CHAPTER III
Affected Environment

This Chapter provides a general description of the current social and economic characteristics and the natural environment of the study corridor. These descriptions establish the existing baseline condition of the social and environmental settings of the study corridor and provide a basis of comparison for the determination of the impacts and environmental consequences of the Build Alternatives as discussed in Chapter IV.

For purposes of assessing the potential impacts of the reasonable alternatives, the boundary of the affected environment is the study corridor. The study corridor is defined to represent the generalized limits of impacts from the I-64 Build Alternatives. The study corridor is shown in Exhibit III-1A to III-1C. Specific environmental sites located outside of the study corridor limits have not been identified. More regional issues, such as land use, social and economic characteristics and air quality, have been identified and defined from a regional perspective where appropriate.

A. Social and Economic Characteristics

This section provides a description of the existing social and economic characteristics of the study corridor. Census data totals reported for census tracts along the study corridor, the city of St. Louis, the St. Louis Metropolitan Area, St. Louis County, and the State of Missouri and have been used for analysis. Information related to land use and development was gathered through field surveys, information from development companies, interviews with city planners, and interpretation of related documents.

The characteristics and activities associated with land use and development are the primary influences over the social and economic characteristics of an area. A detailed explanation and analysis of the affected environment requires a discussion of existing land use characteristics and patterns, and an assessment of current land use plans.

1. LAND USE

Land use data gathered for the study corridor included available comprehensive master plans and zoning information from the various municipalities and neighborhoods, and was supplemented with review of aerial photography and windshield surveys.

a. Existing Land Use

The study corridor is located in a metropolitan area urban environment with very little undeveloped land. The existing land uses within the study corridor can be separated into six general categories: single-family residential, multi-family residential, commercial, light industrial, public/semi-public, and parks/recreation/open space areas (see Exhibit III-1A to III-1C). (Agricultural land is included in the following discussion, but is nonexistent in the study corridor.)

Agricultural/Farmland

Agricultural land is nonexistent in the corridor. Consequently it meets the definition of “farmland already committed to urban development,” as contained in the Farmland Protection Policy Act, and therefore is not subject to the Act.

Single-Family Residential

The majority of land use in the study corridor is single-family residential. The density of the single-family homes tends to be higher in the eastern half of the study corridor and lower in the western half of the corridor.

Multi-Family Residential

The multi-family residential areas occur in the eastern portion of the study corridor, between McKnight Road (at the western edge of Brentwood) and the eastern project terminus. Although somewhat scattered throughout this area, there is a large concentration of multi-family housing south of I-64 at McCutcheon Road in Brentwood. There are also several multi-family units on the north and south sides of I-64 in Richmond Heights, scattered between McCausland Avenue and Laclede Station Road. Another area of multi-family residential near I-64 exists near the southwest corner of Forest Park, between Oakland and Clayton Avenues, just east of the I-64 intersection of those two streets.

Commercial

The heaviest concentration of commercial use is located in Richmond Heights and Brentwood, along Brentwood Boulevard, Hanley Road and Eager Road. There are also commercial uses east of Brentwood Boulevard where I-170 and Clayton Road meet. Other commercial use locations along I-64 are at the southeast and southwest corners of the I-64/Lindbergh Road interchange in Frontenac; north and south of I-64 where the highway travels over Clayton Road in Ladue; at the southeast corner of the I-64/Hampton Avenue interchange (south of Forest Park); and at the east end of the study corridor between the Kingshighway interchange and Sarah Street in the city of St. Louis.

Light Industrial

The only area along I-64 where light industrial use is located is at the east end of the study corridor (in St. Louis), predominantly on the south side of I-64, between Taylor Avenue and Sarah Street, and some on the north side, west of Sarah Street.

Public/Semi-Public

Public and semi-public use facilities (a facility includes the property and any buildings and/or uses on the property) within the study corridor include churches, hospitals, civic/government facilities, schools and school play areas, parks, and recreation facilities. These public/semi-public uses located along I-64 are listed in Table III-1, which indicates location and type of ownership, and are shown on Exhibits III-1A to III-1C. Some recreation areas or open space can be publicly owned as the result of “flood buyout” properties, which cannot be developed due to open space deed restrictions, and which are exclusively dedicated to open space and recreation. The St. Louis County Parks Department and the communities in the study corridor that contained floodplain areas were contacted to determine if there are any “flood buyout” properties within the study corridor. It was determined that the city of Brentwood (with assistance from the county) had acquired some flood buyout property; however, it is located in the southern portion of Brentwood, outside the study corridor. The study corridor within the city of St. Louis contains no floodplain areas.

Public Parks, Recreation Facilities and School Play Areas [Sections 4(f), 6(f)]

The public parks, recreation facilities, and school play areas, are important environmental control points (prime candidates for avoidance) because these lands can have special status under the provisions of Section 4(f) of the U.S. Department of Transportation Act of 1966. Before a transportation project is allowed to proceed with any encroachment on an eligible public park or recreation area, a specific evaluation must be conducted that tests all proposed

alternatives. This evaluation must lead to a finding that there is no feasible and prudent alternative to the taking of that park or recreation area and that all possible planning to minimize harm to the resource has been undertaken.

Table III-1
Public/Semi-Public Use Facilities

Name	Location		Ownership (Public / Private)
	Subcorridor	City	
Churches			
Church of Jesus Christ of Latter Day Saints	Greenway	Frontenac	Private
Salem United Methodist Church	Greenway	Ladue	Private
Little Flower Church	Thruway	Richmond Heights	Private
St. Luke's Catholic Church	Thruway	Richmond Heights	Private
Church of the Living God	Parkway	St. Louis	Private
Emmaus Baptist Church	Parkway	St. Louis	Private
Hospitals			
St. Mary's Hospital	Parkway	Richmond Heights	Private
Forest Park Hospital	Parkway	St. Louis	Private
Civic/Governmet Facilities			
Frontenac City Complex	Greenway	Frontenac	Public
City of Ladue Mulch/Recycling Site	Greenway	Ladue	Public
Richmond Heights Fire Station	Thruway	Richmond Heights	Public
Richmond Heights Municipal Complex	Thruway	Richmond Heights	Public
Firestation Number 22 – St. Louis City	Parkway	St. Louis	Public
The Science Center	Parkway	St. Louis	Public
Schools			
Reform Jewish Academy of St. Louis	Greenway	Westwood	Private
Wright School/Early Childhood Center	Greenway	Frontenac	Public (Ladue SD)
Chaney Elementary School (A.B. Green)	Thruway	Richmond Heights	Public
Little Flower School	Thruway	Richmond Heights	Private
St. Luke's Catholic Elementary School	Thruway	Richmond Heights	Private
Dewey International Studies School	Parkway	St. Louis	Public
St. Louis University High School	Parkway	St. Louis	Private
Drew Middle School (Compton-Drew Investigative Learning Center)	Parkway	St. Louis	Public
Forest Park Community College	Parkway	St. Louis	Public
Central Institute for the Deaf	Parkway	St. Louis	Private
Washington University School of Medicine	Parkway	St. Louis	Private
William Stix School (Early Childhood Center)	Parkway	St. Louis	Public
Other Semi-Public Use			
Junior League of St. Louis	Greenway	Frontenac	Private
Parks, Recreation Facilities, School Play Areas			
Wright School Open Space/Athletic Field	Greenway	Frontenac	Public 4(f)*
Church of Jesus Christ of Latter Day Saints Athletic Field	Greenway	Frontenac	Private
Racquet Club of Ladue	Greenway	Ladue	Private
The Heights Community Center (majority of use is indoor recreation)	Thruway	Richmond Heights	Public 4(f)*
A.B. Green Athletic Complex	Thruway	Richmond Heights	Public 4(f)*
Highland Park	Thruway	Richmond Heights	Public 4(f)*, 6(f)
St. Luke's Baseball/Soccer Fields	Thruway	Richmond Heights	Private
Dewey School Play Area	Parkway	St. Louis	Public 4(f)*
Forest Park Community College Ball Field	Parkway	St. Louis	Public 4(f)*
St. Louis University High School Track & Field	Parkway	St. Louis	Public 4(f)*
Forest Park	Parkway	St. Louis	Public 4(f)*, 6(f)**
Rainbow Park	Parkway	St. Louis	Public 4(f)*
William Styx School Play Areas	Parkway	St. Louis	Public 4(f)*

* Potential 4(f) eligibility – If impacted, determination regarding 4(f) eligibility, based on primary purpose and public use of the facility is discussed in Chapter IV.
** Land and Water Conservation Funds were used for the Dwight Davis tennis courts located in the north-central portion of Forest Park.

In addition to public parks and recreation facilities, public school playgrounds/athletic fields may, under certain circumstances, be Section 4(f) eligible. If the primary purpose of the public school playground/athletic field is for student recreation and structured physical education classes, it is not considered subject to Section 4(f). However, when the playground or athletic field is open to the public, serving either organized or recreational purposes (walk-on activity), it would be subject to Section 4(f) requirements if it is considered by the officials having jurisdiction over the facility to be of local significance for recreational purposes.

During the early stages of a transportation project, parks, recreation facilities, and school play areas which appear to meet the basic purposes and intent of Section 4(f) are identified as prime candidates for avoidance. Avoidance is preferred unless such avoidance would have other, more serious socio-economic, environmental or engineering consequences. Early coordination identified the parks, recreation facilities, and school play areas within the study corridor that are potentially Section 4(f) eligible. These were mapped as control points to guide the early planning of the project.

The Land and Water Conservation Fund (LWCF), has been providing grants (known as Section 6(f) funds) for recreational land acquisition and development for many years. Parkland that has been the recipient of these funds would be subject to the provisions of Section 6(f) if it is impacted. Those provisions state that the impacted parkland or facilities must be replaced with land or facilities of at least equal recreational utility and monetary value, and is subject to approval by the U.S. Department of the Interior. In addition, other funding sources that can apply to public lands were considered, including the Pittman/Robertson Wildlife Restoration funding program, the Dingle/Johnson Sport Fish Restoration funding program, the Federal Lands to Parks program, the Urban Parks and Recreation Recovery program, and Community Development Block Grants.

The public parks, recreation facilities, and school play areas within the study corridor that have the potential of being subject to the provisions of Section 4(f) and/or 6(f) are listed in Table III-1 (and noted as such) and described below. In Chapter IV, Environmental Consequences, the applicability of Section 4(f) to any of these public areas that are impacted will be discussed and a determination will be made regarding 4(f) eligibility based on primary purpose and public use, and if determined eligible, a Section 4(f) evaluation will be conducted. A discussion of historic resources is included in Section B.6 of this chapter.

Public Parks

A.B. Green Athletic Complex – This park in Richmond Heights is located adjacent to the I-64 right-of-way, southeast of the I-64/Laclede Station Road interchange. Facilities include two tennis courts, basketball courts, a playground, restrooms, a picnic pavilion, and a baseball/soccer field. The playground portion of the property was developed using Community Development Block Grant funds.

Highland Park – This park is located in Richmond Heights, adjacent to the I-64 right-of-way, northeast of the Highland Terrace overpass. It includes a children's playground and a covered picnic table. It was developed with Land and Water Conservation Funds and is subject to the provisions of Section 6(f).

Forest Park – This St. Louis urban park is located both south and north of I-64, between Kingshighway and Skinker Boulevard. The majority of the park area is located north of I-64, but a small section of the park is located between the south edge of the existing right-of-way and Oakland Avenue. With an area of approximately 1,372 acres, it is the seventh largest urban park in the country, and receives about twelve million visitors each year. Forest Park contains

several recreational and cultural facilities that provide activities such as softball, cricket, rugby, tennis, golf, archery, lacrosse, soccer, biking, ice skating, roller skating, roller blading, jogging, fishing, horseback riding, concerts, and special events. The facilities that are adjacent or near I-64 include the following:

- Richard C. Hudlin Tennis Courts, northeast of the I-64/Kingshighway interchange;
- James S. McDonnell Planetarium, north of I-64;
- Aviation Field sports fields, north of I-64;
- Department of Parks, Recreation and Forestry administrative offices and greenhouse complex, north of I-64;
- St. Louis Zoo and parking lot, north of I-64;
- Forest Park Bike Path, north of I-64; and
- Turtle Playground in Forest Park, with seven giant land turtle sculptures, which is located on the south side of I-64 at the northeast corner of Tamm and Oakland Avenues.

Rainbow Park – This is a corner open-space park located at the corner of Gibson Avenue and Taylor Avenue in St. Louis.

Public Recreation Facilities

The Heights Community Center – This facility is the Richmond Heights Community Center and Memorial Library, which opened in 2000. It is located south of I-64, adjacent to the right-of-way, between Hanley Road and Laclede Station Road. The facility is open to the general public for a fee, and houses an indoor water park, gymnasium, game room, lounge, multi-purpose room, fitness room, and library. All of the recreation facilities are located inside of the building. Nearly two-thirds of the interior floor space is devoted exclusively to recreational activities. There are no recreational facilities on the property outside of the building.

Public School Play Areas

Wright School Open Space/Athletic Field – This is an open field located north of the Wright School, adjacent to the south side of I-64. It is used as a practice field for athletic teams in the Ladue School District. It is not used by the general public for walk-on recreational activities.

Dewey School Play Area – This play area is located behind (southwest of) the Dewey school building and consists of a playground area and grassed open space. The school is located between Clayton Avenue and Central Avenue, south of I-64 and Forest Park.

Forest Park Community College Ball Field – This is a baseball/softball field on the college property located at the southwest quadrant of the Oakland/Macklind intersection.

St. Louis University High School Track and Field – This is a running track surrounding a football/soccer field on the high school property, located south of Oakland Avenue, near the southeast corner of Forest Park.

William Styx School Play Areas – There are two play areas on the school property. The building surrounds one that is located inside the courtyard, and the other is located northwest of the school building.

b. Land Use Planning and Regulation

The study corridor is comprised of portions of Westwood, Frontenac, Ladue, Brentwood, Richmond Heights, Clayton, and St. Louis. Land use planning and zoning regulations are discussed below for each.

City of Westwood

Westwood has neither a comprehensive plan nor zoning regulations. It is a country club community that contains a private golf course and some very large upper scale single-family homes.

City of Frontenac

Frontenac has no comprehensive plan, but does have zoning and land use regulations. The Land Use Regulation (2001) and Zoning Map (2000) show residential uses along I-64 and the frontage roads. There is limited commercial activity in the southwest quadrant of the I-64 and Lindbergh Boulevard interchange.

City of Ladue

Ladue's only comprehensive plan was done for the city over 60 years ago in 1939, and included a preliminary subdivision ordinance. The *Ladue City Plan*, although dated, did layout the overall development pattern for the city that has continued to this day. The plan focused on low-density residential development with limited commercial development. There are no changes in access to I-64 as part of the proposed action.

City of Brentwood

The *City of Brentwood Comprehensive Plan* (1991) has been amended several times, most recently July 1999. During the mid to late 1990's, large areas of Brentwood in the vicinity of I-64 and I-170 were proposed for development and redevelopment with commercial or industrial uses. The *Land Use Plan*, amended in 1999, shows much of that area planned as mixed use. This category supports a number of land uses including office, multi-family residential, light industrial and retail uses. The category further states that there could be high-density development if warranted. It is anticipated that development in this generalized area will continue through the planning period.

Brentwood also has a zoning code that was adopted in 1985 and re-codified in 1987. In addition, the zoning district map was amended in 1994. In compliance with the 1995 and 1999 amended plans, southwest corner of I-64 and Hanley Road is currently being planned as a commercial and mixed-use area consisting of hotel, retail, and office space. A multi-level parking structure and a MetroLink light rail station are also being planned for this area. The southeast quadrant of McKnight Road and I-64 is in Brentwood. This area is intended to remain residential.

City of Clayton

Clayton has a master plan that was adopted in 1975 and amended in 1989. The city also has a Business District Master Plan that was adopted in 1993, an Overlay and Urban Design Districts Plan that was adopted in 2001, and a zoning ordinance that was adopted in 2001.

The *Clayton Business District Master Plan* was prepared in 1993. The Clayton Road Business District was one of the 17 business districts discussed in that document. The action area for one of those districts, the Clayton Road – West district, includes the area bounded by I-170, Brentwood Boulevard and Clayton Road. The future function of the commercial properties west

of the I-170 corridor are planned to provide office, convenience, and specialty retail. This would take advantage of high traffic volumes and proximity to the Galleria. The area plan also notes the need to coordinate development and redevelopment with Richmond Heights. The I-170 improvements in all the alternatives would affect the same area north of Clayton Road, between Brentwood Boulevard and existing I-170.

City of Richmond Heights

Richmond Heights has a comprehensive plan that was updated in 1980 and 1986. The city also has a zoning ordinance. The city is currently planning the development of a "World Aquarium" facility at the southeast corner of the I-64/Hanley Road interchange, adjacent to the new community center. At the northwest corner of the I-64/I-170 interchange, between Brentwood Boulevard and I-170, development is being planned that would consist of commercial, office, and high-density residential use. The site is currently composed of commercial and residential use.

The *Richmond Heights Comprehensive Plan Update* (1986) shows an area of planned commercial development of mixed uses (office-service-retail) west of I-170 and north of I-64. Much of this development has occurred at this time. The area bounded by East Linden Avenue, the St. Louis Belt and Terminal RR (now under construction as MetroLink), and I-170 is designated as office, service and public/semi-public. The area south of this planned commercial district is expected to continue in its present low-density residential pattern. As the city proceeds eastward along I-64, there is slow but noticeable increase in the density of development, which is in keeping with historic growth pattern. The single-family residential areas have lot sizes that reflect the development standards in place at the time. The net result is higher residential development densities than those present in the Greenway Subcorridor. Single-family residential development is at least two to three times as dense as the residential development in newer communities and the Greenway. The future land use plan indicates no significant change with respect to residential density.

City of St. Louis

Land use planning documents and zoning regulations were obtained from the city of St. Louis. However, the last formally adopted, comprehensive plan for the city was prepared more than fifty years ago, in 1947. There have been many redevelopment plans, functional plans and neighborhood plans during the intervening years, but a new overall comprehensive plan remains to be prepared. In 1999, the city prepared a Five-Year Consolidated Plan Strategy for submission to the U.S. Department of Housing and Urban Development (HUD). That document included an analysis of the issues that exist in the neighborhoods and the city overall, and described how the city plans to utilize HUD funds throughout St. Louis. One of the main objectives of the strategy plan was successful neighborhood and economic development. Several of the city's neighborhoods have been designated as Neighborhood Revitalization Areas by the HUD, one of which is the Forest Park Southeast neighborhood, located on the east end of the study corridor. The city intends to continue requests to HUD for additional city neighborhoods to be approved as revitalization areas.

St. Louis *Neighborhood and Area Plans* address local land use issues, within the overall context of the city *Comprehensive Plan* (1947). This comprehensive plan has been revised through individual neighborhood and development plans. The neighborhood plans are generally up to date, addressing both the preservation of existing neighborhoods as well as the redevelopment opportunities. The adjacent and affected St. Louis neighborhoods are Hi-Pointe, Clayton-Tamm, Cheltenham, King's Oak, Central West End and Forest Park Southeast. One neighborhood, the Cheltenham, has a major redevelopment project underway at this time, the Highlands at Forest Park Office Park, which is a large office development on the site of the former St. Louis Arena

and Highlands Amusement park. The development has one office building complete and under lease. Construction on the second office building began in 2004. The 26-acre development is proposed to be a mix of class A office space and high-end residential units. The Highland at Forest Park office development is located adjacent to the Forest Park Community College and would be provided improved access from I-64 through the Hampton Avenue Interchange.

Land use planning issues and revitalization plans and initiatives for St. Louis' individual neighborhoods within the study corridor are described below. The St. Louis neighborhoods adjacent to the I-64 corridor include the Central West End, Forest Park Southeast, Kings Oak, Cheltenham, Clayton-Tamm, Hi-Pointe, and Wydown-Skinker (see Exhibit III-1A to III-1C).

Wydown-Skinker Neighborhood – This neighborhood is located on the west side of Forest Park, west of Skinker Boulevard. It is bounded by Clayton Avenue on the south, Forsyth Boulevard on the north, and the city limits (west of Skinker) on the west. It is an affluent and stable neighborhood with properties that are maintained to high standards. It is likely to remain stable and new development will most likely not occur within this neighborhood.

Hi-Pointe Neighborhood – This neighborhood is located south of Forest Park at the park's southwest corner. It is bounded on the north side by Oakland Avenue, St. Louis city limits (west of McCausland Avenue) on the west, Louisville Avenue on the east, and Dale Avenue on the south. Although a specific revitalization plan was not identified, the TRIAD Housing Corporation was listed as working in the neighborhood.

Clayton-Tamm Neighborhood – This neighborhood is located just south of I-64, between Oakland Avenue on the north and Manchester Avenue on the south, and between Hampton Avenue on the east and Louisville Avenue on the west. A "Neighborhood Action Plan" was developed for the Clayton-Tamm Neighborhood, which featured the development of four housing units, done in conjunction with the Neighborhood Stabilization Officer, the TRIAD Housing Corporation, and Operation Impact. One neighborhood has a shortage of 3-bedroom houses, which has resulted in many families leaving the neighborhood to find larger homes. In addition, Forest Park Hospital, located at the southwest corner of Hampton Avenue and Oakland Avenue, is planning an expansion of its facilities.

Cheltenham Neighborhood – This neighborhood is located just south of I-64, between Oakland Avenue on the north and Manchester Avenue on the south, and between Macklind Avenue on the east and Hampton Avenue on the west. Cheltenham does not have a revitalization plan, however, the Cheltenham Neighborhood Organization has been active since the mid-1980s when the neighborhood was successful in protesting proposals to blight the area. The St. Louis Arena at Oakland Avenue was demolished in the winter of 1999 and the site is now occupied by the first phase of an office park called the Highlands at Forest Park. It includes an office building, parking garage, and a landscaped open space with a lighted fountain. A second office building, small hotel, a restaurant, and other amenities are also being planned for the remainder of the site. As a part of community redevelopment, the portion of Oakland Avenue that lies adjacent to the site will be streetscaped.

Kings Oak Neighborhood – This neighborhood is located just south of I-64, between Oakland Avenue on the north and Manchester Avenue on the south, and between Kingshighway on the east and Macklind Avenue on the west. The city of St. Louis has designated the Kings Oak neighborhood as an Operation ConServ area, whereby the King Oaks Community Housing Corporation was established to monitor and enhance housing in the neighborhood. The housing corporation purchases and redevelops properties and markets them to buyers who agree to be owner-occupants.

Forest Park Southeast Neighborhood – This neighborhood is located on the south side of I-64, southeast of Forest Park, between Kingshighway and the east end of the study corridor (to South Vandeventer Avenue). In 1974 the northwest portion of the Forest Park Southeast neighborhood was included in the Washington University Redevelopment Corporation's revitalization plan. The Forest Park Southeast Housing Corporation began in 1977 to lead in housing revitalization. However, there was not a great deal of activity until 1995 when the Washington University Community Revitalization Program started operating in the neighborhood. Forest Park Southeast was also designated as a Neighborhood Revitalization Area by HUD. With this designation an area has somewhat more flexibility in the use of Community Development Block Grant funds. In 1998, Forest Park Southeast was one of the first neighborhoods to be included in the St. Louis 2004 Sustainable Neighborhoods initiative, which is a partnership of residents, community groups, financial institutions, and state and local government to revitalize neighborhoods through an initiative directed by the residents.

Recently, the Washington University Medical Center and Mercantile Bank joined forces to sponsor a community-driven strategic master plan for the revitalization of the neighborhood. The final plan, completed in 1999, presented design principles and strategic initiatives that provide a framework in which to seek and evaluate development proposals for revitalization projects. The main goals of the plan are to revitalize and create housing, attract and retain businesses, respect the historic integrity of the district, and reduce cut-through traffic. Specific issues included the lack of a school, limited public open space, unmarked gateways, and vacant storefronts.

Central West End Neighborhood – This neighborhood is located north of I-64 on the east side of Forest Park, between Kingshighway and the east end of the study corridor (to North Vandeventer Avenue). The Washington University Medical Center has sponsored the Washington University Redevelopment Corporation since 1975. Under its revitalization plan, redevelopment initiatives in the neighborhood include rehabilitation of existing housing, construction of new dwelling units, commercial rejuvenation, improvements in traffic, and improvements in general neighborhood appearance.

The Barnes-Jewish Christian Hospital/St. Louis Children's Hospital/Washington University Medical Center Complex (BJC) located across Kingshighway Boulevard from Forest Park is currently undergoing several improvements and expansion. Part of the BJC expansion includes the aesthetic streetscape of Kingshighway Boulevard between BJC and I-64. The BJC expansion moves east toward the existing Boyle Avenue interchange, and will consist of structured parking and other facilities.

2. DEMOGRAPHICS AND SOCIAL CHARACTERISTICS

Demographic and social characteristics were developed for this study based on the 2000 Census. The census data is presented in tables for the I-64 study corridor, the city of St. Louis, the St. Louis Metropolitan Area, St. Louis County, and the State of Missouri. The study corridor includes census tracts that are adjacent to I-64. The study corridor is contained within census tract numbers 2153.02, 2154, 2163, 2164, 2165, 2166, 2167, 2168, 2173, 2174, 2175, 2176 in St. Louis County; and census tract numbers 1041, 1042, 1045, 1051.98, 1121, 1124, 1186 in St. Louis (see Exhibit III-2). Specific data for each individual census tract is included in Appendix G. The map of census tract boundaries is provided in Exhibit III-2.

a. Demographic Data

Population

Between 1990 and 2000 the city of St. Louis experienced a decline in its population of about twelve percent. The population included in the study corridor also declined between 1990 and 2000 by about 4.5 percent. St. Louis County and the St. Louis Metropolitan Area experienced gains of about two percent and 6.5 percent respectively. The state of Missouri experienced a positive population change of about nine percent from 1990 to 2000.

Not surprisingly each of the areas examined had the majority of its population within the 20-64 year old range. The median age was similar for each of the areas with the city of St. Louis having a slightly lower median age, and St. Louis County having a slightly higher median age. Within each of the areas the male and female population ranges are evenly divided. The municipal demographics within the study corridor reflect similar trends.

Table III-2
Population, Gender, Age (2000)

		Study Corridor	St. Louis	St. Louis MO-IL Metro Area	St. Louis County	Missouri
Total Population		100,779	348,189	2,603,607	1,016,315	5,595,211
% Change – 1990 to 2000		-4.5	-12.2	6.5	2.3	9.3
% Male		48.4	47.0	48.0	47.4	48.6
% Female		51.6	53.0	52.0	52.6	51.4
Age	Under 20	23,489	99,929	755,110	282,282	1,594,172
	20 – 64	62,238	200,418	1,513,052	590,771	3,245,660
	Over 64	15,052	47,842	335,445	143,262	755,379
	Median Age	35.5*	33.7	36.1	37.5	36.1

*Average of median age. Median Age for each census tract in the study corridor can be provided upon request to the Missouri Department of Transportation. Their address is listed in Chapter VI.
Source: U.S. Census Bureau and Missouri Census Data Center, Census 2000 (Summary File 1, Demographic Profile 1)

Education

Of those persons for whom education had been determined, the city of St. Louis had the highest percentage of persons who had not reached the level of education of a high school graduate. Of the areas being studied in Table III-3, the study corridor had the lowest percentage, about 11 percent, of individuals with an education below the level of high school graduate. Conversely, the study corridor had the highest percentage, about 56 percent, of persons who had some type of college degree. St. Louis County is similar to the study corridor, in that about 12 percent of those individuals reporting their level of education, had less than a high school degree. About 41 percent of those reporting in St. Louis County had some type of college degree. The State of Missouri had its highest percentage of those persons reporting, at the educational level of high school graduate. The St. Louis MO-IL Metro Area also had its greatest percentage of persons at the high school graduate level.

Minority Populations

The percentage of non-whites is similar within the study corridor, St. Louis County and the St. Louis Metropolitan Area, ranging from 21.6 percent to 23.2 percent. The State of Missouri contained a smaller percentage of minorities on the whole, with about 15 percent of the population being non-white. The city of St. Louis had a far greater percentage of its population fall within one of the minority categories of the population. The percentage of non-white individuals was about 56 percent.

Table III-3 Education

	Study Corridor	St. Louis	St. Louis MO-IL Metro Area	St. Louis County	Missouri
Less than 9th Grade	2,572 (3.8%)	21,291 (9.6%)	96,840 (5.7%)	26,962 (4.0%)	237,618 (6.5%)
9th to 12th Grade, No Diploma	4,892 (7.2%)	42,424 (19.1%)	184,333 (10.9%)	54,573 (8.1%)	441,477 (12.1%)
High School Graduate	9,932 (14.6%)	61,046 (27.5%)	485,415 (28.7%)	162,405 (24.0%)	1,189,670 (32.7%)
Some College No Degree	12,293 (18.0%)	45,154 (20.3%)	392,830 (23.2%)	153,941 (22.7%)	796,999 (21.9%)
Associate's Degree	2,434 (3.6%)	9,698 (4.4%)	104,730 (6.2%)	39,417 (5.8%)	184,666 (5.1%)
Bachelor's Degree	19,161 (28.1%)	25,431 (11.5%)	272,818 (16.1%)	149,139 (22.0%)	507,892 (14.0%)
Graduate or Professional Degree	16,862 (24.7%)	16,907 (7.6%)	156,031 (9.2%)	90,590 (13.4%)	276,584 (7.6%)

Source: U.S. Census Bureau, 2000 Census

Two of the census tracts within the study corridor have a very high percentage of minority populations. About 82 percent of the individuals within Tract 118100 are part of the minority population and about 74 percent of the population in Tract 118600 are a minority. These tracts are located on the eastern end of the study corridor, within the city of St. Louis (see Exhibit III-2). Interstate 64 bisects Tract 118600, and the portion north of the interstate is part of the Central West End neighborhood, while the portion south of the interstate is part of the Forest Park Southeast neighborhood. Kingshighway is the western boundary of this tract. Tract 118100 is located directly south of Tract 118600, but is located about ¼ mile south of I-64, with Kingshighway serving as its western boundary. Tract and block group data is included in Appendix G. Environmental justice issues are addressed in the Environmental Consequences (Chapter IV) and Public Involvement (Chapter VIII) chapters of this document.

Table III-4 Racial Characteristics (2000)

	Study Corridor	St. Louis City	St. Louis MO-IL Metro Area	St. Louis County	Missouri
Total Population	100,779	348,189	2,603,607	1,016,315	5,595,211
White	78,975	152,666	2,037,369	780,830	4,748,083
Black or African American	15,267	178,266	476,716	193,306	629,391
American Indian & Alaskan Native	202	950	5,895	1,717	25,076
Asian	3,649	6,891	37,118	22,606	61,595
Native Hawaiian or Other Pacific Islander	39	94	671	251	3,178
Some Other Race	726	2,783	13,485	4,775	45,827
Two or More Races	1,921	6,539	32,353	12,830	82,061
Hispanic or Latino (of any race)	1,766	7,022	39,677	14,577	118,592
% Minority (non-white)	21.6	56.1	21.7	23.2	15.1

Source: U.S. Census Bureau and Missouri Census Data Center, Census 2000 (Summary File 1, Demographic Profile 1)

b. Neighborhoods and Communities

Neighborhoods and communities can be identified as self-contained areas where residents share common geographic identities and other ties or interests. The study corridor contains several neighborhoods within the communities of Westwood, Frontenac, Ladue, Brentwood, Richmond Heights, Clayton, and Saint Louis.

City of Westwood

Westwood is a country club community that contains a private golf course and some very large upper scale single-family homes. The south edge of the Westwood community is near the north side of I-64, but not adjacent to it. The entire portion of the community that lies within the study corridor is comprised of single-family homes.

City of Frontenac

Frontenac extends along I-64 from Lindbergh Boulevard to the west end of the study corridor. There are several neighborhoods of single-family on each side of I-64. This part of the community also includes the Wright School/Early Childhood Center and the Frontenac Municipal Complex, both of which are located on the south side of I-64 between Lindbergh Boulevard and Spoede Road. There is also a commercial area located on the west side of Lindbergh Boulevard, south of the I-64/Lindbergh interchange.

City of Ladue

Interstate 64 travels through Ladue, which is located between McKnight Road and Lindbergh Boulevard. There are several single-family neighborhoods on each side of I-64. This area of the community also includes Horton Watkins High School, Conway School, the Ladue Junior High School, St. Louis County Library, and Salem United Methodist Church. The commercial areas in this part of the community occur along Clayton Road, on the north side of I-64, and along Lindbergh Boulevard on the south side of I-64. Tilles Park, a popular county park located south of the I-64/McKnight Road interchange, is frequented by residents of this area of the community.

City of Brentwood

Brentwood lies on the south side of I-64 between Hanley Road and McKnight Road. A major portion of the community along the I-64 corridor is the commercial area between Hanley Road and Brentwood Boulevard. Single-family homes are southwest of the I-64/Brentwood Boulevard interchange, and east of McKnight Road. There is also a large multi-family residential area to the west of Brentwood Boulevard, although the portion of it in Brentwood is not immediately adjacent to I-64.

City of Richmond Heights

Interstate 64 travels through the entire length of Richmond Heights. In the eastern half between Hanley Road and the eastern city limits, there are residential neighborhoods on both sides of I-64. On the north side, with the exception of an area of low-density single-family homes between Hanley Road and Laclede Station Road, the residential areas are a mix of dense single-family housing and multi-family housing. Most of the multi-family units are interspersed in the area between Laclede Station Road and Big Bend Boulevard. There is also a concentration of multi-family housing on the north side of I-64, just east of Bellevue Avenue. The low-density single-family homes between Hanley Road and Laclede Station Road is known as Hampton Park, and is currently recommended as being eligible for listing on the National Register of Historic Places (NRHP) as a district. Just west of Hanley Road, on the north side of I-64, is a neighborhood called Lake Forest, which is also listed as NRHP.

The east half of Richmond Heights along I-64 also contains St. Mary's Hospital, St. Luke's Church/School and athletic fields, Little Flower Church, Highland Park, the A.B. Green Athletic Complex, The Heights Community Center, and the municipal complex. Most of the commercial area is located along Big Bend Boulevard and along Hanley Road.

In the west half of Richmond Heights, single-family residential neighborhoods are on the north side of I-64 between I-170 and Hanley Road, with a small isolated residential area located between Brentwood Boulevard and I-170. There are also single-family residential neighborhoods on the north side of I-64, between the Galleria Mall and the west city limits. On the south side of I-64, there is a large multi-family residential area west of Brentwood Boulevard and a single-family neighborhood adjacent to the west edge of the multi-family housing area. The west half of Richmond Heights along I-64 also contains a major commercial area along Brentwood Boulevard and along I-170.

City of Clayton

The portions of Clayton that are within the study corridor include a single-family residential area at the far southeast corner of the city, and a small area around the intersection of I-170 and Clayton Avenue that includes commercial buildings, an area of single-family homes, and an area of multi-family homes.

St. Louis

The city of St. Louis contains many specific neighborhoods. Those adjacent to the I-64 corridor include the neighborhoods of Central West End, Forest Park Southeast, Kings Oak, Cheltenham, Clayton-Tamm, Hi-Pointe, and Wydown-Skinker. Information concerning these specific neighborhoods was obtained from the Community Information Network web site of the city of Saint Louis.

Wydown-Skinker Neighborhood – Wydown-Skinker was originally part of the grounds of the 1904 World's Fair. It is an expensive and stable neighborhood with tree-lined private streets and large homes (built in the 1920s) that are maintained to high standards. There are also several high-rise apartment, and condominiums located along Skinker Boulevard. Several churches are located at the north end of the neighborhood, as well as Washington University, which lies just outside the north end of the neighborhood.

Hi-Pointe Neighborhood – The Hi-Pointe neighborhood is predominantly residential, due in part to the 1904 World's Fair in Forest Park, which promoted the area and helped its settlement. The Hi-Pointe Cinema, a local landmark, is located at the intersection of Clayton Avenue and McCausland Avenue. The neighborhood also includes the Dewey International Studies School, a bank, and a fire station. The main commercial area is located at the intersection of Clayton, Oakland, and Skinker Avenues.

Clayton-Tamm Neighborhood – The housing in this neighborhood began to be built up in the mid 1800s when clay mining first brought people into this area. As the clay mines closed, subdivision housing was built over them. After World War II, almost all of the mines had closed, resulting in a neighborhood that is predominantly residential. Almost ¾ of the housing units are single-family.

Religious institutions and schools include the St. James the Greater Catholic Church and School, the Gratiot School for Continuing Education, and Development Child Care, Inc. Forest Park Hospital is located at the southwest corner of the Oakland Avenue/Hampton Avenue intersection. The commercial areas are located at the Clayton Avenue and Tamm Avenue intersection, and along the west side of Hampton Avenue.

Cheltenham Neighborhood – The majority of the houses in Cheltenham are one-story single-family homes with porches overlooking the sidewalks. Several were built in the shotgun

style, only a few feet apart from each other. The residential area is located at the middle-west end of the neighborhood, surrounded by industrial, commercial, and retail buildings.

Forest Park Community College, which also serves as a performing arts center for the region, is located on the north end along Oakland Avenue. The northern edge also includes the new Highlands Office Park. The Humane Society, which houses an adoption center, a veterinary clinic, and an educational center, is located on Macklind Avenue on the neighborhood's east edge. The southern perimeter of Cheltenham is comprised of mostly industrial and commercial buildings. The western edge, along Hampton Avenue, contains several restaurants and convenience stores.

Kings Oak Neighborhood – All of the original houses (approximately 80) in the small neighborhood of Kings Oak were built around the time of the St. Louis World's Fair of 1904, and are confined to the northeast corner of the neighborhood. Most of them are single-family homes, but there are some two and four-family rental units along Wise Avenue at the southern end of the residential area. The northern end of the neighborhood is comprised of educational institutions such as St. Louis University High School, Compton-Drew Middle School, and the St. Louis Science Center. The southern portion is strictly industrial and commercial.

Forest Park Southeast Neighborhood – Forest Park Southeast is characterized by industrial operations that are intermingled with residential areas, including abandoned factories and warehouses on the edges of the neighborhood. The residential areas include single-family homes, two and four-family homes, and some buildings that house five or more families. Although the neighborhood has had a shortage of parks and other green space, it is adjacent to Forest Park, and just a few miles from the Missouri Botanical Gardens and Tower Grove Park.

A concentrated revitalization effort, which started in the early 1990s, is now taking place to revitalize and create housing, attract and retain businesses, respect the historical integrity of the neighborhood, and reduce cut-through traffic. The commercial area along Manchester Avenue had declined and consisted of several boarded-up storefronts with some scattered industrial buildings. Prior to the revitalization efforts the neighborhood lacked restaurants, grocery stores, and other basic services. It gradually lost its sense of community and cohesion, which, combined with other factors, lead to an increase in drug problems, crime, and poverty. Development initiatives include a new park in the center of the neighborhood, new retail businesses along Manchester Avenue to create a "Main Street," and new housing along Kingshighway. The previously closed Adams School has been restored and shares a gymnasium and common courtyard with the new community center.

There are several churches and religious organizations in the neighborhood including St. Cronan's Catholic Church and Community Center, the United Methodist Metro Ministry, which also operates the Shalom House shelter for homeless women, and four other churches.

Central West End Neighborhood – Much of the development in the Central West End Neighborhood, which included several mansions, was mainly due to the coming of the 1904 World's Fair. The neighborhood also contains many private streets and luxury apartment buildings, as well as commercial and religious architecture that is characterized by richness of detail and quality of construction.

The Central West End, ranked second in population, is one of St. Louis' largest neighborhoods. Approximately ¾ of the residences are single-family homes, but the neighborhood also has the largest number of high-rise apartments in the city. There are several very active neighborhood organizations that have formed to address the needs of their neighborhoods. Recently, large single-family homes have been converted into multi-family dwellings or rezoned for business

use. Some homes have also been demolished and replaced with apartment buildings or condominiums.

The Cathedral Square Special Business District is a recent development in the Central West End, in addition to the Euclid Avenue Business District, which includes three prominent business nodes: Euclid-McPherson, Maryland Plaza, and Euclid-Laclede. Several hospitals, research facilities, and teaching facilities are also located in the Central West End, including Washington University Medical Center and School, Barnes-Jewish Hospital, Central Institute for the Deaf, Barnard Free Skin and Cancer Hospital, and William Styx School. A prominent church in the neighborhood is the Cathedral Basilica of St. Louis, home of the Catholic Archdiocese of St. Louis.

c. Housing Characteristics

The housing characteristics of the study area are compared with city, county, regional and state characteristics in Table III-5. St. Louis County has the highest percentage of occupied housing units; the percentage of occupied housing units was about 95 percent. The city of St. Louis had the lowest percentage of occupied housing units at around 83 percent. The city of St. Louis was also the only area to have fewer owner occupied housing units than renter occupied housing units. Within the study corridor about 91 percent of the housing units available are occupied. The average family size ranged from 2.9 to 3.2 persons for the areas studied.

Table III-5
Housing Characteristics

	Study Corridor	City of St. Louis	St. Louis MO-IL Metro Area	St. Louis County	Missouri
Total Housing Units	49,951	176,354	1,092,915	423,749	2,442,017
Total Vacant Housing Units	4,307	29,278	80,496	19,437	247,423
Total Occupied Housing Units	45,644	147,076	1,012,419	404,312	2,194,594
Percent Occupied	91.4%	83.4%	92.6%	95.4%	89.7%
Owner Occupied Units	25,174	68,939	722,542	299,670	1,542,149
Renter Occupied Units	20,470	78,137	289,877	104,642	652,445
Average Household Size	2.1	2.3	2.5	2.5	2.5
Average Family Size	2.9	3.2	3.1	3.0	3.0
Median Home Value*	$196,979**	$63,900	$107,900**	$116,600	$89,900

** Average of median values. Median values for each census tract in the study corridor can be provided upon request to the Missouri Department of Transportation. Their address is listed in Chapter VI.
Source: U.S. Census Bureau and Missouri Census Data Center, Census 2000 (Summary File 1, Demographic Profile 1)

3. ECONOMIC CHARACTERISTICS

a. Employment Characteristics of Residents

While the employment characteristics of residents in the I-64 Corridor are similar to those at the city, county, regional and state levels, there are some differences (see Table III-6). Employed residents in the I-64 Corridor tend to be more likely to be employed in education, health or social services, or in professional, management or administrative services. They are less likely to be employed in manufacturing or in finance, insurance or real estate than would employed residents at the county, city or state levels.

b. Income and Poverty

Table III-7 identifies income and poverty characteristics. As shown, the city of St. Louis had the lowest median household income at $27,156, as well as having had the highest percentage of persons below the poverty level at almost 25 percent. St. Louis County had the highest median

household income at $50,532. The county also had the lowest percentage of persons below the poverty level at less than seven percent. The lowest per capita income was $16,108 and was in the city of St. Louis. The study corridor is located in both the city of St. Louis and St. Louis County and as such contains a mix of the statistics from both areas. The data suggests that while the corridor statistics indicate relatively high levels of household income and low levels of persons below the poverty level, portions of the I-64 Corridor located in the city of St. Louis may contain a concentration of households with low household income. Conversely, portions of the corridor located in St. Louis County may contain areas with high levels of household income.

Table III-6
Employment Characteristics of Residents

Employment by Industry	Study Corridor		St. Louis		St. Louis MO-IL Metro Area		St. Louis County		Missouri	
Agriculture, Forestry, Fishing and Hunting and Mining	105	0.2%	419	0.3%	8,406	0.7%	1,146	0.2%	58,415	2.2%
Construction	1,602	3.3%	5,652	3.9%	78,396	6.3%	24,817	4.9%	182,858	6.9%
Manufacturing	4,502	9.2%	17,220	12.0%	178,594	14.3%	64,212	12.7%	393,440	14.8%
Transportation and warehousing, and utilities	1,469	3.0%	8,405	5.8%	72,298	5.8%	27,141	5.4%	150,641	5.7%
Information	1,812	3.7%	4,587	3.2%	40,182	3.2%	19,021	3.8%	80,623	3.0%
Wholesale Trade	1,642	3.3%	4,062	2.8%	46,613	3.7%	21,290	4.2%	97,021	3.7%
Retail Trade	4,552	9.3%	13,903	9.7%	144,623	11.5%	57,061	11.3%	315,872	11.9%
Finance, Insurance, Real Estate and Rental and Leasing	4,491	9.1%	9,470	6.6%	95,848	7.7%	45,603	9.0%	177,651	6.7%
Professional, scientific, management, administrative, and waste management services	7,180	14.6%	13,991	9.7%	118,256	9.4%	56,101	11.1%	198,547	7.5%
Arts, Entertainment, Recreation, Accommodation and Food Services	3,850	7.8%	15,045	10.5%	100,647	8.0%	38,345	7.6%	206,295	7.8%
Educational, Health and Social Services	14,080	28.7%	33,767	23.5%	257,520	20.6%	109,440	21.7%	541,715	20.4%
Other Services (Except Public Administration)	2,175	4.4%	8,486	5.9%	63,535	5.1%	24,398	4.8%	132,940	5.0%
Public Administration	1,645	3.3%	8,843	6.1%	47,652	3.8%	16,675	3.3%	121,906	4.6%

Source: U.S. Census Bureau, 2000 Census

Table III-7
Income and Poverty

	Study Corridor	City of St. Louis	St. Louis MO-IL Metro Area	St. Louis County	Missouri
Total Population	100,600	348,189	2,603,607	1,016,315	5,595,211
Median Household Income	$48,857*	$27,156	$43,365*	$50,532	$37,934
Per Capita Income	$32,508**	$16,108	$21,694**	$27,595	$19,936
Number of Persons below Poverty Level	11,169	83,388	253,785	68,552	637,891
% of Persons below Poverty Level	11.1%	24.6%	9.7%	6.9%	11.7%

* Average of median household income. Median household income for each census tract in the study corridor can be provided upon request to the Missouri Department of Transportation. Their address is listed in Chapter VI.
** Average of Per Capita income. Per Capita income for each census tract in the study corridor can be provided upon request to the Missouri Department of Transportation. Their address is listed in Chapter VI.
Source: U.S. Census Bureau, 2000 Census

c. Employment

The number of persons employed in a region provides a direct measure of economic activity. An increase in the amount of employment reflects an increase in economic activity. A declining trend is shown in total employment for St. Louis over the decade of the 1990s. For St. Louis County employment growth has been very positive, as shown in Table III-8.

Table III-8
St. Louis City and County Employment Trends

Year	City of St. Louis Employment	Growth	St. Louis County Employment	Growth
1990	321,222	---	693,291	---
2000	300,043	-7%	791,599	14%

Source: *United States Department of Commerce, Bureau of Economic Analysis*

Type of employment also affects the magnitude of economic activity. Increased employment in higher paid jobs will provide more of an economic stimulus than an increase in lower paid jobs. Tables III-9 and III-10 provide a summary of employment trends by industry in St. Louis and St. Louis County, respectively.

Table III-9
St. Louis Employment Trends by Industry

Industry	Average Annual Employment		Growth
	1990	2000	
Mining and Construction	10,211	10,067	-1%
Manufacturing	48,675	35,503	-27%
Transportation, Communications, and Utilities	27,154	25,951	-4%
Wholesale Trade	19,399	15,224	-22%
Retail Trade	36,083	29,934	-17%
Finance, Insurance, Real Estate	28,422	25,436	-11%
Services	99,547	109,830	10%
Federal Government	22,918	17,611	-23%
State and Local Government	24,515	27,288	11%

Source: *United States Department of Commerce, Bureau of Economic Analysis*

Table III-10
St. Louis County Employment Trends by Industry

Industry	Average Annual Employment		Growth
	1990	2000	
Mining and Construction	35,390	46,973	33%
Manufacturing	118,736	87,687	-26%
Transportation, Communications, and Utilities	38,254	51,152	34%
Wholesale Trade	42,228	46,961	11%
Retail Trade	121,977	134,854	11%
Finance, Insurance, Real Estate	62,176	77,300	24%
Services	215,147	279,413	30%
Federal Government	6,710	5,994	-11%
State and Local Government	41,429	49,813	20%

Source: *United States Department of Commerce, Bureau of Economic Analysis*

There are a number of employment centers located adjacent to I-64 including the following major centers. The major employment centers, the employment type, primary access point from I-64 and estimated number of employees are listed in Table III-11.

The employment centers are located within the study corridor except for the Clayton Central Business District (CBD). The Clayton CBD is about 2 ½ square miles in area, located east of I-170 and about one mile north of I-64. Even though it is outside of the study corridor, the Clayton CBD was listed because of its adjacent location and its significance as a regional destination, estimated as a daytime population of 80,000.

Table III-11
Major Employment Centers in the I-64 Corridor

Employment Center	Employment Type	Access Point	Estimated Number of Employees
BJC Hospital and Health Center Complex	Medical, Office	Kingshighway / Boyle	9,000
Children's Hospital	Medical, Office	Kingshighway / Boyle	2,000
Washington University School of Medicine	Medical, Office	Kingshighway / Boyle	7,000
Central Institute for the Deaf	Institutional	Kingshighway	500
Forest Park Community College	Institutional	Hampton / Kingshighway	1,000
The Highlands Office Complex	Office	Hampton / Kingshighway	750
Clayton Central Business District / St. Louis County Government Complex	Retail, Office, Institutional	Brentwood / I-170 / Hanley	30,000
St. Louis Galleria (Shopping Mall)	Retail	Brentwood / I-170 / Hanley	4,000
Brentwood Promenade / Brentwood Pointe (Dierberg's Center) / The Meridian Development	Retail, Office	Brentwood / I-170 / Hanley	1,000
Plaza Frontenac (Shopping Mall)	Retail	Spoede / Lindbergh	1,500

Source: HNTB Corporation, 2002.

d. Local Sales Tax Collections

Another measure of economic activity is the amount of sales tax collections. Sales taxes are a substantial part of the local economy and their amount directly impacts revenues for the local governments. The general trend in local sales tax collections for St. Louis and St. Louis County is illustrated in Table III-12. The data shows that there has been a significant increase in gross sales tax receipts in both jurisdictions since 1990.

Table III-12
City of St. Louis and St. Louis County Local Sales Tax Collections

Year	City of St. Louis Gross Sales Tax Receipts (Thousands)	Growth	St. Louis County Gross Sales Tax Receipts (Thousands)	Growth
1990	42,789	---	111,174	---
2002	132,129	209%	282,886	154%

Source: *Missouri Department of Revenue*

4. PEDESTRIAN AND BICYCLE FACILITIES

Existing pedestrian and bicycle facilities within the study corridor include three types:

- Separate pedestrian and bicycle interstate crossings that cannot be accessed by vehicular traffic,
- Shared interstate crossings that accommodate pedestrians, bicycles and vehicular traffic, and
- Separate corridors or paths parallel to the I-64 corridor for use only by pedestrians and bicycles.

With the exception of the recreational path within Forest Park, which is a Section 4(f) resource, the other pedestrian/bicycle facilities described in this section are for transportation purposes and as such, are not subject to Section 4(f) provisions. Further discussion concerning impacts and proposed improvements to pedestrian and bicycle facilities can be found in Chapters II and IV.

Pedestrian and Bicycle Interstate Crossings (Stand Alone Structures)

There are five existing pedestrian crossings within the I-64 study corridor. The locations are as follows (see Exhibits III-1B and III-1C):

- Pedestrian bridge in Richmond Heights, St. Louis County, approximately 1,000 feet (305 meters) south of the Galleria Parkway interchange across I-170.
- Pedestrian bridge in Richmond Heights, St. Louis County, approximately 350 feet (110 meters) west of the Big Bend Boulevard interchange.
- Pedestrian bridge at Forest Park Community College in the city of St. Louis, approximately 2,200 feet (670 meters) east of the Hampton Avenue interchange.
- Pedestrian tunnel underneath I-64 in the city of St. Louis, approximately 1,000 feet (305 meters) west of the Science Center overpass.
- Pedestrian bridge over I-64 in the city of St. Louis, approximately 500 feet (150 meters) east of the Kingshighway Boulevard interchange.

Pedestrian and Bicycle Interstate Crossings (shared with vehicular crossings)

Existing bridges and underpasses across I-64 vary in respect to pedestrian and bicycle considerations. Some bridges have sidewalks for pedestrians, while others do not. None of the existing bridges have dedicated bicycle paths. Bicyclists navigate over bridges either by using existing sidewalks, or by riding with traffic on the roadway. In most cases, high volumes of vehicular traffic and poorly defined bicycle routes exist at the crossings.

Pedestrian and Bicycle Paths Along the I-64 Corridor

Currently there are no parallel paths or designated bike routes located within the existing I-64 right-of-way.

Along Clayton Road, south of the Clayton Road/Warson Road interchange, a designated bike route allows cyclists to travel to the commercial area of Clayton Road and Lindbergh Boulevard (see Exhibit III-1A).

Forest Park, in the city of St. Louis, has a pedestrian/bicycle trail system that travels through the park and around its perimeter. The southern portion of the trail within the park parallels I-64 between the Science Center and Aviation Field, and between Hampton Avenue and just west of the St. Louis Zoo (see Exhibit III-1C).

Proposed Bicycle Facilities

Many local and regional proposed bicycle facility plans are in their draft stages at the present time. Some of the bridges crossing the I-64 corridor would be connectors for existing or proposed bicycle corridors as identified by the local and regional government agencies. All of these projects are proposed by local agencies independent of the proposed action on I-64. Coordination with the regional stakeholders is ongoing to identify the bridges that would include dedicated bicycle lanes. This coordination will continue into the design process to determine if additional bridges would need to include dedicated bicycle lanes where the improvements are planned to continue beyond the limits of the existing I-64 right-of-way.

In addition, a pedestrian/bicycle trail within Forest Park has been proposed by the Parks Department to parallel I-64 between the southeast corner of Aviation Field and the Park Department Headquarters at Hampton Avenue.

The St. Louis Regional Bicycle Facilities Plan, prepared for the East-West Gateway Coordinating Council, identifies two bicycle routes that will cross I-64. These two routes are along Bellevue Avenue and Tower Grove Avenue (see Exhibit III-1C). The path on Bellevue Avenue will connect neighborhoods and public facilities located on each side of I-64. The path on Tower Grove Avenue would connect the Central West End and Tower Grove Park neighborhoods within the city of St. Louis. Signage and/or striping on existing roadways would designate these paths.

There will be a pedestrian/bicycle path under I-64, adjacent to MetroLink Light Rail Transit in St. Louis County, built by others, and there are plans for a Macklind Avenue bicycle route in the city of St. Louis (see Exhibits III-1B and III-1C).

A designated bicycle route would be accommodated along the reconstructed South Outer 40 Drive near the Clayton Road/Warson Road interchange in the Greenway Subcorridor. Currently, many pedestrians and cyclists use this roadway to access the commercial land uses along Clayton Road from the residential areas along South Outer 40 Drive.

B. Natural Environment

This section provides a description of the natural environment within the study corridor.

1. AIR QUALITY

The Federal Clean Air Act Amendments (CAAA) of 1970 required the adoption of air quality standards. These were established to protect public health, safety and welfare from known or

anticipated effects of sulfur dioxide (SO_2), particulates (PM_{10}, 10 micron and smaller; $PM_{2.5}$, 2.5 micron and smaller), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (0_3), and lead (Pb). In addition to these pollutants, the State of Missouri has established additional criteria for hydrogen sulfide (H_2S) and sulfuric acid (H_2S0_4). The Missouri and National Ambient Air Quality Standards (NAAQS) for these pollutants are listed in Table III-13.

Table III-13
Missouri and National Ambient Air Quality Standards

Pollutant	Averaging Time	Standard Value	Standard Type
Ozone (O_3)	One Hour(7) Eight Hour(9)	0.12 ppm (235 μg/m^3) 0.08 ppm (157 μg/m^3)	Primary & Secondary Primary & Secondary
Carbon Monoxide (CO)	One Hour(1) Eight Hour(1)	9 ppm (10 mg/m^3) 35 ppm (40 mg/m^3)	Primary Primary
Nitrogen Dioxide (NO2)	Annual Arithmetic Mean	0.053 ppm (100 μg/m^3)	Primary & Secondary
Particulate (PM_{10})	Annual Arithmetic Mean 24-hour average	50 μg/m^3 150 μg/m^3	Primary & Secondary Primary & Secondary
Particulate ($PM_{2.5}$)	Annual arithmetic mean(9) 24-hour average(9)(2)	15 μg/m^3 65 μg/m^3	Primary & Secondary Primary & Secondary
Lead (Pb)	Quarterly average	1.5 μg/m^3	Primary & Secondary
Sulfur Dioxide (SO2)	Annual arithmetic mean 24-hour average(1) 3-hour average(1)	0.03 ppm (80 μg/m^3) 0.14 ppm (365 μg/m^3) 0.50 ppm (1300 μg/m^3)	Primary Primary Secondary
Hydrogen Sulfide (H2S)	One-half Hour(3) One-half Hour(4)	70 μg/m^3 (0.05 ppm)(8) 42 μg/m^3 (0.03 ppm) (8)	
Sulfuric Acid (H_2SO_4)	Twenty-four Hour(5) One Hour(6)	10 μg/m^3 (8) 30 μg/m^3 (8)	

Source: 10 CSR 10 – 6.010 Ambient Air Quality Standards
(1) Not to be exceeded more than once per year.
(2) Statistically estimated number of days with exceedances is not to be more than 1 per year.
(3) Not to be exceeded more than twice per year.
(4) Not to be exceeded more than twice in any five consecutive days.
(5) Not to be exceeded more than once in any ninety consecutive days.
(6) Not to be exceeded more than once in any two consecutive days.
(7) Not more than one expected exceedance per year, on a three-year average.
(8) Missouri Air Quality Standards.
(9) In effect as of April, 2004.
ppm – parts per million parts of air (by volume) at 25°C
μg/m^3 – micrograms of pollutant per cubic meter of air
mg/m^3 – milligrams of pollutant per cubic meter of air

The CAAA of 1977 required all states to submit to the U.S. Environmental Protection Agency (EPA) a list identifying those air quality control regions, or portions thereof, which meet or exceed the NAAQS or cannot be classified because of insufficient data. Portions of air quality control regions that are shown, by monitored data or air quality modeling, to exceed the NAAQS for any criteria pollutant are designated "non-attainment" areas for that pollutant.

The 1990 CAAA established procedures for determining the conformity of state implementation plans with the requirements of the federal regulations. These procedures are published in 40 CFR Parts 51 and 93.

The project falls within the Metropolitan St. Louis Interstate Air Quality Control Region (AQCR #70). The AQCR is designated as a moderate non-attainment area for ozone, a limited maintenance area for CO, and either as attainment or no designation for the remaining pollutants. The Missouri state implementation plan contains transportation control measures for this AQCR.

The St. Louis metropolitan area was reclassified by the U.S. Environmental Protection Agency (USEPA) from moderate non-attainment for ozone to a maintenance area for the one-hour

ozone standard 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. 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.

New control strategies for ozone resulting in additional emissions reductions will be studied by EWGCC to achieve the new national air quality standards. 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.

2. WATER QUALITY

a. General

The study corridor is located within the Cahokia-Joachim watershed (Hydrologic Unit #07140101). Surface water resources in the study corridor include Deer Creek, Black Creek, Hampton Branch, tributaries of each of these streams, a few upland ponds, and some potential wetland areas along Deer Creek. The quality of these resources varies depending upon such factors as water permanence, type of shoreline/bank and surrounding vegetation, substrate, presence or absence of in-flowing streams, and surrounding land use. 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. Within the study corridor, two tributaries of Deer Creek, portions of Black Creek and Hampton Branch, and the unnamed tributary of Hampton Branch have concrete-lined channels. Deer Creek, Black Creek, and Hampton Branch all flow to the River Des Peres, which flows into the Mississippi River at the south end of the city of St. Louis.

The federal Water Pollution Control Act, section 303(d), requires that each state identify those waters that are not meeting the state's water quality standards (i.e. for which existing required pollution controls are not stringent enough to implement state water quality standards). For these waters, states are required to establish total maximum daily loads (TMDLs) according to a priority ranking. A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. The Missouri Department of Natural Resources' (MDNR) list of 303(d) impaired waters does not include any of the water resources in the study corridor. The Revised Environmental Protection Agency (EPA) Consolidated 2002 Missouri 303(d) List became available January 9, 2004. This list was reviewed and none of the streams crossed by I-64 in the study area are on the list. It should be noted that the EPA placed the River Des Peres on the list and is noted for having low dissolved oxygen (DO) from urban non-point source. The water resources within the study corridor are also not on the Missouri Department of Natural Resources' (MDNR) list of "Classified Waters of Missouri." The streams, rivers, lakes, and wetlands on this list have some amount of water year round, and have identified beneficial uses, such as irrigation, livestock and wildlife watering, protection of warm water aquatic life and human health/fish consumption, cool and cold watery fisheries, whole body contact recreation, boating and canoeing, drinking water supply, and industrial use.

Ambient water quality data has been collected within the Cahokia-Joachim Watershed by the EPA [STORET database]. Ambient concentrations of selected conventional pollutants

(ammonia, phosphorus, pH, and dissolved oxygen) are monitored. For this watershed, greater than 50 percent of monitoring observations, over a nine-year period (1990-1998), exceeded the national reference level developed by the EPA for the pollutants.

The EPA has performed a *Watershed Health Evaluation* based on Index of Watershed Indicators. This information is based on 1998 data and although the Index of Watershed Indicators has not been updated, it is the most recent information available. The evaluation 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. Actions to prevent declines in aquatic conditions in these watersheds are appropriate, but at a lower priority than in watersheds with higher vulnerability.

The area’s public water is supplied from local river intakes and wells in the river flood plains. Present regulations regarding well construction would prevent contamination to local wells from surface contaminants.

b. Groundwater and Springs

Groundwater levels occur in nearly all strata to some degree. Most of the study corridor is underlain by bedrock consisting of limestone, dolomite, sandstone and shale. Some of the bedrock layers are jointed, fractured, and solutioned making them permeable and allowing the transmission of water vertically and horizontally. Locally the groundwater that occurs in the soil and upper bedrock layers is often polluted from surface contaminants and is not considered a reliable water source.

Springs, seeps and losing streams may occur locally where the soil and bedrock layers convey water from an area of recharge to an area of discharge, however in the study corridor area there are no springs, seeps or losing streams listed in the literature.

3. GEOLOGY

a. Physiography and Topography

The proposed study corridor is located within the Dissected Till Plains of the Central Lowland physiographic province. The Dissected Till Plains consist of gently rolling hills, which contain minor loess deposits, are generally composed of glacial material deposited on sedimentary rocks. The topography in the area of the study corridor is relatively flat. Local relief seldom exceeds 100 feet.

In general, the area within the study corridor can be characterized as predominantly an urban environment. Most of the land has been cleared and reshaped to achieve a level surface, or reshaped to produce several different elevations or levels within an area. The depth of cuts and fills within the study corridor range from less than five feet to more than 30 feet. The original soils, which were developed from either windblown glacial silt deposits or from weathering of parent rock material, have been altered. Most of the silt and clay soils within the area now contain gravel, sand, brick, glass, asphalt, and other man made materials. Some of the original natural drainage system within the study corridor has been rechannelized or covered.

In some of the study corridor, a few karst features had been noted in the literature. Although most of the surface expressions of the karst features have been altered in the urban environment, the conditions that created these relief features originally probably still exist in the

subsurface. These features will need to be identified and taken into account during construction. Increased runoff caused by construction and newly paved areas may exacerbate some karst problems. Karst features usually develop in carbonate rocks such as limestone and dolomite. The limestone and dolomite are dissolved by natural chemical processes along the bedding planes, joints and fractures in the rock to form solutional cavities and sinkholes. No known losing streams where water is lost to the subsurface were noted in the area.

Geology

Within the study corridor the geology is characterized by relatively horizontal layers of sedimentary rocks of the Pennsylvanian and Mississippian System. The underlying bedrock, which displays a very irregular surface, is from the Desmoinesian Series of the Pennsylvanian System and the Meramecian Series of the Mississippian System. Most of these rocks were formed in either a marine to marginal marine or terrestrial environment approximately 330 million years ago.

The Desmoinesian Series in the St. Louis area consists of the Marmaton and Cherokee Groups. These two groups in the St. Louis area can be characterized predominately as shale with local layers of sandstone and limestone. The Marmaton and Cherokee groups may contain coal, but in the St. Louis area, the limited extent of coal has never made it an economical resource for mining.

The Meramecian Series is characterized predominately as limestone with some shale and sandstone. The Meramecian Series consists of the following formations, St. Genevieve Limestone, St. Louis Limestone, Salem Formation, and Warsaw Formation. Of these only the St. Louis Limestone formation will be encountered at the surface, with possibly the Salem and Warsaw formations encountered at depth.

The St. Louis Limestone consists in part of a white to light-gray fine crystalline, medium to massive-bedded limestone that can attain a thickness of 100 feet. Limestone breccia is common in the lower portion. Chert is not common in this unit but blue to bluish-gray shale partings are common.

Underlying the St. Louis Limestone is the Salem Formation. The Salem Formation consists of a light gray to white limestone with a characteristic bed of “Cannonball” chert just below the upper contact with the overlying St. Louis Limestone. The weathered residuum from the upper 50 feet of the Salem Formation contains a high concentration of speckled gray and tan chert nodules. In the middle portion of the formation the Salem contains exceptionally pure white oolitic limestone. The Salem Formation can attain a thickness from 100 to 150 feet.

Below the Salem Formation lies the Warsaw Formation. The Warsaw Formation consists of a finely crystalline shale, very fossiliferous dolomitic limestone in the lower portion and a dark gray fissile shale in the upper portion. The Warsaw Formation varies in thickness from 40 to 80 feet in this area.

Structurally the bedrock can be generalized as relatively flat lying layers of sedimentary rock. All formations display bedding and jointing of some sort. Regional dip is rather shallow and to the northwest although some complex flexure, dip and faulting is observed locally. While faulting is not predominant the literature designates the St. Louis Fault. The St. Louis Fault, according to the literature is located just east of the study corridor at 4528 South Broadway and strikes N 5° E and extends 15 miles to the north and 30 miles to the south. The width of the fault is several hundred feet and consists of two vertical fault planes with the net throw of ten feet.

With the project being located approximately 150 miles from the New Madrid Seismic Zone the effect of seismic activity must be considered into the cost of the project. All highway bridges as well as those designated as "Essential Bridges" will need to be designed in accordance with current seismic design criteria.

Mining

Coal and clay production existed in the St. Louis area from the early 1800s to mid 1900s. Clay was mined for the making of firebrick. By the end of World War II most of the clay mines in the St. Louis area were closed and commercial and housing subdivisions were built over them. The possibility exists for unknown clay mines to be located within the study corridor. Review of the available literature from MNDR and 1926 Sanborn fire maps shows the possibility that several abandoned mines are located within the study corridor. Soil boring results of a geotechnical investigation done in conjunction with the development of the Richmond Heights Community Center indicated the possibility of previous unknown mining activities northeast of the Dale Avenue/Hanley Road intersection, south of I-64. Approximate locations of underground mine entries and shafts, and an estimated extent of mined-out areas within the study corridor are shown on Exhibit III-1B and 1C. These locations were obtained from a 1987 map developed by MDNR titled *Underground Coal and Clay Mines in the city of St. Louis, Missouri*.

b. Soils

Surface soils in the area can be classified as either eolian, residual or alluvial. Much of the upland area is covered with eolian or windblown glacial silt deposits known as loess. The loess is typically a silt deposit that may contain layers of very high plasticity clay and areas of cementation. The residual soils in the area are formed by the weathering of the parent bedrock and are typically low to high plastic clay, which may contain extensive amounts of chert gravel. The chert gravel is the undissolved, remnant of the parent carbonate rock. Alluvial soils are formed by the erosion and deposition by water and are not very extensive in the study corridor. Typically alluvial soils consist of silts and sandy gravel in the bottom of narrow stream valleys. The depth to bedrock in the study corridor is highly variable with a range of six to 60 feet.

For engineering purposes the soils of the area can be classified by the Unified Soil Classification System as follows: ML, CL, and GM for the loess derived soils, CL, CH, GC for the residual soils, and ML, CL, SP or GP for the alluvial soils. Some problems have been noted within the soils due to ground water flow. These problems have been noted in slope failures caused by the impeded downward migration of surface water through the soil.

4. WATER RESOURCES

In the preliminary inventory of existing water resources within the study corridor, 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 NWI maps are based on a classification system known as the Cowardin System (named after its principal author, Cowardin et. al. 1979). This system classifies the types of ecosystems related to water resources which, in this region, include streams, lakes, ponds, and vegetated wetlands (see Exhibit III-1A to III-1C). After a review of the water resource data, it was determined that the following Cowardin systems are represented in the study corridor:

- *Riverine* system representing lower perennial streams,

- *Palustrine* system representing upland ponds with unconsolidated bottoms (ponded areas covering less than 20 acres), and

- *Palustrine* system representing forested wetlands.

Section 404 of the Clean Water Act regulates discharges of dredged or fill materials into “waters of the U.S.” (streams, lakes, ponds that are fed by streams, and wetlands). The U.S. Army Corps of Engineers (USACE) is the regulatory agency responsible for administering the Section 404 permit program. At the beginning of the EIS process the USACE was sent a letter soliciting comments on the project. However, no comments were received from the USACE by the DEIS, and no comments have been received for the FEIS.

Based on the examination of the Wild and Scenic Rivers list, it was determined that there are no designated Wild and Scenic Rivers in the study corridor.

a. Streams

The streams within the study corridor include Deer Creek, Black Creek, Hampton Branch, and unnamed tributaries of each. Deer Creek, a lower perennial stream with scattered areas of riparian vegetation, flows under I-64 where Clayton Road and I-64 meet in Ladue. Black Creek is a lower perennial stream that flows from northwest to southeast, under the I-64/Brentwood Boulevard interchange in Brentwood. This stream has previously been relocated in conjunction with commercial construction northwest of the interchange, and has a concrete channel on the southeast side of the interchange. Hampton Branch is an intermittent stream located just east of the I-64/Hanley Road interchange in Richmond Heights. This stream has a concrete channel on the north side of I-64, and a rock bed on the south side.

In addition, there are also smaller intermittent tributaries that are not classified as riverine on the NWI maps, but are shown as blue-line streams on the USGS quad maps. These blue-line streams are considered “waters of the U.S.” if an ordinary high water mark is present. There are six unnamed tributaries of Deer Creek, two of which have concrete channels. One of these concrete channels is located in the north half of the interchange at Spoede Road and upstream from the interchange on the south side of I-64, and the other is located west of Log Cabin Drive in Ladue on the south side of I-64. There is also one unnamed tributary of Black Creek, and one tributary of Hampton Branch called Claytonia Creek. Claytonia Creek, located west of Big Bend Road, has a concrete channel on both sides of I-64.

b. Ponds

The *Palustrine* “unconsolidated bottom” system within the study corridor includes some of the upland ponds located in Forest Park, and a pond in a residential area in Frontenac near the west end of the corridor. These are referred to as lakes, however the Cowardin system usually designates a body of water as a "lake" if it covers more than 20 acres. No other ponds lie within the study corridor limits.

c. Wetlands

Within the study corridor, the areas shown on the NWI maps that are classified as vegetated wetlands include the palustrine “forested” (PFO) system and for purposes of the exhibits the “emergent/scrub-shrub” wetlands. Because much of the study corridor is situated in urban built-up land, wetland areas are minimal. However, there are three potential "forested" wetlands that are mapped adjacent to Deer Creek (see Exhibit III-1A), southeast of the area where I-64 crosses over Clayton Road in Ladue. There is also a small (less than 0.05 acre) unmapped "emergent/scrub-shrub" isolated wetland area located northwest of the I-64/Brentwood

Boulevard interchange, adjacent to the shopping mall parking lot. The area ponds enough water that cattails and willow are the dominant vegetation.

Areas mapped as vegetated wetlands on the NWI maps have the potential of being regulated as special aquatic sites by the USACE. The regulatory definition of wetlands, as adopted by the EPA and USACE to administer the Section 404 permit program is as follows:

> *(Wetlands are) those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, bogs, and similar areas (EPA, 40 CFR 239.2 and CE, 33 CFR 328.3).*

This definition emphasizes the fact that wetlands must possess the following three essential characteristics before a positive determination of a wetland can be made: hydric soils, a prevalence of hydrophytic vegetation, and a persistent wetland hydrology. Jurisdictional wetland determinations performed for regulatory purposes are not dependent on the NWI Cowardin classification system, but on these three mandatory characteristics. In addition to the mapping sources listed above, data was also gathered from soil survey maps from the Natural Resources Conservation Service (NRCS) to determine the presence or absence of hydric soils. This data indicated that hydric soil areas large enough to be mapped, or soils with hydric inclusions, are not present in the study corridor.

d. Floodplains

As part of the National Flood Insurance Program (NFIP), the communities in St. Louis County, Missouri have implemented Flood Insurance Studies (FIS) 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. In the case of St. Louis County, a detailed Flood Insurance Study was available and the NFIP Flood Insurance Rate Maps, showing the 100-year floodplain and the regulatory floodway, were collected and reviewed for the study corridor. The flood insurance study is dated Revised: August 23, 2000. There are four volumes, in addition to the various maps, published under the auspices of FEMA. (See References at the end of this chapter.)

There are three communities that have creeks whose floodplains are within the study corridor (see Exhibit III-1A to III-1C). These communities, all in St. Louis County, are Ladue, Brentwood, and Richmond Heights. These communities, and St. Louis County, were contacted to determine if there are any “flood buyout” properties within the study corridor. These properties cannot be developed due to open space deed restrictions, and are exclusively dedicated to open space and recreation. It was determined that the city of Brentwood (with assistance from the county) had acquired some flood buyout property, however, it is located in the southern portion of Brentwood, outside the study corridor. The study corridor within the city of St. Louis contains no floodplain areas. All the stream crossings discussed here flow in a southerly direction across I-64 and are regulatory streams.

For the streams studied as part of the NFIP, the rules and regulations of the NFIP apply. Streams located in the study corridor which participate in the NFIP include the following:

- Deer Creek and two tributaries (Ladue),
- Black Creek (Brentwood), and
- Hampton Branch and its tributary Claytonia Creek (Richmond Heights).

The NFIP rules and regulations are promulgated in Title 44 of the Code of Federal Regulations (CFR), Chapter 1, Parts 59 through 78 (except Parts 69, 74, 76-77, which have been reserved).

Title 44 has defined a *base flood* for regulatory purposes as the flood having a one percent chance of being equaled or exceeded in any given year (44 CFR Ch. 1 (10-1-96 Edition, p. 221)). *Floodplain* or flood-prone area means any land area susceptible to being inundated by water from any source (p.223, ibid.). Regulatory *floodway* means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height (p.226, ibid.).

A regulation that has bearing (page 239 of 44CFR60.3) on the I-64 project states that once the final base flood elevations have been established, the community shall prohibit encroachments within the adopted regulatory floodway unless it can be demonstrated that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

Floodplains provide natural and beneficial values to nature and society. For example, vegetation in the floodplain provides food, resting and nesting areas for birds. Floodplains can also provide water storage during floods, reducing peak discharges and act as filters to purify the flood water that is temporarily stored there. Floodplains can also provide open areas or green spaces that provide aesthetic value to a community.

Deer Creek

Interstate 64 crosses Deer Creek at Clayton Road in Ladue. The creek runs parallel to I-64 for approximately 3,600 feet (1,097.3 meters). The closest that Deer Creek comes to I-64 is about 250 feet (76.2 meters). The Clayton Road bridge is below I-64 and likely causes more obstruction to flood flows than the I-64 piers do. The low steel of the present I-64 bridge over Deer Creek is well above the 100-year (1-percent) floodplain water surface elevation.

The floodplain width at this general location varies between 600 and 800 feet (182.9 and 243.8 meters) while the floodway varies between 200 to 250 feet (61 to 76.2 meters). The base flood elevation (1-percent event) varies between 504 and 506 feet (153.6 and 154.2 meters), NGVD (National Geodetic Vertical Datum). Approximately 0.7 miles (1.1 kilometers) downstream, the east floodplain has been filled for future residential development.

Further to the east, two tributaries to Deer Creek cross the study corridor. Both tributaries flow under I-64 through reinforced concrete box culverts. Base flood elevations have been determined for the west tributary at the I-64 crossing to be 494 feet (150.6 meters), NGVD on both the north and south sides of I-64. Floodways have not been determined in the Flood Insurance Study for either tributary. Base flood elevations for the second tributary have been determined, but not as far upstream as I-64. The base flood elevation for the second tributary is 484 feet (147.5 meters), NGVD.

The second tributary culvert is about one-half mile up the tributary from Deer Creek and joins Deer Creek approximately one mile downstream of the crossing at Clayton Road. The floodplain for the first tributary at I-64 is between 180 and 800 feet (54.9 and 243.8 meters).

Black Creek

Interstate 64 crosses Black Creek in Brentwood. Black Creek flows in a southeasterly direction through a concrete arch culvert under I-64 and Brentwood Boulevard. The ramp onto I-64 is immediately north and adjacent to the culvert entrance, therefore, there is virtually no floodplain

on the south side of the creek. Fill has been placed for a large parking lot on the immediate north bank of Black Creek at the entrance to the culvert and extending upstream. The floodplain has been confined as a result of the parking lot on the north and I-64 ramp on the south. The floodplain width of Black Creek in the vicinity of I-64 is between 400 and 450 feet (121.9 and 137.2 meters) just downstream and upstream of the culvert. The base flood elevation at the upstream entrance to this culvert is 472 feet (143.9 meters), NGVD. The floodway is approximately 50 feet wide at the entrance to this culvert and is approximately 130 feet (39.6 meters) wide 300 feet (91.4 meters) upstream of the entrance. At the outlet to this culvert the base flood elevation is 464 feet (141.4 meters), NGVD and the floodway is 50 feet (15.2 meters) wide at the outlet. The floodway is approximately 60 feet (18.3 meters) wide 300 feet (91.4 meters) downstream of the outlet. This culvert is approximately 1,250 feet (381 meters) long.

The city of Brentwood hired a consulting engineering company to investigate flooding at the Hanley Industrial Court, just downstream of the culvert under Brentwood Boulevard. According to the engineer's report, flooding appeared to be worse at the industrial court after the construction of the Galleria shopping complex. The engineering consultant believed that any increase in severity of flooding may be caused by the modification of the sewer system at the Galleria.

Hampton Creek and tributary Claytonia Creek

The Hampton Branch and its tributary, Claytonia Creek, cross the study corridor in Richmond Heights, east of Brentwood Boulevard. These two streams are approximately 2,500 feet (762 meters) apart measured along I-64 and flow south to their confluence. The 100-year (1-percent probability) floodplain of Hampton Branch is approximately 165 feet (50.3 meters) wide just upstream of I-64. The floodplain elevation of Hampton Branch is 483 feet (147.2 meters) at the culvert entrance and 482 feet (146.9 meters), NGVD, at the outlet. The floodway on the Hampton Branch is approximately 50 feet (15.2 meters) wide at the entrance and outlet of the culvert. The floodway expands to about 100 feet (30.5 meters) wide 300 feet (91.4 meters) upstream of the culvert entrance. The floodplain of its tributary is approximately 90 feet (27.4 meters) wide just upstream of I-64. The floodplain elevation on Claytonia Creek at the entrance to the culvert is 488 feet (148.7 meters), NGVD and 484 feet (147.5 meters) at the outlet. The floodway on Claytonia Creek at the culvert entrance and outlet is about 25 feet (7.6 meters) wide. The floodway upstream of the entrance expands to about 40 feet (12.2 meters) wide 300 feet (91.4 meters) upstream.

Both streams cross I-64 through reinforced box culverts. Hampton Branch outlets from a triple box culvert adjacent to a parking lot that is part of the Richmond Heights Community Center. A hundred feet (30.5 meters) or so downstream from the outlet, the channel has been replaced with a rectangular cross section. The tributary culvert is a double-box whose outlet channel is a rectangular cross section.

Hampton Branch joins Black Creek south of I-64, just inside the corporate limits of the city of Brentwood. Black Creek joins Deer Creek approximately 1,100 feet (335.3 meters) downstream from the confluence of Hampton Branch and Black Creek. Deer Creek continues until it joins the River Des Peres, a tributary to the Mississippi River.

The majority of the floodplains for the streams described above are in residential and commercial areas. There appears to be very little land left for development unless some residential areas are converted to commercial.

5. BIOLOGICAL RESOURCES

The majority of the study corridor is comprised of urban built-up land. The most dominant vegetative natural communities occurring in the study corridor, although few, are the remnant upland and riparian forests (wooded areas). These forested areas are isolated small tracts that are the result of previous fragmentation or alteration. Grassed areas are predominantly composed of maintained cool-season grasses in residential and commercial areas.

a. Forest Communities

The upland oak-hickory forest remnants occur on steeper slopes that are not conducive to development, in low-density residential areas, and in the southwest portion of Forest Park. The riparian forest areas, dominated by oaks and sycamores, occur in the floodplain of Deer Creek and along some of the other stream corridors. The importance of these wooded areas in protecting water resources from runoff, stabilizing stream banks, inhibiting soil erosion, providing aesthetic value, wildlife habitat, and plant and animal diversity is evident, especially in areas where much of the forest has been cleared for development purposes. These wooded areas are important migration corridors.

b. Natural Communities

The Missouri Department of Conservation (MDC) has identified some high quality natural communities that have been, for the most part, undisturbed and that possess defining characteristics of a specific type of natural community. These residual areas are important to the natural heritage of the region, not only because of their uniqueness, but also because they may provide habitat for rare species. These units have been located, mapped, and compiled in the MDC's Natural Heritage Database (NHD). A letter was sent to the MDC (see letter in Appendix I, dated January 17, 2002) requesting information concerning significant natural features and sensitive biological resources. The MDC did not formally reply, however, the MDC's policy coordinator stated, in a phone call, that the Missouri Department of Transportation's (MoDOT) biological specialist could access the NHD information. A search of this database was conducted, but it was found that no significant natural communities occur in the study corridor (see letter in Appendix I, dated March 7, 2002).

c. Wildlife

The study corridor is located in a highly urbanized/developed area, and the natural habitat that previously occurred has been disturbed. In general, some of the species of wildlife that have adapted to living in this urbanized area include many species of birds, such as the northern cardinal, the rock dove, the blue jay, the northern mockingbird, the American robin, the Eurasian tree sparrow, the red-headed woodpecker, and the house finch. Other animals that have adapted to the area include the Virginia opossum, the woodchuck, the striped skunk, the gray squirrel, the eastern cottontail rabbit, the raccoon, and the white-tailed deer (in the wooded riparian corridors such as Deer Creek). In addition, the streams, ponds, and wetland area environments in the study corridor can provide habitat for the green sunfish, the beaver, the southern leopard frog, western chorus frog, the eastern tiger salamander, the painted turtle, and the common garter snake.

The most prevalent form of wildlife that occurs in this urban study corridor is the bird population. The forested areas in this urban environment provide valuable habitat for migrating and resident songbirds. According to the U.S. Fish and Wildlife Service (USFWS), the St. Louis Metropolitan area, being on the Mississippi Flyway, attracts and provides habitat for approximately 350 bird species, which pass through the area each spring and fall during migration. Birds provide a constant connection between urban residents and nature, and can be instrumental in

developing conservation attitudes and ethics in urban residents. The urban forest remnants, and the birds that inhabit these areas, are important components in urban areas, and contribute to livability and quality of life.

d. Threatened and Endangered Species

Under the U.S. Endangered Species Act, the U.S. Fish and Wildlife Service (USFWS) has primary responsibility in the protection of federally endangered and threatened species and designation of critical habitat areas for these species.

In Missouri, all federally endangered and threatened plants and animals are protected by the Endangered Species Act of 1973 (ESA). The Missouri Department of Conservation (MDC) determines species' state status in Missouri under constitutional authority (3CSR10-4.111 Endangered Species). Species that are listed in the Wildlife Code under 3CSR10-4.111 are protected by State Endangered Species Law 252.240. Annually, the MDC publishes the Missouri Species of Conservation Concern Checklist. Some of the plants and animals in the checklist may also appear in the Wildlife Code, and it is those that are listed in the Wildlife Code that are afforded special legal protection.

Correspondence was conducted with the USFWS (see letter dated November 8, 2001 in Appendix I), and information was obtained from the MDC's Natural Heritage Database (see Section 5.b of this chapter and letter dated March 7, 2002 in Appendix I) and the Missouri Fish and Wildlife Information System (MOFWIS) concerning those species that are listed as federally endangered or threatened, and state-endangered, that have been known to occur in St. Louis County and St. Louis. Based on information regarding distribution and general habitat requirements, it was determined that the following species could potentially occur within the study corridor:

Indiana Bat (Myotis sodalis) *(Endangered on both the federal and state level)*

The Indiana bat occupies caves for hibernation in winter, but during spring and summer its maternity roost sites tend to be in living, injured (e.g. split trunks and broken limbs), dead or dying trees, greater than nine inches (22.9 cm) diameter at breast height (dbh) (optimally greater than 20 inches [50.8 cm] dbh) with loose exfoliating bark or cracks or cavities. Preferred roost trees are generally located in riparian and upland forest openings, at the forest edge, or where the overstory canopy allows some sunlight exposure to the roost tree, and usually within 0.6 miles (one kilometer) of water. There are no known locations or recorded occurrences within the study corridor, however, suitable habitat exists in the wooded areas of the corridor.

Peregrine Falcon (Falco peregrinus) *(Endangered on the state level)*

The peregrine falcon has historically nested on cliffs, but tall buildings with potential nest sites free of human disturbance are also suitable. A search of the MDC's Natural Heritage Database indicated that numerous peregrine falcon nest sites have been recorded on tall buildings in the downtown St. Louis area, one of which appears to be very close to the study corridor. An updated search, done in January 2004, indicated that a nest site exists on a tall building about one-half mile north of the I-64/I-170 interchange. Tall buildings within the study corridor could provide potential falcon nesting habitat and will be considered during impact analysis.

6. CULTURAL RESOURCES

a. Introduction

The proposed construction work could result in unavoidable impacts (including destruction and significant visual effects) to significant cultural resources. Cultural resources include all

prehistoric and historic archeological resources, as well as buildings, bridges, and landscapes. Of these resources, only those associated with significant persons or events in history or prehistory, that exhibit significant architectural features, or which could provide valuable new information for understanding past inhabitants, are deemed significant (NRHP 1990). The cultural resource investigations were performed according to the Missouri Department of Transportation's "Protocol for Cultural Resource Investigations" (Reeder 1997).

The cultural resource investigation consisted of an archival search and an architectural survey. In order to identify previously recorded cultural resources and determine the present state of knowledge on past cultural systems, archival research was conducted for a study area encompassing a 3,281 foot-wide (1,000 meter) corridor, comprised of 1,640 feet (500 meters) on either side of the centerline of the existing interstate. The archival search revealed that potentially significant archeological information could exist within the area of potential effects (APE). An architectural survey was conducted to identify and evaluate buildings and structures more than 50 years old as well as historic landscapes within the APE. The APE was developed in concert with MoDOT and the State Historic Preservation Office (SHPO). Throughout the course of the study, cultural resource staffs of the city of St. Louis and St. Louis County were consulted. The consulting parties to the Section 106 process included FHWA, the SHPO, and MoDOT as well as St. Louis County, the Cities of St. Louis, Brentwood and Richmond Heights and the St. Louis Board of Public Service. Through the consultation process two additional historic districts were identified and one expanded. For details on the consultation process see Appendix E.

b. Previous Investigations

An archival search was performed in order to identify previously recorded cultural resources within 1,640 feet (500 meters) on either side of the existing I-64. These previously recorded cultural resources included, but were not limited to, properties eligible for the National Register of Historic Places (NRHP), properties and districts determined eligible by the State Historic Preservation Office, architectural surveys conducted by the City of St. Louis, the St. Louis Landmarks Association and St. Louis County, cultural resource management studies, archeological (historic and prehistoric) sites, bridges and tunnels, local landmarks, cemeteries, cultural landscapes, mines, schools, churches, parks, hospitals, and other public facilities. Specific themes, such as transportation issues, were pursued when encountered during the course of research.

Several sources were consulted for the archival search. Forms recording previously identified archeological sites submitted to the Archaeological Survey of Missouri were reviewed. The records of the SHPO in Jefferson City were also reviewed for content on previously recorded, as well as NRHP listed or eligible, archeology and architecture within the I-64 study area. The Missouri Department of Transportation Cultural Resource section was contacted in order to exchange information pertinent to the project and applicable bridge service ratings. Historical documentation regarding the general history of St. Louis and the study area from the Missouri Historical Society in St. Louis and the State Historical Society in Columbia was examined. Archives were consulted from the city of St. Louis and St. Louis County Libraries and Mercantile Library, as well as from the libraries of Washington University, the University of Missouri, St. Louis University and the University of Wisconsin (maintains a research web site).

Archeology

The archival search revealed that very little archeological work has been performed within the I-64 study area, with the exception of work conducted almost exclusively inside, or immediately adjacent to, Forest Park. Only two archeological sites have been recorded; both 23SL8 and

23SL732 are in Forest Park, outside of the study area. There are no previously recorded archeological sites within the APE.

Mounds (23SL8) were identified within the park near "Art Hill" during the late 19th century. Conant (1879) reported that "In Forest Park, a few miles west of the city, there is a small group of mounds which the park commissioners, I am happy to know, have resolved to preserve." Unfortunately, the mounds were destroyed during the modification of Forest Park for the Louisiana Purchase Exposition (1904 World's Fair).

The World's Fair Dump Site (23SL732) used after the closing of the 1904 World' Fair is in a wooded location near Valley Drive, approximately a 164 x 164 foot (50 x 50 meter) area, half way between the back of the Art Museum and Skinker Road (Diaz-Granados 1989). Over 5,000 artifacts were excavated from the site. The majority were fragments of glass, ceramics, porcelain electrical insulators, electrical parts, metal, brick, vitrified pipe, staff, and high button shoes. Only 26 complete bottles, two coins, and buttons were recorded in their entirety.

Architecture

Previously recorded architecture within the study area includes four individual properties listed on the NRHP, one NRHP listed district, and five bridges recorded in Clayton Fraser's 1996 draft Missouri Historic Bridge Inventory. Previously recorded architecture also includes two Certified Local Government Districts, six churches, four schools, two residential properties, and one partially completed NRHP nomination for Forest Park (see Table III-14). The Cultural Resources located within the APE are shown in bold on Table III-14. A detailed description of each previously recorded resource listed in Table III-14 can be found in Appendix E. The individual NRHP properties and district are shown on Exhibits III-1A through III-1C, and on the Plan Plates in Appendix C. The other previously recorded resources listed in the table are included separately in other sections of text that follows, if they are located within the APE.

Table III-14
Previously Recorded Cultural Resources within Study Area

Name	Location	Recommended By	Date Recorded	Property Type
Lambskin Temple	1054 S. Kingshighway	Cameron	1985	NRHP
St. Louis Floral Conservatory (Jewel Box)	Forest Park	Longwisch and Mitchell	2000	NRHP
Dr. Samuel A. Bassett Office and Residence	1200 Big Bend Blvd.	Frapoili	1992	NRHP
Forest Park Headquarters	Forest Park	Stiritz and Toft	1985	NRHP
Forest Park Southeast	**St. Louis City**	**Historic Preservation Services**	**2000**	**NRHP District**
Bridge 260.03	St. Louis Terminal Railway/ Kingshighway	Fraser	1996	NHRP eligible
Bridge K468	Sarah Street/I-64	Fraser	1996	NHRP eligible
Bridge K854	**McKnight Road/ I-64**	**Fraser**	**1996**	**NHRP eligible**
Bridge K861	**McCutcheon Road/ I-64**	**Fraser**	**1996**	**NHRP eligible**
Bridge K795R	**Clayton-Warson Interchange/ I-64**	**Fraser**	**1996**	**Non-eligible**
Hampton Park Subdivision	**Richmond Heights**	**Hamilton and Bohm**	**1995**	**Certified Local District**

Name	Location	Recommended By	Date Recorded	Property Type
Lake Forest Subdivision	**Richmond Heights**	**Hamilton and Bohm**	**1995**	**Certified Local District**
New Providence Missionary Baptist Church	4214 West Papin	Stiritz	1990	Church
Emmaus Baptist Church	**Tower Grove and Chouteau**	**Stiritz**	**1990**	**Church**
Tower Grove Methodist Episcopal Church	1040 South Taylor Ave.	Stiritz	1993	Church
Gibson Heights United Presbyterian Church	1075 South Taylor Ave.	Stiritz	1993	Church
St. Paul's English Evangelical Lutheran Church	1034 South Kingshighway	Stiritz	1993	Church
St. Peter's Lutheran Church	1126 South Kingshighway	Stiritz	1993	Church
West Richmond School (A.B. Green School now Chaney School)	**1313 Boland Place**	**Webb**	**1991**	**School**
Dewey School	**6740 Clayton Ave**	**Longwisch**	**1988**	**School**
New Lincoln School	7917 Thomas Place	Naglich	1997	School
Old Wright School	**Clayton Road**	**Webb and Hamilton**	**1991**	**School**
Oak View Garden Apartments	**1014-1038 Oak View Pl.**	**Kneller et al.**	**2001**	**Residence**
Vernacular apartment building	**1044-1046 Oak View Pl.**	**Kneller et al.**	**2001**	**Non-eligible Residence**
Forest Park	**Forest Park**			**NRHP (partial)**

Bolded text indicates location within I-64 Corridor APE.

Forest Park

On file at SHPO is a partial manuscript to nominate Forest Park to the NRHP. Forest Park was recommended as significant for entertainment/recreation, architecture, and art. Park designers and administrators from the inception of the park in 1875 to the present time have provided the public with a variety of recreation and entertainment, such as hiking, biking, golf, tennis, fishing, field sports, and a diversity of music and drama. Architecture is primarily represented by the Italianate/Second Empire Forest Park Headquarters, the Beaux Arts Art Museum, the Spanish Mission/Craftsman World's Fair Pavilion, the Classical Revival Jefferson Memorial, the Craftsman Maintenance Building, and several Spanish/Craftsman Zoological Buildings. Art is scattered throughout the park with numerous sculptures, fountains, and memorials designed by well known artists and architects. More information and a list of significant buildings and structures recorded in the manuscript is located in Appendix E. The U.S. Army Corp of Engineers prepared a Fact Sheet on Forest Park and it is presented in Appendix I. The Fact Sheet documents the finding of an unexploded ordnance from the Army training grounds. The training grounds were located away from I-64, in the northwest portion of the park, and is not expected to be a project impact.

c. Architectural Survey

The architectural survey provides a glimpse into the area's growth from its early origins to its current modern state and holds value primarily as a documentary record of the highway corridor's development and growth. The architecture along the I-64 corridor reflects the sequence of residential construction, which in general occurred in an east-to-west pattern.

Early development occurred around Forest Park in the late 1800s, primarily due to improvements to the rail and streetcar systems that made this portion of St. Louis more accessible. The 1904 World's Fair brought further attention to the region, resulting in the greater development of western St. Louis and Richmond Heights. Further improvements to the transportation systems, the freedom fostered by the automobile, and cheaper residential construction methods made homes more affordable to the common citizen, and resulted in the platting of numerous subdivisions in the western portion of the corridor between 1920 and 1950.

Housing purchases were somewhat limited during much of this time period due to the Depression and World War II, but increased dramatically in the years immediately following the war. Several of these western communities had restrictive housing ordinances that prevented African Americans from owning homes within their boundaries. Following the Supreme Court ruling in 1948 that such laws were unconstitutional, the African American population in places such as Richmond Heights increased exponentially. Interstate 64 was expanded to its current state during the 1950s. Although the highway construction destroyed homes in some of the older subdivisions, it made the region and points further to the west more attractive for habitation.

Methodology

Much of the APE associated with the proposed improvements to Interstate 64 is limited to areas that have been previously impacted by the construction of the interstate. Proposed plans do include a slight expansion in some locations along the interstate, with larger areas needed for interchanges. For these reasons; the properties evaluated in the architectural survey included those entirely within the proposed right-of-way, those at least partially within the right-of-way (even if the building(s) on the property were not threatened), those contiguous to the right-of-way, and those that will come into direct view of the highway due to the proposed removal of intervening buildings. Prior to the architectural fieldwork, all properties were assigned a number from east to west, which was used for identification on forms, maps, tables, and photographs.

The initial architectural survey was conducted from January to April, 2002 by the Archaeological Research Center of St. Louis (ARC). All properties that are in the APE with at least one building over 50 years old were photographed and assessed according to the NRHP criteria for evaluation. Residential architectural styles were categorized using *A Field Guide to American Houses* by Virginia and Lee McAlester, *Ozark Vernacular Homes: A Study of Rural Homeplaces in the Arkansas Ozarks 1830-1930* by Jean Sizemore, and *American Architecture Since 1780* by Marcus Whiffen. Architectural styles for commercial buildings were categorized according to *The Buildings of Main Street* by Richard Longstreth. All buildings 50 years or older were recorded on Architectural/Historic Inventory Survey Forms. Structures, such as tunnels, bridges, etc., more than 50 years old were documented and recorded on Bridge Inventory Survey Forms distributed by the SHPO. These forms have been compiled and submitted to MoDOT and the SHPO as Appendix A and B in a separate report titled *Interstate 64 Archival Search and Architectural Survey*.

Information on specific neighborhoods and properties over 50 years old was obtained from several sources. Both the Landmarks Association of St. Louis and the St. Louis County Department of Parks and Recreation were contacted for information on previously recorded architecture within the APE. Neighborhood information was acquired from St. Louis Neighborhoods Webpage (stlouis.missouri.org/neighborhoods/index.html), as well as from several local historical societies, including the Clayton Historical Society, the Richmond Heights Historical Society, and the Frontenac Historical Society. Another website that provided

historical information on St. Louis was 'Time Portal to Old St. Louis', found at www.usgennet.org/usa/mo/county/stlouis. Other specific property information was obtained from the St. Louis Genealogical Society through the Society's website at (www.rootsweb.com/~mostlogs/STINDEX.HTM), as well as from www.ancestry.com. Most of the construction dates for the properties within the APE were located at the City of St. Louis Recorder of Deeds, or at the St. Louis County Government web page (www.stlouisco.com/ias). Plat maps of individual subdivisions within St. Louis County were obtained from the St. Louis County Recorder of Deeds Office in Clayton.

Clayton Fraser's 1996 draft *Missouri Historic Bridge Inventory*, and the MoDOT *1995 Service Ratings for Bridges* were consulted for information on bridges.

Subsequent to the DEIS, the City of Richmond Heights requested to be a consulting party under Section 106. The Cities of St. Louis and Brentwood and St. Louis County Parks Department were also consulting parties. On June 23, 2003 The City of Richmond Heights submitted a separate report, "*Reevaluation of MoDOT survey Highway 64/40, St. Louis County, Richmond Heights, Missouri"* authored by Ruth Nichols that was reviewed by the SHPO, FHWA and MoDOT. This report was amended and the *"Architectural Survey & National Register Evaluation Regarding the Proposed Improvements to Highway 64/40 by the Missouri Department of Transportation – Richmond Heights , St. Louis County, Missouri"* was submitted by Richmond Heights to the SHPO in August of 2003. These reports identified additional districts the City recommended as eligible for the NRHP, and expansions of two districts identified in the DEIS. The SHPO commented on the proposed districts in a letter on October 8, 2003. At the request of Richmond Heights the FHWA submitted information on all properties within the City to the Keeper of the National Register of Historic Places (Keeper) for a determination of eligibility. The Keeper provided determinations of eligibility for the districts proposed by the City of Richmond Heights in two reviews, in correspondence dated March 26, and July 5, 2004. Copies of these letters are located in Appenidx 4f-J.

Additional survey methodology and consultation details can be found in Appendix E in the *Survey Methodology* section.

Eligibility Criteria

A cultural resource's significance was determined based on criteria for listing a resource to the NRHP. The NRHP Bulletin *How to Apply the National Register Criteria for Evaluation* (1990) lists the criteria that originally appear in the *Code of Federal Regulations, Title 36, Part* 6Q for evaluation of historically significant properties.

> "The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
>
> A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> B. That are associated with the lives of persons significant in our past; or
>
> C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> D. That have yielded, or may be likely to yield, information important to prehistory or history."

> Several types of properties are categorically excluded from eligibility for the NRHP unless they have exceptional significance, and meet one of the criteria listed above. Criteria consideration G recognizes properties that have achieved significance within the past 50 years if they have exceptional significance due to the extraordinary importance of an event, or if the entire category of resources is so fragile that survivors of any age are rare. The exceptional significance can be at the local, state or national level.

The architectural survey of the I-64 APE resulted in the identification *of 384* previously unrecorded properties 50 years or older, twelve previously recorded properties, nine previously unidentified bridges and four previously recorded bridges more than 50 years old. All previously recorded resources were revisited during the architectural survey and found to be extant. The potential significance of the cultural resources was assessed as part of these investigations. In order to be significant within a property's historic context, it must meet one or more of the criteria listed above and it must retain integrity.

Individually Eligible Architectural Resources

Of the 403 architectural resources recorded during the course of the survey, the APE contains 28 architectural resources that are individually eligible for listing on the NRHP. These are listed in Table III-15 in order of settlement from east to west, and some, as noted below, are individually located on the Plan Plates in Appendix C. Individually eligible architectural resources that are located in an eligible historic district are not shown. Table III-15a, which lists 101 properties within NRHP eligible districts, is shown below. The tables indicate the location, type of resource, date constructed, architectural style, and the eligibility criteria for each resource. Further descriptions of each individual property can be found in Appendix E under *Individually Eligible Architectural Resources*.

Table III-15
Individually Eligible Properties within the I-64 Corridor APE
Not Located within Eligible Historic District Limits

No.	Address	Subcorridor	Type	Date	Style	Criteria
20	925 S. Boyle Ave.	Parkway	Residential	1912	Shotgun	C
21	927 S. Boyle Ave.	Parkway	Residential	1925-26	Shotgun	C
27	4303/4305 Chouteau Ave.	Parkway	Residential	1907-09	Vernacular	C
28	4307/4309 Chouteau Ave.	Parkway	Residential	1907-09	Vernacular	C
29	4347 Chouteau Ave.	Parkway	Church	1897	Gable-Front-&-Wing	A & C
58	900 S. Taylor	Parkway	Commercial	1921	One Part Commercial Block	A
59	909 S. Taylor Ave.	Parkway	Clinic/School	1951	Vernacular	A
64A	4560 Clayton Avenue	Parkway	School	1928	Italian Renaissance	A & C
65	5050 Oakland Avenue	Parkway	Public	1963	Vernacular	A & C
73	1014-1038 Oakview	Parkway	Residential	1925-26	Vernacular	C
92	6740 Clayton	Parkway	School	1917	Italian Renaissance	A & C
100	1038-1042 McCausland	Parkway	Residential	1930	Art Deco	C
156	7125 Nashville	Parkway	Residential	1930	Mission	C
165	1219 Bellevue Ave.	Thruway	Residential	1936	Tudor	C
172	1330-1338 Hawthorne Pl.	Thruway	Residential	1953	Art Deco	C
173	1244 Highland Terr.	Thruway	Residential	1923	Shingle	C
178	1334 Highland Terr.	Thruway	Residential	1928	Colonial Revival	C
179	1336 Highland Terr.	Thruway	Residential	1904	Shingle	C
195	7464 Warner Avenue	Thruway	Residential	1919	Craftsman	C
206	1330 S. Big Bend Blvd.	Thruway	Public	1927	Colonial Revival	A & C
283	1313 Boland Place	Thruway	School	1926	Georgian Revival	C
484	31 Northcote Road	Greenway	Residential	1926	Tudor	C

No.	Address	Subcorridor	Type	Date	Style	Criteria
489	20 Northcote Road	Greenway	Residential	1929	Tudor	C
499	8 Godwin Lane	Greenway	Residential	1938	Colonial Revival	C
503	15 Godwin Lane	Greenway	Residential	1940	Prairie	C
530	50 Overhills Drive	Greenway	Residential	1932	Tudor	C
609A	10315 Clayton Road	Greenway	Commercial	1870	Folk Victorian	C
623	1412 Spoede Road	Greenway	Residential	1860	Italianate	C

Table III-15a
Properties within Eligible Districts within the I-64 Corridor APE

Number	District Name & Location	Subcorridor	Type	Date	Style	Criteria
60	Forest Park SE 4557 Chouteau Avenue	Parkway	Residential	c. 1909	Vernacular	C
61	Forest Park SE 4559 Chouteau Avenue	Parkway	Residential	1917-18	Vernacular	C
62	Forest Park SE 4563 Chouteau Avenue	Parkway	Residential	1906	Vernacular	C
127	Hi-Pointe Neighborhood 1051 McCausland	Parkway	Residential	1920	Craftsman	C
128	Hi-Pointe Neighborhood 1059 McCausland	Parkway	Residential	1920	Craftsman	C
129	Hi-Pointe Neighborhood 1061 McCausland	Parkway	Residential	1912	Craftsman	C
130	Hi-Pointe Neighborhood 1065 McCausland	Parkway	Residential	c. 1920	Craftsman	C
131	Hi-Pointe Neighborhood 1069 McCausland	Parkway	Residential	c. 1920	Vernacular	C
132	Hi-Pointe Neighborhood 1075 McCausland	Parkway	Residential	c. 1920	Vernacular	C
133	Hi-Pointe Neighborhood 1077 McCausland	Parkway	Residential	c. 1926	Vernacular	C
134	Hi-Pointe Neighborhood 1083 McCausland	Parkway	Residential	1912-1913	Italianate	C
135	Hi-Pointe Neighborhood 7015 Berthold	Parkway	Residential	c. 1920	Vernacular	C
136	Hi-Pointe Neighborhood 7017 Berthold	Parkway	Residential	c. 1919	Vernacular	C
137	Hi-Pointe Neighborhood 7021 Berthold	Parkway	Residential	1922	Colonial Revival	C
138	Hi-Pointe Neighborhood 7023 Berthold	Parkway	Residential	c. 1920	Vernacular	C
139	Hi-Pointe Neighborhood 7027 Berthold	Parkway	Residential	c. 1920	Craftsman	C
140	Hi-Pointe Neighborhood 7029 Berthold	Parkway	Residential	c.1920	Vernacular	C
141	Hi-Pointe Neighborhood 7033 Berthold	Parkway	Residential	c. 1920	Vernacular	C
142	Hi-Pointe Neighborhood 7039 Berthold	Parkway	Residential	1919-1920	Vernacular	C
143	Hi-Pointe Neighborhood 1114 Blendon Place	Parkway	Residential	1924	Craftsman	C
144	Hi-Pointe Neighborhood 1116 Blendon Place	Parkway	Residential	c. 1924	Craftsman	C
145	Hi-Pointe Neighborhood 1120 Blendon Place	Parkway	Residential	c. 1918	Vernacular	C
146	Hi-Pointe Neighborhood 1124 Blendon Place	Parkway	Residential	c. 1918	Vernacular	C
147	Hi-Pointe Neighborhood 1128 Blendon Place	Parkway	Residential	1924	Vernacular	C

Number	District Name & Location	Subcorridor	Type	Date	Style	Criteria
148	Hi-Pointe Neighborhood 1200/1206 Yale	Parkway	Residential	1945	Ranch	C
164	St. Luke's District Dale & Bellevue Avenue	Thruway	Church	1928	Late Gothic Revival	A & C
168	St. Luke's District 1245/1345 Bellevue Avenue	Thruway	Residential	1923	Vernacular	C
212	West Moor Park #2 7532 Warner	Thruway	Residential	1928	Vernacular	C
213	West Moor Park #2 7538 Warner	Thruway	Residential	1928	Craftsman	C
215 A	West Moor Park #2 7542 Warner	Thruway	Residential	1927	Tudor	C
215 B	West Moor Park #2 7546 Warner Avenue	Thruway	Residential	1930	Tudor	C
218 (*1)	West Moor Park #2 7548 Warner Avenue	Thruway				
219	West Moor Park #2 7554 Warner Avenue	Thruway	Residential	1942	Vernacular	C
222	West Moor Park #2 7558 Warner Avenue	Thruway	Residential	1926	Craftsman	C
224	West Moor Park #2 7564 Warner Avenue	Thruway	Residential	1927	Vernacular	C
226	West Moor Park #2 7566 Warner Avenue	Thruway	Residential	1932	Colonial Revival	C
228	West Moor Park #2 7570 Warner Avenue	Thruway	Residential	1930	Tudor	C
230	West Moor Park #2 7574 Warner Avenue	Thruway	Residential	1928	Craftsman	C
232	West Moor Park #2 7578 Warner Avenue	Thruway	Residential	1930	Craftsman	C
234	West Moor Park #2 7584 Warner Avenue	Thruway	Residential	1929	Colonial Revival	C
236	West Moor Park #2 7588 Warner Avenue	Thruway	Residential	1929	Colonial Revival	C
238	West Moor Park #2 7590 Warner Avenue	Thruway	Residential	1926	Craftsman	C
243	Oakview Terrace 7527 Lovella Avenue	Thruway	Residential	1925	Craftsman	C
244	Oakview Terrace 7529 Lovella Avenue	Thruway	Residential	1926	Craftsman	C
245	Oakview Terrace 7531 Lovella Avenue	Thruway	Residential	1926	Craftsman	C
246	Oakview Terrace 7533 Lovella Avenue	Thruway	Residential	1926	Craftsman	C
247	Oakview Terrace 7535 Lovella Avenue	Thruway	Residential	1925	Craftsman	C
248	Oakview Terrace 7537 Lovella Avenue	Thruway	Residential	1929	Craftsman	C
249	Oakview Terrace 7539 Lovella Avenue	Thruway	Residential	1925	Craftsman	C
250	Oakview Terrace 7541 Lovella Avenue	Thruway	Residential	1925	Craftsman	C
251	Oakview Terrace 7543 Lovella Avenue	Thruway	Residential	1920	Craftsman	C
252	Oakview Terrace 7545 Lovella Avenue	Thruway	Residential	1926	Craftsman	C
253	Oakview Terrace 7547 Lovella Avenue	Thruway	Residential	1926	Craftsman	C
254	West Moor Park #2 1231 Claytonia Terrace	Thruway	Residential	1929	Vernacular	C

Number	District Name & Location	Subcorridor	Type	Date	Style	Criteria
255	West Moor Park #2 1254 Moorlands Drive	Thruway	Residential	1927	Craftsman	C
256	West Moor Park #2 1256 Moorlands Drive	Thruway	Residential	1927	Craftsman	C
258	West Moor Park #2 1258 Moorlands Drive	Thruway	Residential	1927	Vernacular	C
259	West Moor Park #2 1260 Moorlands Drive	Thruway	Residential	1927	Vernacular	C
260	West Moor Park #2 1262 Moorlands Drive	Thruway	Residential	1947	Vernacular	C
261	Oakview Terrace 1307 Claytonia Terrace	Thruway	Residential	1925	Craftsman	C
278	West Moor Park #2 1291 Arch Terrace	Thruway	Residential	1929	Spanish Eclectic	C
279	West Moor Park #2 1285 Arch Terrace	Thruway	Residential	1925	Vernacular	C
280	West Moor Park #2 1281 Arch Terrace	Thruway	Residential	1925	Colonial Revival	C
281	West Moor Park #2 1275 Arch Terrace	Thruway	Residential	1925	Italian Renaissance	C
282	Clayton Park Addition (Bennett Avenue) 1282 Laclede Station Rd.	Thruway	Residential	1958	Ranch	A
298	Clayton Park Addition (Bennett Avenue) 8012 Bennett Avenue	Thruway	Residential	1959	Ranch	A
299	Clayton Park Addition (Bennett Avenue) 8020 Bennett Avenue	Thruway	Residential	1966	Split Level	A
300	Clayton Park Addition (Bennett Avenue) 8021 Bennett Aveneu	Thruway	Residential	1966	Neocolonial	A
301	Clayton Park Addition (Bennett Avenue) 8027 Bennett Avenue	Thruway	Residential	1961	Ranch	A
303	Hampton Park 1259 Hampton Park Dr.	Thruway	Residential	1920	Italian Renaissance	C
304	Hampton Park 1247 Hampton Park Dr.	Thruway	Residential	1922	Tudor	C
305	Hampton Park 1235 Hampton Park Dr.	Thruway	Residential	1910	Vernacular	C
306	Hampton Park 1215 Hampton Park Dr.	Thruway	Residential	1928	Tudor	C
307	Lake Forest 103 Lake Forest Drive	Thruway	Residential	1937	Colonial Revival	C
308	Lake Forest 104 Lake Forest Drive	Thruway	Residential	1940	Colonial Revival	C
309	Lake Forest 124 Lake Forest Drive	Thruway	Residential	1937	Tudor	C
397	Lavina Gardens 1216 McMorrow	Thruway	Residential	1940	Tudor	C
398	Lavina Gardens 1212 McMorrow	Thruway	Residential	1940	Tudor	C
399	Lavina Gardens 1208 McMorrow	Thruway	Residential	1940	Tudor	C
400	Lavina Gardens 8522 Antler Drive	Thruway	Residential	1940	Tudor	C
401A	Lavina Gardens 8514 Antler Drive	Thruway	Residential	1940	Tudor	C

Number	District Name & Location	Subcorridor	Type	Date	Style	Criteria
402	Lavina Gardens 8531 Antler Drive	Thruway	Residential	1940	Tudor	C
403A	Lavina Gardens 8523 Antler Drive	Thruway	Residential	1940	Tudor	C
403	Lavina Gardens 8527 Antler Drive	Thruway	Residential	1940	Tudor	C
460	Richmond Hills 9006 Stonebridge Drive	Thruway	Residential	1953	Ranch	C
461	Richmond Hills 9008 Stonebridge Drive	Thruway	Residential	1951	Minimal Traditional	C
462	Richmond Hills 9010 Stonebridge Drive	Thruway	Residential	1953	Vernacular	C
463	Richmond Hills 9014 Stonebridge Drive	Thruway	Residential	1952	Ranch	C
464	Richmond Hills 9016 Stonebridge Drive	Thruway	Residential	1953	Ranch	C
465 (*2)	Richmond Hills 1918 Stonebridge	Thruway	Residential	1995	Neoclassical Revival	C
472	Richmond Hills 9040 Monmouth Drive	Thruway	Residential	1953	Ranch	C
473	Richmond Hills 9044 Monmouth Drive	Thruway	Residential	1954	Ranch	C
474	Richmond Hills 9046 Monmouth Drive	Thruway	Residential	1950	Ranch	C
475	Richmond Hills 9050 Monmouth Drive	Greenway	Residential	1951	Ranch	C
476	Richmond Hillls 9052 Monmouth Drive	Greenway	Residential	1950	Ranch	C
477 (*2)	Richmond Hills 9054 Monmouth Drive	Greenway	Residential	1960	Ranch	C
478	Richmond Hills 9058 Monmouth Drive	Greenway	Residential	1950	Ranch	C
479	Richmond Hills 9060 Monmouth Drive	Greenway	Residential	1953	Ranch	C
480	Richmond Hills 9062 Monmouth Drive	Greenway	Residential	1953	Ranch	C
481	Richmond Hills 9070 Monmouth Drive	Greenway	Residential	1954	Ranch	C
493	York Village 4 Northcote Road	Greenway	Residential	1927	Tudor	C
495	York Village 1 Northcote Road	Greenway	Residential	1927	Tudor	C
495A	York Village NE corner of McKnight & York	Greenway	Gate House	1926	Tudor	A & C

Note: (*1) Residence was demolished.
(*2) Residence is non-contributing resource.

Eligible Districts

Within the I-64 APE are twelve historic district eligible for listing on the NRHP. Of these districts eight have been formally determined to be eligible by the Keeper: one NRHP listed district in St. Louis City and seven districts in Richmond Heights. The remaining districts have been determined eligible through consultation with the consulting parties. These districts are listed in Table III-16, in order from east to west and are located on the Plan Plates in Appendix C. Detailed descriptions of each district can be found in Appendix E under *Eligible Districts*.

In the DEIS there were ten districts identified as listed on the NRHP or recommended as eligible for listing on the NRHP. During the consultation process, the City of Richmond Heights, based on a cultural survey completed by Ruth Nichols, recommended that several additional neighborhoods were eligible for the NRHP and that boundaries of two previously recommended

districts should be expanded. MoDOT, FHWA, SHPO, Richmond Heights, and the other consulting parties considered the recommendations presented by Richmond Heights. The SHPO concurred with the previous determinations, except they concurred with Richmond Heights that the Clayton Park Addition was eligible for the NRHP.

At the request of Richmond Heights, the FHWA forwarded information on all the resources within the community to the Keeper for a determination of eligibility, including those districts not in dispute. In March 2004, the Keeper determined that one historic district boundary, West Moor Park No. 2, was to be amended to include the areas identified by Richmond Heights, the Oakview Terrace Historic District boundary was correct as identified by ARC, five neighborhoods needed additional information to determine eligibility and two were not eligible.

After the submittal of additional information, the Keeper, in July 2004, ruled that three of the historic districts were eligible, two were not eligible and one had insufficient information. Hampton Park does not have a formal determination of eligibility, but has been treated as an NRHP eligible district in all documents for this project. As shown in Table III-16, St. Luke's Historic District and Richmond Hills Subdivision have been added to the list of NRHP eligible districts, the only districts added since the DEIS. The Historic District boundary for West Moor Park No. 2 has been amended to the boundary determined eligible by the Keeper.

Table III-16
Eligible Districts within the I-64 Corridor APE

Name & Location	Subcorridor	Type	Date	Style	Criteria
Forest Park SE (in St. Louis City, east of Kingshighway & south of I-64)	Parkway	Residential	1906-18	Vernacular	C
Forest Park (in St. Louis City, north of I-64, between Skinker Blvd. & Kingshighway)	Parkway	Recreational	1876	Various	A & C
Hi-Pointe Neighborhood bounded by McCausland, I-64, Yale and undetermined northern boundary	Parkway	Residential		Various	C
St. Luke's Historic District (in Richmond Heights, south of Dale Ave., west of North Ave. (Yale) and east of Big Bend Blvd.)	Parkway and Thruway	Residential	1910-1930's	Various	C
Oakview Terrace Subdivision (in Richmond Heights, south of I-64 & west of Big Bend Blvd.)	Thruway	Residential	1920-29	Craftsman	C
West Moor Park #2 Subdivision included the Little Flower Catholic Church Complex (in Richmond Heights., north of I-64, west of Woodland Drive, east of Laclede Station Road.)	Thruway	Residential	1925-29	Various	C
Clayton Park Addition (Bennett Avenue in Richmond Heights between Hampton Park and West Moor Park #2)	Thruway	Residential	1959-66	Various	C
Hampton Park Subdivision (in Richmond Heights, north of I-64 & east of Hanley Rd.)	Thruway	Residential	1909-40	Various	C
Lake Forest Subdivision (in Richmond Heights, north of I-64 & west of Hanley Rd.)	Thruway	Residential	1930-40	Various	C
Lavina Gardens Subdivision (in Richmond Heights, north of I-64 & east side of I-170, on Redbud Avenue and Antler Drive)	Thruway	Residential	1937-40	Tudor	C
Richmond Heights Subdivision (in Richmond Heights, north of I-64, west of McCutcheon Road and east of McKnight Road)	Thruway and Greenway	Residential	1950's	Ranch	C
York Village (in Brentwood, south of I-64 & east of McKnight)	Greenway	Residential & Gate House	1926-27	Tudor	C

Eligible Structures

Twenty-four bridges were examined and assessed for historical significance. Nine bridges 50 years old or older were recorded. Two previously recorded bridges that are recommended eligible are located within the APE. All were revisited during the architectural survey and found to be extant. Of the structures within the I-64 APE, four bridges are eligible for listing on the NRHP. These are listed in Table III-17, in order from west to east, and are located on the Plan Plates in Appendix C.

Table III-17
Eligible Bridges within the I-64 Corridor APE

Number	Subcorridor	Route	Feature/Location	Date	Structural Type	Criterion
K601R	Greenway	I-64	Spoede Road	1937	Stringer	C
K600R2	Greenway	I-64	US 67 (Lindbergh)	1940	Concrete Rigid Frame	C
K854R	Greenway	I-64	McKnight Road	1940	Concrete Rigid Frame	C
K861R	Thruway/ Greenway	I-64	McCutcheon Road	1944	Concrete Rigid Frame	C

Two of these bridges (K854R-McKnight Road and K861R-McCutcheon Rd) are of concrete rigid frame construction and have been previously recorded by Fraser as potentially eligible under criterion C. The Missouri State Highway Department (MSHD) used the structural type very sparingly in urban overpass situations, and never adopted concrete rigid frame as a state construction standard. According to Fraser, only seven bridges of this type have been identified within the state of Missouri, and of these three are located in St. Louis. Both of these bridges are NRHP eligible.

Another bridge within the APE, however, appears to share similar visual and structural characteristics with the two recorded bridges. Not recorded in Fraser's 1996 *Missouri Historic Bridge Inventory*, bridge K600R2 (I-64 bridge over Lindbergh Blvd.) was given the same designation on the 1995 Service Ratings as the eligible bridges noted above. The piers and abutments are formed in a rectilinear decorative motif. The rarity of the structural type and the application of architectural style to bridge K600R2 resulted in the bridge being NRHP eligible under criterion C.

The fourth bridge that is eligible to the NRHP is bridge K601R on Spoede Road. The bridge is a steel stringer, a structural type that was adopted by MSHD in the 1920s and has maintained widespread usage. Bridge K601R is the only unrecorded bridge within the I-64 APE that has piers and abutments constructed and with a decorative motif suggestive of the Art Deco style. For this reason, the bridge is eligible to the NRHP under criterion C.

Non-eligible Resources

Properties which are not eligible for the NRHP include a host of buildings constructed with methods and in styles so commonly employed that multiple examples can be found in the area. According to NRHP guidelines, a resource "is eligible as a specimen of its type of period of construction if it is an important example (within its context) of building practices of a particular time in history" (NRHP 1995). Recorded buildings, districts, bridges and structures, not in the above recommended list fail eligibility requirements when held to this standard. Many recorded buildings were removed from consideration because they lack integrity, having been subject to renovations that substantially altered their original massing, fenestration, or identifying features. Again, according to the NRHP guidelines, "[t]he property is not eligible, if it has lost the majority of characteristics that once characterized its style" (NRHP 1995). Among the buildings recorded, most were either significantly changed with additions and modifications, or were in a

poor state of preservation. Significant examples that lacked additions and kept the original plan intact, or unusual examples within the urban context, were selected for possible eligibility.

d. Conclusions

Previously recorded properties within the archival search study area included four individually listed NRHP properties, one NRHP listed district, four bridges recorded in Clayton Fraser's 1996 draft *Missouri Bridge Inventory*, two Certified Local Government districts, six churches, four schools, two residential properties, and a partially recorded NRHP nomination for Forest Park.

Within the APE, a total of 723 properties and 24 bridges were examined and assessed for historical significance. From these, a total of 403 architectural properties and nine bridges 50 years or older were recorded. One historic district, two certified local districts, two residences, three schools and one church previously recorded architectural properties and three previously recorded bridges were located within the APE. All were revisited during the architectural survey and found to be extant. All other previously recorded cultural resources were outside the APE.

Historical research on the I-64 corridor concluded that settlers gradually moved from the city to points westward along major roads such as Clayton Road and the Daniel Boone Expressway. This conclusion, drawn from the records and literature search, was supported by the findings of the architectural survey. As one moves west along the I-64 corridor, the fewer historic buildings are present and the more frequent modern housing and subdivisions become.

Of the architectural resources properties recorded during the course of the study and the subsequent consultations, a total of 28 are individually eligible for the NRHP, all of which are located outside of either listed or eligible historic districts. Also eligible are 12 historic districts, containing 101 properties within the APE, and four bridges.

Archeological Resources Potential

No archeological sites have been recorded in the project corridor. The extent of disturbance along the margins of the existing highway corridor is unknown. Sites that may have been located within the corridor would have been impacted by past construction but intact portions of those sites may survive along the edges of existing right-of-way and in areas bordering the highway where new construction is planned. Based on archival research, a predictive model to identify high potential areas for archeological sites was developed. Several areas bordering I-64 have some potential to include significant archeological remains and those areas should be evaluated during an archeological survey prior to construction.

High sensitivity areas for prehistoric sites include the valleys and terraces of streams and rivers including the River Des Peres in Forest Park and Deer Creek in Ladue. Historic archeological sites and features may also be present throughout the corridor, including the Forest Park area where sites related to the 1904 World's Fair may survive. High sensitivity areas will be evaluated during an archeological survey prior to construction, as stipulated in the signed Programmatic Agreement (PA) developed for this project, a copy of which is located in Appendix K.

7. HAZARDOUS WASTE SITES

a. Survey Methodology

A Phase I hazardous waste assessment was conducted for the I-64 study corridor. The purpose of the waste assessment was to identify sites within the study corridor that are contaminated or potentially contaminated with hazardous materials or waste. Sites containing

solid waste were also identified. Where sites were identified, discussions of their potential severity and impacts to the project have been developed.

For the purposes of this assessment, hazardous wastes and materials are defined as products or wastes regulated by the U.S. Environmental Protection Agency (EPA) or the State of Missouri Department of Natural Resources (MDNR). These include substances regulated under the Comprehensive Emergency Response, Compensation, and Liability Act (CERCLA), The Resource Conservation and Recovery Act (RCRA), The Toxic Substances Control Act (ToSCA), The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), solid waste management, and storage tanks.

The hazardous waste assessment for the I-64 study corridor involved extensive data collection efforts, including review of numerous government agency lists and files, review of current aerial photographs, and a field reconnaissance of the study corridor. The documents reviewed include the following: EPA and MDNR computer databases provided by Vista Environmental Information, Inc. (November 30, 2001); EPA Region VII files, Kansas City, Kansas; MDNR Central Office and Jefferson City Regional Office files.

In a letter dated November 28, 2001, which included a U.S. Army Corps of Engineers Fact Sheet (see Appendix I), MDNR stated that there was an identified hazardous waste site within Forest Park that was formerly a 17-acre military recreation camp during World War II. The camp was located in the north central area of the park near the Eisenhower Municipal Golf Course, which is in the northwest portion of the park. In 1988, a live World War I mortar round was excavated during construction work at the golf course, which is well outside of the study corridor. The ordnance was properly disposed of by the Army and no other ordnance was discovered at that time.

b. Potential Hazardous Waste Sites

In all, 188 sites were identified within the study corridor as having the potential for hazardous or solid waste contamination. State and federal agency lists document all 188 sites. No site within the study corridor is documented as having a high potential for contamination. All of the sites are summarized in Technical Memorandum No. 1 which is on file at MoDOT Headquarters. The summary tables listing all of the sites are located in Appendix F.

Eight of the sites in the study corridor were identified as being in the vicinity of the highways and streets where improvements requiring additional right-of-way could potentially impact these sites (see Exhibits III-1A to III-1C). Of these eight sites, four are considered to have a moderate potential for contamination and four are considered to have a low potential for contamination.

All eight sites have regulatory documentation. These sites store or generate hazardous material; are former or operating service stations with known or unknown underground or above ground storage tanks; are suspected to be contaminated with hazardous materials by nature of land use or business; were reported to emergency spill response authorities; or store considerable amounts of solid waste. The following is a description of each site:

- *Site 1: S-1 Frontenac Cleaners 9908 Clayton Road* – This site is listed on the Resource Conservation and Recovery Information System (RCRIS) small quantity hazardous waste generators list and should require a Phase I investigation if taken by an improvement to the existing I-64. This site is evaluated as having a low potential for contamination.

- *Site 2: S-2 Shell Service Station 1240 S Brentwood Boulevard* – This site is listed on the Underground Storage Tanks (UST) and Leaking Underground Storage Tanks (LUST) lists. Some tanks have been noted as removed. This site is evaluated as having a moderate potential for contamination.

- *Site 3: S-3 Telle Tire Auto Service Inc., 1401 Big Bend Avenue* – This site is listed on the UST list though it should also be noted that the tanks are noted to have been removed. This site is evaluated as having a low potential for contamination.

- *Site 4: S-4 Fowlers Texaco 1220 S Big Ben* – This site is listed on the UST list. This site is evaluated as having a low potential for contamination.

- *Site 5: S-5 Mobile Mart 1051 Hampton Avenue* – This site is listed on the UST and LUST lists. Some tanks have been noted as removed. This site is evaluated as having a moderate potential for contamination.

- *Site 6: S-6 AMOCO Service Station 1104 Hampton Avenue* – This site is listed on the RCRIS small quantity hazardous waste generator list and should require a Phase I investigation if taken by an improvement to the existing I-64.This site is listed on the UST, Aboveground Storage Tanks (AST), and LUST lists. Some tanks have been noted to have been removed. This site is evaluated as having a moderate potential for contamination.

- *Site 7: S-7 Forest Park and the City of St. Louis Department of Parks* – This site is listed on the RCRIS small quantity hazardous waste generators list and should require a Phase I investigation if taken or encroached upon by an improvement to the existing I-64. This site is evaluated as having a moderate potential for contamination.

- *Site 8: S-8 Central Sign Systems/Continental Baking Company, 920 S Taylor Avenue* – This site is listed on the RCRIS small quantity hazardous waste generators list and should require a Phase I investigation if taken by an improvement to the existing I-64. This site is also listed on the UST list though it is noted that the tank has been removed. This site is evaluated as having a low potential for contamination.

In November 2004, an additional review of the EPA records (located at 'www.epa.gov') was conducted which included the "CERCLIS (Superfund) Database", the "National Priorities List (NPL) Sites in Missouri", the "Proposed NPL Sites", the "New Proposed NPL Sites", and the "New Final NPL Sites" (all updated September 23, 2004)". In addition, the hazardous waste facility data available on the MDNR website (www.dnr.mo.us) and the University of Missouri CARES website (www.cares.missouri.edu) were reviewed. Data included all facility databases, some of which are hazardous waste generators and transporters, leaking underground storage tanks, petroleum tank database, and RCRIS. It was determined that there were no new hazardous waste site listings located within the areas where additional right of way would be required.

8. VISUAL QUALITY

a. Existing Visual Environment

The I-64 corridor is very diverse and contains several areas of varying visual characteristics. It provides different experiences for drivers along this urban corridor, via the highway's undulating alignment. The visual environment includes the wooded areas adjacent to I-64 between Lindbergh Boulevard and McKnight Road, the lower density residential areas between the west end of the study corridor and Brentwood Boulevard, the commercial areas in the vicinity of the

I-64/I-170 interchange, the dense residential areas between I-170 and Forest Park, the Forest Park landscape, the institutional and office buildings south of Forest Park, and the light industrial district and institutional buildings at the east end of the study corridor. Viewsheds widen and narrow to hide and reveal driver's views of buildings and landmarks throughout the length of the study corridor. There are also some scattered wooded areas and a great variety of materials used for the construction of onsite structures such as bridges, fences, and retaining walls.

b. Visual Quality and Views

The character of the visual environment throughout the I-64 study corridor is varied. Although an assessment of the visual quality of the environment is, for the most part, subjective and preferential, the following text describes the visual components of the study corridor in relation to aesthetic considerations and viewers. There are two distinct categories of views: 1) *views from the road*, representing viewers who are users of the project facility, and 2) *views of the road*, which represents people who can observe the roadway from an adjacent vantage point.

For visual quality and aesthetic/urban design considerations, the study corridor was separated into three areas called "subcorridors". These include the Greenway Subcorridor, Thruway Subcorridor, and Parkway Subcorridor (see Exhibits III-1a to III-1c).

Greenway Subcorridor

The Greenway Subcorridor is located from the west end of the study corridor, west of Spoede Road, to McCutcheon Road. It consists of a very tight right-of-way that opens slightly at interchanges. Sycamore trees that dot the roadside with spots of white color accent this area. This Subcorridor has an undulating landscape edge of scrub brush with canopy trees as a backdrop, providing a visually pleasing driving experience. However, the houses along the Greenway Subcorridor are very difficult to see, especially during the spring, summer and fall. The houses are much more visible during the winter months when the vegetation is dormant, since most of the existing landscape is deciduous. The roadway opens at the Clayton Road overpass where there are a few offices and shops, but closes down immediately following the convergence of the on/off ramps with the mainline. The largest opening of the roadway happens at the Lindbergh Boulevard interchange where it transitions from a tight corridor into a large open area, and then narrows back to a tight corridor, which continues to the west end of the study corridor.

The Greenway Subcorridor has a very calming natural feel, which is a dramatic change from the urban feel of the east end of the study corridor. Both the eastbound traffic and westbound traffic on I-64 view a heavily landscaped edge of deciduous vegetation. The views from the road consist of momentary views of houses and brief views of commercial areas. From the neighborhoods the edge is well defined and the mature vegetation provides excellent screening of the views of the road. The bridges in this Subcorridor are older and feature small reveals and treatments that make them unique in their surroundings.

Thruway Subcorridor

The Thruway Subcorridor begins at McCutcheon Road and continues east to McCausland Avenue. The area is predominantly residential with some intermixing of commercial at the major interchanges. This topography of the area is mostly hilly which hides and reveals views throughout the subcorridor. Crests of the hills at Highland Terrace Avenue and Laclede Station Road provide distant views to the west. The Magna Place building at the corner of Brentwood Boulevard and I-64 is a very prominent figure on the horizon. Along I-64, most of the roadway is in cut with 3:1 slopes banking both sides. The viewshed opens up wide near the I-170 and Brentwood Boulevard interchange revealing the Promenade, the Galleria, and Brentwood

Square shopping centers. Between Brentwood Boulevard and McCutcheon Road, the viewshed narrows due to the transition from commercial to residential. The roadway plantings here are very dense and provide only a glimpse of the housing that lines the roadway. It consists mostly of large canopy trees with scrubby underbrush that provides an excellent landscape edge. This edge is an extension of the Greenway Subcorridor.

The bridges along the Thruway Subcorridor show a definite transition from new to old. The bridges on the east end of the subcorridor are fairly standard bridges similar to those used on most transportation projects, while the bridges toward the west end at McCutcheon Road are older bridges that yield simple design detailing of surface reliefs and recesses to articulate the bridge elements. The bridges add a bit of historical character to the area. Most of the roadway fencing is typical of the corridor, rusty chain-link with no top rail, and adds no visual stimulus to the area. The views from the roadway are of moderate quality. Distant views are good, while most of the near views are of housing in the area. Views of the roadway from the neighborhoods, vary depending on the area of the Subcorridor. On the west end of the Subcorridor, the roadway is not completely visible from the residential areas because it is screened by vegetation. However, views on the east end of the Subcorridor are typically of poor quality due to the unobstructed views of the roadway from the residences.

Parkway Subcorridor

The I-64 Parkway Subcorridor, located at the east end of the study corridor from McCausland Avenue to west of Sarah Street, has many key elements to it. The east end of the Parkway Subcorridor features smaller more industrial use buildings that evolves to park/open space around the Kingshighway interchange. This transition marks the beginning of Forest Park (a notable visual resource), and yields the Science Center overpass, which narrows the driver's view of the roadway. It then opens up to reveal the Aviation Field sports fields to the North and Forest Park Community College to the south. Tree-lined Oakland Avenue as well as the trees that parallel I-64 to the north (within Forest Park) also helps to narrow the driver's focus to the roadway. Traveling west, once past Forest Park Community College and Aviation Field, the new Highlands Office Park on Oakland Avenue is a very modern and prominent building near the roadway. The proximity of Oakland Avenue to the I-64 right-of-way presents a varied edge for eastbound traffic on I-64. The right-of-way is defined by a narrow strip of land and a chain link fence. The views beyond are defined by the buildings along Oakland Avenue.

Just to the west of Hampton Avenue, the mainline gives drivers a wide-open view of the adjacent structures. At this point, the driver is given an unobstructed view to the west that yields the large Amoco sign at the corner of Skinker Road and Clayton Road. This sign is a local landmark for I-64 drivers. The view to the north, is an unobstructed view of the Zoo. Eastbound traffic in this area is given a distant view of the Arch with the new federal courthouse in the foreground. The mainline then turns southwest around the Clayton Road exit, where it transitions from an at-grade view of the adjacent surroundings, to a cut area where the motorist is surrounded by retaining walls and bridges crossing overhead. At the McCausland Avenue interchange, the viewshed opens up revealing the red brick architecture characteristic of this residential area. West of McCausland Avenue, 3:1 slopes are typical with a sparse landscape edge dotting the roadway. This allows an at grade view of the homes that are adjacent to the roadway.

The Parkway Subcorridor has a varied mix of uses from mostly residential uses on the west end southwest of Forest Park, to park/open space in the middle, to light industrial on the east end. Bridges are typically a simple design with no special treatments. Forest Park structures as well as adjacent structures to the roadway appear to be well maintained. Right-of-way fencing that parallels I-64 is in poor condition. It is rusty and utilitarian in nature. It also collects debris

associated with roadway travel, as well as leaf litter from existing vegetation. Views of the roadway from adjacent residential areas are typically of poor quality, while the views from the roadway in this area are visually pleasing.

9. NOISE QUALITY

a. Terminology

Noise is a form of vibration that causes pressure variations in elastic media such as air and water. The ear is sensitive to this pressure variation and perceives it as sound. The intensity of these pressure variations causes the ear to discern different levels of loudness. These pressure differences are most commonly measured in decibels.

The decibel (dB) is the unit of measurement for noise. The decibel scale audible to humans spans from zero to approximately 140 dB. A level of zero decibels corresponds to the threshold of hearing, while 140 decibels is considered to be the threshold of pain. The decibel scale is a logarithmic rather than a linear representation of the actual sound pressure variations. As a result, the human ear would not detect a change in sound level of one dB. Another example of this characteristic of sound is that a doubling of the energy level would result in a three dB increase in the sound level, which would be barely perceptible to the human ear in the natural environment. Likewise, a tripling in energy level would result in a clearly noticeable change of approximately five dB in the sound level, and a ten-fold increase in sound energy would result in a ten dB increase in sound level. This ten dB increase in the sound level is generally perceived as a doubling of the apparent loudness of the original source.

The frequency spectrum of highway noise is very broad. As a result, it can be difficult to work with and relate to human response. Therefore a method is needed therefore to summarize the contributions of sound from the various frequency bands, and to correlate these levels with human response. This is done through the use of frequency weighting networks. The A-weighting curve correlates very well with human response to noise, especially in describing annoyance caused by traffic noise. The unit of measurement for A-weighted sound is the dBA.

The equivalent sound pressure level (L_{eq}) is the equivalent steady-state sound level having the same A-weighted sound energy as that contained in the time-varying sound over the same period of time. The time period widely used for traffic noise is one hour. The abbreviation then becomes $L_{eq}(h)$. All traffic noise levels in this analysis are expressed in dBA $L_{eq}(h)$.

b. Methodology

In order to document the existing noise environment, a series of field measurements were made in the study corridor from April through June 2001. These measurements were made at 32 typical first row receiver locations throughout the project corridor. Measurements were made in the morning and afternoon, and each site was measured three times, with the L_{eq} values being averaged and then rounded off to the nearest whole dBA. The criteria for acceptability of the measurements were that the different measurement results were within $\pm$3 dBA of each other, and that no extraneous sound sources contaminated the data.

The equipment used to conduct the measurements included a Larson-Davis Integrating Sound Level Meter (SLM) Model 812 system. The system was calibrated before and after each measurement session, as well as several times during the session.

c. Current Noise Levels

The current sound environment of the study corridor is dominated by traffic on I-64. Since existing I-64 is the predominant roadway within the study corridor with the highest traffic volumes and truck percentages, those areas adjacent to existing I-64 have the highest ambient sound levels. Based on Activity Category B of the FHWA regulation (including residences, churches, schools, libraries, hospitals, nursing homes, apartment buildings, condominiums, etc.), virtually all noise sensitive structures located along, and in the vicinity of, I-64 currently experience noise levels that approach or exceed the Noise Abatement Criteria NAC. An hourly L_{eq} sound level of 66 dBA was used in making this determination. A more detailed description of the MODOT noise impact criteria is presented in Table III-18.

Table III-18
MoDOT Noise Abatement Criteria
Hourly A-Weighted Sound Level - Decibels (dBA)

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

Source: Missouri Department of Transportation, 2002.

When the 66 dBA L_{eq} approach criteria is exceeded, noise abatement procedures are to be reviewed for effectiveness and feasibility according to the following criteria:

- Noise wall must provide noise reduction of at least five dBA.
- Noise wall must provide attenuation for more than one receptor.
- Noise wall must be 18 feet (5.5 meters) or less in height above normal grade.
- Noise wall must not interfere with normal access to the property.
- Noise wall must not pose a traffic safety hazard.
- Noise wall must not exceed a cost of $30,000 per receptor.

The measurement results are shown in Tables III-19, III-20, and III-21, corresponding to the Greenway, Thruway, and Parkway Subcorridors, respectively.

The tables show that measured L_{eq} values in the Greenway Subcorridor range from 62 to 73 dBA; values in the Thruway Subcorridor range from 58 to 75 dBA; values in the Parkway Subcorridor range from 61 to 72 dBA. These levels are to be expected near a busy interstate facility.

Table III-19
Existing (2001) Greenway Subcorridor Sound Levels

Site Number	Site Description	Date	Start Time	Lmin (dBA)	Lmax (dBA)	L10 (dBA)	L_{eq} (dBA)	Final L_{eq} (dBA)
1 S. side I-64	1 Carole Ln. 40's frontage road eop	4/16/01	1110	63.9	75.9	72.1	70.2	**70**
		4/17/01	1109	65.5	76.4	73.0	70.8	
		6/05/01	1011	62.6	80.1	70.8	68.9	
2 N. side I-64	29 Conwood Ln. 75' s row *	4/16/01	1138	64.2	73.4	70.4	69.0	**69**
		4/17/01	1133	64.9	72.9	69.3	68.1	
		6/05/01	0937	65.7	73.6	71.3	70.1	
3 N. side I-64	8 Lynnbrook Rd. at back bldg line **	4/16/01	1201	61.1	77.3	69.6	67.7	**68**
		4/17/01	1149	59.5	71.6	67.6	65.7	
		6/05/01	0959	63.4	73.9	69.9	67.9	
4 S. side I-64	Hilton Hotel at back bldg line ***	4/16/01	1222	58.8	71.5	66.0	64.0	**62**
		4/17/01	1053	58.4	69.4	64.1	62.4	
		6/05/01	1022	56.3	74.1	61.6	60.3	
5 N. side I-64	10064 Briarwood Ln. ◙	4/16/01	1252	63.4	79.8	70.6	69.0	**69**
		4/17/01	1024	60.1	75.1	68.8	66.9	
		6/05/01	1102	63/0	76.6	71.3	69.2	
6 S. side I-64	1304 Brynnwood Dr. ◙◙	4/16/01	1312	66.6	77.2	73.1	71.5	**71**
		4/17/01	1039	61.8	84.9	72.6	71.3	
		6/05/01	1035	64.4	77.1	72.9	71.3	
7a N. side I-64	57 Waverton Dr. @ Magnolia Dr. ☼	4/16/01	1430	60.6	66.9	64.1	63.1	**62**
		4/17/01	1006	58.5	65.8	63.4	61.9	
		6/05/01	1048	57.9	66.9	63.9	62.3	
7b N. side I-64	S end Ladue Crest Ln. @ bldg line	4/16/01	1537	66.7	81.3	71.3	70.0	**70**
		4/17/01	0914	65.2	77.1	72.1	70.4	
		6/05/01	1141	66.4	79.8	72.1	70.8	
8a S. side I-64	Log Cabin Road at Tall Timbers Dr.	4/16/01	1502	61.2	83.2	68.4	66.1	**64**
		4/17/01	0948	59.3	68.9	65.8	64.1	
		6/05/01	1114	58.0	66.8	62.9	61.3	
8b S. side I-64	6 Meadow Acres Ln. side front yard ▲	4/16/01	1322	61.4	71.1	67.6	66.1	**67**
		4/17/01	0929	61.4	82.9	68.8	67.2	
		6/05/01	1128	62.0	73.7	68.9	66.7	
9 N. side I-64	9054 Monmouth Dr. back yard	4/16/01	1534	60.0	77.6	77.1	70.7	**73**
		4/17/01	0901	64.7	80.0	75.8	73.6	
		6/05/01	1236	67.4	80.4	74.9	73.1	
10 S. side I-64	1321 McCutheon Rd. ▼	4/17/01	0845	59.6	70.5	66.0	64.3	**65**
		4/17/01	1211	60.8	71.3	67.0	65.3	
		6/05/01	1224	61.8	68.2	66.0	64.7	

* Wood fence at row
** Heavy vegetation between I-64 & measurement location
*** I-64 elevated at least 10 feet
◙ At front building face line
◙◙ At back building face line
☼ In front/side yard, east corner, 15 feet from street
▲ West side at front building, line near 22 Ladue Road
▼ West-most building in Manhasset Village; at front building face line; I-64 in deep cut (not visible)

Source: The Technology Group and HNTB Corporation, 2002.

In summary, 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. 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.

Table III-20
Existing (2001) Thruway Subcorridor Sound Levels

Site Number	Site Description	Date	Start Time	Lmin (dBA)	Lmax (dBA)	L10 (dBA)	L_{eq} (dBA)	Final L_{eq} (dBA)
1 N. side I-64	8500 Everett Rd. at Pwr Line R/W*	6/11/01	0900	57.6	81.5	66.1	64.8	**64**
		6/12/01	1432	58.1	73.0	65.3	62.9	
		6/13/01	0820	58.4	75.7	65.4	63.1	
2 N. side I-64	7720 Gissler Ave.; bldg line near I-64	6/11/01	0935	64.0	78.9	72.9	70.8	**71**
		6/12/01	1410	65.1	90.4	74.0	72.4	
		6/13/01	0856	65.1	80.0	72.4	70.5	
3 N. side I-64	7416 Warner Ave. at Murphy Ave.**	6/11/01	0953	59.0	70.8	65.3	63.7	**63**
		6/12/01	1229	58.8	69.8	63.6	62.2	
		6/13/01	1419	59.9	68.8	64.5	63.3	
4 N. side I-64	7720 West Park Ave.; at back bldg line	6/11/01	1013	66.5	82.0	76.8	74.8	**75**
		6/12/01	1202	66.8	80.9	76.8	74.8	
		6/13/01	1328	66.6	82.6	76.6	75.0	
5 N. side I-64	7433 Wise Ave. at Murphy Ave.***	6/11/01	1031	49.7	66.4	55.6	53.9	**53**
		6/12/01	1217	48.1	67.5	54.5	52.8	
		6/13/01	1358	50.5	64.7	54.8	53.4	
6 S. side I-64	A B Green Athletic Complex#	6/11/01	1047	57.6	73.8	68.0	65.7	**65**
		6/12/01	1352	59.3	73.8	67.5	64.8	
		6/13/01	0839	58.2	79.7	66.1	63.9	
7 S. side I-64	7547 Lovell Ln. at Claytonia Tr.♦	6/11/01	1103	57.9	73.1	65.6	63.5	**63**
		6/12/01	1334	57.0	74.6	65.0	63.0	
		6/13/01	0907	56.5	77.3	66.1	63.9	
8 S. side I-64	1327 Hawthorne Pl. ♦♦	6/11/01	1126	68.7	83.7	77.4	75.3	**75**
		6/12/01	1244	66.6	80.6	75.8	73.6	
		6/13/01	0925	68.7	82.6	77.3	75.1	
9 S. side I-64	7218 Nashville Ave.▼	6/11/01	1138	61.3	78.0	66.1	64.9	**65**
		6/12/01	1300	60.0	70.9	66.0	64.5	
		6/13/01	0939	60.9	69.8	66.6	65.2	
10 S. side I-64	Alley North of Nashville Ave.▲	6/11/01	1153	54.0	68.4	60.9	58.9	**58**
		6/12/01	1317	51.2	68.5	59.9	57.6	
		6/13/01	1343	53.2	68.8	60.6	58.5	

* At front building line; I-64 approx. 15 feet elevated.
Source: The Technology Group and HNTB Corporation, 2002.
** At back building line near I-64; I-64 approx. 20 feet elevated.
*** Defines ambient levels in the community away from I-64.
# Between Laclede Station Road and Boland Place; basketball court - goal opposite I-64.
♦ At back building line; I-64 approx. 20 feet elevated.
♦♦ At building face near I-64.
▼ At Msgr McMahon Park near home plate; front bldg line. I-64 approx. 20 feet below in cut.
▲ West of McCausland Avenue ; I-64 approx. 40 feet elevated; at back bldg line.

Table III-21
Existing (2001) Parkway Subcorridor Sound Levels

Site Number	Site Description	Date	Start Time	Lmin (dBA)	Lmax (dBA)	L10 (dBA)	L_{eq} (dBA)	Final L_{eq} (dBA)
1	Dewey Sch; Central Ave at Clayton ovps*	6/11/01	1209	62.7	70.2	67.6	66.3	**67**
		6/12/01	1131	60.6	72.0	68.0	66.3	
		6/13/01	1253	62.9	83.0	69.1	67.7	
2	6438 Oakland Ave. at Childress**	6/11/01	1236	61.7	78.3	70.5	67.9	**69**
		6/12/01	905	61.7	81.1	72.4	69.7	
		6/13/01	1236	63.3	78.0	71.3	68.9	
3	St. Louis Comm College ball field***	6/11/01	1258	63.9	80.7	74.3	72.1	**72**
		6/12/01	926	67.1	79.6	74.4	72.7	
		6/13/01	1100	65.8	86.0	74.5	72.2	

Site Number	Site Description	Date	Start Time	Lmin (dBA)	Lmax (dBA)	L10 (dBA)	L_{eq} (dBA)	Final L_{eq} (dBA)
4	St. Louis HS athletic field end near I-64#	6/11/01	1331	60.0	72.4	66.3	64.4	**65**
		6/12/01	943	60.5	71.8	66.9	65.2	
		6/13/01	1117	61.1	88.2	66.4	65.8	
5	4563 Choteau Ave. at back bldg line♦	6/11/01	1352	63.4	77.0	72.3	70.3	**70**
		6/12/01	958	60.5	78.7	71.0	69.0	
		6/13/01	1139	63.9	76.6	71.4	69.4	
6	4365 Donavan Pl. at back bldg line♦♦	6/11/01	1409	57.3	76.2	64.1	62.7	**62**
		6/12/01	1014	58.1	76.4	63.8	62.2	
		6/13/01	1154	58.3	73.3	63.4	62.3	
7	1129 Blendon Pl. front yard	6/11/01	1552	50.3	71.5	61.3	59.0	**61**
		6/12/01	1147	52.4	73.6	61.9	59.7	
		6/13/01	1310	55.4	76.6	65.5	63.7	
8	SW ball field 110 ft from home plate◙	6/11/01	1450	61.9	73.4	68.9	67.0	**67**
		6/12/01	1108	60.2	70.1	67.2	65.3	
		6/13/01	1025	61.1	88.3	69.0	67.2	
9	NE-most ball field at 1st base	6/11/01	1506	57.3	68.9	64.3	62.2	**61**
		6/12/01	1054	53.9	67.1	59.1	57.8	
		6/13/01	1042	58.3	68.7	64.1	62.5	
10	William Stix School near playground	6/11/01	1428	56.1	70.0	62.1	60.4	**61**
		6/12/01	1030	55.8	69.6	62.5	60.6	
		6/13/01	1210	57.7	70.6	62.8	60.9	

*Side of building near I-64; I-64 approx. 20 feet in cut. Significant traffic on Clayton Avenue overpass.
** At front building face; I-64 approx. 20 feet in cut. Significant traffic on Oakland Avenue
*** At fence line near I-64; approx. 300 feet west of Macklin Road. Significant traffic on Oakland Avenue
# Adjacent to St. Louis Science Center. Significant traffic on Oakland Avenue
♦ Opposite CID.
♦♦ Adjacent to Tower Grove Avenue; I-64 approx. 20 feet in cut.
◙ Down left field line; I-64 elevated less than 10 feet.
Source: The Technology Group and HNTB Corporation, 2002.

C. References

Brill, K.G. Jr., 1991, *Geologic Map of St Louis and County, Missouri*: Missouri Department of Natural Resources, Division of Geology and Land Survey, Open File Maps 91-259-G.

City of Brentwood, Missouri, *Comprehensive Plan for the City of Brentwood*, 1991.

City of Brentwood, Missouri, *Reports on Recommended Amendments to the Comprehensive Plan*, 1994, 1995, and 1999.

City of Clayton, Missouri, *Clayton Business Districts Master Plan*, 1993.

City of Clayton, Missouri, *Clayton Master Plan*, adopted 1975, amended 1989.

City of Clayton, Missouri, *Chapter 22a of the Municipal Code - Overlay and Urban Design Districts,* 2001.

City of Frontenac, Missouri, *Land Use Regulations*, 2001.
City of Ladue, Missouri, *A Preliminary Report: Upon a City Plan*, 1939.

City of Ladue, Missouri, *Zoning District Map*, 2000.

City of Richmond Heights, Missouri, *Comprehensive Plan Update*, 1986.

City of St. Louis, Missouri, Community Information Network website, http://stlouis.missouri.org, Neighborhoods, 2002.

City of St. Louis, Missouri, *St. Louis Five-Year Strategy Consolidated Plan*, http://stlouis.missouri.org/5yearstrategy, 2002.

Cowardin, Lewis M. 1979, *Classification of Wetlands and Deepwater Habitats of the United States*, U.S. Fish and Wildlife Service, 1979.

Federal Highway Administration, U.S. Department of Transportation, *Guidance for Preparing and Processing Environmental and Section 4(F) Documents*, FHWA Technical Advisory T6640.8A, October 30, 1987.

Federal Emergency Management Agency, *Flood Insurance Rate Maps, St. Louis County, Missouri,* Map number 29189C0169 J (Panel 169) August 23, 2000; Map number 29189C0188 H (Panel 188), August 2, 1995; Map number 29189C0189 H (Panel 189) August 2, 1995.

Federal Emergency Management Agency, *Flood Insurance Study, St. Louis County, Missouri*, Revised: August 23, 2000.

Federal Highway Administration, U.S. Department of Transportation, *Noise Barrier Cost Reduction Procedure, STAMINA2.0/OPTIMA User's Manual*, FHWA-DP-58-1, Washington, DC, 1982.

Federal Highway Administration, U.S. Department of Transportation, *Procedures for Analysis and Abatement of Highway Traffic Noise and Construction Noise,* US Code Title 23, Section 772 (23CFR772).

Federal Highway Administration, US Department of Transportation, *Transportation Conformity Reference Guide (Revised),* July 31, 2001.

Garstang, Mimi, 1987, *Underground Coal and Clay Mines in the City of St. Louis, Missouri:* Missouri Department of Natural Resources, Division of Geology and Land Survey, Open File Maps 87-238-MR.

Lee, C. Y, and Fleming, G. G., *Measurement of Highway-Related Noise*, FHAW-PD-96-046, Federal Highway Administration, Washington, DC, 1996.

Lutzen, Edwin E. and Rockaway L.D.,1971, *Engineering Geology of St Louis County, Missouri*: Missouri Geological Survey and Water Resources, Engineer Geology Series No. 4, 23 p., 1pl, 3 tbls.

McCracken, Mary H., 1971, *Structural Features of Missouri: Missouri Geological Survey and Water Resources, Report of Investigations No. 49*, 99p, 1pl.

Missouri Department of Conservation website, www.conservation.state.mo.us, MDC Nature Section, Missouri Natural Heritage Database, and Missouri Fish and Wildlife System, 1995-2002.

Natural Resources Conservation Service, *Soil Survey of St. Louis County*, 1982.

Nelson, Paul W., *The Terrestrial Natural Communities of Missouri*, Missouri Natural Areas Committee, 1985.

Shrouds , J. M., *Discussion Paper: Appropriate Level of Highway Air Quality Analysis for a CE, EA/FONSI, AND EIS,* Federal Highway Administration, US Department of Transportation, Office of Environmental Policy, Noise and Air Analysis Division; March, 1986.

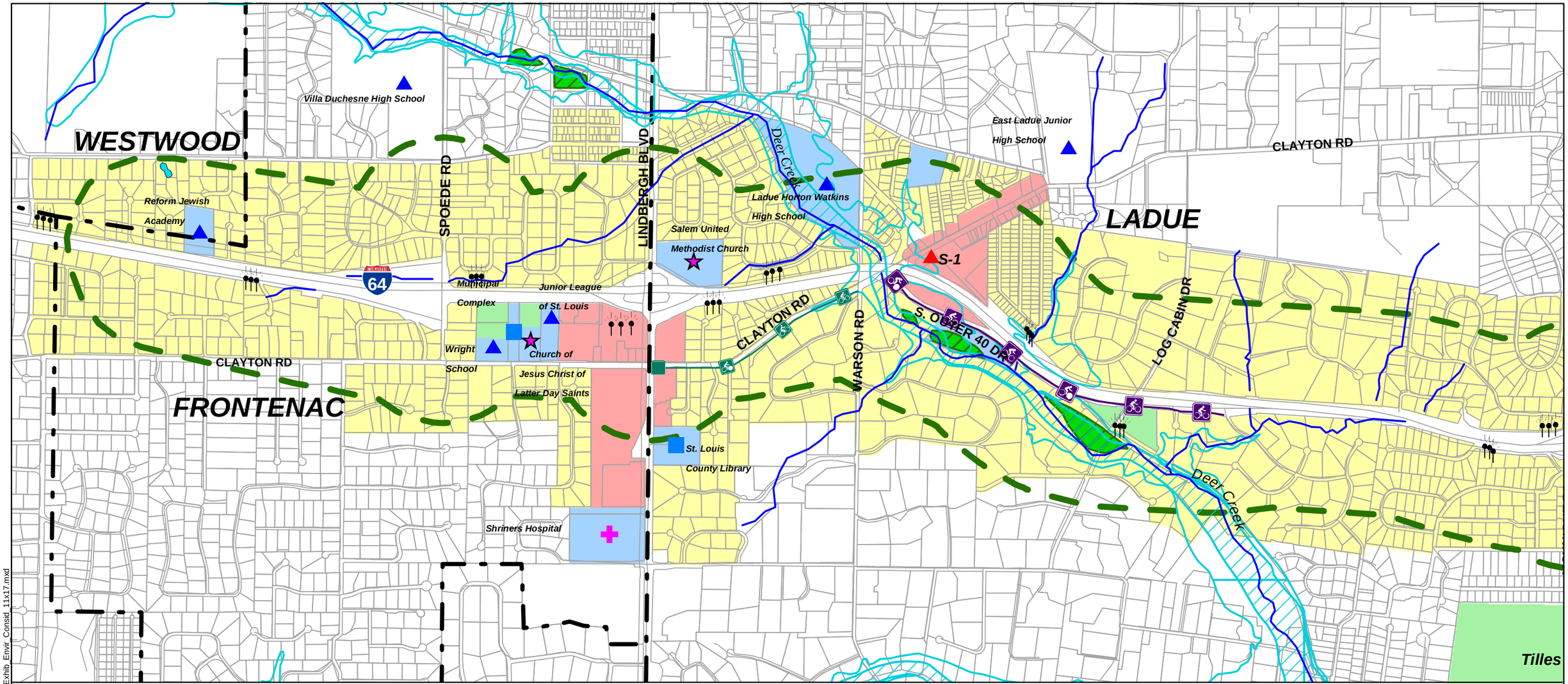
Thompson, Thomas L., 1995, *The Stratigraphic Succession in Missouri (Revised –1995)*: Missouri Department of Natural Resources, Division of Geology and Land Survey, Volume 40 (2nd Series) Revised, 188p, 42 figs., and 1 tbl.

Thompson, Thomas L., 1986, *Paleozoic Succession in Missouri, Part 4- Mississippian System*: Missouri Department of Natural Resources, Division of Geology and Land Survey, Report of Investigations 70, 189p, 110 figs., 2 tables.

U.S. Department of Agriculture Soil Conservation Service, in Cooperation with the Missouri Agriculture Experiment Station, 1982, *Soil Survey of St Louis County and St Louis City, Missouri*; 137p., 15 maps.

U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, *User's Guide to CAL3QHC Version 2.0: Modeling Methodology for Predicting Pollutant Concentrations near Roadway Intersections*; EPA-454/R-92-006, Research Triangle Park, NC, November 1992.

U.S. Environmental Protection Agency website, www.epa.gov, Surf Your Watershed, 2002.



EXISTING LAND USE

- Single-Family Residential
- Multi-Family Residential
- Commercial
- Light Industrial
- Public/Semi-Public
- Parks & Recreation Areas

- Greenway Subcorridor
- Thruway Subcorridor
- Parkway Subcorridor
- City Boundaries
- St. Louis Neighborhoods
- Underground Mine Entry/Shaft Locations (approx.)*

- Schools / Institutions
- Churches
- Municipal Facilities
- Hospitals
- Potential Section 4(f) Park/Recreation Area
- Potential Hazardous Waste Sites

- National Register of Historic Places (NRHP) Listed Resource
- NRHP Listed Districts
- Existing Bike Route
- Proposed Bike Route
- Proposed Pedestrian/Bike Path
- Existing Pedestrian/Bike Path

- Streams
- Ponds
- Floodway
- 100-Year Floodplain
- Potential Vegetated Wetlands

- Noise Measurement Sites
- Existing Pedestrian Bridge or Tunnel
- Estimated Extent of Mined-out Area*

*(Source: MDNR map titled Underground Coal and Clay Mines in the City of St. Louis, Missouri, 1987)

N W E S

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

Greenway Subcorridor

ENVIRONMENTAL CONSIDERATIONS

Exhibit III-1A

I-64 CORRIDOR STUDY

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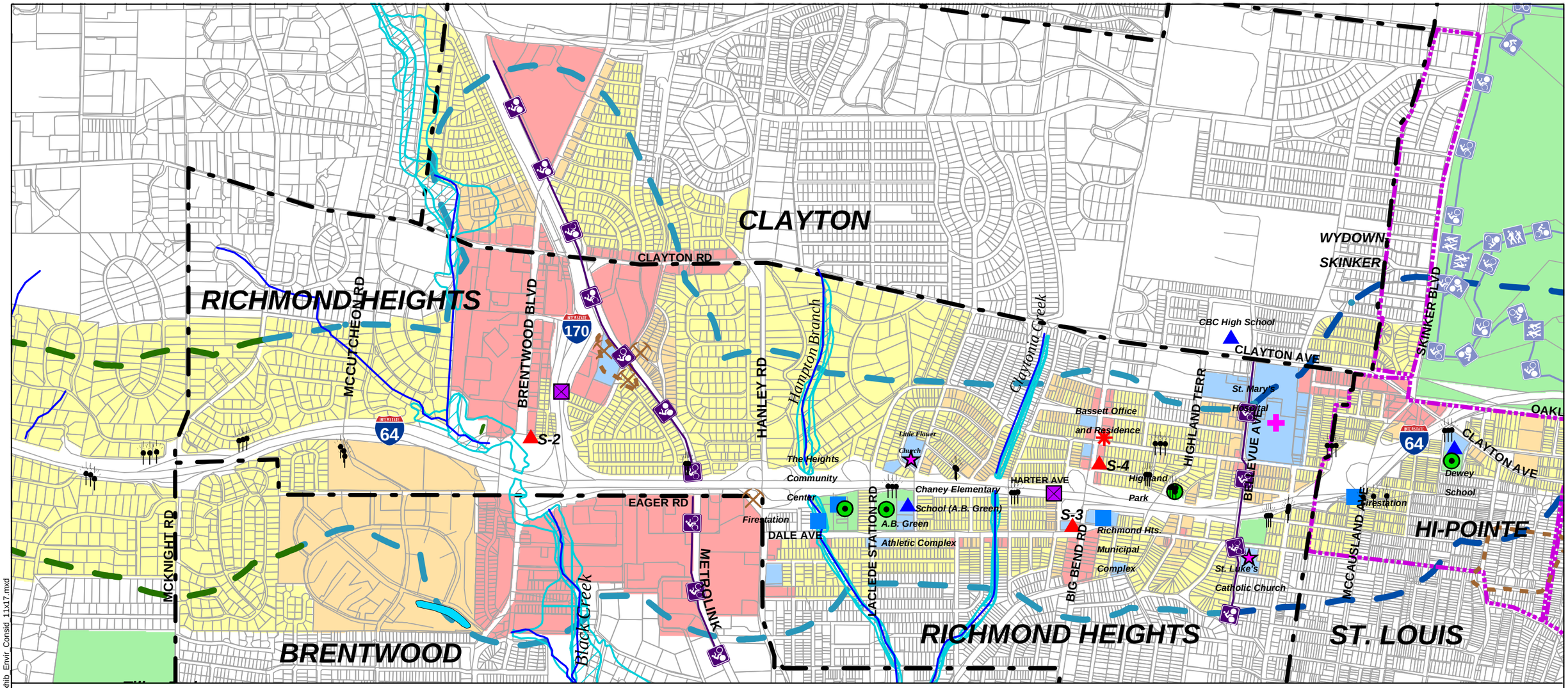

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- Noise Measurement Sites
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- Estimated Extent of Mined-out Area*

*(Source: MDNR map titled Underground Coal and Clay Mines in the City of St. Louis, Missouri, 1987)

N W E S

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

I-64 CORRIDOR STUDY

Thruway Subcorridor

ENVIRONMENTAL CONSIDERATIONS

Exhibit III-1B

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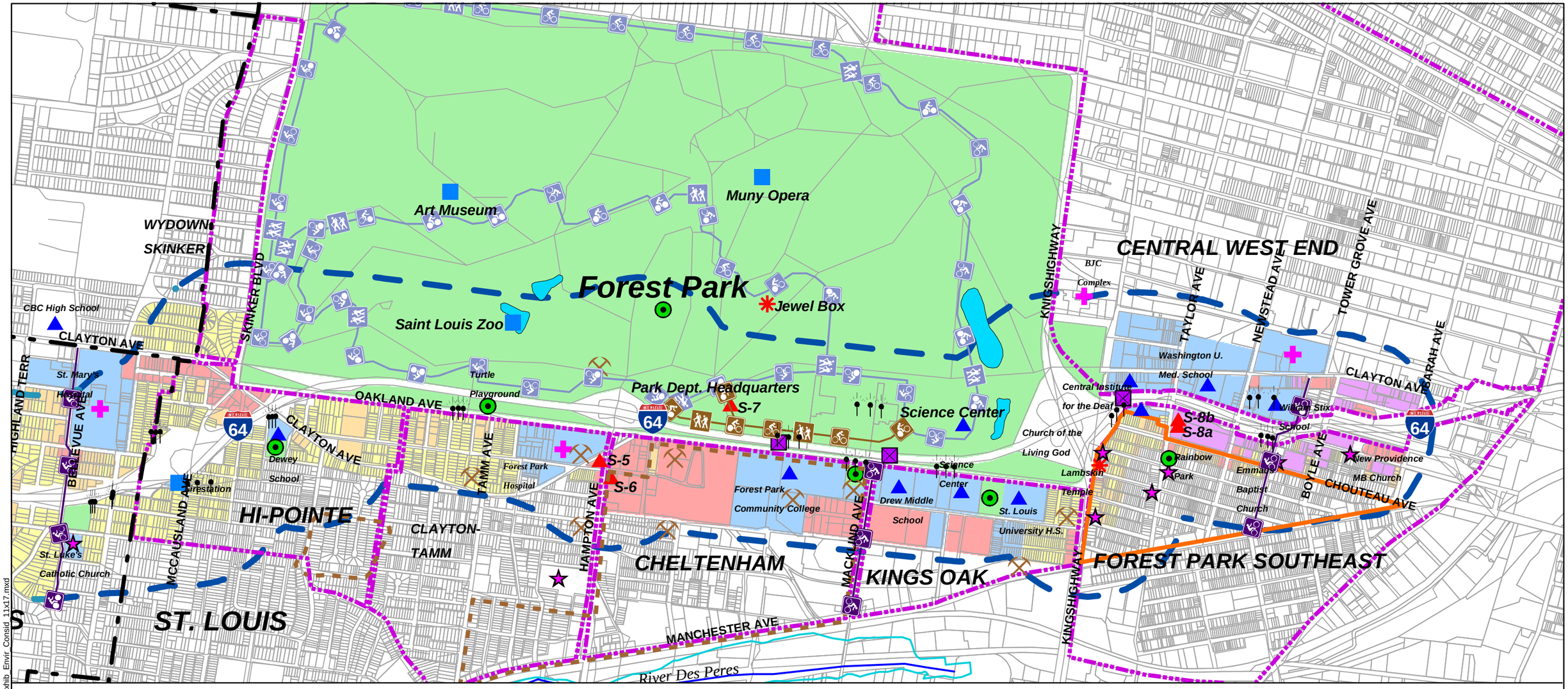

EXISTING LAND USE

- Single-Family Residential
- Multi-Family Residential
- Commercial
- Light Industrial
- Public/Semi-Public
- Parks & Recreation Areas

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*(Source: MDNR map titled Underground Coal and Clay Mines in the City of St. Louis, Missouri, 1987)

N W E S

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

I-64 CORRIDOR STUDY

Parkway Subcorridor

ENVIRONMENTAL CONSIDERATIONS

Exhibit III-1C

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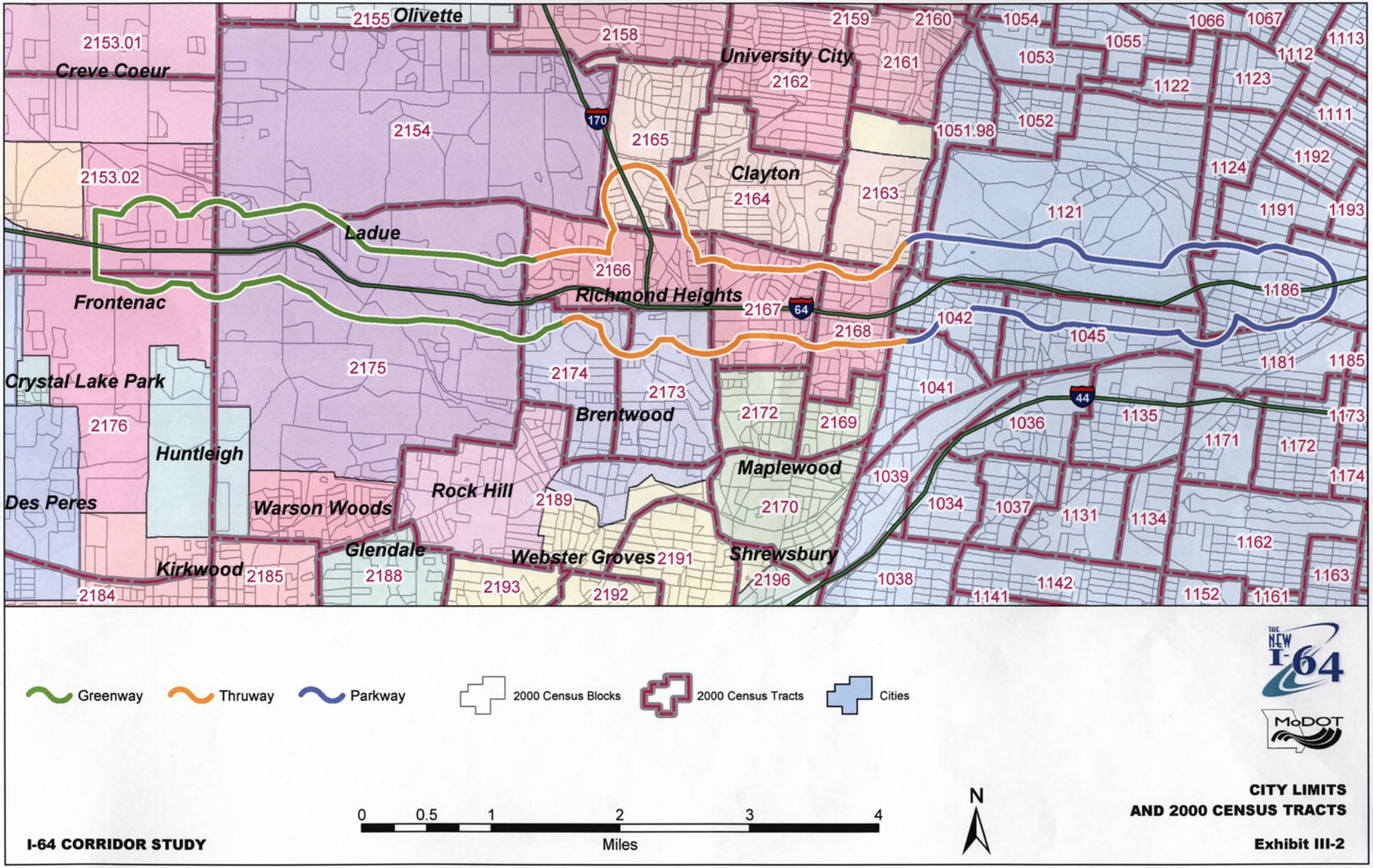

I-64 CORRIDOR STUDY

CITY LIMITS AND 2000 CENSUS TRACTS

Exhibit III-2