. As a result, impacts to the natural substrate of streams are minimal. The impacts to streams within the I-64 study corridor are as follows:

a. Greenway Subcorridor

No-Build Alternative

The No-Build Alternative would have no impacts to the streams within the study corridor.

Greenway Alternative 1 (Preferred)

This option would cross eight streams (Deer Creek and six of its tributaries, crossing one twice) resulting in 1770 linear feet of streams with natural substrate being culverted or disturbed by construction activities, and 1830 linear feet of streams with concrete channels that would be culverted, most of which occur at the Spoede Road interchange. Deer Creek would continue to be bridged, thereby avoiding impacts to the stream.

Impacts would occur to a portion of an unnamed tributary of Deer Creek located east of the Lindbergh/I-64 intersection, paralleling the north side of I-64. This stream was previously relocated when the roadway was initially constructed. During construction of a retaining wall for roadway improvements, 735 linear feet of the stream, with natural substrate, would be disturbed by construction activities, however, fill material would not be permanently placed in the stream channel. Impacts to the wooded riparian areas adjacent to these streams are included in the forest impacts discussion in section M.2. of this chapter.

b. Thruway Subcorridor

No-Build Alternative

The No-Build Alternative would have no impacts to the streams within the study corridor.

Thruway Alternative 2

This option would cross one stream (Claytonia Creek) resulting in 50 linear feet of concrete channel of this stream being culverted.

Thruway Alternative 2a

This option would cross two streams (Black Creek and Claytonia Creek), resulting in a total of 200 linear feet of concrete channels being culverted. This option would include ramps that travel over Black Creek, however, they would be constructed on piers, thereby avoiding or minimizing impacts to the creek. However, part of the mainline re-alignment embankment would be placed within 150 feet of Black Creek at its south bank where concrete had been utilized in previous construction.

Thruway Alternative 3 (Preferred)

This option would cross two streams (Hampton Branch and Claytonia Creek) resulting in 200 linear feet of concrete channels being culverted. No impacts to Black Creek would occur.

Thruway Alternative 3a

This option would cross three streams (Black Creek, Hampton Branch, and Claytonia Creek) resulting in 340 linear feet of the concrete channels being culverted. The impacts to Black Creek are the same as those described above in Alternative 2a.

c. Parkway Subcorridor

There are no streams, and therefore no impacts to streams, within the Parkway Subcorridor.

Mitigation for stream impacts is discussed below under Compensatory Mitigation.

2. WETLANDS

It is possible that there could be impacts to a potential wetland within Alternatives 2a and 3a. A 0.06 acre portion of a one-acre potential “emergent/scrub-shrub” wetland located northwest of the I-64/Brentwood Boulevard interchange (see Plan Plates T9 and T21 in Appendix C), falls within the area that would be acquired for right-of-way in Thruway Alternatives 2a and 3a. The ramps at this location would be on piers, the locations of which have not yet been determined, and could possibly impact as much as 0.06 acres of this potential wetland. This potential wetland area is a drainage ditch in the overflow/detention area south of the Galleria, and it collects water that drains off of a mall parking lot. It is drained by a pipe located under the berm on the north side of Black Creek, but the area ponds water long enough to support cattails and willows. Since it is a drainage ditch surrounded by dry land, it would most likely not be

considered a jurisdictional “Waters of the U.S.“ This potential wetland area is not impacted by the Preferred Alternative and was therefore not included in the *Waters of the U.S. and Preliminary Jurisdictional Wetland Determinations Summary Report*, although a field delineation was performed. If Alternative 2a or 3a were to be used, as much as 0.06 acres of impact could occur. In this case, the U.S. Army Corps of Engineers (USACE) would make the final determination of whether or not this is a jurisdictional wetland, and if so, what if any mitigation would be completed.

3. PONDS

The only impact to ponds would occur in the Parkway Subcorridor where 0.01 acre of a 2.4-acre ornamental pond would be impacted by both of the Parkway Alternatives. Since it is an ornamental pond it may not be considered a “Waters of the U.S.,” but it is also an isolated pond and therefore may not be subject to USACE jurisdiction. Based on the recent SWANCC (Solid Waste Agency of Northern Cook County) ruling, the USACE may not have jurisdiction over “isolated” waters because they have no connection to a "Waters of the U.S."

4. COMPENSATORY MITIGATION

Construction activities requiring discharges into jurisdictional “Waters of the U.S.,” which include streams, wetlands and other special aquatic sites, will require a Department of the Army Permit under Section 404 of the Clean Water Act (permits are discussed in more detail in Section L. of this chapter). Streams are regulated below the limits of the ordinary high water mark (OHWM). Impacts to Deer Creek would be avoided by retaining bridging at the creek. Impacts to Black Creek and a potential wetland would be completely avoided by some options, (including the Preferred Alternative) and other options would minimize impacts by utilizing piers to support the ramps that cross the creek and wetland. Impacts to intermittent streams would be minimized by utilizing a minimal amount of additional right-of-way for widening.

During the project design phase, specific impacts to wetlands and other “Waters of the U.S.” will be assessed to determine if those impacts can be avoided or minimized. At that time MoDOT will coordinate with the EPA and appropriate resource agencies during the project design process to develop appropriate mitigation strategies, which would include consideration of bridge construction techniques and design of any mitigation the USACE deems necessary as compensation for project impacts to wetlands and streams. Possible mitigation strategies for stream impacts include stabilizing disturbed banks with a combination of live vegetation (bioengineering techniques) and riprap, and incorporating native seeding and plantings along the buffer zones adjacent to stream banks.

5. ONLY PRACTICABLE ALTERNATIVE FINDING

The Preferred Alternative (Alternative VII, consisting of the Greenway Build Alternative, Thruway Alternative 3, and Parkway Alternative 2) would have no impact on wetlands. As discussed in this document, there are no other practicable alternatives to the proposed action that would adequately serve the purpose and need of the proposed project. The proposed action includes all practicable measures to avoid wetlands.

J. Water Quality Impacts

1. SURFACE WATER QUALITY

As discussed in Chapter III.B.2, the EPA has determined that the Cakokia-Joachim watershed, as a whole, scored in the "more serious problems, low vulnerability" category. A “more serious water quality problems” designation indicates that the watershed has aquatic conditions that are well below State or Tribal water quality goals. A "low vulnerability" designation indicates that

based on available information, pollutants or other stresses on water quality are low, and therefore, there exists a lower potential for future declines in aquatic health.

In this part of the watershed, the major concerns include channelization or other alteration of natural stream channels, construction site erosion, and residential and commercial use of pesticides and fertilizers. As discussed in Chapter III.B.4, several of the streams within the study corridor have concrete-lined channels. According to MDNR (see letter dated November 28, 2001, in Appendix I), none of the water resources in the study corridor are on the list of 303(d) impaired waters.

a. No-Build Alternative

The No-Build Alternative would have no additional impacts to water quality, other than the on-going operation and maintenance related pollutants that currently contribute to water quality impacts.

b. Build Alternatives

Direct water quality impacts include highway or bridge runoff, construction-related impacts, and operation and maintenance related impacts.

Construction related impacts are primarily due to the erosion of cleared areas, operation of heavy earth-moving equipment, and storage of construction materials and supplies, and could include pollutants such as petroleum products, sedimentation, and nutrients leaching from seeded and mulched bare areas. Temporary impacts to water resources in and adjacent to the I-64 corridor can be prevented or minimized by following the management practices outlined by the Missouri Department of Conservation (MDC) including the State Channel Modification Guidelines when modifying channels or relocating streams. Each stream crossing along the I-64 corridor currently bridged would continue to be bridged at the stream, and all other stream crossings would utilize culverts or culvert extensions that maintain the low-flow characteristics of the streams. In addition, the project will comply with specific requirements of Section 401 Water Quality Certification and Section 404 permits. This includes, for example, the following methods to minimize impacts: graded areas should be seeded and mulched as soon as possible using native planting and seeding recommendations; disturbance to the stream banks and riparian zones should also be minimized; work should be minimized between March 1 and June 15; and all standard erosion protection devices such as ditch checks and silt fences shall be installed at the outset of construction and maintained throughout the period.

The National Pollutant Discharge Elimination System (NPDES) permit, administered by MDNR, requires that slopes and ditches be properly designed to prohibit or reduce erosion. MoDOT operates under the provisions of NPDES permit No. MO-R100007 (see Appendix L), which is a general permit issued for road construction statewide. In addition, MoDOT, in cooperation with MDNR, has developed a Temporary Erosion and Sedimentation Control Program to protect the environment from sedimentation and construction pollutants during the building phase. Control measures include the use of temporary berms, ditch checks, slope drains, sediment basins, straw bales, silt fences, seeding and mulching. Temporary and permanent runoff drainage (retention or detention) basins will also be designed and installed to lessen water quality impacts by trapping sediment and other contaminants, while reducing erosive storm surges.

In addition, the MDNR recommends that native (preferably woody) vegetation be planted along the portions of the roadway that remain undeveloped to mitigate for the increased runoff from impermeable road surfaces. MDNR also recommends that native vegetation be incorporated into stream bank stabilization areas to protect water quality through shading and runoff interception. MoDOT will consider using native vegetation in disturbed areas as appropriate.

The MDNR Solid Waste Management Program suggests that compost or wood chips be used whenever possible during construction. MoDOT will use these construction practices to the extent possible during construction.

Potential operation and maintenance related impacts to water quality could include pollutants such as petroleum products, coolants, rubber debris, metals, and de-icing minerals/chemicals. There is also the possibility of collisions on any roadway, regardless of operating characteristics and traffic volumes. Collisions can contribute to pollutants, as chemicals spilled could run off or be flushed into drainage channels.

2. GROUNDWATER QUALITY

There are no public drinking wells or sole-source aquifers within the study corridor, therefore no effects to those types of groundwater supplies are anticipated. There is the possibility that karst features may exist in the subsurface in some portions of the corridor. This will be determined during construction activities to avoid spills or discharges in or near these areas. In addition, vegetated slopes and swales, and detention systems in appropriate locations can provide treatment of potentially polluted runoff from the roadway, thereby avoiding or minimizing impacts to groundwater quality.

K. Floodplain Impacts

As part of the National Flood Insurance Program (NFIP), many communities and counties have had Flood Insurance Studies (FIS) performed to identify flood hazards for floodplain management and flood insurance purposes. The administration of the NFIP, performed by the Federal Emergency Management Agency (FEMA), 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.

At the beginning of the Draft EIS process, a letter was sent to the State of Missouri Emergency Management Agency (SEMA) requesting comments concerning the project and inviting the agency to a scoping meeting. The letter explained the purpose and extent of the project and was supplemented with a map showing the location of the study corridor. In reply to this correspondence, SEMA stated that any development associated with the project located within a Special Flood Hazard Area (SFHA), requires a floodplain development permit from SEMA for the proposed project (see letter dated November 1, 2001 in Appendix I). The Special Flood Hazard Areas are the areas delineated on an NFIP map as being subject to inundation by the base (100-year) flood. The letter also stated that if a proposed development is within a regulated floodway, SEMA requires a certificate of “no-rise” and a statement as to the effects of possible flooding before the development can be granted a permit. A licensed engineer must perform the hydraulic analysis to current FEMA mapping standards.

Exhibits III-1A through III-1C show the extent of the base 100-year floodplain and the regulatory floodway boundaries throughout the study corridor. The plan plates in Appendix C show the location of the project alternatives within the delineated flood boundaries.

1. FLOODPLAIN ENCROACHMENT

The encroachments of the 100-year floodplain and the regulatory floodway would be the result of widening or re-aligning the highway, and are described below and summarized in Table IV-11. The linear feet of floodplain crossed is also included, however, these are existing crossings and no new crossings would occur.

a. Greenway Subcorridor

The flooding source for the Greenway Subcorridor is Deer Creek.

No-Build Alternative

The No-Build Alternative would have no additional impacts to either the 100-year floodplain or the regulatory floodway of Deer Creek.

Table IV-11
100-Year Floodplain and Regulatory Floodway Encroachments

SUBCORRIDORS & OPTIONS	100 YEAR FLOODPLAIN CROSSING (linear feet)	100 YEAR FLOODPLAIN (acres)	REGULATORY FLOODWAY (acres)
Greenway Subcorridor			
Build Alternative *	1325	0.82	0
Thruway Subcorridor			
Build Alternative 2	80	0.12	0.02
Build Alternative 2a	880	0.12	0.02
Build Alternative 3 *	230	0.48	0.04
Build Alternative 3a	1030	0.48	0.04
Parkway Subcorridor			
Build Alternative 1	0	0	0
Build Alternative 2 *	0	0	0

Source: HNTB Corporation, 2002.
* Indicates Preferred Alternative

Greenway Alternative 1 (Preferred)

Deer Creek flows in a southeasterly direction, and its floodplain is crossed by I-64 at Clayton Road. This crossing bridges the 100-year floodplain (575 linear feet) and the regulatory floodway, and will continue to be bridged with the Build Alternative without further impacts to the floodplain or floodway.

Deer Creek flows parallel to I-64 for about 3600 feet after the I-64 crossing. Approximately 2600 feet downstream of the crossing is a tributary that drains through a culvert from the north side of I-64. The 100-year floodplain is adjacent to I-64 on the north side of I-64. The Greenway Alternative 1 will encroach into the floodplain on the north side and cover an area of approximately 0.69 acres. However, a FEMA floodway has not been delineated at the culvert entrance on the north side of I-64. Approximately 800 feet further downstream, the Deer Creek floodplain expands to the edge of the outer road. At this location, there is approximately 0.13 acres of floodplain on the south side of I-64 that will be encroached upon from the Build Alternative. However, there is no floodway encroachment. At the two areas previously described (north and south of I-64), the roadway crosses 750 linear feet of floodplain.

b. Thruway Subcorridor

There are three flooding sources that I-64 crosses along this subcorridor: Black Creek, Hampton Branch, and a tributary of Hampton Branch, Claytonia Creek. Black Creek flows in a southeasterly direction through a large arch culvert that conveys runoff under Brentwood Boulevard. Both Hampton Branch and Claytonia Creek flow through box culverts, the flowlines of which are significantly below the roadway of I-64.

No-Build Alternative

The No-Build Alternative would have no additional impacts to either the floodway or floodplain of Black Creek, Hampton Branch, or Claytonia Creek.

Thruway Alternative 2

This option would encroach upon 0.12 acres of the floodplain, 0.02 acres of which are in the regulatory floodway, of Claytonia Creek (80 linear feet of floodplain crossing).

Thruway Alternative 2a

This option would provide for new ramps on the northwest corner of I-64 and Brentwood Boulevard. These new ramps, which would be placed on piers, would cross over the existing upstream floodplain (800 linear feet) and floodway of Black Creek. This area would be acquired for right-of-way. The floodway just upstream of the culvert on Black Creek is approximately 50 feet wide, and about 150 feet wide 300 feet upstream of the entrance. It may be possible to place piers that are not within the floodway of Black Creek at this location. During the design phase a detailed backwater study of this reach of Black Creek would be performed to determine any adverse effects on the floodway, and the downstream effects of stormwater runoff from additional pavement would be evaluated as discussed for Thruway Alternative 3 below. This Build Alternative would also have the same encroachments to the floodplain and floodway of Claytonia Creek as those described for Option 2 above. Encroachments on the upstream floodway of Claytonia Creek would be the result of extension of the culvert.

Thruway Alternative 3 (Preferred)

This option would encroach on the floodplain and regulatory floodway of Hampton Branch and Claytonia Creek as follows: The encroachment to the Hampton Branch (150 linear feet of floodplain crossing) would include 0.36 acres of floodplain, 0.02 acres of which are in the regulatory floodway. The encroachment to Claytonia Creek (80 linear feet of floodplain crossing) would include 0.12 acres of floodplain, 0.02 acres of which are in the regulatory floodway.

Although this alternative would have no direct impact to the floodplain or the floodway of Black Creek at the I-64/I-170/Brentwood Blvd. interchange, the downstream effect of stormwater runoff from additional pavement will be evaluated during the design phase. It is anticipated that stormwater runoff from the additional pavement in this area would not be substantial enough to contribute to flooding downstream. However, if it is determined that there would be any measurable runoff that would contribute to flooding downstream, then detention options could be considered. As discussed in “Floodplain Permits”, section L..1.b. of this chapter, before any work can be done in a regulatory floodway, a “No-rise” certificate must first be issued, requiring a hydraulic study that would show that there would be no effects on the floodway elevations. This would occur in the design phase.

Thruway Alternative 3a

This option would have the same encroachments to the floodplain and floodway of Black Creek as those described for Thruway Alternative 2a above, and would have the same encroachments to the floodplain and floodway of Hampton Branch and Claytonia Creek as those described for Thruway Alternative 3 above.

c. Parkway Subcorridor

There are no floodplains located along the Parkway Subcorridor, therefore, the No Build Alternative and the Parkway Alternatives 1 and 2 (Preferred) would have no impacts to floodplains or floodways.

2. FLOODING RISKS

The proposed roadway modifications and bridge elevations are set well above 100-year frequency flood elevations, based on studies prepared by FEMA. The exception is the

floodplain of a tributary to Deer Creek that is adjacent to the north side pavement of I-64. In this case, a retaining wall could be constructed that may prevent the 100-year water surface from reaching the roadway. Consequently, the risk of flooding to users of the roadway, and the potential for property loss and hazard to life is minimal. The retaining wall affects the ineffective flow area on either side of the culvert entrance. Using the methods accepted by FEMA, that is assuming steady, uniform flow and a one-dimensional backwater model, the water surface elevation of the 100-year flood would not be affected by constructing a retaining wall at the proposed location along the north side of I-64. There is no regulatory floodway at this location.

3. IMPACTS ON NATURAL AND BENEFICIAL FLOODPLAIN VALUES

The footprint of the roadway fill placed in the floodplain is minimal when compared to the total floodplain area. The proposed ramp structure at Brentwood Boulevard would be constructed to maintain 100-year floodway crossing free of significant hydraulic obstruction. Thus, impacts on natural and beneficial floodplain values are minimal.

4. SUPPORT OF PROBABLE INCOMPATIBLE FLOODPLAIN DEVELOPMENT

The project corridor is presently an urban/suburban environment and consequently there is little undeveloped land for floodplain development. It is unlikely that incompatible development would be encouraged by the construction of this project.

5. MEASURES TO MINIMIZE FLOODPLAIN IMPACTS AND MEASURES TO RESTORE AND PRESERVE THE NATURAL AND BENEFICIAL FLOODPLAIN VALUES

The project construction will incorporate those features necessary to meet NFIP standards, FEMA, SEMA and St. Louis County Floodplain guidelines. All practical measures to minimize impacts to the floodplain will be incorporated into the project design.

6. ONLY PRACTICABLE ALTERNATIVE FINDING

In order to provide reconstructed travel lanes for I-64, it is necessary to locate the rebuilt travel lanes within and through the floodplain of Deer Creek, Hampton Branch, and Claytonia Creek. A total of 1.3 acres (0.53 hectares) of floodplain will be affected by the Preferred Alternative (Alternative VII, consisting of the Greenway Build Alternative, Thruway Alternative 3, and Parkway Alternative 2). This Alternative was determined to provide the best solution to existing roadway deficiencies and future traffic volumes, to best accommodate community access and growth, and to have a lower environmental impact.

The crossings of all base floodplains will be designed and constructed in compliance with applicable floodplain regulations, including Executive Order 11988. There will be no increases in base flood elevations attributable to implementation of these roadway improvements. During the design process, a detailed hydraulic analysis of the flows and water surface elevations will be made in accordance with the requirements of the Federal Emergency Management Agency and the U. S. Army Corps of Engineers. This analysis will ensure the absence of any encroachments upon regulatory floodways as well as avoid any adverse impacts. The proposed action conforms to applicable State of Missouri and local floodplain protection standards.

Based upon the above considerations, and for the reasons stated in this Environmental Impact Statement, the Federal Highway Administration determines that the Preferred Alternative is the only practicable alternative.

L. Permits

Permits applicable to the highway build alternatives may be categorized into two groups: regulatory permits and construction permits. Regulatory permits assist government agencies in the administration and implementation of federal, state or local statutes or initiatives. These permit programs are processed through planning and design phases of proposed actions. Construction permits serve as regulators of construction activities to protect the adjacent environs. State or local government agencies typically operate roadway construction permit programs.

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 USACE. Section 404 is the primary Federal statute that implements federal regulatory policies concerning the protection of wetlands as specified in various orders and regulations. The USACE, St. Louis District, has an agreement with the Missouri Department Natural Resources to process requests for Section 401 water quality certifications jointly with the Section 404 permit application.

Based on map review and windshield surveys, it was determined that "Waters of the U.S." are present in the study corridor. "Waters of the U.S." include streams, ponds (if connected to "Waters of the U.S."), wetlands, and other special aquatic sites, however, the potential wetland and pond impacted by the Build Alternatives may or may not be considered "Waters of the U.S." as discussed previously in Section I of this chapter. The streams crossed by the Build Alternatives are classified as "Waters of the U.S." Any dredge of fill activities in these streams would require a Section 404 permit from the USACE.

Under certain specific circumstances, a project may qualify for authorization by a Nationwide Permit. A Nationwide Permit is a form of general permit which authorizes a category of minor activities throughout the nation and allows those activities to occur with little, if any, delays or paperwork. Nationwide Permits under Section 404 of the Clean Water Act have undergone revision, including nationwide number 14, which may authorize discharges in "Waters of the U.S." as a result of linear transportation stream crossings. The USACE will evaluate its applicability to this project.

b. Floodplain Permits

Portions of some of the Build Alternatives of this project occur in areas that are designated by FEMA as Special Flood Hazard Areas (SFHA). The State of Missouri is a participant in the National Flood Insurance Program (NFIP), and any development associated with this project that occurs within a SFHA must meet the requirements of the State of Missouri Executive Order 98-03. This requires obtaining a floodplain development permit from SEMA prior to construction or development. In addition, portions of some of the Build Alternatives occur within a regulatory floodway, and as such, a "No-Rise" certificate and statements as to the effects of possible flooding are required. MoDOT is responsible for providing a no-rise certificate to SEMA prior its issuance of the Floodplain Development Permit for the project. A hydraulic study would be required that would show that there are no effects on the floodway elevations.

2. CONSTRUCTION PERMITS

MoDOT, in coordination with MDNR, has developed a Temporary Erosion and Sedimentation 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. 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. The NPDES permit, administered by MDNR, requires that slopes and ditches are properly designed to prohibit or reduce erosion. MoDOT operates under the provisions of NPDES permit No. MO-R 100007, which is a general permit issued for road construction statewide.

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.

M. Natural Terrestrial Communities

1. NATURAL COMMUNITIES

A search of MDC's Natural Heritage Database was conducted, but it was found that no significant, high-quality natural communities occur in the study corridor.

2. FOREST COMMUNITIES

The forested communities in the study corridor include the upland oak-hickory forest remnants, and the riparian forest areas located in the floodplain of Deer Creek and along some of the smaller stream corridors. These wooded areas protect water resources from runoff, stabilize stream banks, inhibit soil erosion, and provide aesthetic value, wildlife habitat, and plant and animal diversity. Their importance in providing bird habitat is discussed in the "Wildlife Impacts" Section N of this chapter, and in Chapter III.B.5.c.

The riparian forests within the study corridors were determined by studying aerial photography, USGS topographic maps, floodplain maps, and National Wetlands Inventory maps. Areas determined to be riparian forests were those designated on the NWI maps as palustrine forested areas, and all forested areas within the 100-year floodplain of streams. In addition, wooded areas within 25 feet of the banks of intermittent streams in the uplands were considered to be riparian forest for analysis purposes. All other wooded areas were considered to be upland. Direct impacts to forested communities occur where it is necessary to remove woodland vegetation for roadway construction. Trees removed as part of a construction project will be replaced according to the MoDOT tree replacement program. This program plants two trees for every tree of 15 centimeters (6 inches) in diameter or larger lost to construction. New trees will be planted in the I-64 project corridor or in Forest Park to the extent possible. Tree species will be selected to restore or improve the appearance of the affected areas. These new trees and landscaped roadsides through residential areas will minimize visual impacts caused by construction. Table IV-12 summarizes the acreages of upland and riparian forest that would be removed by each alternative within each subcorridor.

Secondary impacts of forest removal are discussed under the "Wildlife Impacts" Section (N) of this chapter. During the planning process, alignment adjustments were made and retaining walls were included in the design in order to minimize right-of-way acquisition, thereby avoiding or minimizing impacts to wooded areas adjacent to the roadway. As mitigation for forest impacts, tree plantings will occur along the corridor wherever practicable. New trees will be planted as close as possible to the impacted areas, however, trees will not be planted in the clear zones or any area where they would become a hazard. MoDOT intends to replace as many trees as possible, and tree species will be selected to complement and enhance the habitat and appearance of the affected areas.

Table IV-12
Forest Community Impacts

SUBCORRIDOR & OPTIONS	UPLAND FOREST (Acres)	RIPARIAN FOREST (Acres)
Greenway Subcorridor		
No Build Alternative	0	0
Build Alternative *	12.0	1.9
Thruway Subcorridor		
No Build Alternative	0	0
Build Alternative 2	6.2	0
Build Alternative 2a	5.0	0.7
Build Alternative 3 *	6.5	0.1
Build Alternative 3a	5.3	0.8
Parkway Subcorridor		
No Build Alternative	0	0
Build Alternative 1	0.8	0
Build Alternative 2 *	0.7	0

Source: HNTB Corporation, 2002.
* Indicates Preferred Alternative

N. Wildlife Impacts

1. GENERAL

Transportation improvement projects impact aquatic and terrestrial habitat directly through right-of-way acquisition and indirectly through habitat modification and fragmentation. Right-of-way acquisition results in a direct loss of acreage and a reduction in habitat size.

The study corridor is located in a highly urbanized/developed area, and the natural habitat that previously occurred has been disturbed. The most notable wildlife habitat considerations in this urban corridor are forested areas and riparian corridors associated with streams in the study corridor. Much of the forest in this area has been fragmented and cleared for development, and most of the remaining areas are very sparse.

As discussed in Chapter III.B.5.c, the USFWS (see letter in Appendix I, dated November 8, 2001) has stated that the forested areas in the St. Louis metropolitan area provide habitat for approximately 350 species of migrant and resident songbirds, which are the most prevalent form of wildlife that occurs in this urban environment. As indicated in Table IV-19 of the previous Section M on Forest Communities, impacts are relatively minimal, since this project consists of widening and interchange improvements of an already existing highway.

Streams, wetlands, and ponds also provide habitat values and are considered in the analysis. Not only do they serve as habitats for some amphibious species, but they also provide drinking water for terrestrial wildlife. However, several of the streams in the study corridor have been channelized and lined with concrete as discussed in Chapter III. In addition, streams that are currently bridged (such as Deer Creek) will continue to be bridged in order to avoid or minimize impacts to aquatic species. As discussed in Section I of this chapter, impacts to the natural water resources in the study corridor would be minimal.

Only those species with a high tolerance of humans and development are those that survive and remain in this urban environment. The wildlife species currently present have adapted to

living near humans in a developed environment and will attempt to relocate in response to the habitat impacts of any of the alternative highway improvements. However, some impacts could occur because smaller, less mobile species may have difficulty moving to other areas with suitable habitat. Other species that are relatively mobile may also be impacted because suitable habitat in an urban area is scarce, and the wildlife population is likely at or near carrying capacity. As a result, wildlife may have difficulty withstanding the loss of their limited habitat. Therefore, some impacts to wildlife could occur, although they would most likely be minimal because of the narrow limits of construction.

The wildlife species within this urban corridor would continue to be subject to vehicle-induced mortality as they disperse to other areas at the outset of construction. However, in areas where sound walls may be located, there could be a reduction in mortality because the walls would provide a barrier that prevents terrestrial species from entering the highway right-of-way. Conversely, the sound walls may create problems for the terrestrial wildlife that use the right-of-way by creating dispersal barriers. In other areas, without barriers, there could be a slight increase in wildlife mortality because of a wider roadway. Therefore, the highway improvements, as a whole, would have minimal impacts on the wildlife population that currently exists because of the narrow limits of construction.

2. THREATENED AND ENDANGERED SPECIES

The US Fish and Wildlife Service (see letter in Appendix I, dated November 8, 2001) has indicated that the federal endangered Indiana bat (*Myotis sodalis)* could occur within the study corridor.

a. Indiana Bat

There are currently no known or recorded occurrences of the Indiana bat (*Myotis sodalis)* within the study corridor. The USFWS has determined that during the summer months the species has been more commonly found north of the Missouri River and most of the winter hibernaculum are found south of the Missouri River. The Indiana bat occupies caves for hibernation in winter, but during spring and summer its maternity roost sites tend to be in dead or dying trees, greater than nine inches (22.9 centimeters) diameter at breast height, with loose or exfoliating bark or cracks or cavities. The roost trees are generally within wooded riparian areas, floodplain forests, or upland wood lots, and within 0.6 miles (one kilometer) of water.

The Build Alternatives would impact relatively minimal amounts of wooded areas. The greatest amount of impacts to wooded areas in the Build Alternatives would be approximately 2.7 acres of riparian woodland and 19.3 acres of upland woods, totaling 22 acres. Since this is a widening project, these impacts are linear (along the edges of the existing roadway) and are distributed along an eleven-mile urban corridor, rather than being impacts to large blocks of woodlands. As a comparison, those 22 acres of woodland impacts would be approximately four percent of the estimated 500 acres of forest/woodland in the study corridor, and less than $^{1}/_{10}$ of a percent of the estimated 26,000 acres of forest/woodland in St. Louis County.

The USFWS previously recommended not cutting suitable Indiana bat roost trees during the breeding season (April 1 through September 30) to avoid negative impacts to this species. This guidance applied to all actions. However, after reviewing new information on summer Indiana Bat use and roost tree availability in Missouri, the Service determined that the best scientific and commercial information did not support seasonal tree cutting as a general measure to avoid impacts and formal consultation. The USFWS now requests that impacts of proposed actions be evaluated on a case-by-case basis, taking into consideration the value of the site for Indiana bats and all relevant factors pertaining to habitat. Examples of such factors are: 1) proximity of

the action to known hibernaculum, maternity, or male roosts and/or important foraging areas; 2) the composition and extent of trees to be cut; 3) landuse of the action area after project completion and 4) consideration of the magnitude, scope, frequency, duration and other pertinent environmental changes associated with the action in reference to the importance of the area to the Indiana bat. Based on these factors, at this time this project is not likely to have an adverse impact on the Indiana bat. However, things could change between now and the time that construction begins on this project. For example, new information about the species may become available or the species status could change.

b. Peregrine Falcon

The Missouri Department of Conservation's Natural Heritage Database indicated that numerous peregrine falcon *(Falco peregrinus – state endangered)* nest sites have been recorded on tall buildings in the downtown St. Louis area, one of which is relatively close to but outside of the study corridor, and one that is on a tall building about one-half mile north of the I-64/I-170 interchange within the study corridor. Neither of these buildings, nor any other tall buildings would be impacted by any of the alternatives.

O. Historic and Archeological Preservation

In accordance with MoDOT Protocol for "Cultural Resources Investigations Associated with Environmental Assessment or Environmental Impact Statements" (Reeder 1997), those cultural resources that are located within the area of potential effects (APE) of the I-64 improvement alternatives have been identified. As discussed in Chapter III, B.6, these resources have been categorized based on the various investigations – archeological, architectural (individual properties and districts), and historical bridges. Each of the affected resources that were not already listed in the NRHP was evaluated for eligibility for the NRHP.

The discussion in Chapter III.B.6 contains tables that list NRHP properties, including buildings, districts and bridges, which are eligible for listing on the NRHP. These eligible resources included two historic districts identified in the two cultural resource survey reports provided by Ruth Nichols on June 23, and August 2003 under contract for the City of Richmond Heights during the consultation process. Since the City of Richmond Heights was not in agreement with the recommendations of ARC and MoDOT that the SHPO concurred with, it requested that FHWA seek determinations of eligibility from the Keeper of the National Register of Historic Places (Keeper). The Keeper provided determinations of eligibility for resources within Richmond Heights. Copies of correspondence from the SHPO and the Keeper are shown in Appendix I. For more detailed information on the identification and consultation process, see Appendix E, Cultural Resources, Survey Methodology.

Cultural Resources on or eligible for listing on the NRHP can have special status under the provisions of Section 4(f) of the Federal Aid Highway Act of 1966. Before any transportation project is allowed to proceed with an encroachment that would have an "adverse effect" on an eligible resource, a Section 4(f) evaluation must be conducted that tests all proposed alternatives. Archeological sites that are on or eligible for listing on the NRHP, but do not warrant preservation in place, are not subject to the Section 4(f) evaluation. This evaluation must lead to a finding that there is no feasible and prudent alternative to the impacts on the cultural resource, and that all possible planning to minimize harm to the resource has been undertaken.

This Section 4(f) evaluation also includes the signed Programmatic Agreement (Appendix K) between the FHWA, the SHPO, Advisory Council on Historic Preservation and MoDOT that outlines procedures for identification, evaluation and mitigation of the project's impact to NRHP

eligible properties. The archeological investigations will use a phased process, as specified in "Procedures for the Protection of Historic and Cultural Properties" of the Advisory Council on Historic Preservation Sec. 800.4(b)(2). This process will be used to identify and evaluate archeological sites, evaluate the effects of the proposed undertaking on NRHP eligible archeological sites, and mitigate the adverse effects of the project on NRHP eligible archeological sites that cannot be avoided.

For each of the Build Alternatives, the criteria of adverse effect (36 CFR 800.5(a)(1)) were applied to each NRHP eligible resource. For Section 4(f) eligibility, if the highway use is brought closer to the cultural resources, one of two classifications of effect is possible:

- No Adverse Effect (no impacts to the property or a portion of the property is acquired, and construction does not disturb the resource).

- Adverse Effect (direct impact – disturbance or demolition of the resource). A significant portion or all of the property is acquired. The effect of the project on the setting of the historic property was also considered.

As stated above, the cultural resources that would be adversely affected (the resource is demolished or the setting is significantly altered) by the Preferred Alternative may require a Section 4(f) Evaluation. Correspondence regarding the effects of the project can be found in Appendix I. Those that are adversely affected by each alternative are listed in the following impact analysis.

After the consultation process regarding the eligibility of resources was concluded, consultation regarding effects commenced. MoDOT made recommendations on the effects of the project on NRHP listed and eligible resources in September 2004 to all the consulting parties. MoDOT recommended that the project would have adverse effects on five individually eligible buildings, one eligible historic district and four eligible bridges. The SHPO and St. Louis City concurred with MoDOT's recommendations. The City of Richmond Heights disagreed with the MoDOT recommendations. Copies of this correspondence are located in Appendix I. The FHWA forwarded copies of the correspondence to the Advisory Council on Historic Preservation (Council) regarding the effects of the project for a Council review of the findings, as provided for in the Programmatic Agreement for this project.

The Council provided comment on the effects of the project on the setting of historic properties within Richmond Heights. In a letter dated February 24, 2005 the Council concurred with the FHWA that because of the measures taken to minimize noise impacts detailed in this document that the improvements will not cause adverse effects from visual or atmospheric elements. In addition, the Council concurred with the FHWA that taking small portions of property from property 283 and the Richmond Hills Historic District would not cause adverse effects because of the urban setting of the properties and their existing close proximity to I-64.

The Council signed the Programmatic Agreement (PA) for the New I-64 Improvement Project on August 28, 2004. All the consulting parties were invited to sign the PA as concurring parties, however none chose to do so.

During the planning process, alignment adjustments were made and retaining walls were included in the design in order to avoid and minimize impacts on adjacent properties, which included eligible cultural resources. These design changes resulted in reducing the impacted resources to a total of nine adversely affected by the Build Alternatives. Adverse effects within each subcorridor and alternative are discussed below.

1. NRHP LISTED RESOURCES

The No-Build Alternative and the Build Alternatives would not affect the NRHP listed resource discussed in Chapter III.B.6.

2. ARCHEOLOGICAL RESOURCES

There are no previously recorded archeological resources located within the APE. After a Phase I archeological survey is performed on the Preferred Alternative, and if archeological deposits are found, an assessment of eligibility is conducted and an evaluation of effect is applied to any archeological resources that are determined to be eligible for the NRHP. Section 4(f) evaluation may be necessary for sites that warrant preservation in place and are not impacted. Procedures for consultation on archeological resources are contained in the signed Programmatic Agreement located in Appendix K.

3. INDIVIDUALLY ELIGIBLE ARCHITECTURAL RESOURCES

Of the 403 architectural resources recorded during the course of the survey, the APE contains 28 that are individually eligible for listing on the NRHP. These are listed in Table III-15, in Chapter III.B.6, and are individually located on the Plan Plates in Appendix C.

Table IV-13a lists the individually eligible architectural resources and the effect of the Preferred Alternative, based on consultation with the SHPO, other consulting parties and considering Council comments. The table also indicates the estimated distance from the building to the proposed right-of-way line or impact area or type of impact.

a. Greenway Subcorridor

No-Build Alternative

The No-Build Alternative would have no effect on any individually eligible architectural resources within the Greenway Subcorridor.

Greenway Alternative 1 (Preferred)

The Build Alternative would have no adverse effect on seven NRHP eligible properties since there is no taking from the property. The Preferred Alternative would have no adverse effect on #503 (a residence) as the right-of-way acquisition from the property is over 100 feet from the residence and the setting of the property will remain unchanged.

Table IV-13a
NRHP Eligible Individual Properties-Architectural Resources
MoDOT Effect Recommendations

Resource Number	Plate Number	Subcorridor	MoDOT Effect Recommendation	Comments
623	G2	Greenway	No Adverse Effect	No property acquisition*
609a	G4	Greenway	No Adverse Effect	No property acquisition*
530	G6	Greenway	No Adverse Effect	No property acquisition*
503	G7	Greenway	No Adverse Effect	Minor r/w taking, new r/w over 100' from buildings
499	G7	Greenway	No Adverse Effect	No property acquisition*
489	G7, T17	Greenway	No Adverse Effect	No property acquisition*
484	G7, T17	Greenway	No Adverse Effect	No property acquisition*
283	T20	Thruway	No Adverse Effect	Small taking from parking lot, will not impact school building
206	T20, P1	Thruway	No Adverse Effect	No property acquisition*
195	P1	Thruway	Adverse Effect	Property acquired; building will be removed

Resource Number	Plate Number	Subcorridor	MoDOT Effect Recommendation	Comments
179	P1	Thruway	Adverse Effect	Property acquired; building will be removed
178	P1	Thruway	Adverse Effect	Property acquired; building will be removed
173	P1	Thruway	No Adverse Effect	No property acquisition*
172	P1	Thruway	Adverse Effect	Property acquired; building will be removed
165	P1	Thruway	No Adverse Effect	No property acquisition*
156	P1	Parkway	Adverse Effect	Property acquired; building will be removed
100	P2	Parkway	No Adverse Effect	Small taking from the property, will not impact the building
92	P2	Parkway	No Adverse Effect	Small taking from the property, will not impact the building
73	P3	Parkway	No Adverse Effect	No property acquisition*
65	P4	Parkway	No Adverse Effect	No impact to the Planetarium*
64a	P5	Parkway	No Adverse Effect	Small taking from the property, will not impact the building
59	P5	Parkway	No Adverse Effect	Altering access, not impacting the building directly
58	P5	Parkway	No Adverse Effect	No property acquisition*
29	P7	Parkway	No Adverse Effect	No property acquisition*
28	P7	Parkway	No Adverse Effect	No property acquisition*
27	P7	Parkway	No Adverse Effect	No property acquisition*
21	P7	Parkway	No Adverse Effect	No property acquisition*
20	P7	Parkway	No Adverse Effect	No property acquisition*

*The highway is already in close proximity to the properties. The project will not introduce additional visual or atmospheric elements that would impact the qualities that make the properties eligible for listing on the NRHP

b. Thruway Subcorridor

No-Build Alternative

The No-Build Alternative would have no effect on any individually eligible architectural resources within the Thruway Subcorridor.

Thruway Alternatives 2, 2a, 3 (Preferred), and 3a

All of the Thruway Alternatives would have an effect on eight individually eligible properties, of which four would be no adverse effect. Properties #206, #173 and #165 do not have any property acquisition by the Preferred Alternative, while Property #283 has a minor right-of-way acquisition.

The Preferred alternative has an adverse effect on four individually eligible architectural resources within the Thruway Subcorridor: properties #195 (a residence), #179 (a residence), #178 (a residence), and #172 (an apartment building). These properties would be adversely affected by the acquisition of the entire parcel and the demolition of the resource.

c. Parkway Subcorridor

No-Build Alternative

The No-Build Alternative would have no effect on any individually eligible architectural resources within the Parkway Subcorridor.

Parkway Alternative 1

Parkway Alternative 1, which includes a ramp to Oakland Avenue, would have no adverse effect on three individually eligible architectural resources: property #92 (Dewey School), property 64a

(CID on the north side of I-64), and #59 (former CID building on the south side of I-64 currently occupied by St. Louis College of Health Careers). At properties #100, #92 and #64a, a small portion of the properties is affected, but the buildings would not be impacted and the roadway improvements would not alter the setting of the cultural resources. For property #59, a portion of the circle drive would be directly impacted; however there is sufficient space to mitigate the effect by constructing a new drive to replicate the original setting. Properties #73, #65, #58, #29, #28, #27, #21 and #20 have no property acquisition and no adverse effect. One individually eligible property, #156 (a residence), would be adversely affected.

Parkway Alternative 2 (Preferred)

Parkway Alternative 2, which does not utilize a ramp to Oakland Avenue, would have an adverse effect on property #156 as the property is acquired and the building demolished, and no adverse effect on four individually eligible architectural resources properties, #100, #92, #64a and #59, as only a small amount of property is acquired from each. Properties #73, #65, #58, #29, #28, #27, #21 and #20 have no property acquisition and no adverse effect.

4. ELIGIBLE DISTRICTS

Within the I-64 APE there are twelve historic districts listed on or eligible for the NRHP. These are listed in Table III-16, in Chapter III.B.6, and are located on the Plan Plates in Appendix C. During the planning process, alignment adjustments were made and retaining walls were included in the design in order to either avoid or minimize impacts to these districts. The project has no adverse effect on the NRHP listed Forest Park SE Historic District since no property is acquired from the district and the Kingshighway ramps will be moved farther from the district than the existing ramps. Of the 12 NRHP eligible districts, one Lavinia Gardens, would be adversely affected by Preferred Alternative as discussed below. There is no adverse effect to the eligible Forest Park Historic District as the property acquisition is minor, located at the edge of the district and affects features that have been changed and do not contribute to the significance of the district. This documentation is also shown in the Section 4(f) evaluation. There were originally 48 properties within the APE that were a part of an NRHP listed or eligible district. Following the July 5 Keeper Determinations of Eligibility, there were 101 properties eligible as part of a historic district. Two properties previously treated as individually eligible are now included within a historic district.

Table IV-13b
NRHP Eligible or Listed Districts
MoDOT Effect Recommendations

Historic District Name	Plate Number	Subcorridor	MoDOT Effect Recommendation	Comments
York Village Subdivision	G7	Greenway	No Adverse Effect	No acquisitions from the district*
Richmond Hills Subdivision	G7, T17	Greenway and Thruway	No Adverse Effect	Minor property acquisition taking from edge of district, no buildings impacted
Lavinia Gardens Subdivision	T18, T19	Thruway	Adverse Effect	Acquiring several buildings from the district
Lake Forest Subdivision		Thurway	No Adverse Effect	No acquisitions from the district*
Hampton Park Subdivision	T18, T20	Thruway	No Adverse Effect	No acquisitions from the district*
Clayton Park Addition	T20	Thruway	No Adverse Effect	No acquisitions from the district*
West Moor Park #2 Subdivision	T20, P1	Thruway	No Adverse Effect	No acquisitions from the district*
Oakview Terrace Subdivision	T20, P1	Thruway	No Adverse Effect	No acquisitions from the district*

Historic District Name	Plate Number	Subcorridor	MoDOT Effect Recommendation	Comments
St. Luke's Historic District	T20, P1	Thruway and Parkway	No Adverse Effect	No acquisitions from the district*
Hi-Pointe	P1, P2	Parkway	No Adverse Effect	No acquisitions from the district*
Forest Park	P2-P6	Parkway	No Adverse Effect	Minor acquisitions will be on edges of the district and in areas that have been altered from their historic configurations.
Forest Park Southeast	P5-P7	Parkway	No Adverse Effect	No acquisitions from the district*

*The highway is already in close proximity to the properties. The project will not introduce additional visual or atmospheric elements that would impact the qualities that make the properties eligible for listing on the NRHP.

a. Greenway Subcorridor

There are two eligible historic districts, York Village Subdivision and a portion of the Richmond Hills Subdivision located within the Greenway Subcorridor. There are no adverse effects on the York Village Subdivision as no property is acquired. There is no adverse effect to the Richmond Hills Subdivision as only a minor right-of-way acquisition is planned, which will not affect the setting of the historic district.

b. Thruway Subcorridor

No-Build Alternative

The No-Build Alternative would not have any effect on any of the eligible historic districts within the Thruway Subcorridor.

Thruway Alternatives 2, 2a, 3 (Preferred) and 3a

The Thruway Alternatives would have an adverse effect on one historic district, Lavinia Gardens, within the Thruway Subcorridor. Alternatives 2 and 2a would impact six of the residences in the Lavinia Gardens neighborhood. Alternatives 3 and 3a would require the acquisition of four residences in Lavinia Gardens. The removal of any of the buildings from the district would constitute an adverse effect.

There are no property acquisitions and there is no adverse effect to the, Lake Forest Subdivision, Hampton Park Subdivision, West Moor Park #2 Subdivision, Clayton Park Addition (Bennett Avenue), Oakview Terrace Subdivision, St. Luke's Historic District and Hi-Pointe Historic Districts. There are minor property acquisitions from the Richmond Hills Subdivision and Forest Park Historic Districts, which do not affect the setting of the historic districts and do not directly affect any contributing resource within the districts.

c. Parkway Subcorridor

No-Build Alternative

The No-Build Alternative would have no effect on any of the eligible or listed historic districts within the Parkway Subcorridor.

Parkway Alternatives 1 and 2 (Preferred)

Parkway Alternatives 1 and 2 would have no adverse effect on the Forest Park Historic District, in that only a relatively small portion of property would be impacted at the south edge of the park, which is the edge of the district and which contains only non-contributing resources.

These alternatives would have no adverse effect on the eligible St. Luke's and Hi-Pointe Historic Districts and the NRHP listed Forest Park Southeast Historic District.

5. ELIGIBLE HISTORIC BRIDGES

Of the bridges within the I-64 APE, four bridges are eligible for listing on the NRHP. These are listed in Table III-17 in Chapter III.B.6, and are located on the Plan Plates in Appendix C.

Table IV-13c
NRHP Eligible Individual Properties-Bridges
MoDOT Effect Recommendations

Resource Number	Plate Number	Subcorridor	MoDOT Effect Recommendation	Comments
K601R	G2	Greenway	Adverse Effect	Bridge to be replaced (Spoede Road)
K600R2	G3, G4	Greenway	Adverse Effect	Bridge to be replaced (Lindbergh Boulevard)
K854R	G7	Greenway	Adverse Effect	Bridge to be replaced (McKnight Road)
K861R	T17	Thruway	Adverse Effect	Bridge to be replaced (McCutcheon Road)

*The highway is already in close proximity to the properties. The project will not introduce additional visual or atmospheric elements that would impact the qualities that make the properties eligible for listing on the NRHP

a. Greenway Subcorridor

No-Build Alternative

The No-Build Alternative would not have an adverse effect on the three eligible bridges: K601R (Spoede Road), K600R2 (I-64 over Lindbergh), and K854R (McKnight Road). This alternative would not include lane additions or alignment changes, but these bridges would require routine maintenance and repair because they are 60 years old or more. Maintenance activities are required to keep these bridges open for as long of a period as possible.

Greenway Alternative 1 (Preferred)

The Greenway Alternative 1 would have an adverse effect on three eligible bridges: K601R (Spoede Road), K600R2 (I-64 over Lindbergh), and K854R (McKnight Road). These bridges would require replacement, as they are 60 years old or more, deteriorating and do not meet current vertical clearance standards.

b. Thruway Subcorridor

No-Build Alternative

The No-Build Alternative would not have an adverse effect on the one eligible bridge: K861R (McCutcheon Road). This alternative would not include lane additions or alignment changes, but the bridge would require routine maintenance and repair because it is 60 years old or more. Maintenance activities are required to keep this bridge open for as long of a period as possible.

Thruway Alternatives 2, 2a, 3 (Preferred) and 3a

The Thruway Alternatives would have an adverse effect on the one eligible bridge: K861R (McCutcheon Road). This bridge would require replacement, as it is 60 years old or more, deteriorating and does not meet current vertical clearance standards.

c. Parkway Subcorridor

No-Build Alternative

There are no eligible bridges in the Parkway Subcorridor.

Parkway Alternatives 1 and 2 (Preferred)

There are no eligible bridges in the Parkway Subcorridor.

6. SUMMARY

The consultation process on effects has concluded and the ACHP has provided comments on the effects of the project. The Preferred Alternatives will have an adverse effect on five individually eligible buildings, four individually eligible bridges, and one historic district. The Preferred Alternatives will have no adverse effects on the other eligible or listed properties. Tables 13a, 13b, and 13c summarize the effects of the project on NRHP listed or eligible resources.

Those historic properties that are likely to be totally acquired, or are likely to have their cultural setting significantly altered by the Preferred Alternative, and thus will be adversely affected, require a Section 4(f) evaluation, which is included in this document. Ten resources that will be adversely affected include five individually eligible architectural resources: properties #195, #179, #178, #172, and #156, four bridges: K601R, K600R2, K854R, and K861R, and one historic district: the Lavinia Gardens Historic District.

It should be noted that Forest Park is addressed in the Section 4(f) Evaluation for impacts to parkland rather than for effects on its significance as a historic district.

The effect of the noise barriers, proposed as part of the noise abatement for this project, on the cultural resources associated with this project has not been considered, since the location and size of the barriers has not been determined. Additional Section 106 review and consultation will be necessary once locations of the walls are determined and the visual effects on cultural resources can be determined.

P. Hazardous Waste Sites

1. NO-BUILD ALTERNATIVE

The “No-Build” Option for the I-64 Corridor would have no effect on the potential hazardous waste sites identified during the hazardous material screening. Any current release of hazardous materials or waste would likely continue.

2. BUILD ALTERNATIVES

Existing waste sites identified in Chapter III, could be affected by the proposed improvements. Releases into the environment may be aggravated by construction activities resulting in new or additional contamination and possible worker exposures. Types of potential negative impacts may include, but are not limited to those impacts listed as follows:

- Dust from disturbing contaminated soils during earth moving activities, with potential exposure to workers and nearby residents.
- Unearthing disposal sites and spreading hazardous materials.
- Displacement of contaminated soils by borrowing or excavating and placing material in the embankment or undocumented area.
- Creation of conduits for migration of potential contaminants (i.e. underground utilities).

All known and unknown hazardous waste impacts encountered during roadway improvements will be handled per federal, state, and local laws and regulations. Sites can be addressed by avoidance, minimization, and/or mitigation. There may be a possibility of encountering unregulated residential fuel oil tanks. With residential properties being acquired for this project, the possibility of encountering buried fuel oil tanks is moderately to highly probably, especially in older neighborhoods. Standard procedures described in the MoDOT Project Development Manual should be followed beginning in preliminary design regarding inspection for asbestos containing materials (ACM) and hazardous waste surveys.

However, the likelihood of these impacts occurring is low due to preventative measures taken before and during construction. Avoidance of known sites should be provided to the extent possible. Known impacts should be remediated prior to, or as part of the construction of the roadway improvements. If an unknown site would be encountered during construction, MoDOT and MDNR must be contacted and appropriate laws and EPA regulations would be followed to eliminate or minimize any adverse environmental consequences.

A positive impact of the build alternatives would be remediation or clean up of the wastes sites identified within the limits of the preferred alternative. Remediation of solid and hazardous waste site, and related contamination, most likely will be conducted in the preconstruction phase of the project.

The observed and documented waste sites listed in Chapter III were rated as having either a high, moderate or low potential for contamination. No high potential sites were designated in the screening. Two of the eight sites listed in Chapter III would be impacted by the alternatives. One site has a moderate, and one site has a low potential for contamination impact.

Future site inspections and characterization should be performed as part of the design or construction. The preferred method of mitigation for the low and moderate potential sites is avoidance. If due to other factors, a site cannot be avoided and is impacted by the project, it is anticipated that the necessary remediation, if any, would not be substantial or consequential.

The potential impacts of the improvements and the proposed mitigation plans are discussed below for the potential hazardous and solid waste sites identified during the hazardous material screening.

a. Greenway Subcorridor

Greenway Alternative 1 (Preferred)

The Greenway Alternative 1 would have no impacts on the potential hazardous waste sites identified during the hazardous material screening.

b. Thruway Subcorridor

Thruway Alternative 2

This option would have no impact on the potential hazardous waste sites identified during the hazardous material screening.

Thruway Alternative 2a

Site S-2 Shell Service Station 1240 S Brentwood. The site is listed on the UST (Underground Storage Tank) and LUST (Leaking Underground Storage Tank) lists. Some tanks (LUST) were noted to have been removed. The site is now assumed to meet current MDNR regulations. This site is evaluated as having a moderate potential for contamination. Standard procedures for UST tank removal and contamination testing should be followed.

Thruway Alternative 3 (Preferred)

This option would have no impact on the potential hazardous waste sites identified during the hazardous material screening.

Thruway Alternative 3a

Site S-2 as described above.

The one moderate risk site (S-2) would have little impact on the proposed options. The greatest impact might be from leaking underground storage tanks and possible contaminated soil and groundwater. Contamination of this type would not subject the project to undue costs or time delay. Any remediation would require the coordination and approval of MoDOT and MDNR, and appropriate laws and EPA regulations would be followed to eliminate or minimize any adverse environmental consequences.

c. Parkway Subcorridor

Parkway Alternatives 1 and 2 (Preferred)

This option would have no impact on the potential hazardous waste sites identified during the hazardous material screening.

Q. Visual Impacts

1. URBAN DESIGN TREATMENTS

As roadway design plans are developed, urban design features would be considered to enhance the aesthetics within the corridor. Urban design elements and landscaping can help to maintain the property values of the neighborhoods adjacent to the freeway.

The I-64 and I-170 interchange is a regional interchange of high visibility. The urban design elements of enhanced bridges, retaining walls, sound walls, lighting, sign structures, and landscaping would provide for aesthetic features at the I-64/I-170 interchange and throughout the I-64 corridor.

Described in this section are the impacts to the existing visual resource, the relationship of impacts to views from I-64 and for persons viewing I-64 from adjacent areas. See exhibits in Chapter V, Urban Design for views of the possible urban design conceptual features of I-64.

In the detailed design phase for the Preferred Alternative, it will be determined whether or not sound walls are desired by the residential neighborhoods and at Aviation Field in Forest Park. If sound walls are incorporated in these areas, the drivers' views from I-64 into the neighborhoods and the park would be restricted, and the walls would also be highly visible to the neighborhood residences and the users of Forest Park. Therefore, if sound walls are to be incorporated in these areas, the visual impact of the walls will be softened or reduced by utilizing landscaping and aesthetically pleasing surface treatments.

2. GREENWAY SUBCORRIDOR

a. No-Build Alternative

Views from I-64

The common visual strength of the Greenway Subcorridor is the mature, lush vegetation buffering I-64 from adjacent land uses. Except at the Lindbergh Boulevard interchange, there is

a continuous buffering of vegetation. The vegetation consists of both deciduous and evergreen material and ranges in size from mature canopy trees to lower shrubs and groundcover.

Bridges within this Subcorridor have architecturally significant detailing and visual interest. Bridge abutments and parapet wall shapes and details were influenced by the Art-deco style design. These bridges are highly visible to drivers. The details are highly noticeable because of the lack of visual competition from other structures and buildings, due to the extensive vegetative buffering along the right-of-way.

The bridges lose a portion of their architectural integrity with the signage that is placed on their facades. The signage is functional and a necessity, but they distract from the visual attractiveness of the bridges. Shoulder and median areas have many worn pavement and barrier segments and they contrast sharply with the woodland character of the surrounding vegetative buffering.

Views to I-64 from Adjacent Areas

The mature, lush vegetation that is a visual strength for drivers of I-64 is also the common visual strength for views toward I-64. The majority of the land use adjacent to I-64 through this Subcorridor is residential. A visual buffer of the highway is a high priority for residents. The combination of deciduous and limited evergreen material and the range of sizes from mature canopy trees to low shrubs provide an effective screen from residential areas adjacent to I-64. During the growing season, the vegetative buffer achieves a 60 to 100 percent visual screen, depending on location.

b. Greenway Alternative 1 (Preferred)

Views from I-64

West and east of Spoede Road, I-64 would be wider and the profile lower than existing conditions. The widening of I-64 would impact existing vegetation along the right-of-way and adjacent property. Existing mature trees and shrubs in portions adjacent to I-64 would be removed. The effect would be that residents would lose a portion of their visual buffer. The existing vegetative strip would be narrower than existing conditions. A visual buffer would remain, but it would be more transparent than existing conditions. For drivers, the Greenway Subcorridor would remain similar to existing conditions. The view would be broad, with turf along the adjacent slopes and vegetation along the edge of the right-of-way.

East and just west of Lindbergh Boulevard, the profile of I-64 would be substantially higher than existing conditions. Just east of Lindbergh Boulevard, the profile would be up to 20 feet higher. The higher profile and widening of I-64 would create the need for retaining walls and slopes adjacent to the highway. The walls and sloping would impact existing vegetation. Existing mature trees and shrubs in portions of the area adjacent to I-64 would be removed.

Views to I-64 – I-64 would be wider and the profile lower than existing conditions. For residents facing I-64, there would be primary visual affects. One, the existing visual buffer would be reduced with the loss of vegetation. Second, residential areas would face retaining walls within the right-of-way. Retaining wall heights would vary depending on location. Walls in some locations would be up to 30-40 feet in height. In some locations, existing mature trees and shrubs in portions of the area adjacent to I-64 would be removed.

3. THRUWAY SUBCORRIDOR

a. No-Build Alternative

Views from I-64

Near McCutcheon Road and Laclede Station Road, I-64 is in cut. These sections have grass slopes with existing vegetation buffering the adjacent residential land uses. The grass slopes with adjacent trees and trees provide a visual softening of this section of the Thruway Subcorridor.

Closer to I-170, I-64 is on fill, above the grade of adjacent areas. The area surrounding the intersection of I-64 and I-170 is commercial and retail. Visibility and orientation to surrounding businesses is a visual strength of this section. The Galleria, Brentwood Promenade, Brentwood Commons, and the Dierberg's Center, are all retail and business areas that are highly visible from I-64.

Between Laclede Station Road and Bellevue Avenue, the majority of the Subcorridor has grass slopes with a vegetative buffer or trees and shrubs along the perimeter of the right-of-way. Ornamental tree and shrub massing along cut slopes and interchanges provide additional visual interest. There is a lack of architecturally significant visual elements adjacent to the right-of-way.

Bridges in this Subcorridor are architecturally insignificant with little or no aesthetic treatments. There are plantings of ornamental trees and shrub massing along slopes of cut sections and around interchanges. However, many of these landscape plantings have not filled in or have not been maintained properly and appear spotty. Other elements within the right-of-way such as fencing, retaining walls, and guard barriers offer little aesthetical treatment.

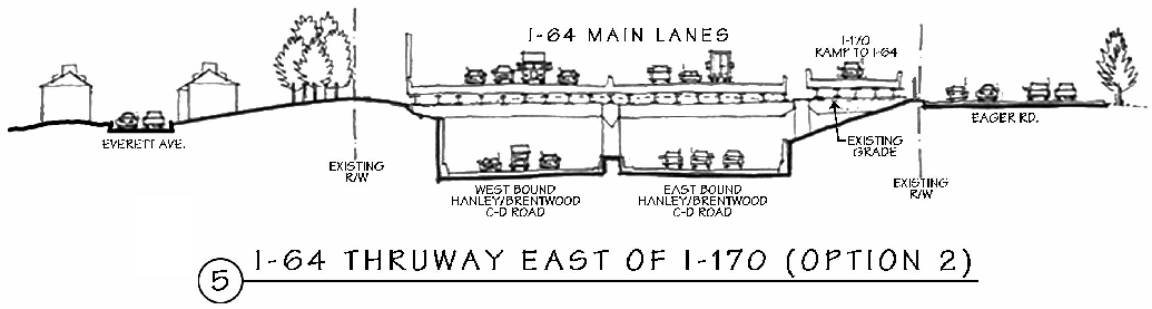
Views to I-64 from Adjacent Areas

The residential areas near McCutcheon Road and Laclede Station Road are fairly well buffered from I-64 through vegetation and change of elevation. The vegetative buffer is not as wide or as dense as in the Greenway Subcorridor, but since I-64 is in cut in these areas, views from the residential areas tend to be above I-64. Near I-170, I-64 is highly visible from surrounding areas. Since many of the businesses in this area are regional destinations, the visibility of I-64 aids in way-finding and orientation for visitors to and from these businesses. Although the Thruway Subcorridor has an existing buffer of vegetation, the width and density of the vegetation varies. Thus, I-64 can be visible, especially in winter when the deciduous vegetation has lost its foliage.

b. Thruway Alternative 2 and 2a

The most distinct differences between alternatives in visual appearance of I-64 are between Hanley Road and Brentwood Boulevard. Here the cross sections between Thruway Alternative 2/2a and 3/3a differ substantially. Visual characteristics of Thruway Alternative 2 and 2a are based on a stacked roadway design that places the mainlines on the upper level and collector / distributor lanes on the lower level. This design reduces the highway footprint and keeps the I-64 mainlines slightly above existing elevations. An illustrative typical cross section for Thruway Alternative 2/2a is shown in Figure IV-1.

Figure IV-1 Typical Section for Thruway Alternative 2 and 2a

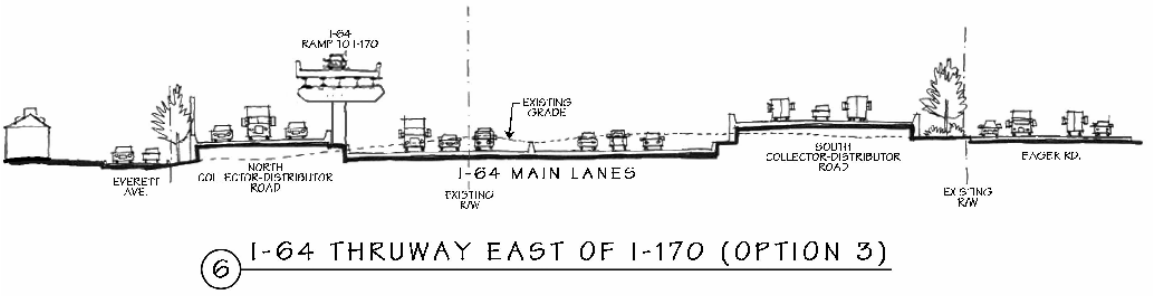


c. Thruway Alternative 3 (Preferred) and 3a

Views from I-64

Interstate 64 through the Thruway Subcorridor would change in profile, width, and alignment. Changes with the interchange of I-64 and I-70 would create substantial visual impacts from and toward I-64. Approaching Brentwood Boulevard, I-64 would have an alignment further south than existing. This would encroach on property and vegetation north of McCutcheon Road and Eager Road. The widening of I-64, the shifting of the alignment north, and new ramps to I-70 would encroach on property north of the existing I-64 and east of the existing I-170. For drivers, the Thruway Subcorridor would be more visually open than existing conditions. Highway infrastructure such as ramps, piers, retaining walls, and bridges would increase and be highly visible. Views of residential area west of Hanley Road would become more open and visible with the alignment shift north and new ramps to I-170. The typical section for Thruway Alternative 3/3a is shown in Figure IV-2.

Figure IV-2 Typical Section for Thruway Alternative 3 and 3a



Views to I-64 from Adjacent Areas – I-64 would be more visible from areas adjacent to the alignment. The encroachment onto adjacent property would reduce or eliminate existing vegetative buffers. Views of retaining walls, ramps, and structures would be more visible. Highly impacted areas would be the residential areas north of McCutcheon Road and Eager Road and along the streets of Linden Avenue, Everett Avenue, and Antler. The New I-64 would be substantially closer to these impacted areas. Existing conditions include visual buffering by vegetation, buildings, and topography. The proposed alignment would reduce or eliminate these visual buffers.

4. PARKWAY SUBCORRIDOR

a. No-Build Alternative

Views from I-64

Views of Forest Park to the north provide for visual interest. Vistas into the park change continuously for drivers along I-64 as the spacing and grouping of canopy trees, evergreens, vegetation, and topography create various opportunities for views into the park. Major institutions of the park are visible from I-64 and help provide way finding for park visitors. The Planetarium, Science Center, St. Louis Zoo, and Aviation Field are all highly visible from the interstate.

South of I-64, the Science Center, the Highlands office park, and Turtle Playground in Forest Park are all highly visible and provide for architectural and artistically significant viewing opportunities. The continuation of greenspace and mature trees west of Turtle Playground, with Kennedy Woods to the north, provides a parkway effect for drivers in this stretch.

Although this Subcorridor has many visual strengths for drivers to adjacent land uses, the view of elements within the right-of-way tend to be weak, especially elements that are transition devices between I-64 and adjacent land. The chain link fencing along both sides of I-64 does not provide the level of aesthetic quality suitable for the adjacent land uses. With the fence being so close to I-64 through the Parkway Subcorridor, it is highly visible for drivers.

Interstate 64 is in cut east of Kingshighway. Grass slopes soften the transition to the surrounding urban environment. Besides the grass slopes, there is a minimal amount of landscape and vegetation through this Subcorridor. Spot trees and shrub plantings dot the slopes. The vegetative buffer between the right-of-way and the surrounding urban context is spotty with a few small to medium trees.

Views to I-64 from Adjacent Areas

Although I-64 is highly visible from the institutions along the eastern part of the Parkway Subcorridor, views toward the park and the shared scenery of adjacent vegetation soften the overall impact.

Along the western portion of the Parkway Subcorridor, topography and existing mature canopy trees effectively buffer views toward I-64. Interstate 64 is lower in elevation in this area. Oakland Avenue and the existing greenspace to the north act as a buffer for residential areas to the south. The mature vegetation along Forest Park also acts a buffer.

Along Oakland Avenue, I-64 is only separated by a small width of lawn and a chain link fence. Visually, there is little separation or buffering at this location.

b. Parkway Alternatives

Views from I-64

The widening of I-64 would encroach on existing property south of I-64 from McCausland Avenue to Oakland Avenue. The encroachment would result in the loss of existing vegetation and the need for retaining walls.

Along Forest Park, the alignment profile would be lower than existing conditions. The widening of I-64 would generally happen to the south of the current alignment. The widening and the new ramps at the Hampton Avenue interchange would impact areas of existing vegetation. Mature canopy trees along the segments of the park edge would be removed. Mature trees would also

be removed south of I-64 in areas near Turtle Playground and west of Kingshighway. The reconfiguration of the Kingshighway ramps would allow additional green space to be turned over to Forest Park. However, the new northwest Kingshighway ramp has the potential to encroach on Forest Park and the existing lake. East of Kingshighway, there would be opportunities on the north side of I-64 to view sloped turf and landscape areas where retaining walls currently exist. For drivers, retaining walls up to ten feet (three meters) in height would line portions of I-64 on the north side, and up to 20 feet (6.1 meters) in height on the south side. These walls would provide a distinct edge between I-64 and adjacent areas. The lower profile would also cause changes in current way-finding for drivers toward adjacent destinations. Currently, the zoo entrance pylon is visible from I-64. With the lower profile, the zoo pylon would not be visible to drivers as they pass by the Zoo section. The overall ability for visual vistas into Forest Park from I-64 would be reduced or eliminated.

Views to I-64 from Adjacent Areas

For views toward I-64, the loss of existing trees directly adjacent to the existing alignment would be a visual loss. Views toward I-64 would be impacted for residents near Wise, Forest, and Berthold Avenues. The existing visual buffer would be reduced by the loss of existing vegetation. Residents would also face retaining walls in portions of this section. The lower alignment profile, however, would help soften the visual impact of I-64 through this section. The lower profile would also create a distinct edge between I-64 and the adjacent areas. Northwest of the Kingshighway intersection, the view from Forest Park toward I-64 would be impacted by the new Kingshighway ramp.

East of Kingshighway, the loss of existing vegetation would reduce the limited visual buffer between I-64 and adjacent areas. The lower alignment profile would help soften the visual impact through this segment. Along the south edge, I-64 would be up to 20 feet (6.1 meters) below adjacent areas. At the Kingshighway interchange, the reconfigured ramps would allow additional green space to be turned over to Forest Park. The additional green space would provide a visual buffer of the interchange.

5. LIGHTING IMPACTS

The impacts that result in excessive levels of light that adversely affect adjacent properties are termed “light pollution.” Light pollution can be further defined and measured in different ways, such as sky glow, glare and light trespass.

- **Sky glow** is the scattering of artificial light (often a colored glow, depending on its source) caused by the natural occurrence of dust particles and humidity in the sky.
- **Glare** is the shine or brightness of a light source visible against a darker or glossy background.
- **Light trespass** occurs when light from a source located on one property spills over on to an adjacent property.

In order to minimize lighting impacts, efficient lighting and equipment would be installed consistent with MoDOT’s Project Development Manual and MoDOT lighting standards to optimize the use of light on the road surface while avoiding and minimizing stray light intruding on adjacent properties.

As the project progresses during detailed design, a variety of lighting choices would be investigated in more detail to avoid and minimize light trespass such as:

- High pressure sodium lamps or metal halide for pole lights which are compact, efficient and can be fitted with shields to focus light in directions where light is required minimizing stray light.
- Flat glass or flat plane lamps with cut-off light distribution above the horizontal plane of the lantern enhancing light control and minimizing stray light so it cannot be seen at far distances.
- Locate the majority of roadway lighting in the median of the main lanes to direct light where most needed and reduce light impacts to surrounding property.
- Low threshold and pedestrian level lamps may be used in areas to provide additional security, safety, and enhance the pedestrian environment.
- Use reflective striping on pavement and traffic rails at flyover ramps to reduce need for lighting fixtures.

R. Energy

Energy considerations to be taken into account when evaluating the various alternatives include the energy consumed during normal operations and maintenance. Direct and indirect energy impacts should also be considered. Direct impacts include the energy consumed by vehicles using the facility. Indirect impacts include construction energy and such items as the effects of any changes in automobile usage due to the construction of the facility.

Energy consumed during construction includes energy consumed for earthwork and construction activities, as well as energy consumed off-site for the production of materials and equipment. Energy consumed during construction also includes energy expenditures caused by vehicle delay due to construction activities, such as lane closures.

Change in Fuel Consumption

The amount of fuel consumed by vehicles in the region is a function of the total VMT, the average speed the vehicles are traveling and the ratio of automobiles, gasoline trucks and diesel trucks. As discussed above in the economics impacts section, construction of a Build Alternative increases the capacity of the Greenway Subcorridor, thus increasing the daily and annual amount of VMT in the region. Even though the daily VHT decreases, the regional average speed per vehicle does not increase enough to validate better fuel efficiency per vehicle. As a result, the Build Alternatives increase the fuel consumption and energy expenditures as compared to the No-Build Alternative.

The direct impact from the increase in fuel consumption for Build Alternatives was similar in the Greenway and Parkway subcorridors. There were minor variations between the alternatives that include Alternatives 2 /2a or 3/3a in the Thruway. Table IV-14 summarizes the results.

Table IV-14
Change in Fuel Consumption (2012-2032)

Alternative	Change in Fuel Consumption (Daily gallons)	
	Year 2012	Year 2032
No-Build	0	0
Build Alternatives including 2 or 2a	7,619	10,934
Build Alternatives including **3 *** or 3a	7,641	10,958

* Indicates Preferred Alternative

S. Construction Impacts

Potential construction impacts are described in this section. While construction impacts will be more fully known when more detailed design plans have been completed, MoDOT shall work with the public to address concerns during the during final design of projects within the I-64 Corridor and will provide further coordination with impacted parties and individuals.

MoDOT has developed a series of Standard Specifications for Highway Construction. These specifications include, but are not limited to, air, noise, and water pollution control measures to minimize construction impacts. The Standard Specifications for Highway Construction also include traffic control and safety measures. MoDOT would implement these standards on the I-64 corridor project for construction activity. Pollution control measures, both temporary and permanent, would be enacted under the project construction specifications. During construction of the project, construction methods and operations would be conducted in accordance with Missouri Department of Natural Resources (MDNR) and MoDOT regulations, particularly concerning batch plant operations and clearing and grubbing functions.

1. WASTE DISPOSAL

Specifications and procedures for the disposal of wastes resulting from construction activity would be developed with consideration given to the MDNR Solid Waste Management Program. This program emphasizes the need to develop uses and markets for recycled and recyclable materials in construction activities. These materials include, but are not limited to, waste tires, rubberized asphalt, ground glass subgrade, structural steel, plastic lumber, and paints that utilize recycled glass. Furthermore, any potential hazards in the right-of-way would be identified and handled in accordance with all applicable regulations. For example, all underground storage tanks within the I-64 corridor right-of-way would be identified and disposed of in a proper manner during construction of the project. In addition, the construction specifications would include requirements to prohibit the contractor from disposing of any pollutants, such as fuels, lubricants, raw sewage, or other harmful substances, inappropriately.

Impacts would be mitigated by adherence to construction permit and contract conditions. Materials resulting from clearing and grubbing, demolition, or other operations (except materials to be retained) would be removed from the project, or otherwise properly disposed of by the contractor.

2. WATER QUALITY

Construction impacts on water resources include both direct and indirect impacts. Storm water runoff is addressed by MoDOT's Sediment and Erosion Control Program and would be used to address this concern during construction. MDNR has noted that nutrients leached from project areas that have been hydro seeded and mulched can result in increased phosphorous levels in streams and adjacent water bodies, such as creeks and reservoirs. The Missouri Department of Conservation (MDC) has stated that the following best management practices should reduce impacts to the aquatic environment to a minimal level:

- grade and seed disturbed areas as soon as possible and in compliance with the MDC seeding and planting recommendations;
- minimize disturbances to the stream banks and riparian zones; and
- avoid work in stream channels from the beginning of March to mid June as much as possible and practicable; and undertake all necessary precautions to prevent petroleum products from entering streams.

These best management practices, as outlined by the MDC, also include conformance to the State Channel Modification Guidelines when altering channels or relocating streams. Measures will be taken to ensure that proper flow conditions are maintained in the creeks and tributaries during construction. In addition, restoration work will include cleanup, shaping, replacement of topsoil, and establishment of vegetative cover on all disturbed bare areas, as appropriate, and in accordance with the project's landscaping plan.

3. AIR

Construction activity would cause temporary air quality impacts. These short-term effects will include the following:

- Increased emissions from heavy diesel construction vehicles and equipment. Emissions from construction vehicles and equipment would be controlled in accordance with emission standards prescribed under state and federal regulations.

- Increased emissions from vehicles as a result of decreased speeds through work zones. Efforts will be made to minimize these impacts by maintaining smooth traffic flow during construction periods. Further discussion of this subject can be found in this section under item 7, "Maintenance of Traffic."

- Increase in dust resulting from grading operations and exposed soils. Dust generated by construction activities would be minimized by the implementation of dust control measures, such as water sprinkling and applications of calcium chloride to control fugitive dust and other airborne particulates.

Contractors would be required to comply with Missouri's statutory regulations regarding air pollution control, which are designed to minimize air quality impacts by reducing air pollutants during construction. Air quality impacts would be mitigated by adherence to construction permit and contract conditions, which include prohibitions against burning of construction debris, and control measures to limit pollution if tree trunks and limbs are permitted to be burned on site.

4. NOISE

Noise from heavy construction equipment and haul trucks would result in unavoidable short-term impacts. Residents adjacent to the roadway and zoo animals could be most impacted by construction noise. In an effort to minimize the effects during construction, contractors may be required to equip and maintain muffling equipment for trucks and other machinery in order to minimize noise emissions. Contract specifications may also restrict excessively noisy construction activities to daytime working hours. Further discussion on noise impacts in relation to zoo animals can be found in this section under St. Louis Zoo Issues.

A number of noise mitigation options are available for consideration. Noise impacts during construction are one area of great concern in discussions with the public and the project's advisory committees because of the dense urban nature of the I-64 corridor. Construction zone strategies that could be implemented to address the noise and vibration impacts may include:

- Wherever possible, sound walls and retaining walls would be built in their final locations as soon as possible to help mitigate the temporary noise and vibration impacts from construction.

- Restricting night operations for particularly loud or vibration intrusive construction practices,

- Using temporary noise mitigation screens in residential area impacts to reduce dB levels, and

- Abiding by local municipality noise ordinances and standards.

The I-64 mainline corridor addressed in this EIS underwent a complete resurfacing in 1999 using nighttime construction strategies to speed up construction with reasonable success. The resurfacing construction speed was reduced to less than one year. During that time, some adjacent stakeholders, especially those directly adjacent to I-64 voiced negative concerns about that strategy due to late night noise and vibration impacts. Those opinions were heard again during this project's advisory committees. MoDOT has worked with affected groups throughout the NEPA process and will continue to do so during the detailed design phase.

5. VIBRATION

Due to the proximity of the alignment to residential areas, the CID and the St. Louis Zoo, a carefully planned and executed drilling and blasting program will be prepared, during the design development phase, which will place limits or controls on drilling and blasting activities. The requirements of this program will be governed by local, state, and federal regulations. MoDOT has worked with affected groups throughout the NEPA process and will continue to do so during the detailed design phase.

6. UTILITY RELOCATION

Utilities located in the I-64 Corridor include a water main crossing at Lindbergh, a cell phone communication tower on the AB Green property east of Hanley, several different minor utilities crossing at Boyle and a large water main crossing of I-64 at Clayton/Oakland. Utility easements run along the entire length of the I-64 Corridor just outside the right-of-way. Areas where additional right-of-way is needed may require utility relocation and the purchase of additional utility easements from property owners by the utility companies. Utility conflicts will be coordinated with the appropriate utility companies to provide minimal or no interruption of service if at all possible.

Utility relocation and temporary widening of I-64 would also be performed first in preparation for mainline I-64 traffic shifting to one side for construction to occur half at a time. Utility relocation and drainage structures would also be constructed in stages half at a time in coordination with the I-64 mainline construction. Crossroad drainage devices would be constructed and located to provide for water flow through the area during construction.

7. TRAFFIC IMPACTS

During the construction of the preferred Build Alternative, the existing I-64 facility would stay in operation; however, the traffic capacity on I-64 and traffic access between I-64 and the local roadway system would be impacted. I-64 is an important east-west corridor in the St. Louis region to commuter traffic, multi-state traffic and commercial business use within the study corridor. During construction, I-64's mainline capacity, to some degree, would be reduced. Measures would be required to maintain traffic service on I-64, on the local roadways and local roadway access to I-64.

a. Construction Sequencing

The Build Alternatives would require reconstruction of I-64 in its current location. This reconstruction action would result in traffic impacts and traffic delays. Efforts to minimize these impacts to traffic flow are described in this section. A detailed discussion of how the alternatives

would be constructed can be found in Chapter II, Section C.1.d. for the No-Build Alternative and Chapter II, Section C.2.e for the Build Alternatives.

A traffic strategy to minimize traffic impacts while reconstructing I-64 would include these three guidelines:

- A minimum of two through lanes on the I-64 mainline would service traffic each way, eastbound and westbound, during any given time.

- To some degree, efforts would be made to maintain traffic service across I-64 along major arterial roadways during any given construction period. The major arterials in the study corridor are: Lindbergh Boulevard, Brentwood Boulevard, Hanley Road, Big Bend Boulevard, Hampton Avenue and Kingshighway Boulevard.

- Wherever practical, any two adjacent major arterial interchanges along I-64 would not have I-64 access closed at the same time during any given year. This guideline would aid maintenance of traffic by allowing adjacent interchanges not under construction to service traffic, deliberately avoiding areas under construction. Because of the urban nature of this corridor, when driver expectation of construction delays to traffic service would be expected, travel patterns are expected to change to adjacent interchanges and crossings in order to avoid the areas under construction even when those routes are not marked as detoured routes.

  Some interchange areas have been identified as being an exception to this guideline because the roadways are so closely spaced and the Build Alternative cannot be constructed in an efficient manner without addressing the whole area. These interchange areas include: the Spoede Road/Lindbergh Boulevard area, the Brentwood Boulevard/I-170/Hanley Road area, the Big Bend Boulevard/Bellevue Avenue area and the Kingshighway Boulevard/Tower Grove Avenue/Boyle Avenue area.

Local access to individual parcels in the area adjacent to the construction would be maintained through the use of newly constructed pavement, temporary connections, temporary widening of existing and/or new pavement and the use of nearby alternative routes.

All of the Build Alternatives are of the scale that they would be constructed in separate phases. Project phases could overlap and a number of phases could be underway at the same time. The anticipated project phasing is as follows:

1. Kingshighway/Tower Grove/Boyle Interchange Set
2. I-64/I-170/Brentwood Interchange
3. Spoede Road/Lindbergh Boulevard Interchange Set
4. McKnight Road
5. Hanley Road
6. Clayton Road/Warson Road
7. Hampton Road/McCausland Avenue
8. Big Bend Boulevard/ Bellevue Avenue

b. Duration of Construction

Construction impacts will also be affected by the duration of construction. If construction occurs over a shorter period of time, the impacts will be more intense but briefer than if construction occurs over a longer period of time. The construction schedule is not known at this time due to decisions related to the most optimal duration of construction that will minimize traffic impacts

and secondly, the issue of project funding. Funding for construction may be provided over a short or long period of time. Funding levels are a constraint to how fast construction can occur.

While the project could physically be constructed over a six year period, the annual level of funding required to construct the project within that time frame would be quite large. Three funding scenarios were considered. In the full funding scenario, construction projects would be contracted within three years and the entire project completed in six years. With partial funding, the rate of funding would be slightly slower, resulting in the construction of a Build Alternative taking up to eight years. The third funding scenario assumes relatively low levels of funding per year. In a minimal funding scenario, the Build Alternative would be completed over a 16 year period. In all three scenarios, construction would begin in the year 2008.

In addition to funding, additional considerations related to construction duration are traffic and noise impacts. Construction strategies exist that could reduce the duration of construction, but these strategies usually result in greater loss of traffic access with the roadway. Such strategies that the No-Build and Build Alternatives could execute to reduce the total time of construction include:

- 24-hour continual construction.
- Complete interstate closures to traffic service, either all day long, nighttime closures, only during non-rush hours, or all weekend long.
- Directional interstate closures; meaning, traffic either eastbound or westbound would be completely closed in one direction to traffic during long construction periods.
- Ramp access closures to aid bridge and pavement repair for the No-Build Alternative or interchange construction for the Build Alternatives. Traffic on the mainline would remain open, but access to and from the interstate would be removed through several interchanges so that the new ramps would be built quickly.
- The use of a public information campaign just prior to construction to encourage the use of alternate routes and rescheduling trips through the corridor.

Conversely, the negative impacts of 24-hour construction, complete interstate closures, direct interstate closures and ramp access closures could be considered to outweigh the positive benefits of speedier construction. Negative impacts would include noise, light and vibration during night time hours.

The benefits of speedier construction could include:

- Lower construction cost because less effort would be applied toward maintenance of traffic;
- Better quality of construction because sections would be constructed together rather than subdivided; and
- Reduction of construction related impacts because construction would not last as long as under other strategies.

Decisions related to the use of these strategies to potentially reduce the duration of construction and possibly the construction-related impacts will be made during the design development phase through consultation with adjacent city representatives and input from stakeholders and subcorridor committees.

c. Maintenance of Traffic

The impacts of interchange reconstruction on the urban arterial system include a temporary loss of access to, from and across I-64. As the study corridor is located in an urban area, there are many alternative routes for traffic to use while access is reduced or restricted at interchanges during construction. The travel delay experienced by motorists will vary depending on the level of construction that is occurring at the time, and the time of day that the travel occurs. A lane closure in the peak direction of peak hour travel will result in shifts of traffic to alternative routes and in additional delays to motorists remaining on I-64. The average peak hour traffic delay to a motorist resulting from a lane closure is estimated at 11 to 14 minutes. Delays may also occur in the non-peak directions and during non-peak hours, but the length of the delays will lessen with the lower traffic volumes that are present during these periods.

Traffic impacts during construction would be minimized by the availability of alternative regional travel routes. From a regional perspective, there are three alternate interstate facilities serving east-west corridors: I-270, I-70 and I-44. Interstate 270 also connects to I-64 1.3 miles (2.0 kilometers) west of the study corridor where it travels north and south to connect to I-70 and I-44. A large part of the commuting trips originating west of I-270 would be expected to use alternate interstate routes such as I-70 and I-44 during I-64 reconstruction. Also, commuting trips originating east of the study corridor, such as downtown St. Louis and from Illinois, would have the opportunity to use I-70, I-44, I-55 and I-270 as alternative interstates.

Traffic impacts to motorists that remain on I-64 during construction would be minimized through the use of Intelligent transportation system (ITS) measures. These measures would include permanent and portable message signs, and would be used on a regional basis to direct traffic away from the I-64 corridor especially when I-64 mainline lane capacity would be reduced. Intelligent Transportation Systems such as MoDOT's Gateway Guide system, temporary changeable message signs and motorist assist programs, would help keep commuters informed on alternative route choices, commute time and delays, and clear crashes quickly to promote the safe and free flow of traffic on I-64 during construction.

Within the study corridor, traffic impacts to I-64 during construction would be minimized by the use of other local major east-west arterials. These arterial roadways include: Page Avenue (Missouri Route D), Olive Boulevard (Missouri Route 340), Ladue Road, Clayton Road, Forest Park Parkway, Delmar Boulevard and Manchester Road (Missouri Route 100). Simply due to proximity, the closer these roadways are to I-64, the more the corridors would expect to carry large amounts of traffic attempting to avoid construction delays.

Efforts will be made to maintain traffic service across I-64 along major arterial roadways during any given construction period. The major arterials in the study corridor are: Lindbergh Boulevard, Brentwood Boulevard, Hanley Road, Big Bend Boulevard, Hampton Avenue and Kingshighway Boulevard. Wherever practical, any two adjacent major arterial interchanges along I-64 would not have I-64 access closed at the same time. MoDOT will coordinate with local governments to provide information about construction activity and to assist in traffic management.

During the Brentwood Boulevard/I-170/Hanley Road interchange system construction, nearby parallel alternative routes such as Brentwood Boulevard and Hanley Road would carry some traffic avoiding the construction area. Regionally, since I-170 does terminate at I-64, Brentwood Boulevard, Hanley Road and Big Bend Boulevard act as major north-south arterials. To aid those north-south corridors, it would be ideal that construction on Big Bend Boulevard and McKnight Road either not occur or be completed before the Brentwood Boulevard/I-170/Hanley Road construction begins in order to accommodate traffic service.

The regional travel model was used to estimate the traffic impacts due to increased use of the regional and corridor alternative routes during construction of I-64. The results include the following:

- No significant increase in traffic delay would be expected to occur on I-70 and I-44 during I-64 construction. Excess capacity would exist on those interstates to handle I-64 traffic seeking regional alternative routes.
- Traffic conditions during peak periods on northbound and southbound I-270 located west of I-64 currently experiences congestion and delays. Traffic diverted from I-64 to I-270 would increase congestion and average peak hour traffic delay time by around 10 minutes. During non-peak hours, I-270 would have excess capacity to handle I-64 traffic seeking alternative routes.
- The traffic operation of eastbound and westbound arterials along I-64 such as Page Avenue (Missouri Route D), Olive Boulevard (Missouri Route 340), Ladue Road, Forest Park Parkway, Delmar Boulevard and Manchester Road (Missouri Route 100) would not be significantly reduced during I-64 construction. These routes would receive traffic diverted away from I-64, but the arterials have sufficient capacity so that only minimal increases in average delay time would likely occur for motorists.
- The traffic operation of Clayton Road would be impacted during peak periods. In particular, Clayton Road from Spoede Road to McKnight Road in the Greenway Subcorridor would incur the most change in travel delay. The average peak hour traffic delay to a motorist on Clayton Road is estimated at around five to ten minutes.
- The traffic operation of major northbound and southbound arterials in the I-64 corridor would not be significantly impacted during peak periods. The arterials would receive traffic from I-64 seeking alternative routes, but only minimal increases in average delay time would be expected.

During subsequent design phases, a detailed traffic maintenance plan will be developed for each individual project. These plans will be coordinated with local jurisdictions. The media, MoDOT web site, ITS and other methods will be used to provide coordinated information to motorists regarding the availability of alternative travel routes.

d. Alternative Transportation

The traffic impacts of construction will be minimized by increased coordination and promotion of alternative transportation modes. MoDOT will coordinate with the Bi-State Development Agency (Metro) to encourage the use of public transportation, increase vehicle occupancy and decrease the mode share of the private vehicle in the corridor. A MetroLink light rail expansion is expected to become operational in 2005 with two stations serving the I-170/Hanley Road interchange area. MoDOT will partner with the regional public transportation system to provide information to travelers that an alternate mode choice is available during roadway construction. One option being considered is to subsidize transit fares during peak commute times. It is not expected that construction in the I-64 Corridor would impact the physical operation of MetroLink.

8. ST. LOUIS ZOO ISSUES

Construction activities relating to the re-construction of I-64 would have potential impacts to the St. Louis Zoo and the animals that reside there. Early in the project planning phase, a meeting was held with zoo officials to discuss construction issues and how they might affect the zoo animals and zoo operations. The construction issues that zoo officials were concerned about the most were noise, dust, lights, and vibration. As design plans are being developed, MoDOT

will meet with Zoo officials to further address construction impacts and to include appropriate provisions within the construction plans.

Each animal species has varying tolerances to noise, dust, lights, and vibration. The animals most affected by noise, and in particular sudden noise, is hoof stock. The hoof stock is located close to the Washington Avenue (Hampton Avenue)/Wells Drive intersection. Animals are more tolerant of noise from construction when it happens during the day rather than at night, as they can become acclimated to the usual noise that occurs during the day. During past internal construction projects at the zoo, music or other sounds have also been piped through a sound system in order to acclimate the animals to noise. Ambient dirt particles can also have an effect on certain animals. Dust curtains around construction sites at the zoo have been used in the past to help keep dust to a minimum. Breeding could also be affected by night lighting. In the past, the zoo has tried to reduce light impacts on internal construction projects by allowing construction to take place only in daylight hours.

Another concern is the vibration that would occur if blasting was required for excavation. In this case, as with all aspects of the construction activities near the zoo, it is important that communication be continuous and mutual among MoDOT, zoo officials, and the construction manager in order to anticipate potential problems and develop working solutions. Zoo officials have requested that they have information made available to them regarding the specific construction schedule as it is developed. For example, if they were to introduce new animals, they might delay it to miss a period of potential construction impact. Overall construction schedules will be regularly coordinated with the zoo and day-to-day communications will be provided as needed for construction activities near the zoo. Continuous and mutual communication among MoDOT, zoo officials, and the construction manager can aid in coordination of construction schedules, thereby anticipating potential problems and developing working solutions.

T. Secondary and Cumulative Impacts

The Council on Environmental Quality defines cumulative impacts as: *The impact on the environment which results from the incremental impact of 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).* Direct effects are caused by the project and occur at the same time and place. Indirect (secondary) effects are caused by the project and are later in time or further removed. The focus of cumulative effect analysis is on resource sustainability in an expanded geographic and time boundary.

The proposed action is the replacement of bridges, interchanges and pavement that no longer meet design criteria and/or have reached the end of their economic life. The project does not introduce a new transportation facility or corridor into the region. There is much research and empirical evidence to support the theory that economic development will follow significant improvements in transportation and access. However, the Build Alternatives for this project will basically replace an existing infrastructure and will not provide any substantial new access. The existing economic and social opportunities will remain.

Cumulative impacts or effects on the natural resources within the geographic area of this project are not expected to be significant. Cumulative impacts or effects on people and the built environment include actions by other agencies within the project area such as the extension of MetroLink from Forest Park to I-170 on an alignment paralleling I-64; and the Manchester Corridor Revitalization Plan was prepared to assist the communities of Brentwood, Maplewood, Rock Hill, Glendale, Warson Woods, and Kirkwood in visualizing and implementing revitalization actions for the Manchester Road Corridor (Missouri Route 100). These six participating

municipalities jointly funded this effort by providing the local share to match a grant from the EWGCC Community Improvement Challenge Grant program. Several local re-development projects are proposed along Hanley Road south of the I-64 Corridor. The projects if they would move forward, would include some big box commercial, smaller retail shops and a mix of residential density. St. Louis County has prepared a preliminary conceptual improvement of Hanley Road from I-64 to the south. This project includes widening Hanley Road, adding traffic control medians and providing a direct traffic movement from northbound Hanley Road to westbound Eager Road. Local governmental actions supporting economic redevelopment include the Forest Park Southeast Revitalization Plan, BJC Hospital expansion plans and the Highlands redevelopment. Additional transit projects proposed by Bi-State Development Agency (Metro), within the I-64 Corridor include constructing a transit center at Forsyth and Bonhomme and bus shelters on Kingshighway and on Manchester.

Manhassett Village apartments sit in the area southwest of the I-170 interchange, south of the existing McCutcheon overpass. The site plans for redeveloping the area with similar uses include realigning parts of McCutcheon road; however, the road would still connect to the bridge across I-64 in the same location. Correspondence between Manhassett Village apartments and MoDOT has been ongoing, so I-64 reconstruction is expected to avoid impacting their plans.

The analysis of Secondary and Induced Development is driven by the recognition that new or substantially improved transportation facilities are a key component of development. This is most often the case where a new facility is developed or when an existing facility is significantly improved, e.g. widening existing facilities, provision of access control or replacing intersections with interchanges. One or more of these may be present when a facility is upgraded.

The differences between the I-64 improvement project and the construction of a new project is that I-64 improvements were spurred by the need to replaced bridges that are structurally deficient, pavement that has reached the end of its service period, and interchanges that are functionally obsolete. No new interchanges are proposed. Rebuilding the bridges and replacing deteriorated pavements on the ramps and the main traveled lanes would be costly and result in little or no improvement over existing conditions.

Most of the secondary impacts and induced development normally associated with an interstate highway project have already occurred in the I-64 corridor, especially in I-170 and I-64 Interchange area. Regional shopping centers and office parks have been built or are being built in its vicinity at this time. Additional areas have been prepared for development and redevelopment by local governments through their city planning process, setting design criteria and rezoning land with anticipation of further developments taking place. The existing local circulation system will likely become overloaded as these developments either fill up or come on line unless the improvements are forthcoming.

1. GREENWAY SUBCORRIDOR

a. No-Build Alternative

This alternative would not have secondary or cumulative impacts.

b. Greenway Alternative 1 (Preferred)

Secondary development in this section would be limited to the relocation of those displaced by the project. Limited relocation space is available within the communities for new commercial development. Since the New I-64 project would not require all the property associated with the commercial development taken, this remaining land could then be redeveloped, likely in a similar use, like an office building. New development would have to comply with the current zoning and building codes.

Similarly, vacant land for new residential construction is limited. A sufficient number of existing residential housing stock would be expected to be available for residential displacements. Other relocation options would include moving to new areas in the city or surrounding communities by either purchasing from the existing housing stock or building anew. The improvements being made to the roadway system are unlikely to induce additional development beyond replacement of displaced housing and commercial facilities.

2. THRUWAY SUBCORRIDOR

a. No-Build Alternative

This alternative would not have secondary or cumulative impacts.

b. Thruway Alternative 2

This alternative and Alternative 3 both impact the same apartment complex. There are other large apartment complexes to the west and south. Vacant land for redevelopment, which includes multi-family land uses, is to the southeast. The replacement of the multi-family development would be secondary impact should it move to the south of Brentwood Promenade.

c. Thruway Alternative 2a

This alternative would impact the least number of both single family and multi family residences in the I-64/I-170 & MetroLink and Eager Road neighborhoods. It would appear that fewer residential displacements would make it more likely that the residential neighborhoods would maintain their stability longer. This would also be the case if Richmond Heights does not amend their plan to include additional higher density and intensity land uses in this neighborhood.

d. Thruway Alternative 3 (Preferred)

This alternative would have the most single-family residential impacts to the neighborhood bounded by MetroLink, I-170 and I-64. This area could undergo a transition from residential to commercial uses similar to the neighborhood on the west side of I-170. This would however, be unplanned growth, as the Comprehensive Plan for the city of Richmond Heights shows this area remaining as low density residential. Should this transition occur, addition residential relocations would likely follow, setting up a new and likely more dense land use pattern for this area.

e. Thruway Alternative 3a

This alternative would impact residential areas similar to Thruway Alternative 2a and have similar impacts. As with Thruway Alternative 2a, the residential neighborhood west of I-170 would continue its conversion from residential to commercial uses.

3. PARKWAY SUBCORRIDOR

a. No-Build Alternative

This alternative would have no impact on secondary and induced development.

b. Parkway Alternatives 1 and 2 (Preferred)

The difference between the two alternatives is the provision of ramps at Oakland. There are eleven more residential displacements if the ramps are included. Infill development for the relocated residents could provide for some of the space necessary. Redevelopment opportunities could provide for a wide range of housing types. This type of development would allow those residents who wish to stay in their present neighborhood to do so. This would account for some of these developments but would take coordination between city and state agencies for it to succeed.

There is no large area that is now subject to additional development activity. The new office park on Oakland would likely provide sufficient tenant space for the near future. The success of this office park may provide the incentive for other developments to locate in the area.

U. Relationship of 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 ALTERNATIVE

The No-Build Alternative would avoid the short-term and localized construction impacts. However, projected traffic growth in the project corridor would further reduce the operation of the existing freeways, resulting in traffic safety (higher number of crashes and fatalities) and mobility along I-64 and I-170, and the possible loss of economic growth opportunities.

2. BUILD ALTERNATIVES

Short-term consequences of the Build Alternatives could include:

- Relocation of residences,
- Removal of private property from tax rolls, thereby causing a reduction in city and county tax base, and
- Inconvenience to residents, businesses and employees during construction.

Some long-term benefits that may be realized from the Build Alternatives include:

- Improved motorist safety and convenience,
- Greater potential for area economic development because of improved transportation, and
- Potential for new tax base in the I-64 corridor.

Interstate 64 improvements 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. Therefore, the local short-term impacts and use of tax revenue resources by the proposed action is consistent with the maintenance and enhancement of long-term productivity.

V. Irreversible and Irretrievable Commitment of Resources

The construction and operation of any of the Build Alternatives would entail, in varying degrees, an irreversible and irretrievable commitment of natural, physical, human, and fiscal resources. Land, structures, money, manpower, construction materials, and energy resources would all be committed to project implementation. In addition to these quantifiable resources, a commitment of amenity resources that reflect the value of a community to its residents is often a cost of transportation to adjacent landowners. At the same time, it is a benefit to the traveling public.

1. NO-BUILD ALTERNATIVE

The money, time and transportation user hardship related to the anticipated higher rate of crashes associated with the No-Build Alternative would be irretrievable. The cost and time

associated with the decreasing LOS for both auto and truck traffic would also result in irretrievable commitment of resources.

2. BUILD ALTERNATIVES

The impacts of each of the Build Alternatives are considered similar in magnitude. Land acquired for constructing I-64 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, 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 to construct the Build Alternatives. 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 these resources is to a large part predicated on the basic concept that 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. The benefits such as improved access to businesses and community services, increased safety, and reduced travel times, and increased economic development are expected to outweigh the commitment of resources in the long term.

W. Preferred Alternative

In order to evaluate and compare alternatives for the entire project length, the subcorridor alternatives were combined to create project alternatives. The combination of the alternatives within each subcorridor yielded eight distinct project alternatives. These are defined in Table IV-15.

Table IV-15
Project Alternatives

Project Alternative	Subcorridor Alternative		
	Greenway	**Thruway**	**Parkway**
No-Build	No-Build	No-Build	No-Build
Alternative I	Build Alternative	Alternative 2: Double-Decked – South Alignment	Alternative 1: Ramp to Oakland at McCausland
Alternative II	Build Alternative	Alternative 2a: Double-Decked – North Alignment	Alternative 1: Ramp to Oakland at McCausland
Alternative III	Build Alternative	Alternative 3: Flat – South Alignment	Alternative 1: Ramp to Oakland at McCausland
Alternative IV	Build Alternative	Alternative 3a: Flat – North Alignment	Alternative 1: Ramp to Oakland at McCausland
Alternative V	Build Alternative	Alternative 2: Double-Decked – South Alignment	Alternative 2: No ramp to Oakland at McCausland
Alternative VI	Build Alternative	Alternative 2a: Double-Decked – North Alignment	Alternative 2: No ramp to Oakland at McCausland
Alternative VII (Preferred)	**Build Alternative**	**Alternative 3: Flat – South Alignment**	**Alternative 2: No ramp to Oakland at McCausland**
Alternative VIII	Build Alternative	Alternative 3a: Flat – North Alignment	Alternative 2: No ramp to Oakland at McCausland

Based upon the analysis of engineering and traffic service considerations, and based on the evaluation of social, economic and environmental impacts, MoDOT has identified Project Alternative VII – the combination of the Greenway Build Alternative (as refined), Thruway Alternative 3 (as refined) and Parkway Alternative 2 as its preferred alternative.

The No-Build and eight Build Alternatives were retained for detailed evaluation in the Draft EIS. These nine alternatives remained under consideration through the project's public hearing and the review and comment period for the Draft EIS.

The process to select the preferred alternative was to evaluate and compare the effectiveness of the alternatives based on: (1) the ability to accomplish the Purpose and Need for Action, (2) project cost, (3) the comparison of social, economic and environmental factors and (4) input from the public and review agencies.

1. PURPOSE AND NEED OBJECTIVES

a. No-Build Alternative

The No-Build Alternative was not identified as the preferred alternative because it would fail to meet the project purpose and need. The key reasons include the following:

- While the pavement surface could continue to be maintained and overlays continued to be used to provide for a smooth driving surface, this alternative would not improve the existing vertical alignment, provide for sufficient inside or outside shoulder width, provide sufficient vertical clearance for bridges, or sufficient geometrics for vehicle merging and diverging.

- The alternative would not provide sufficient capacity for the movement of mainline traffic, nor would it provide needed operational improvements at interchanges. The No-Build Alternative would not improve safety for vehicles traveling I-64 or entering and exiting the freeway.

- The No-Build Alternative would continue to limit the movement of pedestrians, and it would not support the traffic access to existing or planned future economic development.

b. Build Alternatives

Because all of the Build Alternatives follow essentially the same alignment and include similar lane geometrics, each Build Alternative would improve freeway condition and interchange design. All of the Build Alternatives would increase freeway capacity. The traffic considerations are similar between the Build Alternatives. The Build Alternatives would reduce the number of crashes on this section of I-64 by 47 percent as compared to the No-Build Alternative. Overall traffic operation for the mainline, for weaves and for merges/diverges would improve from a LOS E/F with the No-Build Alternative to LOS C/D with the Build Alternatives. All of the Build Alternatives would include special design elements on I-64 that would improve aesthetics, enhance neighborhood connectivity and support community redevelopment. There was some concern that Project Alternatives I, II, V and VI which include the stacked feature in the Thruway, could result in negative impacts related to aesthetics and may not fully support community redevelopment. There was also support for these same stacked alternatives because they reduced property impacts.

2. PROJECT COST

Major differentiators between Build Alternatives were the engineering factors of project cost and project constructability. The primary cost differences were with the "stacked" Thruway

Alternatives 2 and 2a with the "flat" Thruway Alternatives 3 and 3a. Thruway Alternatives 2 and 2a are estimated to cost over $60 million more than did Thruway Alternatives 3 and 3a with staged construction over a 16 year period, beginning in the year 2008 and assuming an annual construction cost inflation rate of three percent. Given these assumptions, the length of the elevated mainline with Thruway Alternatives 2 and 2a was also considered to have more complex construction than would Thruway Alternatives 3 and 3a. The estimated costs of the Build Alternatives ranged from $853 million to $775 million. The preferred alternative, Project Alternative VII has an estimated cost of $787 million.

3. SOCIAL, ECONOMIC AND ENVIRONMENTAL FACTORS

Social considerations also provided differentiation between build alternatives. In the Parkway Subcorridor, Alternative 2 was identified because it would impact fewer residences and would lessen traffic volumes on the section of Oakland Avenue east of Hampton Boulevard. For this reason, Project Alternatives I through IV are not the preferred alternative.

The Thruway Alternative 2 and 3 were identified as more desirable than Thruway Alternatives 2a and 3a. Thruway Alternatives 2 and 3 followed the alignment further to the south in the portion of I-64 located immediately west of Brentwood. These alternatives did have a greater impact on the Town and Country Apartments. However, Thruway Alternatives 2 and 3 have less impact on land area north of I-64 that is planned as a commercial extension adjacent to the St. Louis Galleria mall. These alternatives also have less impact to Black Creek. For these reasons, Project Alternatives VI and VIII are not the preferred alternative.

Of the two remaining reasonable alternatives, Project Alternative V includes the "stacked" option (Thruway Alternative 2) and Project Alternative VII includes the "flat" option (Thruway Alternative 3). These project alternatives are similar except for this difference. Project Alternative V would have 17 fewer full and two fewer partial property impacts than would Project Alternative VII. The majority of the displaced residential properties are located along Everett Avenue and along Hanley Downs in the city of Richmond Heights. The stacked design was considered to result in visual impacts where I-64 would be at a height above or at the same height as adjacent residences. Due to these reasons and the cost differential described previously, the flat option, Project Alternative VII (Thruway Alternative 3), became the preferred alternative.

GREENWAY SUBCORRIDOR

EVALUATION FACTORS	UNITS	ALTERNATIVES	
		No-Build	Build[1]
ENGINEERING & TRAFFIC CONSIDERATIONS			
PROJECT COST			
Construction Cost Estimate	$ (Million)	$23.8	$197.9
Right-of-Way and Relocation Cost	$ (Million)	$0.0	$14.1
TOTAL PROJECT COST[2]	$ (Million)	$23.8	$212.0
CONSTRUCTABILITY ISSUES			
Timing/Staging	Rating	○	🔴
Difficulty of Construction	Rating	○	🔴
Accommodation of Traffic During Construction	Rating	○	🔴
Impacts to Adjacent Properties	Rating	○	🔴
LEVEL OF SERVICE			
Mainline (2020)	Peak Hour LOS (AM / PM)	E / F	C / D
SYSTEM MEASURES			
Daily Vehicle Miles Traveled (2020)	(miles/day) <> No-Build	NA	see Thruway
Daily Vehicle Hours Traveled (2020)	(hours/day) <> No-Build	NA	see Thruway
SAFETY[3]			
Crashes 2020 - (PDO)	Number	262	175
Crashes 2020 - (Injury)	Number	112	74
Crashes 2020 - (Fatal)	Number	1	2
SOCIAL CONSIDERATIONS			
TOTAL ACQUISITIONS			
Single-Family Residential	Dwelling Units	0	12
Multi-Family Residential	Dwelling Units	0	0
Business	Number	0	0
Public/Semi-Public Facilities	Buildings	0	0
PARTIAL ACQUISITIONS			
Single-Family Residential	Dwelling Units	0	87
Multi-Family Residential	Dwelling Units	0	0
Business	Number	0	10
Public/Semi-Public Facilities	Number	0	5
NEIGHBORHOOD/COMMUNITY COHESION	Rating	○	○
ECONOMIC CONSIDERATIONS			
HIGHWAY USER BENEFITS	$ (Million) <> No-Build	NA	see Thruway

EVALUATION FACTORS	UNITS	ALTERNATIVES	
		No-Build	Build[1]
ENVIRONMENTAL CONSIDERATIONS			
PARKLAND – Section 4(f)/6(f)	Number	0	0
Gross Area of Park Open Space Gained	Acres	0	0
Total Permanent Impacts	Acres	0	0
Total Temporary Impacts	Acres	0	0
AIR QUALITY	CO Exceedences	0	0
IMPACTED NOISE RECEPTORS	Dwelling Units	0	135
WATER RESOURCES			
Streams	Number	0	8
	Linear Feet	0	3,600
Wetlands	Acreage	0	0
Ponds	Acreage	0	0
FLOODPLAINS	Linear Feet	0	1,325
	Acreage	0	0.82
NATURAL COMMUNITIES			
Upland Forests	Acreage	0	12
Riparian Forests	Acreage	0	1.9
THREATENED & ENDANGERED SPECIES	Number	0	0
CULTURAL RESOURCES			
NRHP Eligible Architectural Resources No Adverse Effect	Number	0	7
NRHP Eligible Architectural Resources[4] Adverse Effect – 4(f)	Number	0	0
NRHP Eligible Bridges Adverse Effect – 4(f)	Number	3	3
NRHP Eligible NR Historic Districts Adverse Effect – 4(f)	Number	0	0
HAZARDOUS WASTE SITES (CERCLA etc.)	Number	0	0
VISUAL QUALITY			
Views From I-64	Rating	○	🔴
Views Toward I-64	Rating	○	🔴

Impact Rating Scale: ○ – Low Impact 🔴 – Low/Moderate Negative Impact 🔴 – Moderate Impact 🔴 – Moderate/High Impact 🔴 – High Impact

[1] Preferred Alternative
[2] Assumes construction starts in 2008, takes 16 years and 3% inflation.
[3] Accident statistics and safety data summarized and presented in this table are protected under federal law. See Appendix AA.
[4] Recommended NRHP Eligible Individual Architectural Resources

THRUWAY SUBCORRIDOR

EVALUATION FACTORS	UNITS	ALTERNATIVES				
		No-Build	Option 2	Option 2a	Option 3[1]	Option 3a
ENGINEERING & TRAFFIC CONSIDERATIONS						
PROJECT COST						
Construction Cost Estimate	$ (Million)	$29.2	$378.7	$381.4	$311.1	$311.7
Right-of-Way and Relocation Cost	$ (Million)	$0.0	$85.5	$78.3	$91.5	$78.5
TOTAL PROJECT COST[2]	$ (Million)	$29.2	$464.2	$459.7	$402.6	$390.2
CONSTRUCTABILITY ISSUES						
Timing/Staging	Rating	○	●	●	●	●
Difficulty of Construction	Rating	○	●	●	●	●
Accommodation of Traffic During Construction	Rating	◔	●	●	●	●
Impacts to Adjacent Properties	Rating	○	◕	◕	◕	◕
LEVEL OF SERVICE						
Mainline (2020)	Peak Hour LOS (AM / PM)	E / F	C / D	C / D	C / D	C / D
SYSTEM MEASURES						
Daily Vehicle Miles Traveled (2020)	(miles/day) <> No-Build	NA	165,619	165,619	166,050	166,050
Daily Vehicle Hours Traveled (2020)	(hours/day) <> No-Build	NA	-9,355	-9,355	-9,370	-9,370
SAFETY[3]						
Crashes 2020 - (PDO)	Number	459	157	157	157	157
Crashes 2020 - (Injury)	Number	182	59	59	59	59
Crashes 2020 - (Fatal)	Number	0	0	0	0	0
SOCIAL CONSIDERATIONS						
TOTAL ACQUISITIONS						
Single-Family Residential	Dwelling Units	0	75	80	94	99
Multi-Family Residential	Dwelling Units	0	92	52	92	52
Business	Number	0	43	46	41	42
Public/Semi-Public Facilities	Buildings	0	0	0	0	0
PARTIAL ACQUISITIONS						
Single-Family Residential	Dwelling Units	0	18	24	21	23
Multi-Family Residential	Dwelling Units	0	1	1	2	2
Business	Number	0	6	6	6	6
Public/Semi-Public Facilities	Number	0	2	2	1	1
NEIGHBORHOOD/COMMUNITY COHESION	Rating	○	○	○	◔	◔
ECONOMIC CONSIDERATIONS						
HIGHWAY USER BENEFITS	$ (Million) <> No-Build	NA	545.92	545.92	546.13	546.13

EVALUATION FACTORS	UNITS	ALTERNATIVES				
		No-Build	Option 2	Option 2a	Option 3[1]	Option 3a
ENVIRONMENTAL CONSIDERATIONS						
PARKLAND – Section 4(f)/6(f)	Number	0	2	2	1	1
Gross Area of Park Open Space Gained	Acres	0	0	0	0	0
Total Permanent Impacts	Acres	0	0.53	0.53	0.43	0.43
Total Temporary Impacts	Acres	0	0.08	0.08	0.08	0.08
AIR QUALITY	CO Exceedences	0	0	0	0	0
IMPACTED NOISE RECEPTORS	Dwelling Units	0	140	140	140	140
WATER RESOURCES						
Streams	Number	0	1	2	2	3
	Linear Feet	0	50	200	200	340
Wetlands	Acreage	0	0	0.06	0	0.06
Ponds	Acreage	0	0	0	0	0
FLOODPLAINS	Linear Feet	0	80	880	230	1,030
	Acreage	0	0.12	0.12	0.48	0.48
NATURAL COMMUNITIES						
Upland Forests	Acreage	0	6.2	5	6.5	5.3
Riparian Forests	Acreage	0	0	0.7	0.1	0.8
THREATENED & ENDANGERED SPECIES	Number	0	0	0	0	0
CULTURAL RESOURCES						
NRHP Eligible Architectural Resources No Adverse Effect	Number	0	4	4	4	4
NRHP Eligible Architectural Resources[4] Adverse Effect – 4(f)	Number	0	4	4	4	4
NRHP Eligible Bridges Adverse Effect – 4(f)	Number	1	1	1	1	1
NRHP Eligible NR Historic Districts Adverse Effect – 4(f)	Number	0	2	2	1	1
HAZARDOUS WASTE SITES (CERCLA etc.)	Number	0	0	1	0	1
VISUAL QUALITY						
Views From I-64	Rating	○	◕	◕	◕	◕
Views Toward I-64	Rating	○	◕	◕	◕	◕

Impact Rating Scale: ○ – Low Impact ◔ – Low/Moderate Negative Impact ◕ – Moderate Impact ◕ – Moderate/High Impact ● – High Impact

[1] Preferred Alternative

[2] Assumes construction starts in 2008, takes 16 years and 3% inflation.

[3] Accident statistics and safety data summarized and presented in this table are protected under federal law. See Appendix AA.

[4] NRHP Eligible Individual Architectural Resources

PARKWAY SUBCORRIDOR

EVALUATION FACTORS	UNITS	ALTERNATIVES		
		No-Build	Option 1 With Oakland Ramp	Option 2[1] W/o Oakland Ramp
ENGINEERING & TRAFFIC CONSIDERATIONS				
PROJECT COST				
Construction Cost Estimate	$ (Million)	$26.3	$165.2	$161.5
Right-of-Way and Relocation Cost	$ (Million)	$0.0	$11.7	$11.1
TOTAL PROJECT COST[2]	$ (Million)	$26.3	$176.9	$172.6
CONSTRUCTABILITY ISSUES				
Timing/Staging	Rating	○	●	●
Difficulty of Construction	Rating	○	●	●
Accommodation of Traffic During Construction	Rating	◔	●	●
Impacts to Adjacent Properties	Rating	○	●	●
LEVEL OF SERVICE				
Mainline (2020)	Peak Hour LOS (AM / PM)	E / F	C / D	C / D
SYSTEM MEASURES				
Daily Vehicle Miles Traveled (2020)	(miles/day) <> No-Build	NA	see Thruway	see Thruway
Daily Vehicle Hours Traveled (2020)	(hours/day) <> No-Build	NA	see Thruway	see Thruway
SAFETY[3]				
Crashes 2020 - (PDO)	Number	226	174	174
Crashes 2020 - (Injury)	Number	97	64	64
Crashes 2020 - (Fatal)	Number	0	0	0
SOCIAL CONSIDERATIONS				
TOTAL ACQUISITIONS				
Single-Family Residential	Dwelling Units	0	10	9
Multi-Family Residential	Dwelling Units	0	8	8
Business	Number	0	1	1
Public/Semi-Public Facilities	Buildings	0	0	0
PARTIAL ACQUISITIONS				
Single-Family Residential	Dwelling Units	0	17	12
Multi-Family Residential	Dwelling Units	0	0	0
Business	Number	0	12	12
Public/Semi-Public Facilities	Number	0	6	6
NEIGHBORHOOD/COMMUNITY COHESION	Rating	○	◔	○
ECONOMIC CONSIDERATIONS				
HIGHWAY USER BENEFITS	$ (Million) <> No-Build	0	See Thruway	See Thruway

EVALUATION FACTORS	UNITS	ALTERNATIVES		
		No-Build	Option 1 With Oakland Ramp	Option 2[1] W/o Oakland Ramp
ENVIRONMENTAL CONSIDERATIONS				
PARKLAND – Section 4(f)/6(f)	Number	0	1	1
Gross Area of Park Open Space Gained	Acres	0	14.38	14.38
Total Permanent Impacts	Acres	0	12.71	12.71
Total Temporary Impacts	Acres	0	10.07	10.07
AIR QUALITY	CO Exceedences	0	0	0
IMPACTED NOISE RECEPTORS	Dwelling Units	0	40	40
WATER RESOURCES				
Streams	Number	0	0	0
	Linear Feet	0	0	0
Wetlands	Acreage	0	0	0
Ponds	Acreage	0	0.01	0.01
FLOODPLAINS	Linear Feet	0	0	0
	Acreage	0	0	0
NATURAL COMMUNITIES				
Upland Forests	Acreage	0	0.8	0.7
Riparian Forests	Acreage	0	0	0
THREATENED & ENDANGERED SPECIES	Number	0	0	0
CULTURAL RESOURCES				
NRHP Eligible Architectural Resources No Adverse Effect	Number	0	12	12
NRHP Eligible Architectural Resources[4] Adverse Effect – 4(f)	Number	0	1	1
NRHP Eligible Bridges Adverse Effect – 4(f)	Number	0	0	0
NRHP Eligible NR Historic Districts Adverse Effect – 4(f)	Number	0	0	0
HAZARDOUS WASTE SITES (CERCLA etc.)	Number	0	0	0
VISUAL QUALITY				
Views From I-64	Rating	○	◔	◔
Views Toward I-64	Rating	○	◔	◔

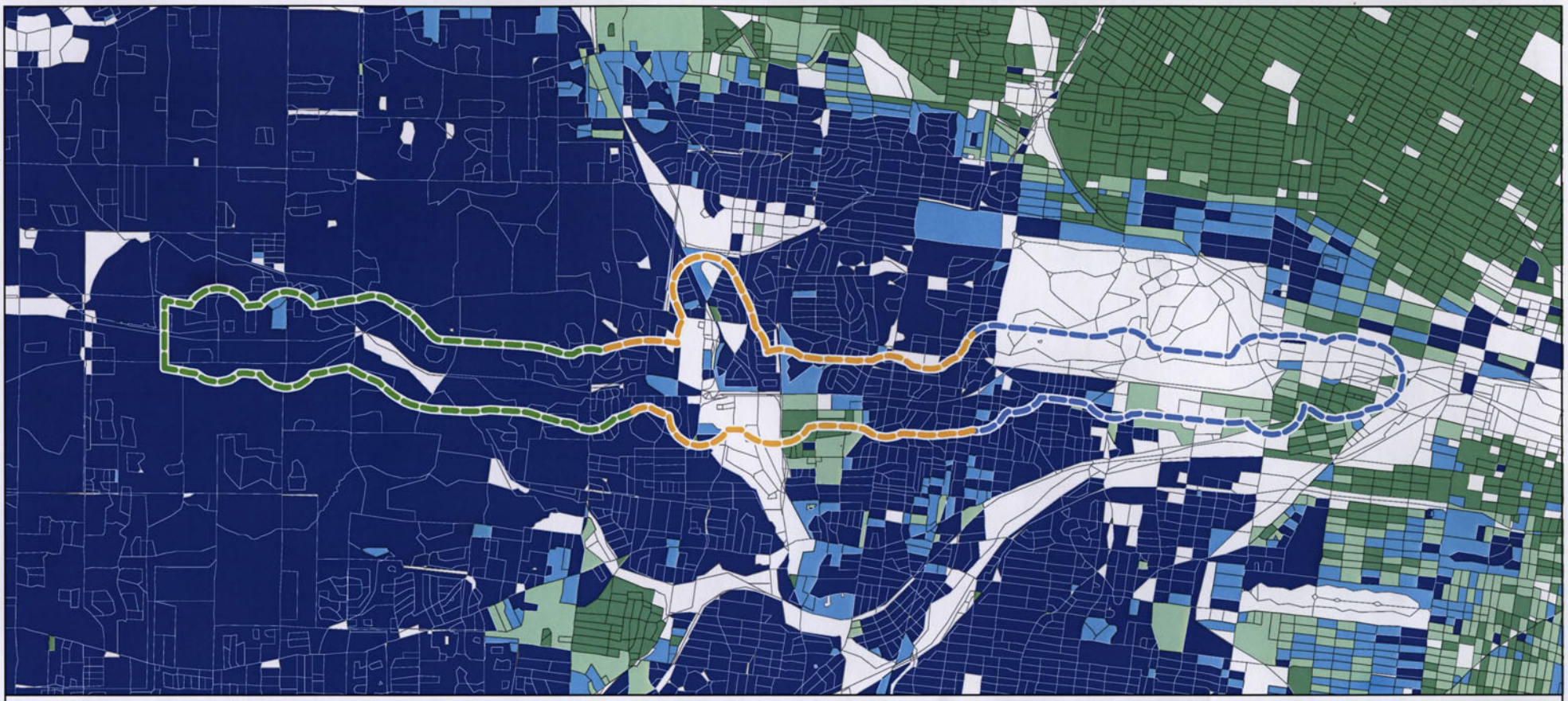
Impact Rating Scale: ○ – Low Impact ◔ – Low/Moderate Negative Impact ◔ – Moderate Impact ◔ – Moderate/High Impact ● – High Impact

[1] Preferred Alternative

[2] Assumes construction starts in 2008, takes 16 years and 3% inflation.

[3] Accident statistics and safety data summarized and presented in this table are protected under federal law. See Appendix AA.

[4] NRHP Eligible Individual Architectural Resources



Study Areas

- Greenway
- Thruway
- Parkway

Block Classification

- 0% - 25% Minority
- 26% - 50% Minority
- 51% - 75% Minority
- 76% - 100% Minority
- NO POPULATION

THE NEW I-64

MoDOT

0 0.5 1 2 3 4

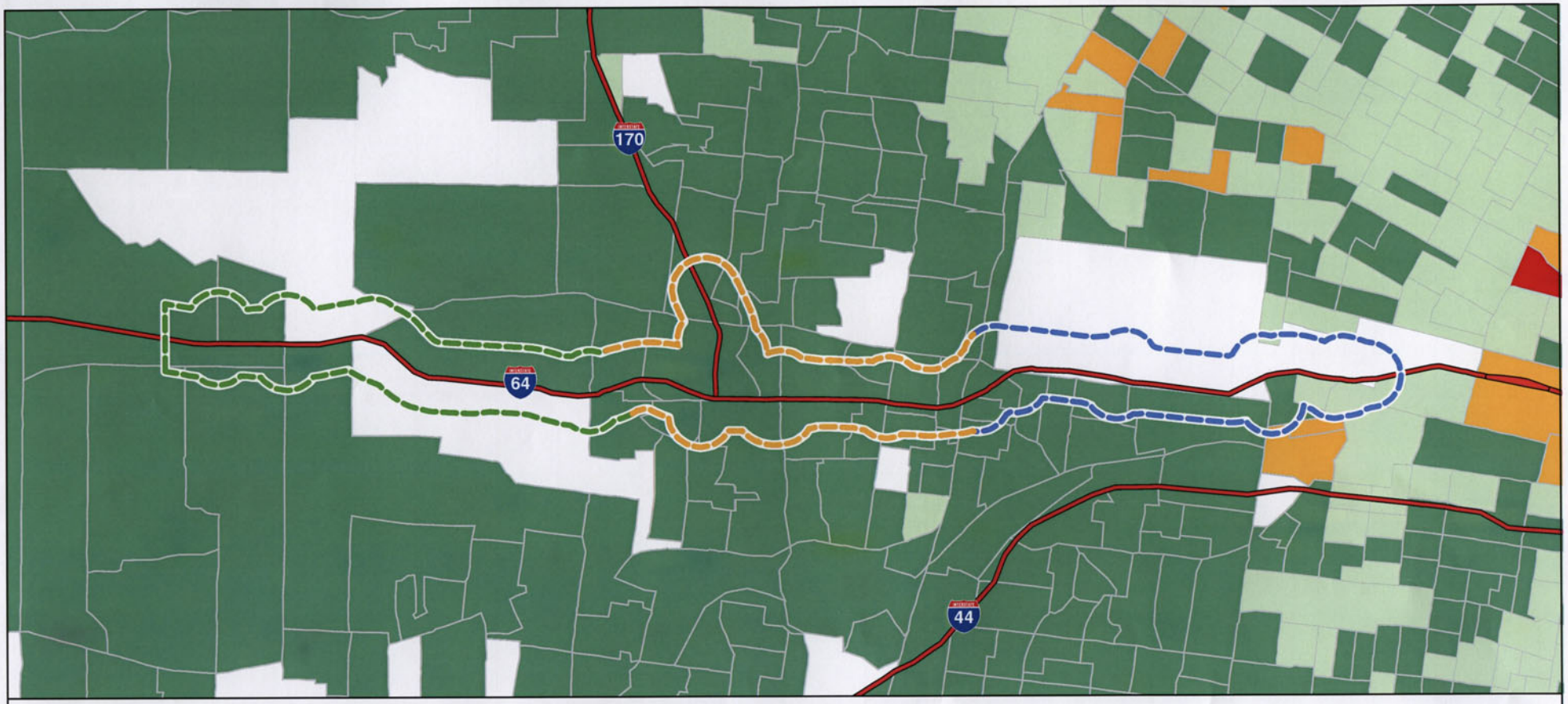
Miles

N

ENVIRONMENTAL JUSTICE ANALYSIS BY 2000 CENSUS BLOCK

I-64 CORRIDOR STUDY

Exhibit IV-2A



Study Areas

- Greenway
- Thruway
- Parkway

Percent Below Poverty Level (By Block Group)

- 0 - 25% Below Poverty Level
- 25 - 50% Below Poverty Level
- 50 - 75% Below Poverty Level
- 75 - 100% Below Poverty Level

0 0.5 1 2 3 4

Miles

N

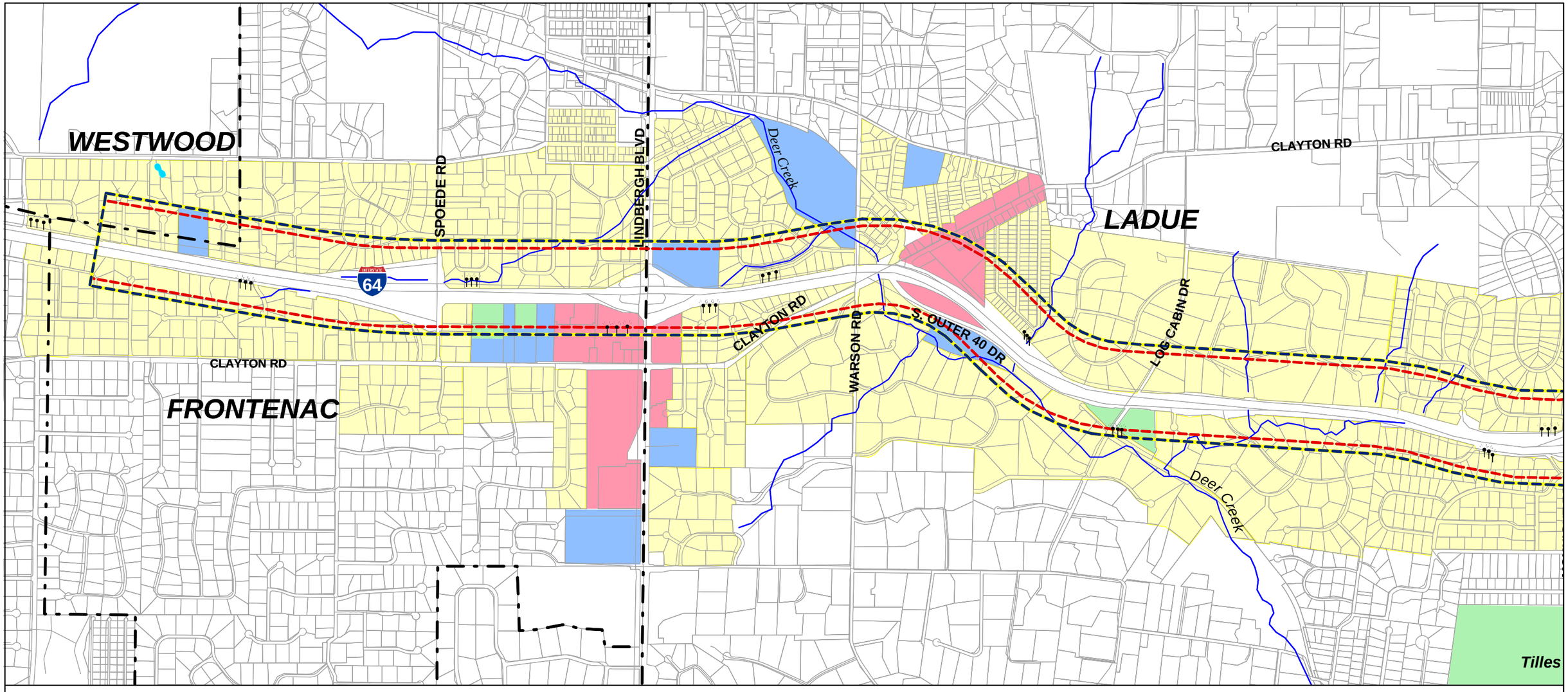
THE NEW I-64

MoDOT

ENVIRONMENTAL JUSTICE ANALYSIS
PERCENT BELOW POVERTY LEVEL

Exhibit IV-2B

I-64 CORRIDOR STUDY



Single-family Residential

Multi-family Residential

Commercial

Light Industrial

Public/semi-public

Parks & Recreation Areas

Ponds

Streams

No Build 66dBA Contour

Noise Measurement Site

Preferred Build Alternative 66dBA Contour

Note: Noise Contours have been approximated using the noise software STAMINA and are included to indicate approximate noise levels.

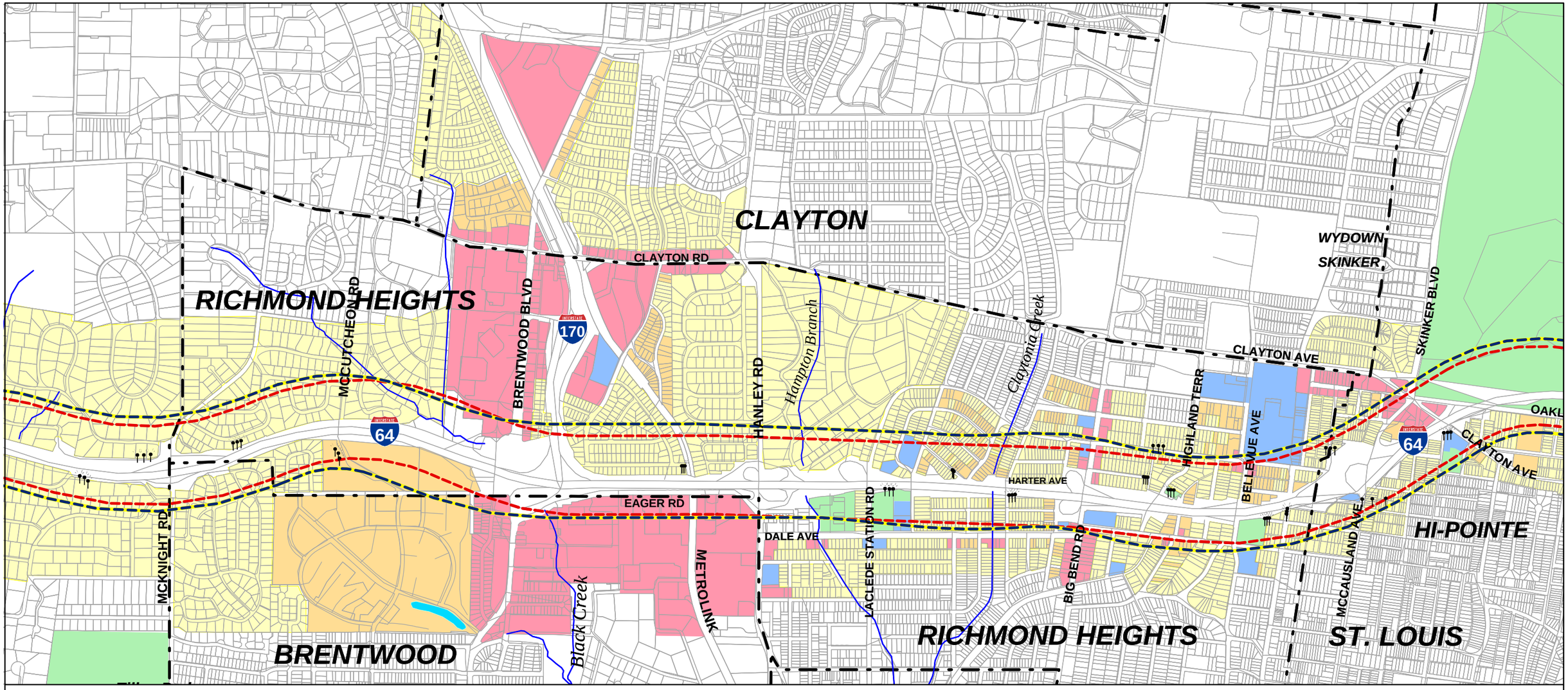
I-64 CORRIDOR STUDY

N W E S

0 1,000 2,000 4,000 6,000 Feet

Greenway Subcorridor

NOISE CONTOURS
Exhibit IV-3A



Single-family Residential

Multi-family Residential

Commercial

Light Industrial

Public/semi-public

Parks & Recreation Areas

Ponds

Streams

No Build 66dBA Contour

Noise Measurement Site

Preferred Build Alternative 66dBA Contour

Note: Noise Contours have been approximated using the noise software STAMINA and are included to indicate approximate noise levels.

0 1,000 2,000 4,000 6,000 Feet

I-64 CORRIDOR STUDY

Thruway Subcorridor

NOISE CONTOURS

Exhibit IV-3B

Forest Park
WYDOWN-SKINKER
CENTRAL WEST END
HI-POINTE
CLAYTON-TAMM
CHELTENHAM
KINGS OAK
FOREST PARK SOUTHEAST
ST. LOUIS
CLAYTON AVE
OAKLAND AVE
MANCHESTER AVE
River Des Peres
SKINKER BLVD
HIGHLAND TERR
BELLEVUE AVE
MCCAUSLAND AVE
TAMM AVE
HAMPTON AVE
MACKLIND AVE
KINGSHIGHWAY
TAYLOR AVE
NEWSTEAD AVE
TOWER GROVE AVE
BOYLE AVE
CHOUTEAU AVE
64

Single-family Residential
Multi-family Residential
Commercial
Light Industrial
Public/semi-public
Parks & Recreation Areas
Ponds
Streams
No Build 66dBA Contour
Noise Measurement Site
Preferred Build Alternative 66dBA Contour

Note: Noise Contours have been approximated using the noise software STAMINA and are included to indicate approximate noise levels.

0 1,000 2,000 4,000 6,000 Feet

I-64 CORRIDOR STUDY

Parkway Subcorridor

NOISE CONTOURS
Exhibit IV-3C