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Section 1

Purpose of and Need for the Proposed Action

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Purpose of and Need for the Proposed Action

1.1 Description of the Proposed Action

1.1.1 Location and Termini

The Zoo Interchange is located in western Milwaukee County in southeastern Wisconsin at the junction of Interstate 94 (I-94), Interstate 894 (I-894), and United States Highway 45 (US 45), in the cities of Milwaukee, Wauwatosa, and West Allis (**Exhibit 1-1**). The study area encompasses the Zoo Interchange and its four approaches (referred to as the east, west, north, and south legs). The west terminus of the project is 124th Street, and the east terminus is 70th Street, a distance of about 3.5 miles. The south terminus of the project is Lincoln Avenue, and the north terminus is Burleigh Street, a distance of approximately 5.5 miles. Each approach's termini were selected to provide sufficient distance for matching back into the existing freeway alignment.

The Wisconsin Department of Transportation (WisDOT) and the Federal Highway Administration (FHWA) are studying the 108th Street (WIS 100, better known as Highway 100, locally) interchange on the west leg, the Greenfield Avenue (WIS 59) interchange on the south leg, and the 84th Street (WIS 181) interchange on the east leg. WisDOT and FHWA are studying these interchanges because of their proximity to the Zoo Interchange and their effect on the flow of traffic to and from the Zoo Interchange.

The north leg is longer than the east, west, and south legs. Unlike the east, west and south legs, the north leg includes a number of service interchanges over a very short distance, each that influence operations on both the freeway and each other. Freeway entrances and exits at Bluemound Road (US 18), Wisconsin Avenue, Watertown Plank Road, Swan Boulevard, Mayfair Road (Highway 100), and North Avenue are very closely spaced. There is not a full interchange with US 45 at North Avenue because there is no exit from northbound US 45 to eastbound North Avenue. Instead, this exit is provided from US 45 onto Highway 100 south of North Avenue. For this reason, WisDOT and FHWA included the North Avenue interchange as part of this study, and established Burleigh Street as the terminus on the north because it will allow improvements to the North Avenue interchange to transition smoothly back into the existing freeway. The Burleigh interchange, and those to its north (Capitol Drive, Hampton Avenue, Silver Spring Drive, and Appleton Avenue) are each standard-diamond interchanges and are spaced evenly, approximately one mile apart from each other. This more uniform interchange type, and the consistent spacing of the interchanges, along with dropping traffic volumes as US 45 continues north, improves the operational efficiency and safety performance of US 45 north of the Burleigh project limit.

1.1.2 Proposed Action

The proposed action is to reconstruct the Zoo Interchange and the corresponding freeway segments within the limits of the project as stated above. The scope of the proposed action includes reconstructing the freeway and bridges, modifying interchange access to improve safety and traffic flow, reconstructing local streets affected by the freeway reconstruction, and enhancing the appearance of the reconstructed freeway.

1.1.3 Project History

Construction of the Zoo Interchange was completed in 1963. In 1966, the Southeastern Wisconsin Regional Planning Commission (SEWRPC) completed a regional transportation system plan for the year 1990. This original transportation plan recommended several new freeway links, many of which were never constructed. An example is a once-planned outer beltway that would have connected I-94 in southern Milwaukee County to I-94 in Waukesha County and to US 41/45 in Washington County. In Milwaukee County, the planned Park West Freeway and Stadium Freeways were never completed. As a result, the freeway system now carries more traffic than initially projected.

In 1991, WisDOT began analyzing long-term improvements to three I-94 system interchanges in Milwaukee County: the Zoo Interchange, the Stadium Interchange, and the Marquette Interchange. By 1995, the Zoo Interchange study was merged with the two other system interchange studies and a study evaluating light rail transit and bus options in the I-94 east-west corridor, referred to as the I-94 East-West Corridor Study, was completed.

A Draft Environmental Impact Statement (Draft EIS)/Major Investment Study (MIS) for the I-94 East-West Corridor Study was published in October 1996. WisDOT advanced a Locally Preferred Alternative (LPA) that included all the transportation components of the Draft EIS/MIS, such as reconstruction of the Marquette Interchange with design and safety improvements, reconstruction of I-94 to modern design standards, addition of high-occupancy vehicle (HOV) lanes on I-94, expansion of bus transit, and addition of through lanes and light rail transit. The Milwaukee County Board accepted the LPA but did not endorse implementation, and only endorsed further study funded entirely with federal and state funds.

The Waukesha County Board supported studying the reconstruction and modernization of I-94, including adding HOV lanes and expanding bus service, but opposed constructing light rail. The Waukesha County Board also supported preliminary engineering, completing the Final EIS, and separating the study of transportation improvements so that each improvement could advance independently.

Since development of the LPA completed the MIS process, FHWA closed the MIS process for the I-94 east-west corridor in Milwaukee and Waukesha counties. FHWA issued a notice in the June 26, 2000, *Federal Register* that the I-94 East-West Corridor Draft EIS would not be followed by a corridor-wide Final EIS or Record of Decision, because the MIS was in place and the components of the LPA were unlikely to proceed on the same schedule. With WisDOT as sponsor, only one element of the LPA (Marquette Interchange reconstruction) has advanced from preliminary engineering to final design and construction.

The Wisconsin Center District, in cooperation with the City of Milwaukee and Milwaukee County, took the light rail element of the LPA into further preliminary engineering study and is currently preparing an environmental assessment. Like the Wisconsin Center District study, this study builds upon the previous studies. The proposed action focuses on the Zoo Interchange and its approaches.

In 2009, WisDOT placed weight limits on three Zoo Interchange bridges because of advanced and accelerating deterioration uncovered during a routine inspection. In 2010, WisDOT replaced the three bridges because of continued serious deterioration, despite the imposition of the weight restrictions the previous year. (See Section 1.3.4 for a detailed discussion of the bridges and their condition.)

Also in 2009, the Draft EIS was circulated for review and comment. The key dates in development of this Environmental Impact Statement (EIS) are:

Notice of Intent to prepare an EIS appeared in the Federal Register on May 19, 2008

The Draft EIS was circulated for review in May 2009 and public hearings were held on June 23 and 24, 2009.

The Supplemental Draft EIS was circulated for review in February 2011 and public hearings were held on March 22 and 23, 2011.

1.1.4 Relationship to Other Proposed Actions

Based on rapid development in and around the Watertown Plank Road interchange with US 45, Milwaukee County, the City of Milwaukee, the City of Wauwatosa, and WisDOT examined traffic patterns in western Milwaukee County, known as the West Suburban Traffic Impact Analysis (TIA). The limits of the study were Highway 100 on the west, Bluemound Road on the south, 84th Street on the east, and the Menomonee River on the north.

The study focused on the need for potential roadway improvements to enhance traffic operations on the local street system due to future development at the Milwaukee County Research Park, the Milwaukee Regional Medical Center, and the Milwaukee County grounds (see Section 1.3.5, **Exhibit 1-17** and Section 2.5.4 for more information). This study is compatible with the recommendations of the West Suburban TIA study.

WisDOT and FHWA are also studying the conversion of US 41 and US 45 to an interstate highway from the Mitchell Interchange north to Green Bay via I-894, US 45, and US 41. The Zoo Interchange study team coordinates regularly with staff involved in the interstate conversion study because US 45 through the Zoo Interchange study area would be converted to an interstate designation. Both studies are consistent in using the same set of traffic forecasts and interstate standards to develop alternatives.

1.2 Purpose of Proposed Action

The purpose of the proposed action is to address the deteriorated condition of the study-area freeway system, obsolete design of the roadway and bridges, current and future capacity, and high crash rate. The proposed action would accomplish the following:

- Maintain a key link in the local, state, and national transportation network. Section 1.3 describes the project in the context of the regional transportation planning process and the role of the study-area freeway system in the local, regional, and national transportation network.
- Address the obsolete design of the study-area freeway system to improve safety. This includes replacing left-hand entrances and exits and providing proper weaving distances between exit and entrance ramps. Section 1.3 describes the outdated design that results in vehicles weaving across two or three lanes in a short distance, including closely spaced left- and right-hand entrance and exit ramps.
- Replace deteriorating pavement and bridges. Section 1.3 describes the poor condition of the pavement on the study-area freeway system, which has not been replaced since being constructed in the early 1960s. Several pavement overlays have been performed, but each performs more poorly than the previous overlay (**Exhibit 1-6**). Section 1.3 also documents the deteriorated condition of the bridges in the Zoo Interchange, which resulted in three of the most deteriorated bridges being replaced in 2010.
- Accommodate future traffic volumes at an acceptable level of service. Section 1.3 describes current congestion on the study-area freeway system during the morning and afternoon rush hours and how congestion will worsen in the future.

The proposed action would neither require nor foreclose other future transportation improvements identified in the regional transportation plan. The proposed action would provide a safer and more efficient transportation system in the Zoo Interchange, while minimizing impacts to the natural and built environment to the extent feasible and practicable.

1.3 Need for Proposed Action

The need for transportation improvements in the Zoo Interchange corridor is demonstrated through a combination of factors, including the following:

- Regional land use and transportation planning
- System linkage and route importance
- Existing and future traffic volumes
- Crash history
- Existing freeway conditions and deficiencies

The remainder of this section discusses these factors in more detail. The need for improvements sets the stage for developing and evaluating possible improvement alternatives.

1.3.1 Land Use and Transportation Planning

SEWRPC, created by state statute in 1960, is the official planning agency for southeastern Wisconsin, which includes Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha counties.

SEWRPC's principal responsibility is to prepare a comprehensive plan for the physical development of the region. The key product is a regional land use plan upon which all other plan elements, including transportation, are based. Regional planning is conducted under the guidance of various technical coordinating and advisory committees with

representatives from state and federal agencies; local planning, transportation and public works departments; transit providers and service groups; private utilities; and environmental organizations. Implementing the plan recommendations and the degree of implementation is the responsibility of local, state, or federal governments based on additional, focused planning, programming, and engineering/environmental studies, such as those conducted by WisDOT.

The following is a summary of adopted regional plans relevant to the Zoo Interchange study area.

2035 Regional Land Use Plan for Southeastern Wisconsin—SEWRPC Planning Report No. 48 (June 2006). The first regional land use plan was adopted in 1966 with updates adopted in 1978, 1994, 1997, and 2006 (current plan). The land use plan is based on an extensive database and inventory of the region's physical characteristics that has been maintained and updated by SEWRPC for more than 40 years. Physical characteristics pertinent to transportation demand include existing and future land use, growth and development trends/locations, and housing and employment trends. The 2035 regional land use plan is also based on an *intermediate growth scenario* that recommends the following:

- Seek a centralized regional settlement pattern that moderates the current trend toward decentralized land development.
- Stabilize and revitalize urban centers, particularly the Milwaukee urbanized area.
- Encourage new development as infill in existing urban centers with defined growth emanating outward from the existing urban centers.
- Plan new urban development at densities that effectively support essential urban services including water, sewer, and public transit.
- Protect remaining primary environmental corridors from incompatible urban development, discourage urban development in secondary environmental corridors, and preserve prime agricultural lands.

Table 1-1 presents growth projections for Milwaukee County based on an intermediate growth scenario. SEWRPC projects vehicle miles traveled to increase by 16 percent between 2000 and 2035, which is equivalent to a 0.4 percent annual increase.

TABLE 1-1
Milwaukee County Growth Projections

Growth Indicators	Percent Increase (2000–2035)
Population ^a	7.0
Households ^a	12.2
Employment ^a	6.6
Urban Land Use ^a	5.2
Vehicles Miles Traveled ^b	16.0

^a Source: *2035 Regional Land Use Plan for Southeastern Wisconsin* (Tables 28, 30, 31, and 35). Percent increase for population, households, and employment for years 2003 to 2035.

^b Source: *2035 Regional Transportation System Plan for Southeastern Wisconsin* (Table 107). Data are for arterial and highway systems under "no-build" scenario evaluated in the 2035 regional transportation system plan and for years 2001 to 2035.

A Regional Transportation System Plan for Southeastern Wisconsin: 2035—

SEWRPC Planning Report No. 49 (June 2006). Similar to the land use plan, the first regional transportation system plan was adopted in 1966 with updates adopted in 1978, 1994, 1997, and 2006 (current plan). Based on population, household, employment growth, and other data from the regional land use plan, the transportation system plan forecasts traffic growth and transportation demand in the region. It also analyzes the ability of existing transportation facilities to address forecast traffic demand and meet air quality conformity requirements. SEWRPC's regional traffic model has been in place for more than 40 years and determines future traffic demand. SEWRPC updates the model regularly to reflect changing trends. A transportation project must be listed in the regional transportation plan before it can be constructed. However, inclusion in the plan does not mean the project will be constructed.

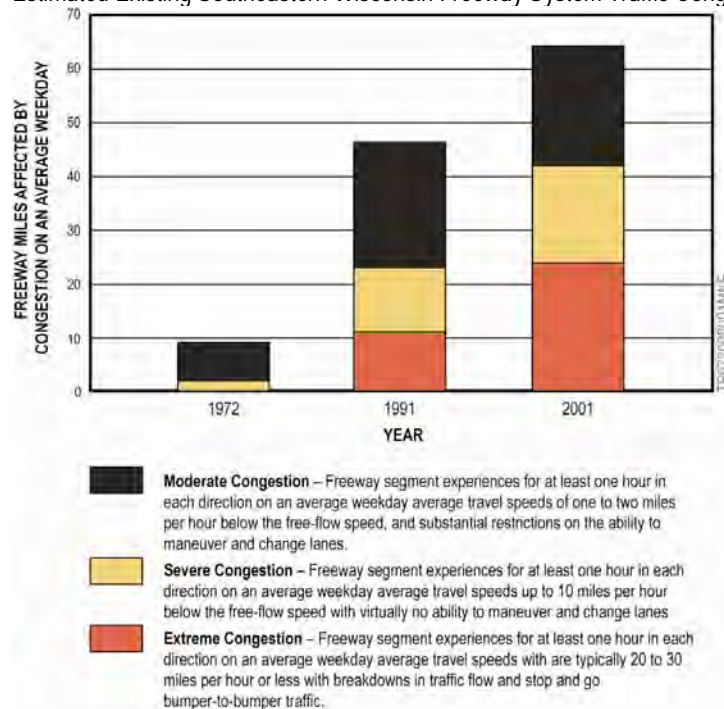
Traffic forecasts reflect predicted growth patterns, number and types of trips made, routes taken, travel times, and other factors such as transit use. In its recommendations for providing additional highway capacity, the regional transportation plan recommends and incorporates the following:

- An intermediate growth scenario for the region and community land use planning that promotes compact development/redevelopment in areas that can use existing or expanded municipal sewer and water, and where higher density development can be served by transit, bicycle, and pedestrian facilities.
- A 100 percent increase in public transit in terms of revenue-transit vehicle miles. The increase in public transit includes the development of rapid and express transit systems and substantial expansion of local bus systems where development density is sufficient to generate ridership.
- Reduced auto travel and improved efficiency of existing facilities before increasing highway capacity.
- Traffic flow and safety improvements on highways and arterial streets through measures such as intersection improvements and access management before committing to increasing highway capacity.

The regional transportation system plan identifies the traffic volumes and congestion that will remain even if the above actions are implemented. The plan estimated the increase in congestion that occurred on the southeastern Wisconsin freeway system between 1972 and 2001. Over the 29 years analyzed, the number of freeway miles affected by congestion increased sixfold (**Exhibit 1-2**).

EXHIBIT 1-2

Estimated Existing Southeastern Wisconsin Freeway System Traffic Congestion on an Average Weekday



Source: SEWRPC.

The plan evaluates street and highway capacity expansion (freeway and surface arterial) and makes recommendations to address the residual traffic volumes and congestion. The plan recommends about a 4 percent expansion of arterial lane miles over the next 30 years.

The 2035 regional transportation system plan includes the following recommendations for the Zoo Interchange study area:

- Expand I-94 from 6 to 8 travel lanes through the Zoo Interchange
- Expand the I-894 bypass from 6 to 8 travel lanes
- Expand US 45 from 6 to 8 travel lanes through the Zoo Interchange

The 2035 regional transportation system plan includes a note indicating WisDOT will perform preliminary engineering and environmental study on the proposed freeway widening (i.e., this study) to evaluate the need for additional capacity for the study-area freeway system.

A Regional Freeway System Reconstruction Plan for Southeastern Wisconsin—SEWRPC Planning Report No. 47 (May 2003). SEWRPC conducted the regional freeway system planning study at the request of WisDOT. The purpose of the study was to identify segments of the freeway system that would require reconstruction within the next 30 years and recommend whether certain freeway segments should be rebuilt as is, with minor redesign, with substantial redesign, or with additional traffic lanes. Implementing the plan's recommendations requires further consideration through preliminary engineering and the preparation of environmental documents for specific freeway improvement projects, based on WisDOT's prioritization of need and other factors.

SEWRPC conducted the 2003 regional freeway system planning study in the context of the 2020 regional land use and transportation system plans. The 2020 regional transportation system plan proposed modernization and limited expansion of the southeastern Wisconsin freeway system.

Based on the final meeting of the Southeastern Wisconsin Regional Freeway System Advisory Committee (April 2, 2003) regarding the 2003 freeway system plan, the committee made several freeway system recommendations for updates to the 2020 regional transportation system plan. The current 2035 regional transportation plan incorporates the committee's recommendations. Recommendations applicable to the Zoo Interchange study area include the following (adapted from the 2003 freeway system plan):

- Reconfigure the freeway-to-freeway system interchanges:
 - Eliminate left-hand on and off ramps.
 - Minimize lane drops and provide route continuity.
 - Improve freeway-to-freeway ramps to provide ramp speeds closer to freeway mainline speeds.
 - Address closely spaced service interchanges with grade separations or collector-distributor roadways.
- Improve freeway service interchanges:
 - Increase length and width of ramps.
 - Convert multipoint exits to single-point exits.
 - Provide selected auxiliary lanes to address closely spaced interchanges.
- Improve freeway mainline:
 - Improve horizontal and vertical curves, grades, and vertical clearance to meet modern design standards.
 - Provide full inside and outside shoulders.
 - Provide additional lane capacity (increase from 6 to 8 lanes) on I-94, I-894 south of the interchange, and US 45 north of the interchange.

The 2003 regional freeway system plan includes the following traffic operations information for the Zoo Interchange study area:

- The west, south, and north freeway legs of the Zoo Interchange serve substantial through vehicle travel. Through travel is defined as having trip ends outside the county in which the freeway segment is located.
- All interchange legs serve substantial inter-county traffic. Inter-county traffic has one trip end within the county and one trip end outside the county in which the freeway segment is located.
- All interchange legs have extreme congestion under existing traffic and year 2020 forecast traffic. Extreme congestion ranges between 6 and 14 hours on an average weekday.

- All interchange legs potentially need additional freeway traffic lanes.

The 2003 regional freeway system plan includes the following conceptual design recommendations for the Zoo Interchange study area:

- Reconstruct the Zoo Interchange and convert left-hand entrance and exit ramps to right-hand ramps, provide lane and route continuity, smooth out horizontal curves, and flatten vertical curves.
- Construct grade-separated ramp connections between the Zoo Interchange and adjacent Greenfield Avenue interchange on I-894 bypass.
- Construct collector-distributor roadways on US 45 in the segment from I-94 to Watertown Plank Road, and reconstruct interchange ramps at Wisconsin Avenue, Watertown Plank Road, and North Avenue.
- Construct grade-separated ramp connections between the Zoo Interchange and Highway 100 interchange on I-94.
- Reconfigure Highway 100 interchange on I-94, including a single-point exit for westbound traffic rather than the current two successive exits.
- Construct grade-separated ramp connections between the Zoo Interchange and adjacent 84th Street interchange on I-94.

The 2003 regional freeway system plan studied HOV and high-occupancy toll (HOT) lanes but did not recommend them for the regional freeway reconstruction plan for several reasons. The I-94 East-West Corridor Study previously considered HOV lanes and received little to no support when proposed in the mid-1990s. Furthermore, implementing barrier-separated HOV and HOT lanes would require significant additional right-of-way and substantially increase freeway system reconstruction costs compared to adding regular freeway lanes (see Section 2.3.2 of this EIS and Appendix G of SEWRPC's 2035 regional transportation plan).

SEWRPC 2011–2014 Transportation Improvement Program for Southeastern Wisconsin (February 2011). SEWRPC is the federally designated metropolitan planning organization that ensures air quality conformance in the seven-county southeastern Wisconsin region. The six-county Milwaukee Transportation Management Area (Milwaukee, Racine, Kenosha, Ozaukee, Waukesha, and Washington counties) is a moderate non-attainment area under the 8-hour ozone National Ambient Air Quality Standards (NAAQS). Walworth County is a maintenance area under the 1-hour ozone NAAQS and an attainment area under the 8-hour ozone NAAQS. In accordance with the 1990 Clean Air Act Amendments, proposed highway improvements must be included in an approved Transportation Improvement Program (TIP) and the adopted regional transportation system plan to be in conformance with the State Implementation Plan (SIP) for air quality.

The SIP documents how the Wisconsin Department of Natural Resources (DNR) intends to meet its obligations to protect and enhance air quality. The SIP consists of many parts, each of which is approved by the United States Environmental Protection Agency (U.S. EPA) after allowing for public comment and a public hearing. Most parts of the SIP apply to all sources of air pollution in Wisconsin, while some "source-specific" parts of the SIP may apply to a single regulated entity.

On June 21, 2006, FHWA and Federal Transit Administration (FTA) determined that the 2035 regional transportation plan is in conformance with the state air quality implementation plan. FHWA and FTA also approved the regional emissions analysis prepared for the 2035 regional transportation system plan, which the 2011–2014 TIP serves to implement. See Appendix C of the 2011–2014 TIP for more information on conformity.

The Zoo Interchange study area is included in the 2011–2014 TIP as Project Number 17: “Reconstruction of the Zoo Interchange and approaches on I-94, I-894, and US 45 in Milwaukee County.” The TIP was amended in September 2011 to include the Adjacent Arterials Component.

1.3.2 System Linkage and Route Importance

I-94 is a major east-west freeway link across the northern United States connecting Detroit, Chicago, Milwaukee, Madison, St. Paul, Minneapolis, and Billings, Montana. I-94 connects to I-90 in Billings and I-90 continues west to Seattle. I-894 is a bypass around Milwaukee for through traffic and provides an important freeway connection for several Milwaukee County communities. US 45 is a north-south highway link connecting the Upper Peninsula of Michigan, Oshkosh, Fond du Lac, West Bend, Milwaukee, Chicago’s O’Hare International Airport, and points south.

The Zoo Interchange carries nearly 300,000 vehicles per day — more than any freeway interchange in Wisconsin. The Zoo Interchange is a gateway to Wisconsin’s Fox River Valley (Oshkosh, Appleton, and Green Bay) and to Milwaukee area tourism venues (Milwaukee County Zoo, Wisconsin State Fair Park, and Mayfair Mall shopping center). In addition to serving long-distance travelers and regional and national freight movement, the study-area freeway system is an important commuter route for many of the approximately 692,000 employees who work in Milwaukee and Waukesha counties.

The study-area freeway system is critical in moving health care patients to hospitals and trauma centers. The Milwaukee Regional Medical Center is located east of US 45 between Wisconsin Avenue and Watertown Plank Road. Its campus is home to several health care organizations: Blood Center of Southeastern Wisconsin, Children’s Hospital of Wisconsin, Curative Rehabilitation Services, Froedtert Hospital, and the Medical College of Wisconsin. The trauma center at Froedtert Hospital and the Medical College of Wisconsin is the only adult Level 1 trauma center in eastern Wisconsin, and Children’s Hospital of Wisconsin is one of only three Level 1 pediatric trauma centers in the state. (Level 1 means the center meets stringent national standards and provides the highest level of specialty expertise.)

I-94, I-894, and US 45 are part of the National Highway System. The National Highway System is a priority system of highways designated to ensure connectivity to the national defense highway network and other important regional transportation routes, and provides a high level of safety, design, and operational standards. I-94 is also a designated federal and state “long truck route,” allowing longer commercial vehicles to use the freeway. I-94, I-894, and US 45 are “backbone” routes in WisDOT’s *Connections 2030* long-range multimodal transportation plan (WisDOT, 2009a).

1.3.3 Crash History

WisDOT measures highway safety by the frequency and severity of crashes, and maintains a database of crashes on the state highway system. WisDOT uses the information to develop statewide average crash rates for highways. WisDOT and FHWA used Wisconsin statewide averages for urban freeways as the basis to evaluate the study-area freeway system. Crash rates are expressed as crashes per 100 million vehicle miles traveled and include all reported crashes that caused a fatality, injury, or property damage. From 2001 to 2005¹, the average statewide urban freeway crash rate was 96. **Table 1-2** and **Exhibit 1-3** summarize the crash rates calculated for the study-area freeway system compared to the statewide average for similar roadways.

TABLE 1-2
High Crash Rate Locations

Crash Rate	Applicable Area
2 to 3 times higher than the statewide average	Northbound I-894 near Greenfield Avenue
	Westbound I-94 near the Zoo Interchange
	Northbound I-894/US 45 through the Zoo Interchange
	Northbound I-894 to Westbound I-94
	Eastbound I-94 to Northbound US 45
	Westbound I-94 to Southbound I-894
3 to 4 times higher than the statewide average	Eastbound I-94 near Highway 100
	Southbound US 45/I-894 through the Zoo Interchange
Over 4 times higher than the statewide average	Eastbound I-94 near the Zoo Interchange

On the study-area freeway system, there were 4,522 crashes (not including deer or other animal crashes) on the freeway and entrance/exit ramps at interchanges from 2001 to 2005, or roughly 2.5 crashes per day. Approximately 30 percent of those crashes resulted in injuries, and nine crashes were fatal.

On the study-area freeway system and entrance/exit ramps, the most common types of crashes were:

- Rear-end crashes (57 percent)
- Single vehicle off-road crashes (22 percent)
- Sideswipe crashes (18 percent)

Rear-end and sideswipe crashes are often indicators of congestion as well as inadequate acceleration/deceleration lanes, weaving, and substandard ramp spacing. The presence of both left- and right-hand entrance and exit ramps is also a contributing factor to these crashes. In general, off-road crashes by single vehicles usually indicate tight curves with inadequate banking and narrow shoulders. This is reflected in the high crash rates on tight curves at the Highway 100 exit from westbound I-94; the northbound entrances to I-894 from Greenfield Avenue; and the Bluemound Road exit from northbound US 45 (see discussion of acceleration and deceleration lanes in Section 1.3.4).

¹ 2005 was the most recent year evaluated for crash data. In 2006, the Marquette Interchange construction began, which noticeably impacted traffic volumes on the east leg of the Zoo Interchange study area.

At the entrance and exit ramp intersections with local streets, the most common types of crashes were rear-end crashes (47 percent), followed by angle crashes (36 percent), and single vehicle off-road crashes (12 percent). Many crashes are a result of excessive speed, especially during adverse weather conditions, or poor driver judgment. An inordinate amount of rear-end crashes are usually a result of inadequate deceleration distance along exit ramps. This distance may indicate that the ramp is too short, has inadequate width for storing traffic queues, has improper signal timing, or experiences a combination of these factors. Rear-end crashes may also indicate inadequate decision sight distances or inadequate stopping sight distances, due to disruption of sight lines from sharp vertical crest curves or obstructions along the inside of horizontal curves, such as traffic barriers along narrow shoulders. Angle crashes may indicate problems with intersection design as vehicles attempt to make left or right turns onto a local street. The off-road crashes indicate substandard ramp design and lack of a clear roadside recovery area. Section 1.3.4 documents existing freeway deficiencies.

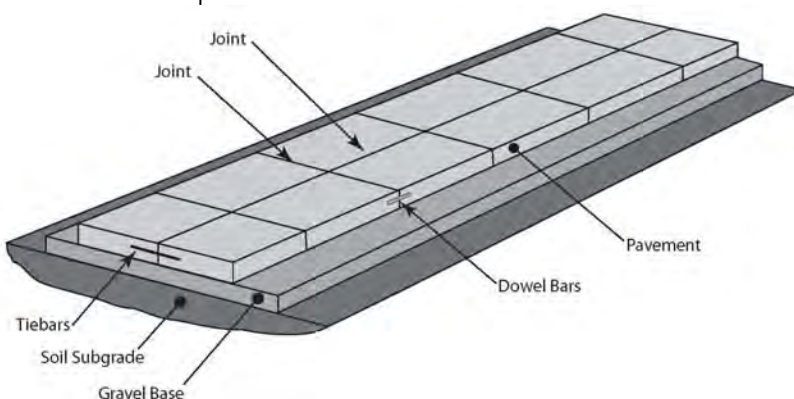
Crashes that occur on the study-area freeway system frequently cause traffic congestion, increasing travel times within the study area. The extent of the congestion depends on the severity of the accident and the number of lanes affected.

1.3.4 Existing Freeway Conditions and Deficiencies

Pavement Condition

The study-area freeway system opened in 1963. Over the years, the original concrete pavement has worn and cracked. Water enters into pavement cracks and rusts the steel bars that hold the slabs of concrete together (**Exhibit 1-4**). Water also runs through the cracks to the gravel base under the pavement and can wash out the finer gravel material. This erosion leaves a void underneath the pavement and decreases the pavement's stability. Water expands when it freezes, widening existing cracks. Freeze-thaw cycles and heavy trucks add to pavement stress.

EXHIBIT 1-4
Basic Pavement Components



WisDOT resurfaced I-94 and US 45 in the mid-1970s, and I-894 in the early 1980s. Resurfacing restored the roadway's smooth riding surface but did not address the cracks in concrete or the voids in the gravel base beneath. Since then, WisDOT resurfaced I-94 again in the late 1990s, and I-894 and US 45 a second and third time, most recently in the early 2000s (**Exhibit 1-5**). In general, each highway resurfacing has a shorter life span than the previous resurfacing because the original pavement, still in place after 45 years, provides a less effective base as the concrete

continues to crack and deteriorate (**Exhibit 1-6**). Based on WisDOT's experience with other highways, resurfacing the study-area freeway system again would not be cost effective.

WisDOT pavement evaluation methodology permits a projection of pavement life expectancy. SEWRPC projected the remaining pavement life of southeastern Wisconsin freeways as a part of *A Regional Freeway System Reconstruction Plan for Southeastern Wisconsin* (SEWRPC, 2003b). The analysis estimated that the I-94 and I-894 pavement in the study area would reach the end of its life expectancy² between 2006 and 2010, and the US 45 pavement in the study area would reach the end of its useful life between 2011 and 2015.

Bridge Condition

The structural condition of the study-area freeway system's bridges is a factor in the need for the proposed action. The condition of the bridges has deteriorated over the years due to age, heavier than expected traffic, road salt, freeze-thaw cycles, and water entering cracks in the bridges. The bridge designs in the core of the Zoo Interchange exacerbated their deteriorated condition, as the following discussion of bridge types explains.

Bridge Types. Most highway bridges in Wisconsin are concrete or steel girder bridges. For example, the bridges over US 45 at Bluemound Road and Wisconsin Avenue are concrete girder bridges, and the bridges on I-94 over 84th Street and on Highway 100 over I-94 are steel girder bridges. These bridges have a deck, the concrete surface on which vehicles drive. The deck is supported by concrete or steel girders that lie horizontally under the deck. The girders are supported by vertical concrete piers, or columns, that are anchored in the ground. When the deck wears out, it can be removed and replaced. The girders, which typically last longer than the decks, remain in place (**Exhibit 1-7**).

Several bridges in the core of the Zoo Interchange are concrete box girder or concrete voided slab designs like those previously used in the Marquette Interchange. Two were converted to steel girder bridges in the 1980s.

The concrete box girder bridges differ from typical girder bridges because they consist of long, hollow concrete "boxes" that rest on top of the piers. Instead of having a deck that rests on top of girders, the deck is a critical part of the box girder, contributing to its strength (**Exhibit 1-7**). Older concrete box girders, like those found in the Zoo Interchange, have two main disadvantages:

- Deck deterioration affects the bridge's overall condition, rather than just the driving surface.
- The deck cannot be replaced separately from the rest of the box girder without the aid of extensive temporary supports underneath the bridge because the deck is part of the bridge's load carrying structure.

Concrete voided slab bridges are similar to concrete box girder bridges because the deck is part of the bridge's load carrying structure. However, they are thinner than concrete box girder bridges.

Two voided slab bridges remain on the study-area freeway system: the bridge carrying US 45 northbound over I-94 westbound and the bridge carrying 76th Street over I-94.

² Life expectancy in the SEWRPC analysis was based on pavement condition, total traffic, truck traffic, construction history, and the number and timing of resurfacings.

Deterioration. The six bridges in the core of the Zoo Interchange opened in 1963 and received a concrete overlay in the mid-1970s. Two received new decks in 1986. The other four bridges received a second concrete or asphalt overlay between 1995 and 2001. Typically, the overlays help make the driving surface smooth and in some cases slow down the rate of deterioration by sealing out water. The main deterioration on these bridges is hidden by overlays.

The bridges in the study-area freeway system were constructed using reinforced concrete. Reinforced concrete consists of concrete with steel reinforcing bars, known as rebar, placed in the concrete for added tensile strength. When the steel rebar is exposed to oxygen and road salt, it rusts. The deicing salts used on roads in Milwaukee County contain chlorides that accelerate the formation of rust. When the salt-laden water from the roadway enters the cracks in the concrete, it eventually comes in contact with the rebar causing the steel to rust and weaken. The rust on the rebar then expands and exerts pressure on the concrete, which cracks the concrete from within creating a spall, or pothole, on the top or bottom of the bridge (**Exhibit 1-7**).

As this process continues, the spalls become larger resulting in more pieces of concrete chipping and falling off the bridge and steel rebar losing overall strength (**Exhibit 1-8**).

When spalls on the top of the bridge deck occur, an overlay of concrete or asphalt is needed. The overlay restores a smooth driving surface and offers some protection to the rusted steel rebar. As the overlay deteriorates, the steel rebar in the deck will continue to rust. The extent of this additional deterioration is not immediately visible and may become very severe before a pothole reappears on the deck surface. This extensive deterioration results in reduced load carrying capacity for the bridge, requiring repair or replacement. New concrete bridges have improved concrete, joints, and rebar.

In addition, the Zoo Interchange bridges carry more traffic than they were designed to carry. When the Zoo Interchange was designed, a more extensive freeway system was envisioned for southeastern Wisconsin. Eliminating several segments of the planned southeast Wisconsin freeway system resulted in the Zoo Interchange carrying three times more traffic than anticipated in a 1957 traffic analysis by the Milwaukee County Expressway Commission.

In fall of 2007, the US 45 southbound exit ramp to I-94 eastbound was closed for 2 weeks for bridge deck repairs (**Exhibit 1-9**), increasing delay and backups for vehicles on southbound US 45. This rehabilitation was required to keep the bridge in service and was expected to last until 2012. These types of closures and disruptions will become more frequent without reconstruction of the Zoo Interchange freeway bridges.

Despite the 2007 rehabilitation, this bridge and two other box girder and voided slab bridges were posted for weight limits in 2009 based on deterioration found during a routine inspection. When WisDOT found that the weight limits were not slowing the deterioration, it decided to replace the three bridges.³ While the replacement bridges were under construction, one existing bridge, US 45 northbound, was closed to all traffic when accelerated deterioration was discovered.

³ The three structures were constructed by WisDOT and FHWA with the understanding that they may be removed before they reach the end of their useful life if the Zoo Interchange is reconstructed. Their construction did not influence the NEPA process or the selection of the preferred alternative.

Safety Factor. The Zoo Interchange bridges are safe to drive on and are capable of carrying both legal load limits and over-weight permit loads; however, the bridges continue to deteriorate. The safety factor to which these bridges were originally designed and constructed has been reduced. The safety factor is based on truck loadings, not automobile loadings.

It is difficult to predict exactly when a particular bridge would reach the point of requiring weight restrictions. Nevertheless, it is prudent to address the issue before additional emergency action is required.

Existing Bridge Condition Ratings. The FHWA maintains the National Bridge Inventory (NBI), which is a comprehensive database of structural and appraisal data collected by each state for all bridges in the United States. This inventory includes each bridge's structural and functional properties. One of the appraisal ratings, the Structural Evaluation Appraisal Rating, was used to evaluate the condition of bridges on the study-area freeway system. This rating takes into account the condition of the bridge's girders and piers, in addition to the bridge's safe load level and the amount of traffic carried by the bridge (FHWA, 1995). The functional deficiencies of the study-area freeway system bridges are documented later in this section.

The appraisal ratings range from 0 to 9 with 9 being "superior to present desirable criteria" and 0 being a closed bridge. Two bridges in the study-area freeway system have a rating of 4. A Structural Evaluation Rating of 4 is defined as "meets minimum tolerable limits to be left in place as is." The study area bridges that have a rating of 4 are listed below and illustrated on **Exhibit 1-10**.

- The bridge carrying US 45 southbound over I-94 eastbound (B-40-104 on **Exhibit 1-10**)
- The Wisconsin Avenue bridge over US 45 (B-40-0131 on **Exhibit 1-10**)

As previously noted, the deterioration is the result of rusted rebar, which reduces the bridge's load carrying capacity and causes concrete to spall and chip. Higher than expected traffic volumes and outdated design have hastened the deterioration.

Other bridges on the study-area freeway system are rated as 5 (fair) or better. However, over the next few years, several of these bridges would likely decline to a 4 rating based on WisDOT's experience with bridge deterioration. For example, the bridges carrying Center Street and Bluemound Road over US 45 have a rating of 5, but their decks are in poor condition and will eventually need replacement.

Freeway Design Deficiencies

Freeways must meet the minimum values for 13 controlling design criteria, such as alignments, lane and shoulder widths, and sight distance. Design standards developed for the controlling elements are based on the American Association of State Highway and Transportation Officials' (AASHTO's) 2001 *A Policy on Geometric Design of Highways and Streets* and AASHTO's *A Policy on Design Standards – Interstate System* (2005), as well as WisDOT's *Facilities Development Manual* and are the basis for evaluating the study-area freeway system for acceptability, function, and safety.

Horizontal Curves. On freeways, curves should be designed to allow the driver to negotiate the curves safely without reducing speed. A larger curve radius results in a more gradual curve and allows higher design speed. Another element that influences a vehicle's speed through a curve is the amount of banking, or super elevation, in the curve. Super elevation is the extent to which the roadway is banked to offset the tendency of vehicles to slide outward or overturn on a curve. A smaller curve radius requires more banking than a larger curve to ensure vehicle safety. Several curves in the study-area freeway system have a radius and super elevation that result in actual design speeds less than the recommended design speed (see **Table 1-3** and **Exhibit 1-11**).

TABLE 1-3
Horizontal Alignment—Minimum Recommended Design Speeds and Existing Design Speeds

Location	Minimum Recommended Design Speed (mph)	Existing Design Speed (mph)
I-94 west of the Zoo Interchange	60	45–60
I-94 east of the Zoo Interchange	60	45–60
US 45 north of the Zoo Interchange	60	45–60
I-894/US 45 south of the Zoo Interchange	60	60
Zoo Interchange Ramps:		
I-94 eastbound to US 45 northbound	45	30
I-94 eastbound to I-894 southbound	45	30
I-894 northbound to I-94 westbound	45	30
I-894 northbound to I-94 eastbound	45	30
I-94 westbound to I-894 southbound	45	30
I-94 westbound to US 45 northbound	45	30
US 45 southbound to I-94 eastbound	45	30
US 45 southbound to I-94 westbound	45	30

Design speed is the maximum safe speed that a driver can maintain over a specific section of highway. Factors such as highway type, topography, adjacent land use, and driver expectations affect design speed. To account for a wide range of vehicle running speeds, the design speed is generally 5 miles per hour (mph) greater than the posted speed limit. Based on WisDOT and AASHTO policy, **Table 1-3** summarizes the recommended design speeds for the study-area freeway system.

System interchange ramps connect one freeway to another. According to AASHTO, these ramps are typically designed for 70 to 85 percent of the freeway design speed. As a result, the minimum recommended design speed for each system interchange ramp in the Zoo Interchange is 45 mph (**Table 1-3**).

Vertical Alignment. Vertical alignment refers to the grade or steepness of a roadway. In general, the flatter the road, the safer it is to drive on. However, WisDOT and AASHTO guidelines recommend a slight grade on freeways to ensure that water properly drains off the roadway. On a completely flat road, water tends to pond, increasing the risk of vehicles hydroplaning.

At the following ramp locations, the vertical grade is below the minimum 0.3 percent grade guidelines recommended for drainage:

- Northbound I-894 to eastbound I-94 has an existing grade of 0.05 percent.
- Southbound US 45 to eastbound I-94 has an existing grade of 0.07 percent.

Cross Slope. In addition to the vertical alignment, the roadway should have a crown that allows water to drain to the side of the road. Freeways are typically designed with a minimum 2 percent crown, or cross slope, to let water drain (the elevation of the road slopes down 2 feet for every 100 feet of road, or 0.25 inch for every 1 foot). Mainline pavement in the study-area freeway system was originally constructed with a 1.56 percent cross slope. When the freeway was resurfaced, the asphalt overlay was thickened near the center of the roadway to achieve a 2 percent grade on the outside driving lanes; however, the center lanes still have a cross slope below the minimum standard 2 percent.

Stopping Sight Distance. Stopping sight distance is the minimum distance required by a driver traveling at a given speed to stop a vehicle after sighting an object in its path.⁴ Minimum stopping sight distance is based on the design speed of a roadway. On hill crests, sight is obstructed by the roadway between the driver and an object. At the bottom of a hill, sight is restricted at night because headlights do not fully illuminate the roadway ahead. On curves, a median barrier may reduce stopping sight distance. According to AASHTO standards, the minimum stopping sight distance should be 570 feet for the study-area freeway system, based on the recommended design speed of 60 mph. For the Zoo Interchange ramps (eastbound I-94 to northbound US 45 for example), the minimum required stopping sight distance should be 360 feet, based on the minimum recommended design speed of 45 mph. Most of the Zoo Interchange ramps do not meet the minimum stopping sight distance standards. **Table 1-4** and **Exhibit 1-12** note the locations on the study-area freeway system where the existing design speed is less than the minimum recommended design speed based on the minimum guidelines for stopping sight distance.

TABLE 1-4
Stopping Sight Distance—Minimum Recommended Design Speeds and Existing Design Speeds

Location	Minimum Recommended Design Speed (mph)	Existing Design Speed (mph)
I-94 west of the Zoo Interchange	60	40–60+
I-894/US 45 south of the Zoo Interchange	60	50–60+
I-94 east of the Zoo Interchange	60	40–60+
US 45 north of the Zoo Interchange	60	40–60+
Zoo Interchange Ramps:		
I-94 eastbound to US 45 northbound	45	30–49
I-94 eastbound to I-894 southbound	45	40–49
I-894 northbound to I-94 eastbound	45	30–49
I-94 westbound to US 45 northbound	45	30–49
US 45 southbound to I-94 eastbound	45	30–49
US 45 southbound to I-94 westbound	45	30–49

⁴ Stopping sight distance differs from vertical alignment or grade. Stopping sight distance can be inadequate even if the vertical alignment is adequate and vice versa. A crest in the road or median barriers can interfere with the driver's line of sight around a curve and affect stopping sight distance. Vertical grade measures the steepness of a roadway. A gradual transition to a steep grade may not affect the driver's line of sight.

Decision Sight Distance. Decision sight distance provides a driver sufficient time for safe decision making. While stopping sight distance is the minimum distance required to bring a vehicle to a complete stop, decision sight distance gives a driver sufficient time to detect an object, recognize its threat potential, select an appropriate speed and path, and perform the required action safely and efficiently. These decisions most commonly occur prior to exits, major forks, and lane drops. The minimum decision sight distance is based on AASHTO and WisDOT's design criteria.

The following areas do not meet AASHTO or WisDOT's minimum standard for decision sight distance:

- The northbound I-894 ramp to westbound I-94
- The northbound I-894 ramp to eastbound I-94
- The eastbound entrance to I-94 at 84th Street
- The westbound entrance to I-94 at 84th Street
- The westbound I-94 ramp to northbound US 45
- The southbound US 45 ramp to eastbound I-94
- The northbound exit from US 45 at North Avenue
- The northbound entrance to US 45 at North Avenue
- The southbound exit from US 45 at North Avenue

Cross Section. A roadway's cross section refers to the ditches, shoulders, median, and travel lanes that make up the roadway. The width of travel lanes and width of shoulders on both the inside and outside of the travel lanes are key elements of freeway design. WisDOT and AASHTO policy, for roadways with three or more lanes, calls for 12-foot inside and outside shoulders. The outside shoulder width is less than 12 feet at all locations in the study area. Narrow inside shoulders result in distressed vehicles having to cross over three lanes of traffic to reach a safe area on the outside shoulder. In addition, inside shoulders provide room for drivers to avoid crashes and give space for snow storage and emergency vehicle access. Locations with substandard inside shoulder widths include the following:

- The inside I-94 eastbound shoulder from 116th Street to the Zoo Interchange is 4.5 feet.
- The inside I-94 westbound shoulder through the Zoo Interchange is 4.5 feet.
- The inside I-94 eastbound and westbound shoulders from 92nd Street to 84th Street are 2 feet.
- The inside I-894 northbound shoulder from Greenfield Avenue to Schlinger Avenue is 3.5 feet.
- The inside US 45 northbound and southbound shoulders through the Zoo Interchange are 2 feet.
- The inside US 45 northbound and southbound shoulders near the Bluemound Road interchange are 5 feet.
- The inside US 45 northbound shoulder near Swan Boulevard is 5 feet.

According to WisDOT guidelines, single-lane freeway ramps should have a 22-foot width measured from face of curb-to-face of curb. Locations of curbed ramps with a substandard width of less than 22 feet are listed below:

- The Highway 100 entrance to westbound I-94
- The I-94 westbound exit to northbound Highway 100
- The I-94 eastbound exit to Highway 100
- All ramps at the Greenfield Avenue interchange
- Portions of the I-94 eastbound exit to 84th Street
- Portions of the I-94 westbound exit to 84th Street
- All the Zoo Interchange ramps
- All the ramps at the Bluemound Road interchange
- All the ramps at the Wisconsin Avenue interchange
- Portions of the US 45 northbound exit to Watertown Plank Road
- Portions of the US 45 southbound exit to Watertown Plank Road
- Portions of the US 45 southbound entrance from Watertown Plank Road
- The US 45 northbound exit to North Avenue
- The US 45 southbound entrance from North Avenue
- The US 45 southbound exit to eastbound North Avenue
- The US 45 southbound exit to westbound North Avenue

Vertical Clearance. Vertical clearance is the distance between a roadway and a bridge over it. Adequate vertical clearance is required to prevent tall trucks from hitting overpasses. Minimum vertical clearance requirements differ based on the type of roadway. Since interstate highways are part of the National Highway System, they require a minimum 16-foot clearance to accommodate oversized vehicles. WisDOT and AASHTO guidelines call for a 16-foot, 4-inch clearance to allow for a 3- to 4-inch asphalt overlay in the future. More than half the bridges in the study area do not meet the minimum vertical clearance criteria. **Table 1-5** lists the substandard locations and the minimum criteria.

TABLE 1-5
Bridges with Inadequate Vertical Clearance

Location	Minimum Vertical Clearance Criteria	Existing Vertical Clearance
Northbound Highway 100 over I-94	16' 4" (freeway)	16' 2"
92nd Street over I-94	16' 4" (freeway)	14' 8"
Eastbound I-94 over 84th Street	16' 3" (arterial)	15' 10"
Westbound I-94 over 84th Street	16' 3" (arterial)	15' 10"
Northbound I-894 to westbound I-94 over southbound US 45	16' 4" (freeway)	16' 9"
Southbound US 45 over eastbound I-94	16' 4" (freeway)	15' 2"
Northbound US 45 over eastbound I-94	16' 4" (freeway)	15' 1"
Southbound US 45 over westbound I-94	16' 4" (freeway)	14' 3"
Northbound US 45 over westbound I-94	16' 4" (freeway)	14' 5"
Southbound US 45 to eastbound I-94 over northbound US 45	16' 4" (freeway)	15' 7"
Eastbound Bluemound Road over US 45	16' 4" (freeway)	14' 2"
Westbound Bluemound Road over US 45	16' 4" (freeway)	15' 6"

TABLE 1-5
Bridges with Inadequate Vertical Clearance

Location	Minimum Vertical Clearance Criteria	Existing Vertical Clearance
Wisconsin Avenue over US 45	16' 4" (freeway)	14' 5"
Northbound US 45 over Watertown Plank Road	16' 3" (arterial)	14' 8"
Swan Boulevard over US 45	16' 4" (freeway)	15' 0"
Southbound US 45 over Highway 100	14' 9" (arterial w/ no interchange)	14' 4"
Northbound US 45 over Highway 100	14' 9" (arterial w/ no interchange)	14' 4"
Union Pacific Railroad over US 45	16' 4" (freeway)	15' 6"
Southbound US 45 over North Avenue	16' 3" (arterial)	15' 5"
Northbound US 45 over North Avenue	16' 3" (arterial)	14' 7"
Meinecke Avenue over US 45	16' 4" (freeway)	14' 10"
Center Street over US 45	16' 4" (freeway)	14' 7"

Lane and Route Continuity. Continuity implies that drivers following a particular route need not change lanes or exit in order to remain on the route. The principle of route continuity simplifies the driving task because it conforms to what drivers expect, reduces lane changing, and delineates the through route. Continuity is accomplished by adding and dropping lanes only on the right and through special system interchange designs. An interstate route through an interchange should, at a minimum, provide two through lanes. Additional lanes may be necessary depending on the traffic volumes carried by the route and the proximity of adjacent entrance and exit ramps.

Lane and route continuity were assessed throughout the study-area freeway system. The Zoo Interchange lacks lane continuity due to through lanes becoming exit only lanes on each approach as indicated below:

- The inside lane on eastbound I-94 becomes a left-hand exit to northbound US 45.
- The outside lane on northbound US 45 becomes the exit to eastbound I-94.
- The inside lane on westbound I-94 becomes a left-hand exit to southbound I-894.
- The inside lane on southbound US 45 becomes a left-hand exit to eastbound I-94.

Interchange Configuration and Spacing. System interchanges, like the Zoo Interchange, are interchanges that connect freeways. Service interchanges, like the Watertown Plank Road interchange, are interchanges that connect freeways with surface streets and cross roads. The Zoo Interchange and service interchanges located in the study-area freeway system have numerous ramps that do not meet current design criteria or standards.

Left-Hand Entrances and Exits. The Zoo Interchange was designed with left-hand entrances and exits. National design guidelines call for all freeway entrances and exits to be on the right side (AASHTO, 2001). Left-hand entrance and exit ramps violate driver expectancy. The left-hand

ramps in the Zoo Interchange combined with closely spaced service interchanges at Highway 100, Greenfield Avenue, 84th Street, and Bluemound Road create unsafe situations where drivers must weave across multiple lanes in a short distance to reach their exit:

- The left-hand entrance from northbound I-894/US 45 to westbound I-94 is less than 0.3 mile from the right-hand exit to northbound Highway 100.
- The left-hand entrance from westbound I-94 to southbound I-894 is approximately 0.5 mile from the right-hand exit to Greenfield Avenue.
- The left-hand entrance from southbound US 45 to eastbound I-94 is approximately 0.3 mile from the right-hand exit to 84th Street.
- The left-hand entrance from eastbound I-94 to northbound US 45 is approximately 0.4 mile from the right-hand exit to Bluemound Road.

On the study-area freeway system, these configurations are the single largest reason for the high crash rate. According to WisDOT's Facilities Development Manual (FDM), FHWA research indicates that the use of right-hand entrances and exits compared to left-hand ramps may reduce crashes by 25 to 70 percent. Refer to Section 1.3.3, Safety, and **Exhibit 1-3** for additional information.

Ramp Spacing. The risk of crashes increases when successive entrance and exit ramps are close in proximity or when through traffic is disrupted by lane changes while entering or exiting the freeway. A combination of these factors creates dangerous weaving segments in the study-area freeway system. WisDOT and AASHTO guidelines call for 2,000-foot spacing between entrance and exit ramps on freeways to provide adequate weaving distance and space for signing (AASHTO, 2001). **Table 1-6** lists locations where the study-area freeway system does not provide the minimum ramp spacing.

TABLE 1-6
Locations Where Minimum Ramp Spacing is Not Provided

Location	Minimum Spacing Required (feet)	Existing Spacing Between Ramps (feet)
US 45 northbound entrance ramp from Wisconsin Avenue to the US 45 northbound exit at Watertown Plank Road	2,000	875
US 45 southbound entrance ramp from Watertown Plank Road to the US 45 southbound exit at Wisconsin Avenue	2,000	1,225
I-894/US 45 northbound entrance ramp from Greenfield Avenue to the eastbound I-94 exit	2,000	1,555
I-94 westbound entrance ramp from I-894/US 45 northbound to the northbound exit at Highway 100	2,000	1,565
I-894/US 45 southbound entrance ramp from I-94 eastbound to the Greenfield Avenue exit	2,000	1,645
I-94 eastbound entrance ramp from US 45 southbound to the 84th Street exit	2,000	1,765

Ramp Taper Rates. Adequate merging distance can be measured by a ramp's taper rate. According to WisDOT and AASHTO standards, the taper rate for a freeway entrance ramp should be 50:1, which means the merge lane becomes one foot narrower every 50 feet. Similarly, the taper rate for a freeway exit ramp should be 12.5:1. **Table 1-7** lists locations with substandard ramp taper rates.

TABLE 1-7
Locations with Substandard Ramp Taper Rates

Location	Minimum Taper Rate Criteria	Existing Taper Rate
I-94 eastbound exit to Highway 100	12.5:1	None
US 45 southbound entrance from North Avenue	50:1	7.1:1
I-94 eastbound entrance from Highway 100	50:1	25:1
US 45 northbound exit to Highway 100	12.5:1	7.1:1
I-894 southbound exit to Greenfield Avenue	12.5:1	7.6:1
US 45 northbound exit to Watertown Plank Road	12.5:1	7.6:1
US 45 southbound exit to westbound North Avenue	12.5:1	10:1

Acceleration and Deceleration Lanes. Ramp design includes careful consideration of adequate acceleration lanes on entrance ramps and deceleration lanes on exit ramps so that entering vehicles can accelerate to freeway speed before merging with freeway traffic. If there is a difference in speed between vehicles on the freeway and vehicles entering the freeway, then crashes can occur from the resulting congestion as vehicles decelerate on the freeway to allow the vehicles to enter. Exit ramps should be designed to provide enough distance to safely decelerate on the ramp rather than on the freeway.

The required lengths of the acceleration and deceleration lanes vary depending on the tightness of curves on the ramp. An entrance ramp that has a gradual curve allows drivers to accelerate on the ramp; therefore, the length of the acceleration lane can be shorter than an entrance ramp with tighter curves.

Table 1-8 lists entrance and exit ramps that have inadequate acceleration and deceleration lengths based on AASHTO freeway design guidelines.

TABLE 1-8
Ramps with Inadequate Acceleration or Deceleration Lanes

Location	Minimum Lane Length Needed (feet)	Actual Acceleration/Deceleration Lane Length (feet)
I-94 eastbound exit to Highway 100	235	0
I-94 westbound entrance from Highway 100	550	500
I-94 westbound exit to southbound Highway 100	410	225
I-94 westbound exit to northbound Highway 100	350	115
I-894 northbound exit to Greenfield Avenue	380	225
I-894 northbound entrance from eastbound Greenfield Avenue	810	405
I-894 northbound entrance from westbound Greenfield Avenue	670	330
US 45 northbound exit to Bluemound Road	410	230
US 45 southbound entrance from North Avenue	670	530

1.3.5 Traffic Volumes

This section describes the existing and projected future traffic volumes on the study-area freeway system. Roadways are typically designed to accommodate traffic volumes projected to occur 20 to 25 years into the future. For this study, 2035 is the “design year.”

Traffic volume is not the only factor that indicates roadway congestion, especially during heavy travel periods. Level of service is the measure of a roadway’s congestion, which uses rankings ranging from A to F. Freeway level of service is based on the number of vehicles per hour per lane, with level of service A exhibiting free-flow traffic and level of service F exhibiting severe congestion that approaches gridlock (**Exhibit 1-13**). FHWA guidance calls for freeways to provide level of service C; however, level of service D is acceptable in urban areas like Milwaukee County.

Existing Traffic Volumes

The Zoo Interchange currently (Year 2009 volumes) carries nearly 300,000 vehicles on an average weekday. Year 2005 average weekday traffic volumes on US 45 north of the Zoo Interchange ranged from 153,000 vehicles per day (vpd) near North Avenue to 171,000 vpd just north of the Zoo Interchange. Year 2005 traffic volumes on US 45/I-894 were 153,000 vpd near National Avenue, south of the Zoo Interchange (**Exhibit 1-14**). Year 2004 traffic volumes on I-94 ranged from 174,000 vpd east of the Zoo Interchange to 152,000 vpd west of Highway 100 (WisDOT, 2005a).

Between 1995 and 2004, traffic volumes on the study-area freeway system increased approximately 12 percent, about 1.3 percent per year.

The Marquette Interchange reconstruction began in 2004 and concluded in 2008. As the I-43 (north-south direction) and I-94/I-794 (east-west direction) roadways, bridges, and ramps were being reconstructed, traffic usage on the Milwaukee County freeway system changed as travelers avoided the construction zone and used other freeway and arterial links. As a result, Years 2004 and 2005 traffic volumes on portions of the Zoo Interchange corridor were influenced by that project.

Beyond the influence of the Marquette Interchange reconstruction, fuel prices rose significantly throughout 2008 to levels approaching \$4 per gallon, leading to decreased usage on the nation’s freeways and streets (as measured by vehicle miles traveled [VMT]). Once the price of gasoline and diesel fuel dropped to around \$3 per gallon and stabilized, VMT began to rise again.

In acknowledgement of the completion of the Marquette Interchange reconstruction in late 2008, WisDOT recounted traffic in the study area in 2009. WisDOT quantified new mainline and ramp volumes based on 2009 counts and new SEWRPC data (see **Exhibit 1-14**). Year 2009 average weekday traffic volumes on US 45 north of the Zoo Interchange ranged from 127,000 vpd near North Avenue to 154,000 vpd just north of the Zoo Interchange. Year 2009 traffic volumes on US 45/I-894 were 136,000 vpd near National Avenue, south of the Zoo Interchange. Year 2009 traffic volumes on I-94 ranged from 153,000 vpd east of the Zoo Interchange to 134,000 vpd west of Highway 100. These volumes are lower than those reported in the Draft EIS. As a result, WisDOT conferred with SEWRPC to determine if the 2035 forecast for the study-area freeway system is still accurate. SEWRPC reviewed its 2035 traffic forecast in 2010 and determined that these forecasts remain valid for long-range transportation planning (SEWRPC 2010).

During the heaviest traffic periods, the level of service on US 45 north of the Zoo Interchange normally ranges between level of service D and level of service E. Level of service is generally D south of the Zoo Interchange on US 45/I-894. Similarly, level of service on I-94 west of the Zoo Interchange usually ranges between level of service D and level of service E, while it is generally level of service E east of the Zoo Interchange (**Exhibit 1-15** and **Exhibit 1-16**). There are segments operating at level of service F (severe congestion) on all four approaches to the Zoo Interchange during the heaviest traffic periods:

- Northbound US 45 between Bluemound Road and Wisconsin Avenue during the morning peak hours
- Northbound US 45 between Wisconsin Avenue and Mayfair Road during the evening peak hours
- Southbound US 45 between Wisconsin Avenue and the Zoo Interchange during the evening peak hours
- Southbound US 45/I-894 between the Zoo Interchange and Lincoln Avenue (south study limit) during the evening peak hours
- Northbound US 45/I-894 between Greenfield Avenue and the Zoo Interchange during the morning and evening peak hours
- Westbound I-94 between the Zoo Interchange and Highway 100 during the morning and evening peak hours
- Westbound I-94 between 76th Street and the Zoo Interchange during the morning and evening peak hours
- Eastbound I-94 between the Zoo Interchange and 84th Street during both the morning and evening peak hours
- Eastbound I-94 between 84th Street and 76th Street during the morning peak hours
- The ramp carrying southbound US 45 to eastbound I-94 during the morning peak hours
- The ramp carrying westbound I-94 to northbound US 45 during both the morning and evening peak hours
- The ramp carrying eastbound I-94 to southbound US 45/I-894 during the evening peak hours

Future Traffic Volumes

The 2035 travel forecasts take into account the recent and planned development in the study area (**Exhibit 1-17**), which includes the following:

- Proposed construction of a new University of Wisconsin-Milwaukee **research** campus on the Milwaukee County grounds
- Redevelopment of the Milwaukee County Behavioral Health Complex (at the Regional Medical Center) at the US 45/Watertown Plank Road interchange
- Continued development of the Milwaukee County Research Park on the west side of US 45
- Redevelopment of 74 acres of land adjacent to the US 45/Burleigh Road interchange just north of the study area (not shown on **Exhibit 1-17**)

Each development would further increase traffic on the study-area freeway system. Furthermore, the Milwaukee Regional Medical Center has plans to develop an additional

4 million square feet on their campus between 2007 and 2018. Wisconsin State Fair Park is also seeking to become a year-round destination with plans for a hotel on the north end of the grounds and by developing 6 acres along Greenfield Avenue for a restaurant, hotel, and retail space related to the Milwaukee Mile racetrack.

Even without freeway modernization and capacity expansion, traffic volumes on the study-area freeway system are expected to increase. By the design year 2035, weekday traffic volumes on US 45 north of the Zoo Interchange are expected to increase 34 percent to 170,000 vpd near North Avenue and increase 25 percent to 192,000 vpd just north of the Zoo Interchange. On US 45/I-894 south of the Zoo Interchange (near National Avenue), traffic is expected to increase 24 percent to 164,000 vpd in 2035. Future weekday traffic volumes on I-94 are expected to increase 27 percent west of Highway 100, to 170,000 vpd, and increase 14 percent to 174,000 vpd east of the Zoo Interchange (SEWRPC and WisDOT, 2008).

In 2035, the increased traffic volumes will generally cause the north-south segment of the study-area freeway system to operate at a level of service D and the east-west segment to operate at a level of service E (**Exhibit 1-18** and **Exhibit 1-19**).

The areas noted on the previous page will continue to be congestion problems in the future. Many more locations on US 45/I-894 and I-94 will operate at a lower level of service by 2035. Additional segments operating at level of service E or F in the design year include the following:

- Southbound US 45 between Burleigh Street (north study limit) and Wisconsin Avenue during the morning peak hours
- Northbound US 45/I-894 between Lincoln Avenue (south study limit) and the Zoo Interchange during the morning peak hours
- Northbound US 45/I-894 between Lincoln Avenue (south study limit) and Greenfield Avenue during the evening peak hours
- Westbound I-94 between Highway 100 and 124th Street (west study limit) during both the morning and evening peak hours
- Eastbound I-94 between 124th Street (west study limit) and the Zoo Interchange during the evening peak hours
- Eastbound I-94 between 124th Street (west study limit) and Highway 100 during the morning peak hours

For the study-area freeway system to operate under acceptable conditions (level of service D or better), a combination of improvements need to occur to eliminate weaving, add freeway capacity, and extensively reduce freeway travel growth. The latter is unlikely given that traffic forecasts already assume a 100 percent increase in transit service throughout the region and a lower rate of traffic growth compared to the 1990–2005 growth rates.

1.3.6 Arterial Improvements

The original Draft Environmental Impact Statement (Draft EIS), as distributed in May 2009, focused solely on project need factors related to the freeway and interchanges within the study area. This was due to a presumption by FHWA and WisDOT that improvements to freeway-related elements alone would sufficiently address and correct the operational and safety deficiencies.

However, following the receipt of comments and testimony on the Draft EIS, and as a result of additional study undertaken to address that feedback, FHWA and WisDOT have concluded that improvements to segments of three arterial roadways (Highway 100, Watertown Plank Road, and 84th Street/Glenview Avenue) are necessary and integral components of any significant freeway modernization concept. This is due to the need for these arterials to carry traffic between the freeway (primarily, I-94) and a number of adjacent destinations based on access modifications proposed under the modernization concepts.

Each of these arterial roadways carries their own mix of local and through traffic:

- Highway 100 is a six-lane urban arterial through much of the study area, carrying traffic volumes in excess of 30,000 vehicles per day. It currently operates at a marginal to poor level of service in both morning and afternoon peak periods.
- Watertown Plank Road is a four-lane divided urban arterial carrying up to 22,000 vehicles per day through the project area. It serves as the primary east-west corridor for traffic accessing the Milwaukee County Regional Medical Center, Milwaukee County Research Park, and other institutional and commercial developments near US 45. It operates at a marginal level of service in the afternoon peak period carrying current traffic volumes.
- 84th Street (WIS 181) is a two- or four-lane undivided urban arterial carrying north-south traffic of up to 14,000 vehicles per day through the east side of the study area. It serves a mix of residential, commercial, and institutional traffic generators and users. It operates at a marginal level of service in the afternoon peak period carrying current traffic volumes.

In order for these arterials to perform as effective extensions of the freeway system, operational and capacity improvements to these arterials are required to fully and satisfactorily address the full range of project purpose and need objectives described earlier in this section.

The remainder of the Final EIS discusses the types of arterial improvements proposed, and the impacts that would result from their construction.

1.3.7 Summary of the Need for the Project

The proposed action is needed to address the substandard characteristics of the study-area freeway system in order to maintain a key link in the local, regional, state, and national transportation network.

The study-area freeway system's configuration is functionally deficient in many areas. Several areas have shoulders that are too narrow, and 22 bridges have a substandard vertical clearance. Additionally, the horizontal and vertical alignment is substandard in several locations, which results in poor driver sight distance.

The most notable functional deficiencies are the closely spaced service interchanges and the combination of left- and right-hand entrance and exit ramps, which are counter to driver expectancy and result in major safety problems such as weaving and congestion. All of the functional deficiencies combined create substandard conditions throughout the study-area freeway system, resulting in a higher-than-average crash rate in many locations. Several segments of the study-area freeway system have crash rates that are two to five times higher than the statewide average for urban freeways.

Current traffic volumes in the study area result in congestion and delays for Zoo Interchange travelers and shippers. Anticipated development and redevelopment in the study area, in particular the US 45 corridor north of the Zoo Interchange, will add additional traffic onto the already congested freeway. By 2035, the level of service is expected to be E or F, on a scale of A through F, for significant portions of the day on all four legs. Improvements to selected arterials is also required under all Modernization concepts, to complement the improvements and access modifications included in those alternatives.

Despite the recent replacement of three bridges due to deterioration, it can be expected that deterioration of the other bridges on the study-area freeway system will continue, and the need for replacement of some will be likely over the coming years.

1.4 Local Government and Public Input, and Agency Coordination

The public had the opportunity to review exhibits and see a presentation that illustrated the need for the project at open house workshops, public meetings, and the public hearings from 2008 through 2011. In general, those who spoke with the study team at these meetings or submitted written comments concurred with the need to reconstruct the study-area freeway system.

The Cities of Milwaukee, Wauwatosa, and West Allis agree the purpose and need for the project is sufficient, as do DNR, U.S. EPA, and the U.S. Army Corps of Engineers (Corps). Their comments are included in Appendix D. Coordination with cooperating and review agencies in advance of the distribution of the Supplemental Draft EIS was conducted, seeking feedback on issues or concerns related to changes made since the distribution of the Draft EIS, along with an offer to meet to discuss Supplemental Draft EIS issues. No feedback or requests were received.

1.5 Environmental and Socioeconomic Aspects

Environmental aspects are noted here because the factors documented in this section set the stage for development of alternatives, discussed in Section 2. The Zoo Interchange freeway

corridor has a number of resources including streams, environmental corridors, wetlands, parks, neighborhoods, schools, and churches. When developing and evaluating the transportation improvement alternatives, WisDOT and FHWA consider preserving these resources, to the extent possible and practicable, an important factor in the development of alternatives.

For projects affecting resources protected under the Clean Water Act, the development of alternatives must consider the *Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material* administered by U.S. EPA and the Corps (1977). The guidelines state that dredged or fill material should not be discharged into aquatic ecosystems, including wetlands, unless no practicable alternatives can be demonstrated; such discharge will not have unacceptable adverse impacts; and all practical measures to minimize negative effects are undertaken. The Corps may adopt this document to fulfill their agency responsibilities pursuant to NEPA.

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SECTION 2

Alternatives / Preferred Alternative

This section describes the range of alternatives developed to address the purpose and need factors identified in Section 1, Purpose of and Need for the Proposed Action. Section 2 presents a broad range of alternatives considered; evaluates the range of alternatives; identifies reasonable alternatives retained for detailed study; explains why other alternatives were eliminated from further consideration, and identifies WisDOT's preferred alternative.

All sections contained in the Supplemental Draft Environmental Impact Statement (Supplemental Draft EIS) were modified from the Draft EIS approved in May 2009. The range of alternatives considered in the Draft EIS was expanded in the Supplemental Draft EIS to investigate modifications and new concepts that are responsive to the following issues (see Section 2.5):

- Feedback received during and after the June 2009 public hearing and the Draft EIS comment period following its distribution for agency and stakeholder review (see also Section 5, Public Involvement and Agency Coordination During Draft EIS Preparation and Following Draft EIS Availability).
- New traffic information pertaining to both the study-area freeway system, as well as intersecting and parallel local arterials, due in part to modified access resulting from alternative refinements developed to address the first bullet, above.

The range of alternatives was modified to include a new freeway alternative (Reduced Impacts Alternative) and improvement options to segments of three arterials in the study area: Highway 100, Watertown Plank Road, and WIS 181 (84th Street/Glenview Avenue).

2.1 Development of Initial Range of Alternatives

The Council on Environmental Quality regulations for implementing the National Environmental Policy Act (NEPA) recognize that many alternatives may exist for implementing a particular action (40 CFR 1502.14). The Council on Environmental Quality regulations state that only reasonable alternatives should be carried forward for detailed evaluation and comparison. Reasonable alternatives are practical and feasible for addressing the project's purpose and need; can avoid, minimize, or mitigate overall social, environmental, and economic impacts, to the extent practicable; and are consistent with both regional and local planning goals and objectives.

The remainder of this section explains the process of selecting reasonable alternatives for future transportation improvements to the study-area freeway system.

2.1.1 No-Build

The No-Build Alternative does not include any safety or capacity improvements. Only maintenance and minor improvements would be performed. This alternative also serves as a baseline for comparison to the Build Alternatives.

2.1.2 Transportation Demand Management Alternative

The Transportation Demand Management (TDM) Alternative strives to reduce the number of automobile trips through increased transit ridership and other strategies. The public transit system element of *A Regional Transportation System Plan for Southeastern Wisconsin: 2035* recommends several ways to increase bus service in Milwaukee County (SEWRPC, 2006b). Options (to be studied by others based on state statutes¹) include the following:

- Rapid-transit bus system operating on freeways to provide commute and reverse commute service
- Express bus system operating at higher speed with limited-stop arterials
- Local bus system operating on arterial and collector streets with frequent stops

Milwaukee County Transit System (MCTS), Washington County Commuter Express, Coach USA, Greyhound Bus Lines, and Badger Bus currently provide transit service in the study area. WisDOT has also implemented a RIDESHARE program that offers phone and internet services to match potential carpoolers based on route and personal preferences. Other TDM measures include telecommuting and flexible work schedules.

2.1.3 Transportation System Management Alternative

The Transportation System Management (TSM) Alternative includes measures to maximize the efficiency and use of the highway system to help alleviate or postpone the need to expand capacity. The TSM element of the SEWRPC regional transportation plan recommends measures such as freeway traffic management (ramp meters, bus, and HOV lanes on ramps) and intelligent transportation systems (advanced traveler information for transit and highway travel conditions).

TSM measures in the study area include the following:

- Ramp metering
- HOV lanes on entrance ramps
- Freeway monitoring with variable message signs warning travelers of delays
- Closed-circuit television cameras that post images and traffic conditions to local newscasts and the internet
- Crash investigation sites
- Enhanced freeway patrols to help remove disabled vehicles quickly from the freeway
- “511” caller information system for highway travel conditions and transit information

2.1.4 Build Alternatives

The preliminary range of Build Alternatives was developed in the context of regional transportation plans and various forms of community involvement (including public workshops and public information meetings; meetings with local officials, citizens, and interest groups; input from the Community Advisory Committee and Technical Advisory

¹ WisDOT's role in rail transit is capped at funding 50 percent of the non-federal share, or 25 percent of the total, whichever is less (Wis. Stat. 85.064).

Committee; coordination with state and federal review agencies; and input from Native American interests) and with thorough consideration of adjacent development, socioeconomic factors, and environmental constraints.

The Build Alternatives initially considered were:

- **Replace-in-Kind:** The Replace-in-Kind Alternative would replace the study-area freeway system in its current configuration (three lanes in each direction, left-hand entrance and exit ramps, closely spaced interchanges, and no change in the horizontal or vertical alignment of the freeway or interchanges).
- **Spot improvements:** Replacing the existing roadway and bridges in or close to their existing configuration while addressing safety issues that can be fixed with little or no new right-of-way acquisition. The Spot Improvement Alternatives include building auxiliary lanes and service roads on each of the four approach legs without changing the Zoo Interchange configuration. Selected service interchanges would be reconfigured to improve traffic operations.
- **Modernization improvements (6-lane):** Replacing the existing roadway and bridges and reconfiguring the study-area freeway system to address the safety issues described in Section 1, Purpose of and Need for the Proposed Action.
- **Modernization improvements with added capacity (8-lane):** Utilizing the modernization improvements alternative while also adding one new lane in each direction to address congestion as described in Section 1, Purpose of and Need for the Proposed Action.

The Build Alternatives also include reconstruction of the existing service interchanges in the study area (Highway 100 interchange with I-94, 84th Street interchange with I-94, Greenfield Avenue interchange with I-894/US 45, Bluemound Road interchange with US 45, Wisconsin Avenue interchange with US 45, Watertown Plank Road interchange with US 45, and North Avenue interchange with US 45).

As part of the Build Alternatives, WisDOT and FHWA evaluated a new service interchange with US 45 at Swan Boulevard. WisDOT and FHWA also evaluated adding a direct northbound exit from northbound US 45 to eastbound North Avenue as part of the reconstruction of the North Avenue interchange.

2.2 Initial Alternatives Screening

The alternatives described above were assessed based on their ability to meet the project's purpose (see Section 1.2, Purpose of the Proposed Action). Each was assessed using the following factors:

- Maintain a key link in the transportation network, consistent with the regional transportation plan.
- Address the obsolete design of the study-area freeway system to decrease crashes, which includes replacing left-hand entrances and exits, providing adequate weaving distances between exit and entrance ramps, providing desirable design speed, and providing adequate inside shoulder width. This is measured by the extent to which the alternative meets current design standards (see Section 1.3.3 and 1.3.4).

- Replace deteriorating pavement and bridges (see Section 1.3.4).
- Improve traffic operations and accommodate future volumes on the study-area freeway system and service interchanges. This is measured by level of service, a rating of congestion from A to F, as described in Section 1.3.5.

In addition to their ability to meet the project's purpose, the alternatives were assessed on their ability to minimize impacts to the natural and built environment and construction cost as well as the support the various alternatives received from local governments and the public. WisDOT and FHWA obtained input at public information meetings and through nearly 300 small group meetings with neighborhood, environmental, community, minority, and business groups, elected officials, and local government staff.

2.2.1 No-Build Alternative

While the No-Build Alternative would include pavement maintenance and minor safety improvements over time, such improvements would not address the purpose of, and need for, the project with respect to safety concerns, existing highway deficiencies, and future traffic demand. Furthermore, it would not be consistent with regional transportation system plans that document the importance of the study-area freeway system for the movement of people, goods, and services and a regional transportation system designed to meet the travel needs of southeastern Wisconsin.

The No-Build Alternative is not considered a reasonable course of action but is used as a basis for comparison to the Build Alternatives.

While it would have minimal environmental impacts and have no construction cost, the No-Build Alternative would not address the following project purpose and need factors:

- Maintain a key link in the transportation network, consistent with the regional transportation plan: This alternative would eventually result in weight restrictions on bridges and more frequent and extensive maintenance. It is not consistent with the regional plan.
- Address the obsolete design of the study-area freeway system to decrease crashes. This alternative would not address substandard design elements that contribute to crashes.
- Replace deteriorating pavement and bridges. Existing pavement and bridges would continue to deteriorate, requiring more frequent and extensive maintenance.
- Improve traffic operations and accommodate future volumes on the study-area freeway system and service interchanges. This alternative would not improve traffic operations or accommodate future traffic volumes.

Additionally, no local governments or members of the public have advocated for this alternative.

2.2.2 Transportation Demand Management Alternative

SEWRPC's regional transportation plan assumes a 100 percent increase in public transit (in terms of revenue vehicle-miles of service), including rapid and express transit systems and substantial expansion of local bus systems where development density is sufficient to generate ridership. One of these recommended transit systems is a potential commuter rail

system between Oconomowoc and downtown Milwaukee's Intermodal Station operating on existing Canadian Pacific (CP) Railway tracks. Another transit system **the plan suggests be considered in a corridor study** consists of a potential light rail/bus guideway from Waukesha to downtown Milwaukee on an exclusive guideway route. The plan also recommends on-street express bus services as well as freeway and non-freeway bus routes. None of the transit routes included in the regional plan would utilize freeway medians.

Even with the proposed increase in public transit, traffic volumes on the study-area freeway system are expected to increase 18 percent by 2035. As noted in Section 1, the study-area freeway system is already carrying more traffic than it was designed to carry.

While it would minimize environmental impacts and cost less than the Build Alternatives, the TDM Alternative alone would not fully address the other elements of the project's purpose and need:

- Maintain a key link in the transportation network, consistent with the regional transportation plan: Implementing TDM alone is not consistent with the regional plan.
- Address the obsolete design of the study-area freeway system to decrease crashes: This alternative would not address substandard design elements that contribute to crashes.
- Replace deteriorating pavement and bridges: Existing pavement and bridges would continue to deteriorate, requiring more frequent and extensive maintenance.
- Improve traffic operations and accommodate future volumes on the study-area freeway system and service interchanges: This alternative would not sufficiently improve traffic operations or accommodate future traffic volumes². SEWRPC's regional transportation plan recommends adding capacity along with implementing several measures to reduce demand, most notably an increase in transit service.

Additionally, no local governments or members of the public have advocated for this as a stand-alone alternative. There is some support for a combination of TDM and freeway reconstruction/modernization alternatives.

For these reasons, the TDM Alternative is not considered a reasonable course of action and has been eliminated from consideration as a stand-alone alternative.

2.2.3 Transportation System Management Alternative

The regional transportation plan includes several TSM recommendations to maximize the efficiency and use of the highway system and help alleviate or postpone the need for expanding highway capacity in the region. WisDOT has implemented several TSM measures in the study area, including ramp metering, HOV lanes on entrance ramps, variable message signs warning travelers of delays, closed-circuit television cameras posting images and traffic conditions to local newscasts and the internet, crash investigation sites, and enhanced freeway patrols.

A 2005 study estimated that ramp metering reduced freeway delay by 5 percent in 24 urban areas. Freeway patrols that clear incidents, combined with closed-circuit television cameras that detect incidents, reduced freeway delay by 7 percent in the 60 urban areas that had one

² SEWRPC's 2035 regional transportation plan estimates that a "TSM only" plan would decrease regional vehicle miles of travel about 1 percent compared to the regional plan's No-Build Plan (Table 107, page 300).

or both systems (Texas Transportation Institute, 2005). A 2002 study of variable message signs found that although travel time was not noticeably reduced, the signs are an effective routing tool (University of Minnesota, 2002). Even with these TSM measures already in place, the regional transportation plan documents the need for additional capacity on the study-area freeway system. The percentage of freeway miles in southeast Wisconsin experiencing extreme congestion during the morning and evening peak hours has increased from none in 1972 to 8.9 percent in 2001. The preferred alternative may include TSM elements, but TSM alone will not meet the purpose and need for the project, especially safety concerns. On a regional level, SEWRPC predicts that TSM and TDM measures together would have only a modest impact on congestion compared to no action.

The TSM Alternative would minimize environmental impacts and cost less to construct. While several TSM measures, such as HOV lanes on ramps, variable message signs, and closed-circuit television cameras, will likely be implemented in conjunction with a Build Alternative, the TSM Alternative alone would not, by itself, fully address any of the project's purpose and need elements:

- Maintain a key link in the transportation network, consistent with the regional transportation plan: Implementing TSM alone is not consistent with the regional plan.
- Address the obsolete design of the study-area freeway system to decrease crashes: This alternative would not address substandard design elements (left-hand entrances and exits, short weaving distances) that contribute to crashes.
- Replace deteriorating pavement and bridges: Existing pavement and bridges would continue to deteriorate, requiring more frequent and extensive maintenance.
- Improve traffic operations and accommodate future volumes on the study-area freeway system and service interchanges: Though many elements of this alternative are already in place, this alternative would not sufficiently improve traffic operations or accommodate future traffic volumes (see Section 1.3.5).

Additionally, no local governments or members of the public have advocated for this as a stand-alone alternative.

For these reasons, the TSM Alternative is not considered a reasonable course of action and has been eliminated from consideration as a stand-alone alternative. The Corps asked whether it is reasonable to couple TSM and TDM measures with one of the Modernization Alternatives (Appendix D, pages D-4 through D-7). The Modernization Alternatives assume certain TDM elements will be implemented, and would include certain TSM elements like ramp metering, variable message signs, crash investigation sites, and closed-circuit television cameras. In this sense the Modernization Alternatives are a type of hybrid alternative.

2.2.4 Build Alternatives

Replace-in-Kind Alternative

While the Replace-in-Kind Alternative would include pavement and bridge replacement, such improvements would not address the purpose of, and need for, the project with respect to safety concerns, existing geometric deficiencies, and future traffic demand. Furthermore, it would be inconsistent with regional transportation system plans that document the importance of the study-area freeway system for the movement of people, goods, and services and a regional transportation system designed to meet the travel needs of southeastern Wisconsin.

While it would address deteriorated pavement and bridges, have minimal environmental impacts, and lower construction cost than other Build Alternatives, the Replace-in-Kind Alternative would not address the following project purpose and need factors:

- Maintain a key link in the transportation network, consistent with the regional transportation plan: This alternative is not consistent with the regional plan.
- Address the obsolete design of the study-area freeway system to decrease crashes: This alternative would not address substandard design elements that contribute to crashes.
- Improve traffic operations and accommodate future volumes on the study-area freeway system and service interchanges: This alternative would not improve traffic operations or accommodate future traffic volumes.

As part of the emergency bridge replacement project constructed in 2010, two of the three bridges replaced are components of the existing left-side ramp configuration leading to operational and safety problems. While replacing those structures addressed the physical condition of their predecessor structures and improved vertical clearance over the roadways and ramps crossed, the replacements have done nothing to improve the short weaving distances before and after each of the replacement bridges.

Additionally, no local governments and few members of the public have advocated for this alternative.

For these reasons, the Replace-in-Kind Alternative is not considered a reasonable course of action and has been removed from consideration as a viable alternative.

Spot Improvements

The Spot Improvement Alternatives would replace the existing freeway and bridges while addressing the safety issues that can be fixed with modest right-of-way acquisition. The Spot Improvement Alternatives would include six freeway lanes, auxiliary lanes, and service roads on each of the four approach legs without changing the Zoo Interchange configuration. Selected service interchanges would be reconfigured to improve traffic operations.

WisDOT and FHWA developed three spot improvement alternatives (SI-1, SI-2, and SI-3), which share the common features previously noted.

Spot Improvement Alternative 1 (SI-1). The key feature of SI-1 is a system of service roads that control access to the freeway from the service interchanges at Highway 100, Greenfield Avenue, Bluemound Road, and 84th Street (**Exhibit 2-1**). Motorists entering the freeway at these four interchanges would travel on a service road for nearly 2 miles before merging into freeway traffic. In some cases, motorists would make a U-turn on the service road prior to reaching the freeway. For example, a motorist entering eastbound I-94 from Highway 100 would travel on a service road into the Zoo Interchange, then south through a U-turn, and enter I-94 east of 84th Street (**Exhibit 2-2**). The service roads would reduce weaving between the Zoo Interchange and the adjacent service interchanges (Greenfield, Highway 100, Bluemound Road, and 84th Street).

EXHIBIT 2-2

Entering Eastbound I-94 from Highway 100 under SI-1



Access to and from US 45 would be modified at the Bluemound Road/Wisconsin Avenue interchange. The Wisconsin Avenue interchange would be removed and replaced by a new northbound entrance and exit to 95th Street between Wisconsin Avenue and Bluemound Road. A southbound US 45 exit to Bluemound Road would be provided, but no southbound entrance to US 45 would be provided from Wisconsin Avenue or Bluemound Road. SI-1 would require relocation of one residence.

Spot Improvement Alternative 2 (SI-2). The key feature of SI-2 is auxiliary lanes along one or both sides of the study-area freeway system (**Exhibit 2-3**). The Bluemound Road/Wisconsin Avenue interchange would be reconfigured like SI-1. Service roads on both sides of US 45 between Wisconsin Avenue and Watertown Plank Road would provide direct access to the Regional Medical Center and the Milwaukee County Research Park. The one-way service roads are similar to one-way frontage roads alongside the freeway with Texas U-turns to allow motorists access over the freeway. SI-2 would require relocation of one residence.

Spot Improvement Alternative 3 (SI-3). SI-3 has many of the same features as SI-2, but would also reconfigure the 84th Street and Greenfield Avenue interchanges (**Exhibit 2-4**). At the 84th Street interchange, a service road along I-94 between 84th Street and 76th Street would replace the existing westbound entrance and eastbound exit ramps. An entrance to westbound I-94 and an exit from eastbound I-94 would be located on the service road between 84th Street and 76th Street (**Exhibit 2-5**).

What is a Texas U-turn?

Texas U-turns, or Texas Turnarounds, are ramps that allow a vehicle traveling on a one-way frontage road to turn around and travel in the opposite direction on another frontage road on the other side of a freeway. Texas U-turns are desirable because the vehicle does not have to make two left turns at a cross street, as would typically be necessary when completing this movement. This eases congestion at the intersections. This particular highway configuration is particularly common in Texas but can also be found in other states, such as Michigan, where frontage roads travel along freeways.



Modernization Alternatives

The following discussion pertains to alternatives developed prior to the distribution of the Draft EIS in May 2009 and the public hearing conducted in June 2009. Three new components have been investigated based on hearing testimonies and comments on the Draft EIS:

- A new freeway alternative (Reduced Impacts Alternative)
- A modified interchange at I-94 and 84th Street with reduced impacts to the north side of I-94 and increased impacts to the south side of I-94
- Improvements to several arterials in the vicinity of the freeway corridor

These new alternatives are described in Section 2.5.

WisDOT and FHWA evaluated modernizing the study-area freeway system to eliminate all safety and design deficiencies. WisDOT and FHWA developed several Modernization Alternatives, including 6-lane and 8-lane versions.

Core. The core of the Zoo Interchange is defined as I-94 from roughly 92nd Street to Highway 100, and US 45 from Schlinger Avenue to Bluemound Road. The core design of the Zoo Interchange is similar under all the Modernization Alternatives (**Exhibit 2-6**):

- All exits on the right; through traffic stays left
- Full 8- to 12-foot shoulders on all ramps and freeways
- 2 to 3 lanes on all through routes
- 3 to 4 lanes on all four approach legs
- The interchange would have five levels rather than three, making it about 30 to 40 feet higher than it is today
- Several ramps that have one lane today would have two lanes:
 - The ramp from I-94 eastbound to I-894/US 45 southbound would be two lanes.
 - The ramp from I-894/US 45 northbound to I-94 westbound would be two lanes.
 - The ramp from US 45 southbound to I-94 eastbound would be two lanes.
 - The ramp from I-94 westbound to US 45 northbound would be two lanes.
- Smoother curves on all interchange ramps (minimum 45 mph design speed, compared to as low as 30 mph today)
- I-94 and US 45 would have a 60 mph design speed.

The footprint of the Zoo Interchange core will stay mostly the same with the exception of two areas:

- In the northwest quadrant, a loop ramp would be built to carry traffic from I-94 westbound to Greenfield Avenue. The loop ramp would lie on land owned by We Energies close to the Milwaukee County Zoo parking lot and picnic area. Also in the northwest quadrant, a ramp that would carry traffic from US 45 southbound to I-94 would impact the Milwaukee County Zoo's overflow parking lot and the Zoofari Conference Center.
- In the southwest quadrant, the Milwaukee County Zoo maintenance facility, five residences and one business would be relocated to accommodate the ramp from I-94 eastbound to I-894/US 45.

Because the core layout of the interchange would be the same under all Modernization Alternatives, any Modernization Alternative on one leg of the study-area freeway system would be compatible with any Modernization Alternative on another leg. The Modernization Alternatives are described by leg.

West Leg. Each of the three alternatives below could be implemented with 6 lanes or 8 lanes.

Modernization Alternative 1 (W1). The Highway 100 interchange would be reconstructed in generally the same configuration as the existing interchange except (1) the entrance and exit ramps would be extended to provide a longer distance for motorists to accelerate/decelerate when entering/exiting I-94, and (2) the existing westbound I-94 exit to northbound Highway 100 would be removed and replaced by a loop ramp (**Exhibit 2-7**). A new entrance ramp to I-94 eastbound from Highway 100 would allow motorists to enter eastbound I-94 without having to weave across motorists who are exiting I-94 to I-894/US 45. Traffic on westbound I-94 would be able to exit to Highway 100 without weaving across motorists entering I-94 westbound from US 45 or I-894.

Modernization Alternative 2 (W2). The Highway 100 interchange with I-94 would be the same configuration as described under Alternative W1.

Modernization Alternative 3 (W3). The Highway 100 interchange with I-94 would be reconfigured. Two of the three exit ramps (one westbound, one eastbound) would remain in roughly the same configuration but lengthened to provide adequate acceleration/deceleration distance. The existing westbound I-94 exit to northbound Highway 100 would be removed. The entrance ramps from Highway 100 to I-94 would be consolidated into one ramp that would split into two ramps, one eastbound and one westbound (**Exhibit 2-8**).

Table 2-1 summarizes the key impacts of the Modernization Alternatives for the west leg. A service road would be added between Highway 100 and the Zoo Interchange, like Alternative W1.

TABLE 2-1
Key Impacts of Modernization Alternatives—West Leg

W1		W2		W3	
6-lane	8-lane	6-lane	8-lane	6-lane	8-lane
No residential relocations	No residential relocations	No residential relocations	No residential relocations	No residential relocations	No residential relocations
2 commercial relocations (hotel and coffee shop)	2 commercial relocations (hotel and coffee shop)	2 commercial relocations (hotel and coffee shop)	2 commercial relocations (hotel and coffee shop)	2 commercial relocations (hotel and coffee shop)	2 commercial relocations (hotel and coffee shop)

Eastbound I-94 to Greenfield Avenue Ramp (Sub-alternative). As originally developed, none of the west leg Modernization Alternatives provided access from eastbound I-94 directly to Greenfield Avenue (via I-894/US 45). Based on input from stakeholders, WisDOT and FHWA developed a sub-alternative that would provide a ramp connecting I-94 eastbound to Greenfield Avenue to allow motorists to access Greenfield Avenue from I-94 eastbound. This sub-alternative is compatible with both the W1 and W3 alternatives. Six additional residences (four single-family and one duplex) and one additional business on South 100th Street would be relocated to accommodate this ramp.

East Leg. Each of the three alternatives below could be implemented with 6 lanes or 8 lanes.

Modernization Alternative 1 (E1). The 84th Street interchange would be reconstructed similar to Alternative SI-3 (**Exhibit 2-9**). A service road between 84th Street and 76th Street would replace the existing westbound entrance and eastbound exit ramps. An entrance to westbound I-94 and an exit from eastbound I-94 would be located on the service road between 84th Street and 76th Street. Motorists on 84th Street wishing to enter I-94 westbound would travel east on the service road along the south side of I-94, follow the Texas U-turn near 76th Street, and enter I-94 from the service road on the north side of I-94. This configuration gives westbound motorists more distance to merge into the correct lane as they enter the Zoo Interchange. The entrance to westbound I-94 would be about 0.5 mile east of the existing entrance to westbound I-94. The eastbound I-94 exit ramp would be placed east of 84th Street. Exiting traffic that wants to reach 84th Street would proceed east on the service drive, follow the Texas U-turn, and proceed westbound on the north service drive back to 84th Street. The westbound exit ramp and the eastbound entrance ramps would be reconstructed in locations similar to the existing ramps, and would be braided, or grade-separated, with the adjoining ramps described above.

Combined Service Drive (Sub-alternative). A sub-alternative would combine the service drive on the north side of I-94, located between South 84th Street and South 76th Street, with O'Connor Street to provide local street access and circulation, as well as freeway access. Combining these two roadways would reduce the impact to the Wisconsin State Fair parking lot on the south side of the freeway. The sub-alternative would provide access to the O'Connor Street neighborhood similar to today.

Modernization Alternative 2 (E2). The westbound entrance to I-94 from 84th Street would be a loop ramp, which would displace several residences and the Boy Scouts' Council office building (**Exhibit 2-10**). The loop ramp would provide motorists with a greater distance to reach their desired lane before entering the Zoo Interchange compared to the existing ramp.

Modernization Alternative 3 (E3). Alternative E3 is the only one of the three Modernization Alternatives that would maintain the 84th Street interchange ramps in roughly their same configuration but with longer acceleration and deceleration lanes (**Exhibit 2-11**). The westbound entrance ramp to I-94 from 84th Street and the eastbound exit ramp from I-94 to 84th Street would be braided with ramps connecting I-94 to US 45. As a result, the "footprint" of I-94 west of 84th Street would be wider than the other Modernization Alternatives. This alternative would require relocation of 19 to 20 residences (six duplexes and seven to eight single family) and one business along the south side of I-94, and one single family residence, one duplex, two 8-unit apartment buildings, and an office building on the north side of I-94.

E1/E3 Hybrid Alternative. Based on input from the October 2008 public information meeting, WisDOT and FHWA developed an alternative that incorporates elements of Alternative E1 and Alternative E3 (**Exhibit 2-12**). The eastbound lanes of I-94 would have the same configuration as Alternative E1, and the westbound lanes would have the same configuration as Alternative E3. This alternative would provide an eastbound exit directly to 84th Street, like Alternative E3. The westbound entrance to I-94 would be via a Texas U-turn at 76th Street, like Alternative E1. There would be no residential or business relocations on the north side of I-94, but there would be 19 (6-lane) to 20 (8-lane) residential and one business relocation on Adler Street south of I-94.

Modified E3 Alternative. A new alternative, modifying the original E3 concept, was developed based on feedback received during the study. Section 2.5.2 contains a discussion of this alternative; for ease of comparison to other East Leg alternatives, the key impacts of this new alternative, along with those for the original modernization concepts for the East Leg, have been added to **Table 2-2**.

South Leg. Each of the three alternatives below could be implemented with 6 lanes or 8 lanes.

TABLE 2-2
Key Impacts of Modernization Alternatives—East Leg

E1		E2		E3/Modified E3		E1/E3 Hybrid	
6-lane	8-lane	6-lane	8-lane	6-lane	8-lane	6-lane	8-lane
No residential relocations	No residential relocations	5 to 10 residential relocations east of 84th Street	5 to 10 residential relocations east of 84th Street	38 residential relocations west of 84th Street on Adler and Chester (16 relocations are from two 8-unit apartments). Modified E3 would result in the relocation of one 8-unit apartment.	39 residential relocations west of 84th Street on Adler and Chester (16 relocations are from two 8-unit apartments). Modified E3 would result in the relocation of one 8-unit apartment.	19 residential relocations on Adler Street west of 84th Street	20 residential relocations on Adler Street west of 84th Street
No commercial relocations	No commercial relocations	No commercial relocations	No commercial relocations	7 commercial relocations (6 at Honey Creek Corporate Center and 1 on Adler). Modified E3 would not require any commercial relocations.	7 commercial relocations (6 at Honey Creek Corporate Center and 1 on Adler). Modified E3 would not require any commercial relocations.	1 commercial relocation on Adler Street west of 84th Street	1 commercial relocation on Adler Street west of 84th Street
No impact on Boy Scout building	No impact on Boy Scout building	Boy Scout building relocated	Boy Scout building relocated	No impact on Boy Scout building	No impact on Boy Scout building	No impact on Boy Scout building	No impact on Boy Scout building
Land acquired from State Fair parking lot	Land acquired from State Fair parking lot	Land acquired from State Fair parking lot	Land acquired from State Fair parking lot	Land acquired from State Fair parking lot	Land acquired from State Fair parking lot	Land acquired from State Fair parking lot	Land acquired from State Fair parking lot

Modernization Alternative 1 (S1). The Greenfield Avenue interchange would be reconstructed like SI-3, but two one-way service roads would also be provided on both sides of I-894/US 45 between the Greenfield Avenue and Lincoln Avenue interchanges to supplement the ramp connections (**Exhibit 2-13**).

Modernization Alternative 2 (S2). The Greenfield Avenue interchange with I-894/US 45 would remain in roughly the same configuration except all Greenfield Avenue traffic entering northbound I-894/US 45 would use the loop ramp in the southeast quadrant (**Exhibit 2-14**). Ramps would be lengthened to provide better acceleration/deceleration distance and smoother curves. Two businesses on Greenfield Avenue adjacent to I-894/US 45 would be relocated.

Modernization Alternative 3 (S3). The Greenfield Avenue interchange would be reconstructed as a diamond interchange (**Exhibit 2-15**). Alternative S3 between Greenfield Avenue and the Zoo Interchange would be wider than S1 and S2, and would take up most or all of the electrical transmission line right-of-way east of the freeway. The electrical transmission lines would have to move east to accommodate the freeway, likely requiring the acquisition of up to 40 single-family residences on 98th Street. Two businesses on Greenfield Avenue adjacent to I-894/US 45 would be relocated.

Ramp from Eastbound I-94 to Greenfield Avenue Ramp (Sub-alternative). See west leg discussion.

Table 2-3 notes the relocations needed to construct the various South Leg alternatives and to accommodate the Eastbound I-94 to Greenfield Avenue ramp connection.

TABLE 2-3
Key Impacts of Modernization Alternatives—South Leg

S1		S2		S3	
6-lane	8-lane	6-lane	8-lane	6-lane	8-lane
No residential relocations	No residential relocations	No residential relocations	No residential relocations	35–40 residential relocations on 98th Street	35–40 residential relocations on 98th Street
No commercial relocations	No commercial relocations	2 commercial relocations on Greenfield Ave	2 commercial relocations on Greenfield Ave	2 commercial relocations on Greenfield Ave	2 commercial relocations on Greenfield Ave

I-94 to Greenfield Avenue ramp sub-alternative requires six additional residential relocations and one additional commercial relocation on the south leg.

Freeway would be closer to many homes on the south leg because of longer ramps and merging areas.

North Leg. Each of the three alternatives below could be implemented with 6 lanes or 8 lanes. A common feature of the north leg Modernization Alternatives is that there would be no direct access to/from Bluemound Road and I-94. Drivers on I-94 would need to use 84th Street or Highway 100 to access Bluemound Road.

Modernization Alternative 1 (N1). The Bluemound Road interchange would provide direct access to and from US 45 only. New service roads along both sides of US 45 would provide access to and from northbound US 45 and Bluemound Road (**Exhibit 2-16 sheets 1 through 3**). No interchange would be provided at Wisconsin Avenue, but service roads would connect Bluemound Road, Wisconsin Avenue, and a new local road overpass north of Wisconsin Avenue that would provide access to the Regional Medical Center and the Milwaukee County Research Park. This new local road overpass would connect to an exit from southbound US 45 and a new northbound entrance ramp. Service roads would connect these ramps to Wisconsin Avenue and Bluemound Road.

The Watertown Plank Road interchange would be reconstructed in roughly the same configuration. On the east side of US 45, the exit/entrance ramps would intersect Watertown Plank Road several hundred feet east of the current ramp intersection. A connection to and from Swan Boulevard would be braided with the Watertown Plank Road ramps; access to and from Swan Boulevard and US 45 would avoid the intersection with Watertown Plank Road via a structure over Watertown Plank Road.

Modernization Alternative 2 (N2). This alternative would provide a diamond interchange at Bluemound Road, accessible from US 45 only (**Exhibit 2-17 sheets 1 through 3**). Motorists on I-94 would not be able to access the Bluemound Road interchange by way of US 45, nor would motorists entering US 45 southbound be able to access I-94. No freeway access would be provided at Wisconsin Avenue. A service road would connect Wisconsin Avenue and Watertown Plank Road along the east side of US 45 and provide access to the Regional Medical Center. The Watertown Plank Road interchange would be reconstructed in roughly the same configuration.

This alternative would provide a direct connection between US 45 and Swan Boulevard via a direct exit from northbound US 45 to Swan Boulevard. Motorists on Swan Boulevard would have the option of entering directly onto southbound US 45 without going through the Watertown Plank Road interchange.

Modernization Alternative 3 (N3). A full interchange would be provided at Bluemound Road with access to/from US 45 only (**Exhibit 2-18 sheets 1 through 3**). One-way service roads would provide a connection between Bluemound Road, Wisconsin Avenue, and Watertown Plank Road on both sides of US 45. Texas U-turns (at Bluemound Road, Wisconsin Avenue and Watertown Plank Road) would allow motorists on these service roads to cross over US 45 without having to use Watertown Plank Road or Bluemound Road. The Watertown Plank Road interchange would be reconstructed in roughly the same configuration.

Like N2, this alternative would provide a direct exit from northbound US 45 to Swan Boulevard. Motorists on Swan Boulevard would have the option of entering directly onto southbound US 45 without going through the Watertown Plank Road interchange.

Swan Boulevard Interchange (Sub-alternative). Unique to Alternative N3, a full or half interchange would be built to connect Swan Boulevard and US 45. An interchange at this location would provide an additional access point to/from US 45, the Milwaukee County Research Park, and Milwaukee Regional Medical Center. A full interchange would encroach upon Milwaukee County's Wil-O-Way Special Recreation Center (2 acres) and DNR's Forestry Science Center (0.7 acre), both of which are east of US 45 and north of Swan Boulevard.

If a full interchange is built at Swan Boulevard, Swan Boulevard would be extended west and intersect Watertown Plank Road about 0.25 mile west of its current intersection. This would require reconfiguration—or perhaps relocation—of Milwaukee County Department of Public Works' storage and maintenance facility and greenhouses.

North Avenue Diamond Interchange (Sub-alternative). The North Avenue interchange could be reconfigured as a diamond interchange, which would eliminate the two current loop ramps but would require (1) the relocation of the Denny's restaurant in the southeast quadrant of the interchange, and (2) reconfiguration of an access road to two hotels and a car dealer.

North Avenue Single-Loop Interchange (Sub-alternative). The North Avenue interchange could be configured to retain a loop ramp in the northeast quadrant but the loop ramp in the southwest quadrant would be eliminated in favor of a conventional southbound exit ramp to North Avenue. This interchange configuration is compatible with all three north leg modernization alternatives.

North Avenue Double-Loop Interchange (Sub-alternative). The North Avenue interchange could be reconfigured in roughly the same configuration as it is today, with the two loop ramps. This sub-alternative would require no relocations or new access roads at North Avenue.

Table 2-4 notes the relocations needed to construct the various North Leg alternatives.

TABLE 2-4
Key Impacts of Modernization Alternatives—North Leg

N1		N2		N3	
6-lane	8-lane	6-lane	8-lane	6-lane	8-lane
1 residential relocation	1 residential relocation	1 residential relocation	1 residential relocation	1 residential relocation	1 residential relocation
1–2 commercial relocations	1–2 commercial relocations	1–2 commercial relocations	1–2 commercial relocations	1–2 commercial relocations	1–2 commercial relocations
One child and adolescent treatment center building relocated (Bldg. F)		Avoids child and adolescent treatment center		One child and adolescent treatment center building relocated (Bldg. F)	

Less than 1 acre acquired from Underwood Parkway

Acquisition of the Milwaukee County Zoo's overflow parking lot on the west side of US 45

Relocation of the Zoofari Conference Center on Bluemound Road

Right-of-way acquisition from St. Therese Church and Montessori School on the east side of US 45

Comparison of 6-Lane and 8-Lane Alternatives

In general, the 6-lane Alternatives would be narrower than the 8-lane Alternatives because they would have one less traffic lane in each direction. The relocation impacts are the same between the 6-lane and 8-lane Modernization Alternatives on the south, west, and north legs. The 8-lane E3 would relocate one more residence than the 6-lane E3.

The 6-lane Modernization Alternatives would have greater congestion and therefore a lower level of service compared to the 8-lane Alternatives. Under the 6-lane Alternatives, during the 2035 morning and evening rush hour, northbound US 45 would operate at level of service F almost continuously between Lincoln Avenue and Burleigh Avenue. I-94 between 70th Street and 84th Street would operate at level of service F both eastbound and westbound during the evening rush hour. I-94 near Highway 100 (eastbound and westbound) would operate at level of service F during both morning and evening rush hours, and for several hours outside of the rush hour. The North Avenue and Burleigh Avenue interchanges would operate at level of service F during the morning and evening rush hour. Other shorter segments of the study-area freeway system would operate at level of service F and E, with only a handful of locations operating at level of service D.

The three 8-lane Alternatives would vary slightly in terms of traffic operation under 2035 traffic volumes. However, all segments of the study-area freeway system would generally operate at level of service D or better. Some short segments of the freeway system would operate at level of service E during the morning or afternoon rush hour. See Section 3.3.

The 6-lane Modernization Alternatives would meet most elements of the project's purpose and need:

- Maintain a key link in the transportation network, consistent with the regional transportation plan: This alternative would maintain the study-area freeway system as a key link in the transportation network, but the regional plan calls for adding an additional lane to the study-area freeway system.

- Address the obsolete design of the study-area freeway system to decrease crashes: These alternatives would address all substandard design elements.
- Improve traffic operations and accommodate future volumes on the study-area freeway system and service interchanges: These alternatives would improve traffic operations by providing auxiliary lanes and service roads at select locations. They would accommodate future traffic volumes generally at level of service E and F, which is below the level considered acceptable.
- Replace deteriorating pavement: These alternatives would replace existing pavement.

The 6-lane Modernization Alternatives would cost more than the spot improvements alternatives and less than the 8-lane Modernization Alternatives. Environmental impacts would be less than, though comparable, to the 8-lane Modernization Alternatives' impacts.

Local government support for the 6-lane Modernization Alternatives has come from the City of Milwaukee. At the May 2008 and October 2008 public information meetings and 2009 public hearing, there was less public support for the 6-lane Modernization Alternative than the 8-lane Modernization Alternative (see Section 5.1, Public Involvement).

The 8-lane Modernization Alternatives would meet all the purpose and need elements:

- Maintain a key link in the transportation network, consistent with the regional transportation plan: This alternative is the only one that is completely consistent with the regional transportation plan.
- Address the obsolete design of the study-area freeway system to decrease crashes: These alternatives would address all substandard design elements and reduce congestion-related crashes (rear end crashes, for example) compared to the 6-lane Modernization Alternative.
- Improve traffic operations and accommodate future volumes on the study-area freeway system and service interchanges: These alternatives would improve traffic operations by adding an additional travel lane and providing auxiliary lanes and service roads at select locations. They would generally accommodate future traffic volumes at level of service C and D. No study-area freeway segments would operate at level of service F.
- Replace deteriorating pavement and bridges: These alternatives would replace existing pavement and bridges.

At the May 2008 and October 2008 public information meetings and 2009 public hearing, public input supported the 8-lane Modernization Alternatives more than the spot improvement or 6-lane Modernization Alternatives. The No-Build Alternative had more support than the 8- or 6-lane Modernization Alternatives based on public comments reviewed. The City of Milwaukee opposes adding capacity to the freeway system anywhere in the City of Milwaukee and prefers modernization with no added capacity.

The 8-lane Modernization Alternatives would cost the most of the Build Alternatives and incur the most environmental impacts.

2.3 Other Alternatives Considered

Several other alternatives have been considered and dismissed for various reasons.

2.3.1 Level of Service C Alternative

FHWA and AASHTO's freeway design guidelines state that level of service C is the desirable level of service in urban areas, although level of service D "may be appropriate in heavily developed sections of metropolitan areas" (AASHTO, 2004a). WisDOT's FDM Procedure 11-5-3, Table 1 also indicates that a level of service C is a design goal for Corridor 2020 Backbone Routes located in urbanized areas with populations greater than 50,000.

Based on this guidance, WisDOT and FHWA developed an alternative that would provide level of service C on the study-area freeway system. This alternative would have a similar configuration to the Modernization Alternatives but provide a 70 mph design speed rather than 60 mph (The WisDOT FDM Procedure 11-10-1 indicates that a design speed of 70 mph is to be used for Corridor 2020 Backbone multilane divided highways). To accomplish this, curves would be more gradual and could potentially require more right-of-way acquisition. The level of service C alternative would feature four basic lanes in each direction and two-lane system ramps, resulting in a 16-lane cross section on each leg at the Zoo Interchange.

To properly transition from the widened freeway back to a 6-lane freeway, the project limits would be expanded west to Sunnyslope Road, south to Oklahoma Avenue, and east to Hawley Road. The north leg project terminus would remain at Burleigh Avenue. Additional right-of-way acquisition would be required to accommodate the 16-lane cross section near each leg at the Zoo Interchange core. This alternative would require roughly 250 to 300 residential relocations compared to between 6 and 39 for the Modernization Alternatives that remain under consideration. Based on the relocation impacts, this alternative was eliminated from consideration.

2.3.2 High-Occupancy Vehicle / High-Occupancy Toll Lanes

In the 1990s, WisDOT and FHWA considered adding lanes for the exclusive use of vehicles carrying two or more passengers (HOV lanes). HOV lanes were also considered as part of this study. In some cities, single-occupant vehicles that pay a toll are allowed to use HOV lanes. These lanes are referred to as HOT lanes. HOV and HOT lanes can be separated from general purpose lanes by either pavement markings or a concrete barrier.

Barrier-separated lanes are safer and more effective at stopping the improper use or access to HOV and HOT lanes. For example, a high-speed vehicle in the HOV or HOT lane crashing into lower speed vehicles in the general purpose lanes could increase the severity of crashes. If a low-speed vehicle in the general purpose lanes illegally pulls into the HOV/HOT lanes to avoid a slowed or stopped vehicle, they could trigger a severe crash with a high-speed vehicle in the HOV/HOT lanes. A barrier also allows HOV and HOT lanes to continue to operate if there is a crash in the general purpose lanes, and vice versa.

A barrier between general purpose lanes and HOV or HOT lanes would widen the freeway because HOV and HOT lanes would need their own shoulder, in addition to the shoulder on the general purpose lanes. **Exhibit 2-19** illustrates the width of a freeway under different combinations of general purpose and HOV and HOT lanes. Adding one HOV or HOT lane in each direction to three general purpose lanes would add between 30 and 60 feet to the width of the study-area freeway system.

The increased width of the study-area freeway system with HOV and HOT lanes would dramatically increase the number of residential relocations compared to the other Build Alternatives. At least 50 to 70 residential relocations (based on WisDOT's cursory impact analysis) would be required under this alternative compared to 6 to 39 residential relocations under the modernization with added capacity alternatives.

Buffer separated HOV and HOT lanes have the advantage of a narrower cross section but do not have the safety benefits of the barrier-separated HOV/HOT lanes. Most HOV/HOT lanes constructed around the country in the past decade have been buffer-separated due to the real estate impacts associated with barrier-separated facilities.

Motorists are typically allowed to enter and exit the HOV/HOT lanes every few miles. At these locations, the freeway needs more width to accommodate the added lane that carries motorists into and out of the HOV/HOT lanes. These HOV/HOT lane exit and entrance areas are typically in advance of and following major interchanges like the Zoo Interchange. Additional right-of-way and relocation impacts may occur depending on where these HOV/HOT entrance and exit areas would be located.

A challenge to implementing HOV lanes, either buffer or barrier-separated, on the study-area freeway system is that over 40 percent of vehicles that approach the Zoo Interchange change direction (exiting one freeway to enter another). Through HOV lanes are always constructed along the median or "inside lane" of the roadway. As such, drivers that want to exit the freeway to go in a different direction (such as I-94 westbound to US 45 northbound) would have to cross over two to three lanes of traffic to reach an exit ramp then weave across two to three lanes to reach the HOV lane after entering the new freeway on the right side. The solution to eliminating these additional weaving maneuvers is to construct ramps within the interchange core for exclusive HOV use. This would create an "interchange within an interchange," complicating the design within the limited space available for the Zoo Interchange. Other challenges include construction sequencing and traffic handling during interchange construction. If median HOV lanes were added to only one of the through routes, for instance I-94 only, then the amount of weaving on the freeway system could be better managed.

Studies on the effectiveness of HOV lanes reducing congestion in Seattle and San Francisco, and practical experience in Washington, DC and other locations, have reached different conclusions (Kwon and Varaiya, 2005). AASHTO guidance on HOV lanes suggests that they are appropriate when, among other factors, average speeds on the freeway are "less than 30 mph for a distance of about 5 miles or more" (AASHTO, 1992; 2004b). That condition does not occur on the study-area freeway system nor is it forecasted to occur by the design year.

SEWRPC considered barrier-separated HOV or HOT lanes while developing *A Regional Freeway System Reconstruction Plan for Southeastern Wisconsin* and determined that the right-of-way and relocation impacts were too great (SEWRPC, 2003b). SEWRPC does not recommend implementing HOV and HOT lanes (SEWRPC, 2003b). WisDOT and FHWA were involved in preparation of *A Regional Freeway System Reconstruction Plan for Southeastern Wisconsin* and concur in its methodology and recommendations with respect to HOV lanes (see Section 1.3.1).

The study-area freeway system limits and the traffic characteristics make HOV lanes, which add weaving movements, a marginal improvement over the Modernization Alternatives. As a result, this alternative was eliminated from consideration.

DNR asked if HOV lanes could be added in the future (Appendix D, page D-29). The Modernization Alternatives do not provide space for transfer lanes to carry motorists into and out of HOV lanes or special ramps within the core of the Zoo Interchange to carry HOV traffic from one freeway to another. Buffer separated HOV lanes could be added to the Modernization Alternatives in the future, for through traffic only, by converting the inside general purpose lane to an HOV lane. This would likely reduce the overall traffic capacity of the freeway.

2.3.3 Adding Capacity without Widening

In some cities, drivers are allowed to drive on the inside or outside shoulder during peak hours. Another way to add capacity is using narrower lane widths to provide additional lanes without widening the freeway.

The key benefit of these measures is increased capacity (up to 30 percent) at a low cost. The key disadvantage is that the shoulder is not available for disabled vehicles, emergency vehicle access, or snow storage. Some studies have found an increase in crash rates when the shoulder is used as a general purpose lane; other studies have found no change in crash rates (FHWA, 2006b). WisDOT and FHWA have decided not to implement either narrower lanes or allow shoulder use. However, the Modernization Alternatives would not preclude using shoulders as travel lanes at some point in the future. Narrower lanes have also been ruled out since 12-foot lanes are the minimum standard for freeways.

2.3.4 Additional Build Alternatives Suggested by Stakeholders

Throughout the course of the study, a number of suggestions for freeway, non-freeway, and off-alignment options were received during public meetings and via the project website. These included: completion of other planned Southeast Wisconsin freeway system links such as the Stadium North Freeway, Stadium South Freeway, Belt Freeway, and others shelved several decades ago; the conversion of existing arterials into freeways to provide options to users of I-94 and US 45; the capacity expansion of existing state trunk and county trunk highways to be used as “bypasses” for I-94 and US 45 traveling through the Zoo Interchange corridor; and others.

FHWA and WisDOT studied each alternative for their ability to address project purpose and need factors (see Section 1), and each were found deficient for various reasons: their inability to attract traffic from the existing system based on land use and development adjacent to the project corridor; their non-responsiveness to addressing the deteriorated condition of study-area roadways and bridges; and the range and extent of impacts resulting from significant improvement and/or expansion of other facilities to provide for the required carrying capacity to attract traffic from I-94 and/or US 45. For these reasons, each of these additional build alternatives were dismissed from further consideration.

The Waukesha County based Highway J Citizens Group, a group formed in 2001 in opposition to widening WIS 164 between I-94 in Waukesha County and US 41/45 in Washington County, suggested an alternative. The group suggested an alignment known

as the Power Corridor Alternative because it would follow an electrical transmission line for part of its route.

The Power Corridor Alternative was evaluated as part of the WIS 164 Final EIS (I.D. FHWA-WISC-EIS-01-01-F).

The Power Corridor Alternative would not address any of the purpose and need elements of the Zoo Interchange project. There is no connection between the power line corridor and the Zoo Interchange corridor. Implementing the power corridor alternative would not preclude the need to reconstruct the Zoo Interchange and was therefore eliminated from consideration.

2.4 Second Alternatives Screening / Alternatives Retained for Detailed Study

After public information meetings (May and October 2008), Technical Advisory Committee meetings (June, October, and November 2008), and Community Advisory Committee meetings (July and October 2008), WisDOT and FHWA eliminated some alternatives from consideration based on public input, traffic operations, and impacts.

The following alternatives remain under consideration:

- No-Build Alternative
- Modernization with No Added Capacity (6-lane) Alternative
- Modernization with Added Capacity (8-lane) Alternative

WisDOT and FHWA continue to consider several sub-alternatives:

- A single-loop ramp interchange at North Avenue
- A double-loop ramp interchange at North Avenue
- A ramp from eastbound I-94 to Greenfield Avenue
- A combined service drive option on the north side of the east leg (E1 only)

WisDOT and FHWA have dropped consideration of a full interchange at Swan Boulevard, which included an extension of Swan Boulevard from US 45 west through the Milwaukee County Department of Public Works maintenance facility. This interchange sub-alternative was dropped because the benefits of the interchange (better traffic operations) were not sufficient enough to justify the cost of the interchange and relocation of the maintenance facility. The adjacent Watertown Plank Road interchange would operate at an acceptable level of service without the Swan Boulevard interchange.

WisDOT and FHWA have also dropped the North Avenue diamond interchange from consideration because the loop ramp options provide better traffic operations and avoid business relocation and access issues.

The core of the Zoo Interchange would be reconstructed in generally the same configuration under each of the Modernization Alternatives. As a result, the four legs of the Modernization Alternatives may be mixed and matched to create the most effective design solution. **Table 2-5** summarizes the alternatives that remain under consideration.

TABLE 2-5
Secondary Screening of Alternatives by Leg (2009)

Leg	Alternative	Retained or Eliminated (Proposed)	Reasons for Proposed Elimination/Retention of This Alternative
West	W1 (6- and 8-lane)	Eliminate	W3 more compatible with ramp from eastbound I-94 to Greenfield Avenue.
	W2 (6- and 8-lane)	Eliminate	Same as W1.
	W3 (6- and 8-lane)	Retain	Provides best traffic operations on Highway 100. Recommended alternative for west leg.
East	E1 (6- and 8-lane)	Retain	Acceptable traffic operations, less impacts than E3.
	E2 (6- and 8-lane)	Eliminate	Poor traffic operations near 84th Street westbound entrance ramp; several buildings would be relocated to accommodate loop ramp at 84th Street.
	E3 (6-lane)	Eliminate	6-lane E3 has greater impacts and more congestion than 8-lane E1.
	E3 (8-lane)	Eliminate	Greater impacts than E1 or E1/E3 hybrid; traffic operations comparable to E1/E3 hybrid.
	E1/E3 Hybrid (6- and 8-lane)	Retain	Acceptable traffic operations, less impacts than E3, and less indirection at 84th Street than E1.
South	S1 (6- and 8-lane)	Eliminate	Traffic operations not as good as S2, also encroached into utility right-of-way.
	S2 (6- and 8-lane)	Retain	Recommended alternative for south leg.
	S3 (6- and 8-lane)	Eliminate	Extensive residential relocation impacts due to encroachment into utility right-of-way next to freeway.
North	N1 (6- and 8-lane)	Retain	Acceptable traffic operations.
	N2 (6- and 8-lane)	Eliminate	Widest footprint of the three north leg alternatives; poor traffic operations on northbound US 45 between the Zoo Interchange and Bluemound Road.
	N3 (6- and 8-lane)	Retain	Acceptable traffic operations.

2.5 Post-Public Hearing (2009) Alternatives Development and Refinement

Following approval and distribution of the Draft EIS in May 2009, a public hearing was conducted in June 2009 for the alternatives presented in the Draft EIS. Three themes were predominant in the testimony and comments received, as follows:

- Investigate whether full access to and from I-94 can be provided at the existing US 45 freeway crossings with US 18 (Bluemound Road) and Wisconsin Avenue, to replace the interchange access provided at present with one or more of the freeway reconstruction/modernization alternatives.
- Investigate whether a standard diamond interchange configuration can be reconsidered at the 84th Street (WIS 181) interchange with I-94, to avoid real estate impacts and the diversion of through and local traffic from 84th Street to 76th Street via the Texas U-turn ramps previously proposed.

- Investigate whether Build Alternatives with fewer environmental impacts (residential, business, and institutional building relocations; stormwater management; natural resource areas, including public-use and parklands; etc.) are viable.

In response to these comments, WisDOT and FHWA have investigated modifications to the Build Alternatives described above, considering new freeway alternatives, sub-alternatives, and surface arterial improvements that relate to changed freeway access in the study area. More detail on the new alternatives and sub-alternatives follows in the remainder of this section.

2.5.1 Providing Full Range of Access at Bluemound Road/Wisconsin Avenue

A significant amount of testimony and comment was received during the public hearing and Draft EIS availability requesting that WisDOT re-investigate the potential for providing access to and from Bluemound Road/Wisconsin Avenue with I-94 (this access is not provided by any of the Modernization Alternatives presented in the Draft EIS). Though it is both dangerous (multi-lane weaves required over very short distances) and occasionally unavailable (freeway on-ramp signing prohibits these weaves during peak morning and afternoon periods), the existing freeway system allows that access today.

WisDOT has studied the issue at length based on these requests, but remains unable to provide this access, because of the close proximity of the core Zoo Interchange with Bluemound Road. To address the short spacing, right-of-way needed to provide separate service interchange ramps to and from I-94 (likely braided with or exiting from system ramps) would substantially increase the number of relocations required and the amount of right-of-way needed to construct the necessary connections.

WisDOT performed additional traffic studies to determine the volume and distribution pattern of traffic entering and exiting the Milwaukee Regional Medical Center (**Exhibit 2-20**). That study determined that the amount of traffic using the Bluemound Road/Wisconsin Avenue interchange to and from I-94 is 5 percent of the total traffic volume entering or exiting the Milwaukee Regional Medical Center.

WisDOT has developed an enhanced interchange with Watertown Plank Road that improves traffic handling and capacity. In addition, WisDOT has proposed the inclusion of specific arterial improvements to facilitate the handling of diverted traffic. Existing and future I-94 traffic that would have used the existing Bluemound Road/Wisconsin Avenue interchange for the Milwaukee Regional Medical Center and other destinations will be accommodated by these new elements.

2.5.2 Modified E3 Alternative

Input from the October 2008 public information meeting and the June 2009 public hearing requested that WisDOT and FHWA investigate options for recreating the existing access pattern at the 84th Street interchange with I-94. This would avoid the diversion of ramp traffic along the two service drives (Kearney and O'Connor Streets) to 76th Street and ramps located east of 84th Street. WisDOT and FHWA developed an alternative, called Modified E3, that mimics most aspects of the original E3 standard-diamond interchange (**Exhibit 2-21**). The Modified E3 Alternative pertains exclusively to Modernization Alternatives.

The substantive change would be to the location of the ramp braid between the westbound I-94 system off-ramp and the 84th Street to westbound I-94 on-ramp. Under the original E3 Alternative, that braid was located approximately 500 feet west of the I-94 bridges over 84th Street. The resulting configuration would require additional land along the north side of the freeway, and would result in the relocation of one of the Honey Creek Corporate Center buildings and several residential units along Chester Street (two 8-unit apartment buildings and one single-family home). Under the Modified E3 Alternative, the ramp braid is moved to the east, beginning just east of the I-94 bridges over 84th Street. The shift in this braid allows for a quicker transition to existing freeway right-of-way, and as a result, reduces the relocation impacts on the north side of I-94 to one 8-unit apartment building. In addition to the relocations along Adler Street resulting from the Draft EIS Modernization Alternatives, there would be four additional residential relocations required on the south side of I-94 (to the west of the relocations required for the original E3 Alternative). **Table 2-2** summarizes the key impacts of the Modernization Alternatives for the east leg.

2.5.3 Reduced Impacts Alternative

In response to testimony and comments received from stakeholders during the Draft EIS comment period and the June 2009 public hearing, WisDOT and FHWA investigated options that would balance traffic service, geometric improvements, and safety enhancements with a reduced freeway footprint throughout the project corridor. Specifically, strategies to reduce right-of-way acquisition (primarily building relocations), better locate and quantify stormwater management techniques, and minimize impacts to natural resource areas were identified. This alternative reduces several impacts to abutting landowners and other stakeholders in the corridor. As a result, WisDOT and FHWA made a determination to present the Reduced Impacts Alternative as a new alternative for consideration and input.

While an 8-lane Reduced Impacts Alternative would result in less efficient traffic operations (and increased congestion) through the design year than any of the previously-developed 8-lane Modernization Alternatives, the reduction is not significant (see Section 3.3). A 6-lane version of this alternative would not provide acceptable traffic operations (delay, level of service), and therefore is not offered as a reasonable alternative.

Core. The core of the Reduced Impacts Alternative is defined similarly to the core for the Modernization Alternatives (I-94 from roughly 92nd Street to Highway 100, and US 45 from Schlenger Avenue to Bluemound Road). The core design of the Reduced Impacts Alternative is similar to the Modernization Alternatives core in the following respects (**Exhibit 2-22**):

- All exits on the right; through traffic stays left.
- Full 8- to 12-foot shoulders on all ramps and freeways.
- 3 lanes on US 45 northbound and southbound.
- Several ramps that have 1 lane today would have 2 lanes:
 - The ramp from I-94 eastbound to I-894/US 45 southbound would be 2 lanes.
 - The ramp from I-894/US 45 northbound to I-94 westbound would be 2 lanes.
 - The ramp from US 45 southbound to I-94 eastbound would be 2 lanes.
 - The ramp from I-94 westbound to US 45 northbound would be 2 lanes.

- Smoother curves on all freeway-to-freeway interchange ramps (minimum 45 mph design speed, compared to as low as 30 mph today).
- I-94 and US 45 would have a 60 mph design speed.
- Access to and from US 45/I-894 is provided to US 18 (Bluemound Road); access to and from I-94 to this interchange would not be provided.

The core of the Reduced Impacts Alternative is different from the core of the Modernization Alternatives in the following respects:

- 2 lanes on I-94 eastbound and westbound (Modernization Alternatives have 3 lanes on I-94 eastbound and westbound).
- 18-foot inside shoulders on I-94 eastbound and westbound that could be converted to an additional through lane in the future.
- The interchange would have four levels rather than five, making it about 20 feet lower than the Modernization Alternatives core design (but 20 feet higher than the existing core).
- The merge points for on- and off-ramps to adjacent service interchanges would be in the interior of the core, improving ramp spacing by eliminating a number of ramp braids and structures, and adding an auxiliary lane section in each cardinal direction.
- Adding these new auxiliary lane sections, along with ramp braids in selected locations, eliminates the need for the Modernization Alternative core loop ramp in the northwest quadrant, and the need for a sub-alternative to provide access from I-94 eastbound to Greenfield Avenue.
- The modified configuration avoids the need to relocate the County Zoo maintenance facilities, the Zoofari Conference Center, and reduces the number of ATC and We Energies transmission and distribution towers and other facilities adjacent to the freeway compared to the Modernization Alternative.
- It is not compatible with any of the approach legs under the various Modernization Alternatives presented in the Draft EIS, and as a result is a “stand-alone” alternative.

West Leg

The West Leg of the Reduced Impacts Alternative is nearly identical to the Modernization Alternative W3, except for the retention of the westbound I-94 to southbound Highway 100 free-flow loop ramp and the westbound I-94 to northbound Highway 100 slip ramp (**Exhibit 2-23**).

The key impact of the Reduced Impacts Alternative for the west leg is two relocations (a coffee shop and hotel in the northwest quadrant). These impacts are comparable to those required under the Modernization Alternatives’ West Leg options.

East Leg

The East Leg of the Reduced Impacts Alternative (**Exhibit 2-24**) is similar to the Modernization Alternative E3 (standard diamond interchange configuration). All exits and entrances to/from the freeway would be via intersections at 84th Street, as occurs today. The service drives south of I-94 (Kearney Street) and north of I-94 (O’Connor Street), each east of 84th Street, would remain in-place.

By moving the westbound on-ramp and eastbound off-ramp merge points with I-94 to the interior of the core, the need for ramp braiding is eliminated, and merging operations are significantly improved. The resulting configuration is narrower than Modernization Alternative E3, and reduces the need for relocations to one 8-unit residential building located north of I-94 and east of 92nd Street, and no relocations along Adler Street.

South Leg

The South Leg of the Reduced Impacts Alternative (**Exhibit 2-25**) is similar to the Modernization Alternative S3 (standard diamond interchange configuration). By moving the northbound on-ramp and southbound off-ramp merge points with US 45/I-894 to the interior of the core, the need for ramp braiding is eliminated, and merging operations are significantly improved. The resulting configuration is narrower than that for Modernization Alternative S3, and eliminates the need to encroach into the utility corridor located east of I-894. The change to a diamond off-ramp in the southeast quadrant of the interchange eliminates the need for any relocations along Greenfield Avenue, and provides space for stormwater management elements or the return of a small amount of right-of-way back to abutting landowners or the City of West Allis.

North Leg

The North Leg of the Reduced Impacts Alternative is described by section, as follows:

- **Between the core and the south end of the US 45/Watertown Plank Road interchange:**

The Reduced Impacts Alternative is similar to the Modernization Alternative N2 in this area. Similarities include: 1) access at Bluemound Road to and from US 45 only (no access to/from Bluemound to I-94); 2) no service drives between Bluemound Road and Wisconsin Avenue (or further north); 3) continuation of 95th Street as a local road connection between Bluemound Road and Wisconsin Avenue; 4) cul-de-sac of 97th Street near Bluemound Road; and 5) no provision for the extension of Innovation Drive across US 45 north of Wisconsin Avenue (though that connection could be made at a future date, as part of a local street improvement project).

Major differences include: 1) no relocation of the Zoofari Conference Center; 2) reduced impacts in front of the Poolside Park Apartments; 3) no relocation of a building in the Behavioral Health complex at the Watertown Plank Road interchange; and 4) elimination of the collector-distributor roads between the Bluemound Road and Watertown Plank Road interchanges (**Exhibit 2-26 sheets 1 through 3**).

- **The US 45/Watertown Plank Road interchange:** The Reduced Impacts Alternative includes a new and distinct Watertown Plank Road interchange configuration. This alternative includes free flow access to and from all directions; that is, no signals would be required along Watertown Plank Road which would significantly increase the capacity of this interchange. A combination of loop ramps (southwest and northeast quadrants) and U-ramps (both north and south of the US 45 bridges over Watertown Plank Road) are included. By eliminating ramp braids included in the Modernization Alternatives, and including auxiliary lanes between Bluemound Road and Watertown Plank Road on the freeway, overall right-of-way impact would be reduced. Impacts are increased in the southwest and northeast quadrants of the interchange (immediately adjacent to Watertown Plank Road), but are reduced in the northwest and southeast quadrants, and along the east side of US 45 as it approaches the Swan Boulevard overpass.

Swan Boulevard would be separated from the Watertown Plank Road interchange, with access to and from Swan Boulevard to US 45 provided exclusively via the extension of Swan Boulevard to the south and west, intersecting with Watertown Plank Road at a new signalized intersection at the existing Innovation Drive/Watertown Plank Road intersection. A sub-alternative was presented at public information meetings early in the study that suggests relocating and extending Swan Boulevard as an element of a US 45/Swan Boulevard interchange. Based on impacts and feedback, that concept was dismissed prior to the public hearing.

This feature would re-introduce the need to relocate a number of Milwaukee County DPW facilities along Watertown Plank Road west of US 45 (greenhouses, salt shed, and surface parking and storage areas for DPW equipment and for the Sheriff's Substation) (Exhibit 2-26).

After the March 2011 public hearings WisDOT decided to increase the design speed of the Watertown Plank Road loop ramps from 25 to 30 mph. This would result in more right-of-way acquisition in the northeast and southwest quadrants. The curves would not be as tight with a 30 mph design speed as they would be with the 25 mph design speed shown in the Supplemental Draft EIS. A 30 mph ramp decreases the speed differential on the freeway and on Watertown Plank Road, which allows for safer diverging of traffic entering and exiting US 45 at Watertown Plank Road.

- **Between the US 45/Watertown Plank Road interchange and the northern terminus of the project at the Burleigh Street interchange:** The Reduced Impacts Alternative mimics each of the Modernization Alternatives in this segment. A slip ramp to northbound Highway 100 (Mayfair Road) would remain, and a double-loop ramp configuration is proposed at the North Avenue interchange. No change in impacts is anticipated between the Reduced Impacts Alternative and the other Modernization Alternatives in this segment (Exhibit 2-26).

Summary

Generally, the trade-off between the previously presented Modernization Alternatives and the Reduced Impacts Alternative involves traffic operations/congestion and impacts to abutting development and environmental resources. Based on traffic modeling, the Reduced Impacts Alternative operates at a slightly lower average speed during the evening peak hour than the Modernization Alternatives (56 mph versus 60 mph). In the evening peak hour, the Reduced Impacts Alternative also operates at a lower level of service with an average density of 25 passenger cars per mile per lane (pc/mi/pl), while the Modernization Alternatives would operate with an average density of 21 pc/mi/pl. This is roughly a 20 percent increase in vehicle density. The Reduced Impacts Alternative reduces relocations as well. A worst-case 8-lane Modernization Alternative requires a maximum of 39 relocations, while the Reduced Impacts Alternative requires only 8 residential relocations (one 8-unit apartment building), 3 business relocations, and relocations of select buildings at the Milwaukee County DPW yard site. This alternative is also responsive to feedback related to environmental impacts (stormwater management, public-use lands, and total right-of-way acreage acquisition). More detail regarding the comparison of these alternatives' impacts is provided in Section 3, Existing Conditions, Environmental Impacts, and Measures to Mitigate Adverse Impacts.

2.5.4 Adjacent Arterials Component

As noted in Section 1.1.4, a study of ongoing development in the northern portion of the study corridor was undertaken by local units of government under the leadership of WisDOT concurrent with the Zoo Interchange corridor study (see Exhibit 1-17 on page 1-40). The study was named the West Suburban Traffic Impact Analysis (WSTIA) and focused on improvements needed to a number of arterials in the study area to adequately serve development-generated traffic in the Milwaukee Regional Medical Center, Milwaukee County Research Park, the potential UWM research campus, and other activities. Those arterials included the following:

- Highway 100, between Bluemound Road and Watertown Plank Road
- Watertown Plank Road, between Highway 100 and 87th Street
- 84th Street/Glenview Avenue, between Bluemound Road and Watertown Plank Road
- Bluemound Road, between Highway 100 and 84th Street
- Wisconsin Avenue, between Highway 100 and 84th Street

The WSTIA final report concluded that a number of improvements were required, both along each of the arterials listed above, and at intersections between the various arterials. WSTIA efforts and findings were coordinated with the Zoo Interchange corridor study, and improvements related solely to freeway operations and access were planned for, but not included in, WSTIA recommendations.

As freeway alternatives were further investigated, WisDOT and FHWA determined that some amount of access to and from I-94, I-894, and US 45 to intersecting and parallel arterials would be modified. Because I-94 access to and from Bluemound Road and Wisconsin Avenue would be precluded by the Modernization and Reduced Impacts Alternatives, some traffic that would have used this interchange would instead use Highway 100, Watertown Plank Road, and 84th Street/Glenview Avenue to access areas adjacent to the Bluemound Road / US 45 Interchange. Some traffic would be diverted to local streets as a result. The increase in traffic as a result of the access change to/from Bluemound Road/Wisconsin Avenue could be offset by the decrease in traffic on the local arterials caused by the expansion of the freeway. (Exhibit 2-27 sheet 1 and 2).

Newly-obtained traffic information, along with observations of traffic operations during the Zoo Emergency Bridge Replacement construction in 2010, confirmed the need to investigate arterial improvements as part of the freeway reconstruction effort, due to the close relationships between local traffic both on- and off-freeway throughout the project corridor. As a result, potential improvements to selected arterials studied in the WSTIA were included in the Supplemental Draft EIS as integral components of the overall reconstruction and modernization purpose and need, as well as elements of freeway modernization, including the following:

- Highway 100 between I-94 and Watertown Plank Road
- Watertown Plank Road between Highway 100 and 87th Street
- 84th Street/Glenview Avenue between I-94 and Wisconsin Avenue

Other WSTIA-recommended improvements are not directly related to freeway operations and needs, and are therefore not included in the freeway reconstruction project alternatives detailed in the Supplemental Draft EIS.

A general discussion of the improvement concepts and major impacts is outlined below. More detailed information on impacts, costs, and other features is included in Section 3.

Highway 100

The segment of Highway 100 (between the I-94 interchange ramps and just north of Watertown Plank Road) was analyzed. Highway 100 is currently a 6-lane urban arterial through much of the study area, carrying traffic volumes in excess of 30,000 vehicles per day. Major Highway 100 intersections in the study area include the I-94 ramp terminals, Bluemound Road and Watertown Plank Road. Proposed improvements to Highway 100 include eight through lanes; access modifications via driveway consolidation, median opening changes, and additional width for bicyclists in the outside lane. Also, turn lanes and storage for turning vehicles would be added at the intersections of Highway 100 with Bluemound Road, Wisconsin Avenue, Research Drive/Potter Road, and Watertown Plank Road (**Exhibit 2-28**).

The improvements at the Highway 100/Bluemound Road intersection would result in the potential relocation of 1 to 2 businesses on the east side of Highway 100 north of the intersection, and the extension of the UPRR tunnel underneath the intersection. Some encroachment into parking areas, particularly in the southwest and southeast quadrants of that intersection, is expected. Adding left-turn lanes (to provide three left-turn lanes instead of the current two) adding a through lane on Highway 100 and lengthening the existing right-turn lanes are the key improvements.

Based on input during the Supplemental Draft EIS public comment period, WisDOT modified its plan by reducing the length of the eastbound right-turn lane to reduce parking impacts in the southwest quadrant of the intersection. As a result, 35-40 public parking spots that would have been removed under the original plan would not be affected. About 25 parking spaces at Edwardo's restaurant would be removed.

In the southeast quadrant of the interchange, on-street parking on Bluemound Road would be not be allowed for a distance of about 350 feet east of Highway 100. This would result in a loss of approximately 20 on-street parking spaces, most of which are used by County Zoo patrons.

Watertown Plank Road

Watertown Plank Road is a four-lane divided urban arterial carrying up to 22,000 vehicles per day through the project area. Major Watertown Plank Road intersections in the study area include Highway 100, Innovation Drive, the ramp terminals with US 45, 92nd Street, and 87th Street. The segment of Watertown Plank Road included for analysis is between Highway 100 on the west and 87th Street on the east. Improvements to Watertown Plank Road include widening from four to six through lanes. This level of improvement will better handle both Regional Medical Center/Research Park/County Grounds redevelopment traffic and traffic diverted from the Bluemound Road Interchange (traffic coming from I-94). Additionally, possible access modifications via driveway consolidation, median opening changes, and other strategies may be employed. Also, additional turn lanes and storage for turning vehicles at the intersections of Watertown Plank Road with Swan Boulevard/Innovation Drive, 92nd Street, and 87th Street would be provided (**Exhibit 2-29**).

A slight shifting of Watertown Plank Road through the US 45 interchange is required. Right-of-way acquisition is anticipated along the entire segment, though no relocations are required. Traffic signals at the US 45 interchange are not required. Swan Boulevard traffic would no longer pass through the interchange, but would instead be rerouted along Watertown Plank Road via an extension that ties into the existing T-intersection of Watertown Plank Road and Innovation Drive, west of US 45.

WIS 181 (84th Street/Glenview Avenue)

84th Street/Glenview Avenue is a two- to four-lane urban arterial carrying north-south traffic of up to 14,000 vehicles per day through the east side of the study area. It serves a mix of residential, school, commercial, and institutional traffic generators and users. Major 84th Street/Glenview Avenue intersections through the study area include the ramp terminals with I-94, Bluemound Road, and Wisconsin Avenue.

The Bluemound Road/84th Street intersection would be reconstructed to lengthen existing left-turn lanes and right-turn lanes. A left-turn lane would be added on southbound 84th Street/Glenview Avenue as it approaches Bluemound Road. Based on input received during the Supplemental Draft EIS public comment period, Glenview Avenue north of Bluemound Road would be reconstructed to provide one lane in each direction and a two-way left-turn lane in the middle. The two-way left-turn lane would add capacity to this segment of roadway by allowing traffic to get by left-turning vehicles. Left-turn lanes would be provided on all four approaches to the Wisconsin Avenue/Glenview Avenue intersection. (Exhibit 2-30).

The turn-lane improvements at Bluemound Road and Wisconsin Avenue may result in strip right-of-way acquisitions along both sides of 84th Street/Glenview Avenue.

2.6 Alternatives Retained for Detailed Study in Supplemental Draft EIS

Table 2-5 reflects the screening performed prior to the Draft EIS and the June 2009 public hearing. As a result of efforts undertaken since the June 2009 public hearing, new alternatives and refinements as outlined above have been developed. The Reduced Impacts Alternative, along with the Modernization Alternative refinements described above, were each retained for further consideration in all segments.

Additionally, Highway 100, Watertown Plank Road, and 84th Street (as described in Section 2.5.4) were each retained for further consideration. These arterial improvements become part of both the Modernization Alternatives and the Reduced Impacts Alternative.

2.7 Selection of Preferred Alternative

After reevaluating the environmental and engineering information contained in both the Draft and Supplemental Draft EISs and after reviewing the public, local unit of government and agency comments on both documents, WisDOT has selected the Reduced Impacts Alternative with the Adjacent Arterials Component as the preferred alternative.

Because of the interconnection between efficient operations on key arterials adjacent to the freeway and efficient freeway operations, WisDOT decided that the Adjacent Arterials Component would not be a stand-alone alternative, but an element of the Modernization Alternatives and Reduced Impacts Alternatives.

As a basis for selecting the preferred alternative, the following factors were evaluated:

- Freeway and local street traffic operations
- Comparison of environmental and socioeconomic impacts (See Exhibit S-1 for impact summary)
- Public and agency comments as a result of the public hearings and the availability of the Draft and Supplemental Draft EISs.

The Reduced Impacts Alternative will increase the capacity over the existing condition. Eight lanes will be provided in the north-south direction. Due to high turning movements, only four east-west lanes are needed through the core while additional capacity in the form of auxiliary lanes will be provided east and west of the core to accommodate the future traffic volumes.

Transportation Service

Freeway. Traffic flow on the study-area freeway system with the 6-lane Modernization Alternatives generally would operate at level of service D, E, and F during the morning and evening rush hour in 2035. Four segments of freeway would experience level of service F. The 8-lane Modernization Alternatives would improve traffic flow compared to the 6-lane Modernization Alternatives by adding an additional travel lane on each approach leg. The 8-lane Modernization Alternatives generally would operate at level of service D or better (compared to D, E, and F for the 6-lane modernization Alternatives), and no freeway segments would operate at level of service F.

Similar to the 8-lane Modernization Alternatives, the Reduced Impacts Alternative would operate at level of service D or better. No freeway segments are expected to operate at level of service F. The Reduced Impacts Alternative will have greater segments of the freeway operating at LOS D compared to the 8-lane Modernization Alternatives, and only one location is expected to operate at LOS E. Average operating speeds are minimally less on the Reduced Impacts Alternative, slightly increasing flow density and average delay, but not significantly enough to noticeably decrease LOS. The Reduced Impacts Alternative would have 8 lanes northbound and southbound and 6 lanes eastbound and westbound

Local Roads. The No-Build and all 6-lane Modernization Alternatives would divert freeway traffic to local streets during morning and afternoon rush hour because there would not be enough capacity on the freeway system in the study area to handle the anticipated traffic volumes. The 8-lane Modernization Alternatives and Reduced Impacts Alternative would not divert freeway traffic to local streets because of lack of capacity. For example, Glenview Avenue would carry 17,000 vehicles per day under the No-Build Alternative and 14,000 vehicles per day under the Reduced Impacts Alternative.

Safety. The Modernization Alternatives and Reduced Impacts Alternative would reduce crash rates by eliminating all substandard design features. The 8-lane Modernization and

Reduced Impacts Alternative may further reduce crashes by reducing the level of congestion compared to the 6-lane Modernization Alternative. Research suggests that the crash rate on a roadway may vary based on the level of congestion, and that increased congestion leads to increased crash rates.

Access to Facilities and Services

The Modernization Alternatives and the Reduced Impacts Alternative would maintain access to facilities and services, though in some areas access would be modified. Both alternatives would eliminate direct freeway access to and from I-94 and Bluemound Road (via US 45). Vehicles on US 45 southbound and vehicles on I-894/US 45 northbound would be able to access Bluemound Road under the various Modernization Alternatives or the Reduced Impacts Alternative. The Reduced Impacts Alternative, with its free-flow Watertown Plank Road interchange, better responds to concerns expressed by the City of Milwaukee, the City of Wauwatosa, and the Milwaukee Regional Medical Center about the lack of I-94 access to Bluemound Road/Wisconsin Avenue than does the Watertown Plank Road interchange concept contained in the Modernization Alternatives.

At the 84th Street interchange, Modernization Alternative E1 would use the Texas U-turn option, which increases out-of-direction travel to enter and exit I-94 as compared to a conventional diamond interchange, as well as would likely divert substantial traffic to 76th Street, increasing volumes along a residential street. Modernization Alternative E1/E3 Hybrid and the Reduced Impacts Alternative would maintain the conventional diamond interchange thereby being more responsive to the City of West Allis' and State Fair Park Board's concerns about out-of-direction travel at the interchange.

Utilities

With the Modernization Alternatives, up to 61 electrical transmission towers would need to be relocated. The Reduced Impacts Alternative would relocate 30 to 50 towers. Beyond the difference in the number of transmission towers affected, the Modernization Alternatives would require a 3- to 4-acre utility easement from the Milwaukee County Zoo along I-94 to accommodate relocated towers. Some of the vegetation buffer between I-94 and the Zoo would have to be removed from the easement. The Milwaukee County Zoo expressed concern over having overhead electrical transmission lines in what is now the vegetative buffer area between I-94 and the Zoo because of the loss of the buffer and visual impact of the towers and wires. The Reduced Impacts Alternative would not require a utility easement from the Milwaukee County Zoo or affect the existing buffer.

Except for the impact on transmission towers, the utility impacts of the Modernization Alternatives and Reduced Impacts Alternatives would be similar.

Residential Displacements

The Modernization Alternatives would have similar residential relocation impacts in the core (5 residential displacements), north leg (1 residential relocation), south leg (0 to 6 residential displacements), and west leg (none). On the east leg, there are differences between Alternative E1, the E1/E3 Hybrid Alternative, and the Modified E3 Alternative. The number of displacements would vary depending upon the subalternatives chosen (Table 2-2).

Under the Reduced Impacts Alternative, no residential displacements would occur in the core or the north, south, or west legs of the Zoo Interchange. On the east leg, 8 residential displacements would occur, consisting of 1 multi-family residence adjacent to Chester Street.

Commercial Displacements

The Modernization Alternatives would have the same business relocation impacts in the core (one business), north leg (one business), south leg (two to three businesses), and west leg (two businesses). On the east leg, there is a difference between Alternative E1 (no businesses relocated) and the E1/E3 Hybrid and Modified E3 Alternatives (one business relocated). Under the Reduced Impacts Alternative, there would be no business relocation impacts in the core or east and south legs and two on the west leg. On the north leg, an automotive oil and lubrication shop would be relocated, as under all Modernization Alternatives.³

The Modernization Alternatives and the Reduced Impacts Alternative have similar impacts to the limited natural resource features in the study area. However, a notable difference between the Modernization Alternatives and the Reduced Impacts Alternative is the potential impact at the Zoo. The Modernization Alternatives would affect about 15 acres of Zoo property, including acquisition of the maintenance facility and Zoofari Center. The Reduced Impacts Alternative would affect approximately 7.6 acres without displacing any buildings.

Construction and Maintenance Costs

The 6-lane Modernization Alternatives would cost \$2.10 billion in year-of-construction dollars, including real estate acquisition, design costs, construction, and a contingency. The 8-lane Modernization Alternatives would cost \$2.28 billion and the Reduced Impacts Alternative \$1.71 billion.

Maintenance costs for the 8-lane Modernization Alternative and the Reduced Impacts Alternative would be greater than for the 6-lane Modernization Alternatives because both require more pavement to maintain, resurface, and eventually replace. Snow removal cost would be higher for the 8-lane Modernization Alternative and Reduced Impacts Alternative.

2.7.1 Public, Local Unit of Government and Agency Comments

Public Comments

During the public hearing and public comment period 579 people commented. In addition, a petition signed by 91 people was submitted in opposition to the loss of parking at the Bluemound Road/Highway 100 intersection.

Those who supported the Reduced Impact Alternative (67 comments) cited the alternative's smaller footprint, lower cost, no Texas U-turns, and simpler design.

Many who oppose the Reduced Impacts Alternative stated a preference for the No-Build Alternative (7 comments) or the Replace-in-Kind Alternative (12 comments). Others felt that it should have more lanes.

³Two businesses on Highway 100 would be relocated under the Adjacent Arterials Component.

Twice as many people wanted an 8-lane freeway (27 comments) than a 6-lane freeway (12 comments).

Stormwater management, preserving open space, and the potential use of ponds to collect and treat stormwater, was a key concern (225 comments). The large number of comments received regarding open space and stormwater is due a grass-roots effort to write and email WisDOT against the loss of open space and the use of stormwater ponds. The key concern is that the commenters feel that there is a better way to protect water quality than stormwater ponds placed in parkland.

A large number of the comments received on the project were related to arterial improvements (117 comments). The large number of comments on the adjacent arterials is due to the property acquisition, loss of parking and changes in local street access that has a greater direct impact on many commenters than the freeway reconstruction.

- Forty-one comments noted concern over the proposed reconstruction of the Bluemound Road/Highway 100 intersection and its impacts on adjacent parking and access to adjacent businesses. In addition to those 41 comments, a petition from 91 people opposed reducing parking spaces in front of the office building in the southwest quadrant of the Bluemound Road/Highway 100 intersection. The width of the intersection and the ability of pedestrians and bicyclists to safely cross the intersection was also cited a concern.
- The widening of Glenview Avenue is opposed by the City of Wauwatosa, St. Jude the Apostle Church and school, and many residents adjacent to Glenview Avenue.
- Several comments suggested that 92nd Street should be extended between Bluemound Road and Wisconsin Avenue.
- Preserving Monarch butterfly habitat on the County Grounds was cited as a concern (106 comments).
- Maintaining or enhancing bicycle and pedestrian accommodations was also a concern (83 comments).
- Many comments said that transit options should be included in the preferred alternative (74 comments).

Agency Comments

Resource agency comments (Corps, EPA, DNR, Fish and Wildlife Service) are generally supportive of the Reduced Impacts Alternative. None of the agencies noted concerned over the Reduced Impact Alternative. The Corps of Engineer's June 2011 letter identified the Reduced Impacts Alternative as the least environmentally damaging practicable alternative (Appendix F, page F-93). The U.S. EPA (Appendix F, page F-95) and DNR (Appendix F, page F-97) concurred with the selection of the Reduced Impact Alternative in their June 2011 letters.

The City of Milwaukee Department of Public Works (Appendix F, page F-27) opposes an 18-foot-wide median on I-94 through the core of the Zoo interchange that could be converted to an additional (third) travel lane in the future. The City of Milwaukee also notes concern over noise levels adjacent to the study-area freeway system and its support for the “Texas U-turns” at 84th Street which would eliminate the need to acquire an 8-unit apartment building. The City also urges WisDOT to consider transit options including preserving a north-south transit corridor from the Hank Aaron State Trail north to the Milwaukee County Zoo, Regional Medical Center and Milwaukee County Research Park.

An April 2011 resolution from the City of Milwaukee Common Council (Appendix F, page F-40) stated support for the Department of Public Works’ statements and added that the project should not acquire any property from the Milwaukee Montessori School on the east side of US 45 just north of the Zoo Interchange.

The City of Wauwatosa (Appendix F, page F-46) commented on the Adjacent Arterials Component, noting that the proposed Glenview Avenue widening would have “an extremely negative effect on adjacent properties as well as safety of children and schools.” Wauwatosa does not comment on the freeway alternatives. Wauwatosa provided additional comments after selection of the preferred alternative (Appendix F, page F-91). Three Wauwatosa aldermen commented about their concern over the Adjacent Arterials Component and the need for more investment in transit (Appendix F, pages F-50, F-54, and F-60).

The City of West Allis is “cautiously recommending construction of the Reduced Impacts Alternative.” (Appendix F, page F-63). The City has concerns of local street impacts, stormwater quality, and noise.

2.7.2 Summary

The Reduced Impacts Alternative with the Adjacent Arterials Component is WisDOT’s preferred alternative because it provides the best solution for addressing long-term mobility needs and safety concerns while minimizing impacts to existing development and environmental resources to the maximum extent practicable. The Reduced Impacts Alternative would have fewer residential and business relocations, smaller impacts to the Milwaukee Montessori School, St. Therese’s church, and Milwaukee County Zoo than the 8-lane Modernization Alternative. The Reduced Impacts Alternative would provide a traffic level of service (D or better) that is comparable to the 8-lane Modernization Alternative but its construction cost would be comparable to the 6-lane Modernization Alternative.

Public and agency comments support the Reduced Impacts Alternative. Many public and local government comments express concern over the impacts of the Adjacent Arterials Component. Many public comments express concern over the potential use of stormwater detention/retention ponds, particularly in parkways.

Unavoidable impacts for the Reduced Impacts Alternative and Adjacent Arterials Component including wetlands, public use lands, stream crossings/realignments, and displacement of homes and businesses will be compensated. Coordination with state and federal regulatory agencies will continue in the engineering design phase to evaluate additional ways to further minimize impacts to environmental resources. There will also be

additional public involvement opportunities in the engineering design phase that will be conducted over the next several years.

FHWA's selection of a preferred alternative will be performed in accordance with the Clean Water Act's Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 CFR Part 230), administered by U.S. EPA and the Corps. The guidelines mandate that dredged or fill material should not be discharged into aquatic ecosystems (including wetlands), unless no other practicable alternatives are demonstrated; that such discharge will not have unacceptable adverse impacts; and that all practicable measures to minimize adverse effects are undertaken.

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Section 3

Existing Conditions, Environmental Impacts, and Measures to Mitigate Adverse Impacts

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SECTION 3

Existing Conditions, Environmental Impacts, and Measures to Mitigate Adverse Impacts

This section provides background information on regional and local planning, the built environment, socioeconomic characteristics and trends, archaeological and historical resources, public use land, and the natural environment in the Zoo Interchange study area. This information establishes the context for the proposed improvements and their potential impacts. Information in this section has been updated to reflect the social, environmental, and economic impacts of the Reduced Impacts Alternative and the Adjacent Arterials Component. While the Adjacent Arterials Component is not a stand-alone alternative (it is an element of either the Modernization or the Reduced Impacts Alternative), its impacts have been pulled out and identified separately. Information about the other Modernization Alternatives is the same as presented in the Draft EIS.

This section also identifies the beneficial and adverse social, economic, and environmental effects the Zoo Interchange project may have on resources and conceptual measures to minimize and mitigate adverse effects. Existing conditions and impacts are discussed by resource. The Impact Summary Table (Exhibit S-1) is reprinted on the following page.

The Zoo Interchange study area is located in Milwaukee County in Wisconsin, and includes the City of Milwaukee, City of Wauwatosa, and the City of West Allis. Geologically, the project corridor is located in an area known as the Eastern Ridges and Lowlands, part of a larger area called the Rock River-Lake Winnebago-Green Bay Lowland, which runs from Wisconsin's southern border to Green Bay. This area was alternately scoured by the advancing movement of glaciers and covered by layers of till left behind when the glaciers retreated (Curtis, 1959; Martin, 1965; Paull, 1977).

Topography in the Zoo Interchange study area is generally flat with gentle changes in elevation. Elevation ranges from approximately 690 feet above sea level along US 45 at Underwood Creek, to approximately 790 feet above sea level along I-894/US 45 at the Greenfield Avenue interchange.

3.1 Land Use and Land Use Planning

3.1.1 Affected Environment

Land Use Planning

SEWRPC provides regional planning on an advisory basis. The following is a summary of key regional and local plans that were not previously summarized in Section 1.3.1:

A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin – SEWRPC Planning Report Number 42 (September 1997) (Amendment to the Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin – SEWRPC Amendment to Planning

Report 42 [December 2010]). In 1997, SEWRPC completed a regional natural areas and critical species habitat protection and management plan. While developing the plan, SEWRPC recognized that urbanization in the region, combined with agricultural activity, has greatly diminished the remaining undisturbed ecological resources. The plan identified the high-quality natural areas, critical species habitats, wetlands, environmental corridors, and significant geological and archaeological sites in southeastern Wisconsin and formulated a recommended plan for the protection, wise use, and proper management of those resources. The plan promotes sound rural and urban development and avoiding unnecessary and costly conflicts between development proposals and resource protection. See Sections 3.11 through 3.18 for information about specific resources in the study area. The December 2010 amendment updated changes to listed and protected species lists as well the laws concerning protected species. The amendment also updated changes to the known locations for identified natural areas and critical species habitat sites. The plan updates did not identify new locations for wetlands, critical species (or their habitats) or other locations of concern within the Zoo Interchange study area.

A Regional Bicycle and Pedestrian Facilities System Plan for Southeastern Wisconsin: 2010 – SEWRPC Planning Report Number 43 (1994) (Amendment to the Regional Bicycle and Pedestrian Facilities System Plan for Southeastern Wisconsin: 2020 – SEWRPC Amendment to Planning Report Number 43 [2001]). This system plan provides information on the development of bicycle and pedestrian facilities as part of a comprehensive transportation system for southeastern Wisconsin. See Section 3.26 for information on bicycle routes in the study area.

A Park and Open Space Plan for the City of Wauwatosa, Milwaukee County, Wisconsin – SEWRPC Community Assistance Planning Report Number 207 (1998). This plan identifies the need for additional outdoor recreation sites and facilities in the City of Wauwatosa and ideal locations for these facilities. The purpose of this plan is to help the City, “... guide the preservation, acquisition, and development of land for park, outdoor recreation, and related open space purposes as needed to satisfy the recreational needs of city residents and to protect and enhance the important natural resources within the City.” The plan identified the following areas, near the Zoo Interchange study area, in need of a neighborhood park:

- West of US 45, between North Avenue and Burleigh Street
- Near 116th Street and Gilbert Avenue, approximately 0.3 mile west of US 45 – potential location for a 10-acre neighborhood park
- Eisenhower School, approximately 0.2 mile west of US 45, just north of Center Street – proposed as a joint school site-neighborhood park

A Park and Open Space Plan for Milwaukee County. An update to Milwaukee County’s 1991 Park and Open Space Plan is under development.

SEWRPC Community Assistance Planning Report No. 312, A Land and Water Resource Management Plan for Milwaukee County: 2012-2021 (February 2011). The plan incorporates inventory findings, land use, natural resource data, soil erosion levels, and water quality data to addresses the principal land and water resource concerns and issues that were identified by the Milwaukee County Land and Water Resource Management Plan

	No Build/Replace-in-kind for entire project area		Modernization (6-Lane)	Modernization (8-lane)	Reduced Impacts Alternative	Adjacent Arterials Component	Preferred Alternative Total Impacts (Reduced Impacts Alternative plus Adjacent Arterials Component)
	No-build	Replace-in-kind					
Total Cost (Design, Construction, Real Estate, Utilities, Contingency Cost (year of Construction \$ in millions)	\$0	\$922	\$2,100	\$2,300	\$1,710		\$1,710
New Right-of-Way (acres) ^{1,2}	0	0	57-72	61-75	65	11	76
Residential Displacements	0	0	6-30	6-39	8	0	8
Commercial Displacements	0	0	6-8	6-8	3	2	5
Public Bldg Displacements	0	0	3	3	2	0	2
100 year floodplain crossings (no new crossings)	2	2	2	2	2	3	5
Floodplain (acres)	0	0	0.1	0.2	0.5	0.0	0.5
Stream crossings (no new crossings)	3	3	3	3	3	1	4
Wetland (acres)	0	0	1.6	1.7	1.5	0.05	1.6
Parkland (acres) ¹	0	0	15.7	16.2	8.8	<0.1	8.8
Threatened and endangered species (Yes/No) ³	No	No	Yes	Yes	Yes	Yes	Yes
Primary Environmental Corridor (acres) ¹	0	0	0.5	0.8	0.6	<0.1	0.6
Primary Environmental Corridor Crossings (no new crossings) ¹	2	2	2	2	2	1	3
Isolated Natural Resource Area (acres)	0	0	0	0	0	0.2	0.2
Historic Sites Affected	0	0	0-1	0-1	0-1	0	0-1
Archaeological Sites Affected	0	0	0	0	0	0	0
Environmental Justice Issues (Yes/No)	No	No	No	No	No	No	No
Air Quality Permit	No	No	No	No	No	No	No
Noise Receptors Impacted (Design Year 2035) ⁴	0	0	332-369	352-388	397	29	426
Potential Contaminated Sites	0	0	72	72	71	21	92

1. Total new right-of-way, parkland and primary environmental corridor acres impacted and corridor crossings do not include land for proposed stormwater retention/detention ponds.
2. In addition to right-of-way acquisition (not included as part of the new right of way total in this table), easements may be required for utility relocation as a result of this project.
3. The threatened and endangered species is the Butler's garter snake, located along the north leg.
4. To assist in noise modeling efforts, all noise receptors were assigned to a leg, thus no noise receptors were assigned to the core.
5. The south leg was only modeled with the eastbound I-94 access to Greenfield Avenue included.
6. The impacts listed for the Adjacent Arterials Component are separate from those portrayed for the Modernization and Reduced Impacts Alternatives; the Adjacent Arterials' impacts should be added to the Modernization and/or Reduced Impacts Alternatives for full-project totals.
7. Adjacent Arterial Component cost is included in the Modernization Alternative and Reduced Impact Alternative cost estimate.

Advisory Committee. These concerns included loss of wetlands, woodlands, quality farmland, environmental corridors, and other green space. The plan also includes working goals to protect, maintain, and restore land and water resources in Milwaukee County. Wil-o-way Woods and Underwood Parkway Woods are known critical species habitat sites within the Zoo Interchange study area.

Milwaukee Metropolitan Sewerage District (MMSD) 2020 Facilities Plan (2007). The MMSD 2020 Facilities Plan addresses needed and ongoing water pollution abatement for MMSD's planning and sewer service area through the year 2020. The 2020 Facilities Plan is a long-range comprehensive planning document that identifies improvements to all relevant systems so that these systems can accommodate regional growth and protect water resources. The purpose of the 2020 Facilities Plan is to identify the facilities, programs, operational improvements and policies necessary to achieve the water resource goals inspired by the public, as well as those required under state and federal law. See Section 3.11 for a description of key MMSD projects in the study area.

Menomonee River Watercourse Management Plan (2000). This plan includes five projects to manage flooding along the Lower Menomonee River. The project most relevant to the Zoo Interchange study area is a floodwater storage basin and diversion structure east of US 45. The project includes a floodwater diversion structure at Underwood Creek west of US 45; a tunnel under US 45; an outfall basin connected to the tunnel, approximately 0.4 mile east of US 45 on both sides of Swan Boulevard; and an outlet to the Menomonee River. The project also includes rehabilitating Underwood Creek by replacing the concrete-lined channel with natural banks. The rehabilitation area of Underwood Creek is from Highway 100 to its confluence with the Menomonee River, including the portion of the creek under US 45. See Section 3.11.1 for more information on stormwater management in the Zoo Interchange study area.

Other Plans. Municipalities and Milwaukee County guide land use and development in the study area with land use plans that vary in age and detail. WisDOT has reviewed the applicable regional and local land use, development, and conservation plans as part of this study. Section 1.3.1 discusses several of the regional and local plans applicable to the study-area freeway system.

Additionally, the *Zoo Interchange Corridor Study Indirect and Cumulative Effects Report* provides an overview of all relevant regional and local land use plans that are located within or near the study area (WisDOT, 2009b). **Table 3-1** lists relevant regional and local land use plans in place in the study area. Wauwatosa approved a new comprehensive plan in 2008. The plan's transportation element notes the potential reconstruction of the Watertown Plank Road interchange. It also recommends a commuter rail line along the Canadian Pacific Railway tracks under US 45 and a light rail line along the future Hank Aaron State Trail (HAST), with a connection to the Regional Medical Center via the west side of US 45. The Modernization Alternatives would not preclude implementation of the commuter rail or light rail lines in the Wauwatosa comprehensive plan.

WisDOT and project-area municipalities collaborated on a West Suburban Traffic Impact Analysis that focused on improvements to area corridors. See Section 2 for more information.

TABLE 3-1
Land Use and Development Plans in the Zoo Interchange Study Area Corridor

SEWRPC Plans

2035 Regional Land Use Plan for Southeastern Wisconsin (2006)

A Regional Transportation System Plan for Southeastern Wisconsin: 2035 (2006)

A Regional Freeway System Reconstruction Plan for Southeastern Wisconsin (2003)

A Transportation Improvement Program for Southeastern Wisconsin: 2011–2014 (2011)

SEWRPC Community Assistance Planning Report No. 312, A Land and Water Resource Management Plan for Milwaukee County: 2012-2021 (2011)

Land Use and Development Plans in the Study Area Corridor

A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin (1997) Amendment to the Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin – SEWRPC Amendment to Planning Report 42 [December 2010]

A Regional Bicycle and Pedestrian Facilities System Plan for Southeastern Wisconsin: 2010 (1994), Amendment to the Regional Bicycle and Facilities System Plan for Southeastern Wisconsin: 2020 (2001)

A Comprehensive Plan for the Menomonee River Watershed, SEWRPC Planning Report 26 (1976) and; Stream Habitat Conditions and Biological Assessment of the Kinnickinnic and Menomonee River Watersheds, SEWRPC Planning Report 194 (2010)

A Park and Open Space Plan for Milwaukee County, SEWRPC Community Assistance Planning Report No. 132 (1991)

A Park and Open Space Plan for the City of Wauwatosa, Milwaukee County, Wisconsin SEWRPC Community Assistance Planning Report No 207 (1998)

City of Milwaukee

Housing Strategy for the City of Milwaukee (1988); Updated 2002

West Side Area Plan (2009)

City of Wauwatosa

2020 Comprehensive Master Plan (2008)

City of West Allis

West Allis Comprehensive Plan 2030 (2011)

Existing Land Use

Existing land use in the study area ranges from undeveloped land to high-density urban development. The land uses are commercial, residential, institutional, industrial, parks, transportation and utilities (**Exhibit 3-1**). Section 3.4, Utilities, Section 3.5, Residential Development, Section 3.6, Commercial and Industrial Development and Section 3.8, Institutional and Public Services provide additional detail on existing land use along the study-area freeway system.

North Leg. The north leg of the Zoo Interchange is a mixture of residential, commercial, industrial, and public uses. The Milwaukee County Zoo parking lot and Zoofari Conference Center are located on the west side of US 45, south of Bluemound Road. Immediately east of US 45, there is a We Energies electrical substation, the 108-unit Parkside Pool apartment complex, and the St. Therese Catholic Church and Milwaukee Montessori School complex. Between Bluemound Road and Wisconsin Avenue, the land use on both sides of US 45 is generally residential, mainly consisting of single-family residences with some multi-unit buildings.

West of US 45 between Wisconsin Avenue and Watertown Plank Road is the 175-acre Milwaukee County Research Park, which is home to more than 70 businesses. East of US 45 between Wisconsin Avenue and Watertown Plank Road, is the 250-acre Milwaukee Regional Medical Center, consisting of multiple health care facilities and related businesses.

Land use on the west side of the freeway, north of Watertown Plank Road, includes the Milwaukee County DPW office and maintenance facility, Milwaukee County Sheriff's Office patrol sub-station, Wisconsin Lutheran College athletic fields, and Underwood Creek Parkway. Milwaukee County's Underwood Creek Parkway, Wil-O-Way Underwood Recreation Center, Hansen Park, DNR's Forestry Science Center, and MMSD's flood storage basin are east of US 45. In this same area, adjacent to US 45, the University of Wisconsin-Milwaukee (UWM) also plans to build a **research** campus, and We Energies is planning to expand its power plant.

From Highway 100 to North Avenue, land use is primarily commercial with a residential area located in the southwest quadrant of the North Avenue interchange. Mayfair Mall, the largest commercial development in the study area, is located along Highway 100, just east of US 45 and north of North Avenue, in Wauwatosa. Additional commercial development is located along Highway 100 throughout the study area.

Between North Avenue and Center Street, land use is generally residential. North of Center Street, Wauwatosa West High School is located along the west side of US 45, and Whitman Middle School is located on the east side of US 45. Industrial and warehousing businesses are located near the Burleigh Street interchange.

East Leg. Land use is generally residential along the south side of I-94, from the core of the Zoo Interchange to 84th Street. On the north side, land use is a mix of single-family and multi-family housing and includes the Honey Creek Corporate Center located between 91st Street and 87th Street. St. Charles Youth and Family Services' 7-acre campus is located on the west side of 84th Street, north of I-94, as is a section of the Honey Creek Parkway. The Walter and Olive Stiemke Scout Service Center, a City of Milwaukee fire station, and Wisconsin Lutheran High School are located north of I-94, on the east side of 84th Street. The remaining land use north of I-94 and along 84th Street is generally residential with commercial properties at the intersection of Bluemound Road and St. Jude the Apostle Church north of Wisconsin Avenue. South of I-94, the Wisconsin State Fair Park and Pettit Center are bordered by 84th Street on the west and 76th Street on the east, with residences east of 76th Street and west of 84th Street.

South Leg. Land use along the south leg of the Zoo Interchange is mostly residential with an American Transmission Company electrical transmission line corridor paralleling the east side of I-894/US 45. The west side of I-894/US 45, between the Zoo Interchange and Greenfield

Avenue, is a mostly single-family residential neighborhood with one school/church. Between Greenfield Avenue and Lincoln Avenue, east of I-894/US 45, the land use is primarily single-family residential, while the land use on the west side of the highway is a mixture of residential and light industrial/warehousing activities north of the Union Pacific Railroad tracks and apartment buildings south of the tracks to Lincoln Avenue.

West Leg. The largest individual land use located along the west leg is the Milwaukee County Zoo, which stretches along the north side of I-94 from the Zoo Interchange to the Union Pacific rail line located just east of Highway 100. On the south side of I-94, from the core of the Zoo Interchange west to Highway 100, is a combination of residences, the American Transmission Company electrical transmission line corridor, the HAST, and a Zoo maintenance facility. A Union Pacific Railroad line runs north-south across I-94, just east of Highway 100. A Colder's appliance and furniture store, a Quad Graphics plant, and a We Energies training center are located south of I-94, between Highway 100 and 116th Street, and land use is mostly industrial west of Highway 100 to the western project limit. On the north side of I-94, between Highway 100 and the west project limit, land use is commercial and residential with Chippewa Park adjacent to the I-94 right-of-way and the Wheaton Healthcare Center located on the west side of Highway 100.

Adjacent Arterials Component. Land use is much the same along the three elements of the Adjacent Arterials. Highway 100, between Bluemound Road and Watertown Plank Road, is a densely-developed urban corridor. Restaurants, strip malls, gas stations, and office buildings line the west side of the roadway. Along much of the east side, frontage to the Milwaukee County Research Park is undeveloped, landscaped open lands. Along Watertown Plank Road, between Highway 100 and 87th Street, is a densely-developed mix of institutional developments, including Milwaukee County Children's Court, public works, mental health, and administration facilities. The Milwaukee Regional Medical Center is located along the south side of Watertown Plank Road, east of US 45. Much of the 84th Street/Glenview Avenue corridor is described under the East Leg section; this corridor is primarily residential, particularly along the west side, and also on the east side north of Bluemound Road.

3.1.2 Land Use Impacts

Direct Land Use Changes

The direct land use impact along the legs of the project will convert between 57 and 75 acres of land to highway right-of-way. The Adjacent Arterials Component will convert 11 acres. Most of the right-of-way acquired would be strips of land adjacent to the existing right-of-way.

No-Build Alternative. Under the No-Build Alternative, no land use changes would occur.

Modernization Alternatives. Under the Modernization Alternatives, between 57 and 75 acres of land would be converted to highway right-of-way. Land acquired would consist of residential, commercial, utility, parks and institutional land. Land use on the remaining parcels of land adjacent to the freeway would likely not change as a result of the proposed action (see Section 3.2, Indirect and Cumulative Effects).

On the east leg, the E1/E3 Hybrid Alternative would require more land than Alternative E1 (8 to 10 acres versus 7 acres). On the east leg, the Modified E3 Alternative would require the most right-of-way at 11 acres. On the south, west, and north legs, the right-of-way acquisition impacts are comparable; however, the 8-lane Modernization Alternatives would require more right-of-way than the 6-lane Modernization Alternatives.

Reduced Impacts Alternative. Under the Reduced Impacts Alternative, approximately 65 acres of land would be converted to highway right-of-way. Similar to the Modernization Alternatives, land acquired would consist of residential, commercial, utility, parks, and institutional land. Land use on the remaining parcels of land adjacent to the freeway would likely not change as a result of the proposed action (see Section 3.2, Indirect and Cumulative Effects).

Adjacent Arterials Component. Under the Adjacent Arterials Component, approximately 11 acres of land would be converted to highway and local street right-of-way. Land acquired would generally consist of commercial land. Land use on the remaining parcels of land adjacent to these arterial roadways would likely not change as a result of the proposed action (see Section 3.2, Indirect and Cumulative Effects).

Conformity with Local and Regional Plans

WisDOT and FHWA coordinated with the three cities and Milwaukee County, and the proposed action conforms to relevant local and regional land use plans. Sections 1.3.1 and 3.1.1 summarize relevant local and regional plans prepared by SEWRPC and the cities in the study area. SEWRPC's 2035 regional transportation plan recommends adding capacity to the study-area freeway system.

No-Build Alternative. This alternative does not conform to SEWRPC's *A Regional Transportation System Plan for Southeastern Wisconsin: 2035*, which calls for modernization and capacity expansion of the study-area freeway system.

Modernization and Reduced Impacts Alternatives, and Adjacent Arterials Component. Local plans do not address the issues of capacity, safety, or existing highway conditions on the study-area freeway system, but some local plans note the importance of the Zoo Interchange and the study-area freeway system to their community and plan for redevelopment in the study area. The Modernization and Reduced Impacts Alternatives, and the Adjacent Arterials Component each conform to SEWRPC's 2035 regional transportation plan, and do not conflict with local plans.

3.1.3 Measures to Mitigate Adverse Land Use Impacts

FHWA and WisDOT would compensate property owners for land acquired from residences, businesses, utilities, and institutions (see Sections 3.4.3, 3.5.3, 3.6.4, and 3.8.3).

3.2 Indirect and Cumulative Effects

A detailed discussion of both indirect and cumulative effects is available in the *Zoo Interchange Indirect and Cumulative Effects Report* (WisDOT, 2009b and 2011). The Code of Federal Regulations (CFR) Title 40 defines indirect and cumulative effects as:

- **Indirect effects** are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to the induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR § 1508.8).
- **Cumulative effects** are the impacts on the environment, which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time (40 CFR § 1508.7).

3.2.1 Indirect Effects

The indirect effects analysis conducted during the Draft EIS phase followed the systematic 6-step approach as outlined in the WisDOT's *Guidance for Conducting Indirect Effects Analysis* (WisDOT, 2007b). The six steps include the following:

- Step 1—Scope, select activities, and determine the study area.
- Step 2—Inventory the study area and notable features.
- Step 3—Identify the impact causing activities of the proposed project alternatives.
- Step 4—Identify the potentially significant indirect effects.
- Step 5—Analyze the indirect effects and evaluate assumptions.
- Step 6—Assess consequences and identify mitigation activities.

As part of the Draft EIS analysis, stakeholder interviews with community development and public works personnel were conducted to collect information about local land use and development trends. A focus group meeting was also conducted to verify the outcomes of the indirect effects analysis.

The indirect effects analysis conducted on the Reduced Impacts Alternative and the Adjacent Arterials Component followed WisDOT's 6-step approach; however, it did not include the stakeholder interviews and focus group meeting used during the Draft EIS phase. The Supplemental Draft EIS indirect effects analysis was guided by the input received during the Draft EIS phase. The Reduced Impacts Alternative's and Adjacent Arterials Component's potential to influence indirect effects **is included in the overall discussions of all alternatives** below.

Each step of the systematic indirect effects analysis approach is summarized in the following sections.

Step 1—Scoping, Selecting Activities, and Determining the Study Area. WisDOT determined that a qualitative approach, based on trend data, local plans, and input from local stakeholders, was appropriate for the indirect effects analysis. Stakeholder interviews with community development and public works personnel were conducted to collect information about local land use and development trends. A focus group meeting was also conducted on September 25, 2008, to verify the outcomes of the indirect effects analysis. Invitees to the focus group meeting were planners and community development staff from the cities of Milwaukee, Wauwatosa, and West Allis; major land owners, such as the Milwaukee County Research Park and Milwaukee Regional Medical Center; and developers who are active in

the area. WisDOT also met with representatives of several minority chambers of commerce to inquire about their plans to develop businesses in the study area.

The study area, or Area of Potential Effects (APE), for the indirect effects analysis is a 1-mile buffer around the study-area freeway system. The area was chosen because it encompasses the residential, commercial, and industrial areas adjacent to the freeway that could be susceptible to change during the planning horizon (20 years after construction, or 2035).

Step 2—Inventory the Study Area and Notable Features. The APE is a fully constructed and established urban area with a stable population including numerous cultural, recreational, and employment destinations of regional importance. The APE contains the Milwaukee County Research Park and the Milwaukee Regional Medical Center, which are economic drivers for the region, as well as the Milwaukee County Zoo and State Fair Park, which attract hundreds of thousands of visitors each year.

Since very little vacant land is available for new development, communities within the APE are focusing on redeveloping existing commercial and industrial areas that have become underutilized. The communities' efforts, as well as market demand, are creating opportunities for new retail, office, industrial, and residential developments that could diversify and intensify land uses within the APE. According to local officials, communities are preserving existing residential areas.

Since the APE is an urbanized area, the area's remaining natural, biological, and recreational resources generally lie within narrow bands of environmental corridors along Underwood Creek, the Menomonee River, and Honey Creek. Many of the corridors contain public parks and recreation trails. The environmental corridors are owned by Milwaukee County, which preserves these resources.

Steps 3 and 4—Identify Impact Causing Activities of the Proposed Project Alternatives and Identify Potentially Significant Indirect Effects. WisDOT and FHWA reviewed the 6- and 8-lane Modernization and Reduced Impacts Alternatives, including the various leg and core alternatives, and the Adjacent Arterials Component to determine which elements have the potential to cause indirect effects. A list of reasonably foreseeable indirect effects of the Modernization and Reduced Impacts Alternatives, and the Adjacent Arterials Component is provided below. The next section, Step 5, evaluates the likelihood these effects could occur for the Modernization and Reduced Impacts Alternatives, and the Adjacent Arterials Component and compares those effects to the No-Build Alternative.

- Modernizing the freeway is likely to facilitate planned development overall within the APE.
- A new eastbound North Avenue exit from northbound US 45 is likely to facilitate planned development.
- New service roads and new direct access roads to the Milwaukee County Research Park and the Milwaukee Regional Medical Center are likely to facilitate planned development.
- Freeway capacity increase and changes to local road traffic could indirectly affect neighborhoods and business environments.

- Some direct access from the existing interchanges may be replaced with service roads that would provide less direct access, indirectly affecting local economic development decisions.
- The encroachment of the freeway could indirectly affect residential, commercial, and natural resource areas.

As noted in Section 2, improving segments of Highway 100, Watertown Plank Road, and 84th Street/Glenview Avenue as part of the Adjacent Arterials Component are now viewed as critical elements of freeway modernization. As components of the Modernization Alternative and Reduced Impacts Alternative, the local road improvements are not likely to influence indirect development independent of the influence exerted by the freeway improvements. However, localized indirect effects to local businesses could occur, and are discussed further below.

Step 5—Analyze the Indirect Effects and Evaluate Assumptions. WisDOT and FHWA reviewed the following indirect effects that are likely to occur as a result of the transportation alternatives proposed for the Zoo Interchange project.

Growth Inducing Effects. Planned development within the APE is likely to happen regardless of the chosen alternative for the Zoo Interchange project. This was confirmed with participants at the September 2008 focus group meeting. However, the participants acknowledged that the freeway is highly interconnected with local land use, and the reconstruction of the freeway could either hinder or facilitate local economic development depending on the alternative selected.

Focus group participants generally felt the No-Build Alternative is likely to hinder the economic development potential within the APE because access to local destinations would become increasingly difficult due to increasing congestion. On the other hand, focus group participants generally felt the 8-lane Modernization Alternative is most likely to facilitate planned economic development within the APE because the additional travel lanes more effectively addresses traffic congestion compared to the other alternatives. The 6-lane Modernization Alternative is also likely to facilitate economic development by improving safety and some traffic operations. However, focus group participants generally agreed it would have less growth inducing effects compared to the 8-lane alternative because traffic congestion would continue to increase, discouraging people and businesses from using the corridor.

The following specific areas within the APE were reviewed to determine if certain aspects of the transportation alternatives are likely to cause growth inducing indirect effects:

- **State Fair Park.** State Fair Park has considered selling a portion of their parking lot along I-94 for private development. The E1, E1/E3 Hybrid, and Modified E3 Alternatives and the Reduced Impacts Alternative require additional right-of-way to accommodate the service roads proposed between 84th and 76th streets, which would reduce the amount of land State Fair Park could sell in the future. These alternatives are likely to change future development plans.
- **Highway 100 Corridor.** The Highway 100 interchange with I-94 will be reconstructed as a full service interchange with the same level of access under all Modernization and Reduced Impacts Alternatives; therefore, growth inducing effects related to the reconstruction are not likely.

Under the Adjacent Arterials Component, Highway 100 would be expanded to an eight-lane roadway, with a median separating opposing traffic and possible access consolidation. The access consolidation and new medians, which may provide less direct access to some parcels, would not change future redevelopment plans. But changes are not expected to be substantial as Highway 100 is an important commercial corridor with convenient access. Development would continue regardless of alternative.

- **North Avenue Interchange.** A North Avenue interchange sub-alternative would provide direct access to eastbound North Avenue from US 45 for the first time. The new access is likely to indirectly facilitate planned development and improve the redevelopment potential of the Highway 100 corridor. However, this effect is not likely to be substantial since eastbound North Avenue is already accessible from the adjacent Highway 100/Mayfair Road exit. The Reduced Impacts Alternative is similar to the existing North Avenue Interchange configuration and would continue to support development in the area.
- **Milwaukee County Research Park and Milwaukee Regional Medical Center.**

Modernization Alternatives. The Modernization Alternatives propose a system of service roads and new direct access roads that would facilitate access to the Research Park and the Regional Medical Center. These new roads are likely to indirectly facilitate existing and planned development at these facilities by reducing traffic congestion and improving access. The Regional Medical Center plans an additional 4 million square feet of development within the next 15 years. Without added access, the capacity of the current roadway system (as well as local land use regulations) could place limitations on the future development in this area. In addition, the Milwaukee County Mental Health Complex is considering relocating, which could open up 45 acres of land on the southeast quadrant of the Watertown Plank Road/US 45 interchange. The Regional Medical Center is interested in constructing additional facilities if the land becomes available.

Reduced Impacts Alternative. The Reduced Impacts Alternative would provide a free-flow interchange at Watertown Plank Road and US 45 which would facilitate access to the Research Park and the Regional Medical Center. Like the Modernization Alternatives, this new interchange is likely to indirectly facilitate existing and planned development at these facilities by reducing traffic congestion and improving access. No differences in indirect development effects are anticipated between this alternative and other Modernization Alternatives.

Adjacent Arterials Component. To address the travel demand and capacity of the current roadway system, additional driving lanes on Highway 100 and Watertown Plank Road are proposed as part of this alternative. These improvements may facilitate planned development within the Milwaukee County Research Park or the Milwaukee Regional Medical Center.

- **Bluemound Road/Wisconsin Avenue Corridor.**

Modernization Alternatives. Direct ramp access to and from Bluemound Road via I-94 would be eliminated under the Modernization Alternatives. Some participants at the September 2008 focus group meeting felt this could hinder business development along the Bluemound Road corridor. However, the indirect effect is not likely to be substantial

because alternate access is provided in close proximity at 84th Street, Highway 100, and Watertown Plank Road.

Reduced Impacts Alternative. This alternative's growth inducing effects would be the same as the Modernization Alternatives.

Adjacent Arterials Component. Improvements to Highway 100 and 84th Street/Glenview Avenue at both Bluemound Road and Wisconsin Avenue are proposed under the Adjacent Arterials Component. These improvements are not expected to affect future redevelopment plans, but support potential growth in travel demand from development in the APE.

- **Greenfield Avenue Corridor.** Participants at the September 2008 focus group meeting felt alternatives that provide less direct access to Greenfield Avenue from eastbound I-94 via I-894/US 45 may indirectly affect economic development in West Allis, since Greenfield Avenue is an important link to the community. The sub-alternative that maintains full access to Greenfield Avenue from eastbound I-94 and the Reduced Impacts Alternative would facilitate West Allis' planned development.
- **84th Street/Glenview Avenue Corridor.** Under the Adjacent Arterials Component, improvements to turning lanes and driving lanes are proposed between I-94 and Wisconsin Avenue. Proposed improvements are maintained with the existing road footprint. 84th Street is an established, densely developed, mostly residential corridor. There is little likelihood that the improvements contemplated as part of the Adjacent Arterials Component (removed on-street parking, adding left-turn lanes) would change the character of the area or convert existing land uses to a more intensive use.
- **Local Road Traffic Effects.** Indirect effects related to changing local road traffic patterns are discussed below.
- **Freeway Capacity Effects.**

Modernization Alternatives. The lack of capacity on the freeway system places greater pressure on local arterial roads to carry regional traffic, which indirectly affects local traffic operations and the quality of the local business environment along arterials. This impact was confirmed at the focus group meeting where participants felt the No-Build Alternative is likely to have the greatest effect on local arterials because regional traffic would continue to increase as the freeway system becomes more congested. The 6-lane Modernization Alternative is likely to provide some operational improvements along the freeway, but traffic break downs (level of service F) would continue, encouraging drivers to continue to use local arterial streets as alternative routes. The 8-lane Modernization Alternative would add new capacity to the study-area freeway system and make operational improvements that would maintain a level of service D or better on the freeway during peak travel times. As a result, this alternative would provide relief to the local arterial road system by encouraging regional traffic to stay on the freeway system.

Reduced Impacts Alternative. The Reduced Impacts Alternative would also add new capacity to the study-area freeway system and make operational improvements that would maintain a level of service D or better on the freeway during peak travel times. As a result, this alternative would provide relief to the local arterial road system by encouraging regional traffic to stay on the freeway system.

- **Reduced Access to/from I-94 and Bluemound Road/Wisconsin Avenue.** All Modernization and Reduced Impacts Alternatives would eliminate access to/from I-94 and Bluemound Road and Wisconsin Avenue via US 45, resulting in traffic diversions on to the local arterials such as 84th Street/Glenview Avenue, Highway 100, and Watertown Plank Road. Participants at the September 2008 focus group noted the diverted traffic could increase the need to expand local roadways in the future. For this reason, added capacity and intersection modifications are proposed under the Adjacent Arterials Component to accommodate the projected increase in traffic on 84th Street/Glenview Avenue, Highway 100, and Watertown Plank Road. Traffic volumes on these arterials would be higher under the No-Build Alternative because more traffic would divert from the congested freeway system.
- **Service Roads Between 84th and 76th Streets.** Under Modernization Alternative E1 the proposed service roads adjacent to I-94 between 76th and 84th streets would increase traffic on 76th Street between I-94 and Greenfield Avenue by 14 percent (14,000 vpd to 16,000 vpd) compared to the No-Build Alternative. This could indirectly affect the quality of life for residents along this corridor. However, this effect is not expected to be substantial. Residences along 76th Street are already affected by a relatively higher traffic volume because the street is a main arterial and is adjacent to State Fair Park. Also, access to 76th Street from I-94 by the proposed service roads under E1 would be similar to existing conditions. The street currently has access to I-94 by way of frontage roads and local roads that connect with the 84th Street and 70th Street interchanges with I-94. Furthermore, traffic analysis has determined traffic operations (level of service) will remain acceptable along 76th Street under the E1 Modernization Alternative.

Traffic increases along 76th Street are expected under the No-Build, E1, and E1/E3 Hybrid Alternatives. These increased volumes could affect the quality of life along this corridor. The Modified E3 and Reduced Impacts Alternative, which maintain full access at 84th Street, would mimic what is in place today, and would not worsen the traffic volumes along 76th Street via diversion from 84th Street.

Neighborhood Encroachment Effects. On the east leg of the study area, residences south of I-94, west of 84th Street, would be directly affected by acquisitions and relocations under the Modernization Alternative. (See Section 3.5 for more information on residential acquisitions.) The neighborhood has a relatively small number of homes between I-94 and a large manufacturing plant to the south. As a result, the area's quality of life could be indirectly affected by the property acquisitions that decrease the number of people in the neighborhood. The E1/E3 Hybrid Alternative (both 6 and 8 lanes) and Modified E3 Alternative would have the greatest effect on the neighborhood since it requires the largest number of residential acquisitions. Modernization Alternative E1 (both 6 and 8 lanes) and the Reduced Impacts Alternative would not affect this neighborhood on the east leg nor would the No-Build Alternative because no residences would be acquired.

Five to 11 residences would also be directly affected by relocations from the core and south leg under all of the 6- and 8-lane Modernization Alternatives. Since the residences adjacent to the south leg are part of a larger neighborhood, the Modernization Alternatives are less likely to indirectly affect their long-term integrity. Under the Reduced Impacts Alternative, no residences would be acquired in the core or along the south leg. The Adjacent Arterials Component would not require any residential relocations.

Business Encroachment Effects. The 6- and 8-lane Modernization Alternatives would acquire 6 to 8 businesses, with associated job loss, unless the businesses relocate within the study area. Similarly, the Reduced Impacts Alternative would acquire 3 businesses and the Adjacent Arterials Component would acquire 2 businesses. (See Section 3.6 for more information on business acquisitions.) This is not likely to indirectly affect the local economy because some job losses could be offset by businesses being relocated within the study area. Also, the Modernization Alternatives, Reduced Impacts Alternative, and Adjacent Arterials Component are expected to strengthen local economic conditions by facilitating planned development within the study area. Furthermore, the area is attractive to economic development due to its proximity to the freeway system and its central location in the metropolitan area. The No-Build Alternative would not require the acquisition of businesses and, therefore, would not cause indirect effects.

Encroachment on Natural Resources. Indirect effects to natural resources are not likely under the Modernization Alternatives, Reduced Impacts Alternative, Adjacent Arterials Component, and No-Build Alternative. The APE is a fully built out urban area that has placed its remaining natural resources in public ownership to ensure their preservation. One remaining undeveloped area is located on the northeast quadrant of the Milwaukee County grounds. According to the land use plan for this area, the western side is planned for development, including the UWM research campus. The remaining undeveloped areas will be preserved for the DNR Forestry Science Center and open space. As a result, any development that is induced by the Modernization Alternatives, Reduced Impacts Alternative, and Adjacent Arterials Component would be directed to areas planned for development or redevelopment.

Step 6—Assess Consequences and Identify Mitigation Activities. The consequences of the indirect effects discussed above and mitigation measures for those effects are discussed below.

Growth Inducing Effects. The communities within the APE are actively planning and promoting the redevelopment of existing commercial and industrial areas. The redevelopment of these areas is likely to happen regardless of the selected alternative for the Zoo Interchange. However, local officials have acknowledged that 1) the Zoo Interchange corridor is highly connected to local economic development goals, and 2) the reconstruction and modernization of the Zoo Interchange corridor is important to maintain the area's regional competitiveness.

The majority of community representatives from the study area feel that development which may be induced by the Modernization Alternatives and Adjacent Arterials Component, if planned, would be positive for their communities by helping implement their land use plans and economic development goals. Planned development would also increase the local tax base and help pay for the cost of public services that are already in place. Furthermore, development that occurs on lands that have been previously developed would not diminish the amount of green space in the APE or affect the area's remaining natural resources that are preserved by public ownership. New development or redevelopment could increase the intensity of land uses in some areas and create additional traffic on local streets, as well as increase impervious area. It is expected that development that may be induced by the Reduced Impacts Alternative would have the same effect on land use plans and economic development goals as the other Modernization Alternatives.

To minimize negative effects of induced development, local communities have a number of tools available. A key tool is developing and implementing land use plans to direct future land use and developing zoning ordinances that support land use plans. All communities within the

APE have community development departments, plan commissions, and zoning regulations in place. They also have comprehensive plans or are in the process of developing comprehensive plans. Additionally, local regulations are in place to control stormwater runoff.

To further support local regulations and policies, state and federal regulations help manage impacts to natural resources such as wetlands (DNR Chapter 30 permits and the Corps Section 404 permits), water quality (NR 151), and threatened and endangered species (NR 27 and Endangered Species Act).

Local Road Traffic Effects. WisDOT will work with local communities to implement mitigation measures to address potential traffic increases that may occur during and after construction. Measures may include improved signal timing and signing, improved signal hardware, removing on-street parking, and other minor operational improvements to local roads. Local governments are also taking measures to minimize the impacts to local streets by using zoning and other land use planning tools to control the location and size of developments.

Neighborhood Encroachment Effects. As discussed in the previous section, the 6- and 8-lane E1/E3 Hybrid and Modified E3 Alternatives are likely to affect the quality of life in the neighborhood south of I-94, on the east leg, by acquiring residential property due to reconstruction of the Zoo Interchange. The City of Milwaukee has expressed concern that loss of residences in this area could make it difficult to maintain home ownership rates of the remaining homes, which could lead to decreased investment in the area over time.

WisDOT is continuing to refine the design of the Zoo Interchange to further avoid and minimize impacts to residential areas and neighborhoods. This was one of the reasons for developing the Reduced Impacts Alternative. Mitigation measures for unavoidable impacts to neighborhoods could be developed through community sensitive design.

Business Encroachment Effects. Overall, there will be no adverse indirect effects to the businesses within the APE as a result of encroachments, and no mitigation measures are required. Removal of parking in the vicinity of the Bluemound Road/Highway 100 intersection could indirectly affect the viability of local businesses. WisDOT will continue to coordinate with the City of Wauwatosa and local businesses to explore additional opportunities to maintain access and provide alternative parking solutions.

Natural Resource Encroachment Effects. The remaining natural resources within the APE are owned and protected by Milwaukee County, and are not likely to be indirectly affected by the Zoo Interchange project or other development that is facilitated by the Modernization Alternatives, Reduced Impacts Alternative, or Adjacent Arterial Component.

3.2.2 Cumulative Effects

Based on the anticipated direct and indirect project effects, the following resources were reviewed for potential cumulative effects within the project corridor:

- Environmental corridors and stream crossings
- Wetlands and floodplains
- Surface water quality
- Threatened and endangered species
- Commercial areas

- Historic properties
- Public parks and open space
- Neighborhoods
- Air quality

Area of Potential Effect

The APE for cumulative effects varies depending on the resource discussed. **Table 3-2** summarizes the resources reviewed in this document within the APE. The APE includes the Zoo Interchange corridor, but also considers the geographic boundaries for resources that are larger than the project corridor.

Past, Present, and Reasonably Foreseeable Future Actions

Given the history of development around the project corridor and the existing demand for new development, there are many past, present and reasonably foreseeable future actions that may contribute to cumulative impacts within the APE. **Table 3-3** provides a list of the other actions, that when considered with the Zoo Interchange project may have cumulative effects on the environment.

TABLE 3-2
Area of Potential Effects by Resource

Resource	Area of Potential Effects
Environmental corridors and stream crossings	Counties in which the environmental corridor or stream crossing is located
Wetlands and floodplains	The counties in which the wetland or floodplain is located
Surface water quality	Menomonee River, Underwood Creek, and Honey Creek watersheds
Threatened/endangered species	Extent of the habitat that supports the species
Commercial areas	Properties within the immediate vicinity of the Zoo Interchange corridor
Historic properties	Properties within the immediate vicinity of the Zoo Interchange corridor
Public Parks and Open Spaces	Properties within the immediate vicinity of the Zoo Interchange corridor
Neighborhoods	Neighborhoods and local roads within immediate vicinity of the Zoo Interchange corridor
Air Quality	Southeastern Wisconsin

TABLE 3-3
List of Past, Present, and Reasonably Foreseeable Future Actions

Action	Location
Past / Present	
Historic urban and suburban development	Milwaukee County
Canadian Pacific and Union Pacific Rail and other rail development	Milwaukee County
Construction of US 45, I-94, and I-894	Milwaukee County

TABLE 3-3
List of Past, Present, and Reasonably Foreseeable Future Actions

Action	Location
Development at the Milwaukee Regional Medical Center, Milwaukee County Grounds, the Milwaukee County public works facility, and Milwaukee Lutheran College athletic facility	Near Watertown Plank Road/US 45 interchange
Milwaukee County Zoo	NW quadrant of Zoo interchange
Milwaukee County Research Park	SW quadrant of Watertown Plank Road/US 45
Milwaukee County DPW facility	NW quadrant of Watertown Plank Road/US 45
MMSD flood management facilities	Milwaukee County Grounds and Underwood Creek
Underwood Creek rehabilitation	Between Highway 100 and confluence with Menomonee River
Wisconsin State Fair grounds	84th Street/I-94 interchange
Honey Creek Business Park	84th Street/I-94 interchange
Redevelopment of former Allis Chalmers site and other former industrial sites	City of West Allis
I-94 north-south reconstruction	Milwaukee, Racine, and Kenosha counties
Marquette Interchange reconstruction	Milwaukee
Future	
Continuing redevelopment at the Milwaukee Regional Medical Center	SE quadrant of Watertown Plank Road/US 45 interchange
Continuing redevelopment at Milwaukee Research Park	SW quadrant of Watertown Plank Road/US 45 interchange
Potential redevelopment of Milwaukee County public works facility	NW quadrant of Watertown Plank Road/US 45 interchange
Potential development in Economic Development Zone on Milwaukee Grounds	NE quadrant of Watertown Plank Road/US 45 interchange
Continued redevelopment of former industrial sites	City of West Allis
Future SE Wisconsin freeway reconstruction	Milwaukee County

Cumulative Effects Analysis and Environmental Consequences

The analysis considered the existing condition of each resource and the consequences of the anticipated cumulative effects. Modifying alternatives to avoid, minimize, or mitigate the effects was also discussed. The findings of the analysis are summarized by resource in the following sections.

Environmental Corridors and Stream Crossings

Environmental corridors, which are usually associated with streams, are unique resources within the APE that represent some of the most substantial natural areas in a highly urbanized environment. Therefore, local municipalities seek to protect these resources from further encroachment through zoning and permitting regulations. The majority of

environmental corridors are also publicly owned to ensure their preservation. Historically, past land development has affected environmental corridors throughout the region.

The alternatives for the Zoo Interchange project are not likely to cumulatively affect environmental corridors and stream crossings. All Modernization and Reduced Impacts Alternatives will maintain the two existing crossings over the Underwood Creek environmental corridor and one adjacent to the Honey Creek environmental corridor, but no additional crossings are proposed. Potential temporary effects from construction would be avoided and minimized by using WisDOT's *Standard Specifications for Road and Bridge Construction* (2009c) and complying with Wisconsin's TRANS 401 regulations that oversee construction site erosion control and stormwater management. Local governments would continue to be responsible for regulating development that could affect environmental corridors through land use policies, zoning, and permitting regulations.

Wetland and Floodplain

Wetland filling and dredging from past urban development, including the original construction of the Zoo Interchange and continuing development in the study area, are the primary causes of wetland loss and degradation in the study area. Similarly, urban development in floodplains has reduced flood storage capacity. As a result, less wetland and floodplain remain to improve water quality, control flooding, provide wildlife habitat, and provide aesthetic appeal. Degradation from past activities also allows aggressive, non-native species to repopulate degraded wetlands, which contributes to poor floristic quality of disturbed wetlands throughout the APE. Since early settlement years, wetlands in Milwaukee and Waukesha counties have declined by 70 and 26 percent, respectively (SEWRPC, 1997).

Some activities are occurring within the APE that could improve flood storage and habitat. MMSD's flood management facility is under construction on the Milwaukee County grounds and is expected to be completed by 2011. The facility is expected to minimize flooding along the Menomonee River by providing approximately 316 million gallons of flood storage. In addition, the rehabilitation of Underwood Creek, between Highway 100 and its confluence with the Menomonee River, will improve natural floodplain functions and help re-establish wetlands along this reach of the creek, which flows under US 45. The first phase of the Underwood Creek rehabilitation (Highway 100 to US 45) was completed in 2010. Construction of the remaining segments is scheduled for 2012-2013.

State and federal laws regulate filling and dredging in wetland, and floodplain filling on all development projects. The goal of the regulations is to avoid net loss of wetland and maintain floodplain functions. In addition, local zoning regulations manage the cumulative effect of wetland losses and the development of floodplains from changes in land use. Local zoning includes wetland protection measures and limits floodplain development for all communities within the APE. Thus, further wetland and floodplain loss or degradation from present and future developments can be avoided, minimized, or mitigated.

Reconstructing the Zoo Interchange would impact 1.0 to 1.7 acres of wetland. Section 3.15 summarizes wetland avoidance and minimization measures that WisDOT and FHWA have implemented or plan to implement. Wetland impacts of the Zoo Interchange reconstruction would be managed according to the *Wisconsin Department of Transportation Wetland Mitigation Banking Technical Guideline* (WisDOT, 2002) and the new regulations for compensatory wetland mitigation issued jointly by the Corps and USEPA in May 2008. The guideline establishes how

unavoidable impacts are mitigated either in the project corridor, offsite, or at a mitigation bank. Mitigation will occur at either a new onsite mitigation site or at an established offsite wetland mitigation bank. After a preferred alternative is selected, the exact wetland impact is quantified. Then, WisDOT and FHWA will finalize mitigation and monitoring measures for wetlands. (The guideline and the WisDOT/DNR Cooperative Agreement require monitoring.)

Potential cumulative effects from short-term highway construction in floodplains would be avoided and minimized by using WisDOT's *Standard Specifications for Road and Bridge Construction* and implementing any additional measures deemed necessary through ongoing coordination with DNR.

Local governments would be responsible for monitoring compliance with zoning and land use regulations that manage and protect wetland and floodplain resources. Furthermore, federal and state wetland laws require monitoring commitments of all permitted activities that include wetland mitigation of unavoidable impacts.

Surface Water Quality and Quantity

Section 3.11 identifies the relationship between the non-point sources of water pollution from urban development and the resulting decline of water quality in the study-area watersheds. Section 3.11 notes that the Modernization and Reduced Impacts Alternatives would increase impervious area on various legs by between 28 and 51 percent over the existing study-area freeway system. The Adjacent Arterials Component would increase impervious area between 13 and 29 percent over the existing local roadways. In letters from April 1, 2008, August 10, 2009, and March 28, 2011, MMSD stated concern over potential increase in impervious surface area as it relates to increased stormwater runoff (see Appendix D, page D-61, Appendix E, and Appendix F, Page F-68). While runoff volumes would increase under the Modernization, Reduced Impacts Alternative and Adjacent Arterials Component, the water quality analysis notes that using best management practices would reduce the level of pollutants in stormwater runoff compared to the existing conditions.

Current and future land development could cumulatively impact water quality despite any improvements implemented during reconstruction of the Zoo Interchange. For example, the planned expansion at the Regional Medical Center could add 4 million square feet of new development over the next 10 to 15 years and UWM plans to build a research campus at the northeast quadrant of the Watertown Plank Road/US 45 interchange. Increased impervious area from these developments would increase the likelihood of stormwater carrying sediment and other pollutants in streams that are already heavily degraded from historic urbanization.

As discussed in Section 3.11, WisDOT and FHWA are evaluating several best management practices to minimize the amount of runoff that enters water bodies, reduces flow velocity, and improves the water quality of the runoff. The use of retention/detention basins to manage stormwater from the proposed improvement is being evaluated along all legs of the Zoo Interchange project.

To mitigate the impact of non-point source runoff, DNR implemented NR 151, which sets performance standards for stormwater quality control measures. For example, 80 percent of the total suspended solids from site runoff must be removed on new construction sites 1 acre or larger. After construction, permanent measures must be in place to continue removing 80 percent of total suspended solids in stormwater runoff from the site. By 2013,

local governments must implement stormwater management measures to remove 40 percent of the total suspended solids discharged from their storm sewers. Best management practices required under stormwater and non-point runoff rules are expected to improve water quality as future projects and ongoing redevelopment occur.

Short-term highway construction impacts to water quality would be avoided or minimized by using WisDOT's *Standard Specifications for Road and Bridge Construction* and complying with Wisconsin's TRANS 401 regulations that regulate construction site erosion control and stormwater management.

DNR and local governments are responsible for monitoring the performance of stormwater management measures and making corrective actions for non-WisDOT projects. WisDOT will monitor its performance measures through its WisDOT/DNR Cooperative Agreement (Memorandum of Understanding on Erosion Control and Stormwater Management). The Zoo Interchange reconstruction would implement best management practices for stormwater and monitoring performance and, therefore, would not cumulatively contribute to water quality impacts.

Threatened and Endangered Species

Urban development is the primary cause of the loss and fragmentation of Butler's garter snake habitat in the APE (see Section 3.18). Habitat degradation (including wetland degradation) reduces and isolates species in remaining habitats.

Along with impacts from past, present, and anticipated future actions, the Zoo Interchange reconstruction and other foreseeable actions could impact the Butler's garter snake by reducing habitat on the north leg and west leg. State laws regulate impacts to the species, but no state or federal permits are required. No other threatened or endangered species impacts are anticipated. Local governments can manage the cumulative effect of other land development actions through existing land use and zoning regulations. Communities in the study area have zoning regulations that limit development along waterways and conservation areas, which are typically environmental corridors and isolated natural areas where Butler's garter snakes may be present.

Section 3.18 summarizes the measures developed by WisDOT and DNR to avoid, minimize, and mitigate impacts to the Butler's garter snake. Utilizing these measures, WisDOT will minimize the potential for cumulative impacts to the Butler's garter snake. A conservation plan for the Butler's garter snake (if required) may include monitoring. Local governments can further manage direct effects of other developments and potential indirect effects from the project through local plans and zoning regulations.

Commercial Areas

The Milwaukee region has historically been an economic hub in Wisconsin, providing a stable employment base for the region. While both Milwaukee and Waukesha counties have seen continued job growth between 1980 and 2000, Milwaukee County employment grew at a much slower rate (7 percent) than Waukesha County (104 percent). Slower growth in Milwaukee County can be attributed to a number of factors such as mature land use patterns and a decline in large-scale manufacturing employment, historically located in Milwaukee County. The area around the Zoo Interchange is the focus of substantial economic activity. Part of the economic vitality of the project area is due to its close

proximity to the freeway system, a large employment base, and other transportation infrastructure, including the airport and transit system.

The Modernization Alternatives would require acquisition of 8 to 10 businesses. The Reduced Impacts Alternative would acquire 5 businesses. Included in these totals are the two relocations resulting from construction of the Adjacent Arterials Component. While removing commercial buildings and local parking within the Zoo Interchange footprint will have a direct impact, the overall adverse impact to commercial areas is not expected to be substantial. Modernizing the study-area freeway system is expected to maintain access and improve safety and traffic circulation, which would have a positive cumulative effect on jobs within the area. In addition, vacant space is available within the region to relocate businesses. The Milwaukee metro region had a retail vacancy rate of 6.6 percent in 2010 (CoStar Group, 2010a). Office vacancy rates were 21.4 percent for Milwaukee metro and 17.5 percent for Waukesha/Pewaukee in the first quarter of 2011 (Xceligent, CARW 2011). The overall combined vacancy rate for high tech, office services, manufacturing, and industrial was 11.7% in Milwaukee County and 6.2% in Waukesha County at the end of 2010 (Marketbeat, 2011). WisDOT's acquisition and relocation program would avoid and minimize potential negative cumulative effects for affected businesses (see Section 3.6).

Historic Properties

Ongoing development and redevelopment could potentially affect historic resources through demolition or alterations that affect the property's historic integrity. Both federal and state laws help protect properties that are eligible for, or listed in, the National Register of Historic Places. These laws require sponsors of state and federally funded projects to consult with the State Historic Preservation Office (SHPO). However, these laws do not always apply to privately initiated actions that could affect historic resources where neither federal nor state permits or approvals are required. In addition to state and federal historic properties, local governments take measures to protect properties that are historically significant to their communities. To help avoid and minimize impacts to locally designated historic properties, the cities of Milwaukee, West Allis, and Wauwatosa have historic preservation commissions to review plans and make recommendations prior to local approval.

If the Union Pacific rail bridge over I-94 needs to be realigned from its current location, the Zoo Interchange project could require the replacement of the Union Pacific Railroad truss bridge just south of I-94, which is eligible for listing on the National Register (see Section 3.25 and Section 4). If WisDOT and FHWA determine the bridge does not need to be realigned, the Zoo Interchange project would likely not affect the truss bridge.

If the truss bridge is adversely affected, WisDOT and FHWA will implement appropriate mitigation measures to minimize cumulative impacts to historic resources. These mitigation measures are documented in Section 3.25.

Based on the addition of the Adjacent Arterials Component, impacts to several properties led to additional coordination with SHPO. Those properties include the Muirdale Sanatorium, the St. Jude Roman Catholic Church complex, and a residential neighborhood along Glenview Avenue. Each has been identified as eligible for listing in the National Register of Historic Places. WisDOT completed Section 106 consultation with SHPO on these properties to avoid and minimize potential direct, adverse and cumulative effects.

Parks and Open Space

Parks and open space within the APE are publicly owned and protected from private development. As discussed in Section 3.26, alternatives would require strip acquisitions from the following parks:

- Milwaukee County Zoo—Modernization Alternatives would affect up to 15.3 acres, including the Zoo maintenance facility, the Zoofari Conference Center, and the over flow parking lot. The Reduced Impacts Alternative would affect 7.6 acres, mostly at the over flow parking lot. The Adjacent Arterials Component would affect 0.1 acre in the southeast quadrant of the Highway 100 intersection at Bluemound Road. The Zoo’s animal exhibit area would not be affected by any alternative.
- Chippewa Park—The 6- and 8-lane W3 Modernization Alternative would affect 0.1 and 0.2 acre, respectively, of this park. The Reduced Impacts Alternative would affect 0.31 acre of this park.
- Underwood Creek Parkway—The Modernization Alternatives would affect up to 0.3 acre near the US 45 crossing. The Reduced Impacts Alternative would affect 0.3 acre near the US 45 crossing and 0.2 acre north of Watertown Plank Road to realign the parkway road connecting it to Swan Boulevard north of Innovation Drive.
- Wil-O-Way Underwood Special Recreation Center—The Modernization Alternatives would affect 0.5 acre. The Reduced Impacts Alternative would affect 0.01 acre.
- Honey Creek Parkway – The Reduced Impacts Alternative would affect approximately 0.2 acre.
- DNR Forestry Science Center - The Reduced Impacts Alternative would affect 0.2 acre.

Section 4 provides additional information on Section 4(f) resources. **Exhibit 4-1** shows the location of all parks in the area; **Exhibit 4-2A** and **Exhibit 4-2B** show the impacts to Wil-O-Way; **Exhibit 4-3** and **Exhibits 4-2A, 2B and 2C** show the impacts to Underwood Creek Parkway; **Exhibit 4-4A** and **Exhibit 4-4B** show the impact to the Milwaukee County Zoo; and **Exhibit 4-5A** and **Exhibit 4-5B** show the impact to Chippewa Park, and **Exhibit 4-6A** and **Exhibit 4-6B** show the impacts to Honey Creek Parkway.

WisDOT has taken measures to minimize impacts to parkland. Measures include constructing entrance and exit ramps as close to the mainline freeway as possible and using retaining walls will minimize the right-of-way needs of the project. WisDOT continues to coordinate with Milwaukee County to develop additional mitigation measures to maintain and enhance parkland through community sensitive design measures. Section 4 and Appendix A contain detailed discussions of the mitigation measures. These measures would minimize the Zoo Interchange’s cumulative effect on parks and open spaces.

Neighborhoods

Maintaining infrastructure is important to a community’s quality of life. Highways and other transportation infrastructure generally provide reliable access to employment and cultural centers and improve mobility of people and goods—both of which encourage continued investment throughout the community and within neighborhoods.

Conversely, infrastructure in and adjacent to neighborhoods can cause direct and proximity impacts such as right-of-way acquisition, relocations, and increased air, noise, and visual impacts. The combination of these impacts can decrease quality of life and cause disinvestment in neighborhoods. Neighborhoods close to large infrastructure systems become more vulnerable to these impacts as the infrastructure expands. Small impacts from individual projects can cumulatively contribute to neighborhood decline.

The Zoo Interchange reconstruction would not divide neighborhoods, but the Modernization Alternatives would affect between 6 and 39 residences. The Reduced Impacts Alternative would affect one apartment building with 8 residences. The anticipated impact is not substantial compared to the overall population in Milwaukee, Wauwatosa, and West Allis. However, there is a potential cumulative impact to neighborhoods where past and future freeway construction has and could occur. The City of Milwaukee is particularly concerned about the future reconstruction of the southeast Wisconsin freeway system, noting the vulnerability of neighborhoods that are subjected to the cumulative adverse impacts of expanding highways. Also, residential areas along 76th Street, between I-94 and Greenfield Avenue, could be cumulatively affected by projected traffic increases from Modernization Alternative E1, State Fair Park events, and potential redevelopment of State Fair Park land.

Milwaukee, Wauwatosa, and West Allis would experience loss of tax base (see Section 3.9), representing a fraction of 1 percent of the tax base. The Modernization Alternatives, Reduced Impacts Alternative, and Adjacent Arterials Component could offset this impact by enhancing and facilitating the planned redevelopment potential in the APE.

With the Reduced Impacts Alternative, WisDOT has modified the project design to avoid and minimize relocations to the extent possible. The Adjacent Arterials Component has no residential relocations. Community sensitive design is used to further minimize impacts, enhance infrastructure elements, and improve the visual quality of Zoo Interchange. WisDOT and local communities can incorporate similar design and community sensitive design techniques into future infrastructure projects to improve neighborhood quality of life and minimize traffic impacts.

The capacity improvements on Highway 100, Watertown Plank Road and at the Bluemound Road/Highway 100 intersection would create additional lanes for through traffic and turning movements. The existing commercial development and its associated traffic, combined with the new physical expansion of the intersection could have a cumulative effect of making pedestrian and bicycle use along these transportation corridors less attractive. The City of Wauwatosa's Comprehensive Plan specifically calls for integrating bicycles and pedestrians on local streets. The plan identifies a proposed on-street bike lane on Bluemound Road and a proposed off-street path along Watertown Plank Road. ¹ TRANS 75, requires sidewalks and bikeways with new highway construction. Exceptions to the requirement are allowed when, among other factors, constrained conditions result in excessive negative impacts when these facilities are added. WisDOT proposes to provide an extra wide outside lane on Highway 100 and Watertown Plank Road to accommodate bicycles. However, constrained conditions exist on Bluemound Road and 84th Street such that on-street bike accommodations cannot be provided. Maintaining existing sidewalks

¹ <http://www.wauwatosa.net/DocumentView.aspx?DID=390> and <http://www.wauwatosa.net/DocumentView.aspx?DID=391>

along these streets, as well as on Watertown Plank Road and Highway 100 would minimize a potential negative cumulative effect.

There could be additional negative effect on neighborhoods in the vicinity of the Bluemound Road/Highway 100 intersection. Ongoing economic development has, in some cases caused spillover traffic and parking on neighborhood streets, creating concerns about noise and safety. Additional capacity expansion, along with potential indirect effects of induced development could have a negative cumulative effect on local neighborhoods. The intersection improvements would accommodate increased traffic volumes and serve to keep through traffic off of neighborhood streets. However, lost business parking along Bluemound Road may cause customers to park along neighborhood streets. Some of this effect could be minimized through WisDOT's ongoing coordination with local businesses to develop alternative solutions for lost parking spaces.

Air Quality

The Zoo Interchange alternatives, along with other activities and developments in the study area, may have a cumulative impact on air quality in the region. Other activities in the region such as the new Oak Creek coal-fired power plant expansion and continued regional traffic growth are sources of air pollutants. By the year 2035, average weekday traffic in the Zoo Interchange study area is expected to increase by 18 percent. While the southeast Wisconsin region is in attainment for five of the seven criteria pollutants, the area is in non-attainment for the 8-hour ozone standard and the 24-hour fine particle (PM_{2.5}) standard. Current and future development in the region has the potential to continue to impact air quality.

DNR manages, monitors, and enforces air quality programs in Wisconsin. To help manage the air quality program, DNR works with a range of industries, agencies, interest groups, and individuals to develop the State Implementation Plan (SIP) that demonstrates how Wisconsin will attain compliance with national air quality standards. FHWA also provides congestion management and air quality grants for transportation projects in non-attainment areas that will reduce transportation-related air emissions.

Ultimately, U.S. EPA plays a major role in managing Wisconsin's compliance with the Clean Air Act, which includes monitoring the SIP. If the state and southeast Wisconsin region cannot achieve attainment standards, U.S. EPA can impose sanctions, such as stricter emissions rates for new developments and withholding federal funds for transportation projects.

To obtain federal funding, the reconstruction of the Zoo Interchange must be included in transportation plans that conform to the SIP. At the regional level, SEWRPC prepares a Transportation Improvement Program (TIP) to assure conformance with the SIP. Conformity with the SIP means projects contained in the TIP will not worsen air quality or delay attainment of air quality standards. The Zoo Interchange reconstruction is included in SEWRPC's conforming TIP and, therefore, would not contribute to a substantial negative cumulative impact to air quality, as measured by current pollutant standards.

Consistent with DNR permitting requirements, WisDOT conducted a carbon monoxide screening analysis for the Zoo Interchange, which confirmed that reconstruction would not exceed air quality standards for carbon monoxide. In addition to meeting air quality standards, there is growing concern over the direct and cumulative effect of other hazardous air pollutants, typically referred to as Mobile Source Air Toxics (MSATs). WisDOT and

FHWA evaluated the risk of increased MSATs of the Modernization Alternatives and Reduced Impacts Alternative with the Adjacent Arterials Component and the No-Build Alternative. Section 3.20 and Appendix C contain detailed discussions of the MSAT analysis.

According to the MSAT analysis, MSATs will decrease in the future because of U.S. EPA's national pollution control programs (see Appendix C). In 2007, a new U.S. EPA rule to regulate MSATs, *Control of Hazardous Air Pollutants from Mobile Sources*, went into effect. The rule sets new standards for fuel consumption, vehicle exhaust emissions, and evaporative losses from portable containers that will be phased in between 2011 and 2015.

The MSAT analysis predicts that total MSAT emissions will decrease 66 percent between 2004 and 2035 in the affected transportation network despite a projected 22 to 24 percent increase in vehicle miles traveled (VMT). Projected MSAT emissions in 2035 for the Modernization Alternative and Reduced Impacts Alternative would be slightly higher compared to the No-Build Alternative. MSAT emissions would be slightly higher under the 8-lane Modernization Alternative than the 6-lane Modernization Alternative and Reduced Impacts Alternative because adding freeway capacity will attract more vehicles to the freeway, though emissions would still be below existing conditions.

When a highway is widened and, as a result, moves closer to receptors, the localized level of MSAT emissions may increase. However, this could be offset by increases in speeds and reductions in congestion, which are associated with lower MSAT emissions.

Greenhouse gas emissions are also a concern in the Zoo Interchange study area. While there are no accepted quantitative tools to estimate greenhouse gases at the project level, vehicles using the Zoo Interchange can be expected to contribute to greenhouse gas emissions within the region. WisDOT recently released a report, *Transportation and Global Warming: Defining the Connection and the Solution* (CTC and Associates, 2007). The report noted that greenhouse gas emissions in Wisconsin grew by 26 percent in the last decade, compared to 20 percent across the U.S. The Governor's Task Force on Global Warming conducted another study in Wisconsin, which noted that the transportation sector accounts for approximately 24 percent of greenhouse gas emissions in Wisconsin, ranking second behind the energy sector at 35 percent (World Resources Institute, 2007). Transportation emissions have grown 19 percent from 1990 levels, with a concurrent 35 percent increase in VMT.

Currently, the major way to reduce emissions of greenhouse gases from transportation is to reduce the amount of fuel consumed, which can be accomplished by reducing congestion (more efficient driving conditions), reducing driving, and using more fuel efficient vehicles. WisDOT was a partner on the Governor's Task Force on Global Warming, providing input as part of the Transportation Work Group. Some of the policy recommendations from the Task Force's report include reducing emissions through improved vehicle technology, using low carbon fuels, and reducing VMT through land use planning and implementing public transit (DNR, 2008).

Managing and reducing greenhouse gases requires the continued use of appropriate land use and zoning policies that reduce travel demand within individual communities and southeast Wisconsin. A recent study published by the Urban Land Institute indicates that the continuing growth of VMT may offset emissions reduction gained through technological improvements in vehicles and fuels (Ewing et al., 2007). The study points to the importance

of reducing VMT by managing growth and land use patterns. Several studies on the relationship between land use and vehicle trips found that where diverse land use, accessible destinations, and interconnected streets exist, households drive 33 percent less compared to households in low-density developments.

WisDOT will continue to participate in statewide initiatives to reduce greenhouse gases, monitor the development of additional findings, and minimize impacts of projects to the greatest extent practicable.

Increased amounts of greenhouse gas in the atmosphere can have impacts on the environment and human health across on the planet. Examples of these impacts include rising sea levels, causing erosion of beaches and shorelines, destruction of aquatic plant and animal habitat, floods of coastal cities, and disruption of ocean current flows; a warming trend over much of the planet, broadening the range for many insect-borne diseases; and chronic stress of coral reefs. The possible impacts of global warming to Wisconsin include warmer and drier weather; decreases in the water levels of the Great Lakes, inland lakes, and streams (which may affect shipping operations); increases in water temperature (lowering water quality and favoring warm water aquatic species); changes in ecosystem and forest composition; increases in droughts and floods (impacting crop productivity); and reduction of snow and ice cover (lessening recreational opportunities) (Public Service Commission of Wisconsin and DNR, 2004).

3.2.3 Measures to Mitigate Adverse Effects

WisDOT policies and practices include several measures to mitigate potential adverse cumulative effects, as noted in Section 3.2.2. The alternatives, including the preferred alternative described in Section 2.7 were developed with a sensitivity to avoid and minimize impacts in a densely developed urban setting that includes resources important to the community such as parks, natural resources, historic structures and established neighborhoods and commercial centers. The preferred alternative modifies previous alternatives to further reduce the overall project footprint, while still meeting the project purpose and need.

3.3 Transportation Service

3.3.1 Affected Environment

Mass Transit

Both intra-city and inter-city bus service and passenger rail service are available in the Zoo Interchange study area, providing transportation services to those traveling in and through the study area.

Intra-city Bus. The Milwaukee County Transit System (MCTS) is the largest local transit operator in Wisconsin. MCTS provides transit services for all of Milwaukee County and paratransit services (Transit Plus) for the elderly, persons with disabilities, and people with conditions that prevent them from using MCTS buses. Freeway Flyer express service is available along the I-94 and US 45 corridors. Freeway Flyer routes operate during weekday morning and evening rush hours, providing service between park-and-ride lots and downtown Milwaukee. Service is also provided to special events such as Summerfest, other lakefront festivals, and the Wisconsin State Fair.

In the study area, park-and-ride lots are located on the south side of I-94 at 76th Street and at Watertown Plank Road, west of US 45. Several MCTS Freeway Flyer routes operate on the study-area freeway system and several other MCTS routes operate on local streets in the study area (**Exhibit 3-2**).

Three MCTS routes (Route 10 on Wisconsin Avenue/Bluemound Road, Route 31 on Watertown Plank Road, and Route 67 on both 92nd Street and 84th Street) serve the Regional Medical Center. According to MCTS, the Regional Medical Center is one of their top ten ridership generators (MCTS, 2009). SEWRPC's draft *Milwaukee County Transit System Development Plan: 2009-2013* considers express bus service on Wisconsin Avenue and Bluemound Road that would serve the Regional Medical Center (SEWRPC, 2009).

The regional transportation plan recommends corridor studies be conducted for an east-west bus guideway/light rail transit system as a possible option to provide service through the study area. Route 31 and, to a lesser extent, Route 28 (Highway 100) serve the Milwaukee County Research Park. No freeway-based bus service serves either facility, although the Route 45 Freeway Flyer services the Watertown Plank Road/US 45 park-and-ride lot.

Inter-City Bus. The Washington County Commuter Express provides several commuter bus routes that utilize the study-area freeway system. These routes include the following:

- Seven weekday round trips between West Bend and downtown Milwaukee via US 45 and I-94.
- Four morning weekday trips and five evening weekday trips between West Bend and the Research Park and the Regional Medical Center via US 45 and Watertown Plank Road. This route also travels along Wisconsin Avenue to Marquette University High School and the Veterans Affairs Medical Center.

In addition, Coach USA operates commuter bus routes that utilize the study-area freeway system. These routes include the following:

- Routes 901, 904, and 905 provide a total of 28 weekday trips from Waukesha County to downtown Milwaukee and 31 weekday trips from Milwaukee to Waukesha County via I-94. The hours of operation for these routes are between 5:00 A.M. and 10:30 P.M. Route 901 has a stop at the 76th Street park-and-ride lot.
- The Airport Express route provides 14 daily round trips via I-94 from Waukesha to downtown Milwaukee to General Mitchell International Airport, Chicago O'Hare International Airport, and Chicago Midway Airport.
- The University of Wisconsin-Whitewater route provides service between Whitewater and downtown Milwaukee via I-94, while school is in session (September through May). There are two trips from Whitewater to Milwaukee on Friday afternoons and two trips from Milwaukee to Whitewater on Sunday afternoon/evening. This route utilizes the 76th Street park-and-ride lot.

The Megabus offers service to destinations throughout the Midwest. Two daily round trips between Minneapolis and Milwaukee utilize I-94.

Greyhound Bus Lines utilize the study-area freeway system and include the following routes:

- Two daily round trips between Green Bay and Milwaukee via US 45 and I-94.
- Six daily trips from Milwaukee to Minneapolis and four daily trips from Minneapolis to Milwaukee via I-94 with a stop at 84th Street.

Lamers Bus Lines provides a daily route with one round trip running between Milwaukee and Wausau with stops in the Fox Valley area. This route utilizes I-94 and US 45 within the study area.

The Badger Bus also operates six daily round trips between Madison and Milwaukee via I-94 with a stop at 84th Street.

Rail Service

Both passenger and freight rail service are provided in and near Zoo Interchange study area.

Passenger Rail Service. Amtrak provides one daily round trip between downtown Milwaukee and points west via the Empire Builder route. Amtrak operates this service on tracks owned by the Canadian Pacific Railway. The tracks cross under US 45 approximately 0.75 mile north of the Watertown Plank Road interchange.

Freight Rail Service. The Canadian Pacific Railway and Union Pacific Railroad service the study area. The Canadian Pacific Railway's main line, between western Canada and Chicago, crosses under US 45 approximately 0.75 mile north of the Watertown Plank Road interchange. The Union Pacific Railroad crosses over US 45 approximately 0.3 mile south of the US 45/ North Avenue interchange, over I-94 400 feet east of Highway 100, and under I-894/US 45 approximately 0.4 mile south of Greenfield Avenue.

At Highway 100 and Bluemound Road, the Union Pacific Railroad crosses underneath the intersection in a 709-foot long tunnel. The same Union Pacific rail line also crosses over a former Canadian Pacific Railway line (converted to DNR's HAST), approximately 470 feet south of I-94 via a historic triple intersection Warren through truss bridge (See Section 3.25.1 or Section 4.3.7 for more information.) Approximately 30 trains per day travel along this segment of Union Pacific's rail line (Federal Railroad Administration, 2009).

Highways

I-94 is the major east-west roadway in the corridor. I-894/US 45 is the major north-south roadway in the corridor (see **Exhibit 1-1**). Other state and U.S. highways near the corridor that parallel I-94 are Greenfield Avenue (WIS 59), Capitol Drive (WIS 190), and Bluemound Road (US 18). Other state highways parallel to I-894 and US 45 include Highway 100 (108th Street/Mayfair Road) and 84th Street/Glenview Avenue (WIS 181).

Bicycle/Pedestrian

The Oak Leaf Trail, HAST, planned Cross Town Connector, and on-street routes serve, or will serve, bicyclists and pedestrians. See Section 3.26, Recreational Resources for more information.

3.3.2 Transportation Impacts

Mass Transit

With the Modernization Alternatives, park-and-ride lots at Watertown Plank Road (northwest quadrant) and 76th Street may be reconfigured but will still serve transit riders. Under the Reduced Impacts Alternative, the park-and-ride lot at Watertown Plank Road (southwest quadrant) may be relocated.

All existing and proposed transit service to the Regional Medical Center and the Milwaukee County Research Park uses local streets (Wisconsin Avenue, Bluemound Road, 92nd Street, 84th Street, Watertown Plank Road, and Highway 100). The Modernization and Reduced Impacts Alternatives would not directly affect any of the routes; all would continue to provide service to the Milwaukee Regional Medical Center and Milwaukee County Research Park. Local street traffic volumes would be lower under the 8-lane Modernization and Reduced Impacts Alternatives than the 6-lane Modernization Alternatives, which may improve local bus service. Streets that carry local bus service may be closed during construction, which would require a detour (see Section 3.27, Construction). The regional transportation plan's **potential** east-west bus guideway/light transit service to the Regional Medical Center would not use the study-area freeway system corridor; it could be implemented under any of the Modernization or Reduced Impacts Alternatives.

Under the Adjacent Arterials Component, local roadways will be reconstructed with staged construction, which would require temporary bus stops and detoured transit routes.

Rail Service

Two Union Pacific Railroad bridges, one over I-94 near Highway 100 and one over US 45 near North Avenue, would be replaced under all the Modernization and Reduced Impacts Alternatives. In addition, a Union Pacific Railroad bridge over North Avenue may be replaced. These bridges would be replaced with longer bridges to accommodate wider roadways. Bridges carrying US 45 over the Canadian Pacific Railway and I-894/US 45 over the Union Pacific Railroad would also be replaced.

Under all Modernization and Reduced Impacts Alternatives, the Union Pacific rail line crossing over I-94 may remain in its existing alignment or be realigned approximately 30 feet to the east or west of its current location. If the tracks remain on their existing alignment, the historic triple intersection Warren through truss bridge over the former Canadian Pacific rail line would likely remain in service. However, if the railroad alignment is shifted to the east or west, the truss bridge would need to be removed from service and replaced with a new structure.

Under the Adjacent Arterials Component, the Union Pacific Railroad tunnel under the Highway 100 and Bluemound Road intersection will be extended on both the north and south sides. The work would occur in the railroad right-of-way.

Highway Traffic and Operational Characteristics

Freeway. This section compares the No-Build Alternative with the Modernization and Reduced Impacts Alternatives with respect to how the freeway will operate (i.e., how traffic flows). Level of service is a key descriptor to measure traffic flow, and is explained in Section 1 and illustrated in **Exhibit 1-13**. The following discussion focuses on traffic in the morning and

afternoon rush hour in year 2035 since that represents the highest anticipated traffic volumes, assuming the freeways adjacent to the project area include eight traffic lanes. If the study-area freeway system is widened to eight lanes, there will be an indefinite period of time where the adjacent segments of the freeway system are six lanes. There will be peak hour congestion approaching the termini (southbound I-894/US 45 approaching Lincoln Avenue, eastbound I-94 approaching 70th Street, northbound US 45 approaching Burleigh Street, and westbound I-94 approaching 124th Street). The Reduced Impacts Alternative handles downstream weaving and lane drops better than the 8-lane Modernization Alternatives (one fewer through lane), which mitigates some of the congestion at project termini.

No-Build Alternative. Under the No-Build Alternative, the congestion described in Section 1 and illustrated in **Exhibits 1-14, 1-15, 1-17, and 1-18** would occur by 2035. Most segments of the study-area freeway system would operate at level of service E or F either in the morning or afternoon rush hour, or both.

Modernization Alternatives

6-Lane Modernization Alternatives. The 6-lane Modernization Alternatives would improve traffic flow compared to the No-Build Alternative. Moving all exits and entrances to the right side of the freeway will eliminate some weaving, and providing longer entrance and exit ramps will improve traffic flow even though there would be no added through capacity. The study-area freeway system would generally operate at level of service D, E, and F during the morning and afternoon rush hour in 2035 (**Exhibits 3-3, 3-4, 3-5, and 3-6**). Areas that would experience level of service F include the following:

- I-894/US 45 northbound and southbound between Lincoln Avenue and Bluemound Road
- US 45 northbound and southbound near North Avenue and near Burleigh Street
- I-94 westbound just west of Highway 100
- I-94 eastbound and westbound between 84th and 70th Streets

8-Lane Modernization Alternatives. The 8-lane Modernization Alternatives would further improve traffic flow compared to the 6-lane Modernization Alternatives by adding an additional travel lane (**Exhibits 3-7, 3-8, 3-9, and 3-10**). As these figures illustrate, traffic flow would be similar under both 8-lane alternatives. Both 8-lane Modernization Alternatives would generally operate at level of service D or better (compared to D, E, and F for the 6-lane modernization, and E and F under the No-Build Alternative). No freeway segments would operate at level of service F. Southbound I-894/US 45 between Greenfield Avenue and Lincoln Avenue would operate at level of service E during the afternoon rush hour.

Reduced Impacts Alternative

Similar to the 8-lane Modernization Alternatives, the Reduced Impacts Alternative would generally operate at level of service D or better (compared to D, E, and F for the 6-lane modernization, and E and F under the No-Build Alternative) (**Exhibits 3-11 and 3-12**). No freeway segments are anticipated to operate at level of service F. While the Reduced Impacts Alternative would have greater portions of the freeway operating at level of service D in comparison to the 8-lane Modernization Alternatives, only one location is anticipated to operate at level of service E. Southbound I-894 south of the Lincoln Avenue exit will operate at level of service E during the afternoon rush hour.

Local Roads. Traffic flow on local roads will depend on the alternative selected for the study-area freeway system. The No-Build Alternative and all 6-lane Modernization Alternatives would divert freeway traffic onto local streets during morning and afternoon rush hour because there would not be enough capacity on the study-area freeway system to handle the anticipated traffic volumes. The 8-lane Modernization and Reduced Impacts Alternatives would not divert freeway traffic to local streets because of lack of capacity. The Adjacent Arterials Component would improve traffic flow on local roads by adding one driving lane in each direction on Highway 100 and Watertown Plank Road and a two-way left-turn lane on 84th Street / Glenview Avenue and improving intersections on both Highway 100 and Watertown Plank Road.

Capacity improvements to Highway 100, Watertown Plank Road, and 84th Street/Glenview Avenue under the Adjacent Arterials Component would address traffic diverted to local streets under the build alternatives. In addition to capacity improvements on the Adjacent Arterials Component, there would also be additional turn lanes, optimized signal timing/phasing, and additional access control.

The access modification at the Bluemound Road/Wisconsin Avenue Interchange would divert I-94 eastbound and westbound traffic to local streets to reach Bluemound Road and Wisconsin Avenue, and vice versa, under both the 6-lane and 8-lane Modernization Alternatives and the Reduced Impacts Alternative. Some locations on Highway 100, Watertown Plank, Bluemound Road, and 84th Street could carry more traffic as a result of the change in access to/from Bluemound Road/Wisconsin Avenue and I-94. The increase in traffic as a result of the access change to/from Bluemound Road/Wisconsin Avenue could be offset by the decrease in traffic on the local arterials caused by the expansion of the freeway.

Other arterials would also see a change in traffic under the 8-lane Modernization Alternatives:

- Traffic volumes on Highway 100 would be an average of 62 percent lower under the 8-lane Modernization Alternatives than the No-Build, and would be approximately the same with the Reduced Impacts Alternative as the No-Build.
- Traffic volumes on 84th Street/Glenview Avenue between Bluemound Road and Wisconsin Ave would be approximately 17 percent lower under the 8-lane Modernization Alternatives than the No-Build, and would be approximately the same with the Reduced Impacts Alternative as the No-Build.
- Traffic volumes on Watertown Plank Road would be an average of 3 percent lower under the 8-lane Modernization Alternatives than the No-Build, and 2 percent higher under the Reduced Impacts Alternative than the No-Build.
- Greenfield Avenue would see a 7 percent increase in traffic under the 8-lane Modernization Alternative and a 6 percent increase under the Reduced Impacts Alternative compared to the No-Build Alternative.
- 76th Street would see an increase in traffic under Alternative E1 compared to the E1/E3 Hybrid Alternative or the Modified E3 Alternative. In 2035, traffic volumes on 76th Street between I-94 and Greenfield Avenue would increase 14 percent (from 14,000 vpd

to 16,000 vpd) under Alternative E1 compared to the No-Build, and decrease 14 percent (14,000 vpd to 12,000 vpd) under the Modified E3 Alternative and would be approximately the same with the Reduced Impacts Alternative as the No-Build (14,000 ypd).

Freeway Access Changes. As noted, the access modification at Bluemound Road/Wisconsin Avenue would divert I-94 eastbound and westbound traffic to local streets to reach Bluemound Road/Wisconsin Avenue, and vice versa, under both the 6-lane and 8-lane Modernization Alternatives and the Reduced Impacts Alternative. Drivers on I-94 that enter US 45 northbound from the Zoo Interchange would not be able to exit US 45 at Bluemound Road/Wisconsin Avenue. Watertown Plank Road would be the first available exit for these drivers. The Regional Medical Center expressed concern over this arrangement because today Bluemound Road/Wisconsin Avenue is one of two freeway access points to the center, along with Watertown Plank Road. The Reduced Impacts Alternative's free-flow interchange at Watertown Plank Road/US 45 and the Adjacent Arterials Component were developed in response to the Milwaukee Regional Medical Center's concerns and similar comments received during the June 2009 public hearing.

Safety

No-Build Alternative. Under the No-Build Alternative, none of the existing safety issues on the study-area freeway system would be addressed. The crash rate would likely remain the same, and congestion would continue to increase. As a result, more traffic would divert to local streets. In general, travel on local streets takes longer than travel on freeways and crash rates are also higher on local streets than freeways (based on WisDOT crash data). Higher traffic volumes on local streets also increase the potential for car-pedestrian and car-bicycle crashes.

Modernization Alternatives. The Modernization Alternatives would likely reduce crash rates by eliminating all substandard design features.

The 8-lane Modernization Alternatives may further reduce crashes by reducing the level of congestion compared to the 6-lane Modernization Alternatives. Research suggests that the crash rate on a roadway may vary based on the level of congestion, and that increased congestion leads to increased crash rates (Lord et al., 2003; Zhou and Sisiopiku, 1997). The reduction in crash rate corresponds to the level of service, with a 10 percent reduction in crash rate for each letter grade improvement in level of service.

Traffic volumes on local streets adjacent to the study-area freeway system would generally be lower under the 8-lane Modernization Alternatives compared to the No-Build Alternative and the 6-lane Modernization Alternatives. In general, crash rates on local streets are higher than crash rates on freeways.

Reduced Impacts Alternative. The Reduced Impacts Alternative would likely reduce crash rates by eliminating all substandard design features, and it may further reduce crashes by decreasing the level of congestion compared to the 6-lane Modernization Alternatives as discussed above.

Traffic volumes on local streets adjacent to the study-area freeway system would generally be lower under the Reduced Impacts Alternative compared to the No-Build Alternative and the 6-lane Modernization Alternatives.

Adjacent Arterials Component. The Adjacent Arterials Component would likely reduce the potential for crashes on local streets by eliminating substandard design features, increasing capacity, and improving level of service.

Access to Facilities and Services

No-Build Alternative. Under the No-Build Alternative, no changes to facilities or services would occur. Increased congestion may affect access to some facilities and services by increasing travel times.

Modernization Alternatives. The Modernization Alternatives would maintain access to facilities and services though in some areas the access would be modified. The level of congestion would vary between the 6-lane and 8-lane Modernization Alternatives, which may affect access to some facilities and services by increasing travel times. Travel times would generally be higher under the 6-lane Modernization Alternatives than the 8-lane Modernization Alternatives. There would be no major changes in access along the west leg.

North Leg. All the Modernization Alternatives would eliminate direct freeway access to/from I-94 and Bluemound Road (via US 45). Vehicles on US 45 southbound and vehicles on I-894/US 45 northbound would be able to access Bluemound Road. The City of Milwaukee, Wauwatosa, and the Milwaukee Regional Medical Center (and member institutions) expressed concern about the lack of I-94 access to Bluemound Road/Wisconsin Avenue. Given that input and the inability to safely provide direct I-94 access to Bluemound Road/Wisconsin Avenue, the Reduced Impacts Alternative's free-flow Watertown Plank Road interchange and the Adjacent Arterials Component were developed.

East Leg. All the Modernization Alternatives would maintain an interchange at 84th Street and 70th Street. Modernization Alternative E1 would modify access to 84th Street such that drivers exiting eastbound I-94 at 84th Street and drivers entering I-94 westbound from 84th Street would travel 1 mile out of their way (**Exhibit 3-13**). The E1/E3 Hybrid Alternative would provide conventional diamond interchange ramps at the 84th Street interchange for the I-94 eastbound entrance and exit and I-94 westbound exit movements. The westbound I-94 entrance movement would follow the pattern of Modernization Alternative E1, meaning drivers entering I-94 westbound from 84th Street would travel 1 mile out of route. The City of West Allis, State Fair Park Board, and some residents are concerned about the indirect effect Modernization Alternative E1 would have since it is not intuitive for drivers and would likely increase travel time. For this reason, the Modified E3 Alternative (see Section 2). **Exhibit 2-25** was developed to provide a conventional diamond interchange at 84th Street for both eastbound and westbound traffic entering and exiting I-94.

South Leg. A sub-alternative under all the Modernization Alternatives is to provide a ramp for drivers on eastbound I-94 to exit at Greenfield Avenue via I-894/US 45. This ramp would retain the current access to Greenfield Avenue from I-94 eastbound. If the ramp is not provided, drivers on I-94 could reach Greenfield Avenue via Highway 100 or 84th Street.

West Leg. All the Modernization Alternatives would maintain an interchange at Highway 100. Modernization Alternative W3 would remove the existing westbound I-94 exit to northbound Highway 100, and the exit ramp to Highway 100 north and south would be via a loop ramp in the northwest quadrant of the interchange. The entrance ramps from

Highway 100 to I-94 would be consolidated into one ramp that would split into two ramps, one eastbound and one westbound.

Reduced Impacts Alternative. The Reduced Impacts Alternative would maintain access to facilities and services though in some areas the access would be modified. Travel times would generally be lower than the 6-lane Modernization Alternatives and similar to the 8-lane Modernization Alternatives.

North Leg. The Reduced Impacts Alternative would eliminate direct freeway access to/from I-94 and Bluemound Road/Wisconsin Avenue (via US 45). Vehicles on US 45 southbound and vehicles on I-894/US 45 northbound would be able to access Bluemound Road/Wisconsin Avenue. A free-flow interchange would be provided at Watertown Plank Road and US 45, which would likely decrease travel times because there would be no traffic signals at the ramp terminals.

EXHIBIT 3-13

E1 Texas U-Turns at 84th Street

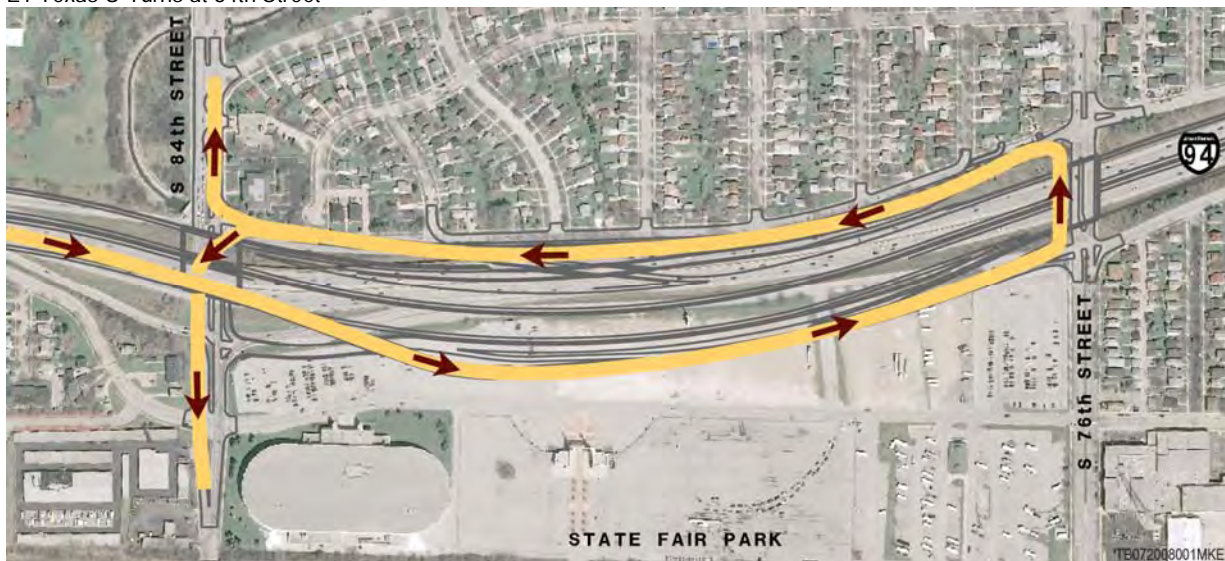
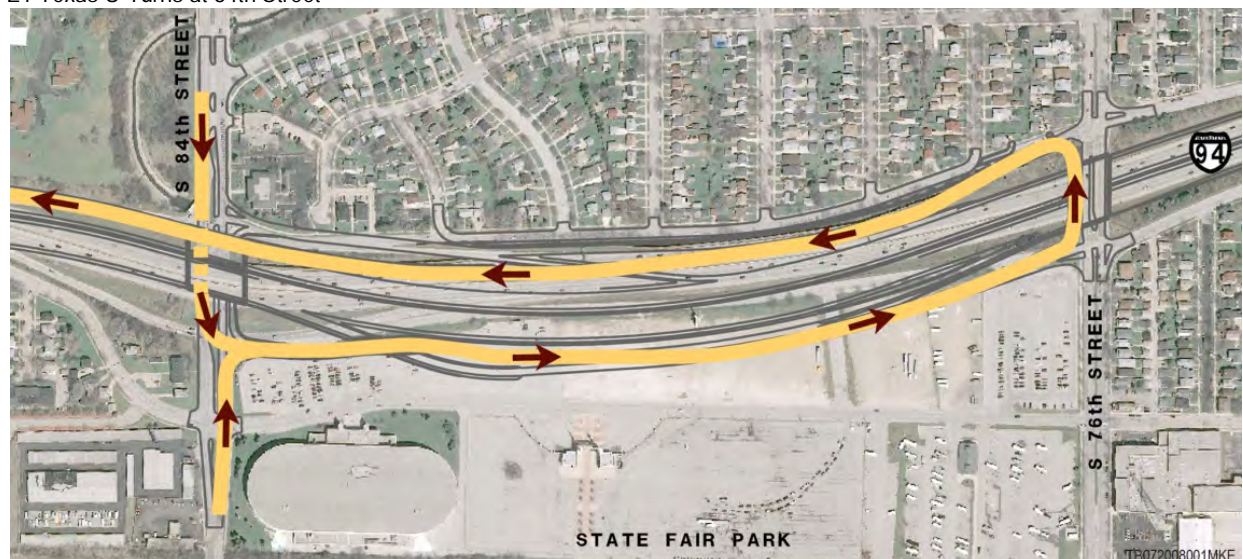


EXHIBIT 3-13

E1 Texas U-Turns at 84th Street



East Leg. The Reduced Impacts Alternative would maintain an interchange at 84th Street and 70th Street. This alternative provides a conventional diamond interchange at 84th Street for both eastbound and westbound traffic entering and exiting I-94. Under the Reduced Impacts Alternative, there would be no major changes in access along the east leg.

South Leg. The Reduced Impacts Alternative provides a conventional diamond interchange at Greenfield Avenue and maintains access for drivers exiting both eastbound and westbound I-94. Under this alternative, there would be no major changes in access along the south leg.

West Leg. The Reduced Impacts Alternative would maintain an interchange at Highway 100 and provide the existing westbound I-94 exit to northbound Highway 100. This alternative keeps a westbound I-94 exit ramp to Highway 100 south via a loop ramp in the northwest quadrant of the interchange. The entrance ramps from Highway 100 to I-94 would be consolidated into one ramp that would split into two ramps, one eastbound and one westbound. There would be no major changes in access along the west leg.

Adjacent Arterials Component. Under the Adjacent Arterials Component, modifications to medians and consolidating driveway access points would result in changes to facilities or services. Access changes include median closures at West Hibbard Avenue and Bluemound Road, 108th Place and Bluemound Road, and 109th Street and Bluemound Road.

Along Highway 100 five medians may be closed between Bluemound Road and Watertown Plank Road. A new signal is proposed at the Wisconsin Avenue intersection which would improve access to and from the Regional Medical Center.

Along Watertown Plank Road between Innovation Drive and 87th Street, 11 median openings serving County facilities may be modified for safety reasons. Access to the County facilities will remain, however, it generally will likely be right-in/right-out creating some indirect travel.

Along 84th Street, the median opening serving the driveway to St. Charles Youth and Family Services will be closed. The 84th Street and Bluemound Road intersection will also have median closures. On-street parking along 84th Street / Glenview Avenue would be reduced between I-94 and Wisconsin Avenue.

3.3.3 Measures to Mitigate Adverse Transportation Impacts

Section 3.27.4, Construction Impacts, describes measures to manage congestion during construction which would be a result of lane closures on the study-area freeway system and adjacent local streets.

WisDOT and FHWA are coordinating railroad tunnel and bridge construction with Union Pacific Railroad to minimize interruptions to rail service while extending the tunnel under Highway 100/Bluemound Road and while replacing the railroad bridges over I-94, US 45, and potentially North Avenue and I-894/US 45 over the Union Pacific Railroad. WisDOT and FHWA will coordinate with Canadian Pacific Railway to minimize interruptions to rail service while replacing the US 45 bridge over the Canadian Pacific rail line.

3.4 Utilities

3.4.1 Affected Environment

Underground and overhead utilities are located throughout the project corridor. The utilities noted in this section are “major” utilities, including electrical and gas transmission lines, and large water lines (over 16-inch) and sewers (over 36-inch).

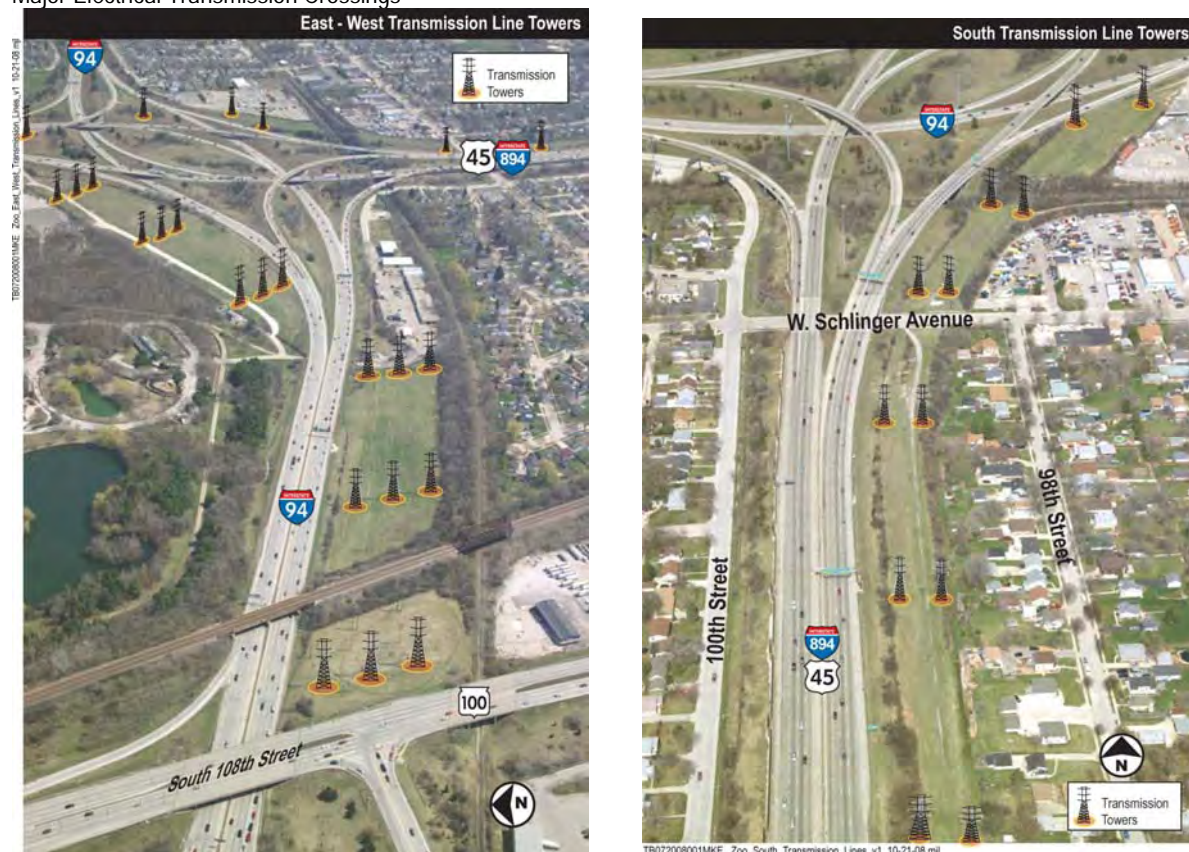
Electrical

Major underground and overhead electrical transmission lines cross the project corridor in several locations (**Exhibit 3-14**):

- Along the east side of I-894/US 45, between Lincoln Avenue and the electrical substation (96th Street substation in the northeast quadrant of the Zoo Interchange) are four overhead 138-kilovolt (kV) electrical transmission lines. North of Greenfield Avenue, the transmission lines are about 60 feet from the edge of the freeway. We Energies owns a 100- to 120-foot-wide corridor between I-894/US 45 and houses on 98th Street for the transmission lines (American Transmission Company owns the transmission lines). We Energies has four electrical distribution lines in this corridor.

EXHIBIT 3-14

Major Electrical Transmission Crossings



- Six overhead and two underground 138-kV electrical transmission lines parallel I-94. East of the Zoo Interchange, the transmission lines are about 0.25 mile north of the freeway. West of the Zoo Interchange the transmission lines are next to the Milwaukee County Zoo and then cross over and under I-94 to the south side of the freeway. An electrical substation (Bluemound Road substation) is located on the south side of I-94, west of Highway 100. We Energies has 10 electrical distribution lines in this corridor.
- One of the Regional Medical Center's main power sources is an underground line from the 96th Street substation on the east side of US 45.
- We Energies also has underground power lines along 84th Street with a primary crossing at I-94.
- American Transmission Company is looking at several options to add electrical transmission capacity between the We Energies 96th Street substation and the Regional Medical Center. Options include a line parallel to US 45.

Gas

Gas mains cross all four legs of the project corridor. Six high-pressure natural gas mains cross I-94 (at Highway 100 and 76th Street); US 45 (at Wisconsin Avenue, Highway 100, and Watertown Plank Road); and I-894 (at Greenfield Avenue). The high-pressure natural gas mains along Highway 100 and Watertown Plank Road extend through the entire corridors included in the study area. There is also a gas line that runs along 84th Street.

Water

The cities of Milwaukee, Wauwatosa, and West Allis provide water service. All of the drinking water in the study area comes from the Milwaukee Water Works. Water mains cross I-94, I-894, and US 45 in the project corridor. Milwaukee County is constructing a new water tower east of US 45 and south of Watertown Plank Road.

Steam and Chilled Water

Two 12-inch chiller lines and two 6-inch steam lines, used to cool and heat Milwaukee County-owned buildings, cross under US 45 near Watertown Plank Road. There are also two chiller lines that cross under Watertown Plank Road between 94th and 92nd Streets. A steam tunnel crosses under Watertown Plank Road just east of 92nd Street. We Energies owns these steam and chilled water lines.

Sewer

The cities of Milwaukee, Wauwatosa, and West Allis and MMSD provide sanitary sewer service in the study area. Several metropolitan interceptor sewers cross I-94, I-894, and US 45. Milwaukee, Wauwatosa, and West Allis maintain sanitary sewers that feed into MMSD's collector sewers. MMSD has collector sewers along Highway 100, Watertown Plank Road, and 84th Street.

WisDOT Utilities

WisDOT has communication lines and storm sewers in the freeway right-of-way.

Fiber Optics

WisDOT and three telecommunications companies have underground fiber optic lines in the study area.

3.4.2 Utility Impacts

No-Build Alternative

Under the No-Build Alternative, no utility impacts would occur.

Modernization Alternatives

The Modernization Alternatives would require relocation or replacement of overhead and buried utilities that would conflict with roadway improvements. The utility impacts of the Modernization Alternatives are similar.

The key utility impact of the Modernization Alternatives would be relocating several underground and overhead electrical transmission lines on the south and west legs. On the south leg, the four overhead transmission lines next to I-894/US 45, between Greenfield Avenue and the Zoo Interchange, would be rebuilt in a narrower corridor that would remain next to the freeway's wider footprint after reconstruction. No new right-of-way would need to be acquired from adjacent property owners to accommodate the transmission lines.

On the west leg, the six electrical transmission lines (on three parallel sets of towers) would stay in their current location west of the Highway 100 interchange. East of Highway 100, WisDOT and American Transmission Company are evaluating different locations for the towers. Two to four of the overhead transmission lines on one or two sets of towers could remain on the north side of the freeway, in a narrower utility corridor between I-94 and the Milwaukee County Zoo. This would require a 3- to 4-acre utility easement from the south side of the Milwaukee County Zoo. Some of the vegetative buffer between I-94 and the Zoo would have to be removed from the easement. The Milwaukee County Zoo expressed concern over having any overhead electrical transmission lines in what is now the vegetative buffer area between I-94 and the Zoo because of the loss of the buffer and visual impact of the towers and wires. See Section 3.26, Recreational Resources/Public Use Lands, for more information.

The remaining two to four transmission lines could be routed in or adjacent to the HAST right-of-way, between Highway 100 and I-894/US 45. The towers would not interfere with DNR's planned 14-foot-wide multi-use trail or restoring rail service in this 80- to 100-foot-wide corridor. East of I-894/US 45, the transmission lines would cross over I-94 to the 96th Street substation, in the northeast quadrant of the interchange.

In total, up to 61 electrical transmission towers would need to be relocated.

Other utility impacts include:

- Relocating the steam and chiller lines near Watertown Plank Road at US 45
- Relocating numerous electrical distribution lines
- Relocating numerous water mains and sewer lines
- Relocating numerous fiber optic lines (Sprint, AT&T, Rogers, and WisDOT)
- Relocating cell towers

Reduced Impacts Alternative

The Reduced Impacts Alternative would also require relocation or replacement of overhead and buried utilities that would conflict with roadway improvements.

The Reduced Impacts Alternative would relocate several underground and overhead electrical transmission lines on the south and west legs within existing right-of-way. On the south leg, the four overhead transmission lines next to I-894/US 45, between Greenfield Avenue and the Zoo Interchange, would be rebuilt in a narrower corridor that would remain next to the freeway's wider footprint after reconstruction.

On the west leg, the six electrical transmission lines (on three parallel sets of towers) would stay near their current alignment but grading will change the base elevation requiring several poles to be replaced.

In total, between 30 and 50 electrical transmission towers would need to be relocated.

Other utility impacts include:

- Relocating the steam and chiller lines near Watertown Plank Road at US 45
- Relocating numerous electrical distribution lines
- Relocating numerous water mains and sewer lines
- Relocating numerous fiber optic lines (Sprint, AT&T, Rogers, and WisDOT)
- Relocating cell towers

Adjacent Arterials Component

The Adjacent Arterials Component would require relocation or replacement of overhead and buried utilities that would conflict with roadway improvements.

Utility impacts may include:

- Relocating electrical distribution lines and power poles
- Relocating gas mains
- Relocating water mains and sewer lines
- Relocating fiber optic and other communication lines (Sprint, AT&T, Rogers, and WisDOT)
- Relocating street lights
- Replacing traffic signals

3.4.3 Measures to Mitigate Adverse Utility Impacts

WisDOT will compensate utilities for relocating their facilities, if required.

WisDOT and FHWA will continue coordinating with utilities, municipalities, and the county to avoid or minimize interruptions in service during construction.

3.5 Residential Development

3.5.1 Affected Environment

Though many residences are near the study-area freeway system, relatively few share a property line with the freeway. In most areas, utility corridors, local streets, and noise walls provide a buffer between residences and the freeway.

North Leg

Several pockets of residences are located along the north leg of the Zoo Interchange. In the northeast quadrant of the Zoo Interchange, the Parkside Pool Apartments complex shares a property line with US 45. This apartment complex consists of 106 units and offers one- and two-bedroom apartments at rents between \$610 and \$710 per month. West of US 45, 15 single-family residences are located along 97th Street, between Bluemound Road and Wisconsin Avenue. On the east side of US 45, between Bluemound Road and Wisconsin Avenue, there are eight single-family residences and one multi-family residence.

Further north along US 45, there are residences in three quadrants of the North Avenue interchange. In the southwest quadrant, Highlands of Mayfair, a 36-unit condominium complex, shares a property line with US 45. Eleven residences and one multi-family residence on 113th Street, 114th Street, and Garfield Avenue are 50 to 275 feet from the North Avenue on-ramp to southbound US 45.

Between North Avenue and Center Street, there are 39 single-family residences on 113th Street west of US 45, and 22 single-family residences and 10 multi-unit residences on 112th Street east of US 45. These residences are about 130 to 160 feet from US 45. There are no noise walls, and US 45 is depressed through this area. There are no residences adjacent to the study corridor between Center Street and Burleigh Street.

East Leg

On the east leg, south of I-94, there are 49 residences on Adler Street, between 95th Street and 84th Street. These residences are a combination of single-family residences, duplexes, and multi-family residences. Based on a field review, approximately 28 of the 49 residences are single-family residences, and the rest are duplexes or multi-family residences. Most of the residences along Adler Street were constructed in the 1950s and early 1960s. These residences are 130 to 150 feet from I-94, and there is no noise wall.

Between 76th Street and the eastern project limit at 70th Street, 10 single-family residences are on Kearney Street south of I-94. These residences were generally constructed during the late 1910s and 1920s. These residences are approximately 130 feet from I-94, and there is no noise wall.

On the east leg, north of I-94, Chester Street parallels I-94 from approximately 94th Street to 89th Street. On the north side of Chester Street, there are seven single-family residences west of 92nd Street, and three multi-unit residential structures east of 92nd Street. The seven single-family residences were constructed in the 1950s, and the multi-family structures were constructed during the 1960s. These residences are approximately 115 to 150 feet north of I-94, and there is no noise wall.

O'Connor Street parallels I-94 to the north between 84th Street and the east project limit at 70th Street. There are 19 single-family residences and seven multi-family residences on the north side of O'Connor Street in this area. Most houses in this area were built in the 1940s and 1950s with a handful constructed in the 1910s and 1920s. There is a noise wall between I-94 and homes on O'Connor Street, between 76th Street and 84th Street. These residences are located approximately 70 to 190 feet from I-94.

South Leg

Between the Zoo Interchange and Greenfield Avenue, there are 29 single-family residences located on 100th Street, west of I-894/US 45. These homes are 160 to 170 feet from the freeway, and there is a noise wall.

On the east side of I-894/US 45, between the Zoo Interchange and Greenfield Avenue, there are 43 single-family residences located on the west side of 98th Street. These residences are 225 to 300 feet from I-894/US 45. Of these 43 residences, 33 share a property line with the We Energies utility corridor, while the remaining 10 residences share a property line with the northbound Greenfield Avenue on-ramp. There is no noise wall on the east side of the freeway.

There are 22 single-family residences along the west side of 100th Street, between Greenfield Avenue and the Union Pacific Railroad, about 100 to 150 feet west of I-894/US 45. There are no noise walls adjacent to I-894/US 45 south of Greenfield Avenue.

South of Greenfield Avenue and east of I-894/US 45, the 66-unit Parkway Central Apartments is roughly 450 to 500 feet from the northbound Greenfield Avenue off-ramp.

South of the Union Pacific Railroad on 102nd Street, the three-building, 330-unit Lincoln Crest apartments shares a property line with I-894/US 45. Between the Lincoln Crest Apartments and Lincoln Avenue, 11 multi-family residences share a property line with I-894/US 45. On the east side of I-894/US 45, between Becher Street and Lincoln Avenue, 17 single-family residences on 99th Street are 325 to 400 feet from I-894/US 45.

West Leg

On the west leg, there are no residences adjacent to I-94. Residences on Bungalow Parkway are about 450 to 500 feet south of I-94, between I-894/US 45 and Highway 100. The Zoo maintenance facility and the planned HAST lie between I-94 and this neighborhood.

West of Highway 100, Chippewa Park buffers residences on Park Hill Avenue from I-94. These residences are 350 to 400 feet from I-94. Further west, a neighborhood with more than 30 residences is located north of I-94, between 121st Street and Underwood Creek. At its closest point, the houses in this neighborhood are approximately 270 feet from I-94, and separated from I-94 by Fairview Avenue and a light industrial area. There are no noise walls on the west leg.

Highway 100 Corridor

Between I-94 and Watertown Plank Road, there are no residences adjacent to Highway 100. Commercial developments buffer residences from Highway 100. Residences on 108th Place are about 345 to 420 feet west of Highway 100, between Bluemound Road and Wisconsin Avenue. Residences on 107th Street are about 170 to 205 feet east of Highway 100, between Bluemound Road and Wisconsin Avenue. South of Wisconsin Avenue, residences on Michigan Street are 95 to 170 feet east of Highway 100.

Watertown Plank Road Corridor

Between Highway 100 and 87th Street, there are no residences adjacent to Watertown Plank Road. Residences on Watertown Plank Road between 86th Street and Elm Lawn Street are located between 25 and 60 feet from Watertown Plank Road.

84th Street/Glenview Avenue Corridor

Between I-94 and Wisconsin Avenue, there is a small pocket of single-family and multi-family residences on the east side of 84th Street at the 84th Street/Dana Street intersection. On the west side of 84th Street north of the ATC transmission line corridor, there is a large block of single family residences that extends to the intersection with Bluemound Road. Between Bluemound Road and Wisconsin Avenue, both sides of 84th Street have single family residences. Residences adjacent to 84th Street are generally located between 20 and 65 feet from the roadway.

3.5.2 Residential Impacts

Relocations

No-Build Alternative. No residential displacements would occur under the No-Build Alternative.

Modernization Alternatives. The Modernization Alternatives would have similar residential relocation impacts in the core (5 residential relocations), north leg (1 residential relocation), south leg (0 to 6 residential relocations), and west leg (none). On the east leg, there are differences between Alternative E1, the E1/E3 Hybrid Alternative, and the Modified E3 Alternative. The number of relocations will vary depending upon the sub-alternatives chosen (**Table 3-4**).

TABLE 3-4
Residential Relocations by Leg and Alternative

Legs	6-lane Alternatives	8-lane Alternatives	Reduced Impacts Alternative
Core	5	5	0
North Leg	1 (N1 and N3)	1 (N1 and N3)	0
East Leg	0 (E1) to 18 (E1/E3 Hybrid)	0 (E1) to 19 (E1/E3 Hybrid) 27 (Modified E3)	8
South Leg	0 (6 with ramp to Greenfield Avenue) (S2)	0 (6 with ramp to Greenfield Avenue) (S2)	0
West Leg	0 (W3)	0	0
Total	6 to 30	6 to 39	8

Note: The number of relocations is based on housing units, not individual buildings. A duplex is counted as two residential relocations.

In the southwest corner of the Zoo Interchange, all Modernization Alternatives would relocate five single-family residences on 100th Street north of Schlenger Avenue (**Exhibit 3-15**).

On the south leg, the sub-alternative of adding a ramp from eastbound I-94 to Greenfield Avenue would require six residential relocations (four single-family and one duplex) on 100th Street.

On the east leg, the 8-lane E1/E3 Hybrid Alternative would require 19 residential relocations, consisting of 14 single-family residences and duplexes on or adjacent to Adler Street, (**Exhibit 3-16**). The 6-lane E1/E3 Hybrid Alternative would require 18 residential relocations, consisting of 13 single-family residences and duplexes on and adjacent to Adler Street. The Modified E3 Alternative would require 27 residential relocations, consisting of 18 single-family

residences and duplexes on or adjacent to Adler Street, (**Exhibit 3-17**). Modernization Alternative E1 would not require any residential relocations.

The impacts of reconstructing and expanding the study-area freeway system also affects the physical and social setting, community services, and other factors that promote a sense of community among residents in the study area.

Reduced Impacts Alternative. Under the Reduced Impacts Alternative, no residential displacements would occur in the core, north leg, south leg, or west leg of the Zoo Interchange. On the east leg, 8 residential relocations, consisting of one multi-family residence adjacent to Chester Street would be required (**Table 3-4** and **Exhibit 3-18**).

Adjacent Arterials Component. No residential displacements would occur under the Adjacent Arterials Component.

Neighborhood Splitting

The proposed improvements would not split or divide any neighborhoods. The study-area freeway system would remain in its existing corridor, and largely within the existing right-of-way. All existing crossroads over or under the study-area freeways would be maintained.

Isolation of Distinct Groups, Real or Perceived

Since the proposed action would not create a new corridor, no isolation of distinct groups is anticipated beyond the existing condition.

New Development Assisted or Discouraged by the Project

See Section 3.2.1, Indirect Effects.

Changes in Property Values

Please see Section 3.9.2 for more information.

3.5.3 Measures to Mitigate Adverse Residential Impacts

Federal property acquisition law provides for payment of just compensation for residences displaced for a federally-funded transportation project (Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended [Uniform Act]). Acquisition price, replacement dwelling costs, moving expenses, increased rental or mortgage payments, closing costs, and other relocation costs are covered for residential displacements.

Under state law, no person or business would be displaced unless a comparable replacement dwelling, business location, or other compensation (when a suitable replacement business location is not available) would be provided. Compensation is available to all displaced persons without discrimination. Prior to appraisals and property acquisition, an authorized relocation agent interviews each owner and renter to be relocated to determine their needs, desires, and unique situations associated with relocating. The agent explains the relocation benefits and services each owner may be eligible to receive.

Property acquisitions not involving residential, business, or other building relocations are also compensated in accordance with state and federal laws. Before initiation of property acquisition, WisDOT provides information explaining the acquisition process and the state's Eminent Domain Law under Section 32.05, Wisconsin Statutes. A professional appraiser inspects the property to be acquired. Property owners are invited to accompany the appraiser to ensure that full information about the property is taken into consideration. Property owners may also obtain an independent appraisal. Based on the appraisal, the value of the property is determined and that amount offered to the owner. In the event agreement on fair market value cannot be reached, the owner would be advised of the appropriate appeal procedure.

A search of available housing from local realtor listings in September 2011 reported more than 175 homes with similar price (\$125,000 to \$230,000) located within 0.5 mile of the study area. A search of replacement rental housing was also conducted, and revealed 32 rental properties similar to the units that would be needed. One-, two-, and three-bedroom units are within one mile of the study area, starting at \$535 per month. Replacement rental housing available includes duplexes and apartment buildings.

Any septic tanks, drain fields, or wells on acquired properties would be abandoned in accordance with state regulations and local zoning standards. WisDOT will survey all buildings to be demolished to determine whether asbestos or lead paint is present. All appropriate and applicable engineering and regulatory controls will be followed during the handling and disposal of asbestos-containing material and lead-based paint. Contractors must comply with U.S. EPA regulations; National Emission Standards for Asbestos; the Occupational, Safety, and Health Administration regulations on asbestos removal; local government regulations; and all other applicable regulations. The most recent editions of all applicable standards, codes, or regulations shall be in effect. In addition, any person performing asbestos abatement must comply with all training certification requirements, rules, regulations, and laws of the State of Wisconsin regarding asbestos removal.

Before a contractor demolishes a building that may contain or is known to contain asbestos, the contractor must notify DNR and Wisconsin Department of Health and Family Services at least 10 working days before starting the work, using DNR Form 4500-113: "Notification of Demolition and/or Renovation and Application for Permit Exemption."

Demographic data for the areas in which residential displacements would occur do not indicate age or income level characteristics that would require special relocation consideration or services. If unusual circumstances were to arise during real estate activities, WisDOT real estate personnel would be available to provide appropriate relocation services.

3.6 Commercial and Industrial Development

3.6.1 Affected Environment

Commercial and industrial development occurs along the freeways and arterials in the study area, with the highest concentration found along the north leg and heavy concentrations in areas adjacent to the freeway system as well. Some of the larger commercial and industrial entities include GE Healthcare, Quad Graphics, and Mayfair Mall.

North Leg

On the north leg, commercial development can be found at nearly every service interchange. The largest concentration of commercial development is located between Wisconsin Avenue and Watertown Plank Road, both east and west of US 45. On the west side, the 175-acre Milwaukee County Research Park is home to more than 70 businesses, employing more than 2,000 people. The park contains nearly 1.7 million square feet of gross leasable space and notable occupants include GE Healthcare (Milwaukee County Research Park Corporation, 2008; Wauwatosa Economic Development Commission, 2008; The Business Journal, 2008).

Mayfair Mall, the largest retail development in the study area, is located along Highway 100, just east of US 45 and north of North Avenue in Wauwatosa. Mayfair Mall is a regional shopping center with more than 180 stores. In addition to Mayfair Mall, commercial development is located along both sides of Highway 100 from Bluemound Road on the south to Burleigh Avenue on the north. Various businesses are located within this area of Highway 100, including restaurants, gas stations, real estate and financial services, and various retail stores.

There are a number of businesses at the Burleigh Avenue and US 45 interchange. On the south side of Burleigh Avenue, Alro Steel, Hansen Storage, and Stroh Die Casting are in an area that is currently being considered for redevelopment. In the northwest quadrant of Burleigh Avenue and US 45, JCP Logistics is the regional distribution center for JC Penney's retail stores in the upper Midwest.

In addition to the businesses currently located at Burleigh Avenue and US 45, land is being considered for redevelopment east of US 45. One parcel, known as the Burleigh Triangle, was formerly home to the Roundy's and Kohl's food distribution warehouses. This parcel is being considered for a mixed-use development and would include a townhouse or multi-story condominium development, corporate offices, and retail establishments. The other parcel, known as the Burleigh Rectangle, is a 5.8-acre site formerly occupied by two automobile dealerships. A mixed-use redevelopment is also being considered for this site. Development plans include a medical office building, retail center, parking garage, hotel, and a condominium tower (Wauwatosa Economic Development Commission). More information about the Burleigh Rectangle and Triangle redevelopment projects can be found at www.wauwatosa.net.

East Leg

Land adjacent to I-94 is primarily residential, with the exception of the Honey Creek Corporate Center, which is located north of I-94 and west of 84th Street, and two businesses along Adler Street, south of I-94. The Honey Creek Corporate Center is a 416,672-square-foot, four-building office complex located on approximately 26 acres adjacent to I-94.

South Leg

Land adjacent to I-894 is predominantly residential with some commercial development located at the Greenfield Avenue and Lincoln Avenue interchanges. In the southwest quadrant of Greenfield Avenue and I-894, there is a seven-building business park that extends from Greenfield Avenue on the north to the Union Pacific Railroad on the south. Businesses in this area include financial institutions, supply companies, a healthcare company, and some small manufacturing companies.

West Leg

At the I-94 and Highway 100 interchange, Wheaton-Franciscan Healthcare Center, coffee shop, and a hotel are located north of I-94 and west of Highway 100. Colder's Furniture and Quad Graphics occupy the southwest quadrant of the interchange. Further west along I-94, the I-94 and Highway 100 Industrial Park occupies land between 116th Street on the east, Underwood Creek Parkway on the west, I-94 on the north, and West Theodore Trecker Way on the south. A number of plastics, molding, and die cast businesses are also located in this park. This area continues on the north side of I-94, between 116th Street on the east, 121st Street on the west, West Dearborn on the north, and I-94 on the south.

Highway 100 Corridor

Between I-94 and Watertown Plank Road, development adjacent to Highway 100 is almost exclusively commercial. Three quadrants of the Highway 100/Bluemound Road intersection include commercial uses. A group of restaurants and a bank are located in the southwest quadrant, an Irish pub is located in the northwest quadrant, and small strip mall is located in the northeast quadrant. Between the intersection and Watertown Plank Road there is a mix of commercial uses on both sides of Highway 100.

Watertown Plank Road Corridor

Between Highway 100 and 87th Street, the adjacent development is institutional rather than commercial.

84th Street/Glenview Avenue Corridor

Between I-94 and Wisconsin Avenue, commercial development is limited to the 84th Street/Bluemound Road intersection. In the southeast quadrant, there is a service station and a Pick 'N Save store. In the northwest quadrant there is a service station, medical office, and a Pizza Hut.

3.6.2 Commercial and Industrial Impacts

Although the study-area freeway system is access-controlled (meaning no business entrances are connected directly to the freeway), service-oriented businesses located near interchanges rely on freeway travelers for their continued viability.

Businesses' employees, patrons, shippers, and suppliers depend on the study-area freeways system to varying degrees for their continued viability. Businesses throughout southeastern Wisconsin use the study-area freeway system to access other parts of the region, state, and country.

No-Build Alternative

No businesses would be relocated under the No-Build Alternative.

Modernization Alternatives

The Modernization Alternatives would have the same business relocation impacts in the core (one business relocated), north leg (one business relocated), south leg (two to three businesses), and west leg (two businesses). Commercial relocations are found in **Table 3-5**. On the east leg, there is a difference between Alternative E1 (no businesses relocated) and the E1/E3 Hybrid and Modified E3 Alternatives (one business relocated) (**Exhibit 3-19**).

TABLE 3-5
Commercial Relocations by Alternative

Legs	6-lane Alternative	8-lane Alternatives	Reduced Impacts Alternative
Core	1	1	0
North Leg	1 (N1 and N3)	1 (N1 and N3)	1
East Leg	0 (E1) to 1 (E1/E3 Hybrid)	0 (E1) to 1 (E1/E3 Hybrid) 1 (Modified E3)	0
South Leg	2 (3 with ramp to Greenfield Avenue)	2 (3 with ramp to Greenfield Avenue)	0
West Leg	2	2	2
Adjacent Arterials	2	2	2
Total	8 to 10	8 to 10	5

In the southwest corner of the Zoo Interchange, a security systems store on 100th Street would be relocated under all the Modernization Alternatives.

On the north leg, an automotive oil and lubrication shop would be relocated under all the Modernization Alternatives.

On the east leg, Alternative E1 would not relocate any businesses. The E1/E3 Hybrid and Modified E3 Alternatives would relocate a musical instrument store on Adler Street, south of I-94.

On the south leg, an office building and an adult variety and video store on the east side of I-894/US 45 at Greenfield Avenue would be relocated under all Modernization Alternatives. If the I-94 eastbound to Greenfield Avenue ramp sub-alternative is built, a photography studio on 100th Street, south of Schlinger Avenue, would be relocated.

On the west leg, a hotel and coffee shop on the north side of I-94 at Highway 100 would be relocated under all Modernization Alternatives.

Reduced Impacts Alternative

Under the Reduced Impacts Alternative, there would be no business relocation impacts in the core, east leg, and south leg. On the north leg, an automotive oil and lubrication shop would be relocated under the Reduced Impacts Alternative, similar to all Modernization Alternatives (**Table 3-5**).

On the west leg, a hotel and coffee shop on the north side of I-94 at Highway 100 would be relocated under the Reduced Impacts Alternative, similar to all Modernization Alternatives (**Exhibit 3-20**).

Adjacent Arterials Component

Under the Adjacent Arterials Component, two business relocations, both located in one commercial building, would occur on the east side of Highway 100 south of Wisconsin Avenue (**Exhibit 3-21**). The displaced businesses would consist of a cosmetic surgery office and a law office.

3.6.3 Transportation User Benefits

No-Build Alternative

Continued and frequent maintenance of the deteriorated pavement would cause further lane closures and increased congestion, but safety deficiencies would not be improved. Allowing the study-area freeway system to deteriorate further could lead to weight restrictions on bridges and potential closures of some portions of the study-area freeway system.

Modernization Alternatives

The Modernization Alternatives would reduce crashes on the study-area freeway system compared to the No-Build Alternative. The 6-lane Modernization Alternatives would offer some congestion reduction compared to the No-Build Alternative. The 8-lane Modernization Alternatives would reduce congestion to a greater extent than the 6-lane Modernization Alternatives. Reduced congestion on the freeway system can translate into increased savings for area businesses in both the travel time and capacity of the freeway for the movement of goods and services within and through the region. Improved travel times would allow for greater capacity for movement of goods and services on the freeway system.

Reduced Impacts Alternative

With additional capacity and improved operations, the Reduced Impacts Alternative would reduce the potential for crashes on the study-area freeway system compared to the No-Build Alternative. The Reduced Impacts Alternative would generally reduce congestion to a greater extent than the 6-lane Modernization Alternatives, and experience congestion similar to the 8-lane Modernization Alternative (**Exhibits 3-3 to 3-12**).

Adjacent Arterials Component

The Adjacent Arterials Component would reduce crashes on the local roadway system compared to the No-Build Alternative. The Adjacent Arterials Component would reduce congestion on the local roadway systems translating into increased savings for area businesses in both the travel time and capacity of the local roadways for the movement of goods and services within each corridor.

Access During Construction

Access to businesses will be maintained during construction, though commuters, business patrons, shippers, and suppliers will experience inconvenience and additional travel time (see Section 3.27.7, Traffic/Conceptual Construction Staging).

3.6.4 Measures to Mitigate Adverse Commercial and Industrial Impacts

Commercial and industrial acquisitions and relocations would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. In addition to providing just compensation for property acquired, additional benefits are available to eligible displaced businesses, including relocation advisory services, reimbursement of moving expenses, and down-payment assistance. Under state law, no person would be displaced unless a comparable business location or other compensation (when a suitable business location replacement is not practical) is provided. Compensation is available to all displaced businesses without discrimination.

Before initiating property acquisition activities, property owners would be contacted and given a detailed explanation of the acquisition process and Wisconsin's Eminent Domain Law under Section 32.05, Wisconsin Statutes. Any property acquired would be inspected by one or more professional appraisers. The property owner would be invited to accompany the appraiser during the inspection to ensure that the appraiser is informed of every aspect of the property. Property owners will be given the opportunity to obtain an appraisal by a qualified appraiser that will be considered by WisDOT in establishing just compensation. Based on the appraisal, the value of the property would be determined and that amount offered to the owner.

Before a contractor demolishes a building that may contain or is known to contain asbestos, the contractor must notify DNR and Wisconsin Department of Health and Family Services at least 10 working days before starting the work, using DNR Form 4500-113: "Notification of Demolition and/or Renovation and Application for Permit Exemption."

There are no known age, ethnic, handicapped, or minority characteristics that would require special relocation consideration for any business displacement. No unusual requirements are anticipated that would preclude successful relocation, except the adult variety bookstore. This bookstore requires an adult entertainment license to operate. All municipalities require this type of zoning, but the zoning location must be investigated within each individual community. The adult entertainment license is applied for by the owner/tenant at the time of application. The application process may add several months to a year to the relocation process for this particular business. There is currently one such business for sale in Manitowoc that includes the license for adult entertainment.

The Multiple Listing Service for April 2009 listed more than 16 warehouse/office space locations in the Milwaukee and Waukesha area that would be adequate for business relocations needed on 100th Street. There is one oil change retail store and several auto service centers available for sale in Milwaukee County that could be retrofitted for the oil change business on Highway 100. There is at least one hotel for sale in Milwaukee County and several others in Racine, Dane, and Walworth counties that approach the size of the hotel on Highway 100 that would be relocated. There are also stand-alone buildings available that could serve the music store, bookstore, coffee shop, cosmetic surgery office, law office, and photography studio. There are more than 100 available retail establishments, based on the Multiple Listing Service, in Milwaukee County.

Based on Multiple Listing Service, there are enough available properties to provide appropriate relocations for the displaced businesses. However, the state of the economy in April 2009 exhibits a greater than normal number of business and commercial listings. As these businesses are relocated in the future, the number of business and commercial listings may change, but it appears likely that sufficient replacement business buildings will be available when required.

3.7 Agricultural Resources

There are no agricultural resources in the study area.

3.8 Institutional and Public Services

3.8.1 Affected Environment

Fire, Ambulance, and Police Protection

The City of Milwaukee is served by the Milwaukee Fire Department, which consists of full-time paramedics and firefighters providing services from 36 fire stations. The Milwaukee Fire Department has a fire station on 84th Street, just north of I-94, housing Engine Company 25 and Hazardous Material Teams 1 and 2. This station utilizes the 84th Street interchange to access incidents located along or adjacent to the study-area freeway system. This station is responsible for responding to calls in the core of the Zoo Interchange and the east leg. For calls within the community, emergency service vehicles use 84th Street as a north-south route and Bluemound Road or Wisconsin Avenue as east-west routes.

The City of Wauwatosa is served by the Wauwatosa Fire Department, which consists of full-time paramedics and firefighters providing services from three fire stations. One of the fire stations is located on Watertown Plank Road, 0.35 mile west of US 45. This station utilizes the Watertown Plank Road interchange to access incidents located along the study-area freeway system. For calls within the community, emergency service vehicles use Highway 100 as a north-south route and Wisconsin Avenue as an east-west route.

The City of West Allis is served by the West Allis Fire Department, which consists of full-time paramedics and firefighters providing services from three fire stations. The West Allis Fire Department has a fire station on Highway 100, just south of Greenfield Avenue, housing Engine 1, Medical Unit 1, and Fire Rescue 1. To access incidents located on the freeway, this station utilizes the Highway 100 interchange and the Greenfield Avenue interchange. If the ramps are congested, they drive west to Moorland Road to access the freeway or send services from a station located near National Avenue and 73rd Street, which increases response time. Emergency service vehicles use Greenfield Avenue to access incidents within the community.

A private ambulance service provider is located on 92nd Street in the southeast quadrant of the Zoo Interchange.

The Milwaukee County Sheriff's Office has a patrol substation on Watertown Plank Road, adjacent to Milwaukee County's DPW facility.

Schools

The Milwaukee, Wauwatosa, and West Allis public school districts serve the study area. There are a number of schools, public and private, located within 0.25 mile of the study-area freeway system (**Exhibit 3-22**). Milwaukee Montessori School, a private K-8 school, is located on the east side of US 45, south of Bluemound Road.

There are five public schools in the Wauwatosa school district adjacent to US 45, including the Plank Road School and River Hills School located on Watertown Plank Road and three schools (Whitman Middle School, Eisenhower Elementary, and Wauwatosa West High School) on Center Street. Wauwatosa West, located west of US 45, has athletic fields east of US 45, accessible by way of a pedestrian bridge over the freeway. Wauwatosa West, Whitman, and Eisenhower are traditional schools, where as the Plank Road School provides educational services to children who are placed by the Milwaukee County courts in a nearby residential treatment facility (see St. Charles Youth and Family Services, below).

The River Hills School provides educational services for children who are part of Milwaukee County Children and Adolescent Services Programs.

North of I-94, there are three schools located in the 84th Street/Glenview Avenue corridor: Wisconsin Lutheran High School located south of Bluemound Road, St. Jude the Apostle School located north of Wisconsin Avenue, and Wilson Elementary School located north of Wisconsin Avenue. Pius XI High school is located off of 76th Street, south of Bluemound Road.

In West Allis, there is one public school (Irving Elementary) and two private schools (Good Shepherd's Lutheran School and Lamb of God Lutheran School) in the study area. Lamb of God Lutheran is located on the east side of I-894/US 45, on the north side of Lincoln Avenue. Good Shepherd's Lutheran School is located on 100th Street, on the west side of I-894/US 45. There is no noise wall between the school and the freeway. The school districts in the area either use or cross the study-area freeway system to transport students to school. Students also use the MCTS for their daily commute to school.

Places of Worship

There are 11 churches within 0.25 mile of the study-area freeway system (**Exhibit 3-22**). The churches located closest to the study-area freeway system include St. Mark's Lutheran Church, Church in Milwaukee, St. Therese Catholic Church, Faith United Methodist Church, Good Shepherd's Evangelical Lutheran Church, Greenfield Avenue Presbyterian Church, and Woodlawn Lutheran Church. St. Therese's property abuts US 45 on the west side of the church. Woodlawn Lutheran Church abuts I-894/US 45 at Lincoln Avenue.

Three other churches are across the street from I-94 or US 45: St. Mark's on 95th Street, adjacent to the northbound off-ramp to Bluemound Road; Faith United Methodist Church, on Adler Street; and Good Shepherd's Evangelical Lutheran Church on 100th Street. Greenfield Presbyterian Church is located on 97th Street, less than 300 feet from the Greenfield Avenue exit ramp.

North of I-94, churches located in the 84th Street/Glenview Avenue Corridor include St. Jude the Apostle Church and Calvary Assembly of God.

St. Charles Youth and Family Services

St. Charles Youth and Family Services, Inc. is a non-profit human services agency that provides an array of prevention and intervention services. The agency has a 7.5-acre campus located in the northwest quadrant of the I-94/84th Street interchange. The agency employs more than 250 persons. Services provided at the agency range from mentoring and day treatment to sheltered care with stays up to 60 days.

St. Charles also runs the youth Focus Program, under contract from Milwaukee County Department of Delinquency and Court Services, in the Milwaukee County Child and Adolescent Treatment Center (Buildings E and F), adjacent to US 45. Youth live in Buildings E and F, which are "staff secure Type 2 residential treatment facilities." About 90 percent of the youths in the Focus Program are minority (Milwaukee County Department of Delinquency and Court Services, 2009).

Boy Scouts of America

The Walter and Olive Stiemke Scout Service Center is located in the northeast quadrant of I-94 and 84th Street and is home to the Milwaukee County Council of the Boy Scouts of America and the

Milwaukee Scout Shop, which sells uniforms, apparel, literature, and camping equipment to area scouts. The Milwaukee County Council registers new members, offers leadership training programs, and provides resources such as books, videotapes, and information fliers for local troops.

Milwaukee County Buildings and Facilities

Several Milwaukee County-owned buildings and facilities are located adjacent to US 45 (**Exhibit 3-23**):

- **Milwaukee County DPW.** Milwaukee County DPW maintains a maintenance and storage facility on Watertown Plank Road, west of US 45. The 30-acre facility consists of a material storage yard, fleet storage buildings, administration buildings, a salt dome, and storage space. The east side of the facility, adjacent to US 45, is a surface parking and outdoor vehicle storage area. The surface parking area is heavily used as a park-and-ride lot during summer festivals, including Summerfest and State Fair.
- **Sheriff.** The Sheriff's Department patrol substation is located adjacent to the DPW's facility.
- **Children's Court.** Milwaukee County Children's Court, operated by the Milwaukee County Department of Delinquency and Court Services, is located on the south side of Watertown Plank Road, 500 feet west of US 45.
- **Milwaukee County Parks System Headquarters.** The Milwaukee County Parks System headquarters is located on the north side of Watertown Plank Road, about 1,000 feet east of US 45. This building is on the National Register of Historic Places. See Section 3.25 and Section 4 for more information.
- **Milwaukee County Zoo.** See Section 3.26, Recreational Resources/Public Use Lands.
- **Milwaukee County Child and Adolescent Treatment Center.** The Milwaukee County Department of Delinquency and Court Services operates this center on the east side of US 45 south of Watertown Plank Road. The six buildings in this complex (Buildings A through F) house a UW Extension office, an auditorium, Plank Road School, the Milwaukee Academy, and the County's Focus Program. Parking for the center is on the northwest corner of the buildings adjacent to US 45. Open space, including an unused ball field, is northwest of the parking lot (**Exhibit 3-23**).

Milwaukee Regional Medical Center

Located east of US 45 at Watertown Plank Road, the 250-acre Regional Medical Center is home to several healthcare organizations, including Froedtert Hospital, Children's Hospital of Wisconsin, the Medical College of Wisconsin, Curative Care Network, and the Blood Center of Wisconsin (**Exhibit 3-24**). These organizations combined employ over 10,000 people.

Wisconsin State Fair Park

Wisconsin State Fair Park is located south of I-94, between 84th Street and 76th Street (**Exhibit 3-25**). State Fair Park serves the citizens of Wisconsin by providing a permanent site for the annual State Fair and other programs of civic interest. The State Fair Park Board manages State Fair Park, which is made up of several entities, including:

- The Wisconsin State Fair which runs for eleven days, typically in late July and early August. In 2007, 801,420 people attended the State Fair. In 2011, 911,231 attended.
- The Milwaukee Mile racetrack, which has grandstand seating for approximately 40,000 spectators and hosts auto racing events every year, among other minor events.
- The Wisconsin Exposition Center, which is the state's largest exhibition hall at 200,000 square feet. The facility hosts a variety of consumer and trade shows throughout the year.
- The Pettit National Ice Center, which consists of a 400-meter speed-skating oval, a 450-meter jogging track, and two smaller ice rinks used for hockey, short-track speed skating, and figure skating. The facility seats 3,000 people and attracts approximately 500,000 visitors annually.
- The Tommy G. Thompson Youth Center provides housing for State Fair junior participants exhibiting at the Fair. The center also hosts overnight retreats and youth camps and is used for conferences, public meetings, and banquets.
- The RV Park is open year-round and provides 70 full-service RV hook-ups.
- The DNR Woodland Preserve, which features a park-like area with mature trees, a stream, pathways, and two enclosed pavilions on either end of the park that can be rented.

The area of State Fair Park that directly borders I-94 includes the fair parking lot, park sign, RV Park, and park-and-ride lot. The State Fair Park Board owns the parking lot adjacent to I-94 and is interested in developing the portion of the parking lot closest to I-94.

The 84th Street interchange and Greenfield Avenue interchange are the key freeway access points to the fairgrounds during the State Fair. Fairgoers that exit I-94 at 84th Street are directed east along the frontage road on the south side of I-94 to 76th Street, then south on 76th Street, creating a clockwise pattern around the fairgrounds.

3.8.2 Institutional and Public Service Impacts

Fire, Ambulance, and Police Protection

No-Build Alternative. The No-Build Alternative would not impact fire, ambulance, or police services within the study-area.

Modernization Alternatives. The Milwaukee Fire Department expressed some concern about accessing I-94 westbound from 84th Street under Alternative E1. The Texas U-turn arrangement would add 1 mile to the fire department's trip, increasing response time. The Modified E3 Alternative would not impact the Milwaukee Fire Department and would provide more conventional I-94 access than the E1 Alternative. Other effects on emergency services are not anticipated. All emergency services and access for these services will be maintained during construction.

Reduced Impacts Alternative. The Reduced Impacts Alternative would not impact fire, ambulance, or police services within the study area. The extension of Swan Boulevard to the intersection of Watertown Plank Road at Innovation Drive may decrease the time it takes the Wauwatosa Fire Department to respond to emergencies north of Watertown Plank

Road. All emergency services and access for these services will be maintained during construction.

Adjacent Arterials Component. The Adjacent Arterials Component would not impact fire, ambulance, or police services within the study area. All emergency services and access for these services will be maintained during construction.

Schools

No-Build Alternative. The No-Build Alternative would not impact study-area schools.

Modernization Alternatives. Under both the 6-lane and 8-lane Modernization Alternatives, the Bluemound Road northbound off-ramp from US 45 would cross the Milwaukee Montessori School property west of the school's building. Alternative N1 would acquire between 0.8 acre (6-lane) and 1.0 acre (8-lane) from the school playground. Both the 6-lane and 8-lane N3 Alternatives would acquire 0.5 acre from the school playground. Swing sets and part of the playground open space would be affected. The school's ability to attract younger students could decrease if the freeway is shifted closer to the school, according to school officials, because of green space loss and increased noise. The alternatives would not require relocating the school.

None of the Modernization Alternatives would require buying land from Wauwatosa West High School, Whitman Elementary, Plank Road School, or River Hills School (located adjacent to US 45 in the Child and Adolescent Treatment Center). The pedestrian overpass over US 45, between Wauwatosa West and Whitman, would be left in place or replaced.

Good Shepherd's Lutheran School would be between 90 and 100 feet from the southbound exit to Greenfield Avenue. Currently, the school is between 105 and 135 feet from the ramp.

Lamb of God Lutheran School's playground is about 25 feet from the northbound entrance to I-894/US 45 from Lincoln Avenue. After reconstruction, the ramp would be approximately 35 feet from the playground. At the north end of the school's lot, the ramp would be approximately 10 feet farther from the school's parking lot/playground than it is today.

Access to the study-area schools will remain as it is today. No changes in school district boundaries are anticipated as a result of the proposed action.

Reduced Impacts Alternative. Under the Reduced Impacts Alternative, the Bluemound Road northbound off-ramp from US 45 would cross the Milwaukee Montessori School property west of the school's building and acquire 0.4 acre from the school playground (reduced from 0.6 acre in the Supplemental Draft EIS). The ramp would be moved as close as possible to the northbound lanes of US 45 while allowing for room for the necessary retaining walls. One retaining wall would be required between US 45 and the off ramp because US 45 is lower and a second retaining wall would be required between the off ramp and the adjacent land of the Montessori School because the ramp would be lower. There would be a barrier on the top of the wall to protect the drop off and WisDOT would coordinate with the Montessori School on the design of the barrier on top of the retaining wall.

Swing sets and part of the playground open space would be affected. The school's ability to attract younger students could decrease if the freeway is shifted closer to the school,

according to school officials, because of green space loss and increased noise. This alternative would not require relocating the school.

The Reduced Impacts Alternative would not require buying land from Wauwatosa West High School, Whitman Elementary, Plank Road School, or River Hills School, adjacent to US 45 in the Child and Adolescent Treatment Center. The pedestrian overpass over US 45, between Wauwatosa West and Whitman, would be left in place or replaced.

Good Shepherd's Lutheran School would be between 90 and 95 feet from the southbound exit to Greenfield Avenue. Currently, the school is between 105 and 135 feet from the ramp.

Lamb of God Lutheran School's playground is about 25 feet from the northbound entrance to I-894/US 45 from Lincoln Avenue. After reconstruction, the ramp would be approximately 35 feet from the playground. At the north end of the school's lot, the ramp would be approximately 10 feet further from the school's parking lot/playground than it is today.

The Reduced Impacts Alternative would acquire 1.5 acres from the Wisconsin Lutheran College's athletic complex located north of the Milwaukee County Department of Public Works in the northwest quadrant of the US 45 interchange at Watertown Plank Road. The new right-of-way acquisition would not affect the use of the athletic fields. The existing access to the athletic fields would be restricted at Watertown Plank Road and a new access would be created off the extension of Swan Boulevard to the southwest.

Access to the other study area schools will remain as it is today. No changes in school district boundaries are anticipated as a result of the proposed action.

Adjacent Arterials Component. Under the Adjacent Arterials Component, less than 0.01 acre may be acquired from the Wisconsin Lutheran High School on 84th Street. St. Jude the Apostle's School would be no closer to Glenview Avenue than it is today. A two-way left-turn lane would be provided on Glenview Avenue in front of St. Jude. Wilson Elementary School would not be affected.

Access to the study area schools will remain as it is today. No changes in school district boundaries are anticipated as a result of the proposed action.

Places of Worship

No-Build Alternative. The No-Build Alternative would not impact places of worship in the study area.

Modernization Alternatives. All of the Modernization Alternatives would acquire property from St. Therese Church on the east side of US 45 on Bluemound Road. The off-ramp from US 45 to Bluemound Road would cross the St. Therese Church property, west of the church building. The 6-lane N1 Modernization Alternative would acquire about 1.3 acres from the church property while the 8-lane N1 Modernization Alternative would acquire 1.4 acres from the church property. Alternative N3 would acquire between 0.8 acre (6-lane) and 1.1 acres (8-lane) from the church. Potential effects from the loss of church property include less area for the parish festival and seasonal Christmas tree sales. Other concerns identified by the church include increased noise from the closer proximity of the ramp, and changes to available parking along Bluemound Road.

St. Mark's Lutheran Church would not be directly affected. All the Modernization Alternatives would remove the Bluemound Road exit ramp from US 45, which is currently across the street from the church. Under Modernization Alternative N1, 95th Street would no longer be a through street; a cul-de-sac would be built at the north end. A new service road would replace the exit ramp to Bluemound Road and would connect to 95th Street across from the church. Under Modernization Alternative N3, 95th Street would remain a through street but would not connect to the new service road.

Faith United Methodist Church would not be directly affected by any of the Modernization Alternatives. Adler Street would remain in its current location in front of the church. Under Alternative E1, the church building would be about 130 feet from the freeway (compared to 160 feet today). Under the E1/E3 Hybrid Alternative, the church building would be 105 feet from the freeway. Under the Modified E3 Alternative, the church building would be approximately 85 feet from the freeway. Further east of the church, the 84th Street exit ramp would require Adler Street to be aligned to the south, resulting in several residential relocations.

Good Shepherd's Evangelical Lutheran Church is north of the Good Shepherd's School. Under all the Modernization Alternatives, I-894/US 45 would be about 100 to 110 feet from the church, compared to about 170 feet today. Unlike Good Shepherd's School, there is currently a noise wall between the freeway and church.

Woodlawn Lutheran Church on Lincoln Avenue would not be any closer to US 45 or the entrance ramp than it is today.

The Church in Milwaukee and Martin Luther Lutheran Church would not be affected.

Reduced Impacts Alternative. The Reduced Impacts Alternative would acquire property from St. Therese Church on the east side of US 45 on Bluemound Road. The off-ramp from US 45 to Bluemound Road would cross the St. Therese Church property, west of the church building and would acquire approximately 1.0 acre from the church property. Potential effects from the loss of church property include less area for the parish festival and seasonal Christmas tree sales. Other concerns identified by the church include increased noise from the closer proximity of the ramp, and changes to available parking along Bluemound Road.

St. Mark's Lutheran Church would not be directly affected. The Reduced Impacts Alternative would remove the existing Bluemound Road exit ramp that is currently across the street from the church. The exit ramp from US 45 would move to the south side of Bluemound Road. Under the Reduced Impacts Alternative, 95th Street would remain a through street.

Faith United Methodist Church would not be directly affected by the Reduced Impacts Alternative. Adler Street would remain in its current location in front of the church. Under the Reduced Impacts Alternative, the church building would be about 90 feet from the freeway (compared to 160 feet today).

Good Shepherd's Evangelical Lutheran Church is north of the Good Shepherd's School. Under the Reduced Impacts Alternative, I-894/US 45 would be about 95 to 105 feet from the church, compared to about 170 feet today.

Woodlawn Lutheran Church on Lincoln Avenue would not be any closer to US 45 or the entrance ramp than it is today.

The Church in Milwaukee and Martin Luther Lutheran Church would not be affected.

Adjacent Arterials Component. Under the Adjacent Arterials Component, 0.04 acre would be acquired from Calvary Assembly of God on 84th Street. St. Jude the Apostle Church would not be closer to Glenview Avenue than it is today.

St. Charles Youth and Family Services

No-Build Alternative. The No-Build Alternative would not impact the St. Charles Youth and Family Services Agency.

Modernization Alternatives. The east leg Modernization Alternatives would not directly impact the St. Charles Youth and Family Services property on 84th Street. The E1/E3 Hybrid and Modified E3 Alternatives would result in I-94 being moved closer to the school property. St. Charles staff did not indicate a concern over either east leg Modernization Alternative, but asked that their outdoor play equipment be moved further from the freeway under the E1/E3 Hybrid Alternative. St. Charles staff noted that any increase in traffic on southbound 84th Street approaching I-94 would block their driveway, causing difficulty for their students crossing 84th Street to and from the bus stop.

Both N1 and N3 Alternatives would require acquisition of Building F, which houses the Focus Program, adjacent to US 45. The youth services Milwaukee County/St. Charles provide in this building would need to be relocated.

Reduced Impacts Alternative. The east leg of the Reduced Impacts Alternative would not directly impact the St. Charles Youth and Family Services property on 84th Street, but it would result in I-94 being moved closer to the school property.

The Reduced Impacts Alternative would not acquire Building F, which houses the Focus Program, adjacent to US 45. The youth services Milwaukee County/St. Charles provide in this building would not need to be relocated.

Adjacent Arterials Component. The Adjacent Arterials Component would not impact the St. Charles Youth and Family Services Agency.

Boy Scouts of America

No-Build Alternative. The No-Build Alternative would not impact the Walter and Olive Stiemke Scout Service Center.

Modernization Alternatives. The Walter and Olive Stiemke Scout Service Center would not be relocated under Modernization Alternatives E1, the E1/E3 Hybrid, or the Modified E3 Alternatives, but about 0.1 to 0.2 acre would be acquired from the south side of the property under all the Modernization Alternatives. O'Connor Street would be about 12 to 35 feet from the south side of the scout building, compared to 45 feet today.

Reduced Impacts Alternative. The Walter and Olive Stiemke Scout Service Center would not be relocated, but about 0.2 acre would be acquired from the south side of the property. O'Connor Street would be about 25 feet from the south side of the scout building, compared to 45 feet today.

Adjacent Arterials Component. The Adjacent Arterials Component would not impact the Walter and Olive Stiemke Scout Service Center.

Milwaukee County Buildings and Facilities

No-Build Alternative. The No-Build Alternative would not impact any Milwaukee County DPW, Sheriff's Department, Children's Court, or Child and Adolescent Treatment Center buildings on Watertown Plank Road.

Modernization Alternatives. The Modernization Alternatives would affect Milwaukee County buildings and facilities to varying degrees:

- **Milwaukee County DPW.** Both the 6- and 8-lane Modernization Alternatives would acquire between 2.5 acres (Alternative N3) and 2.9 acres (Alternative N1) from an area currently used as surface parking and outdoor vehicle storage. The surface parking area is heavily used as a park-and-ride lot during summer festivals, including Summerfest and State Fair Park.
- **Sheriff.** The Sheriff's Department patrol substation would not be affected by either the 6-lane or 8-lane Modernization Alternatives.
- **Children's Court.** Milwaukee County Children's Court would not be affected by either the 6-lane or 8-lane Modernization Alternatives.
- **Milwaukee County Parks System Headquarters.** The Milwaukee County Parks System headquarters will not be directly affected by either to the 6-lane or 8-lane Modernization Alternatives. The northbound entrance ramp from Watertown Plank Road to US 45 would be approximately 500 feet west of the building, compared to approximately 1,000 feet today. Watertown Plank Road would be approximately 220 feet from the south face of the building, compared to 320 feet today. See Section 3.25 and Section 4 for more information.
- **Milwaukee County Zoo.** See Section 3.26, Recreational Resources/Public Use Lands.
- **Milwaukee County Child and Adolescent Treatment Center.** One of the six buildings in this complex (Building F, see **Exhibit 3-23**) would be relocated under both the 6-lane and 8-lane Modernization Alternatives. Building F is one of two buildings that house the Focus Program. The open space would also be acquired as would a portion of a parking lot used by the Child and Adolescent Treatment Center.

Reduced Impacts Alternative. The Reduced Impacts Alternative would affect the following Milwaukee County buildings and facilities:

- **Milwaukee County DPW.** The Reduced Impacts Alternative would acquire approximately 1.6 acres from an area currently used as surface parking and outdoor vehicle storage. The surface parking area is heavily used as a park-and-ride lot during summer festivals, including Summerfest and State Fair. The extension of Swan Boulevard to the Watertown Plank Road intersection at Innovation Drive would acquire an additional 8.5 acres from the site including the relocation of Milwaukee County owned greenhouses, salt dome, and fueling facility. A new access point to the property **would be provided** from Innovation Drive approximately 600 feet north of Watertown Plank Road.
- **Sheriff.** The Sheriff's Department patrol substation access would be affected by the Reduced Impacts Alternative. The eastern driveway would be closed and the western driveway would not accommodate eastbound left turns.

- **Children's Court.** Milwaukee County Children's Court access would be affected by the Reduced Impacts Alternative. All access to the site would be right-in and right-out.
- **Milwaukee County Parks System Headquarters.** The Milwaukee County Parks System headquarters will not be directly affected by the Reduced Impacts Alternative. The northbound entrance ramp from Watertown Plank Road to US 45 would be approximately 430 feet west of the building, compared to approximately 1,000 feet today. Watertown Plank Road would be approximately 290 feet from the south face of the building, compared to 320 feet today. See Section 3.25 and Section 4 for more information.
- **Milwaukee County Zoo.** See Section 3.26, Recreational Resources/Public Use Lands.
- **Milwaukee County Child and Adolescent Treatment Center.** None of the six buildings in this complex (**Exhibit 3-23**) would be relocated under the Reduced Impacts Alternative. However, access to the Milwaukee County Child and Adolescent Treatment Center would be affected. All access to the site would be right-in and right-out under the Reduced Impacts Alternative.

Adjacent Arterials Component. The Adjacent Arterials Component would not impact any Milwaukee County DPW, Sheriff's Department, Children's Court, or Child and Adolescent Treatment Center buildings on Watertown Plank Road.

Milwaukee Regional Medical Center

No-Build Alternative. The No-Build Alternative would not impact the institutions located in the Regional Medical Center.

Modernization Alternatives. The 6-lane and 8-lane Modernization Alternatives would not affect the institutions in the Regional Medical Center.

Reduced Impacts Alternative. The Reduced Impacts Alternative would not impact the institutions located on the Regional Medical Center grounds.

Adjacent Arterials Component. The Adjacent Arterials Component would not impact the institutions located on the Regional Medical Center grounds.

Wisconsin State Fair Park

No-Build Alternative. The No-Build Alternative would not impact State Fair Park.

Modernization Alternatives. All the Modernization Alternatives would acquire some land from the Wisconsin State Fair Park/Pettit Center parking lot adjacent to I-94 and the park's main signage visible from the freeway (**Exhibit 3-25**). The State Fair Park Board has indicated that easy freeway access and traffic circulation patterns for their patrons are important factors (Appendix D, page D-33 and Appendix F, page F-23). Preserving their parking lot for parking and special events is also important to the State Fair Park Board. The Board prefers the E1/E3 Hybrid Modernization Alternative because it impacts the least right-of-way and most closely replicates the existing State Fair ingress and egress patterns. The Wisconsin Exposition Center (Appendix D, page D-59) and Pettit National Ice Center also prefer the E1/E3 Hybrid Alternative.

6-lane E1 Alternative. Approximately 6.6 acres would be acquired from the State Fair Park/Pettit Center parking lot along I-94, removing approximately 830 parking spaces. State

Fair Park's current traffic flow pattern could remain in place for patrons arriving at the fair via I-94. Patrons exiting the fair via 84th Street to I-94 would use the Texas U-turn arrangement and travel east to 76th Street, turn around on the service drive, and then enter I-94 westbound.

The combined service drive option would reduce the State Fair Park/Pettit Center right-of-way acquisition to approximately 4.0 acres, or 440 parking spaces from the Pettit Center and State Fair Park.

8-lane E1 Alternative. Approximately 7 acres would be acquired from the State Fair Park/Pettit Center parking lot, representing approximately 850 parking spaces (730 parking spaces from State Fair Park and 120 from the Pettit Center). Traffic flow issues would be the same as the 6-lane E1 Alternative. Additional freeway capacity would improve freeway traffic operations during the State Fair and other fairground events.

The combined service drive option would reduce the State Fair Park right-of-way acquisition to approximately 4.3 acres, or 480 parking spaces (430 parking spaces from the Pettit Center and 50 from the Pettit Center).

6-lane E1/E3 Hybrid Alternative. Approximately 5.3 acres would be acquired from the State Fair Park/Pettit Center parking lot along I-94, removing approximately 630 parking spaces. This alternative would allow the existing ingress patterns to remain intact.

8-lane E1/E3 Hybrid Alternative. Approximately 5.7 acres would be acquired from the State Fair Park/Pettit Center parking lot along I-94. This represents approximately 700 parking spaces (600 parking spaces from the State Fair Park and 100 from the Pettit Center). The combined service drive option would reduce the parking impact to approximately 285 parking spaces (270 parking spaces from State Fair Park and 15 parking spaces from the Pettit Center). This alternative would allow the existing ingress patterns to remain intact.

Modified E3 Alternative. Approximately 1.6 acres would be acquired from the State Fair Park/Pettit Center parking lot along I-94. This represents approximately 200 parking spaces (190 parking spaces from the State Fair Park and 10 from the Pettit Center). This alternative would allow the existing ingress and egress patterns to remain intact.

Reduced Impacts Alternative. The Reduced Impacts Alternative would acquire the park's main sign and approximately 2.7 acres from the State Fair Park/Pettit Center parking lot along I-94 (**Exhibit 3-25**). This represents approximately 330 parking spaces (300 parking spaces from the State Fair Park and 30 from the Pettit Center). This alternative would allow the existing ingress and egress patterns to remain intact. The State Fair Park Board has indicated that easy freeway access and traffic circulation patterns for their patrons are important factors (Appendix D, page D-33). This was one of the reasons for developing the Reduced Impacts Alternative.

Adjacent Arterials Component. The Adjacent Arterials Component would not impact State Fair Park.

3.8.3 Measures to Mitigate Adverse Institutional and Public Services Impacts

WisDOT and FHWA will fairly compensate schools, churches, Milwaukee County, and State Fair Park for buildings or land acquired as part of the project.

WisDOT and FHWA will work with State Fair Park Board and Pettit Center Board to develop options for replacing lost parking space, including construction of parking structures.

Milwaukee County may move its Focus Program out of the building that would be relocated under Modernization Alternatives N1 and N3, regardless of whether WisDOT acquires the building for US 45 reconstruction. WisDOT and FHWA will develop appropriate mitigation in conjunction with Milwaukee County. Finding a suitable off-site replacement location for the services Milwaukee County/St. Charles provide to at-risk youth in the Child and Adolescent Treatment Center would be difficult.

To minimize the amount of land required from institutional properties along the freeway corridor, service interchanges were designed with ramps that are located as close to the freeway mainline as possible.

3.9 Socioeconomic Characteristics

3.9.1 Affected Environment

Population Levels and Trends

Population in Waukesha and Milwaukee Counties grew 8.1 percent and 0.8 percent, respectively, between 2000 and 2010, while the cities of Brookfield, Elm Grove, Wauwatosa, West Allis, and Milwaukee had population declines of up to 5 percent over the same period (Table 3-6).

Demographic information on Waukesha County has been included because the west project terminus is 124th Street, which is the boundary between Milwaukee and Waukesha Counties. The data collection was based on a 1-mile buffer of the study area. As a result, information for Waukesha County, the Village of Elm Grove, and the City of Brookfield is provided. Some 2010 census data is available and has been added to this section. However, some data on income, age, and detailed population has not yet been released by the Census Bureau.

TABLE 3-6
Area City/County Population 1990–2010

Area	Population 1990	Population 2000	Population 2010	Population Growth 2000-2010
Milwaukee	628,088	596,974	594,833	-0.4%
Wauwatosa	49,366	47,271	46,396	-1.9%
West Allis	63,221	61,254	60,411	-1.4%
Elm Grove	6,261	6,249	5,934	-5.0%
Brookfield	35,184	38,649	37,920	-1.9%
Milwaukee County	959,275	940,164	947,735	0.8%
Waukesha County	304,715	360,767	389,891	8.1%

Source: US Census Bureau, 2010

All of the communities within the study area experienced a population decrease between 2000 and 2010, mostly due to a decline in household size (see Table 3-7).

TABLE 3-7
Study Area Population

Area	Population 1990	Population 2000	Population 2010	Population Growth 2000-2010
Milwaukee	24,141	23,454	23,524	-0.0%
Wauwatosa	29,570	29,039	27,412	-5.6%
West Allis	41,747	40,938	39,556	-3.4%
Elm Grove	3,706	3,633	3,488	-4.0%
Brookfield	5,966	5,799	5,678	-2.1%

Source: US Census Bureau, 2010 block groups

In 2010, minorities accounted for 12.4 percent of the population within the study-area freeway system limits; 9.0 percent within a 1-mile buffer of the freeway centerline; and 14.3 percent within a 500-foot buffer from the freeway centerline (see Table 3-8). Conversely, 39.4 percent of Milwaukee County's population was minority in 2010. Between 2000 and 2010, the minority population in Milwaukee County and Waukesha County has grown annually by approximately one-half percent and 2.2 percent, respectively. Within study-area communities, minority populations have experienced differing levels of annual growth, from 0.08 percent in the City of Milwaukee to 5.2 percent in the City of West Allis. In Milwaukee County, the largest minority population is African American, with 26.8 percent of the population. Hispanics, at 4.1 percent, are the largest minority population in Waukesha County and within the study area population (see Table 3-9 and Exhibit 3-26).

TABLE 3-8
Study Area Minority Population 1990-2010

	1990 Minority Population	2000 Minority Population	2010 Minority Population	Annual Percent Change 2000-2010
Milwaukee City	246,374 (39.2%)	325,985 (54.6%)	328,494 (55.2%)	0.08%
Wauwatosa	1,686 (3.4%)	3,336 (7.1%)	4,822 (10.4%)	3.8%
West Allis	1,791 (2.8%)	4,822 (7.9%)	8,015 (13.2%)	5.2%
Elm Grove	165 (2.6%)	228 (3.6%)	274 (4.6%)	1.9%
Brookfield	1,304 (3.7%)	2,598 (6.7%)	3,806 (10.0%)	3.9%
Milwaukee County	260,411 (27.1%)	356,683 (37.9%)	373,079 (39.4%)	0.5%
Waukesha County	9,860(3.2%)	20,862 (5.8%)	25,928 (6.7%)	2.2%
3x5 mile	-	8,826 (10.2%)	11,204 (12.4%)	2.4%
1-mile radius	-	4175 (7.6%)	4,862 (9.0%)	1.5%
500-foot radius	-	683 (12.1%)	666 (14.3%)	-0.3%

Source: US Census Bureau, 2010

TABLE 3-9
Population by Race, 2010

Area	White	Black or African-American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some Other Race ^a	Two or More Races	Hispanic or Latino (of any race)	Total Population ^b
Wisconsin	4,902,067 (86.2%)	359,148 (6.3%)	54,526 (1.0%)	129,234 (2.3%)	1,827 ($<0.1\%$)	135,867 (2.4%)	104,317 (1.8%)	336,056 (5.9%)	5,686,986
Waukesha County	353,114 (90.6%)	4,726 (1.2%)	863 ($<0.1\%$)	10,675 (2.7%)	117 ($<0.1\%$)	252 ($<0.1\%$)	4,021 (1.0%)	16,123 (4.1%)	389,891
Milwaukee County	574,656 (60.6%)	253,764 (26.8%)	6,808 (0.7%)	32,422 (3.4%)	363 ($<0.1\%$)	51,429 (5.4%)	28,293 (3.0%)	126,039 (13.3%)	947,735
Study Area									
3x5 Mile	79,406 (87.7%)	4,535 (5.0%)	574 (0.1%)	2,301 (2.5%)	47 ($<0.1\%$)	1,429 (1.6%)	2,218 (2.5%)	4,791 (5.3%)	90,510
1-mile radius	47,624 (88.6%)	1,950 (3.6%)	395 (0.1%)	1,457 (2.7%)	28 ($<0.1\%$)	1,032 (1.9%)	1,296 (2.4%)	2,433 (4.5%)	53,782
500-foot radius	3,879 (85.3%)	276 (6.0%)	21 (0.4%)	264 (5.8%)	7 ($<0.1\%$)	98 (2.1%)	106 (2.3%)	315 (6.9%)	4,545

^a Includes all other responses not included in the "White," "Black or African American," "American Indian and Alaska Native," "Asian," and "Native Hawaiian and Other Pacific Islander" race categories described above. Respondents providing write-in entries such as multiracial, mixed, interracial, "Wesort," or a Hispanic/Latino group (for example, Mexican, Puerto Rican, or Cuban) in the "Some Other Race" category are included here.

^b Totals may not reflect the exact sum of the numbers in each column due to identification of self as more than one race.

Source: U.S. Census Bureau, 2010.

Population projections prepared by the Wisconsin Department of Administration anticipate population growth in all study-area communities, except Elm Grove. Elm Grove is expected to experience a 10 percent population decline between 2000 and 2025 (see **Table 3-10**). Brookfield and West Allis are expected to experience the most growth with a 7 percent increase between 2000 and 2025. Waukesha and Milwaukee counties are projected to grow by 18 and 9 percent, respectively.

TABLE 3-10
Projected Population 2000–2025

Community	2000 Population	2025 Population Projection	Increase (Decrease)	Percent Change
Milwaukee	596,974	622,738	25,764	4%
Wauwatosa	47,271	47,518	247	$<1\%$
West Allis	61,254	65,238	3984	7%
Elm Grove	6,249	5,597	(652)	-10%
Brookfield	38,649	41,179	2,530	7%
Milwaukee County	940,164	1,021,406	81,242	9%
Waukesha County	360,767	424,472	63,705	18%

Source: U.S. Census Bureau (2000)

Households

The number of households in the region has increased at a higher rate than population growth and is expected to continue. However, the average household size is expected to continue its historic decline, with a somewhat moderate rate of decline in the coming decades (SEWRPC, 2004b). The number of households influences the number of trips made in the region. Between 2000 and 2035, the number of households in Milwaukee County is expected to increase 13 percent and by 29 percent in Waukesha County.

Income

Based on 2000 Census data, the median household income in the corridor was higher than the average median household income for Milwaukee and Waukesha counties, and was higher than the statewide median (see **Table 3-11**).

TABLE 3-11
Median Household Income (2000)

Community	Median Household Income
Milwaukee and Waukesha County	\$45,956
Milwaukee County	\$39,346
Waukesha County	\$64,570
Wisconsin	\$43,791
3.5- by 5-mile box	\$47,371
1-mile radius	\$48,070
500-foot radius	\$46,556

Source: Department of Administration Demographic Services Center

Following the Office of Management and Budget's Statistical Policy Directive 14, the Census Bureau uses a set of income thresholds that vary by family size and composition to determine who is in poverty. If a family's total income is less than the family's threshold, then individuals in that family are considered to be in poverty. The official poverty thresholds do not vary geographically, but they are updated for inflation using the Consumer Price Index. For example, in 2007, a family of four with two children under the age of 18 would be considered in poverty if the family's total income was less than \$21,027 (U.S. Census Bureau, 2008).

The percentage of persons living in poverty is lower in the project corridor than it is in Milwaukee County and Waukesha County. **Exhibit 3-27** shows the density of persons living in poverty. Roughly 5 percent of people living within 1 mile of the study-area freeway system are in poverty, compared to an average of 12 percent of people in Milwaukee County and Waukesha County.

School Demographics

Five Wauwatosa School District schools are located adjacent to the study corridor. The information below was obtained from Wisconsin's Information Network for Successful Schools, 2009 and 2010. Students attending Wauwatosa West High School and Whitman Middle School display race and income characteristics that differ from the surrounding neighborhoods.

- During the 2008-2009 school year Wauwatosa West High School students were 70 percent white, 20 percent African American, 4 percent Hispanic, and 5 percent Asian American.
- In the 2008-2009 school year, Whitman Middle School students were 70 percent white, 16 percent African American, 9 percent Asian American, and 5 percent Hispanic. Approximately 15 percent of students at both schools are eligible for subsidized lunches. Eligibility is based on a student's household income.
- In the 2008-2009 school year, 13 students were enrolled at Plank Road School. Approximately 92 percent of the students were African American and 8 percent were white while approximately 85 percent of the students were eligible for subsidized lunches.
- During the 2009-2010 school year there were 285 students enrolled at Wilson Elementary School. Approximately 72 percent of the students were white, 15 percent African American, 7 percent Asian, and 6 percent Hispanic. About 12 percent of the students are eligible for subsidized lunches.
- No recent data was provided for the River Hills School, located in the Milwaukee County Mental Health Center.

One school in the West Allis-West Milwaukee School District is located near the Zoo Interchange study area. Irving Elementary School is located approximately 300 feet west of the southbound I-894/US 45 exit ramp at Lincoln Avenue. The school displays race and income characteristics that differ from the surrounding neighborhoods. Students of Irving Elementary School are 69 percent white, 17 percent Hispanic, 7 percent African American, and 7 percent Asian American. Approximately 44 percent of the students are eligible for subsidized lunches (Wisconsin's Information Network for Successful Schools, 2009).

There are five private schools located adjacent to the proposed improvements. Nine percent of the students at Lamb of God Evangelical Lutheran School, located adjacent to I-894/US 45 in West Allis, are non-white, while three percent of students enrolled at Good Shepherd's Evangelical Lutheran School are minority (Private School Review, 2008). At Wisconsin Lutheran High School, located east of 84th Street and north of I-94, 17 percent of the students are non-white. At St. Jude the Apostle School, also located east of 84th Street, 8 percent of the students are non-white (Private School Review, 2010). At Pius XI High School, located on 76th Street, 24 percent of the students are non-white (Private School Review, 2010).

The St. Charles Youth and Family Services complex on 84th Street is home to three different schools, including a Milwaukee Public Schools alternative school. The intensive day treatment program, the youth and family exceptional education program, and the behavioral program had a combined total of 62 students during the 2008-2009 school year. Of the total students, 87 percent are African American; 8 percent are Hispanic; and 5 percent are white. Sixty-eight percent of the students at the schools are eligible for subsidized lunches (Wisconsin's Information Network for Successful Schools, 2009). These race and income characteristics differ from the surrounding neighborhoods.

The Milwaukee Montessori School is the one private school located in the City of Milwaukee that is adjacent to the Zoo Interchange study corridor. Thirty-five percent of the school's enrollment is minority.

Non-English Speaking

No non-English speaking population was identified during public outreach activities.

Employment

Table 3-12 shows the historic and projected employment for Milwaukee and Waukesha counties, based on SEWRPC data. The table compares employment growth between 1970 and 2000, and potential growth between 2000 and 2035. The projected employment outlook for Milwaukee County is anticipated to slow, while the projected employment in Waukesha County is expected to continue to grow. Milwaukee County is expected to add 300 jobs between 2000 and 2035, while Waukesha County is expected to add 76,400 jobs. Milwaukee County's employment is expected to remain steady and continue to be an employment hub for southeast Wisconsin.

TABLE 3-12
Historic and Projected Employment for Milwaukee and Waukesha Counties

Employment Estimates	1980	1990	2000	2035	Difference 2000–2035	Percent Change 2000–2035
Milwaukee County	583,200	609,800	624,600	624,900	300	<1%
Waukesha County	132,800	189,700	270,800	347,200	76,400	28%

Source: SEWRPC. The Economy of Southeastern Wisconsin, Technical Report No. 10, 4th Edition, July 2004. 2035 Projection represents the SEWRPC's intermediate projection for employment.

Table 3-13 shows the distribution of jobs between various sectors of the economy from 1990 to 2000. Milwaukee County's job loss in agriculture, construction, manufacturing, wholesale and retail trade, finance, insurance, and real estate has been offset by an increase in transportation, communication and utilities, service, and other sector employment, for a modest overall increase in the number of jobs between 1990 and 2000. In Waukesha County, most sector jobs increased, while the percentage of agriculture jobs declined between 1990 and 2000. Job loss in agriculture has been offset by an increase in every other sector of employment, contributing to an overall increase in the number of jobs between 1990 and 2000.

TABLE 3-13
Job Distribution

Industry Sector	1990		2000		Percent Change 1990–2000
	Number	Percent of Total	Number	Percent of Total	
Milwaukee County					
Agriculture	266	<1%	128	<1%	-52%
Construction	18,859	3%	17,813	3%	-6%
Manufacturing	110,768	18%	90,010	14%	-19%
Transportation, Communication, and	29,467	5%	34,299	5%	16%

TABLE 3-13
Job Distribution

Industry Sector	1990		2000		Percent Change 1990–2000
	Number	Percent of Total	Number	Percent of Total	
Utilities					
Wholesale Trade	30,405	5%	27,912	4%	-8%
Retail Trade	103,307	17%	92,746	15%	-10%
Finance, Insurance, and Real Estate	54,337	9%	52,627	8%	-3%
Services	196,657	32%	242,826	39%	23%
Government and Government Enterprises	63,452	10%	63,291	10%	0%
Other	2,269	<1%	2,987	<1%	32%
Total Employment	609,787	100%	624,639	100%	2%
Waukesha County					
Agriculture	1,191	<1%	1,011	<1%	-15%
Construction	12,679	7%	18,462	7%	46%
Manufacturing	44,871	24%	56,754	21%	26%
Transportation, Communication, and Utilities	8,185	4%	9,516	4%	16%
Wholesale Trade	16,128	9%	22,508	8%	40%
Retail Trade	31,054	16%	43,132	16%	39%
Finance, Insurance, and Real Estate	13,131	7%	22,340	8%	70%
Services	46,293	24%	76,265	28%	65%
Government and Government Enterprises	13,994	7%	17,059	6%	22%
Other	2,135	1%	3,749	1%	76%
Total Employment	189,661	100%	270,796	100%	43%

Source: SEWRPC. The Economy of Southeastern Wisconsin, Technical Report No. 10, 4th Edition, July 2004.

Transportation

In Milwaukee County, 28,363 workers, or 4.5 percent of workers, use public transportation as a means to commute to work. Conversely 1,134 workers, or less than 1 percent, use public transportation as a means to commute to work in Waukesha County. Of the workers that live within a 1-mile radius of the study-area freeway system, 640, or 2 percent, use public transportation.

In Milwaukee County, 31,505 workers, or 5 percent of workers, have no vehicle available for commuting, while in Waukesha County, 2,482 workers, or 1 percent, are in the same situation. There are 763 workers, or 3 percent, within a 1-mile radius of the study-area freeway system that have no vehicle available for commuting.

Health Condition

Some groups have raised concerns about the potential health-related impacts to residents living near freeways and other high-volume roads, primarily from airborne pollutants emitted from motor vehicle engines and other sources. Data on community health is typically aggregated at the county level and difficult to find below the county level.

Carbon monoxide may reduce the amount of oxygen distributed throughout the body by the blood stream. Nitrogen oxides are one of the main precursors in the formation of ground-level ozone and may affect the delicate structure of lung tissue. Fine particulate matter can penetrate the sensitive respiratory tract and affect health. Sensitive individuals may be affected by low-level pollutant exposure. All three of these pollutants are emitted from vehicle engines, among other sources (see Section 3.20, Air Quality).

WisDOT and FHWA investigated asthma rates, which are related to air quality. Asthma rates for Milwaukee County are higher than that of the State of Wisconsin. According to the Wisconsin Department of Health and Family Services, Milwaukee County's asthma prevalence value is 13.6 percent, compared to the 12.1 percent rate for the State of Wisconsin. In 2005, Milwaukee County had the highest rate of asthma-related emergency room visits and hospitalizations in the state. According to the National Center for Health Statistics, the asthma mortality rate for Milwaukee County is 17.3 deaths per million, the highest of Wisconsin's 72 counties. This is compared to an asthma mortality rate of 13.2 deaths per million for the entire State of Wisconsin (Wisconsin Asthma Coalition, 2007).

Age

The median age for Milwaukee County is less than the Wisconsin statewide median age, while the median age in Waukesha County is higher than the statewide median. According to 2000 Census data, the median age in Wisconsin is 36.0. The median age in Milwaukee and Waukesha counties are 33.7 and 38.1, respectively. Additionally, 74.5 percent of the population in Wisconsin is age 18 and over, while the population of age 65 and over is 13.1 percent. Both Milwaukee and Waukesha counties have higher percentages of populations age 18 and over and age 65 and over than the state average.

Based on public outreach during the study, there does not appear to be a large elderly population in the Zoo Interchange study area. However, St. Camillus Retirement Community is located on Bluemound Road, about 0.25 mile west of US 45.

Disability

Based on 2000 Census data, persons with a disability account for 18.1 percent and 10.8 percent of the Milwaukee and Waukesha County populations, respectively. Persons with a disability are located within the study corridor at about the same rate as Milwaukee and Waukesha counties as a whole.

3.9.2 Socioeconomic Impacts

Neighborhood and Community Cohesion

The impacts of reconstructing and possibly expanding the study-area freeway system can affect the physical and social setting, community services, and other factors that promote a sense of community among residents in the study area. Community cohesion includes

buildings and services, such as churches, commercial development, social services, municipal buildings and services, parks, and schools.

Relocations of residential and commercial properties are the primary contributors to impacts on community cohesion. In the majority of cases on this project, relocations would occur along the edges of established neighborhoods surrounding the existing freeway system. All existing crossroads over/under the freeway corridor would remain (see Section 3.5.2).

Isolation of Distinct Groups, Real or Perceived

Since the proposed action would not create a new corridor, no isolation of distinct groups is anticipated beyond the existing condition (see Section 3.5.2).

New Development Assisted or Discouraged by the Project

See Section 3.2, Indirect Effects.

Changes in Property Values

Residents who live near the study-area freeway system have expressed concern over the potential for their property values to decrease if the freeway is closer to their homes after it is reconstructed. This concern is frequently cited in regard to highway reconstruction projects. Home resale values are affected by numerous variables, including location, home condition, mortgage rates, and the economy. As a result, it is impossible to state if there will or will not be an increase or decrease in property values as a result of the Modernization and Reduced Impacts Alternatives, or the Adjacent Arterials Component. While there has been some research on this topic, it is difficult to rely on the results of a study to draw meaningful conclusions given the variables mentioned above. Additionally, WisDOT will fairly compensate property owners whose property is acquired as part of the project (see Section 3.5.3).

Tax Base Impacts

For the Build Alternatives some private buildings and properties would be acquired by the state, thereby removing it from local tax rolls. WisDOT assessed the potential tax base loss for the cities of Milwaukee, Wauwatosa, and West Allis. WisDOT also calculated the annual property tax revenue loss for each city. This was calculated using the city tax rate for each city. This information was obtained from each city's assessor's office. (Note: The city tax rate consists of money going to the city and does not include tax for such entities as school districts, Milwaukee Area Technical College, and MMSD.) In 2008, the city tax rate per \$1,000 taxed was \$8.09 for Milwaukee, \$6.69 for Wauwatosa, and \$8.70 for West Allis.

The tax base impact for each alternative was determined using 2008 assessment figures. The full assessed value of the property was used for properties that would be acquired. For those properties where only a portion of land would be acquired, the percentage of land taken from the property was multiplied by the total assessed value of the property to determine the impact on the property tax base. There are several institutional uses in the study area (Milwaukee County Zoo, Milwaukee Regional Medical Center, parks, etc.). These uses are not included on the local municipality's property tax roll.

The City of Milwaukee had a full value tax base of \$32.2 billion in 2008 (Wisconsin Department of Revenue, 2009).

The 2008 full value tax base for the City of Wauwatosa was \$5.6 billion in 2008 (Wisconsin Department of Revenue, 2009).

In 2008, the full value tax base for West Allis was \$4.5 billion (Wisconsin Department of Revenue, 2009).

Modernization Alternatives. Table 3-14A lists the tax base loss and property tax revenue loss for each of the Modernization alternatives. In most cases, the 8-lane alternatives would have a greater impact on the property tax base than the 6-lane alternatives.

TABLE 3-14A
Tax Base Impacts

Alternative	City of Milwaukee		City of Wauwatosa		City of West Allis	
	Tax Base Loss	Property Tax Revenue Loss @ 2008 rate	Tax Base Loss	Property Tax Revenue Loss @ 2008 rate	Tax Base Loss	Property Tax Revenue Loss @ 2008 rate
North Leg						
N1 w/ single loop at North	6-lane	\$400	\$3	\$800,000	\$5,400	\$0
	8-lane	\$400	\$3	\$1,450,000	\$9,700	\$0
N1 w/ double loop at North	6-lane	\$400	\$3	\$800,000	\$5,400	\$0
	8-lane	\$400	\$3	\$1,450,000	\$9,700	\$0
N3 w/ single loop at North	6-lane	\$0	\$0	\$800,000	\$5,400	\$0
	8-lane	\$400	\$3	\$1,480,000	\$9,900	\$0
N3 w/ double loop at North	6-lane	\$0	\$0	\$800,000	\$5,400	\$0
	8-lane	\$400	\$3	\$1,480,000	\$9,900	\$0
East Leg						
E1	6-lane	\$0	\$0	\$0	\$0	\$0
	8-lane	\$0	\$0	\$0	\$0	\$0
E1 w/ combined service drive	6-lane	\$0	\$0	\$0	\$0	\$0
	8-lane	\$0	\$0	\$0	\$0	\$0
E1/E3 Hybrid	6-lane	\$1,940,000	\$15,700	\$0	\$0	\$0
	8-lane	\$2,540,000	\$20,500	\$0	\$0	\$0
Modified E3	8-lane	\$3,425,000	\$27,700	\$0	\$0	\$0
South Leg						
S2	6-lane	\$0	\$0	\$0	\$0	\$1,470,000
	8-lane	\$0	\$0	\$0	\$0	\$1,520,000
S2 w/ EB I-94 access to Greenfield Ave.	6-lane	\$0	\$0	\$0	\$0	\$2,290,000
	8-lane	\$0	\$0	\$0	\$0	\$2,350,000
West Leg						
W3	6-lane	\$0	\$0	\$4,935,000	\$33,000	\$0
	8-lane	\$0	\$0	\$6,055,000	\$40,500	\$27,800
Core Interchange						
Core Interchange	6-lane	\$16,000	\$130	\$0	\$0	\$980,000
	8-lane	\$30,000	\$240	\$0	\$0	\$980,000

On the east leg, the 6- and 8-lane E1 and E1 with combined service drive Alternatives would not impact any taxable property. The 8-lane E1/E3 Hybrid Alternative would require the displacement of 19 residences, one business and acquisition of approximately 10 acres of property in the City of Milwaukee. The 2008 assessed value of these properties was approximately \$2.54 million or 0.008 percent of the City of Milwaukee's full value tax base. Using current tax rates, this would result in an annual property tax loss of approximately \$20,500 for the City of Milwaukee. The 6-lane E1/E3 Hybrid Alternative would require the displacement of 18 residences, one business and acquisition of approximately 8 acres of property and would result in approximately \$4,800 less in property tax revenue loss than the 8-lane E1/E3 Hybrid Alternative. The Modified E3 Alternative would require the displacement of 27 residences, one business and acquisition of approximately 11 acres of property in the City of Milwaukee. The 2008 assessed value of these properties was approximately \$3.42 million or 0.011 percent of the City of Milwaukee's full value tax base. Using current tax rates, this would result in an annual property tax loss of approximately \$27,700 for the City of Milwaukee.

Through the core of the Zoo Interchange, the 6-lane and 8-lane Alternatives would result in a loss of approximately \$16,000 and \$30,000, respectively, to the Milwaukee property tax base. This would cause an annual loss of approximately \$130 for the 6-lane Alternative and \$240 for the 8-lane Alternative to Milwaukee's property tax revenue.

Along the east leg, south leg, and the core of the Zoo Interchange, no residential or commercial properties would be displaced, and no land would be acquired in Wauwatosa. The total loss in assessed value to the City of Wauwatosa tax base would be between \$1.45 million and \$1.48 million on the north leg for the 8-lane Alternatives (approximately 0.026 percent of Wauwatosa's full tax base). Using current tax rates, this would result in an annual property tax revenue loss between \$9,700 and \$9,900 for the City of Wauwatosa. The reason for the similarities between the single loop at North Avenue and double loop at North Avenue alternatives is that construction for both loop alternatives would take place within existing WisDOT right-of-way, thus there would be no tax base loss. The 6-lane Alternatives would result in an annual property tax loss of approximately \$5,400 as a result of relocations and property takings along the north leg.

On the west leg, the 6-lane and 8-lane W3 Alternative would acquire two businesses and a portion of property from another business in Wauwatosa. The total loss in assessed value to the City of Wauwatosa as a result of the 6-lane W3 Alternative would be an estimated \$4.94 million (0.09 percent of Wauwatosa's full tax base) while the loss for the 8-lane W3 Alternative would be \$6.06 million (0.11 percent of Wauwatosa's full tax base). This would result in approximate annual property tax revenue loss of \$33,000 for the 6-lane W3 Alternative and \$40,500 for the 8-lane W3 Alternative for the City of Wauwatosa.

For the City of West Allis, impacts to the property base would only occur along the south leg, west leg and in the core of the Zoo Interchange. On the south leg, the total loss in assessed value to the West Allis tax base for the 8-lane S2 Alternative would be approximately \$1.52 million or 0.03 percent of the City's total tax base. Using current tax rates, this would result in an annual property tax revenue loss of approximately \$13,200 for West Allis. This figure would be approximately the same for the 6-lane S2 Alternative along the south leg. If access to Greenfield Avenue from eastbound I-94 is provided, there would be a loss of approximately \$2.29 million to West Allis' tax base for the 6-lane Alternative and

\$2.35 million for the 8-lane S2 Alternative. These totals are approximately .05 percent of West Allis' full value tax base. The S2 6- and 8-lane Alternatives with eastbound I-94 access to Greenfield Avenue would result in an annual property tax revenue loss of approximately \$19,900 and \$20,400, respectively, for West Allis.

Rebuilding the core of the Zoo Interchange would result in a tax base loss of \$980,000 for West Allis and a property tax revenue loss of \$8,500.

Reduced Impacts Alternative. Table 3-14B lists the tax base loss and property tax revenue loss for the Reduced Impacts Alternative. On the east leg, the Reduced Impacts Alternative would require the displacement of 1 multi-family (8-unit) apartment building and acquisition of approximately 9 acres of property in the City of Milwaukee. The 2008 assessed value of these properties was approximately \$900,000, or 0.003 percent of the City of Milwaukee's full value tax base. Using current tax rates, this would result in an annual property tax revenue loss of approximately \$7,280 for the City of Milwaukee.

Through the core of the Zoo Interchange, the Reduced Impacts Alternative would result in a loss of approximately \$9,600 to the City of Milwaukee property tax base. This would cause an annual loss of approximately \$80 to the City of Milwaukee's property tax revenue.

Along the east leg, south leg, and the core of the Zoo Interchange, no residential or commercial properties would be displaced, and no land would be acquired in Wauwatosa. On the north leg, the Reduced Impacts Alternative would require the displacement of one business and acquisition of approximately 28 acres of property in the City of Wauwatosa. The total loss in assessed value to the City of Wauwatosa tax base would be approximately \$1.425 million on the north leg (approximately 0.03 percent of Wauwatosa's full tax base). Using current tax rates, this would result in an annual property tax revenue loss of \$9,500 for the City of Wauwatosa.

TABLE 3-14B
Reduced Impacts Alternative Tax Base Impacts

	City of Milwaukee		City of Wauwatosa		City of West Allis	
	Tax Base Loss	Property Tax Revenue Loss @ 2008 rate	Tax Base Loss	Property Tax Revenue Loss @ 2008 rate	Tax Base Loss	Property Tax Revenue Loss @ 2008 rate
North Leg			\$1,425,000	\$9,500		
East Leg	\$900,000	\$7,280				
South Leg					\$57,000	\$500
West Leg			\$5,500,000	\$36,800		
Core	\$9,600	\$80				

On the west leg, the Reduced Impacts Alternative would require the displacement of two businesses and the acquisition of approximately 4 acres of property in the City of Wauwatosa. The total loss in assessed value to the City of Wauwatosa as a result of the Reduced Impacts Alternative would be an estimated \$5.50 million (0.10 percent of

Wauwatosa's full tax base). This would result in approximate annual property tax revenue loss of \$36,800 for the City of Wauwatosa.

For the City of West Allis, impacts to the property base would only occur along the south leg of the Zoo Interchange. On the south leg, the total loss in assessed value to the West Allis tax base for the Reduced Impacts Alternative would be approximately \$57,000 or 0.001 percent of the City's total tax base. Using current tax rates, this would result in an annual property tax revenue loss of approximately \$500 for West Allis.

Adjacent Arterials Component. Table 3-14C lists the tax base loss and property tax revenue loss for the Adjacent Arterials Component. The Adjacent Arterials Component would require the displacement of 1 professional service office building and acquisition of approximately 10 acres of property in the City of Wauwatosa. The 2008 assessed value of these properties was approximately \$3.56 million, or 0.06 percent of the City of Wauwatosa's full value tax base. Using current tax rates, this would result in an annual property tax revenue loss of approximately \$22,800 for the City of Wauwatosa.

The Adjacent Arterials Component would require the acquisition of approximately 0.20 acre of property in the City of Milwaukee. The 2008 assessed value of these properties was approximately \$4,000. Using current tax rates, this would result in an annual property tax revenue loss of approximately \$30 for the City of Milwaukee.

TABLE 3-14C
Adjacent Arterial Tax Base Impacts

Alternative	City of Milwaukee		City of Wauwatosa		City of West Allis	
	Tax Base Loss	Property Tax Revenue Loss @ 2008 rate	Tax Base Loss	Property Tax Revenue Loss @ 2008 rate	Tax Base Loss	Property Tax Revenue Loss @ 2008 rate
Adjacent Arterials						
STH 100			\$2,625,000	\$17,600		
Watertown Plank Road			\$775,000	\$5,200		
84th Street/Glenview Avenue	\$4,000	\$30				

Changes in Travel Patterns

See Section 3.3.2, Transportation Impacts.

Changes in School Districts

No changes in school district boundaries are anticipated as a result of the proposed action.

See Section 3.8.2, Institutional and Public Service Impacts.

Effect on Community Facilities and Services

No-Build Alternative. The No-Build Alternative would not directly affect community facilities and services.

Modernization Alternatives. All Modernization Alternatives would relocate the Zoofari Conference Center. US 45 would be closer to the Wil-O-Way Underwood Special Recreation Center under all the Modernization Alternatives. See Section 3.26, Recreational Resources, for more information.

Alternative N1 would require relocation of one building of the Milwaukee County's Mental Health Complex. In addition to the mental health services in this building, St. Charles Youth and Family Services provides services through contracts with Milwaukee County. The county is considering whether or not to relocate the entire complex; that determination is independent of the Zoo Interchange reconstruction.

Reduced Impacts Alternative. The Reduced Impacts Alternative would not relocate the Zoofari Conference Center; however, US 45 would be closer to the building. Under the Reduced Impacts Alternative, US 45 would be closer to the Wil-O-Way Underwood Special Recreation Center. The Reduced Impacts Alternative would not relocate any buildings in the Milwaukee County's Mental Health Complex. See Section 3.26, Recreational Resources, for more information.

Adjacent Arterials Component. The Adjacent Arterials Component would not directly affect community facilities and services.

Effect on Social Groups

WisDOT developed and implemented a public involvement program to assess the project's effect on several social groups. Section 5.1, Public Involvement, provides more information on these groups.

Elderly. The No-Build Alternative and Adjacent Arterials Component would not directly affect elderly residents. Under the Modernization and the Reduced Impacts Alternatives, some residential relocations may include elderly occupants.

Handicapped. US 45 would be closer to the Wil-O-Way Underwood Recreation Center under all the Modernization and the Reduced Impacts Alternatives. See Section 3.26, Recreational Resources, for more information. Based on its public outreach efforts, WisDOT is not aware of any other direct impacts to handicapped residents or facilities that serve handicapped users.

Non-Drivers and Transit Dependents. The proposed improvements would affect non-drivers less than drivers who use the study-area freeway and local roadway system regularly. Compared to the Modernization and Reduced Impacts Alternatives, and the Adjacent Arterials Component, the No-Build Alternative would have higher crash rates and congestion, but would not have an adverse effect on non-drivers to the extent it would on drivers that use the study-area freeway and local roadway system on a regular basis. Conversely, non-drivers and transit users would not experience the benefits of the Modernization and Reduced Impacts Alternatives, and the Adjacent Arterials Component to the extent that drivers would. Efficient movement of goods and services on the study-area freeway and local roadway system would benefit non-drivers and transit users to the same extent as other social groups.

Transit routes and their riders that use the study-area freeway and local roadway system would benefit from the improved safety under the 6-lane and 8-lane Modernization Alternatives, the Reduced Impacts Alternative, and Adjacent Arterials Component. Under the 8-lane Modernization Alternatives, the Reduced Impacts Alternative, and the Adjacent

Arterials Component, transit routes and their riders would also benefit from reduced congestion. Adding capacity to the study-area freeway system will reduce traffic volumes on some local streets near the corridor compared to the 6-lane Modernization Alternatives.

Some groups feel that investing in added capacity for the study-area freeway system would have an adverse impact on transit dependent and non-drivers because they would not benefit from the added capacity and because of the increased costs of adding capacity would mean fewer funds available for mass transit. See the following section, Environmental Justice, for a more thorough discussion of this issue.

Environmental Justice

The key regulations and policy directives behind environmental justice assessment requirements are Title VI of the Civil Rights Act of 1964 and Executive Order 12898 issued by President Clinton in 1994.

Title VI of the Civil Rights Act of 1964² prohibits intentional discrimination, as well as disparate impact discrimination, which results when a facially neutral policy has disparate impacts on protected population groups. To clarify and amplify the non-discrimination requirements of Title VI President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."

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

FHWA guidance on "Addressing Environmental Justice in Environmental Assessments/Environmental Impact Statements" outlines the elements and steps to be followed when preparing an EIS and requires the following steps:

- Identification of existing populations
- Identification of coordination, access to information, and participation
- Identification of disproportionately high and adverse effects

WisDOT and FHWA completed an environmental justice analysis to determine whether the proposed project has the potential to incur disproportionately high and adverse effects³ upon minority or low-income populations.⁴ If the high and adverse impacts are found to be borne

² Title VI states that "(n)o person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."

³ Adverse effects are defined in FHWA Order 6640.23 as the totality of significant individual or cumulative human-health or environmental effects, including interrelated social and economic effects, which may include, but are not limited to: bodily impairment, infirmity, illness, or death; air, noise, and water pollution and soil contamination; destruction or disruption of man-made or natural resources; destruction or diminution of aesthetic values; destruction or disruption of community cohesion or a community's economic vitality; destruction or disruption of the availability of public and private facilities and services; vibration; adverse employment effects; displacement of persons, businesses, farms, or nonprofit organizations; increased traffic congestion, isolation, exclusion, or separation of minority or low-income individuals within a given community or from the broader community; and the denial of, reduction in, or significant delay in the receipt of, benefits of FHWA programs, policies, or activities.

⁴ Disproportionately high and adverse effect on low-income and minority populations is defined in FHWA Order 6640.23 as (1) is predominately borne by a minority population and/or a low-income population; or (2) will be suffered by the minority population

disproportionately by low-income and minority populations, an analysis must examine mitigation measures, offsetting benefits, and impacts of other system elements in accordance with FHWA Order 6640.23, Actions to Address Environmental Justice in Minority Populations and Low-Income Populations issued in 1998.

WisDOT and FHWA determined the impacts to the general population and natural resources, and then assessed if those impacts would be disproportionately borne by low-income or minority groups. The following impact categories were identified:

- Indirect and cumulative effects
- Residential and business relocations
- Transportation
- Economic
- Institutional and public service
- Environmental
 - Water quality
 - Water quantity
 - Noise
 - Air quality
- Recreational/public use lands
- Construction impacts

Identification of Existing Minority and Low-Income Populations

To determine the presence of minority and low-income populations in the study area, WisDOT used localized census tract, block group, and census block data supplemented by the study team's extensive public involvement program. The Zoo Interchange study area is located in Milwaukee County in Wisconsin, and includes the City of Milwaukee, City of Wauwatosa, and the City of West Allis. WisDOT identified the minority and low-income populations at three levels: (1) a 3.5-mile by 5-mile perimeter around the study-area freeway system limits, (2) within a 1-mile buffer of the freeway centerline, and (3) within a 500-foot buffer from the centerline to understand the impacts which potentially could be felt by the communities located adjacent to the freeway system.

Section 3.9.1 provided information on the minority populations located in Milwaukee and Waukesha counties. Within the 3.5-by-5 mile area, 1-mile buffer, and 500-foot buffer of the study-area freeway system, minorities made up 12.4 percent, 9.0 percent, and 14.3 percent of the population in 2010, respectively (see **Table 3-8**). The minority population in Milwaukee County and Waukesha County has grown by approximately 0.5 percent and 2.2 percent, respectively, each year between 2000 and 2010. Within study area communities, minority population has experienced differing annual levels of growth from 0.08 percent in the City of Milwaukee to 5.2 percent in the City of West Allis. In Milwaukee County, the largest minority population is African American with 26.8 percent of the population. Hispanics, at 4.1 percent, are the largest minority population in Waukesha County (see **Table 3-9**).

and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

Based on 2000 Census data, the median household income in the study corridor was slightly higher than the median household income for Milwaukee and Waukesha counties, when combined, and was higher than the statewide median (see **Table 3-11**).

The number of persons living in poverty is lower in the project corridor than it is in Milwaukee County and Waukesha County, when combined (**Exhibit 3-27**). Roughly 5 percent of persons living within 1 mile of the study-area freeway system are in poverty, compared to 12 percent of persons in Milwaukee County and Waukesha County, when combined.

Identification of Minority Owned Businesses and Disadvantaged Business Enterprises

Most of the businesses located in the freeway system area are majority owned. The number of minority-owned businesses located within the 3.5-by-5 mile box, 1-mile buffer and 500-foot buffer are 24, 26, and 2, respectively. The number of disadvantaged business enterprises (DBEs) in the same areas is 9, 8, and 3, respectively.

Outreach to Minority Communities

Section 5 and section 6 describe the public involvement process developed by WisDOT to disseminate information on the project and to obtain public input. In addition to the efforts and initiatives described in Section 5, WisDOT specifically engaged the minority community to ensure their participation in the decision making process.

Communication efforts included the use of grassroots outreach through community-based organizations, local leadership, one-on-one communication, small discussion groups, and the convening of the Milwaukee County Urban DBE Advisory Committee and the Milwaukee County DBE Steering Committee. The Urban DBE Advisory Committee was created to improve coordination, communication, and planning of WisDOT's programs and projects within the communities affected by its projects. The committee consists of members drawn from a wide range of transportation industry businesses, agencies, and government. The DBE Steering Committee was created to involve key management-level stakeholders in the community and a wide range of participants drawn from labor associations and government agencies. For more information on these committees, including a list of members, see Section 5.1.13.

Identification of Disproportionately High and Adverse Effects

No-Build Alternative. While the No-Build Alternative would not have as many direct environmental impacts as the Modernization or Reduced Impacts Alternatives, or the Adjacent Arterials Component, failure to address the condition of the study-area freeway and local roadway system may result in higher crash rates and would have an adverse effect on low-income and minority residents, as well as the general population. In addition, the No-Build Alternative would have a higher level of congestion than the Modernization and Reduced Impacts Alternatives, and the Adjacent Arterials Component.

Modernization and Reduced Impacts Alternatives, and the Adjacent Arterials Component.

Indirect and Cumulative Effects. Section 3.2 describes the indirect and cumulative effects of the project.

Residential and Business Relocations.

Modernization Alternatives. The Modernization Alternatives will require the relocations of 6 to 39 residences and 6 to 8 businesses adjacent to the study-area freeway system. As noted

earlier in Section 3.9, the study-area freeway system has fewer minorities and a higher income than the surrounding community. WisDOT contacted the households that may be relocated and determined that one minority household may be relocated under the E1/E3 Hybrid Alternative. Under the Modified E3 Alternative, two additional minority households may be relocated.

WisDOT is not aware of any minority-owned businesses that would be relocated as a result of the project.

Numerous homes, mostly on the east and south legs, would be closer to the freeway under all of the Modernization Alternatives. Census data, supplemented by door-to-door outreach and neighborhood meetings, indicates that few adjacent residences are minority owned/occupied. Census data suggests that income levels are above the Health and Human Services poverty guidelines within the study area, and higher than the Milwaukee County and Wisconsin averages (U.S. Census Bureau, 2008).

Reduced Impacts Alternative. The Reduced Impacts Alternative will require 8 residential relocations, consisting of one multi-family residence, and 3 business relocations adjacent to the study-area freeway system. As noted earlier in Section 3.9, the study area freeway system has fewer minorities and a higher income than the surrounding community. It is anticipated that no minority households would be relocated as a result of this alternative.

WisDOT is not aware of any minority-owned businesses that would be relocated as a result of the project.

Adjacent Arterials Component. The Adjacent Arterials Component will require no residential relocations and 2 business relocations adjacent to the study-area local roadway system. WisDOT is not aware of any minority-owned businesses that would be relocated as a result of this component.

Institutional

Modernization Alternatives. The Modernization Alternatives will affect schools, Milwaukee County-owned facilities, and churches. The Modernization Alternatives would acquire 0.8 to 1.4 acres from St. Therese Catholic Church. Between 0.5 and 1.0 acre would be acquired from Milwaukee Montessori School's property as a result of the Modernization Alternatives. As noted in Section 3.9.1, Milwaukee Montessori School's enrollment is 35 percent minority; comparable to Milwaukee County's percentage and lower than the City of Milwaukee. Anecdotal evidence suggests that the percent of minority St. Therese parishioners is below the Milwaukee County and City of Milwaukee minority percentage.

Modernization Alternatives N1 and N3 would require relocation of a building from Milwaukee County's Youth and Adolescent Services complex. The building is used to provide services to youth as an alternative to prison. About 90 percent of the youths that receive services in the building are minority.

No police, fire, or ambulance services will be affected, nor will any residents be isolated from any of these services under either of the Modernization Alternatives.

Reduced Impacts Alternative. The Reduced Impacts Alternative would affect churches and schools. The Reduced Impacts Alternative would acquire approximately 1.0 acre from St. Therese Catholic Church and 0.6 acre would be acquired from Milwaukee Montessori

School's property. As noted in Section 3.9.1, Milwaukee Montessori School's enrollment is 35 percent minority; comparable to Milwaukee County's percentage and lower than the City of Milwaukee. Anecdotal evidence suggests that the percent of minority St. Therese parishioners is below the Milwaukee County and City of Milwaukee minority percentage.

The Reduced Impacts Alternative would not relocate a building from Milwaukee County's Youth and Adolescent Services complex. The building is used to provide services to youth as an alternative to prison. About 90 percent of the youths that receive services in the building are minority.

No police, fire, or ambulance services will be affected, nor will any residents be isolated from any of these services under the Reduced Impacts Alternative.

Adjacent Arterials Component. The Adjacent Arterials Component would affect schools and churches. On 84th Street, less than 0.01 acre may be acquired from the Wisconsin Lutheran High School and 0.04 acre would be acquired from Calvary Assembly of God under the Adjacent Arterials Component.

No police, fire, or ambulance services will be affected, nor will any residents be isolated from any of these services under the Adjacent Arterials Component.

Physical and Natural Environment. The environmental impacts of the proposed action are evaluated in Sections 3.11 through 3.22. Three areas of environmental impacts have potential impacts on people: water quality, noise, and air quality. Other environmental impacts such as wildlife, environmental corridors, visual/aesthetics were not assessed specifically for their potential environmental justice impact.

Water Quality and Water Quantity. The proposed reconstruction of the study-area freeway and local roadway system will comply with more rigorous and recent state regulations regarding stormwater runoff from highways. As a result, less pollutants and suspended solids will be washed from the study-area freeway and local roadway system into streams compared to the No-Build Alternative.

MMSD and the City of Wauwatosa are concerned about the increasing risk of downstream flooding, as a result of increased runoff into Underwood Creek, Honey Creek and, ultimately, the Menomonee River. Menomonee River flooding in Wauwatosa and Milwaukee is an important issue. However, Menomonee River flooding in Wauwatosa (10.4 percent minority in 2010) and the Milwaukee's Valley Park neighborhood (54 percent minority in 2010, compared to 55 percent in the City of Milwaukee and 39 percent in Milwaukee County) does not have a disproportionate impact on low-income or minority groups.

Noise. The project's noise impacts are localized and confined to areas adjacent to the study-area freeway system. The median household income adjacent to the study-area freeway system is higher than average (see **Table 3-11**), and the percentage of minority residents adjacent to the study-area freeway system is lower than the average in each respective community (see **Table 3-9**).

Air Quality. The air quality impacts of the project are described in Section 3.2.2, Section 3.20, and Appendix C. The project is not expected to have an adverse effect on residents or students adjacent to the study-area freeway system. Carbon monoxide levels are expected to

be below national standards and particulate matter concentrations should decrease based on decreases in diesel truck emission rates. MSATs are expected to diminish under all of the Modernization Alternatives, primarily as a result of reduced emissions from new motor vehicles. WisDOT and FHWA reviewed Census data and conducted extensive public outreach efforts which indicated that there is not a large minority or low-income population within 1 mile of the study-area freeway system, compared to the population of Milwaukee, Wauwatosa, West Allis, Milwaukee County, and the State of Wisconsin (see **Tables 3-8 and 3-9 and Exhibits 3-20 and 3-21**). As a result, none of the proposed Build Alternatives would have a disproportionately high and adverse impact on low-income or minority communities in terms of air quality impacts.

Recreational/Public Use Lands. All of the Modernization Alternatives would affect up to 0.3 acre of Underwood Creek Parkway near the US 45 crossing. The Reduced Impacts Alternative would affect 0.3 acre near the US 45 crossing and 0.2 acre north of Watertown Plank Road to realign the parkway road connecting it to Swan Boulevard north of Innovation Drive.

For all Modernization Alternatives, up to 0.5 acre of land would be acquired from Milwaukee County's Wil-O-Way Underwood Special Recreation Center. Under the Reduced Impacts Alternative, 0.01 acre would be acquired from Milwaukee County's Wil-O-Way Underwood Special Recreation Center. Milwaukee County does not maintain data on race and economic status of Wil-O-Way users. The director of the county's Office for Persons with Disabilities noted that disabled people tend to have higher unemployment rates than average and estimated that the race of Wil-O-Way users is comparable to Milwaukee County's minority percentage.

During WisDOT's outreach to minority groups and agencies that work with low-income residents, none raised concerns about this potential impact having a disproportionate impact on low-income or minority groups.

Construction Impacts. Construction impacts are described in Section 3.27. Construction impacts will be experienced primarily by residents, students and businesses adjacent to the study-area freeway system. Based on 2000 and 2010 Census data and WisDOT's public outreach program, the percentage of minority residents living adjacent to the study-area freeway system is less than their respective communities as a whole. Good Shepherd's School has a lower minority percentage than the neighborhood surrounding the school. Wauwatosa West High School and Whitman Middle School both have a 30 percent minority enrollment, which is greater than the City of Wauwatosa but is less than Milwaukee County as a whole. Milwaukee Montessori has a 35 percent minority enrollment, which is higher than other schools in the study area. It is comparable to Milwaukee County's minority percentage and lower than the City of Milwaukee minority percentage. The percentage of minority students attending St. Jude the Apostle's School and Wisconsin Lutheran High School would be similar to the minority percentage in the study area. Therefore, construction impacts will not disproportionately affect low-income or minority residents or students.

The median household income of residents adjacent to the freeway system is higher than the county and statewide median. Travelers on the study-area freeway system will experience inconveniences and additional delay during construction, but this will not affect minority or low-income populations disproportionately.

Transportation. The American Civil Liberties Union, Sierra Club, Black Health Coalition, NAACP, and the City of Milwaukee have raised the issue (on this or previous freeway studies) of highway funding levels versus transit funding levels. The groups' position is that expanding capacity of the study-area freeway system—in the context of SEWRPC's recommendation to expand freeway capacity throughout Southeast Wisconsin—will have a disproportionately adverse impact on low income and minority groups because:

- The state and federal funds required to pay for capacity expansion will reduce the opportunity to fund mass transit services that would benefit low-income and minority residents.
- These groups are less likely to have access to a vehicle and, therefore, less likely to benefit from the freeway capacity expansion compared to suburban commuters, who are more likely to be white and have higher income.

This issue is related to the groups' position, raised during SEWRPC's freeway system plan development, that the recommended expansion of the southeast Wisconsin freeway system violates Title VI of the 1964 Civil Rights Act by allocating money to freeways at the expense of transit. Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin in programs and activities receiving Federal financial assistance. Specifically, Title VI provides that "no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance" (42 U.S.C. Section 200d).

However, SEWRPC's recommendation to widen the southeast freeway system needs to be evaluated in the context of its overall transportation plan. The plan states that regional transportation planning is a sequential process beginning with consideration of public transit facilities and services, bicycle and pedestrian facilities, and travel demand and transportation systems management measures. Highway system capacity improvement and expansion is considered to address highway traffic volume and congestion which cannot be expected to be alleviated by public transit, bicycle and pedestrian, and travel demand and transportation systems management measures (SEWRPC, 2006b). The plan recommends a 100 percent increase in transit, including rapid transit systems as well as local bus service (see Section 1). Also, public transit carries about 2 percent of total weekday travel in southeast Wisconsin while over 33 percent of the estimated capital and operating costs of the plan are devoted to public transit (SEWRPC, 2006b; Tables 34 and 125).

Furthermore, SEWRPC does not implement any of its recommendations. Local, county, state, or special districts implement recommendations for the transportation facilities and systems they have jurisdiction over as they see fit and funding allows.

Some minority and transit advocacy groups have stated that while a balanced transportation system is recommended, highways receive more funding than transit and as a result the level of transit services has stayed the same or decreased in recent years (after an expansion of transit service in Milwaukee in the late 1990s).

To address this, a discussion of WisDOT's role in developing and maintaining highways and transit systems is relevant. Wisconsin Statute 84.01(2) states, "The department [of transportation] shall have charge of all matters pertaining to the expenditure of state and federal aid for the

improvement of highways, and shall do all things necessary and expedient in the exercise of such supervision.” Conversely, WisDOT does not operate or maintain any transit systems in the state.

However, at the direction of the state legislature WisDOT began providing funding to local transit systems for operating expenses in 1973, utilizing both state and federal funds. Eligible project costs are limited to the operating expenses of an urban mass transit system (Wisconsin Statute 85.20 and TRANS 4.04(1)). In 2011, WisDOT will provide \$118 million in state transit operating assistance to mass transit systems. The current state budget directs WisDOT to provide \$106 million in 2012 and \$106 million in 2013 to support mass transit operating costs around the state.

On average, state operating assistance covers about 37 percent of transit operating expenses statewide. In 2008, nearly \$63.8 million of WisDOT’s transit funding went to MCTS, representing 40 percent of MCTS’s operating budget. WisDOT also provided about 46 percent of the Waukesha transit system’s operating budget annually (\$3.9 million in 2008) which includes funding for commuter bus service between Waukesha and Milwaukee. Federal funds also contribute to these transit systems.

Since 1989 Wisconsin has partnered with Illinois to provide operating support for Amtrak’s Hiawatha service between Milwaukee and Chicago. Wisconsin provides 75 percent of the non-federal, non-Amtrak operating costs. From 2004 through 2007, Wisconsin averaged \$5.9 million in annual operating support for Amtrak.

At the federal level, 15.5 percent of the federal gasoline tax (2.86 cents of the 18.4 cent per gallon tax) goes to the Mass Transit Account of the Highway Trust Fund.

The race and income of those who would benefit from the proposed action is difficult to assess, and impossible to quantify. The demographics of those who live near the study-area freeway system indicate that relatively few minorities live in the study area compared to Milwaukee County as a whole. Median household income of residents in the study area is higher than average.

Another factor to consider is that those who do not drive on the freeway system also benefit from it to some extent through the efficient movement of goods and services. A large percentage of consumer products and other freight are carried on trucks via the interstate system. It’s beyond the scope of this study to assess the extent which improvements to the study-area freeway system affect consumer prices in the Milwaukee area.

Those that do not have access to an automobile will not often use the study-area freeway system, except potentially through local or inter-city bus travel. This population will not benefit from the proposed action as much as those who use the study-area freeway system on a regular basis. In Milwaukee County, those without access to an automobile are largely low-income City of Milwaukee residents. A 2004 UWM study cites Census figures that 81 percent of low-income residents in a four-county area (Milwaukee, Ozaukee, Washington, and Waukesha counties) live in the City of Milwaukee, while 90 percent of the low income residents in the four-county area live in Milwaukee County. Over 36 percent of low-income residents in the four-county area do not have access to a vehicle. In terms of race, two-thirds of bus commuters in the City of Milwaukee are minority (UWM, 2004). However, according to year 2000 Census data for southeast Wisconsin, while minority populations utilize transit more for traveling to work (18 percent of African Americans and

8 percent of Hispanics compared to 2 percent of whites) most commuting by minorities is by car (79 percent for African Americans and 88 percent for Hispanics compared to 95 percent for whites).

Economic. Section 3.27.1 describes the cost of the Modernization and Reduced Impacts Alternatives, and the Adjacent Arterials Component. See the previous discussion regarding the equity issues that have been raised regarding the cost of expanding capacity of the study-area freeway and local roadway system.

Summary

Based on WisDOT's public outreach, those directly affected by the proposed action, through property acquisition, relocation, noise, and other impacts, generally reflect Census data for neighborhoods adjacent to the study-area freeway system. WisDOT and FHWA reviewed the Census data and conducted extensive public outreach efforts which indicated a relatively small minority or low-income population in the study area, compared to the respective county population as a whole. WisDOT and FHWA concluded that the proposed action, regardless of which alternative is implemented, will not have a disproportionately high and adverse impact on low income or minority communities.

3.9.3 Measures to Mitigate Adverse Socioeconomic Impacts

None identified.

3.10 Visual Character/Aesthetics

3.10.1 Affected Environment

The visual character of a transportation project accounts for both the views from the transportation corridor (views by corridor users) and the views of the corridor (views from surrounding areas).

In general, the topography of the corridor is level to gently rolling. The existing landscape and viewshed from the study-area freeway system is mostly an urban, built environment consisting of commercial, industrial, institutional, recreational, natural, utility, and residential land uses. Bridges and the associated approaches offer longer views of the surrounding landscape. Residential features are typically filtered by vegetation or other landscape features, though some pockets of residential activity can be seen from the highways.

Portions of the existing study-area freeway system are at grades lower than the surrounding area or are surrounded by dense vegetation, vegetated berms, steep slopes in the right-of-way, and noise mitigating walls, which limit the views from and of the corridor. Generally, views from the corridor can be characterized as short views of vegetated right-of-way filtering the surrounding landscape.

Along the southern leg, the views from and of the corridor are limited by noise walls located throughout the southern leg, and the trees and other vegetation growing along the edge of the right-of-way. Views are most limited near the Greenfield Avenue interchange and the southbound lanes of I-894 near the Lincoln Avenue interchange. The overhead electrical transmission lines, which parallel to I-894/US 45, are a noticeable element of the viewshed when looking east. There are also views of residential areas with some commercial buildings visible in the distance.

Along the east leg, some views from and of I-94 are blocked by noise barriers. Looking to the south, east of 84th Street, travelers along the highway are able to see State Fair Park, most notably the Pettit Center and State Fair Gate. A commercial office complex is also visible to the north of I-94, west of 84th Street. The west leg provides a view of a wooded area, which houses the Milwaukee County Zoo, and light industrial companies.

The north leg of the study area provides the most varying views for study-area freeway system motorists. Traveling north from the core of the Zoo Interchange, motorists see a residential area that transitions into offices and institutional uses, with the Regional Medical Center located to the east of US 45 at the Watertown Plank Road exit. An open area and several historic buildings are notable landmarks on the east side of US 45, north of Watertown Plank Road. The viewshed through the Underwood Creek segment is restricted by earthen berms on both sides of the highway. Moving north past Underwood Creek, the visual landscape east of the roadway is commercial businesses. Between North Avenue and Center Street, the roadway sits below the surrounding land uses, with views of an embankment and trees. North of Center Street, the Wauwatosa West High School campus, warehousing, light industrial activities, and the Wauwatosa water tower are the most noticeable objects in the viewshed.

Viewers of the roadway in the study area will note that away from the core interchange, the roadway elevation is generally at or below the elevation of the surrounding land uses. However, where present, noise barriers interrupt the viewing horizon. Many residences are located across the street from noise barriers, which block the view from these residences. The many levels of the core of the Zoo Interchange dominate the viewshed in that area.

The existing landscape and viewshed from the Highway 100, Watertown Plank Road, and 84th Street/Glenview Avenue Corridors is mostly an urban, built environment consisting of a mix of residential, commercial, institutional, and recreational uses. Unlike along the freeway portion of the study area, the largely flat terrain along the Adjacent Arterials Component presents shorter views of the surrounding landscape.

3.10.2 Aesthetic Impacts

Highways are prominent features in the landscape that can affect the visual quality of the natural and built environment; likewise, the visual quality of the adjacent natural and built environment affects highway travelers' visual experience. FHWA Technical Advisory T6640.8A provides guidance on the preparation and processing of environmental documents. It states that when potential for visual impacts exists, an environmental study should identify the impacts to the existing resource, and the relationship of the impact to potential viewers of and from the project, as well as measures to avoid, minimize, or reduce the adverse impact.

No-Build Alternative

The No-Build Alternative would not change the visual character of the study area.

Modernization Alternatives

The Modernization Alternatives would change the viewshed for some viewers of or from the study-area freeway system. Since the highway would be reconstructed on its existing alignment, these viewsheds would remain relatively the same. Each Modernization Alternative would have similar impacts on the visual environment. In some instances, the

Modernization Alternatives would cause the relocation of buildings adjacent to study-area highways. These structures provide a visual buffer between the freeway and other structures in the area, to some extent. If these structures are removed, the adjacent homes and businesses would lose their visual buffer. In other instances, the highways would be moving closer to existing structures. Thus, the Modernization Alternatives would remove some buildings and move the highways closer to other buildings, causing some change in the visual environment. Additionally, the core of the Zoo Interchange would contain bridges that are higher than the existing bridges (approximately 25 to 40 feet higher in some locations). This would offer more expansive views of the surrounding landscape from the bridges in the interchange but could make the interchange more visible from the surrounding area.

During construction, several temporary visual impacts would occur, such as exposed earth, construction equipment, and vegetation loss. Constructing new noise barriers and reconstructing existing barriers could eliminate views of and from the freeway in several locations. These barriers could be located closer to existing viewers of the highways, causing a change in the existing viewshed. Relocating the American Transmission Company utility corridor through the south and west legs could also result in a change in the visual environment. Please see Section 4.3.2 for additional information regarding visual impacts to the Milwaukee County Zoo. Along the south leg, it is proposed that the utility corridor be moved closer to the residences on the east side of I-894/US 45 to accommodate the new highway alignment. Currently, the preferred alignment and relocation of the American Transmission Company utility corridor along the west leg has not been finalized. If the utility corridor on this leg is moved from its present location, it could alter the viewshed for both viewers of and from the study-area freeway system.

Reduced Impacts Alternative

The Reduced Impacts Alternative would change the viewshed for some viewers of or from the study area freeway system. Since the freeway would be reconstructed on its existing alignment, these viewsheds would remain relatively the same. In some instances, the Reduced Impacts Alternative would cause the relocation of buildings adjacent to study-area highways. These structures provide a visual buffer between the freeway and other structures in the area, to some extent. If these structures are removed, the adjacent homes and businesses would lose their visual buffer. In other instances, the freeway would be moving closer to existing structures. Therefore, the Reduced Impacts Alternative would remove some buildings and move the highways closer to other buildings, causing some change in the visual environment. Additionally, the core of the Zoo Interchange would contain bridges that are higher than the existing bridges (approximately 20 feet higher in some locations). This would offer more expansive views of the surrounding landscape from the bridges in the interchange but could make the interchange more visible from the surrounding area.

During construction, several temporary visual impacts would occur, such as exposed earth, construction equipment, and vegetation loss. Constructing new noise barriers and reconstructing existing barriers could eliminate views of and from the freeway in several locations. These barriers could be located closer to existing viewers of the highways, causing a change in the existing viewshed. Please see Section 4.3.2 for additional information regarding visual impacts to the Milwaukee County Zoo. Currently, the preferred alignment

and relocation of the American Transmission Company utility corridor along the west leg has not been finalized. If the utility corridor on this leg is moved from its present location, it could alter the viewshed for both viewers of and from the study area freeway system.

Adjacent Arterials Component

Although the Adjacent Arterials Component would generally remain within the existing right-of-way, the scale of the Highway 100, Watertown Plank Road, and 84th Street /Glenview Avenue Corridors would expand. Because new right-of-way acquisitions would generally be limited to strip takings, the views from the road would remain essentially the same as today. The two commercial relocations associated with this alternative would not change the character of the area adjacent to the roadway improvements. Depending upon one's location along these corridors, the views of the road from adjacent uses would be of a slightly larger road, but the change would not be out of character in the highly developed urban landscape. During construction, several temporary visual impacts would occur, such as exposed earth, construction equipment, and vegetation loss.

3.10.3 Measures to Mitigate Adverse Aesthetic Impacts

Future community sensitive design (CSD) efforts will further identify existing viewsheds and vistas, as well as provide concepts for visual benefits and minimization of impacts resulting from a larger-scale freeway and core interchange. Previous CSD efforts on the Marquette Interchange and I-94 North-South Corridor projects provide CSD examples and best practices to draw from for this study. For these projects, CSD committees worked to identify aesthetic treatments and beautification measures that blend the highway corridor into the surrounding environment. A CSD committee will be formed for the Zoo Interchange project.

3.11 Surface Water and Fishery

3.11.1 Affected Environment

The study-area freeway system is in the Menomonee River watershed and crosses two tributary streams to the Menomonee River. US 45 crosses over Underwood Creek, approximately 0.8 mile north of Watertown Plank Road, and I-94 crosses over Honey Creek at the 84th Street interchange and over Underwood Creek at 124th Street (see **Exhibit 3-28**).

Menomonee River Watershed

The Menomonee River watershed, part of the Milwaukee River Basin, consists of 96 miles of rivers and streams and drains 136 square miles in Milwaukee, Ozaukee, Washington, and Waukesha counties. The Menomonee River watershed includes Honey Creek and Underwood Creek; both of these streams cross study-area highways. Land cover within the watershed is primarily urban (42 percent) with significant grassland (22 percent) and agricultural (17 percent) cover (DNR, 2001).

Honey Creek originates from a storm sewer outfall at South 43rd Street in the City of Greenfield. It flows primarily in a northerly direction for a distance of approximately 8.8 miles, until joining the Menomonee River at approximately 72nd Street in the City of Wauwatosa. Honey Creek flows through portions of Greenfield, Milwaukee, West Allis, and Wauwatosa. In the Zoo Interchange study area, Honey Creek crosses under I-94 in an underground, enclosed conduit at the 84th Street interchange, running from the southeast quadrant of the interchange to the northwest quadrant. Honey Creek leaves the underground conduit and daylights in the northwest quadrant of the I-94/84th Street interchange, crossing 84th Street approximately 700 feet north of mainline I-94. A portion of Honey Creek, from I-94 in the north to Arthur Avenue in the south (approximately 2 miles), is contained in an underground concrete conduit, a section of which flows under State Fair Park via a series of three 10-foot by 15-foot box culverts.

Additional channel modification to Honey Creek included deepening, straightening, and lining with concrete. Approximately 87 percent of the creek's length has been altered in an attempt to accommodate increased stream flows due to development and to provide for a stable, low-maintenance channel. The annual peak stream flow in Underwood Creek ranges from 320 to 7,500 cubic feet per second based on flows from 1975 to 2006.

Much of the Honey Creek watershed (11 square miles) is highly urbanized (65 percent of the land is medium to high density residential development) with significant portions having been heavily modified to include numerous municipal stormwater conveyance systems and outfalls. These modifications, along with the lining and channelization of Honey Creek, have severely degraded its overall biological integrity and ecological function. Honey Creek is classified as a warm water forage fish community, meaning it is capable of supporting an abundant, diverse community of forage fish and other aquatic life. Currently, much of Honey Creek does not meet these goals, and there is a variance to the water quality standards for Honey Creek for both bacteria and dissolved oxygen levels. Honey Creek is also known to have a history of high bacteria levels. High bacteria concentrations have been observed along Honey Creek during dry weather, low precipitation events, and wet weather (MMSD, 2006b).

Underwood Creek is an 8-mile-long perennial stream which crosses the Zoo Interchange study area under US 45, east of Highway 100 and

Flood Control in the Menomonee River Watershed

Since 1973, the region encompassing Milwaukee County has had nine flood-related Presidential-declared disasters and two Presidential-declared emergencies. In response, MMSD initiated a comprehensive watershed-wide approach by developing a Watercourse System Management Plan for its planning area, including the Menomonee River. The Menomonee River Watercourse Management Plan consists of five main projects that are integrated and reliant on each other to function properly in managing flooding in the Lower Menomonee River. The Milwaukee County Grounds floodwater management facility is one of the Watercourse Management Plan's component projects.

The Milwaukee County Grounds floodwater management facility, under construction since 2006, will consist of a two-lobe floodwater basin designed to receive water diverted from Underwood Creek during heavy rainfall. Water will be diverted from Underwood Creek by way of a diversion structure located along the east bank of Underwood Creek, west of US 45, and then carried through a 17-foot diameter, concrete-lined tunnel that will be bored at a maximum depth of 90 feet below the surface. This tunnel will cross beneath US 45 and carry water to a tunnel stilling basin before entering the west lobe of the floodwater basin. Water entering the basin will eventually drain out through a low-level outlet and spillway structure constructed on the east lobe of the floodwater basin. This water will be conveyed through culverts beneath the Canadian Pacific Railway bridge and into the Menomonee River. A new bridge along Swan Boulevard was constructed over the open channel between the west and east lobes of the floodwater basin (MMSD, 2006a).

0.4 mile north of Swan Boulevard. The South Branch of Underwood Creek is approximately 1.1 miles long and crosses under I-94 at 124th Street, the western boundary of the study area. Based on 2020 land use conditions, future streamflows are expected to increase from 0 to 5 percent in Underwood Creek (MMSD, 2008). Much of Underwood Creek, including the entire stream within the study area, is channelized with concrete lining and has been diverted from its original course. The drainage area is relatively small (approximately 20 square miles) and is influenced by poorly draining soils which influence the amount and rate of runoff. The drainage area is mostly urbanized with the primary land use consisting of single-family residential. Stormwater runoff from lawns, rooftops, streets, driveways, parking lots, and storage areas contribute sediment, nutrients, organic matter, oil and grease, bacteria, metals, and toxic organic substances to streams.

Between 2003 and 2005, MMSD began water quality monitoring at seven sites along Underwood Creek and the south branch. This monitoring noted that conventional pollutants, including fecal Coliform bacteria, total phosphorus, soluble phosphorous, total Kjeldahl nitrogen, and to a lesser extent, dissolved oxygen, exceeded State of Wisconsin criteria or recommended maximums.

Toxic pollutants were also present in Underwood Creek, but at no time did the levels exceed State of Wisconsin chronic criteria. MMSD developed a water quality index used to evaluate river and creek water quality. This measurement is based on nationally recognized indices and established water quality criteria. The water quality in Underwood Creek was regularly classified as either “fair” or “bad,” with 2005 providing the worst year for water quality, on average. The study also noted that the concentrations of suspended solids, log fecal coliform, copper, and zinc in Underwood Creek increased with rainfall (MMSD, 2008).

According to the Wisconsin Administrative Code, Underwood Creek is designated for a special variance use, meaning it is unable to support full warm-water fish communities. According to SEWRPC's *A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin* (1997), a variance designation indicates that the stream has undergone extreme cultural alteration or has severe physical limitations. In 2002, staff at UWM's Stream Ecology Laboratory conducted a fish survey within Underwood Creek. Two of the sample points were close to the existing US 45 crossing of Underwood Creek, which is approximately 0.75 mile upstream of the confluence of Underwood Creek and the Menomonee River. At sample points both 0.5 mile and 1.0 mile upstream of the confluence, six species of fish were inventoried. The most common fish species sampled at these sites included the green sunfish, bluegill, and blacknose dace. According to the DNR, the Department and stakeholders are working to rehabilitate Underwood Creek and its tributaries to restore warm-water fish habitat and northern pike sport fisheries.

Many streams in the watershed, including Underwood Creek and Honey Creek, have been concrete lined or straightened to convey floodwaters off the land faster, which restricts habitat for aquatic life (DNR, 2001). MMSD, as part of the *Watercourse Management System Plan*, will rehabilitate Underwood Creek from Highway 100 to its confluence with the Menomonee River by replacing the concrete-lined channel with natural banks (MMSD, 2002). The concrete-lined channel bottom of a 300-foot section, near US 45, will be replaced with stone and floodplain vegetation. The side slopes will remain concrete-lined (MMSD, 2006a).

Underwood Creek and Honey Creek are not listed as impaired waters under Section 303(d) of the Clean Water Act. However, sections of Underwood Creek and Honey Creek contain lower amounts of dissolved oxygen than other areas in the watershed. Without sufficient oxygen in the water, desirable species of fish and other aquatic life cannot survive. The amount of dissolved oxygen in water is one of the most important water quality indicators. Stream and wetland modification, urban and rural runoff, construction site erosion, and industrial point sources of pollution are the major contributors to degraded water and habitat quality within the watershed. Additionally, flooding is a major concern in the Menomonee River watershed.

Stormwater Collection

In the study area, the majority of runoff from the freeway system is collected by inlets and conveyed in storm sewer pipes. This storm sewer system, like most in urban areas, empties directly into streams. The north leg of the study-area freeway system drains into Underwood Creek except a small area near Burleigh Avenue that drains to the Menomonee River. The east leg drains into Honey Creek, and the south and west legs drain into the South Branch of Underwood Creek through a 96-inch storm sewer (see **Exhibit 3-28**).

The arterial roadways mimic the freeway collection system, and also drain to nearby waterways. Highway 100 and Watertown Plank Road west of US 45 drain into Underwood Creek. Watertown Plank Road east of US 45 drains to the Menomonee River. North of I-94, 84th Street drains into Honey Creek.

3.11.2 Surface Water and Fishery Impacts

Water Quality

Water quality impacts can occur due to stormwater runoff from highways. Runoff pollution is rainwater or melting snow that washes off roads, bridges, parking lots, rooftops, and other impermeable surfaces. As it flows over these surfaces, the water picks up dirt and dust, rubber and metal deposits from tire wear, antifreeze and engine oil that has dripped onto the pavement, pesticides and fertilizers, and discarded cups, plastic bags, cigarette butts, pet waste, and other litter. These contaminants are carried into lakes, rivers, and streams and have the potential to affect water quality, vegetation, and associated aquatic life (U.S. EPA, 1995a).

Water quality impacts are associated with constructing, operating, and maintaining roadways. The primary construction impact is the potential for erosion and siltation into streams. An increase in suspended sediment can reduce aquatic productivity by limiting photosynthesis, lowering oxygen levels, and covering food sources and fish spawning areas.

During normal roadway operation, these pollutants could be washed from the roadway surface by stormwater runoff to nearby water bodies. The effects of these pollutants would be greatest at locations that discharge directly to waterways. Winter maintenance includes applying deicing agents, normally salt and sand. Deicing salts can also affect water quality by increasing the chloride levels during runoff and snowmelt. Salt flows into ditches and travels to receiving waterways. Salt spray from passing vehicles drifts as a mist and deposits on vegetation and soil.

The most common deicing agent used in Wisconsin is sodium chloride, commonly referred to as road salt. According to TRB Special Report 235, *Highway Deicing: Comparing Salt and Calcium Magnesium Acetate* (1991), impacts of road salt can adversely affect roadside vegetation, streams, and groundwater, but the impacts depend on a wide range of factors. Traffic levels,

wind direction, and intensity and frequency of salt application affect the extent of damage to vegetation. Threshold levels vary based on the species, temperature, light, humidity, wind, soil type, drainage patterns, precipitation, plant size, and water availability.

In general, chloride is thought to be more harmful than sodium to plants. Chloride can cause stress similar to drought conditions when it accumulates in plants. Sodium's impact can be detrimental to plant growth but is less direct. A 1990 Nevada DOT study found that the slope of the roadside is a key factor in determining where salt reaches vegetation (Caltrans and Nevada DOT, 1990). In flat areas, the salt exposure was an average of 17 feet from the edge of pavement.

Runoff from roadways or melting snow enters the ground through ditches adjacent to the study-area freeway system. Studies have found that concentrations are highest within 5 to 10 feet of the edge of pavement, but some studies have found increased sodium and chloride levels in soil up to 30 feet from the pavement. Salt spray can deposit on leaves and branches. Road salt can enter water supplies by percolation through soil into groundwater.

Stormwater runoff from pavement is typically warmer than stream water temperature, and therefore, increased runoff can potentially raise stream temperatures. Increased stream water temperatures can impair habitat for cold-water aquatic species by lowering the amount of dissolved oxygen available and increasing the amount of biological activity, further affecting dissolved oxygen levels.

Water Quantity

The amount of stormwater runoff from highways increases proportionately to the amount of impervious surface (that is, pavement). The Modernization and Reduced Impacts Alternatives, and the Adjacent Arterials Component would increase the amount of runoff from the roadway compared to the No-Build Alternative. In general, an increase in runoff volume can increase the velocity of the runoff thus increasing the potential for erosion and increased sediment (Bent et al., 2001).

The amount of stormwater that runs off the study-area freeway system is an important consideration. Runoff from roadways can increase the amount of water in area streams above normally carried capacities. MMSD prepared the following primer on runoff in urban areas from buildings, parking lots, and roads:

In areas with low levels of development, depending on soil conditions, as much as 50 percent of rainfall can be absorbed directly into the ground, with only about 10 percent of this water running off the land. In contrast, where the land has been extensively developed as in highly urbanized areas, very little water is absorbed into the ground. Instead, more than half of the water runs off the land because of hard impervious surfaces like buildings, streets, and parking lots.

These increases in runoff volumes from highly developed areas often contribute to frequent and more severe flooding problems. Additionally, this runoff also picks up a variety of pollutants from the surrounding landscape and carries it to the stream. Even small storms in highly developed areas can produce dramatic "pulses" of high flows and pollutant loads. Because these high flow pulses occur on a more or less regular basis, they can lead to stream channel erosion, bank instability, pollutant-related toxicity to aquatic organisms and washout of aquatic organisms that live in the stream upon which fish feed.

While there are environmental consequences to high flows during wet periods, there are equally as stressful conditions of lower flow and higher water temperature extremes during dry periods. This occurs because rainfall sheds off the land too quickly in urbanized areas, not allowing rainwater time to replenish the groundwater flow to the stream in a slow, sustainable manner. This

reduction of baseflow, the drying of streams and streambeds, prevents the formation of diverse aquatic life communities and healthy fish populations (MMSD, 2004).

EXHIBIT 3-29
Relationship Between Impervious Area and Stream Flow

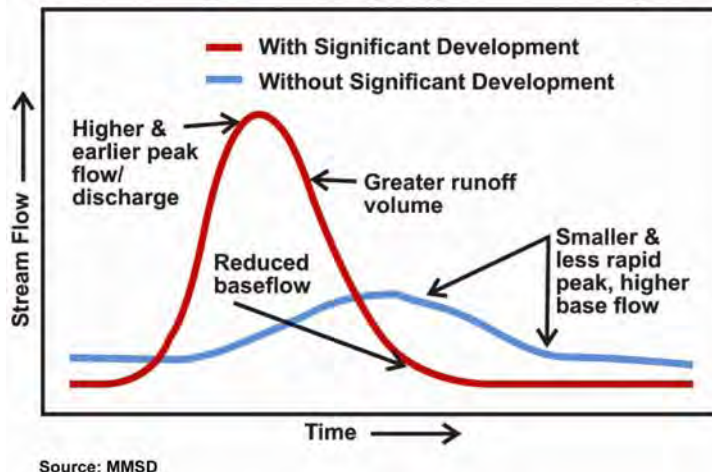


Exhibit 3-29 illustrates the relationship between impervious area and stream flow.

In response to the potential impacts of increased stormwater runoff, WisDOT and FHWA are evaluating several best management practices to minimize the amount of runoff that enters water bodies, reduce the flow's velocity, and improve the water quality of the runoff (that is, remove sediment and pollutants). See Section 3.11.3, Measures to Mitigate Adverse Effects.

The WisDOT/DNR Cooperative Agreement contains a Memorandum of Understanding regarding stormwater discharges to waters of the state. This Memorandum of Understanding requires WisDOT to implement a stormwater management program for its projects that is consistent with Section 402(p) of the Clean Water Act, Chapter 283 of the State Statutes, and Chapter NR 216 Wisconsin Administrative Code.

Wisconsin Administrative Code Chapter TRANS 401 outlines stormwater management and erosion control procedures for WisDOT projects. As applied to this project, this rule requires removal of 40 percent of total suspended solids for the study area, buffer areas upstream of waterways and wetland, and maintaining the 2-year peak discharge rate to the maximum extent practicable.

No-Build Alternative

Under the No-Build Alternative, stormwater would continue to drain off the existing pavement and generally enter area waterways and ditches untreated. Water that drains off bridges would fall directly into waterways below. Few areas of the study-area freeway and local roadway system would have treatment techniques to remove suspended solids from stormwater runoff. Less stormwater would drain off the study-area freeway and local roadway system into Underwood Creek and Honey Creek under this alternative, compared to the Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component, but the level of pollutants would be higher.

Modernization Alternatives

No new water crossings would be required as a result of the Modernization Alternatives. All of the Modernization Alternatives would increase the amount of impervious pavement surface that currently exists within the freeway system. The amount of new pavement will vary depending upon the alternative and sub-alternative selected. On the north leg, the amount of pavement will increase approximately 33.3 to 35.9 acres (37 to 40 percent) from the existing condition. On the east leg, the amount of pavement will increase by approximately 14.1 to 16.3 acres (47 to 51 percent). For the south leg and west legs, the Modernization Alternatives would increase the amount of pavement present by about 13.8 acres (43 percent) and 13.5 acres (43 percent), respectively, from the existing condition. In the core of the Zoo Interchange, the Modernization Alternatives would increase the amount of pavement present by about 32.1 acres (98 percent).

MMSD has expressed concern over an increase in the volume of stormwater runoff from the study-area freeway system; noting that increased runoff could increase the likelihood of downstream flooding. MMSD sized its floodwater management basins at the Milwaukee County Grounds assuming the study-area freeway system's impervious area would not expand (MMSD, 2008). The City of West Allis has also expressed concern about Underwood Creek's ability to handle additional runoff (see Appendix D, page D-53).

Reduced Impacts Alternative

No new water crossings would be required as a result of the Reduced Impacts Alternative; however, the Reduced Impacts Alternative would increase the amount of impervious pavement surface that currently exists within the freeway system. On the north leg, the amount of pavement will increase approximately 23.1 acres (28 percent) from the existing condition. On the east leg, the amount of pavement will increase by approximately 13.6 acres (48 percent). For the south and west legs, the Reduced Impacts Alternative would increase the amount of pavement present by about 13.5 acres (48 percent) and 8.5 acres (42 percent), respectively, from the existing condition. In the core of the Zoo Interchange, the Reduced Impacts Alternative would increase the amount of pavement present by about 29.1 acres (86 percent).

Adjacent Arterials Component

No new water crossings would be required as a result of the Adjacent Arterials Component; however, the Adjacent Arterials Component would increase the amount of impervious pavement surface that currently exists within the local roadway system. In the Highway 100 Corridor, the amount of pavement will increase approximately 4.4 acres (23 percent) from the existing condition. In the Watertown Plank Road Corridor, the amount of pavement will increase by approximately 3.6 acres (29 percent). In the 84th Street Corridor north of I-94, the amount of pavement will increase by approximately 0.2 acre (6 percent) from the existing condition.

3.11.3 Measures to Mitigate Adverse Surface Water and Fishery Impacts

WisDOT would implement stormwater management techniques for the Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component. The Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component will increase impervious area and therefore increase the amount of stormwater runoff from the study-

area freeway and local roadway system. However, these alternatives will also provide the opportunity to implement best management practices (BMPs) to treat the runoff and bring the study-area freeway and local roadway system in compliance with Wisconsin's stormwater management regulations that limit the amount of pollution in runoff.

Stormwater treatment measures will be evaluated during the project's design phase. BMPs can be utilized for stormwater management. BMP options are listed below and shown in **Exhibit 3-30**.

- **Retention Basins (Wet Detention Basins)** — Retention basins have a permanent pool of water year-round. The permanent pool allows pollutant particles in stormwater runoff to settle out over an extended period of time. Nutrient uptake also occurs through increased biological activity.
- **Dry Detention Basins** — A dry detention basin is typically designed to store runoff and discharge it slowly to reduce the peak discharge downstream. As normally designed, these basins typically have little effect on the volume of stormwater released to the receiving water. The peak flow reduction is often accomplished through use of a multistage outlet structure that allows increased discharge as water levels in the basin increase.
- **Infiltration Devices** — Infiltration can be achieved through use of trenches or grass swales. Infiltration devices are used to slow down water flow so that more water is absorbed into the ground and more pollutants are removed from runoff.
- **Grass Ditches** — This BMP generally helps reduce suspended solids to meet the regulatory goal of TRANS 401, which outlines stormwater management and erosion control procedures for WisDOT projects.
- **Trapezoidal Swale through Infield** — This BMP combines grass ditch treatment with peak flow reduction and is considered the same level of suspended solid control as grass ditches.
- **Vegetated Rock Filters** — This BMP may be used at outfalls to waterways or anywhere concentrated runoff leaves the right of way. It is similar in concept to a level spreader which attempts to reintroduce sheet flow and also provides a small amount of peak flow and volume reduction.
- **Swale Blocks/Ditch Checks** — These are small earthen berms constructed in the bottom of a ditch at regular intervals to detain runoff from frequent storms. This BMP provides peak flow reduction and may provide infiltration benefits depending on soil conditions.
- **In-line Storage** — This method is not desirable from a water quality standpoint, but would manage water quantity. Storm sewer pipes would be designed larger than normal to provide storage in the sewer during rain events, then the water is gradually released after the rain event ends.

To comply with State Statute 87.30 and NR 216⁵ and to address concerns raised by MMSD and the City of West Allis, WisDOT and FHWA are also investigating retention/detention basins to manage stormwater from the proposed improvements. The retention/detention ponds would also improve water quality by allowing solid pollutants (sand, grit, etc.) to settle out of the water before it flows into storm sewers or streams. If these retention/detention ponds are built, WisDOT will provide landscaping around the pond. Potential locations for retention/detention basins include:

- West Leg—Along the Underwood Creek Parkway south of I-94. Stormwater runoff from the south and west legs would be stored at this location (see also Section 4.3.1 and 4.3.4). The Oak Leaf Trail is routed along a little-used roadway that currently occupies the potential pond location. WisDOT would remove the roadway and relocate the Oak Leaf Trail to a location suitable to the Milwaukee County Parks Department if a pond were built at this location.

Relocation of the hotel and coffee shop in the northwest quadrant of the Highway 100 Interchange with I-94 may make space available to store stormwater runoff from the Highway 100 corridor south of Bluemound Road. Reconfiguration of the I-94/Highway 100 Interchange may also make space available for one or two small ponds.

- East Leg—In the northwest quadrant of the I-94/84th Street interchange. A retention/detention basin in this location may require relocating the Honey Creek stream bed further east of its current location (see also Section 4.3.4). The basin would provide storage for stormwater runoff from the east leg of the study-area freeway system. Some adjacent residents oppose a pond at this location.

DNR has encouraged WisDOT to consider Honey Creek channel improvements downstream of I-94 in lieu of a retention/detention basin. The channel improvements could include removing the concrete lining and providing a wider channel. WisDOT will work with DNR, MMSD, and local governments to investigate this option. The east leg does not have enough available open space to build a properly sized retention/detention pond without acquiring and removing buildings.

- South Leg—Reconfiguration of the Greenfield Avenue Interchange may make space available for one or more small ponds on the east side of US 45/ I-894.
- North Leg—In the northeast quadrant of the US 45/Watertown Plank Road interchange. The basin would collect stormwater runoff from US 45, between the Zoo Interchange and Swan Boulevard. North of Underwood Creek to an area approximately 900 feet south of Burleigh Street, stormwater runoff would continue to flow through the freeway storm sewer system, into Wauwatosa storm sewers, and discharge to Underwood Creek. Reconfiguration of the north leg service interchanges may make space available for multiple small ponds at Wisconsin Avenue and Watertown Plank Road.
- Core—Reconfiguration of the core of the Zoo Interchange may make space available for one or more small ponds. The core drains into Honey Creek, so ponds in the core would reduce the need for a pond at 84th Street.

⁵ NR 216 says that WisDOT bridge “construction may not cause any obstruction to flood flows.”

- **Adjacent Arterial Component**— In the northeast quadrant of the Highway 100/Watertown Plank Road intersection an existing 1.7-acre pond may be expanded to a 2.5-acre pond.

WisDOT will assess the different water quality and water quantity management options during the design phase.

No fishery mitigation measures have been identified.

3.12 Environmental Corridors and Natural Areas

3.12.1 Affected Environment

As defined by SEWRPC, environmental corridors are areas in the landscape containing especially high-value natural, scenic, historic, scientific, and recreational features. In southeastern Wisconsin, they generally lie along major stream valleys, around major lakes, and in the Kettle Moraine area. These features occur in an essentially linear pattern of relatively narrow, elongated areas.

Primary environmental corridors include a variety of important natural resource and resource-related elements and are at least 400 acres in size, 2 miles long, and 200 feet wide. The primary environmental corridors include some of the best remaining woodlands, wetlands, and wildlife habitat areas in the study area. These corridors have great environmental and recreational value. Their preservation in an essentially open, natural state will serve to maintain a high level of environmental quality in some segments of the study area.

In the Zoo Interchange study area, primary environmental corridors are located along both Underwood Creek and Honey Creek. The primary environmental corridor along Underwood Creek crosses the study area in two locations: under I-94 at 124th Street, and under US 45 north of Watertown Plank Road. The Underwood Creek primary environmental corridor includes the DNR's Forestry Science Center. A primary environmental corridor follows Honey Creek from I-94 north to its confluence with the Menomonee River. The study area primary environmental corridors and the isolated natural areas and state natural area discussed below are shown in **Exhibit 3-31**.

Secondary environmental corridors contain substantial, but smaller, concentrations of natural resources and generally connect with the primary environmental corridors. Secondary environmental corridors are at least 100 acres in size and 1 mile long. There are no secondary environmental corridors in the study area.

Smaller concentrations of natural resource base elements that are separated physically from the environmental corridors by intensive urban or agricultural land uses are also important. These areas, which are at least 5 acres and 200 feet wide, are isolated natural resource areas. The isolated natural areas in the study area include portions of the Milwaukee County Zoo, Wisconsin Avenue Park, and the east side of Highway 100 between Research Drive and Watertown Plank Road.

There is one designated state natural area located near the study corridor. Natural areas are classified on the basis of a system developed by the DNR. According to the *Park and Open Space Plan for the City of Wauwatosa* (SEWRPC, 1998), Wil-O-Way Woods, located just east of US 45 between Swan Boulevard and Underwood Creek Parkway, is considered a natural area of local significance. This area is now the location of DNR's Forestry Science Center. It is defined as a natural area that has been substantially altered by human activity, but provides refuge for native plant and animal species that no longer exist in the surrounding area, due to disruptive land uses and associated activities. The 41-acre Wil-O-Way Woods is considered to be a moderate-quality, southern dry-mesic hardwood forest, containing a representative ground flora.

Milwaukee County is designated as a Coastal Area by Wisconsin's Coastal Zone Management Program; however, there are no special coastal areas located in the study area. Based on WisDOT's review and coordination with the Coastal Management Program, the project appears to be consistent with the Coastal Management Program's goals.

3.12.2 Environmental Corridor and Natural Area Impacts

No-Build Alternative

Under the No-Build Alternative, no environmental corridors or natural areas would be affected.

Modernization Alternatives

The Modernization Alternatives would impact primary environmental corridors on the north, west, and east legs of the Zoo Interchange study area.

The Underwood Creek primary environmental corridor would experience similar impacts from the 6-lane N1 and N3 Alternatives and 8-lane N1 and N3 Alternatives. Reconstructing the US 45 bridge over Underwood Creek Parkway would require construction of new bridge piers within this primary environmental corridor. Currently, 1.8 acres of WisDOT right-of-way is classified as primary environmental corridor on the north leg. The 6-lane Modernization Alternatives would impact an additional 0.4 acre of primary environmental corridor on the north leg, while the 8-lane Modernization Alternatives would impact an additional 0.7 acre. The area impacted consists mainly of small upland trees and bushes along the concrete-lined portion of Underwood Creek.

On the west leg, the bridge carrying I-94 over Underwood Creek and the associated primary environmental corridor will be replaced. The new bridge will be slightly wider, but it will span over the primary environmental corridor, affecting 0.1 acre. As part of the project, a stormwater detention pond may be constructed at Underwood Creek Parkway on the west leg south of I-94. This pond would impact approximately 0.2 acre of primary environmental corridor.

On the east leg, up to 4 acres of primary environmental corridor would be impacted at Honey Creek, west of 84th Street, to create a 2.7-acre stormwater retention/detention pond. To construct the pond, trees would be removed, and the concrete lined stream bed would be re-aligned.

Reduced Impacts Alternative

The Reduced Impacts Alternative would impact primary environmental corridors on the north, west, and east legs of the Zoo Interchange study area.

Reconstructing the US 45 bridge over Underwood Creek Parkway would require construction of new bridge piers within this primary environmental corridor. Currently, 1.8 acres of WisDOT right-of-way is classified as primary environmental corridor on the north leg. The Reduced Impacts Alternative would impact an additional 0.2 acre of primary environmental corridor on the north leg. The area impacted consists mainly of small upland trees and bushes along the concrete-lined portion of Underwood Creek and trees at the DNR Forestry Science Center.

On the west leg, a stormwater detention pond may be constructed at Underwood Creek Parkway south of I-94. This pond would impact approximately 0.2 acre of primary environmental corridor.

On the east leg, construction of the westbound entrance ramp at the I-94/84th Street Interchange would occur within primary environmental corridor. The Reduced Impacts Alternative would impact an additional 0.2 acre of primary environmental corridor at 84th Street north of I-94. The area impacted consists mainly of small upland trees and bushes along the concrete-lined portion of Honey Creek. At this location, up to 4 acres of primary environmental corridor could be impacted at Honey Creek, west of 84th Street, to create a 1- to 1.5-acre stormwater retention/detention pond.

Adjacent Arterials Component

The Adjacent Arterials Component would impact approximately 0.01 acre of primary environmental corridor along Watertown Plank Road at Underwood Creek west of Highway 100. The impacted areas consist mainly of small upland trees and bushes. An existing 1.7-acre stormwater pond that lies within the primary environmental corridor may be expanded to a 2.5-acre pond. Part of the expansion would occur in the primary environmental corridor and part would be outside the primary environmental corridor.

In addition, the Adjacent Arterials Component would impact isolated natural resource areas on Bluemound Road, Highway 100, and Watertown Plank Road.

Reconstructing the Highway 100 intersection at Bluemound Road would impact approximately 0.04 acre of isolated natural resource area located on Milwaukee County Zoo property in the southeast quadrant of the intersection.

Reconstructing Highway 100 to four-lanes in each direction would impact approximately 0.08 acre of isolated natural resource area located along the east side of Highway 100 between Research Drive and Watertown Plank Road.

Reconstructing Watertown Plank Road to three-lanes in each direction would impact approximately 0.07 acre of isolated natural resource area located in the southeast quadrant of the Watertown Plank Road intersection at Highway 100.

3.12.3 Measures to Mitigate Adverse Environmental Corridor and Natural Area Impacts

All primary environmental corridors are also Milwaukee County parkland. Mitigation measures are discussed in Section 3.26.3.

3.13 Floodplains and Hydraulics

3.13.1 Affected Environment

Floodplains provide flood and stormwater attenuation by decreasing water velocities and temporarily storing flood water thus also removing nutrients and providing erosion control. Floodplain also carries regional flood discharges and provides wildlife habitat and corridors for wildlife movement. These functions vary among locations depending upon vegetative cover, waterway hydrology, and distance from the waterway. The freeway mainline crosses the 100-year floodplain associated with Underwood Creek on the north leg along US 45. On the west leg, I-94 crosses over the 100-year floodplain associated with the south branch of Underwood Creek near 124th Street. The bridges carrying US 45 and I-94 over these floodplains will be replaced.

One location in the study area has a 100-year floodplain that does not cross freeway mainline, but does border an interchange ramp. This occurs on the east leg in the northwest quadrant of the 84th Street interchange, where the Honey Creek floodplain abuts the entrance ramp to westbound I-94. 84th Street crosses this 100-year floodplain approximately 750 feet north of I-94. The bridge carrying local roadway traffic over Honey Creek at this location will remain in place.

Local roadways in the study area also cross the 100-year floodplain associated with Underwood Creek at Highway 100 approximately 1,000 feet north of Watertown Plank Road and at Watertown Plank Road approximately 800 feet west of Highway 100. Both bridges carrying local roadway traffic over the floodplain will remain in place.

3.13.2 Floodplain Impacts

Executive Order 11988 on Floodplain Management and 23 CFR 650, Subpart A, directs federal agencies to take action to reduce the risk of floodplain loss; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. The executive order also requires agencies to elevate structures above the flood base whenever possible. The objective of the order is to avoid the long- and short-term adverse impacts associated with the occupancy and modification of floodplain, and to avoid direct and indirect support of floodplain development where ever practical. (See Section 3.2.2 for floodplain cumulative impact discussion.)

Through the WisDOT-DNR Cooperative Agreement, WisDOT is required to determine the impact of new or modified bridges, box culverts on the 100-year flood elevation (WisDOT and DNR, 1993). A hydraulic analysis of both existing and proposed conditions is conducted to determine if the bridge or culvert causes a change in the 100-year flood elevation. Property owners, local zoning authorities, and the DNR are notified if the flood elevation increases by more than 0.01 foot. It should be noted that minor lengthening of

most box culverts often do not require a hydraulic analysis unless there are known deficiencies in hydraulic capacity.

WisDOT is required to assist affected municipalities in updating floodplain information in their zoning ordinance for submittal to the Federal Emergency Management Agency, if requested. WisDOT provides the results of the analysis, the hydraulic models developed, mapping, and other exhibits developed in the course of the analysis.

No-Build Alternative

The No-Build Alternative would not affect floodplain.

Modernization Alternatives

All Modernization Alternatives would result in roughly 0.1 to 0.2 acre of fill being placed in the 100-year floodplain. On the north leg, the 6-lane Modernization Alternatives would fill 0.1 acre of floodplain along Underwood Creek. The 8-lane Modernization Alternatives would require 0.2 acre of floodplain associated with Underwood Creek to be filled.

Bridge replacements at the Underwood Creek and South Branch of Underwood Creek crossing locations would involve mainline crossings of the 100-year floodplain. All bridges would be sized to pass a 100-year flood without interruption to traffic due to flood damage to the roadway or structures and would not increase headwater elevations by more than 0.01 foot. The floodplain structures would not interrupt or terminate a transportation route needed for emergency vehicles or routes that serve as an area's only evacuation route. All floodplain crossings would be constructed in accordance with the WisDOT-DNR Cooperative Agreement.

As noted, one of the intents of Executive Order 11988 is to avoid direct and indirect support of development within existing floodplains. According to the executive order, an action supports floodplain development if it encourages, allows, serves or otherwise facilitates additional floodplain development. Although the project would directly affect the floodplain, it would not support development in the Underwood Creek floodplain because this area is publicly owned and will remain so.

Reduced Impacts Alternative

The Reduced Impacts Alternative would result in approximately 0.5 acre of fill being placed in the 100-year floodplain. On the north leg, the Reduced Impacts Alternative would require 0.3 acre of floodplain associated with Underwood Creek to be filled. Bridge replacements at the Underwood Creek crossing locations would involve mainline crossings of the 100-year floodplain. On the east leg, reconstructing the 84th Street westbound entrance ramp to I-94 under the Reduced Impacts Alternative would fill approximately 0.2 acre of Honey Creek floodplain.

All bridges would be sized to pass a 100-year flood without interruption to traffic due to flood damage to the roadway or structures and would not increase headwater elevations by more than the permissible 0.01 foot. The floodplain structures would not interrupt or terminate a transportation route needed for emergency vehicles or routes that serve as an area's only evacuation route. All floodplain crossings would be constructed in accordance with the WisDOT-DNR Cooperative Agreement.

Adjacent Arterials Component

The Adjacent Arterials Component would not affect floodplain since the Highway 100, Watertown Plank Road, and 84th Street bridges carrying roadway traffic over the floodplain would remain in place.

3.13.3 Measures to Mitigate Adverse Floodplain Impacts

All structures would have adequate capacity for 100-year flood flow without public or emergency vehicle interruption from damage to the roadway or structures and would not increase headwater elevations by more than 0.01 foot. None of the floodplain crossings would cause a substantial potential for interruption or termination of a transportation facility needed for emergency vehicles or the community's only evacuation route. Crossings would be consistent with local floodplain management goals and objectives. **Hydraulic data will be provided to local zoning authorities.** Additionally, floodplain crossings will be designed to not make the existing flood profile worse for adjacent landowners.

3.14 Groundwater and Water Supply

3.14.1 Affected Environment

Groundwater sustains lake levels, provides the base flows for regional streams, and comprises a major source of water supply for domestic, municipal, and industrial users. Like surface water, groundwater is susceptible to depletion in quantity and to deterioration in quality. Lake Michigan is the source of drinking water in the study area. Milwaukee Water Works provides water to the cities of Milwaukee, Wauwatosa, and West Allis (see Section 3.4, Utilities).

According to U.S. EPA's list of Designated Sole-Source Aquifers, there are no sole-source aquifers in Wisconsin as defined by Section 11424(e) of the Safe Drinking Water Act (U.S. EPA, 2004).

Road salt (sodium chloride) is applied to the study-area freeway system during winter weather conditions. WisDOT contracts with Milwaukee County to clear the study-area freeway system of snow and ice. WisDOT set guidelines on when and how much salt is applied to roads in winter. Milwaukee County submits records indicating the type and amount of deicer used for each application. Salt storage sites must have an impermeable base and cover, as well as a holding basin to contain runoff. These requirements help minimize the impact to groundwater from storage facilities.

The Milwaukee County Zoo has a high-capacity well in the northwest quadrant of the Zoo Interchange. The well is used to keep Lake Evinrude and smaller ponds on the Zoo grounds at full elevation. WisDOT and FHWA are not aware of any other water supply wells in the study area.

3.14.2 Groundwater and Water Supply Impacts

No-Build Alternative

The No-Build Alternative would not affect groundwater or drinking water supply.

Modernization and Reduced Impacts Alternative and Adjacent Arterials Component

The Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component are not expected to adversely affect drinking water supply or localized groundwater at or near the surface.

Since sizable dewatering or depressurizing activities are not anticipated during construction, temporary impacts on the groundwater system are not expected or would be minimal in isolated locations such as creeks/stream beds and other low lying areas. No noteworthy changes in chemical characteristics of the surface material are anticipated and no degradation of water quality entering the aquifer is expected.

The County Zoo's well would not be directly affected. Electrical transmission towers may be moved close to the well head.

3.14.3 Measures to Mitigate Adverse Groundwater and Water Supply Impacts

See Section 3.27.4, Water Quality/Erosion. WisDOT and FHWA will ensure that access to and maintenance of the county Zoo's well head is not adversely affected.

3.15 Wetlands

The Corps' Wetland Delineation Manual (1987) defines wetlands as "areas that are inundated or saturated by surface or ground water 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." According to the 1987 manual, in order to be considered a jurisdictional wetland, three criteria must be met: (1) a prevalence of hydrophytic vegetation, (2) the presence of hydric soils, and (3) wetland hydrology.

3.15.1 Affected Environment

WisDOT made a preliminary determination of wetland boundaries in June and July 2007 and September 2010. Wetland determinations and boundaries were estimated based on vegetation, topography, and obvious wetland hydrology field indicators. Once identified, the wetlands were then grouped by wetland classification. Preliminary wetland investigations identified 18 wetlands, totaling 7.4 acres, adjacent to the study-area freeway system (**Table 3-15**). **Exhibit 3-32** illustrates the wetlands.

On the north leg, there are eight wetlands, two of which are associated with Underwood Creek and are within the primary environmental corridor. The remaining six wetlands consist primarily of depressional or disturbed, isolated wetlands. On the east leg, there is one depressional wetland that is associated with a stormwater pond at the Honey Creek Corporate Center. On the south leg, there are two isolated wetlands; one is associated with a roadside ditch, and the other is a small seep wetland on the roadside slope. On the west leg, there are six wetlands that consist primarily of roadside ditches or disturbed isolated wetlands. Within the Highway 100 corridor, there is one contiguous wetland that is associated with an unnamed, intermittent tributary to Underwood Creek.

U.S. EPA, in cooperation with the Corps, has implemented an advanced identification (ADID) program to define if wetlands and other waters are generally suitable or not suitable for discharge of dredged or fill material. In southeastern Wisconsin, advanced identification of such wetlands was undertaken in consultation with SEWRPC and DNR to support

objectives of the area-wide water quality management plan that seeks to preserve high-value aquatic areas by redirecting development outside primary environmental corridors. Discharging dredged or fill material into wetlands and other waters located in primary environmental corridors is generally considered not in conformance with the Clean Water Act's Section 404(b)(1) guidelines. The two wetlands in the Underwood Creek primary environmental corridor are ADID wetlands.

TABLE 3-15
Wetland Summary

Wetland Identifier (see Exhibit 3-32)	Size	Comments
W-1	1.2 acres	W-1 is a shallow marsh with a meadow fringe. The wetland is connected to a ditch that was likely created to drain the wetland. However, the ditch shows evidence of wetland characteristics.
W-2	0.06 acre	W-2 is a small seep wetland on a roadside slope. Stormwater is likely directed to this wetland.
W-3	0.2 acre	This depressional wetland is sustained by stormwater from the large parking lot to the north.
W-5	0.04 acre	W-5 is a depressional wetland that is sustained by stormwater runoff from the parking lot to the south and from the adjacent roads. It is connected to W-6 by a culvert.
W-6	0.05 acre	W-6 is depressional wetland that is sustained by stormwater runoff from the parking lot to the south and from the adjacent roads. It is connected to W-5 by a culvert.
W-7	0.42 acre	This shallow marsh wetland extends outside the study area to the east. The wetland is connected to the roadside ditch which also contains wetland characteristics.
W-9	0.8 acre	W-9 is a depressional wetland. It extends outside the study area to the east.
W-11	0.2 acre	W-11 is a shallow marsh fringe of a stormwater pond. Because the wetland is part of a pond that was likely constructed as a stormwater management feature, it is likely not under Corps jurisdiction.
W-12	0.2 acre	This wetland is located within a ditch located in a mapped hydric soil unit. The wetland receives stormwater from the roadside ditch and drains into an unnamed tributary to the west.
W-13	0.2 acre	This wetland receives water from an unnamed tributary and roadside ditches. The stream dissipates in the wetland. The origin of the unnamed tributary is unknown.
W-14	0.2 acre	This cattail marsh is located at the base of a roadside ditch and collects water from the adjacent roads.
W-15	0.8 acre	W-15 is a depressional wetland that receives water from a ditch and from overland runoff.
W-16	0.6 acre	W-16 is located at the end of two converging ditches. The shallow marsh is supported by hydrology from these ditches. The ditches are included as wetland to a point where the evidence of hydrophytic vegetation ceases.
W-17	1.6 acres	This depressional wetland is located in a bottomland forest along a former railroad corridor. The width of the lowland is greater than 30 feet and contains characteristics of wetland.

TABLE 3-15
Wetland Summary

Wetland Identifier (see Exhibit 3-32)	Size	Comments
W-18	0.5 acre	W-18 is a depressional wetland that includes the ditch for this ramp.
W-19 and W-20	0.33 acre	Outside area of effect.
W-21		W-21 is a riparian emergent wetland that is contiguous with an unnamed intermittent tributary to Underwood Creek.

Note: a very small, shallow marsh wetland was identified in September 2010 on the east side of Highway 100 between Watertown Plank Road and Underwood Creek. The wetland is approximately 5 square feet in area.

The 18 wetlands in the project corridor are generally characterized as degraded due to the presence of non-native species or other prior disturbances that diminished wetland functions and values. However, only the floristic component was considered during the wetland investigation, and the degraded modifier could be eliminated if the majority of wetland attributes, functions, or values are found to be higher quality during the final delineation. Floristic quality is one indicator of quality but alone does not determine a wetland's function and value. For instance, degraded wetlands do provide wildlife habitat.

Wetland Classifications

The Wisconsin Department of Transportation Wetland Mitigation Banking Technical Guideline (WisDOT, 2002) was used to classify wetlands in the Zoo Interchange study area. Wetlands identified within the project corridor are shallow marsh (SM), wet meadow (M), shrub swamp (SS), wooded swamp (WS), and riparian emergent (RPE). Many of the wetlands include more than one wetland type. The descriptions of each classification for wetlands that would potentially be impacted within the project corridor are as follows:

Shallow Marsh (SM). Shallow marshes form in saturated or inundated soils and are characterized by seasonal standing water. Soils in shallow marshes are usually saturated during the growing season and often inundated with 6 inches or more of water. Shallow marshes in Wisconsin are typically found in shallow lake basins or sloughs, on the border of deep marshes on the landward side, in seep areas near irrigated lands, and in areas where water collects due to drainage off roadways, ditches, and other depressional areas.

Wet Meadow (M). Wet meadows commonly occur in poorly drained areas such as shallow lake basins and the land between shallow marshes and upland areas. These wetlands often occur in areas where farming is prevalent, leading historically to their draining and filling for agricultural uses.

Wet meadows are typically drier than other Wisconsin wetland types except during periods of seasonal high water. For most of the year, they do not contain standing water, though the high water table allows the soil to remain saturated.

Shrub Swamp (SS). Shrub swamps, are similar to forested swamps. Shrub swamps are found along slow moving streams and in floodplains. Forested and shrub swamps are often found adjacent to one another, reflecting the change in topography, hydrology, and past disturbances including timber removal. Soils in shrub swamps are often saturated throughout much of the year, and sometimes inundated by as much as a few feet of water.

Wooded Swamp (WS). Forested swamps are often inundated with floodwater from nearby rivers and streams. Sometimes, they are covered by several feet of very slowly moving or standing water. In very dry years, they may represent the only shallow water for miles and their presence is critical to the survival of wetland-dependent species.

Some of the primary functions of wooded swamps include stormwater and floodwater retention, as well as wildlife habitat for a variety of upland and wetland-dependent species.

Riparian Emergent (RPE). Riparian emergent wetlands are found along creeks and streams. Soils are usually saturated and often inundated by surface water or groundwater. Primary functions of riparian emergent wetlands include slowing runoff velocity, filtering water flowing them, and sustaining vegetation.

Wetland Functions

Wetlands provide functions and values depending on their position in the landscape and proximity to other plant communities, wildlife and their habitats, and the built environment. A variety of wetland functions and values are typically assessed in accepted methodologies, including the procedures described in the Highway Methodology Workbook supplement (Corps, 1999) and the Rapid Assessment Methodology forms (DNR, 2004). Wetland functions identified by these methods include floral diversity, wildlife habitat, fishery habitat, flood/stormwater attenuation, water quality protection, shoreline protection, groundwater, and aesthetics/recreation/education.

Estimating the significance of wetland functions and values is subjective and can rank from low to exceptional based on the ability of the wetland to provide the function and value being assessed. All of the wetlands within the project corridor were characterized as degraded, which indicates that while they still fulfill a wetland function or value, they may not function at an optimal level due to such factors as prior disturbance, presence of non-native species, or proximity to some external factor (roads, railroad tracks, etc.). The preliminary wetland investigation indicated a wide distribution of non-native species and the prevalence of many of those species along plant community edges or disturbed areas. Although the functions and values of wetlands within the project corridor were not assessed on an individual basis as part of the preliminary investigation, their position in the landscape and proximity to the existing roadway corridor suggests that they improve water quality by removing sediment and nutrients and provide flood attenuation by storing water and slowing runoff velocity.

3.15.2 Wetland Impacts

No-Build Alternative

No wetlands would be affected under the No-Build Alternative.

Modernization Alternatives

The Modernization Alternatives would affect 1.6 to 1.7 acres of wetlands as a result of reconstructing the study-area freeway system. Wetland impacts of the 6-lane and the 8-lane Modernization Alternatives are generally the same in terms of location and quantity. Most of the affected wetlands are degraded shallow marsh or degraded wet meadow. **Table 3-16A** provides a breakdown of wetland impacts by alternative.

TABLE 3-16A
Modernization Alternatives Wetland Impacts

Alternatives		Wetland Impact
N1 w/ North Ave. single loop interchange	6-lane	0.3 acre (W7, shallow marsh)
	8-lane	0.4 acre (W7, shallow marsh)
N1 w/ North Ave. double loop interchange	6-lane	0.9 acre (W7, shallow marsh and W18, wet meadow)
	8-lane	0.9 acre (W7, shallow marsh and W18, wet meadow)
N3 w/ North Ave. single loop interchange	6-lane	0.4 acre (W3, W5, W7 all shallow marsh)
	8-lane	0.4 acre (W3, W5, W7 all shallow marsh)
N3 w/ North Ave. double loop interchange	6-lane	0.9 acre (W3, W5, W7 all shallow marsh and W18, wet meadow)
	8-lane	0.9 acre (W3, W5, W7 all shallow marsh and W18, wet meadow)
E1	6-lane	No impact
	8-lane	No impact
E1 w/ combined service drive	6-lane	No impact
	8-lane	No impact
E1/E3 Hybrid	6-lane	0.1 acre (W11, shallow marsh)
	8-lane	0.1 acre (W11, shallow marsh)
Modified E3	8-lane	0.1 acre (W11, shallow marsh)
S2	6-lane	<.01 acre (W2, shallow marsh)
	8-lane	<.01 acre (W2, shallow marsh)
W3	6-lane	0.7 acre (W13, wet meadow/shrub swamp and W16, shallow marsh)
	8-lane	0.7 acre (W13, wet meadow/shrub swamp and W16, shallow marsh)

No ADID wetlands would be affected by the Modernization Alternatives.

Reduced Impacts Alternative

The Reduced Impacts Alternative would affect about 1.5 acres of wetlands as a result of reconstructing the study-area freeway system. Most of the affected wetlands are degraded shallow marsh or degraded wet meadow. **Table 3-16B** provides a breakdown of wetland impacts by leg.

TABLE 3-16B
Reduced Impacts Alternative Wetland Impacts

Alternatives	Wetland Impact
North Leg	1.0 acre (W3, W5, W6, W7 all shallow marsh and W18, wet meadow)
East Leg	0.1 acre (W11, shallow marsh)
South Leg	<0.1 acre (W2, shallow marsh)
West Leg	0.4 acre (W13, wet meadow/shrub swamp and W16, shallow marsh)

No ADID wetlands would be affected by the Reduced Impacts Alternative.

Adjacent Arterials Component

The Adjacent Arterials Component would affect approximately 0.05 acre of wetlands as a result of reconstructing Highway 100. The impacts would include 0.05 acre of riparian emergent wetland (W-21) located on the east side of Highway 100, south of Watertown Plank Road. The small, 5-square foot shallow marsh wetland located on the east side of Highway 100 between Watertown Plank Road and Underwood Creek would also be impacted by the Adjacent Arterials Component. No ADID wetlands would be affected under the Adjacent Arterials Component.

3.15.3 Measures to Mitigate Adverse Wetland Impacts

Presidential Executive Order 11990, Protection of Wetlands, requires federal agencies to avoid, to the extent practicable, long- and short-term adverse impacts associated with the destruction or modification of wetlands. More specifically, the order directs federal agencies to avoid new construction in wetlands unless there is no practicable alternative. The order states that where wetlands cannot be avoided, the proposed action must include all practicable measures to minimize harm to wetlands.

The Clean Water Act's Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 CFR Part 230) are administered by U.S. EPA and the Corps. The guidelines state that dredged or fill material should not be discharged into aquatic ecosystems (including wetlands), unless it can be demonstrated that there are no practicable alternatives to such discharge; that such discharge will not have unacceptable adverse impacts; and that all practicable measures to mitigate adverse effects are undertaken.

Measures to Minimize Harm

In accordance with state and federal agency policies and regulations for wetland preservation, including the Section 404(b)(1) Guidelines for Specifications of Disposal Sites for Dredged or Fill Material (40 CFR part 320), the following sections summarize wetland mitigation strategies for the Zoo Interchange study.

Avoid and Minimize Wetland Impacts. Because wetlands are scattered along all legs of the study-area freeway system, including in the ditches that drain the freeway, it is not possible to avoid wetland impacts completely during freeway reconstruction.

Of the 18 wetlands identified within the project corridor, the Modernization Alternatives would avoid impacts to ten wetlands, totaling more than 5 acres. The Reduced Impacts

Alternative would also avoid impacts to **nine** of the wetlands totaling more than 5 acres. Two of these avoided wetlands lie within the primary environmental corridor and, as a result, are ADID wetlands. These wetlands are located in the Underwood Creek Parkway and are located along Underwood Creek. Efforts to avoid and minimize impacts to ADID wetlands are given strong consideration because of the functions they perform due to their geographic position in the landscape. For example, a wetland within the primary environmental corridor can be degraded floristically, but still be considered an ADID wetland due to the function it provides at that location, such as providing flood storage adjacent to a river.

WisDOT will investigate additional measures to minimize wetland impacts such as keeping roadway side slopes as steep as practicable; disposing of excavated material on new roadway side slopes or in upland areas; minimizing sedimentation and siltation into adjacent wetlands by using strict erosion control measures; and using detention ponds, where allowed, to reduce pollutant loading and protect cold-water streams from sedimentation. Specifically, WisDOT will consider the following avoidance and minimization measures:

- Wetland 2: It may be possible to fence the wetland to avoid impacts to it by the Modernization and Reduced Impacts Alternatives.
- Wetland 3: This small wetland fed by runoff from a park-and-ride lot may be avoided by Modernization Alternative N1 and the Reduced Impacts Alternative.
- Wetland 5: Another small wetland fed by runoff from a park-and-ride lot may be avoided by Modernization Alternative N1.
- Wetland 6: Steeper side slopes may minimize the impacts to it by the Reduced Impacts Alternative. Modernization Alternatives do not impact this wetland.
- Wetland 7: Steeper side slopes may minimize the impact, but this 0.4-acre wetland may be completely filled under the Modernization Alternatives N1 and N3, and the Reduced Impacts Alternative.
- Wetland 11: Steeper side slopes may minimize the impact, but approximately half of this 0.2-acre wetland may be filled under Modernization Alternative Modified E3 and the Reduced Impacts Alternative.
- Wetland 13: Steeper side slopes to minimize the impact.
- Wetland 16: Steeper side slopes to minimize the impact.
- Wetland 18: Steeper side slopes and specifications in construction contract to prohibit contractor from going into the wetland.
- Wetland 21: Steeper side slopes may minimize the impacts to this wetland.

Wetland Compensation. Compensation for unavoidable wetland loss will be carried out in accordance with WisDOT's *Wetland Mitigation Banking Technical Guideline* developed as part of the WisDOT-DNR Cooperative Agreement on Compensatory Wetland Mitigation and the new regulations for compensatory wetland mitigation issued jointly by the Corps and

USEPA in May 2008. A wetland mitigation plan will be developed during the project's design phase, in consultation with state and federal agencies.

WisDOT developed the guideline in 1993 and updated it in 1997 and 2002 in cooperation with DNR, the Corps, U.S. EPA, U.S. Fish and Wildlife Service, and FHWA. Through the guideline, these agencies established a statewide policy regarding the sequence of activities required for WisDOT to compensate for wetland losses. Specifically, the guideline states "preference should be given for compensatory mitigation accomplished in the vicinity of the impacted area (onsite). Where such opportunities are not present or practical, in-watershed (near-site) opportunities should be explored."

For those cases in which onsite or near-site opportunities for wetland mitigation are not available, WisDOT can debit the wetland loss at the closest established wetland mitigation bank. Since the time at which the guideline was developed, onsite has been typically interpreted as being within 0.25 mile of the wetland impact, while near-site has been interpreted as within 2.5 miles of the wetland impact area. Therefore, a mitigation site search for a linear corridor, such as the I-94, I-894, and USH 45 corridors, would encompass a 0.5-mile corridor centered on the highway and expand to a 5-mile corridor if onsite opportunities were not available.

The guideline provides ratios for wetland replacement versus wetland loss depending on where the mitigation is to be provided. The replacement ratios increase with the mitigation site's distance from the impacted wetland.

WisDOT has an established statewide wetland mitigation bank located in Walworth County that has remaining acreage available for credit. Debiting wetland acreage credits from this bank to mitigate for the wetland losses from the Zoo Interchange project would be in accordance with the terms of the guideline. The Walworth County site is not in the same watershed as the study-area freeway system.

3.15.4 Wetlands—Only Practicable Alternative Finding

Basis for Finding

Executive Order 11990 on the Protection of Wetlands dated May 24, 1977 requires federal agencies to avoid new construction in wetlands unless there is no practicable alternative, and where wetlands cannot be avoided, the proposed action must include all practicable measures to minimize harm to wetlands.

The Clean Water Act's Section 404(b)(1) *Guidelines for Specification of Disposal Sites for Dredged or Fill Material* state that dredged or fill material should not be discharged into aquatic ecosystems (including wetlands) unless it can be demonstrated that there are no practicable alternatives to such discharge, that such discharge will not have unacceptable adverse impacts, and that all practicable measures to mitigate adverse effects are undertaken.

Summary of Alternatives Considered

Detailed information on alternatives is provided in Section 2. The No-Build Alternative would avoid wetland impacts but it was eliminated from consideration because it would not meet project Purpose and Need. The Replace in Kind Alternative and Spot Improvements Alternative were initially considered but eliminated from consideration

because they would not address future traffic volumes and would not address the high crash rates on the study-area freeway system.

The 6- and 8-lane Modernization Alternatives, Reduced Impacts Alternative and Adjacent Arterials Component were evaluated in detail in the Supplemental Draft EIS. The 6- and 8-lane Modernization Alternatives would both impact approximately 1.6 to 1.7 acres of wetland. The Reduced Impacts Alternative would affect 1.5 acres of wetland. The Adjacent Arterials Component would affect less than 0.1 acre of wetland.

Determination of No Practicable Alternative

After reviewing public, local unit of government and agency input received during the 45-day comment period on the Supplemental Draft EIS, WisDOT and FHWA selected the Reduced Impacts Alternative including the Adjacent Arterials Component as the preferred alternative. The Reduced Impacts Alternative is the preferred alternative because it provides the best solution for addressing long-term mobility needs and safety concerns while minimizing impacts to existing development and environmental resources to the maximum extent practicable. The Reduced Impacts Alternative would have fewer residential and business relocations, lower construction cost, and less impact on the Milwaukee County Zoo, St. Therese church and Milwaukee Montessori School than the 8-lane Modernization Alternative. The Reduced Impacts Alternative would provide a traffic level of service (D or better) that is comparable to the 8-lane Modernization Alternative and better than the 6-lane Modernization Alternative. Public, local unit of government and agency comments support the Reduced Impacts Alternative.

The Reduced Impacts Alternative including the Adjacent Arterials Component is considered to be the “environmentally preferred alternative” providing a balance of sound engineering design, addressing long-term mobility needs and safety concerns, and minimizing impacts to the existing development and natural resources, including wetlands, to the maximum extent practicable.

The Corps has identified the Reduced Impacts Alternative as the Least Environmentally Damaging Practicable Alternative (Appendix F, page F-93).

Measures to Minimize Harm/Wetland Compensation

The project description, the description of wetlands, and wetlands affected are covered in sections 3.15.1 and 3.15.2 of the EIS. The Reduced Impacts Alternative would affect 1.5 acres of wetland. As noted in Section 3.15.3, because wetlands are scattered along all legs of the study-area freeway system, including ditches that drain the freeway, it is not possible to avoid wetland impacts completely and still meet the Purpose and Need.

Measures to minimize harm to wetlands are discussed in Section 3.15.3 and include keeping side slopes as steep as possible, using erosion control to minimize sedimentation in wetlands.

Wetland Finding

Based upon the above factors and considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands of the project area, and that the Preferred Alternative includes all practicable measures to minimize harm to the wetlands that may result from such use.

3.16 Upland Habitat and Woodland

3.16.1 Affected Environment

Upland habitat occurs in environmental corridors, isolated natural areas, and other tracts of land that have forested or grassland cover. Although most of the land adjacent to the study-area freeway system is developed, there is some upland habitat and wooded areas in a few areas within the project area, especially in the vicinity of the Milwaukee County Grounds along Underwood Creek Parkway, Honey Creek Parkway, HAST, We Energies transmission line corridor and the Milwaukee County Zoo. Woodlands have important direct values as wildlife habitat and outdoor recreation. Woodlands also have indirect values for reducing soil erosion and stream sedimentation, reducing runoff, maintaining water tables, streams, and lake levels, and promoting groundwater recharge. Underwood Creek Parkway and Honey Creek Parkway are classified as primary environmental corridor. (See Section 3.12, Environmental Corridors and Natural Areas for more information.)

Most of the land adjacent to the local arterial roadway corridors is developed. However, there is some upland habitat and wooded area along the east side of Highway 100 between Research Drive and Watertown Plank Road.

No land in the Zoo Interchange study area is enrolled in Wisconsin's Managed Forest Law program.

3.16.2 Upland Habitat and Woodland Impacts

No-Build Alternative

The No-Build Alternative would not affect upland habitat or woodland.

Modernization Alternatives

Under the Modernization Alternatives, upland habitat would be acquired in four areas. On the north leg, upland habitat is located along the east side of US 45 between Highway 100 and Watertown Plank Road, including the Underwood Creek Parkway area. Modernization Alternative N1 would acquire approximately 8.4 acres of upland habitat while Modernization Alternative N3 would acquire 4.8 acres. The difference between the alternatives stems from the connector road between Watertown Plank Road and Swan Boulevard being further to the east, and thus, further away from mainline US 45 under Modernization Alternative N1.

Along the south leg, a swath of upland habitat is located along the We Energies transmission line corridor on the east side of I-894/US 45 between Lincoln Avenue and Schlinger Avenue. Modernization Alternative S2 would acquire approximately 6.9 acres of upland habitat in this area, most of which is utility right-of-way with no trees. On the west leg, upland habitat is located south of I-94 between 116th Street and the west end of the Zoo maintenance area. Modernization Alternative W3 would acquire approximately 8.7 acres in this area, mostly as a result of new right-of-way acquired for the Highway 100 interchange. In the Zoo Interchange core, approximately 14.7 acres of upland habitat would be acquired in the northwest quadrant of the interchange, most of which is utility right-of-way with no trees.

Because improvements would occur adjacent to the highway, upland impacts are strip or “edge takings.” New woodland edges created by highway right-of-way may experience tree loss from the drying effects of wind, sun, and exposure to road runoff. Additionally, the Underwood Creek crossing will have room for wildlife to cross under the freeway adjacent to the stream.

Reduced Impacts Alternative

Under the Reduced Impacts Alternative, upland habitat would be acquired in four areas. On the north leg, upland habitat is located along the east side of US 45 between Highway 100 and Watertown Plank Road, including the Underwood Creek Parkway area. In this area, the Reduced Impacts Alternative would acquire approximately 6.1 acres of upland habitat.

Along the south leg, upland habitat is located along the east side of I-894/US 45 between Lincoln Avenue and Schlinger Avenue. The Reduced Impacts Alternative would acquire approximately 9.5 acres of upland habitat in this area, most of which is utility right-of-way with no trees.

On the west leg, upland habitat is located south of I-94 between 116th Street and the west end of the County Zoo maintenance area. The Reduced Impacts Alternative would acquire approximately 8.1 acres in this area.

In the Zoo Interchange core, approximately 7.7 acres of upland habitat would be acquired in the northwest quadrant of the interchange, most of which is utility right-of-way with no trees.

Because improvements would occur adjacent to the highway, upland impacts are strip or “edge takings.” New woodland edges created by highway right-of-way may experience tree loss from the drying effects of wind, sun, and exposure to road runoff. Additionally, the Underwood Creek crossing will have room for wildlife to cross under the freeway adjacent to the stream.

Adjacent Arterials Component

Under the Adjacent Arterials Component, approximately 1.4 acres of upland habitat would be acquired along the east side of Highway 100 between Research Drive and Watertown Plank Road.

Measures to Mitigate Adverse Upland Habitat and Woodland Impacts

None identified.

3.17 Wildlife

3.17.1 Affected Environment

Wetland and upland communities in the study area provide habitat for a variety of mammals, songbirds, waterfowl, raptors, amphibians, insects, and reptiles. Common mammals found in upland habitats include white-tailed deer, opossum, shrews, gray and red squirrels, red fox, raccoon, striped skunk, cottontail rabbit, coyote, woodchucks, mice, gophers, chipmunks, voles, and weasels. Common bird species include American goldfinch, wild turkey, sparrows, owls, wrens, thrushes, warblers, hawks, woodpeckers, and vireos. Common reptiles include brown snake, garter snake, eastern milk snake, fox snake, and turtles.

During the study, a local conservationist and monarch butterfly observer noted that a large migratory population of monarch butterflies uses the Milwaukee County Grounds, near the Eschweiler Buildings. This location is part of a corridor used by the monarch butterflies as part of their migration path every year; most heavily used from late August through September as the monarch butterflies migrate south. The greatest concentration of monarch butterflies on the grounds can be found in trees near the Eschweiler Buildings. The butterflies use the trees in this area for roosting and adjacent meadow, including a berm along US 45, for nectaring. The berm may also enhance the attractiveness of the site by providing a wind break. While there is a population of monarch butterflies in the study area, they have no special regulatory protection.

3.17.2 Wildlife Impacts

No-Build Alternative

The No-Build Alternative would not affect wildlife.

Modernization Alternatives, Reduced Impacts Alternative, and Adjacent Arterials Component

The Modernization and Reduced Impacts Alternatives would have the same impact on wildlife. The Adjacent Arterials Component would have similar impacts, but it would be to a lesser extent since the scope of the freeway improvements is much greater than the local roadway improvements. The primary impact associated with the loss of upland plant communities is loss of wildlife habitat that serves movement corridors and provides cover for breeding, foraging, and resting. Other wildlife impacts caused by removing vegetation include interrupting the natural succession to mature communities; increasing the potential for soil erosion; and reducing aesthetic values.

A State of Wisconsin-listed threatened animal, the Butler's garter snake, is present in the study corridor. Section 3.18, Threatened and Endangered Species, discusses the issues associated with this species.

The Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component would not affect the trees adjacent to the Eschweiler Buildings that are used by the monarch butterflies for roosting. The southern half of the berm, between US 45 and the nectaring area, would be removed under both Modernization Alternatives and the Reduced Impacts Alternative. This would remove some of the nectaring area and part of the wind break that increases the area's attractiveness to the Monarchs. The northern part of the berm would still provide a wind break for the roosting area and the northern part of the nectaring meadow.

3.17.3 Measures to Mitigate Adverse Wildlife Impacts

None identified.

3.18 Threatened and Endangered Species

3.18.1 Affected Environment

The DNR Bureau of Endangered Resources indicates the following threatened and endangered species may be present in the project corridor (see DNR letters dated May 18, 2007, and August 8, 2007, in Appendix D):

State-Listed Species

- Endangered plants:
 - Ravenfoot sedge (*Carex crus-corvi*)
 - False hop sedge (*Carex lupuliformis*)
 - Bluestem goldenrod (*Solidago caesia*)
- Threatened plants:
 - Forked aster (*Aster furcatus*)
 - Handsome sedge (*Carex formosa*)
- Endangered animals:
 - None identified
- Threatened animals:
 - Butler's garter snake (*Thamnophis butleri*)
 - Blanding's turtle (*Emydoidea blandingii*)

WisDOT's 2007 field survey did not find any threatened and/or endangered plant species in the project corridor. An additional field survey conducted in September 2010 did not find any threatened and/or endangered plant species in the project corridor. A previous sighting of a single Blanding's turtle occurred near the Zoo Interchange according to DNR records.

The Butler's garter snake is a reptile that prefers wet-mesic prairies, marshes, and adjacent grassy and open areas. DNR has categorized the Butler's garter snake habitat in southeast Wisconsin into three tiers. Tier 3 habitat is the best for the snakes and DNR requires mitigation in the same habitat patch for any encroachment onto Tier 3 habitat. The one area of Tier 3 habitat within the study area is along the north leg. There is no Tier 1 or Tier 2 Butler's garter snake habitat in the Zoo Interchange study area.

A Butler's garter snake field survey conducted for MMSD's Milwaukee County Grounds floodwater management facility and the Underwood Creek restoration project found Butler's garter snakes residing in the Tier 3 habitat within the Zoo Interchange study area.

Federally-Listed Species

There are no federally-listed threatened or endangered species or locations in the study area. See Appendix D, page D-14.

Other Protected Species

The Migratory Bird Treaty Act of 1918 states that unless permitted by regulation, it is unlawful to kill or capture migratory birds or destroy their eggs and nests. This law protects barn swallows that commonly nest under bridges.

3.18.2 Threatened and Endangered Species Impacts

No-Build Alternative

The No-Build Alternative would not affect threatened or endangered species.

Modernization Alternative, Reduced Impacts Alternative, and Adjacent Arterials Component

US 45 crosses over the Tier 3 Butler's garter snake habitat, and the Modernization and Reduced Impacts Alternatives would affect Butler's garter snake habitat. Removing the existing bridge and constructing a new bridge has the potential to harm Butler's garter snakes and will make it difficult for the snakes to cross under US 45 during construction. The Adjacent Arterials Component may affect Butler's garter snake habitat in the Highway 100 and Watertown Plank Road corridors which abut Underwood Creek and the Milwaukee County Grounds.

Based on a spring 2009 survey, four bridges in the study area currently have swallow nests under them. These bridges would be removed and replaced.

3.18.3 Measures to Mitigate Adverse Threatened and Endangered Species Impacts

Bridges and culverts have been inspected to determine if any migratory birds are present.

WisDOT will coordinate with DNR to develop appropriate measures to mitigate adverse effects to the Butler's garter snake. Potential measures include designing the recommended alternative to minimize impacts to the Tier 3 habitat, fencing to keep the snakes out of the construction area, and trapping or hand-collecting snakes that are inside the fenced area prior to construction. The fencing will be installed prior to March 15 each year to isolate the area that will be disturbed. If the fencing is in place prior to March 15, snakes would not need to be removed from inside the fenced area.

Currently, only Tier 3 habitat requires fencing be put in place. Future DNR strategy may require snake fencing be put in place at Tier 1 and 2 Butler's garter snake habitat areas.

Any area with potential habitat for the Blanding's turtle will be fenced with turtle fencing. The fencing will be in place by March 15.

WisDOT will remove swallow nests from the underside of bridges prior to construction, between August 20 and May 15. The nests are unoccupied during this period. After swallow nests are removed, WisDOT will place nets under the bridge to keep swallows from re-establishing nests on bridges that are about to be removed.

3.19 Noise

3.19.1 Affected Environment

Sound is a form of vibration that causes pressure variations in elastic media such as air and water. Noise is defined as unwanted and disruptive sound. 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 sound. The decibel scale audible to humans spans approximately 140 dB. A level of zero decibels corresponds to the lower limit of audibility, while 140 dB produces a sensation more like pain than sound. The decibel scale is a logarithmic representation of the actual sound pressure variations. Therefore, a 26 percent change in the energy level only changes the sound level 1 dB. The human ear would not detect this change except in a controlled environment. Doubling the energy level would

result in a 3 dB increase, which would be barely perceptible in the natural environment. Tripling the energy sound level would result in a clearly noticeable change of 5 dB in the sound level. A change of 10 times the energy level would result in a 10 dB change in the sound level. This would be perceived as a doubling (or halving) of the apparent loudness.

The human ear has a non-linear sensitivity to noise. To account for this in noise measurements, electronic weighting scales are used to define the relative loudness of different frequencies. The “A” weighting scale is widely used in environmental work because it closely resembles the non-linearity of human hearing. Therefore, the unit of measurement for a decibel A-weighted noise level is dBA.

Traffic noise is not constant. It varies as each vehicle passes a point. The time-varying characteristics of environmental noise are analyzed statistically to determine the duration and intensity of noise exposure. In an urban environment, noise is made up of two distinct parts. One is ambient or background noise. Wind noise and distant traffic noise make up the acoustical environment surrounding the project. These sounds are not readily recognized, but combine to produce a non-irritating ambient sound level. This background sound level varies throughout the day, being lowest at night and highest during the day. The other component of urban noise is intermittent and louder than the background noise. Transportation noise and local industrial noise are examples of this type of noise. It is for these reasons that environmental noise is analyzed statistically.

The statistical descriptor used for traffic noise is L_{eq} . L_{eq} is the constant, average sound level, which over a period of time contains the same amount of sound energy as the varying levels of the traffic noise. The L_{eq} correlates reasonably well the effects of noise on people. It is also easily measurable with integrating sound level meters. The time period for traffic noise is 1 hour. Therefore, the unit of measure for traffic noise is $L_{eq}(1h)$ dBA.

Highway noise sources have been divided into 5 types of vehicles; automobiles, medium trucks, heavy trucks, buses, and motorcycles. Each vehicle type is defined as follows:

- Automobiles – All vehicles with 2 axles and 4 tires, includes passenger vehicles and light trucks, less than 10,000 pounds.
- Medium trucks – All vehicles having 2 axles and 6 tires, vehicle weight between 10,000 and 26,000 pounds.
- Heavy trucks – All vehicles having 3 or more axles, vehicle weight greater than 26,000 pounds.
- Buses – All vehicles designed to carry more than 9 passengers.
- Motorcycles – All vehicles with 2 or 3 tires and an open-air driver/passenger compartment.

Noise levels produced by highway vehicles can be attributed to 3 major categories:

- Running gear and accessories (tires, drive train, fan, and other auxiliary equipment)
- Engine (intake and exhaust noise, radiation from engine casing)
- Aerodynamic and body noise

Tires are the dominant noise source at speeds greater than 50 mph for trucks and automobiles. Tire sound levels increase with vehicle speed but also depend upon road surface, vehicle weight, tread design and wear. Change in any of these can vary noise levels. At lower speeds, especially in trucks and buses, the dominant noise source is the engine and related accessories.

Noise Level Measurements

Existing noise level measurements were conducted on April, 23, 2009, at 12 representative residential areas adjacent to the Zoo Interchange study-area. The measurements were made in accordance with FHWA guidelines using an integrating sound level analyzer meeting American National Standards Institute and International Electrical Commission Type 1 specifications. Noise measurements were conducted for a period of 20 minutes at each site. Traffic counts were taken at each site, concurrent with the noise measurements when traffic was visible from the site. **Table 3-17** presents the data collected at the 12 sites. The location of the field sites are shown **Exhibits 2-6 through 2-18**.

TABLE 3-17
Measured Existing Noise Levels

Field Site	Site Description and Distance From Road	Noise Level dBA L _{eq} (h)
1	Residence, 49 ft east of N. 112th Street and 6 ft north of W. Clarke Street	64
2	Residence, 230 ft north of W. Meinecke Avenue and 18' west of N. 113th Street	69
3	Residence, 69 ft west of N. 97th Street and 417 ft south of W. Wisconsin Avenue	64
4	Wil-O-Way, 45 ft NE of right-of-way, between play structure and swing set	67
5	Chippewa Park, 94 ft south of W. Park Hill Avenue and 95 ft west of N. 111th Street	67
6	Residence, 55 ft northwest of W. Bungalow Pkwy and 8 ft southwest of S 105th Street	58
7	Residence, 275 ft east of I-894 and 10 ft north of W. Becher Street	62
8	Residence, 50 ft west of S 100th Street and 2 ft north of W. Washington Street	64
9	Residence, 49 ft north of W. O'Connor Street and 15 ft west of S. 80th Street	61
10	Residence, 17 ft south of W. Kearney Street and 12ft east of S. 75th Street	67
11	Residence, 124 ft north of I-94 and 7 ft east of W. Dixon Street	66
12	Residence, 32 ft east of W. Adler Street and 6 ft west of S. 89th Street	67

Comparison of Field Data Versus Modeled Noise Levels

The FHWA Traffic Noise Model® (TNM) Version 2.5 was used to model the field measurements, using traffic data counted during the measurements. WisDOT compared the field measurements to the output from TNM to assess the applicability of the model to the specific conditions in the study area.

Comparing the modeled noise levels to the field-measured noise levels confirms the applicability of the computer model to this project. Traffic counts concurrent with the noise

measurements were taken at all 12 of the measurement sites. The traffic data from these 12 sites were used in the model. The modeled traffic counts at 10 of the 12 sites compared within ± 3 dB of the measured levels. This represents reasonable correlation since the human ear can barely distinguish a 3-dB change in the $L_{eq}(1h)$ noise level in the urban environment. The site-by-site comparison is presented in **Table 3-18**.

TABLE 3-18
Comparison of Measured and Modeled Noise Levels

Field Site	Noise Level, dBA L_{eq}		Difference in Noise Level, dBA L_{eq} (Modeled Noise Level Minus Measured Noise Level)
	Measured	Modeled	
1	64	67	3
2	69	72	3
3	64	65	1
4	67	70	3
5	67	69	2
6	58	60	2
7	62	67	5
8	64	62	-2
9	61	62	1
10	67	70	3
11	66	69	3
12	67	71	4

3.19.2 Noise Impacts

The noise analysis presents the existing and future noise levels at various locations in the study area. The determination of noise abatement measures and locations is in compliance with the Wisconsin Administrative Code, Trans 405, Siting Noise Barriers, effective September 1989. TRANS 405 is WisDOT's FHWA approved interpretation of 23 CFR Part 772. The noise level criteria for considering barriers abutting various land uses are presented in **Table 3-19**. The noise level descriptor used is the equivalent sound level, $L_{eq}(1h)$, defined as the steady state sound level which, in a stated time period (usually one hour) contains the same sound energy as the actual time-varying sound.

Noise abatement measures will be considered when the predicted noise levels approach or exceed those values shown for the appropriate activity category in **Table 3-19**, or when the predicted traffic noise levels substantially exceed the existing noise levels. "Approach" is defined as being within 1 dBA less than the noise levels shown in **Table 3-19**. The WisDOT has defined an increase over existing noise levels of 15 decibels or more as being a noise impact.

TABLE 3-19
Noise Level Criteria for Considering Barriers

Activity Category	$L_{eq}(h)$ (dBA) ¹ (Evaluation Criteria)	Description of Land Use Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B ²	67 (Exterior)	Residential
C ²	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails and trail crossings.
D ³	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E ²	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	—	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	—	Undeveloped lands that are not permitted.

¹ "Leq" means the equivalent steady-state sound level, which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same period. For purposes of measuring or predicting noise levels, a receptor is assumed to be at ear height, located 5 feet above ground surface. "Leq(h)" means the hourly value of Leq.

² Includes undeveloped lands permitted for this activity category or publicly-owned recreation lands formally designated in a public agency's Master Plan.

³ Use of interior noise levels shall be limited to situations where a determination has been made that exterior abatement measures will not be feasible and reasonable and after exhausting all outdoor mitigation options.

Source: Wisconsin Department of Transportation, Facilities Development Manual, Chapter 23, Noise, Effective July 7, 2011.

The FHWA Traffic Noise Model®, Version 2.5 (Lau et al., 2004) was used to model existing (2004) and 2035 6- and 8-lane Modernization Alternatives, the Reduced Impacts Alternative and the Adjacent Arterials Component noise levels.

The freeway project, which includes the Modernization Alternative and Reduced Impacts Alternative, was divided into 4 legs:

- North Leg: Alternatives N1, N3 and Reduced Impacts Alternative
- East Leg: Alternatives E1, E1/E3 Hybrid Alternative and Reduced Impact Alternative
- South Leg: Alternative S2 and Reduced Impact Alternative
- West Leg: Alternative W3 and Reduced Impact Alternative

The Adjacent Arterials Component of the project was divided into 5 areas:

- Highway 100 and Bluemound Road
- Highway 100 and Watertown Plank Road
- 92nd Street and Watertown Plank Road
- Glenview Avenue and Bluemound Road
- 84th Street and I-94

The following parameters were used in this model to calculate an hourly $L_{eq}(1h)$ at a specific receiver location:

- Distance between roadway and receiver
- Relative elevations of roadway and receiver (all receivers are assumed to be 5 feet off the ground)
- Hourly traffic volume in light-duty (two axles, four tires), medium-duty (two axles, six tires), and heavy-duty (three or more axles) vehicles
- Vehicle speed
- Roadway grade
- Topographic features, including retaining walls and berms
- Noise source height of the vehicles

TABLE 3-20
Change in Design Hour Noise Levels

Roadway Section	Change in Noise Level, dBA L_{eq}
North Leg	-12 to +8
East Leg	-12 to +8
South Leg	-11 to +14
West Leg	-5 to +5
Hwy100/Bluemound Rd.	-2 to +2
Hwy 100/Watertown Plank Rd.	-5 to 3
92nd/Watertown Plank Rd.	+1 to +3
Glenview/Bluemound Rd.	-2 to +2
84th/I-94	0 to +2

Exhibits 2-6 through 2-18 show 231

representative receiver locations numbered N1 through N231. These receivers were selected to model the representative noise impacts at 611 residences (including apartments), 6 churches, 4 schools (including playgrounds, athletic fields, and a tennis court), 2 hotels, 3 institutional buildings, a hospital, a fire house, Milwaukee County Medical Complex, County Grounds Buildings, the Milwaukee County Zoo, St. Charles Youth and Family Services, and 86 commercial properties adjacent to the proposed project. The results of the computer modeling by leg are presented in Appendix B. (Note that existing noise levels in Appendix B take into account existing noise walls, but future noise levels do not take into account the reduction in noise levels that would occur with noise walls. WisDOT plans to provide noise walls at all of the locations that currently have noise walls.)

The horizontal and vertical alignments of the proposed improvements are substantially different in some areas than what exists today. Therefore, in some areas design year noise levels could change by as much as 14 decibels compared to existing noise levels. The projected changes in the study are summarized by leg in **Table 3-20**.

Design year peak hour noise levels, as presented in Appendix B, differ for each alternative. Likewise, the number of properties that would be exposed to the noise levels that approach or exceed the noise levels in Table 3-17 also differ for each alternative. The projected number of properties that would be exposed to design year noise levels that approach or exceed the levels in **Table 3-19** are presented in **Table 3-21**.

3.19.3 Measures to Mitigate Adverse Noise Impacts Effects

Based upon the requirements of 23 CFR 772 and within the framework of Wisconsin Department of Transportation, Facilities Development Manual, Chapter 23, Noise (FDM 23 Noise), various methods were reviewed to mitigate the noise impact of the proposed improvements. Among those considered were restricting truck traffic to specific times of the day, prohibiting trucks, altering horizontal and vertical alignments, property acquisition for construction of noise barriers or berms, property acquisition to create buffer zones to prevent development that could be adversely impacted, and insulating public use or nonprofit institutional buildings, berms, and sound barriers.

Restricting or prohibiting trucks is counter to the project's purpose and need. Design criteria and recommended termini for the proposed project preclude substantial horizontal and vertical alignment shifts that would produce noticeable changes in the projected acoustical environment. Due to right-of-way limitation the construction of noise berms is neither feasible nor reasonable. Therefore, only the construction of noise barriers was reviewed. Abatement is recommended only when it is feasible and reasonable to construct a noise barrier.

FDM 23 Noise has established criteria for determining feasibility and reasonableness and is summarized as follows:

- The barrier must provide a minimum 5-dB reduction to be considered feasible.
- One receptor or common use area must meet the 9 decibel design goal for the noise barrier to be considered for reasonableness.
- A noise barrier must reduce noise levels by a minimum of 8 decibels for a receptor or common use area to be considered as benefited for the purposes of determining reasonableness. The total cost of the barrier may not exceed \$30,000 per abutting residence.
- If a common noise environment exists within the project termini, cost averaging of multiple barriers within the common noise environment may occur as part of the reasonableness determination. Noise barriers exceeding \$60,000 per benefited receptor cannot be included in the cost averaging. The order of cost averaging of eligible multiple barriers will start with the most cost-effective noise barrier increasing to the second most cost effective barrier to the third, etc., until the average cost approaches or equals but does not exceed \$30,000 per benefited receptor. The noise barriers included in the cost averaging may be carried forward for a determination of whether or not the barrier(s) will be incorporated into the project. The department must receive a vote of support for the project from a simple majority of all votes cast by the owners or residents of the benefitted receptors.

Noise barriers were analyzed at 44 locations adjacent to the study-area freeway system. The results of the barrier analysis, including barrier location, future $L_{eq}(1h)$ noise levels without and with a barrier, barrier length and height, estimated cost, the number of residential units benefited, the noise reduction provided by the barrier and the cost per residential unit are presented in **Table 3-22**. Forty two of the 44 noise barriers analyzed would meet WisDOT's feasibility criteria. However, only 8 noise barriers would meet both of FDM 23 Noise's definitions for feasible and reasonable noise mitigation.

The final step in the reasonableness determination is to cost average the multiple noise barriers within the common noise environment. This averaging was applied to all feasible new noise barriers. As shown in Table 3-22, cost averaging increased the number of reasonable noise barriers for alternative W-N1-E3-S2 from 2 to 7. Two additional noise barriers became reasonable for the W-N3-E1-S2 alternative. Cost averaging of the Reduced Impact Alternative noise barriers increased the number feasible and reasonable noise barriers from 8 to 11. There are numerous areas adjacent to the study-area freeway system where individual receptors or small groupings of residences exceed the noise levels in Table 3-19. However, it is impossible to design a noise barrier for these receptors that would provide an 8-decibel reduction and still meet the FDM 23 Noise's \$30,000 per residence criterion.

The 66 dBA $L_{eq}(1h)$ setback distance along undeveloped areas abutting the study-area freeway system would be 385 feet. The setback distance indicates that noise levels within these distances, measured perpendicular to the centerline of the nearest lane in either direction, is 66 dBA or greater. This setback distance was developed to assist local planning authorities in developing land use control over the remaining undeveloped lands along the project in order to prevent further development of incompatible land use. Noise mitigation for future developments constructed within the setback distance will be the responsibility of the local communities or the developer. Should additional lanes be added to the Zoo Interchange corridor in the future, noise mitigation along the corridor would be assessed according to the Type 1 requirements of 23 CFR 772 and WisDOT's approved policies in effect at that time.

Based on the study, and as shown in Table 3-22, WisDOT intends to replace the existing noise barriers and it is likely to incorporate the additional feasible and reasonable noise barriers into the project. During the design phase of the project, as locations of retaining walls are more accurately defined relative to the surrounding areas, the location of feasible and reasonable noise mitigation will be reassessed. If final design results in substantial changes in roadway design from the conditions modeled for the Draft EIS or Final EIS, noise abatement measures will be reviewed. A final decision of the installation of the abatement measure(s) will be made upon completion of the project's final design and through the public involvement process which will solicit the view points of residents and property owners benefited by the construction of the feasible and reasonable noise barriers.

Based on the study, and as shown in Table 3-22, WisDOT intends to replace the existing noise barriers and install the additional feasible and reasonable noise barriers. During the design phase of the project, as locations of retaining walls are more accurately defined relative to the surrounding areas, the location of feasible and reasonable noise mitigation will be reassessed. If final design results in substantial changes in roadway design from the conditions modeled for the Draft EIS or Final EIS, noise abatement measures will be reviewed.

During the public comment period on the Supplemental Draft EIS, local residents and officials from study area municipalities had the opportunity to comment on the project's potential noise impacts. See Section 6 for more information about public hearing comments. A final decision on installing abatement measures will be made upon completion of the design and the public involvement process.

TABLE 3-21
Noise Impact Summary

	8 Lanes						6 Lanes					
	North Leg		East Leg		South Leg		North Leg		East Leg		South Leg	
	N1	N3	E3	E1	S2	W3	N1	N3	E3	E1	S2	W3
Residences	61	67	59	87	87	15	61	65	44	82	87	9
Apartment units	37	37	7	6	74	0	37	31	7	4	74	0
Churches	0	1	0	1	2	0	0	1	0	1	2	0
Parks	0	0	0	0	0	1	0	0	0	0	0	1
Schools	2	2	0	0	1	0	2	2	0	0	1	0
School athletic fields	2	2	0	0	0	0	2	2	0	0	0	0
School tennis court	1	1	0	0	0	0	1	1	0	0	0	0
Milwaukee County Medical Complex (number of buildings)	0	1	0	0	0	0	0	1	0	0	0	0
County Grounds (number of buildings)	0	0	0	0	0	0	0	0	0	0	0	0
Milwaukee County Zoo	0	0	0	0	0	1	0	0	0	0	0	1
Commercial properties	3	4	2	1	2	8	3	4	1	1	2	8

TABLE 3-21 (CONTINUED)
Noise Impact Summary – Reduced Impacts Alternative and Adjacent Arterials Component

	Reduced Impacts Alternative				Adjacent Arterials Component				
	North Leg	East Leg	South Leg	West Leg	HWY 100/ Bluemound Rd.	HWY 100/ Watertown Plank Rd.	92nd/ Watertown Plank Rd.	Glenview/ Bluemound Rd.	84th/I-94
Residences	73	93	103	9	0	0	0	8	1
Apartment units	39	7	54	0	12	0	0	5	0
Churches	0	1	2	0	0	0	0	0	0
Park	0	0	0	1	0	0	0	0	0
Schools	2	0	1	0	0	0	0	0	0
School athletic fields	2	0	0	0	0	0	0	0	0
School tennis court	0	0	0	0	0	0	0	0	0
Milwaukee County Medical Complex (number of buildings)	1	0	0	0	0	0	0	0	0
County Grounds (number of buildings)	0	0	0	0	0	0	0	0	0
Milwaukee County Zoo	0	0	0	1	0	0	0	0	0
Commercial properties	7	1	1	9	2	0	0	0	0
Hospital	0	0	0	0	1	0	0	0	0

TABLE 3-22
Acoustical Mitigation—Noise Barrier Locations Analyzed

Barrier Number	Locations	Existing Leq(1h) Noise Levels, dBA	Range of Future Leq(1h) Noise Levels, dBA		Noise Reduction (dB)	Barrier Characteristics		Cost ^a	Number of Units Attenuated	Cost/ Unit	Feasible and Reasonable
			w/o Barrier	Barrier		Length (ft)	Height (ft)				
North Leg N1, N3											
1-N1	East of US 45 and south of Bluemound Road	68–76	60–67	57–58	3–9	939	15–21	\$279,489	22	\$12,704	Y
2	East of US 45, and north of North Avenue	66–75	66–72	59-67	4-10	1,792	9-25	\$629,755	20	\$31,488	Y ^{b,c}
4	West of US 45, north of Center Street to Meinecke Avenue	68–77	63–78	59–74	4–8	2,349	25	\$1,057,120	--	\$1,057,120	N
5	West of US 45, between Meinecke Avenue and North Avenue	68–73	67–71	59-62	8–9	1,086	9-25	\$365,560	11	\$33,233	Y ^c
6	West of US 45, approximately 550 ft south of North Avenue and south	75–76	77	62-69	8-15	1,045	7-25	\$290,235	8	\$36,279	Y ^c
7-N1	West of US 45, between Wisconsin Avenue and Bluemound Road	68–74	67–69	61–64	3–8	1,472	25	\$662,988	--	\$662,988	N
1-N3	East of US 45 and south of Bluemound Road	68–76	62–66	57-62	0-9	476	19–21	\$171,349	6	\$28,558	Y
1A-N3	East of US 45, between Bluemound Road and Wisconsin Avenue	67–73	66–70	59–67	3–9	945	21	\$357,319	5	\$71,464	N
7-N3	West of US 45, between Wisconsin Avenue and Bluemound Road	68–74	69–71	62–68	1–9	951	15	\$256,839	9	\$28,538	Y
East Leg E3, E1											
14-E3	South of I-94, west and east of 92nd Street	69–74	65–68	59-67	1–8	2,402	25	\$1,080,917	--	\$1,080,917	N
	South of I-94 and west of 84th Street	71–74	66–69	58–60	8–9	1,965	12–21	\$610,048	7	\$87,150	N
15-E3	South of I-94 and east of 76th Street	68–74	67–72	59–66	2–10	1,916	7-23	\$683,758	8	\$85,470	N
16-E3	North of I-94 and east of 76th Street	64–73	69–74	61–66	7–9	2,166	9-19	\$529,636	9	\$58,848	N
17-E3	North of I-94 and east of 84th Street	65-68	67-68	57-66	2-10	1,397	6-21	\$370,136	4	\$92,534	N ^d
18-E3	North of I-94 and west of 92nd Street	70-75	66-73	60-72	0-9	1,898	11-17	\$523,488	8	\$65,436	N

TABLE 3-22
Acoustical Mitigation—Noise Barrier Locations Analyzed

Barrier Number	Locations	Existing L _{eq} (1h) Noise Levels, dBA	Range of Future L _{eq} (1h) Noise Levels, dBA		Noise Reduction (dB)	Barrier Characteristics		Cost ^a	Number of Units Attenuated	Cost/ Unit	Feasible and Reasonable
			w/o Barrier	Barrier		Length (ft)	Height (ft)				
14-E1	South of I-94 and west of 84th Street	69-77	66-75	58-67	6-12	4,687	15-25	\$1,584,041	46	\$34,436	N
15-E1	South of I-94 and east of 76th Street	68-74	67-72	59-65	2-10	1,923	11-25	\$694,572	8	\$86,822	N
16-E1	North of I-94 and east of 76th Street	64-73	65-74	63-68	1-9	2,251	9-23	\$639,336	6	\$106,556	N
17-E1	North of I-94 and east of 84th Street	63-68	68-69	65-69	0-4	1,197	25	\$538,495	--	\$538,495	N ^d
18-E1	North of I-94 and west of 92nd Street	70-75	66-72	58-71	1-10	1,681	12-21	\$526,312	9	\$58,479	N
South Leg S2											
8	West of I-894 and north of Greenfield Avenue	63-72	69-72	63	6-9	1,502	6-15	\$335,133	9	\$37,237	N
9	West of I-894 and south of Greenfield Avenue	69-77	67-78	59-70	8-11	2,286	12-21	\$671,937	22	\$30,543	Y ^{b,c}
10	West of I-894 and north of Lincoln Avenue	60-64	66-78	60-65	6-13	2,474	15-17	\$689,124	54	\$12,762	Y ^d
11	East of I-894 and north of Lincoln Avenue	67-74	64-72	59-62	5-10	2,119	15-25	\$813,572	13	\$62,583	N
12	East of I-894 and south of Greenfield Avenue	69-71	61-66	57-58	4-8	1,005	25	\$452,348	--	\$452,348	N
13	East of I-894 and north of Greenfield Avenue	67-72	68-72	60-67	2-12	3,201	13-25	\$1,239,647	38	\$32,622	Y ^c
West Leg											
19	North of I-94, West of HWY 100	64-69	65-67	57-59	6-9	1,917	12-21	\$648,296	12	\$54,025	N

^a Based on \$18.00 per square foot

^b Based on cost averaging of multiple barriers within the common noise environment for Alternative N3-E1.

^c Based on cost averaging of multiple barriers within the common noise environment for Alternative N1-E3.

^d This is an existing noise barrier that will be replaced as part of the proposed improvement.

TABLE 3-22 (CONTINUED)

Acoustical Mitigation—Noise Barrier Locations Analyzed – Reduced Impacts Alternative

Barrier Number	Locations	Existing Leq(1h) Noise Levels, dBA	Range of Future Leq(1h) Noise Levels, dBA		Noise Reduction (dB)	Barrier Characteristics		Cost ^a	Number of Units Attenuated	Cost/ Unit	Feasible and Reasonable
			w/o Barrier	Barrier		Length (ft)	Height (ft)				
North Leg											
1	East of US 45 and south of Bluemound Road	68-76	60-68	56-59	3-9	937	7-19	\$230,566	22	\$10,480	Y
1A	East of US 45, between Bluemound Road and Wisconsin Avenue	73	67	67	1	945	21	\$357,319	0	\$357,319	N
2	East of US 45, 1,213 ft South of Meinecke Avenue and 679 ft North of Meinecke Avenue	66-75	67-74	59-65	6-13	1,892	11-19	\$484,013	22	\$22,001	Y
4	West of US 45, between Center Street and Meinecke Avenue	70-76	64-73	59-68	5-9	2,372	15-25	\$882,356	9	\$98,040	N
5	West of US 45, between Meinecke Avenue and North Avenue	68-73	73-75	65-68	5-10	1,073	15-17	\$315,503	6	\$52,584	N
6	West of US 45, between Garfield Avenue and Gilbert Avenue	75-76	65-76	57-67	8-13	1,450	9-17	\$353,146	15	\$23,543	Y
7	West of US 45, between Wisconsin Avenue and Bluemound Road	68-74	67-69	59-65	4-8	1,412	25	\$635,527	0	\$635,527	N
East Leg											
14	South of I-94, west and east of 92nd Street	69-77	70-74	63-71	2-10	3,832	11-21	\$925,188	46	\$20,113	Y
15	South of I-94 and east of 76th Street	68-73	67-72	60-65	3-10	1,916	9-21	\$577,425	7	\$82,489	N
16	North of I-94 and east of 76th Street	69-73	71-74	63-65	8-10	1,374	11-17	\$342,036	7	\$48,862	Y ^b
17	North of I-94 and east of 84th Street	63-66	66-73	62-65	4-9	1,087	25	\$489,222	2	\$244,611	N ^c
18	North of I-94, east and west of 92nd Street	66-75	67-77	61-71	2-10	1,714	9-13	\$321,495	8	\$40,187	Y ^b

TABLE 3-22 (CONTINUED)

Acoustical Mitigation—Noise Barrier Locations Analyzed – Reduced Impacts Alternative

Barrier Number	Locations	Existing Leq(1h) Noise Levels, dBA	Range of Future Leq(1h) Noise Levels, dBA		Noise Reduction (dB)	Barrier Characteristics		Cost ^a	Number of Units Attenuated	Cost/ Unit	Feasible and Reasonable
			w/o Barrier	Barrier		Length (ft)	Height (ft)				
South Leg S2											
8	West of I-894 and north of Greenfield Avenue	62-72	67-72	61-64	6-9	1,776	17-21	\$570,765	20	\$28,538	Y ^c
9	West of I-894 and south of Greenfield Avenue	69-77	67-77	60-69	7-11	1,928	13-17	\$530,650	20	\$26,533	Y
10	West of I-894 and north of Lincoln Avenue	60-64	66-77	59-66	7-11	2,742	11-19	\$729,862	58	\$12,584	Y ^c
11	East of I-894 and north of Lincoln Avenue	67-74	65-73	60-63	5-10	2,776	11-19	\$678,133	13	\$52,164	Y ^b
13	East of I-894 and north of Greenfield Avenue	67-72	67-73	60-66	1-11	2,538	11-21	\$795,315	33	\$24,100	Y
West Leg											
19	North of I-94, west of HWY 100	63-69	64-66	57-60	5-9	2,472	19-23	\$899,278	14	\$64,234	N

^a Based on \$18.00 per square foot^b Based on cost averaging of multiple barriers within the common noise environment for the Reduced Impact Alternative.^c This is an existing noise barrier that will be replaced as part of the proposed improvement.

3.20 Air Quality

3.20.1 Affected Environment

The Clean Air Act of 1970 established National Ambient Air Quality Standards (NAAQS). These were established to protect public health, safety, and welfare from known or anticipated effects of air pollutants. The most recent amendments to the NAAQS contain criteria for sulfur dioxide (SO₂), particulate matter (PM₁₀, 10-micron and smaller along with PM_{2.5}, 2.5 micron), carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), and lead (Pb). **Table 3-23** presents the National and Wisconsin Ambient Air Quality Standards.

Congress directed U.S. EPA to update the standards with current science at least every 5 years, and that proposals to revise them should be based solely upon the best current scientific opinion on public health effects, not economic impacts. Since initially setting standards in the early 1970s, U.S. EPA has changed the standards only twice: in 1979 and in 1987. Under its most recent review in 1997, U.S. EPA concluded that the current primary standards for ozone and particulate matter were not adequate to protect the public from adverse health effects.

The Clean Air Act Amendments of 1977 and 1990 required all states to submit a list to U.S. EPA identifying those air quality 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 exceed the NAAQS for any criteria pollutant are designated as non-attainment areas for that pollutant. The Clean Air Act Amendments also established time schedules for the states to attain the NAAQS.

The primary pollutants from motor vehicles are unburned hydrocarbons, nitrogen oxides, and carbon monoxide. Volatile organic compounds and nitrogen oxides can combine in a complex series of reactions, catalyzed by sunlight, to produce photochemical oxidants, such as ozone and nitrous oxide (N₂O). Because these reactions take place over a period of several hours, maximum concentrations of photochemical oxidants are often found far downwind of the precursor sources. These pollutants are regional problems. The modeling procedures for ozone and NO₂ require long-term meteorological data and detailed area wide emission rates for all potential sources. SEWRPC performs modeling of these pollutants for the State Implementation Plan (SIP).

TABLE 3-23
National and Wisconsin Ambient Air Quality Standards

Pollutant	Primary Standard ^a	Averaging Time	Secondary Standard ^b
Carbon Monoxide (CO)	9 ppm (10 mg/m ³)	8 hour ^c	None
	35 ppm (40 mg/m ³)	1 hour ^c	None
Lead (Pb)	0.15 µg/m ³	Rolling 3-Month Average ^d	Same as Primary
	1.5 µg/m ³	Quarterly Average	Same as Primary
Nitrogen Dioxide (NO ₂)	53 ppb ^e	Annual (Arithmetic Mean)	Same as Primary
	100 ppb	1-hour ^f	None
Particulate Matter (TSP) WI ^g	None	24 hour ^c	150 µg/m ^{3(c)}
Particulate Matter (PM ₁₀)	150 µg/m ³	24 hour ^h	

TABLE 3-23
National and Wisconsin Ambient Air Quality Standards

Pollutant	Primary Standard ^a	Averaging Time	Secondary Standard ^b
Particulate Matter (PM _{2.5})	15 µg/m ³	Annual ⁱ (Arithmetic Mean)	Same as primary
	35 µg/m ³	24 hour ^j	
Ozone (O ₃) WI	0.12 ppm (235 µg/m ³)	1 hour	Same as primary
Ozone (O ₃)	0.075 ppm (2008 std)	8 hour ^k	Same as primary
	0.08 ppm (1997 std)	8 hour ^l	Same as primary
Sulfur Dioxides (SO ₂)	0.03 ppm (80 µg/m ³)	Annual (Arithmetic Mean)	
	0.14 ppm (365 µg/m ³)	24 hour ^c	
		3 hour ^c	0.5 ppm (1300 µg/m ³)
	75 ppb ^m	1 hour	None

^a "Primary air standard" means the level of air quality, which provides protection for public health with an adequate margin of safety.

^b "Secondary air standard" means the level of air quality, which may be necessary to protect welfare from unknown or anticipated adverse effects.

^c Not to be exceeded more than once per year.

^d Final Rule signed October 15, 2008.

^e The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

^f To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).

^g PM₁₀ standards were adopted and most total suspended particulate matter (TSP) standards were deleted when the Wisconsin Administrative Code was revised in 1989. The 24-hour secondary TSP standard was retained. The TSP secondary standard is specific to Wisconsin and should not be confused with the National Ambient Air Quality Standards, which are developed by the U.S. EPA.

^h Not to be exceeded more than once per year on average over 3 years.

ⁱ To attain this standard, the 3 year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.

^j To attain this standard, the 3 year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (effective December 17, 2006).

^k To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).

^l To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

The 1997 standard – and the implementation rules for that standard – will remain in place for implementation purposes as U.S. EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

EPA is in the process of reconsidering these standards (set in March 2008).

^m Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

Source: <http://www.epa.gov/air/criteria.html>, accessed October 7, 2010 and Wisconsin Administrative Code, Chapter NR 404.04, May, 2010.

Carbon monoxide is a colorless and odorless gas that is the by-product of incomplete combustion, and is the major pollutant from gasoline-fueled motor vehicles. Carbon monoxide emissions are greatest from vehicles operating at low speeds and prior to complete engine warm-up (within approximately 8 minutes of starting). Congested urban roads tend to be the principal problem areas for carbon monoxide.

In addition to the NAAQS criteria for air pollutants, U.S. EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road

mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

In April 2007, under authority of the Clean Air Act CAA Section 202(l), U.S. EPA signed a final rule, Control of Hazardous Air Pollutants from Mobile Sources, which sets standards to control MSATs. Under this rule, U.S. EPA set standards on fuel composition, vehicle exhaust emissions, and evaporative losses from portable containers. Beginning in 2011, refineries will be required to limit the annual benzene content of gasoline to an annual average refinery average of 0.62 percent. The rule also sets a new vehicle exhaust emission standard for non-methane hydrocarbon including MSAT compounds, to be phased in between 2010 and 2013 for lighter vehicles and 2012 and 2015 for heavier vehicles.

Greenhouse gases are trace gases that trap heat in the earth's atmosphere. Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are carbon dioxide (CO₂), methane (CH₄), N₂O, and fluorinated gases (U.S. EPA, 2008a).

Exceeding the NAAQS pollutant level does not necessarily constitute a violation of the standard. Some of the criteria pollutants (including CO) are allowed one exceedance of the maximum level per year, while for other pollutants, criteria levels cannot be exceeded. Violation criteria for still other pollutants are based on recorded exceedances. **Table 3-23** lists the allowable exceedances for U.S. EPA criteria pollutants.

The study-area freeway system is located within the Southeastern Wisconsin Intrastate Air Quality Control Region #239. Milwaukee County is currently in attainment status for five of the seven criteria pollutants, and has been classified as being in moderate non-attainment for the 8-hour ozone standard and non-attainment for PM_{2.5}. Since the region has recently been designated as a non-attainment area for PM_{2.5}, SEWRPC and DNR are developing budgets to control PM_{2.5} emissions in accordance with U.S. EPA guidelines so that the region will be in attainment by 2015.

The Milwaukee-Racine area has been designated as nonattainment for the National Ambient Air Quality Standard (NAAQS) for fine particulate matter (PM_{2.5}). This nonattainment area includes Milwaukee, Waukesha and Racine counties. The proposed project is located within the nonattainment area. As such, the project is required to meet Transportation Conformity Rule requirements found in 40 CFR Part 93. This project is included in the *Regional Transportation System Plan for Southeastern Wisconsin: 2035* (SEWRPC, 2006) and SEWRPC's 2011-2014 regional Transportation Improvement Program (SEWRPC, 2011). The Adjacent Arterial Component is included in an amendment to the 2011-2014 regional Transportation Improvement Program. SEWRPC, the region's Metropolitan Planning Organization completed a regional conformity analysis for Particulate Matter 2.5 (PM_{2.5}). Evidence of the conformity analysis is included in the SEWRPC Memorandum Report No. 196 titled, *Assessment of Conformity of the Year 2035 Regional Transportation Plan and the Year 2009-2012 Transportation Improvement Program With Respect to the State of Wisconsin Air Quality Implementation Plan – Six County Southeastern Wisconsin Ozone Nonattainment Area and Three County Fine Particulate (PM_{2.5}) Nonattainment Area*. The FHWA and Federal Transit Administration determined the SEWRPC Regional Transportation Plan and Transportation Improvement Program to be in conformance with the transportation planning requirements

of Titles 23 and 49 U.S.C., the Clean Air Act Amendments, and related regulation on February 17, 2011. *The Assessment of Conformity of the Year 2035 Regional Transportation Plan and Amendment to Include the Widening of STH 100 (N. 108th Street/N. Mayfair Road) between IH 94 and Watertown Plank Road and the Year 2011-2014 Transportation Improvement Program* was determined by the FHWA and Federal Transit Administration to be in conformance with the transportation planning requirements of Titles 23 and 49 U.S.C., the Clean Air Act Amendments, and related regulation on September 14, 2011.

3.20.2 Air Quality Impacts

The air quality impact analysis for this project was conducted in accordance with WisDOT, DNR, FHWA, and U.S. EPA procedures. The project is subject to Wisconsin Administrative Code NR 411 Construction and Operation Permits for Indirect Sources. NR 411 has established traffic volume thresholds for new highways and modified highways. The increase in mainline traffic volumes on I-894 south of the Zoo Interchange and the addition of through lanes at the intersection of Highway 100 and Bluemound Road exceeded the criteria in NR 411. Therefore, WisDOT and FHWA performed CO screening analyses of the proposed improvements to determine if future CO concentrations would exceed 75 percent of any ambient air quality standard for CO.

Recent FHWA guidelines provided methodologies on when and how to perform an MSAT analysis. As a result WisDOT and FHWA performed a quantitative analysis of MSAT emissions. The results of the MSAT analysis are summarized in this section and described in more detail in Appendix C.

Carbon Monoxide Screening Analyses

The CO screening analyses, as prescribed in NR 411.04(2)(c), were performed along I-894 as it passes under Greenfield Avenue and included traffic volumes on the mainline, Greenfield Avenue and all ramps to and from I-894 and at the intersection of Highway 100 and Bluemound Road. According to NR 411, "If the screening analysis results indicate that no receptor location will be exposed to more than 75 percent of any ambient air quality standard for carbon monoxide, no permit is required." The 75 percent threshold is 26.25 ppm and 6.75 ppm, respectively for the 1-hour and the 8-hour standard.

U.S. EPA-approved computer models, MOBILE6.2 (U.S. EPA, 2003) and CAL3QHC 2.0 (U.S. EPA, 1995b) were used to analyze the emissions and dispersion of CO within the microscale study area described in the previous paragraph. MOBILE6.2 is a U.S. EPA computer program for calculating average vehicle CO emission rates. The DNR provided the specific 2016 and 2026 input variables for MOBILE6.2 for Milwaukee County (DNR, 2009).

CAL3QHC is a pollutant dispersion-modeling program for predicting pollutant concentrations from motor vehicles under free-flow or idling conditions. CAL3QHC was used to model traffic on I-894 in the vicinity of Greenfield Avenue, the on and off ramps, Greenfield Avenue, the Highway 100/Bluemound Road intersection and all queued traffic at the signalized intersections in the two study areas. Peak 1-hour and 8-hour traffic volumes were used to determine the maximum one-hour and eight-hour CO concentrations. The CO concentrations at 23 locations along Greenfield Avenue and adjacent buildings were modeled for the Modernization Alternative and the Reduced Impacts Alternative. CO concentrations were modeled at 38 locations along Bluemound Road, Highway 100, and at

buildings along the Adjacent Arterials Component. The results of the CO screening analysis for the locations representing the five highest concentrations for the Modernization Alternative and the Reduced Impacts Alternative and the eight highest concentrations for the Adjacent Arterials Component are presented in **Table 3-24**. Since none of the CO concentrations exceed the 75 percent criteria, an Indirect Source Permit is not required. The DNR Bureau of Air Management concurred with the screening analysis in February 2011 (see Appendix F.)

TABLE 3-24
Maximum Projected Carbon Monoxide Concentrations

Receptor Site: Modernization Alternative I-894 @ Greenfield Ave	Carbon Monoxide (ppm)			
	1-Hour Peak ^a		3.20.3	8-Hour Average ^b
	Construction Year (2016)	Construction Year Plus 10 Years (2026)	Construction Year (2016)	Construction Year Plus 10 Years (2026)
A4 – North sidewalk on Greenfield Ave. bridge over I-894, at stop line for traffic signal	9.8	10.0	5.1	5.1
A5 – North sidewalk on Greenfield Ave. bridge over I-894, 82 ft east of stop line for traffic signal	12.7	12.9	6.3	6.3
A6 – North sidewalk on Greenfield Ave. on bridge over I-894, 164 ft east of stop line for traffic	12.1	12.5	6.1	6.2
A13 – South sidewalk on Greenfield Ave, 82 ft west of stop line for traffic signal	4.8	4.9	2.9	2.9
A14 – South sidewalk on Greenfield Ave. at stop line for traffic signal	4.9	4.9	2.6	2.5
Receptor Site: Reduced Impacts Alternative I-894 @ Greenfield Ave				
A4 – North sidewalk on Greenfield Ave. bridge over I-894, at stop line for traffic signal	9.8	10.3	5.2	5.5
A5 – North sidewalk on Greenfield Ave. bridge over I-894, 82 ft east of stop line for traffic signal	10.6	10.8	5.8	6.0
A6 – North sidewalk on Greenfield Ave. on bridge over I-894, 164 ft east of stop line for traffic	9.6	9.8	5.6	5.6
A13 – South sidewalk on Greenfield Ave, 82 ft west of stop line for traffic signal	4.9	5.2	2.9	2.9
A14 – South sidewalk on Greenfield Ave. at stop line for traffic signal	5.2	5.2	3.0	3.1
Receptor Site: Adjacent Arterials Component Highway 100 @ Bluemound Rd				
A30 – South sidewalk on Bluemound Rd. at stop line for traffic signal	4.4	4.4	2.7	2.7

TABLE 3-24
Maximum Projected Carbon Monoxide Concentrations

A31 – South sidewalk on Bluemound Rd. 82 ft west of stop line for traffic signal	4.7	4.6	3.0	3.0
A42 – North sidewalk on Bluemound Rd. 82 ft west of stop line for traffic signal	4.8	4.6	2.8	2.7
A45 – North sidewalk on Bluemound Rd. at stop line for traffic signal	4.4	4.3	2.8	2.7
A46 – North sidewalk on Bluemound Rd. 82 ft east of stop line for traffic signal	4.6	4.4	3.0	2.7
A49 – East sidewalk on HWY 100 at stop line for traffic signal	4.6	4.5	2.7	2.5
A52 – West sidewalk on HWY 100 25 ft south of stop line for traffic signal	4.6	4.8	2.6	2.6
A53 – West sidewalk on HWY 100 138 ft south of stop line for traffic signal	4.5	4.5	2.5	2.5

^a Includes 1-hour ambient background CO concentration of 1.0 ppm

^b Includes 8-hour ambient background CO concentration of 0.8 ppm

Screening threshold, 1-hour 26.25 ppm; 8-hour 6.75 ppm

MSAT Analysis

In September 2009, FHWA issued updated guidance for the analysis of MSATs in the NEPA process for highway projects (FHWA, 2006a and FHWA, 2009a). The FHWA has developed a tiered approach for analyzing MSATs in NEPA documents. Depending on the specific project circumstances, FHWA has identified three levels of analysis:

- No analysis for projects with no potential for meaningful MSAT effects.
- Qualitative analysis for projects with low potential MSAT effects.
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Since projected traffic volumes by 2035 are projected to exceed 150,000 vpd along a few segments of the corridor, this project required a quantitative analysis due to the higher potential for MSAT effects.

The MSAT analysis indicates that by 2035 with any Build Alternative, MSAT pollutants will decrease 51 to 56 percent for five of the six priority air toxics and over 90 percent for diesel particulate and exhaust organic gases from 2004 conditions. The total vehicles miles traveled (VMT) estimated for the Reduced Impacts Alternative is slightly less than the 6-lane Modernization Alternative which is slightly less than the 8-lane Modernization Alternative and the local street VMT is a smaller percentage of the total VMT for both the 8-lane Modernization Alternative and Reduced Impacts Alternative when compared to the 6-lane Modernization Alternative and No-Build Alternative. This slight difference is created because the additional capacity would reduce congestion on the study-area freeway system and attract trips from the local streets. This increase in VMT would lead to slightly higher MSAT emissions along the

study-area freeway system, but still substantially below 2004 levels. The increased VMT on both the study-area freeway system and the local streets is offset by lower MSAT emission rates due to increased speeds. According to U.S. EPA's MOBILE6.2 emissions model, emissions of all of the priority MSATs except for diesel particulate matter decrease as freeway speeds increase.

The additional travel lanes contemplated as part of the 8-lane Modernization Alternative or Reduced Impacts Alternative with the Adjacent Arterials Component will have the effect of moving traffic closer to some homes, schools and businesses; therefore, there may be localized areas where ambient concentrations of MSATs could be higher compared to the 6-lane Alternative (with the Build Alternatives being considerably lower than existing concentrations). However, the magnitude and the duration of these potential increases compared to the No-Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In summary, when a study-area freeway system is widened the localized level of MSAT emissions for the Build Alternative could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSATs will be lower in other locations when traffic shifts away from local streets. However, as shown with the MSAT results presented in Appendix C, on a regional basis, U.S. EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

PM_{2.5} Qualitative Hot-Spot Analysis

The Transportation Conformity Rule was amended by U.S. EPA with the final rule on March 10, 2006. The Amended Transportation Conformity Rule requires a hot-spot analysis to determine project-level conformity in PM_{2.5} and PM₁₀ nonattainment and maintenance areas. The amended rule also stated that qualitative hot-spot analysis would be performed on projects until such time that quantitative procedures are developed. A hot-spot analysis is an assessment of localized emissions impacts from a proposed transportation project and is only required for "projects of air quality concern."

An Interagency Consultation Team, comprised of representatives from WisDOT, FHWA, DNR, Wisconsin Department of Health Services, SEWRPC, U.S. EPA, Milwaukee County Transit System, the City of Milwaukee, the City of West Allis, and Milwaukee County was established to determine whether the Zoo Interchange project was a "project of air quality concern".

The existing annual average daily traffic (AADT) on the four legs of the Zoo Interchange range 125,000 to 144,000 vehicles per day with 8.1% and 9.3% HDDV on the west leg and south leg respectively. Design year traffic on the four legs is projected to increase to the 173,000 to 222,000 AADT range by 2035. Truck percentage is expected to remain constant. Based on this traffic data, the Interagency Consultation Team determined that the Zoo Interchange project was a "project of air quality concern" since it met the definition in 40 CFR 93.123(b)(1)(i) "New or expanded highway projects that have a significant number or significant increase in diesel vehicles."

The Interagency Consultation Team then proceeded to review the air quality status in the study area, existing air quality data, existing and projected traffic data volumes, and heavy-

duty diesel emission trends and compare the project to the I-80/I-94 Interchange Modifications at I-65 project in Lake County, IN to determine whether the Zoo Interchange project meets all the project level conformity requirements.

Based on the qualitative hot-spot analysis and consultation between WisDOT, DNR, SEWRPC, FHWA, and U.S. EPA in September 2011, it was determined that the Zoo Interchange project meets all the project level conformity requirements, and that the Zoo Interchange project will not cause or contribute to a new violation of the PM_{2.5} NAAQS, or increase the frequency or severity of a violation and will not delay timely attainment. Therefore, the project meets the conformity hot-spot requirements in 40 CFR §93.116 and §93.123 for PM_{2.5}. A copy of the Zoo Interchange PM_{2.5} Qualitative Hot-Spot Analysis is presented as Appendix G at the back of this document.

Conclusion

Based on the air quality analysis completed for the proposed improvements, this project will not contribute to any violation of the NAAQS. MSAT emissions will decrease with any of the Build Alternatives, and neither CO or PM_{2.5} levels will exceed the air quality standards.

3.20.3 Measures to Mitigate Adverse Air Quality Impacts

None identified.

3.21 Hazardous Materials

3.21.1 Affected Environment

Based on the initial record search (database search, aerial photographs, topographic maps, historical as-builts, Sanborn maps, etc.) and windshield survey, 156 potential hazardous materials sites and/or parcels were identified adjacent to the study-area freeway system. Sources reviewed for information include regulatory agency (U.S. EPA and DNR) listings, and past or present land use that would indicate the potential for the use or management of hazardous materials or the generation of hazardous waste. If such information was found, the parcel was noted as a potential hazardous material site/parcel. A summary of the initial findings include the following:

- Based on the proposed right-of-way acquisition and project excavation requirements, 156 sites and/or parcels were recommended for additional record searches. Of the 156 sites, 104 include former gas stations and fill areas. Potentially contaminated soils and possibly underground storage tanks may be encountered if utilities and storm sewers (locations yet to be determined) are proposed at these sites in the future.
- There are 48 bridges within the study area. Three bridges were replaced during emergency bridge replacement and do not contain asbestos-containing materials (ACM). Bridges to be demolished on the study-area freeway system may include asbestos-containing materials (ACM). WisDOT inspected all 53 bridges that could be affected by the proposed action in 2009 to determine if the bridges have ACM. A total of 45 may contain ACM. A copy of the inspection report is available from WisDOT's region office in Waukesha.
- Bridges to be demolished on the study-area freeway system may contain lead-based paint.

WisDOT and FHWA expanded the search area for potential hazardous materials sites to cover the Adjacent Arterials Component. Based on a record search for the expanded area (database search, aerial photographs, topographic maps, historical as-builts, Sanborn maps, etc.) and windshield survey, 187 additional potential hazardous materials sites and/or parcels were identified within a quarter mile database search area. Sources reviewed for information include regulatory agency (U.S. EPA and DNR) listings, and past or present land use that would indicate the potential for the use or management of hazardous materials or the generation of hazardous waste. If such information was found, the parcel was noted as a potential hazardous material site/parcel. Of the 178 sites, 77 were recommended for additional record searches.

Of the 187 sites, 77 were recommended for additional record searches. Of those 77 sites, 42 are leaking underground storage tank (LUSTs) or emergency repair program (ERP) sites. ERP sites are locations other than LUSTs that have contaminated soil and/or groundwater. Examples include industrial spills (or dumping) that need long term investigation, buried containers of hazardous substances, and closed landfills that have caused contamination. Contaminated soils and underground storage tanks may be encountered if utilities are proposed at these sites in the future. Based on the proposed right-of-way acquisition and distance from project excavation requirements, 22 sites in the expanded study area have been recommended for field sampling and testing.

3.21.2 Hazardous Materials Impacts

No-Build Alternative

The No-Build Alternative would not affect any potentially contaminated sites.

Modernization and Reduced Impacts Alternatives

The Modernization and Reduced Impacts Alternatives would affect many of the the 75 (Modernization) and 61 (Reduced Impacts) potential contaminated sites recommended for further analysis. DNR and other affected parties will be notified of the results of field sampling and testing. WisDOT would work with concerned parties to ensure disposition of any petroleum contamination to the satisfaction of the DNR, WisDOT Environmental Services Section, and FHWA.

Forty-five bridges on the study-area freeway system may contain asbestos. WisDOT considers all paint on bridges to be lead-based paint. All bridges are planned for replacement under the Modernization and Reduced Impacts Alternatives. Buildings to be acquired under the Modernization and Reduced Impacts Alternatives could also contain asbestos and/or lead-based paint. Both asbestos and lead-based paint pose a health risk if inhaled or ingested.

Adjacent Arterials Component

The Adjacent Arterials Component would affect many of the 22 potential contaminated sites recommended for further analysis. DNR and other affected parties will be notified of the results of field sampling and testing. WisDOT would work with concerned parties to ensure disposition of any petroleum contamination to the satisfaction of the DNR, WisDOT Environmental Services Section, and FHWA.

Buildings to be acquired under the Adjacent Arterials Component could also contain asbestos and/or lead-based paint. Both asbestos and lead-based paint pose a health risk if inhaled or ingested.

Preferred Alternative

The Preferred Alternative for the project is the Reduced Impacts Alternative. Therefore, 61 of the potentially contaminated sites are recommended for further analysis within the Zoo Interchange. The Adjacent Arterials Component has also been chosen and therefore, 21 potentially contaminated sites are recommended for further analysis. A total of 82 sites are recommended for field sampling and testing based upon the preferred alternative.

3.21.3 Measures to Mitigate Adverse Hazardous Material Impacts

During the project's real estate acquisition phase, WisDOT will survey all buildings that need to be demolished to determine whether asbestos is present.

An asbestos inspection of the 53 structures in the study area was conducted in 2009, 2010 and 2011. Asbestos-containing material is present on 44 of the structures. Special provision 203-005, bid item 203.0210s) will be included in the plan. The contractor will be responsible for completion of the Notification of Demolition and/or Renovation (DNR form 4500-113).

3.22 Soil Resources

3.22.1 Affected Environment

Soils located in the study area were formed mainly in material that was laid down through glaciation and have a high content of clay. Soil associations provide a general idea of the soils located within an area and consist of a landscape that has a distinctive proportional pattern of soils.

The soil association present through the majority of the study area is the Ozaukee-Morley-Mequon association. The U.S. Department of Agriculture Soil Conservation Service Soil Survey states that this soil association consists of well drained to somewhat poorly drained soils that have a subsoil of silty clay loam and silty clay, formed in thin loess and silty clay loam glacial till, on moraines. The land in this soil association consists of intermittent "clay" bluffs and of gently sloping to rolling ridges that roughly parallel the Lake Michigan shoreline. Most of this soil association is well-suited to farming, but erosion control is needed on the sloping soils, and drainage and protection from flooding are needed for the soils in the low areas.

3.22.2 Soil Impacts

None identified.

3.22.3 Measures to Mitigate Adverse Soil Impacts

None identified.

3.23 Cemeteries

3.23.1 Affected Environment

No cemeteries are located adjacent to the study-area freeway system. However, a historic Native American cemetery is reportedly located north of Watertown Plank Road and east of Underwood Creek Parkway. Field survey in 2008 found no evidence of this site. In addition, a complex of three cemeteries, known as Potter's Fields, is located north of Wisconsin Avenue near 87th Street and north of Watertown Plank Road near 87th Street. Milwaukee County used these three cemeteries to bury patients and residents of county facilities in the 19th and 20th centuries.

3.23.2 Cemetery Impacts

None identified.

3.23.3 Measures to Mitigate Adverse Cemetery Impacts

None identified.

3.24 Archaeological

3.24.1 Affected Environment

WisDOT coordinated archaeological investigations in the study area in accordance with the Guidelines for Public Archaeology in Wisconsin, as revised. The archaeological investigations were designed to partially fulfill responsibilities for identifying, recording, and managing cultural resources as stipulated under Section 106 of the National Historic Preservation Act of 1966. The Phase 1 investigation (identification) included an extensive literature search of published reports, site forms, and reports on previously recorded sites on file at regional libraries, historical societies, and the Wisconsin Historical Society. The Phase 1 investigation also included visual inspection, pedestrian field survey, surface collection, and shovel tests as needed to verify the presence or absence of archaeological material along the entire project corridor. The results are documented in *A Phase I Archaeological Investigation of the US 45, I-94, I-894/Zoo Interchange Study Corridor in Milwaukee, Wisconsin Project I.D. 1060-33-00* (March 2008 and January 2009 addendum). The APE for the archaeological study includes areas of reasonably anticipated direct and indirect impacts. The development of the Adjacent Arterials Component after the June 2009 public hearing required additional Phase 1 work along segments of 84th Street/Glenview Avenue north of I-94. The project area for the Phase 1 work was divided into two parcels, the first was at the intersection of 84th Street and I-94, and the second was a few blocks north at the intersections of 84th Street and Bluemound Road and the intersection of Glenview Avenue and Wisconsin Avenue. The original archaeological investigation covered the proposed improvements along Highway 100 and Watertown Plank Road so no additional work was required in 2010. The archaeological fieldwork conducted in 2007, 2008, and 2010 revisited several previously identified archaeological sites. During the field investigations, no new archaeological resources, materials, or sites were encountered. The following previously reported archaeological sites are in or near the APE for the study area corridor:

- The Lyon Cache site is located east of Highway 100, on both sides of Underwood Creek in Hansen Park. The site is previously reported to have yielded approximately 250 flint implements. In 2001, UWM surveyed the site area but found no archaeological resources.
- The Underwood Creek Campsites are located east of Highway 100, on both sides of Underwood Creek in Hansen Park. The site was previously reported by Charles E. Brown and may be a duplicate of the Lyon Cache site. UWM investigated the site in 2001 but found no archaeological resources.
- The Highway 100 site is a prehistoric habitation site defined by a single projectile point fragment. The site is located between Highway 100 and US 45 in Underwood Creek Parkway. The northeast corner of the site is within the study area.
- An unnamed site, located in the southeast quadrant of the Watertown Plank Road interchange, is previously reported to have yielded lithic materials. Since the area is largely paved and used as a parking lot today, the site may be destroyed. No evidence of this site was located during 2007 investigations.
- The Powder House Camp is located north of I-94 and east of 92nd Street. The site is a previously reported campsite associated with 19th century Menominee short-term habitation. No trace of the site was encountered during 2007 investigations, and it appears that the site may be entirely destroyed by development.
- The Honey Creek Camp is located north of I-94 between 92nd Street and Honey Creek. Indications of cornfields and habitation areas were previously reported at the site. No evidence of the site was located during 2007 or 2010 investigations, and indications are that the site has been heavily disturbed.

3.24.2 Archaeological Impacts

No-Build Alternative

The No-Build Alternative would not affect any identified archaeological sites.

Modernization Alternatives

None of the Modernization Alternatives would encroach into any of the identified archaeological sites.

Reduced Impacts Alternative

The Reduced Impacts Alternative would not affect any of the identified archaeological sites.

Adjacent Arterials Component

The Adjacent Arterials Component would not affect any identified archaeological sites.

3.24.3 Measures to Minimize Adverse Archaeological Impacts

None identified.

3.25 Historic Sites

3.25.1 Affected Environment

WisDOT investigated historic properties to identify possible historically significant structures within the APE of improvements to the study-area freeway system. The APE for this review included buildings and structures located within a 500-foot wide corridor on both sides of the study-area freeway system and a 0.5-mile radius around service interchange cross roads. Structures are historically significant if listed in the National Register of Historic Places or meet criteria for eligibility to the National Register. Eligibility criteria for structures are summarized as follows:

- Criterion A— Structures associated with events that have made a significant contribution to broad patterns of our history.
- Criterion B—Structures associated with the lives of persons significant in our past.
- Criterion C—Structures 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.

The nine properties listed below are either eligible to be listed or are listed in the National Register. Detailed descriptions and exhibits of these historical properties are listed in Section 4, **Final** Section 4(f) Evaluation.

The following two sites in the APE are listed in the National Register (see **Exhibit 4-1**):

- The former Milwaukee County Home for Dependent Children Administration Building (currently the Milwaukee County Parks System headquarters), located north of Watertown Plank Road and east of the existing Watertown Plank Road entrance ramp to northbound US 45. This structure was listed in the National Register on January 17, 1999, was listed as a Milwaukee County Landmark in 1978, and is a City of Wauwatosa local landmark. The historical significance of this structure is based on Criterion A (Social History).
- The Milwaukee County School of Agriculture and Domestic Economy Historic District (Eschweiler Buildings), located just south of Swan Boulevard and east of US 45. The district was listed in the National Register on March 19, 1998, and is also a Milwaukee County and City of Wauwatosa landmark. The historical significance of this district is based on Criterion A (Education) and Criterion C (Architecture).

The following seven sites in the APE are eligible for listing on the National Register (see **Exhibit 4-1**):

- Underwood Creek Parkway (including Hansen Park), which loosely follows Underwood Creek through the APE and crosses under US 45. The parkway is eligible for the National Register based on Criterion A (History). **Only the portion of Underwood Parkway north of Bluemound Road is eligible for the National Register.**
- Greenfield Avenue Presbyterian Church is located on 97th Street, south of Greenfield Avenue and east of the I-894/US 45 exit ramp to Greenfield Avenue. This church is a good

example of the English Colonial/Period Georgian Revival style of architecture. The church is eligible for the National Register under Criterion C (Architecture) with regard to Criterion Consideration G: Properties that have achieved their significance within the last 50 years.

- The triple intersection Warren through truss railroad bridge, located along the Union Pacific rail line over a former Canadian Pacific branch rail line, is south of I-94 and east of Highway 100. This single span rail bridge was built in 1910 and carries two sets of railroad tracks. This truss bridge is eligible for the National Register under Criterion C (Engineering).
- Honey Creek Parkway and the 84th Street bridge over Honey Creek, the south end of which is on the north side of I-94 near 84th Street. The Honey Creek Parkway construction began in 1932 and in 1933 permitted the use of Civilian Conservation Corps labor. The parkway is eligible for the National Register based on Criterion A (History) and Criterion C (Architecture/Engineering).
- The former Muirdale Sanatorium property is located on the west side of Innovation Drive south of Watertown Plank Road. The former sanatorium was designated a Milwaukee County landmark in 1980, and recommended as potentially eligible to the National Register in an extensive survey of Wauwatosa in 1996. The former sanatorium and power plant are eligible under Criterion C (architecture) for their Neoclassical style of architecture.
- The Rockway Place Residential Historic District extends along the east side of 84th Street (Glenview Avenue) for two blocks north of the 84th Street/Bluemound Road intersection. It consists of 15 single-family residences. The Rockway and Brookside Places Residential Historic District is eligible for the National Register under Criterion C (architecture) as an example of English-inspired Tudor Revival houses.
- The St. Jude the Apostle Roman Catholic Church Complex includes the combined school and church, rectory, convent, and church. The rectory and convent are located adjacent to Glenview Avenue while the original church and school and the modern church are located around St. Jude Court and slightly to the east. The convent and rectory are eligible for the National Register under Criterion C (architecture) as examples of Collegiate Gothic style. In addition, the two buildings, along with the combined school and church and modern church are eligible under Criterion C as a complex.

3.25.2 Historic Site Impacts

Of the nine historic properties in the Zoo Interchange APE, the triple intersection Warren through truss railroad bridge, and the Honey Creek Parkway (Modernization and Reduced Impacts Alternatives) may be directly impacted by the Zoo Interchange reconstruction. Proposed improvements and possible impacts to historical properties are described below.

Milwaukee County Home for Dependent Children Administration Building (current Milwaukee County Parks Department headquarters)

Modernization Alternatives. The existing US 45/Watertown Plank Road interchange would be reconstructed. The northbound entrance ramp would be closer to the building than it is today, but would not impact the historic boundary of the building. Watertown Plank Road would be reconstructed and realigned 95 feet north to provide a safer and more efficient intersection with the freeway on/off ramps (see Section 4.3.5).

Reduced Impacts Alternative. The existing US 45/Watertown Plank Road interchange would be reconstructed. The northbound entrance ramp would be closer to the building than it is today, but would not impact the historic boundary of the building. The expansion of Watertown Plank Road to three-lanes in each direction would bring the roadway 25 feet north of the current location (see Section 4.3.5).

Adjacent Arterials Component. The Milwaukee County Home for Dependent Children Administration Building would not be affected under the Adjacent Arterials Component (see Section 4.3.5).

Milwaukee County School of Agriculture and Domestic Economy Historic District (Eschweiler Buildings)

Modernization Alternatives. The Swan Boulevard bridge over US 45 will be reconstructed, as will the Swan Boulevard connection to Watertown Plank Road. The existing Swan-Watertown Plank connector road is 421 feet west of the closest of the four buildings; after reconstruction, it would be 343 feet away under both the 6- and 8-lane N3 Modernization Alternatives. Under the 6- and 8-lane N1 Modernization Alternatives, the Swan-Watertown Plank connector road would be in essentially the same location as it is today, moving only slightly closer to the north side of the buildings (3 feet) (see Section 4.3.6).

Reduced Impacts Alternative. The Swan Boulevard bridge over US 45 would be reconstructed, and a new Swan Boulevard connection to Innovation Drive at Watertown Plank Road would be built. The existing Swan Boulevard roadway is located 395 feet northwest of the closest of the four buildings; after reconstruction, it would be 408 feet away under the Reduced Impacts Alternative as Swan Boulevard is realigned to the west. Under the Reduced Impacts Alternative, the connector road to Swan Boulevard from Watertown Plank Road would be eliminated, moving traffic approximately 70 feet away from the west side of the buildings (see Section 4.3.6).

Adjacent Arterials Component. The Milwaukee County School of Agriculture and Domestic Economy Historic District would not be affected under the Adjacent Arterials Component (see Section 4.3.6).

Underwood Creek Parkway

Modernization Alternatives. The existing US 45 bridge over Underwood Creek Parkway would be replaced by a wider bridge. The 123-foot-wide bridge would be up to 51 feet wider after its reconstruction, which would require approximately 50 to 65 feet of new right-of-way or easement from Underwood Creek Parkway, east of the bridge. The 6-lane Modernization Alternatives would require 0.1 acre of new right-of-way or easement to accommodate the wider bridge. The 8-lane Modernization Alternatives would require 0.24 acre of new right-of-way or easement. The wider bridge will cross over the parkway and will not directly affect the parkway roadway. The small brick building in Underwood Creek Parkway is west of the bridge; it would not be any closer to the US 45 bridge over the parkway (see Section 4.3.1).

Reduced Impacts Alternative. The existing US 45 bridge over Underwood Creek Parkway would be replaced by a wider bridge. Similar to the Modernization Alternatives, the 123-foot-wide bridge would be 49 feet wider after its reconstruction, which would require

approximately 50 to 70 feet of new right-of-way or easement from Underwood Creek Parkway, east of the bridge. The Reduced Impacts Alternative would require 0.25 acre of new right-of-way or easement. The wider bridge will cross over the parkway and will not directly affect the parkway roadway. The small brick building in Underwood Creek Parkway is west of the bridge; it would not be any closer to the US 45 bridge over the parkway (see Section 4.3.1).

Additionally, 0.19 acre of new right-of-way or easement would be required north of Watertown Plank Road to realign the parkway road and connect it to Swan Boulevard north of Innovation Drive under the Reduced Impacts Alternative.

Adjacent Arterials Component. Underwood Creek Parkway would not be affected under the Adjacent Arterials Component (see Section 4.3.1).

Greenfield Avenue Presbyterian Church

Modernization Alternatives. Under the Modernization Alternatives for the south leg (6- and 8-lane S2), I-894/US 45 would be reconstructed and potentially widened, including the existing exit/entrance ramps to/from Greenfield Avenue. The off-ramp to Greenfield Avenue would be approximately 20 feet east of the existing ramp and 19 feet closer to the church property (252 feet away from the church rather than 271 feet today). The building's historic boundary would not be affected, and no church property would be acquired (see Section 4.3.8).

Reduced Impacts Alternative. Under the Reduced Impacts Alternative, I-894/US 45 would be reconstructed and widened on the south leg. At Greenfield Avenue, the existing exit/entrance ramps to/from Greenfield Avenue in the southeast quadrant of the interchange would be removed and replaced with a standard diamond interchange ramp. The new off-ramp to Greenfield Avenue would be 215 feet west of the existing ramp and further from the church property (385 feet away from the church's historic boundary rather than 166 feet today). The building's historic boundary would not be affected, and no church property would be acquired (see Section 4.3.8).

Adjacent Arterials Component. The Greenfield Avenue Presbyterian Church would not be affected under the Adjacent Arterials Component (see Section 4.3.8).

Union Pacific Railroad Triple Intersection Warren through Truss Bridge

Modernization Alternatives. The Union Pacific's modern railroad bridge over I-94 would be replaced by a new, longer bridge to accommodate the Zoo Interchange reconstruction. The Warren truss bridge is located just south of the Union Pacific's modern railroad bridge over I-94. The Union Pacific rail line in the vicinity of I-94 may remain in its existing alignment or may be re-aligned approximately 30 feet to the east or west of its current location under all Modernization Alternatives. If the railroad stays on its existing alignment, the truss bridge would likely remain in service. If the railroad would need to be re-aligned, the truss bridge would be removed from service and replaced by a new bridge to its east or west (see Section 4.3.7).

Reduced Impacts Alternative. The impacts of the Reduced Impacts Alternative on the Union Pacific's modern railroad bridge over I-94 and the Warren through truss bridge are the same as the other Modernization Alternatives.

Adjacent Arterials Component. The Union Pacific's modern railroad bridge over I-94 and the Warren through truss bridge would not be affected under the Adjacent Arterials Component.

Honey Creek Parkway

Modernization Alternatives. The 84th Street interchange with I-94 would be reconstructed under the 6-lane and 8-lane E1,E1/E3 Hybrid, and Modified E3 Alternatives. None of the Modernization Alternatives would require acquisition of Honey Creek Parkway for highway right-of-way. However, under all the alternatives, a stormwater detention pond may be built in the parkway just north of I-94 and west of 84th Street. Located on approximately 3.5 acres, the pond would collect runoff from I-94 to reduce the potential for downstream flooding and to improve water quality in Honey Creek by allowing contaminants to settle out of the runoff (see Section 3.11.3). To accommodate the pond, Honey Creek would be realigned and returned to a more natural streambed. The linear, concrete lined channel installed in the 1960s would be removed. The 84th Street bridge over Honey Creek would not be affected (see Section 4.3.4).

Reduced Impacts Alternative. Under the Reduced Impacts Alternative, reconstruction of the 84th Street interchange with I-94 would require an acquisition of 0.2 acre in Honey Creek Parkway for highway right-of-way. This alternative's proposed detention pond would have the same impacts on the parkway as the Modernization Alternatives described above.

Adjacent Arterials Component. Under the Adjacent Arterials Component, neither Honey Creek Parkway nor the Honey Creek bridge would be affected (see Section 4.3.4).

Muirdale Sanatorium

Modernization Alternatives. The sanatorium would not be affected under the Modernization Alternatives.

Reduced Impacts Alternative. The sanatorium would not be affected under the Reduced Impacts Alternative.

Adjacent Arterials Component. The Adjacent Arterials Component would not acquire new right-of-way from the portion of the property where the former power plant is located. Because of the curved alignment of Innovation Drive, the sidewalk would be the same distance away from the power plant (8 feet away) at the northwest corner of the building, but near the center of the building the new sidewalk would be three feet closer to the building (40 feet away).

Rockway Place Residential Historic District

Modernization Alternatives. The district would not be affected under the Modernization Alternatives.

Reduced Impacts Alternative. The district would not be affected under the Reduced Impacts Alternative.

Adjacent Arterials Component. Under the Adjacent Arterials Component, no new right-of-way would be acquired from the District, but the sidewalk, curb and gutter along Glenview Avenue may be replaced in the same location.

St. Jude the Apostle Roman Catholic Church Complex

Modernization Alternatives. The complex would not be affected under the Modernization Alternatives.

Reduced Impacts Alternative. The complex would not be affected under the Reduced Impacts Alternative.

Adjacent Arterials Component. The complex would not be affected under the Adjacent Arterials Component.

WisDOT and FHWA have worked with State Historic Preservation Officer (SHPO) to assess the potential impacts to historic resources. The potential replacement of the Warren truss bridge and vibration during construction adjacent to the Escweiler Buildings are the only potential impacts on historic resources.

3.25.3 Measures to Mitigate Adverse Historic Site Impacts

A Memorandum of Agreement between SHPO, FHWA and WisDOT was executed in September 2011 (the Memorandum of Agreement is available for review at WisDOT SE Region office in Waukesha). See Section 4 for a discussion of mitigation measures related to vibration monitoring at the Eschweiler Buildings and the photographic documentation of the Union Pacific Railroad truss bridge in the event it is taken out of service.

3.26 Recreational Resources / Public Use Lands

3.26.1 Affected Environment

The City of Milwaukee, City of West Allis, Milwaukee County and Wisconsin DNR own parks and other public use areas adjacent to the study-area freeway system. See **Exhibit 3-33** for locations of these facilities.

Recreational Resources Adjacent to Study-Area Highways

Milwaukee County Zoo. The Milwaukee County Zoo is located in the northwest quadrant of the Zoo Interchange and shares a property line with freeway right-of-way on both the east and south sides of the property. The Milwaukee County Zoo is bordered by Bluemound Road to the north and Highway 100 to the west. A maintenance facility for the County Zoo is located in the southwest quadrant of the Zoo Interchange and is connected to the County Zoo via an underpass under I-94.

The Milwaukee County Zoo is owned by Milwaukee County and sits on over 200 acres of parkland. The Milwaukee County Zoo, at its present location, was opened to the public on May 13, 1961. Currently, the Zoo is home to more than 1,700 mammals, birds, fish, amphibians, and reptiles with more than 350 species of animals on exhibit. Along with the animals on exhibit and their living habitat, the site contains a parking lot, Zoofari Conference Center, animal health center, conservation education center, a miniature train that travels around the Zoo grounds, administration offices, food/picnic areas and gift shops, and other amenities. In spring 2008, the new U.S. Bank Gathering Place, a 23,000-square-foot covered atrium and entrance mall, was opened. The Zoo is also home to many special events during the year including concerts, Zoo a la Carte, and large group gatherings.

Honey Creek Parkway. Honey Creek Parkway is a 94-acre parkway that follows Honey Creek from approximately I-94 at 84th Street in Milwaukee to the 70th Street/State Street intersection in Wauwatosa. Both Honey Creek Parkway and the 84th Street bridge over Honey Creek, located approximately 700 feet north of mainline I-94, are eligible for inclusion in the National Register. No Land and Water Conservation Funds (LWCF) or other special funds were used to acquire or develop Honey Creek Parkway.

Chippewa Park. Chippewa Park is a Milwaukee County Park located in Wauwatosa; it shares a property line with I-94 right-of-way. This 10.52 acre park is located at 11500 Park Hill Avenue, north of I-94 and west of the I-94/Highway 100 interchange. The park is bordered by Park Hill Avenue to the north and runs from approximately 114th Street on the west to 110th Street on the east.

Chippewa Park contains a walking path, two children's play areas, one basketball court and open areas with soccer goals. No LWCF funds or other special funds were used to acquire or develop Chippewa Park.

Underwood Creek Parkway. Underwood Creek Parkway is a 196-acre parkway owned by Milwaukee County. The parkway generally follows the path of Underwood Creek, intermittently, from approximately Rainbow Park at 116th Street in West Allis in the west to Swan Boulevard on the east. The Underwood Creek Parkway contains a tot lot just south of Bluemound Road and a segment of the Oak Leaf Trail is routed along the parkway. The Wil-O-Way Underwood Recreation Center is also considered part of Underwood Creek Parkway.

The Underwood Creek Parkway crosses the Zoo Interchange study area in two locations. On the north leg, the parkway crosses under US 45, north of Watertown Plank Road. Along the west leg, a small section of the parkway is located north of the I-94 right-of-way and resumes just south of I-94 near 124th Street (the parkway does not cross under I-94). Underwood Creek Parkway is eligible for the National Register based on the history criterion. No LWCF funds or other special funds were used to acquire or develop Underwood Creek Parkway.

Wil-O-Way Underwood Special Recreation Center. The Wil-O-Way Underwood Special Recreation Center is located at 10602 Underwood Creek Parkway in Wauwatosa. The Center shares a property line with US 45 right-of-way to the west and is located approximately one-quarter mile north of the Swan Boulevard overpass over US 45. The Wil-O-Way Underwood Recreation Center is a 77-acre facility owned by Milwaukee County and operated by the Milwaukee County Office for Persons with Disabilities.

The Wil-O-Way Underwood Special Recreation Center hosts recreation activities designed for people with disabilities through the Wil-O-Way Recreation Center. Activities offered on-site include arts, crafts, life skills, clubs, sports, a hiking trail and music. The Wil-O-Way Underwood Recreation Center includes an accessible demonstration garden, outdoor pergola, picnic area, basketball court, and wheelchair accessible state-of-the-art playground with "roll-in" sandbox. The center also contains a room that can be rented with a capacity of 150 people. No LWCF funds or other special funds were used to acquire or develop the Wil-O-Way Underwood Recreation Center.

Goodwill Industries operates an adult day care program at the site, and Easter Seals operates a summer day camp for kids and adults with disabilities. UW-Extension offers master gardener classes, and UW-Milwaukee uses the grounds for camping.

Oak Leaf Trail. The Oak Leaf Trail is a Milwaukee County multi-use trail consisting of over 100 miles of multiple loops through all of the major parks and parkways in Milwaukee County's Park System. The trail is open to bikers, skaters, runners and walkers and consists of off-road paved trails, park drives and municipal streets where necessary to ensure continuity. No LWCF funds were used to acquire or develop sections of the Oak Leaf Trail located within the Zoo Interchange study area.

The Oak Leaf Trail crosses the Zoo Interchange study-area freeway system in two locations. Along the north leg, the trail crosses under US 45 along the Underwood Creek Parkway. On the west leg, the trail crosses under I-94 between two segments of Underwood Creek Parkway. A connector to the main line of the Oak Leaf Trail, called the East-West Connector, crosses under I-94 on 84th Street.

Along the local roadway system within the study area, the Oak Leaf Trail crosses two arterial roadways. At the Highway 100/Watertown Plank Road intersection, the trail crosses under Watertown Plank Road approximately 800 feet west of Highway 100, and the trail crosses under Highway 100 approximately 950 feet north of Watertown Plank Road.

Hank Aaron State Trail. The Hank Aaron State Trail (HAST) is a paved, multi-use trail owned by the Wisconsin Department of Natural Resources that currently runs through the Menomonee Valley from Milwaukee's lakefront to 94th Place, with plans to extend the trail to the Milwaukee/Waukesha County line. The existing trail is open to walkers, runners, bicyclists and skaters and provides an asphalt path from Miller Park to the Sixth Street bridge and the use of bike lanes and sidewalks to reach the lakefront. In 2006, the DNR acquired 5.5 miles of former Canadian Pacific Railway rail line that runs from Miller Park to the Milwaukee/Waukesha County line that nearly doubled the length of the trail. This would allow for the HAST to provide a direct east-west trail across Milwaukee County along a continuous path, extending from the lakefront to the county line, where it would connect with the Oak Leaf Trail. WisDOT paved the trail from the Menomonee Valley to 94th Place in 2010.

The future extension of the HAST would cross the study-area freeway system in two locations. The trail would cross under I-894/US 45 just south of the Zoo Interchange, and would also cross under I-94 near 116th Street. The trail would also cross under Highway 100 and the Union Pacific's Triple Intersection Warren through truss railroad bridge, which is just east of Highway 100. In 2011, WisDOT will place crushed limestone on the trail between 94th Place and the Oak Leaf Trail near 124th Street.

The HAST extension has been acquired with Knowles-Nelson Stewardship funds and FHWA Congestion Mitigation Air Quality grants. The extension of the HAST is subject to the rail banking provisions of the 1983 National Trails System Act. This means that the corridor must be maintained so that it could be returned to use as a rail corridor, if needed, at some point in the future. WisDOT and the DNR developed a Memorandum of Understanding that lays out the details and responsibilities for the HAST's construction, maintenance and detours during Zoo Interchange construction.

West Allis Cross Town Connector. The West Allis Cross Town Connector Bicycle and Pedestrian Facility is a planned multi-use, 5-mile east-west trail that would link schools, businesses, and other regional trails. The Cross-Town Connector would cross under I-894/US 45 along the Union Pacific rail line located between Greenfield Avenue and Lincoln Avenue, approximately one-half mile south of Greenfield Avenue.

DNR Forestry Science Center. DNR's Forestry Science Center and Demonstration Forest is just east of US 45 between Swan Boulevard and Underwood Creek Parkway. This 67-acre site includes a 50-acre mature hardwood upland forest, dominated by large, old red and white oaks, as well as large sugar maple trees, which will form the centerpiece for the Forestry Science Center. Unforested land will be used for the building and demonstration areas. Land for the Forestry Science Center was purchased through Wisconsin's Knowles-Nelson Stewardship Fund.

The mission of the center will be to promote awareness of the benefits of sustainable forestry in Wisconsin. The center will provide an educational focus on sustainable management of a hardwood forest, reforestation efforts, the significance of wood products to Wisconsin's economy, and the value of sustainable forestry to the future of our forests. An education and awareness center will be constructed on site and will contain indoor and outdoor exhibits and programming, focusing on informing the public about Wisconsin's nationally recognized forestry programs. It will provide urban forestry experiences and activities for school children, parents and visitors to the area. The Center will also link with Wisconsin's LEAF (Wisconsin's K-12 forestry curriculum) – teaching science, history, math, and social studies.

DNR has been working with MMSD, City of Wauwatosa, and Milwaukee County to ensure the center's compatibility with surrounding lands. The DNR will continue working with these partners, along with the education and forestry communities, to finalize plans for program development, fundraising, and exhibit, building, and landscape design.

Other Recreational Resources in the Study Area

Cannon Park. Cannon Park is located approximately 500 feet east of US 45 just north of the Zoo Interchange at 303 North 95th Street in Milwaukee. The 8.5-acre Milwaukee County park is bordered by Park Hill Avenue to the north, 93rd Street to the east, residences and an electrical substation to the south, and the Parkside Pool apartment complex to the west. The park contains a mix of woods and open space with two half-court basketball courts, picnic area, soccer field, tot lot, and the Cannon pavilion, a maximum capacity 50 person meeting area available for rent.

Hansen Park. Hansen Park is a 55-acre Milwaukee County Park located at 9800 Underwood Creek Parkway in Wauwatosa. Hansen Park has an 18-hole, par 3 golf course. Hansen Park is approximately 950 feet northeast of US 45 at its closest point. The park is located north of Underwood Creek Parkway and is bordered by both Underwood Creek Parkway and the Menomonee River Parkway. A Canadian Pacific rail line crosses through the park and the confluence of the Menomonee River and Underwood Creek is located in the northern part of the park.

Wisconsin Avenue Park. Wisconsin Avenue Park is an 18-acre park located in Wauwatosa, north of Wisconsin Avenue and approximately 0.4 mile west of US 45. The park is owned by Milwaukee County and contains a mix of woods and open space. Amenities include two softball diamonds, one baseball diamond, tot lot, two group picnic areas, parking lot, park office, and a small creek that runs through the park.

Reservoir Park. Reservoir Park is located on the east side of I-894/US 45 at 9621 West Lapham Street in West Allis, approximately 0.25 mile south of Greenfield Avenue. Reservoir Park is located approximately 425 feet east of I-894/US 45 and is separated from the highway right-of-way by overhead electric transmission lines. The park is also bordered by West Lapham Street to the north, South 96th Street to the east, and the West Allis underground water reservoir and Union Pacific Railroad to the south.

Reservoir Park is owned by the City of West Allis and contains two baseball diamonds, two soccer fields and children's playground equipment.

LaFollette Park. LaFollette Park, owned by Milwaukee County, is an 18.4-acre park located one-quarter mile east of I-894/US 45 at 9418 W. Washington Street in West Allis. The park contains a pavilion for rent that can accommodate up to 75 people, three softball diamonds, three tennis courts, a tot lot, wading pool, reservable picnic areas and two basketball courts.

Dyer Playfield. Dyer Playfield, owned by the City of Milwaukee, is located at 151 North 80th Street in the City of Milwaukee. The playfield is located near the I-94/ 84th Street interchange, approximately 0.3 mile north of I-94 and 0.2 mile east of 84th Street. The seven-acre Dyer Playfield consists of a children's play area, three baseball/softball fields, a basketball court, a soccer field, and three tennis courts.

Kopperud Park. Kopperud Park is located approximately 0.25 mile south of I-94 at the corner of 76th Street and Pierce Street. This City of West Allis park contains trees and picnic tables.

3.26.2 Recreational Resource/Public Use Land Impacts

No-Build Alternative

The No-Build Alternative would not acquire land from any parks or recreational resources. The study-area freeway system would not be any closer to any parks or recreational facilities under the No-Build Alternative.

Modernization Alternatives

All of the Modernization Alternatives would require acquisition of parkland for the proposed improvements. The 6-lane Modernization Alternatives would require 15 to 16 acres of parkland from three parks. The 8-lane Modernization Alternatives would require 16 acres from three or four parks adjacent to the study-area freeway system. For the specific impacts associated with recreational resources and public use land adjacent to the study-area freeway system see Section 4 and Table 3-25A.

TABLE 3-25A
Parkland Impacts by Modernization Alternatives (Acres)

Alternatives	Park
6-lane core	15.0 acres from Milwaukee County Zoo
8-lane core	15.27 acres from Milwaukee County Zoo
6-lane W3	0.1 acre from Chippewa Park
8-lane W3	0.18 acre from Chippewa Park
6-lane N1/N3	0.1 acre from Underwood Creek Parkway and 0.47 acre from Wil-O-Way Underwood Recreation Center
8-lane N1/N3	0.24 acre from Underwood Creek Parkway and 0.53 acre from Wil-O-Way Underwood Recreation Center

North Leg. The Modernization Alternatives would acquire 0.1 (6-lane) to 0.24 (8-lane) acre from Underwood Creek Parkway. All Modernization Alternatives would acquire up to 0.53 acre from the south end of the Wil-O-Way Underwood Recreation Center. The right-of-way acquisition would not affect play equipment, pool, or building. Under the 8-lane Modernization Alternatives, US 45 would be 53 feet closer to the playground (29 feet versus 82 feet today). Under the 6-lane Modernization Alternative, US 45 would be 40 feet closer to the playground (42 versus 82 feet today). US 45 would be 156 feet (8-lane) and 168 feet (6-lane) from the Wil-O-Way building. Today the building is 213 feet from US 45.

In March 2009, WisDOT met with the Milwaukee County Office for Persons with Disabilities, Goodwill Industries, Easter Seals, and UW-Extension to discuss potential impacts to Wil-O-Way. The primary concern was noise impacts to the outdoor recreation area, especially for autistic children and elderly for whom overstimulation from noise is a concern. Blind people, who rely more heavily on their sense of hearing, would find it more difficult to use the outdoor recreation areas. See Appendix D, page D-36 and Section 4.

No right-of-way would be acquired from the DNR Forestry Science Center, although US 45 would be closer to the center under the Modernization Alternatives than it is today. However, under both alternatives, the view of and from the center would not change. Viewers of the center from US 45 would continue to see trees in the southwest corner of the center and the views from the center would not be changed, in part because the elevation of US 45 in this area is located below that of the Forestry Science Center. No noise receptors were located in the Forestry Science Center adjacent to US 45. The nearest receptor, located on the Wil-O-Way Underwood Special Recreation Center property, showed a 1dBA increase in traffic noise for both 8-lane Modernization Alternatives at this location.

West Leg. Both the 6-lane and 8-lane Modernization Alternative W3 would acquire land from Chippewa Park. The 6-lane W3 Alternative would acquire 0.1 acre in a 5- to 15-foot-wide strip of land from the southeast side of the park, along the westbound I-94 entrance ramp from Highway 100. The 8-lane W3 Alternative would acquire 0.18 acre from a 15- to 25-foot-wide strip of land in the same location. At the west end of the park, I-94 would be located 76 feet away from the park, 21 feet closer than I-94 is today.

Reconstructing the Highway 100 interchange will move the interchange ramps adjacent to the HAST right-of-way, but no right-of-way acquisition is anticipated. The view from the HAST alignment could change as vehicles would be moved closer to the trail near Highway 100. Future noise levels modeled at a location just south of the HAST where the eastbound I-94 Highway 100 ramps will be located show a 3 dBA decrease in future traffic noise levels for the 8-lane Modernization Alternative. Overhead electrical transmission lines would be moved adjacent to the trail between Highway 100 and US 45. The five bridges that carry US 45 over the HAST would be replaced by 5 to 6 bridges in the same general location. Additionally, Highway 100 and the Union Pacific Railroad over the future HAST may be reconstructed.

There would be no highway right-of-way acquisition from Underwood Creek Parkway. A 2.8 acre stormwater retention/detention pond may be built in the parkway to manage runoff from the freeway. If the pond is built, WisDOT and FHWA would remove the park roadway and relocate the Oak Leaf Trail to a location suitable to the Milwaukee County Parks department.

East Leg. There would be no highway right-of-way acquisition from Honey Creek Parkway. A 2.7-acre stormwater retention/detention pond may be built in the parkway west of 84th Street to manage runoff from the freeway (see Section 4).

South Leg. The West Allis Cross Town Connector has not been built nor has its route been precisely determined. If and when the route is finalized, WisDOT will work with the City of West Allis to ensure I-894/US 45 and the Connector are compatible. If the trail is built prior to reconstruction of the bridge carrying I-894/US 45 over the Connector, the trail will be closed during the bridge's construction.

Core Interchange. All Modernization Alternatives would acquire the 5.56-acre Zoo maintenance facility in the southwest quadrant of the existing Zoo Interchange, the Zoofari Conference Center, and 3.6 acres of the 5.51-acre overflow parking lot along US 45. None of the Modernization Alternatives would affect the Zoo's animal exhibits.

The loop ramp connecting westbound I-94 to the Greenfield Avenue exit off I-894/US 45 would be located 11 feet from the southeast corner of the Zoo. The 6-lane N1 Alternative would acquire 0.5 acre from the south edge of the Zoo, while the 8-lane N1 and N3 Alternatives would acquire 0.75 acre. In total, the Modernization Alternatives would acquire 15.27 acres of Zoo property for new right-of-way.

Several overhead transmission lines would be relocated on the west side of the core. Three options are under evaluation. Under one option, no overhead transmission lines would be adjacent to the Zoo. The other two options involve one or two overhead electrical transmission lines, potentially being relocated to the north side of I-94 adjacent to the Zoo. If one transmission line is located in this area it would be built close to I-94, but would still require a 50-foot-wide easement from Zoo property, which may affect the vegetative buffer between I-94 and the Zoo. If two transmission lines are built in this area a 130-foot-wide easement would be required and part of the vegetative screening between I-94 and the Zoo would be permanently removed (see Exhibits 3-34, 3-35, and 3-36). As a result, the transmission lines may be visible from the Zoo's miniature train and possibly from some animal exhibits. Zoo officials have indicated that if transmission lines are relocated to the north side of I-94, this would be a major visual impact to the Zoo.

Several I-894/US 45 bridges will be reconstructed over the future HAST. Box culverts may be used instead of bridges. The construction of box culverts under the highway structures would limit the views from the HAST through the core of the Zoo Interchange. Under all Modernization Alternatives, trail users would have to travel under structures for a longer period of time through the core. Views of the HAST from the study-area freeways and

ramps would not change since current views are limited by structures carrying the roadways over the trail. Future noise levels along the HAST, as modeled at five locations just south of the trail along Bungalow Parkway, are expected to change anywhere from a 1dBA decrease to a 2 dBA increase as a result of the 8-lane Modernization Alternatives.

TABLE 3-25B
Parkland Impacts by Reduced Impacts Alternative (Acres)

Location	Park
Core	7.62 acres from Milwaukee County Zoo
West Leg	0.31 acre from Chippewa Park
East Leg	0.2 acre from Honey Creek Parkway
North Leg	0.25 acre from Underwood Creek Parkway, 0.01 acre from Wil-O-Way Underwood Recreation Center, and 0.2 acre from DNR Forestry Science Center

Reduced Impacts Alternative

The Reduced Impacts Alternative would require acquisition of parkland for the proposed improvements. The Reduced Impacts Alternative would require approximately 9 acres of parkland from five parks adjacent to the study-area freeway system (Table 3-25B). For the specific impacts associated with recreational resources and public use land adjacent to the study-area freeway system see Section 4.

North Leg. The Reduced Impacts Alternative would acquire 0.25 acre from Underwood Creek Parkway near the US 45 crossing and **realign** Underwood Creek Parkway north of Watertown Plank Road in order to connect it to Swan Boulevard north of Innovation Drive. The Reduced Impacts Alternative would acquire 0.01 acre from the south end of the Wil-O-Way Underwood Special Recreation Center. The right-of-way acquisition would not affect play equipment, pool, or building. Under the Reduced Impacts Alternative, US 45 would be 42 feet closer to the playground (40 feet versus 82 feet today). US 45 would be 162 feet from the Wil-O-Way building. Today the building is 213 feet from US 45.

Under the Reduced Impacts Alternative, 0.2 acre of right-of-way would be acquired from the DNR Forestry Science Center, and US 45 would be closer to the center than it is today. However, the view of and from the center would not change. Viewers of the center from US 45 would continue to see trees in the southwest corner of the center and the views from the center would not be changed, in part because the elevation of US 45 in this area is located below that of the Forestry Science Center.

West Leg. The Reduced Impacts Alternative would acquire 0.31 acre from a 25- to 35-foot-wide strip of land from the southeast side of Chippewa Park. At the west end of the park, I-94 would be located 83 feet away from the park, 14 feet closer than today.

Reconstructing the Highway 100 interchange will move the interchange ramps adjacent to the HAST right-of-way, but no right-of-way acquisition is anticipated. The view from the HAST alignment could change as vehicles would be moved closer to the trail near Highway 100. Overhead electrical transmission lines would be moved adjacent to the trail between Highway 100 and US 45 (see **Exhibit 3-37**). The five bridges that carry US 45 over the HAST would be replaced by 9 bridges in the same general location. Additionally, the Union Pacific Railroad over the future HAST may be reconstructed.

There would be no highway right-of-way acquisition from Underwood Creek Parkway. A 2.8-acre stormwater retention/detention pond may be built in the parkway to manage runoff from the freeway. If the pond is built, WisDOT and FHWA would remove the park roadway and relocate the Oak Leaf Trail to a location suitable to the Milwaukee County Parks department.

East Leg. The Reduced Impacts Alternative would acquire 0.2 acre from Honey Creek Parkway for highway right-of-way. Additionally, stormwater retention/detention pond may be built in the parkway west of 84th Street to manage runoff from the freeway (see Section 4).

South Leg. The West Allis Cross Town Connector has not been built nor has its route been precisely determined. If and when the route is finalized, WisDOT will work with the City of West Allis to ensure I-894/US 45 and the Connector are compatible. If the trail is built prior

to reconstruction of the bridge carrying I-894/US 45 over the Connector, the trail will be closed during the bridge's construction.

Core Interchange. The Reduced Impacts Alternative would acquire 0.53 acre near the Zoo maintenance facility in the southwest quadrant of the existing Zoo Interchange; however, none of the buildings would be relocated. Under the Reduced Impacts Alternative, the Zoofari Conference Center would not be relocated. Along US 45 and the southwest quadrant of the Bluemound Road Interchange, 3.46 acres of Zoo property would be converted to highway right-of-way. Additionally, 3 acres of the 5.51-acre overflow parking lot along US 45 would be acquired. The Reduced Impacts Alternative would not affect the Zoo's animal exhibits.

The westbound I-94 exit ramp to Highway 100 would acquire 0.63 acre from the south edge of the Zoo. In total, the Reduced Impacts Alternative would acquire 7.62 acres of Zoo property for new right-of-way.

Several overhead transmission lines would be relocated within the existing right-of-way on the west side of the core. The transmission lines would not require an easement from Zoo property or removal of the vegetative screening between I-94 and the Zoo (see **Exhibit 3-37**).

Several I-894/US 45 bridges **would** be reconstructed over the future HAST. Box culverts may be used instead of bridges. The construction of box culverts under the highway structures would limit the views from the HAST through the core of the Zoo Interchange. Under the Reduced Impacts Alternative, trail users would have to travel under structures for a longer distance through the core than currently. Views of the HAST from the study-area freeways and ramps would not change since current views are limited by structures carrying the roadways over the trail. Future noise levels along the HAST, as modeled at 5 locations just south of the trail along Bungalow Parkway, are expected to increase 1 to 2 dBA as a result of the Reduced Impacts Alternative. **Two to four overhead electrical transmission line towers may be placed in the HAST right of way.**

The project team met with Milwaukee County Parks staff in November 2008 and February 2009, to discuss the stormwater ponds. Milwaukee County Parks' staff was supportive of the concept of using existing park land for the stormwater detention ponds, pending further design and County Board approval.

No land in the study area is enrolled in the Natural Resources Conservation Service's Conservation Reserve Program.

Adjacent Arterials Component

The Adjacent Arterials Component would acquire less than 0.1 acre of County Zoo property for new highway right-of-way in the southeast quadrant of the Highway 100 intersection at Bluemound Road. The Adjacent Arterials Component would not affect the Zoo's animal exhibits. **Reconstruction of the Highway 100/Bluemound Road intersection would require the removal of approximately 15 on-street parking spaces on the south side of Bluemound Road, just east of Highway 100, that are typically used by County Zoo patrons. An existing 1.7-acre stormwater pond in the Underwood Creek Parkway adjacent to Highway 100 may be expanded to a 2.5-acre pond. The expansion would occur partly in Underwood Creek Parkway and partly on private property.**

3.26.3 Measures to Mitigate Adverse Recreational Resource / Public Use Land Impacts

Please see Section 4 for mitigation measures for Underwood Creek Parkway/Oak Leaf Trail /Wil-O-Way Underwood Special Recreation Center, Milwaukee County Zoo, Chippewa Park, and Honey Creek Parkway.

WisDOT will work with DNR to develop a suitable **HAST** connection **during** Zoo Interchange construction.

If and when the West Allis Cross Town Connector route is finalized, WisDOT will work with the City of West Allis to ensure that I-894/US 45 and the Connector are compatible. If the trail is built prior to reconstruction of the bridge carrying I-894/US 45 over the Connector, the trail will be closed during the bridge's construction, and WisDOT will work with the City of West Allis to devise a detour route.

3.27 Construction

3.27.1 Construction Costs

All construction costs presented in this document have been calculated to account for inflation between 2009 and the end of the multi-year construction that WisDOT has scheduled to begin between 2012 and 2015. WisDOT and FHWA assumed a 4-percent annual inflation rate.

No-Build Alternative

The No-Build Alternative would not incur construction costs. However, the study-area freeway system would eventually have to be replaced.

Replacing the study-area freeway system in its current configuration would cost an estimated \$922 million in year-of-construction dollars.

Modernization Alternatives

The immediate economic impact of the Modernization Alternatives would be expenditure of state and federal funds to reconstruct the study-area freeway system. **Table 3-26** summarizes the construction costs.

TABLE 3-26
Construction Cost (in \$ millions)⁶

6-lane	\$2.10 billion
8-lane	\$2.28 billion

Reduced Impact Alternative

The immediate economic impact of the Reduced Impact Alternative would be expenditure of state and federal funds to reconstruct the study area freeway system. The Reduced Impact Alternative would cost an estimated \$1.71 billion in year-of-construction dollars. This amount includes real estate acquisition, design costs, construction, and a contingency.

⁶ All costs are rounded to the nearest \$10 million.

Adjacent Arterial Component

The immediate economic impact of the Adjacent Arterials Alternative would be expenditure of state and federal funds to reconstruct the local arterial roadway system. The Adjacent Arterials Alternative would cost an estimated \$65 to \$73 million in year-of-construction dollars. This amount includes real estate acquisition, design costs, construction, and a contingency and is included in the Reduced Impact Alternative's \$1.71 billion cost.

3.27.2 Operation and Maintenance Cost

No-Build Alternative

The economic impact of the No-Build Alternative would be the long-term cost of maintaining the existing study-area freeway and local roadway system, including pavement resurfacing or replacement, and bridge rehabilitation or replacement. Increased traffic volumes, particularly heavy trucks, would contribute to the frequency of required pavement maintenance. The public and local governments would experience increased costs associated with crashes compared to the Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component.

Modernization Alternatives

Maintenance costs under the Modernization Alternatives would be less than for the No-Build Alternative because the pavement and bridges would be new.

In the long-term, maintenance costs for the 8-lane Modernization Alternatives would be higher than for the 6-lane Modernization Alternatives because it requires more pavement to maintain (8 lanes versus 6 lanes), resurface, and eventually replace. Snow removal cost would be higher for the 8-lane than the 6-lane Modernization Alternative.

Reduced Impacts Alternative

Maintenance costs under the Reduced Impacts Alternative would be less than for the No-Build Alternative because the pavement and bridges would be new.

In the long-term, maintenance costs for the Reduced Impacts Alternative would be similar to the 8-lane Modernization Alternatives, but higher than for the 6-lane Modernization Alternatives because it requires more pavement to maintain, resurface, and eventually replace. Snow removal cost would be higher than the 6-lane Modernization Alternative, but lower than the 8-lane.

Adjacent Arterial Component

Maintenance costs under the Adjacent Arterials Component would be less than for the No-Build Alternative because the pavement would be new.

In the long-term, maintenance costs for the Adjacent Arterials Component would be higher than for the No-Build Alternative because it requires more pavement to maintain, resurface, and eventually replace. Similarly, snow removal costs would be higher than for the No-Build Alternative.

3.27.3 Construction Employment

Substantial economic impacts would result from the Modernization and Reduced Impacts Alternative, and Adjacent Arterials Component compared to the No-Build Alternative. These

impacts may be measured by increases in state output/economic activity, employment, and job earnings. Construction expenditures would occur over the duration of construction, directly creating new demand for construction materials and jobs. These direct impacts would lead to indirect or secondary economic impacts, as output from other industries increases to supply the construction industry. The direct and indirect impacts of construction expenditures cause firms in all industries to employ more workers, leading to induced impacts as the additional wages and salaries paid to workers lead to higher consumer spending, creating new demand in many other economic sectors.

The construction job opportunities for this project will consist of a combination of new jobs and shifting of existing construction jobs to this project. The types of construction jobs required for this project include:

- Concrete workers
- Truckers
- Heavy equipment operators
- Electricians
- Iron workers
- General laborers
- Engineers
- Landscapers

3.27.4 Construction Impacts

This discussion pertains to the Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component. If the No-Build Alternative is selected, no construction impacts, other than regular maintenance, would occur in the short term. However, WisDOT would perform maintenance on the study-area freeway and local roadway system more frequently and eventually replace it, resulting in periodic lane closures, construction noise, dust, and other impacts as portions of freeway are replaced.

Noise

Noise will be generated by construction equipment used to reconstruct the study-area freeway and local roadway system. Typical construction equipment would include dump trucks, graders, cranes, bulldozers, pile-driving equipment and pavement construction equipment. The noise generated by this construction equipment will vary greatly, depending upon the equipment type and model, mode and duration of operation, and specific type of work effort; however, typical noise levels may occur in the 75 to 95 dBA range (at 50 feet). Other distance-typical noise level ranges are shown on **Table 3-27**.

TABLE 3-27
Construction Noise/Distance Relationships

Distance From Construction Site (feet)	Range of Typical Noise Levels (dBA)
25	82–102
50	75–95
100	69–89
200	63–83
300	59–79
400	57–77
500	55–75
1,000	49–69

Sources: U.S. EPA and WisDOT

Variations in building setbacks and land use, local intensity of specific construction activities, and sequencing and timing of construction will result in varying degrees of exposure to construction noise and hence varying levels of resulting impacts. Adverse effects related to construction noise are anticipated to be of a localized, temporary, and transient nature. Construction noise will be controlled in accordance with WisDOT FDM Procedure 23-40-1. In locations where noise walls currently exist, WisDOT will also make every effort to construct new noise walls prior to the demolition of the existing noise walls.

To reduce the potential impact of construction noise, special WisDOT provisions for this project will require operation of motorized equipment in compliance with all applicable local, state and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site. All motorized construction equipment would be required to have mufflers constructed in accordance with the equipment manufactures specifications or a system of equivalent noise reducing capacity. WisDOT would also require that mufflers and exhaust systems be maintained in good operating condition, free of leaks and holes.

Air Quality (Emissions and Dust)

Demolition and construction activities can result in short-term increases in dust and equipment-related particulate emissions in and around the project area. Equipment-related particulate emissions could be minimized if the equipment is well maintained. The potential air quality impacts will be short-term, occurring only while demolition and construction work is in progress and local conditions are appropriate.

Air quality impacts during construction would be generated by motor vehicle, machinery and particulate emissions resulting from earthwork and other construction activities. Construction vehicle activity and the disruption of normal traffic flows may result in increased motor vehicle emissions within certain areas. Construction vehicle emission impacts could be mitigated through implementing and maintaining a comprehensive traffic control plan, enforcing emission standards for gasoline and diesel construction equipment and stipulating that unnecessary idling and equipment operation is to be avoided.

Several air quality construction mitigation best practices are available to assist in reducing diesel emission impacts from construction equipment. Off-road diesel engines can contribute significantly to the levels of particulate matter and nitrogen oxides in the air. In recent years, U.S. EPA has set emissions standards for engines used in most new construction equipment. However, construction equipment can last for a long time and it may take several years before all equipment is equipped with engines that meet U.S. EPA standards. In order to combat this, several strategies can be implemented to reduce emissions from the older engines that are in operation today.

Reductions in pollutant emissions from older off-road diesel engines can be obtained through a variety of strategies including: reducing idling, properly maintaining equipment, using cleaner fuel, and retrofitting diesel engines with diesel emission control devices. By reducing unnecessary idling at the construction site, emissions will be reduced and fuel will be saved. Proper maintenance of the diesel engine will also allow the engine to perform better and emit less pollution through burning fuel more efficiently. Switching to fuels that contain lower levels of sulfur reduces particulate matter. Using ultra-low sulfur diesel does not require equipment changes or modification. Using fuels that contain a lower level of

sulfur also tends to increase the effectiveness of retrofit technologies. Retrofitting off-road construction equipment with diesel emission control devices can reduce particulate matter, nitrogen oxides, carbon monoxide or hydrocarbons, in addition to other air pollutants. Diesel particulate filters can be used to physically trap and oxidize particulate matter in the exhaust stream and diesel oxidation catalysts can be used to oxidize pollutants in the exhaust stream (U.S. EPA, 2008b). In the final design phase, WisDOT will consider including these measures on a voluntary or mandatory basis.

Fugitive dust impacts generated by construction would be mitigated by standard dust control measures. These measures may include the frequent watering of construction sites that have large expanses of exposed soil, watering debris generated during the demolition of existing structures, washing construction vehicle tires before they leave construction sites and securing and covering equipment and loose materials prior to travel.

Dust control during construction would be accomplished in accordance with WisDOT's *Standard Specifications for Road and Bridge Construction*, which require the application of water or other dust control measures during grading operations and on haul roads. The location and operation of concrete batch plants would be in accordance with the Standard Specifications, and any special provisions developed during coordination with the DNR regarding air quality standards and emissions. Any portable material plants would be operated in accordance with DNR air quality requirements/guidelines. Demolition and disposal of residential or commercial buildings is regulated under DNR's asbestos renovation and demolition requirements (Wisconsin Administrative Code, Chapter NR447).

In February 2009, WisDOT received a \$750,000 grant from U.S. EPA Region 5's Midwest Clean Diesel Initiative. WisDOT will use the grant money to assist contractors, who bid on projects in southeastern Wisconsin during the 2006 through 2008 calendar years, in repowering their older unregulated non-road diesel engines from Tier 0 emissions to Tier 1, Tier 2, or Tier 3 emission levels. The grant money could provide up to 50 percent of the cost of an engine repower, not to exceed \$20,000. These non-road construction engines, because of the seasonal nature of construction in Wisconsin, are retained in the fleet for many years. Therefore, repowering this construction equipment with cleaner burning diesel engines will create long lasting emission reductions from WisDOT construction projects in southeast Wisconsin.

Traffic/Conceptual Construction Staging

Construction Related Traffic Diversion. During construction traffic will be diverted from the study-area freeway system, especially when Zoo Interchange ramps are closed for extended periods. Other freeways and local streets will experience increased traffic volumes as a result. After the construction staging plan is developed WisDOT will analyze how much traffic would be diverted from the study-area freeway system and the routes the traffic would divert to.

Several local streets adjacent to the study-area freeway system such as Highway 100, Watertown Plank Road, 84th Street, 76th Street, Greenfield Avenue and Bluemound Road, would experience an increase in traffic as a result of vehicles diverting from the study-area freeway system during construction. This is another reason why the Adjacent Arterials Component has been developed. The added capacity from the Adjacent Arterials Component would better handle the diverted traffic during and after freeway construction.

Transit, Pedestrian, and Bicycle Impacts. MCTS Freeway Flyer routes that use the study-area freeway system would be able to pass through the Zoo Interchange using normal routes. Some system ramps in the Zoo Interchange may be closed, requiring Freeway Flyer routes that use these ramps to divert to another route during construction.

Local street closures and entrance and exit ramp closures may require bus route modifications. MCTS routes that pass over or under the study-area freeway system on North Avenue, Watertown Plank Road, Bluemound Road, Greenfield Avenue, Highway 100, 92nd Street, 84th Street/**Glenview Avenue**, and 76th Street may have to be modified if these local streets are closed during construction at locations that pass over or under I-94.

Pedestrians and bicyclists that cross over or under the study-area freeway system may need to temporarily modify their routes during construction. As noted previously, local street closures would be staged to minimize or avoid closure of adjacent streets at the same time.

Measures to Mitigate Adverse Effects. During the design phase, WisDOT and FHWA would evaluate the diversion routes to determine if improvements to these routes are necessary. In addition to roadway improvements, signal timing modifications, temporary signals, parking restrictions, intersection improvements, incident management, and demand management options may be instituted during construction to ease potential congestion and delay.

Freeway and local street lane closures would be staged to ease disruptions to the extent possible. Other mitigation measures may include the following:

- Holding workshops to determine methods to reduce the effects of construction on area businesses, residents, commuters, community services, and special events.
- Implementing a community involvement plan to inform the public, including radio, internet, print, and television.
- Encouraging the use of transit and carpooling through advertising, temporarily reduced rates, additional routes, and expanded or new park-and-ride lots.
- Encouraging businesses to modify their work schedules and/or shipping schedules to avoid peak traffic hours.
- Improving detour routes and other routes due to increased traffic resulting from freeway construction.
- Building the Adjacent Arterials Component first to accommodate diverted traffic from freeway construction.

Water Quality/Erosion

Construction in and near waterways would be performed in accordance with WisDOT's *Standard Specifications for Road and Bridge Construction*, and Wisconsin Administrative Code Chapter TRANS 401 – Construction Site Erosion Control and Stormwater Management Procedures, and the WisDOT/DNR Cooperative Agreement. Appropriate techniques and best management practices, as described in the WisDOT Facilities Development Manual, would be employed to prevent erosion and to minimize siltation to environmentally sensitive resources in the project area. Erosion control devices would be installed before erosion-prone construction activities begin.

There is potential for erosion during construction as soils are disturbed by excavation and grading. The project would use standard erosion control devices and best management practices to reduce and control the deposit of sediment into environmentally sensitive resources before erosion-prone construction begins. The construction contractor will be required to prepare an Erosion Control Implementation Plan that includes all erosion control commitments made by WisDOT while planning and designing the project. The construction plans and contract special provisions must include the specific erosion control measures agreed on by WisDOT in consultation with DNR. DNR reviews the Erosion Control Implementation Plan.⁷ The following measures may be used during construction:

- Minimizing the amount of land exposed at one time
- Silt fencing
- Sedimentation traps
- Dust abatement
- Turbidity barriers
- Street sweeping
- Inlet protection barriers
- Temporary seeding
- Erosion mats
- Ditch or slope sodding
- Seeding and mulching exposed soils

Under revisions to the WisDOT/DNR Cooperative Agreement, *Memorandum of Understanding on Erosion Control and Stormwater Management*, following construction disturbed land would be re-seeded with a mix of fast growing grasses. Drainage systems would be maintained, restored or re-established in a manner that would not impound water.

Additional impact mitigation techniques during construction would include the following, as needed, at a particular location:

- If dewatering is required, dirty water would be pumped into a stilling, or settling, basin before it is allowed to re-enter a stream.
- Trenched-in erosion bales would be installed in areas of moderate velocity runoff; clean-aggregate ditch checks would be installed in ditches with moderate to high velocity runoff during and after construction; and ditches would be protected with erosion bales and matting in conjunction with seeding.
- Storing and fueling of construction equipment would be done in upland areas, away from environmentally sensitive areas. Accidental spills during refueling at construction sites or as a result of an accident involving hazardous material haulers would be handled in accordance with local government response procedures. First response would be through local fire departments and emergency service personnel to ensure public safety and to contain immediate threats to the environment. Depending on the nature of the spill, the DNR would then be notified to provide additional instructions regarding cleanup and

⁷ Erosion Control will be implemented in accordance with the WisDOT Facilities Development Manual, Chapter 10, Erosion Control and Stormwater Quality; Wisconsin Administrative Code Chapter TRANS 401, Construction Site Erosion Control and Stormwater Management Procedures for Department Actions; and the WisDOT/DNR Cooperative Agreement Amendment, Memorandum of Understanding on Erosion Control and Stormwater Management.

restoration of any affected resources. The cost of cleanup operations is the responsibility of the contractor or carrier involved in the spill. Further, WisDOT's *Standard Specifications* state that public safety and environmental protection measures shall be enforced by the construction contractor.

- Contractors would be required to follow DNR guidelines for ensuring that construction equipment used in or near waterways is adequately decontaminated for zebra mussels and plant exotics including purple loosestrife and Eurasian milfoil.

Section 3.11 provides additional information regarding water quality mitigation and best management practices.

Vibration

Ground-borne vibration has the potential to affect nearby buildings. Blasting and impact pile driving are traditionally associated with high levels of vibration. Excavation and backfilling can generate vibration that is perceptible or noticeable in nearby buildings.

Vibration created by the movement of construction vehicles such as graders, loaders, dozers, scrapers and trucks are generally the same order of magnitude as the vibration caused by heavy vehicles traveling on streets and highways. In general, groundborne vibration from vehicles on streets is not sufficient to impact adjacent buildings.

Buildings that are in good structural condition would likely not be affected by construction-related vibration. WisDOT will coordinate with adjacent property owners prior to construction to determine if any buildings near construction areas are in poor structural condition. For construction work that occurs in the City of Milwaukee, WisDOT will meet City of Milwaukee vibration ordinances. In communities that do not have vibration ordinances, WisDOT will comply with the Wisconsin Department of Workforce Development (formerly Department of Industry, Labor and Human Relations) vibration regulations. [See Section 4.3.6 for description of vibration monitoring at the Eschweiler Buildings.](#)

Material Source/Disposal Sites

The construction contractor is responsible for the selection of material source sites. Material would most likely be obtained from local existing quarry sites. Unusable excavated material would be disposed of by the contractor in accordance with WisDOT's *Standard Specifications for Road and Bridge Construction*, or special provisions to ensure protection of wetlands and waterways. Local zoning, reclamation plans, and other approvals may be needed for material source/disposal sites.

Soil and excavated material (including vegetation) would be stockpiled or disposed of in an upland area, away from wetlands, streams, and other open water; and, where applicable, silt fence would be placed between the disposal area and wetland and open water areas.

If any material sources are necessary to construct the project, appropriate erosion control measures would be applied to these sites during and following construction; and following use, such sites would be properly seeded, mulched, and protected from erosion.

Any portable materials plants would be properly treated to prevent erosion, and DNR would be able to review site plans, including any gravel washing operations, high-capacity wells, and site closure/restoration.

3.28 Relationship of Local and Short-Term Uses versus Long-Term Productivity

Highway construction projects require the investment or commitment of resources in the project area. Short-term uses refer to the immediate consequences of the project, while long-term productivity relates to direct and indirect effects on future generations.

The No-Build Alternative would involve minimal short-term and localized construction impacts associated with pavement and structure maintenance and spot safety improvements. However, projected traffic growth in the study area would further reduce the operational efficiency of the existing highway, reducing safety and mobility, and the possible loss of economic growth opportunities, both within the study corridor as well as outside it, reflecting the importance that this corridor holds on the region and state.

The short-term consequences of the Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component include the following:

- Committing public funds to construct the highway improvements. Because highway funding is derived mainly from vehicle user fees and motor fuel taxes, motorists using the highway ultimately pay for the improvements.
- Removing private properties, thereby reducing the local tax base.
- Converting residential and commercial land, wetland, and other uses to transportation uses.
- Displacing residences. Although displacement costs would be reimbursed through state and federal relocation assistance programs, displaced residents may relocate outside the project area, thus further reducing or shifting the local tax base.
- Acquiring right-of-way from some residential properties, which may result in non-conforming lot sizes and residences that are closer to the study-area freeway system.
- Increasing travel time and inconvenience for through and local traffic, area residents, and businesses during the construction period.
- Generating construction noise and dust that may affect residences, schools, and businesses near construction areas.

Long-term benefits of the Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component include the following:

- Reduced congestion and increased safety.
- Increased operational energy efficiency.
- Added roadway capacity to address future traffic demand (in the case of the 8-lane Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component only).

The local short-term impacts and use of resources by the Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component are consistent with maintenance and enhancement of long-term productivity.

3.29 Irreversible and Irretrievable Commitments of Resources

The No-Build Alternative would involve substantial commitments of resources to maintain the existing deteriorating pavement and structures and to make spot safety improvements. Under the Modernization and Reduced Impacts Alternative and the Adjacent Arterials Component, land acquired for highway construction is considered an irreversible commitment during the time period such land is used for highway purposes. Considerable amounts of fossil fuel, labor, and highway construction materials such as cement, aggregate, and asphaltic material would be required. Considerable labor and natural resources would be used in the fabrication and preparation of construction materials. These resources generally are not retrievable. However, they are expected to remain in adequate supply.

Expenditure of public funds for construction of the Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component is considered an irretrievable commitment. In addition, land converted from private to public use would reduce local tax revenues.

As an alternative to total use of new resources, clean construction demolition materials and recycled cement or asphaltic materials will be considered. Depending on current technology at the time the project would be constructed, alternative types and sources of materials may be available.

The proposed commitment of resources is based on the concept that residents in the study area, region, and state would benefit by the improved quality of the highway. Benefits, which are expected to outweigh the commitment of resources, will include improved safety, preservation of an important transportation corridor, and reduced travel times, depending on the alternative selected.

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SECTION 4

Final Section 4(f) Evaluation

4.1 Introduction

The U.S. Department of Transportation's Section 4(f) law (49 USC 303) states that federal funds may not be approved for projects that use land from a significant publicly owned park, recreation area, wildlife or waterfowl refuge, or any significant historic site unless it is determined that there is no feasible and prudent alternative to the use of land from such properties, and the action includes all possible planning to minimize harm to the property resulting from such use.

Section 4(f) applies only to the actions of agencies within the U.S. Department of Transportation, including FHWA. While other agencies may have an interest in Section 4(f), FHWA is responsible for Section 4(f) applicability determinations, evaluations, findings, and overall compliance for highway projects.

Several resources in the Zoo Interchange study area require a Section 4(f) evaluation (**Exhibit 4-1**). FHWA's determination regarding Section 4(f) applicability to these resources is summarized below.

None of the resources have used funds from the Land and Water Conservation Fund Act (LWCF) as amended (16 USC 4601). Therefore, LWCF Section 6(f) requirements do not apply to the Zoo Interchange project.

The impacts of the No-Build Alternative, Modernization Alternatives, Reduced Impacts Alternative and the Adjacent Arterial Component (which is a component of both the Modernization and Reduced Impacts Alternatives) on Section 4(f) resources are evaluated in this section.

Underwood Creek Parkway (includes Wil-O-Way Underwood Special Recreation Center and Oak Leaf Trail). Underwood Creek Parkway is owned by Milwaukee County. It consists primarily of open space and woodland but also contains a tot lot and two small buildings. The parkway has previously been determined eligible for the National Register of Historic Places (NRHP) under Criterion A (associated with events that have made a significant contribution to the broad patterns of our history). **Only the portion of Underwood Creek Parkway north of I-94 is eligible for the National Register.**

The Wil-O-Way Underwood Special Recreation Center, operated by the county's Office for Persons with Disabilities, provides recreational activities for people with disabilities. In addition to the building, the center includes a picnic area, basketball court, and playground. The Oak Leaf Trail is a county-wide multi-use trail that runs throughout Underwood Creek Parkway.

Section 4(f) applies to the Underwood Creek Parkway, Wil-O-Way Underwood Special Recreation Center, and Oak Leaf Trail because these resources are publicly-owned parks, recreation areas, and/or significant historic sites.

DNR Forestry Science Center. The Forestry Science Center, located in the northeast quadrant of the Milwaukee County Grounds, is owned by the DNR. Its purpose is to promote awareness of the benefits of sustainable forestry in Wisconsin. The property consists of a 50-acre mature upland forest classified by SEWRPC as a natural area. As the center continues to develop, additional non-forested land will be used for an education building and demonstration areas focusing on informing the public about forestry programs. Segregated forestry account funds have been allocated by the State Legislature for planning the project and to support program management, fundraising, exhibit design, staffing, and maintenance. In 2004, the land occupied by the center was rezoned from parkland to conservancy district, and the center was granted a conditional use.

Section 4(f) does not apply to the Forestry Science Center because its primary purpose is forestry education. Although secondary recreational activities such as hiking occur on the property, the center is not a park or recreation area.

Milwaukee County Zoo. The county owns the Zoo, which is located on land that is part of the county's park system. According to its mission statement, the Zoo is intended to inspire public understanding, support, and participation in global conservation of animal species and their environment. Funding for animal acquisitions, fundraising campaigns for building renovations and new exhibits, and financial support for research, conservation, and educational programs are through a public-private partnership with the Zoological Society of Milwaukee County.

Section 4(f) applies to the Milwaukee County Zoo because it is a publicly owned park and recreational facility.

Chippewa Park. The park is owned by Milwaukee County. It contains a walking path, play areas, basketball court, and soccer fields.

Section 4(f) applies to Chippewa Park because it is a publicly-owned park and recreational facility.

Hank Aaron State Trail. The Hank Aaron State Trail (HAST) is a multi-use trail owned by the DNR that will eventually cross Milwaukee County from the lakefront near Maier Festival Park to the Oak Leaf Trail, just west of the Waukesha County line approximately 375 feet south of Bluemound Road. Currently, the HAST provides a connection between Lake Michigan on the east and 94th Place on the west. The trail is open to walkers, runners, bicyclists, and skaters and provides an off-road asphalt path from 94th Place to the 6th Street viaduct and the use of bike lanes and sidewalks from 6th Street to the lakefront.

The extended HAST would cross the Zoo Interchange study area at two locations. The trail would cross under the Zoo Interchange, approximately 550 feet north of Schlinger Avenue, and would also cross under I-94 on the west leg, at a skew, near 116th Street, approximately 0.5 mile west of the Highway 100 overpass. The trail would also be routed under Union Pacific's triple intersection Warren through-truss railroad bridge, located 362 feet south of I-94 and 415 feet east of Highway 100. DNR is investigating the potential of a

connection from the HAST under I-94 to the Milwaukee County Zoo, just west of the core of the Zoo Interchange.

The HAST extension has been acquired and will be developed through the use of Knowles-Nelson Stewardship funds and FHWA Congestion Mitigation Air Quality (CMAQ) grants administered by WisDOT. The CMAQ grants require a 20 percent match by the DNR. This extended section of the HAST will be in fee title under the rail banking provisions of the 1983 National Trails System Act. This means that the corridor must be maintained so that it could be returned to use as a rail corridor, if needed, at some point in the future. WisDOT and the DNR developed a Memorandum of Understanding that lays out the details and responsibilities for the HAST's construction, maintenance, and detours during Zoo Interchange construction.

Section 4(f) does not apply to the HAST. The trail will be a multiple use, serving transportation needs as well as providing recreational opportunities. Additionally, the MOU states that, "The DNR and DOT agree that the primary purpose of the HAST, from Miller Park to Oak Leaf Trail, will be for transportation rather than recreational use. As a result Section 4(f) requirements will not apply to this portion of the HAST."

West Allis Cross-Town Connector (planned trail). The Cross-Town Connector is a planned multi-use, east-west trail that would provide a safe and efficient means of commuting to work, school, shopping and area events, and that would also serve as a recreational resource. The trail is in the planning/design stage and its specific location has not yet been determined. SEWRPC's 2010 Regional Bicycle Plan shows a preliminary location with a crossing under I-894/US 45 along the Union Pacific Railroad line located between Greenfield Avenue and Lincoln Avenue. The proposed trail will extend across the entire City of West Allis and will provide connections with other trails. The Regional Bicycle Plan states that the planned trail will serve a significant portion of the population and will pass by several schools, some of the City's largest employers, several city buildings and gathering places, and five of the City's TIP districts. It will allow a safer regional connection by linking the Glacial Drumlin State Trail, the Waukesha County New Berlin Recreational Trail, and Milwaukee County's the Oak Leaf Trail and the HAST.

The 2011-2014 TIP includes the Cross-Town Connector. Project #302 is defined as "construction of the West Allis Cross-Town Connector bicycle/pedestrian trail from S 56th Street to S 124th Street along the We Energies right-of-way in the City of West Allis (5 miles)." The TIP identifies the project type as Environmental Enhancement and the funding source as a combination of FHWA and FTA funds to be used in 2011 and 2012. The City of West Allis Development Department has been awarded Transportation Enhancement funds to design and implement the trail, and as part of the 2005-2007 Budget Bill, the State Legislature allocated CMAQ funds for construction of a tunnel under the Union Pacific Railroad.

Section 4(f) does not apply to the planned West Allis Cross-Town Connector. As evidenced in the 2010 Regional Bicycle Plan and use of FHWA Transportation Enhancement and CMAQ funding, the trail will be a multiple use facility serving transportation needs as well as providing recreational opportunities. Further, the location of the trail has not yet been formally designated and will be jointly planned with the freeway improvements as the location of the trail is determined.

Honey Creek Parkway. Milwaukee County owns the parkway. Construction of the parkway started in 1933 as a public works project under the Works Progress Administration. The parkway has previously been determined eligible for the National Register under Criterion A (associated with events that have made a significant contribution to the broad patterns of our history), and the 84th Street Bridge over Honey Creek is eligible for the National Register under Criterion C (engineering and architecture).

Section 4(f) applies to the Honey Creek Parkway because it is a significant historic site.

Milwaukee County Parks Building. The building (formerly the Milwaukee County Home for Dependent Children) is listed on the National Register under Criterion A (associated with events that have made a significant contribution to the broad patterns of our history). The building is also listed as a Milwaukee County landmark and City of Wauwatosa local landmark.

Section 4(f) applies to the Milwaukee County Parks building because it is a significant historic site.

Eschweiler Buildings. The Eschweiler buildings are contributing elements in the Milwaukee County School of Agriculture and Domestic Economy Historic District. The District was listed on the National Register in 1998 under Criterion A (associated with events that have made a significant contribution to the broad patterns of our history) and Criterion C (engineering and architecture). The District is also a Milwaukee County landmark and City of Wauwatosa local landmark.

Section 4(f) applies to the Eschweiler Buildings because the Historic District is a significant historic site.

Union Pacific Railroad Truss Bridge. The Union Pacific Railroad truss bridge is eligible for the National Register under Criterion C (engineering and architecture) as an example of a triple intersection Warren through truss bridge.

Section 4(f) applies to the Union Pacific Railroad truss bridge because it is a significant historic structure.

Greenfield Avenue Presbyterian Church. As part of the Zoo Interchange study, the church has been determined eligible for the National Register under Criterion C (engineering and architecture), as an example of a late 19th and 20th Century English Colonial/Period Georgian Revival style of architecture.

Section 4(f) applies to the Greenfield Avenue Presbyterian Church because it is a significant historic structure.

Muirdale Sanatorium. The former Muirdale Sanatorium property is located on the west side of Innovation Drive, south of Watertown Plank Road. The property includes a multi-story hospital building constructed in 1915 and a power plant. The former sanatorium was designated a Milwaukee County landmark in 1980, and was recommended as potentially eligible for the National Register in an extensive survey of Wauwatosa in 1996. The former sanatorium and power plant are eligible under Criterion C (architecture) for their Neoclassical style of architecture.

In 2008, the Muirdale Sanatorium was evaluated in the Phase I historical investigation, but the property was determined to be outside of the area of potential effect. With the proposed

improvements to Innovation Drive as part of the Adjacent Arterials Component, the property is now considered to be within the area of potential effect.

Rockway and Brookside Places Residential Historic District. The Rockway and Brookside Places Residential Historic District extends along the east side of Glenview Avenue for two blocks north of the 84th Street/Bluemound Road intersection. It consists of 15 single-family residences. The Rockway and Brookside Places Residential Historic District is eligible for the National Register under Criterion C (architecture) as an example of English-inspired Tudor Revival houses.

Section 4(f) applies to the Rockway and Brookside Places Residential Historic District because it includes significant historic structures.

St. Jude the Apostle Roman Catholic Church Complex. The St. Jude the Apostle Roman Catholic Church Complex includes the original combined school and church, the rectory, the convent, and the modern church. The rectory and convent are located adjacent to Glenview Avenue, while the original church and school and the modern church are located around St. Jude Court and slightly to the east. The convent and rectory are eligible for the National Register under Criterion C (architecture) as examples of Collegiate Gothic style. In addition, the two buildings, along with the combined school and church and modern church, are eligible under Criterion C as a complex.

Section 4(f) applies to the St. Jude Roman Catholic Church Complex because it includes significant historic structures.

WisDOT and FHWA performed additional coordination with the State Historic Preservation Officer on each of the three additional resources identified above. This coordination was concluded in 2010 (see Appendix E) with a determination that each property meets applicable eligibility criteria for consideration to be included into the National Register of Historic Places.

The remainder of Section 4 discusses, in detail, the resources to which Section 4(f) is applicable.

4.2 Proposed Action

As discussed in Section 1, Purpose and Need Statement, the purpose of the proposed action is to address the study-area freeway system's deteriorated condition, obsolete design of the roadway and bridges, current and future capacity, and high crash rate while minimizing impacts to the natural and built environment. The proposed transportation improvements have the following objectives:

- Maintain a key link in the local, state, and national transportation network.
- Address the obsolete design of the study-area freeway system to decrease crashes.
- Replace deteriorating pavement and bridges.
- Accommodate future traffic volumes at an acceptable level of service.

The need for improvements to the Zoo Interchange corridor is demonstrated through a combination of factors, including regional land use and transportation planning growth forecasts, system linkage and route importance, existing and future traffic volumes, safety, and existing freeway conditions and deficiencies. (See Section 1 for more detailed information.)

Section 3.26, Recreational Resources/Public Use Lands, discusses publicly owned resources in the area of potential effect.

4.3 Section 4(f) Properties

The Modernization Alternatives and Reduced Impacts Alternative would directly affect some Section 4(f) properties while other properties would experience freeways and ramps moved closer to the property (**Table 4-1**). The Modernization Alternatives and Reduced Impacts Alternative would affect the following Section 4(f) resources (**Exhibit 4-1**). Exhibits 4-2A through 4-17 show property lines and existing and proposed right-of-way lines in order to illustrate the proposed right-of-way acquisition.

TABLE 4-1
Modernization and Reduced Impacts Alternatives' Impacts on Section 4(f) Properties

Section 4(f) Property	New Right-of-Way Required (acres)	Other Impacts
Underwood Creek Parkway		
Mod. Alt. 6-lane N1 and N3	0.10	US 45 bridge over parkway would be 26 feet wider than existing bridge.
Mod. Alt. 8-lane N1 and N3	0.24	US 45 bridge over parkway would be 51 feet wider than existing bridge.
Reduced Impacts Alt.	0.25	US 45 bridge over parkway would be 49 feet wider than existing bridge; realigned park road near Swan Road required.
Wil-O-Way Underwood Special Recreation Center		
Mod. Alt. 6-lane N1 and N3	0.47	Right-of-way would be 40 feet closer to playground (42 feet away) and 45 feet closer to building (168 feet away).
Mod. Alt. 8-lane N1 and N3	0.53	Right-of-way would be 53 feet closer to playground (29 feet away) and 57 feet closer to building (156 feet away).
Reduced Impacts Alt.	0.01	Freeway would be 42 feet closer to playground (40 feet away) and 51 feet closer to building (162 feet away).
Oak Leaf Trail		
Mod. Alt. 6-lane N1 and N3	0	Trail would be closed temporarily during construction; Bridge over trail and Underwood Creek Parkway would be 26 feet wider than existing bridge.
Mod. Alt. 8-lane N1 and N3	0	Trail would be closed temporarily during construction; Bridge over trail and Underwood Creek Parkway would be 51 feet wider than existing bridge.
Reduced Impacts Alt.	0	Trail would be closed temporarily during construction; Bridge over trail and Underwood Creek Parkway would be 49 feet wider than existing bridge.
Milwaukee County Zoo		
All Mod. Alt. 6-lane alternatives	15.0	Acquires Zoo maintenance facility, Zoofari Conference Center, and a portion of the overflow parking lot. Strip acquisition (either in fee or easement) from southwest corner of Zoo. Potential visual impact from relocated electrical transmission lines also in southwest corner of Zoo.
All Mod. Alt. 8-lane alternatives	15.27	Acquires Zoo maintenance facility, Zoofari Conference Center, and a portion of the overflow parking lot. Strip acquisition (either in fee or easement) from southwest corner of Zoo. Potential visual impact from relocated electrical transmission lines also in southwest corner of Zoo.

TABLE 4-1

Modernization and Reduced Impacts Alternatives' Impacts on Section 4(f) Properties

Section 4(f) Property	New Right-of-Way Required (acres)	Other Impacts
Reduced Impacts Alt.	7.62	Strip acquisition from a portion of the overflow parking lot (6.46 acres), south edge of Zoo (0.63 acre) and maintenance facility (0.53 acre). No buildings acquired and no transmission lines moved to north side of freeway.
Adjacent Arterials (part of Mod. Alts. And Reduced Impacts Alt.)	0.06	Strip acquisitions in the southeast corner of the Bluemound Road/Highway 100 intersection.
Chippewa Park		
Mod. Alt. 6-lane W3	0.1	Acquires a 5- to 15-foot wide strip of land in the southeast corner of the park.
Mod. Alt. 8-lane W3	0.18	Acquires a 15- to 25-foot wide strip of land in the southeast corner of the park; Mainline I-94 would be located 21 feet closer (76 feet away) on the west end of the park.
Reduced Impacts Alt.	0.31	Acquires a 25- to 35-foot wide strip of land in the southeast corner of the park; Mainline I-94 would be located approximately 14 feet closer (83 feet away) on the west end of the park.
Honey Creek Parkway		
Mod. Alt. 6-lane E1; 8-lane E1; Mod. Alt. 6-lane E1/E3 hybrid; Mod. Alt. 8-lane E1/E3 hybrid; Mod. Alt. Modified E3	0	Approximately 3.5 acres of the parkway west of 84th Street may be converted to a 2.7-acre stormwater retention/detention pond.
Reduced Impacts Alt.	0.2	Approximately 3.5 acres of the parkway west of 84th Street may be converted to a 2.7-acre stormwater retention/detention pond. Right-of-way impact is due to the westbound I-94 on ramp, along 84th Street and southwest corner of the parcel, for strip taking related to modified ramp configuration.
Milwaukee County Parks Building		
Mod. Alt. 6-lane N1; 8-lane N1	0	US 45 northbound entrance ramp would be 442 feet closer to the building (533 feet away); Watertown Plank Road would be moved 95 feet closer to the building (224 feet away).
Mod. Alt. 6-lane N3; 8-lane N3	0	US 45 northbound entrance ramp would be 185 feet closer to the building (790 feet away); Watertown Plank Road would be moved 95 feet closer to the building (224 feet away).
Reduced Impacts Alt.	0	US 45 northbound entrance ramp would be 546 feet closer to the building's historic boundary (429 feet away); Watertown Plank Road would be moved 30 feet closer to the building's historic boundary (290 feet away).
Eschweiler Buildings		
Mod. Alt. 6-lane N1; 8-lane N1	0	Swan Boulevard would be 3 feet closer to the nearest building (390 feet away).
Mod. Alt. 6-lane N3; 8-lane N3	0	Swan Boulevard would be 78 feet closer to the nearest building (343 feet away).

TABLE 4-1
Modernization and Reduced Impacts Alternatives' Impacts on Section 4(f) Properties

Section 4(f) Property	New Right-of-Way Required (acres)	Other Impacts
Reduced Impacts Alt.	0	Swan Boulevard north of the Eschweiler Buildings would be 13 feet farther from the building's historic boundary (367 feet away). Northbound Swan Boulevard, west of the buildings, would be removed.
Union Pacific Railroad Truss Bridge		
All alternatives	N/A	If rail line is moved 30 feet east or west, the truss bridge would be removed from service and replaced by a new bridge adjacent to the truss bridge.
Greenfield Avenue Presbyterian Church		
Mod. Alt. 6- and 8-lane Modernization Alts.	0	I-894/US 45 exit ramp would be 19 feet closer to church building (252 feet away).
Reduced Impacts Alt.	0	I-894/US 45 exit ramp to Greenfield Avenue would be moved further away from the church building's historic boundary (385 feet away versus 166 feet away today).
Rockway and Brookside Places Residential Historic District		
Mod. Alt. 6- and 8-lane Modernization Alts.	0	
Reduced Impacts Alt.	0	
Adjacent Arterials Component (part of Mod. Alts. And Reduced Impacts Alt.)	0	Curb and gutter to be replaced in the same location.
St. Jude Roman Catholic Church Complex		
Mod. Alt. 6- and 8-lane Modernization Alts.	0	
Reduced Impacts Alt.	0	
Adjacent Arterials Component (part of Mod. Alts. And Reduced Impacts Alt.)	0	Glenview Avenue would be re-stripped to a 3-lane roadway featuring a two-way left-turn lane. Glenview Avenue would not be reconstructed.
Muirdale Sanatorium		
Mod. Alt. 6- and 8-lane Modernization Alts.	0	
Reduced Impacts Alt.	0	
Adjacent Arterials Component (part of Mod. Alts. And Reduced Impacts Alt.)	0	Curb and gutter to be generally replaced in same location. At the northeast corner of building, Innovation Drive would be 11 feet closer to the building (168 feet away).
Muirdale Sanatorium Powerhouse		
Mod. Alt. 6- and 8-lane Modernization Alts.	0	
Reduced Impacts Alt.	0	

TABLE 4-1

Modernization and Reduced Impacts Alternatives' Impacts on Section 4(f) Properties

Section 4(f) Property	New Right-of-Way Required (acres)	Other Impacts
Adjacent Arterials Component (part of Mod. Alts. And Reduced Impacts Alt.)	0	Curb and gutter and sidewalk to be replaced. At the northwest corner of building, Innovation Drive sidewalk would be the same distance from the building (8 feet away). Near the center of the building, the sidewalk would be 3 feet closer to the building (40 feet away).

4.3.1 Underwood Creek Parkway / Oak Leaf Trail / Wil-O-Way Underwood Special Recreation Center

Section 4(f) Property Description

Milwaukee County owns Underwood Creek Parkway, Wil-O-Way Underwood Special Recreation Center, and the Oak Leaf Trail.

Underwood Creek Parkway. Underwood Creek Parkway is a 196-acre parkway that generally follows the path of Underwood Creek from an area south of I-94 at Rainbow Park (116th and Walker Streets), through the Milwaukee County Grounds to Swan Boulevard on the east/north (**Exhibit 4-1**). The parkway is generally contiguous with the exception of a portion between Bluemound Road and I-94. Underwood Creek Parkway crosses the Zoo Interchange study area in one location and is located near the study area at another location. On the north leg, the parkway crosses under US 45, approximately 0.4 mile north of Swan Boulevard. WisDOT owns the land under the US 45 bridge. This section of Underwood Creek Parkway is eligible for the National Register based on the history criterion. Along the west leg, a small section of the parkway is located north of the I-94 right-of-way at the Milwaukee/Waukesha County line and resumes south of I-94. However, unlike the north leg, Underwood Creek Parkway does not cross under I-94, and the historic boundary of Underwood Creek Parkway ends north of this area at Bluemound Road. Thus, this section of the parkway is not eligible for the National Register. The parkway consists of open space and wooded areas and contains one tot lot and two small park buildings.

Wil-O-Way Underwood Special Recreation Center. The Wil-O-Way Underwood Special Recreation Center is part of Underwood Creek Parkway, adjacent to US 45 between Swan Boulevard and Underwood Creek Parkway (**Exhibit 4-1**). The center is owned by Milwaukee County and operated by the County's Office for Persons with Disabilities. The Wil-O-Way Underwood Special Recreation Center hosts recreation activities designed for people with disabilities through the Wil-O-Way Recreation Program sponsored by Milwaukee County. Activities offered include arts, crafts, life skills, clubs, sports, and music. Goodwill Industries operates an adult day care program at the site, and Easter Seals operates a summer day camp for kids and adults with disabilities. UW-Extension offers master gardener classes, and UW-Milwaukee uses the grounds for camping. The center includes an accessible demonstration garden, zero entry pool, picnic area, basketball court, and wheelchair accessible playground and sandbox. The center has a room to rent with capacity for 150 people.

Oak Leaf Trail. Milwaukee County's Oak Leaf Trail, a county wide multi-use trail, is routed along Underwood Creek Parkway through the Zoo Interchange study area and crosses the study-area freeway system at two locations (**Exhibit 4-1**). On the north leg, the trail crosses under US 45 along the Underwood Creek Parkway. On the west leg, the trail approaches I-94 from the north on an off-road trail that connects with Underwood Creek Parkway, approximately 150 feet north of I-94. The trail crosses under I-94 along Underwood Creek Parkway. Currently, Milwaukee County has no plans that would provide additional Oak Leaf Trail crossings of the study-area freeway system.

Impacts on Section 4(f) Property

Underwood Creek Parkway. All Modernization Alternatives and the Reduced Impacts Alternative would require right-of-way acquisition along the north leg, where the Underwood Creek Parkway/Oak Leaf Trail crosses under US 45.

- *8-lane N1 Alternative, 8-lane N3 Alternative* – On the north leg, the 8-lane N1 and 8-lane N3 Alternatives would both acquire approximately 0.24 acre of new right-of-way from Underwood Creek Parkway on the east side of US 45 (see **Exhibit 4-2A**). This area consists of approximately 0.1 percent of the total parkway land area. The width of the new bridge spanning Underwood Creek and the Underwood Creek Parkway, including the Oak Leaf Trail, would be approximately 175 feet wide, 51 feet wider than the existing 6-lane US 45 bridge over Underwood Creek.
- *6-lane N1 Alternative, 6-lane N3 Alternative* – On the north leg, the 6-lane N1 and 6-lane N3 Alternatives would acquire approximately 0.1 acre of new right-of-way from Underwood Creek Parkway on the east side of US 45. This area consists of approximately 0.05 percent of the total parkway land area. The new bridge crossing Underwood Creek and Underwood Creek Parkway, including the Oak Leaf Trail, would be approximately 150 feet wide for the 6-lane N1 Alternative and the 6-lane N3 Alternative. This would be 26 feet wider than the existing 6-lane bridge.
- *Reduced Impacts Alternative* – On the north leg, the Reduced Impacts Alternative would acquire approximately 0.25 acre of new right-of-way from Underwood Parkway on the east side of US 45. This area consists of approximately 0.1 percent of the total parkway land area. The width of the new bridge spanning Underwood Creek and the Underwood Creek Parkway, including the Oak Leaf Trail, would be approximately 150 feet wide, 49 feet wider than the existing 6-lane US 45 bridge over Underwood Creek (**Exhibit 4-2B**). The Underwood Creek Parkway connection to Watertown Plan Road would be realigned to intersect with the extended Swan Boulevard (**Exhibit 4-2C**).

No new right-of-way would be acquired from Underwood Creek Parkway along the west leg. A potential stormwater detention pond may be constructed along Underwood Creek Parkway south of I-94 on the west leg. If the pond is built, Milwaukee County may maintain ownership of the land the pond lies within. Please refer to the text box on page 4-28 for more information regarding the stormwater detention pond. An existing 1.7-acre stormwater pond in Underwood Creek Parkway near the northeast quadrant of the Highway 100/Watertown Plank Road intersection may be expanded to a 2.5-acre pond. The expansion would be partially in Underwood Creek Parkway and partly on private property.

Wil-O-Way Underwood Special Recreation Center. All Modernization Alternatives would impact the Wil-O-Way Underwood Special Recreation Center along the north leg.

- *8-lane N1 Alternative, 8-lane N3 Alternative* – The 8-lane N1 and 8-lane N3 Alternatives would acquire 0.53 acre of land in the form of an approximately 35-foot-wide by 650-foot-long strip of land along the west side of the Wil-O-Way Underwood Special Recreation Center property (see **Exhibit 4-2A**). This area consists of approximately 0.7 percent of the total Wil-O-Way land area and would not affect the outdoor recreation facilities. Additionally, the existing 6-lane US 45 is located 82 feet from the playground on the property and 213 feet from the Wil-O-Way building. Under the 8-lane N1 and N3 Alternatives, the new US 45 alignment would be approximately 53 feet closer to the playground and 57 feet closer to the Wil-O-Way building than the existing 6-lane US 45, making the new alignment approximately 29 feet from the playground and approximately 156 feet from the building.
- *6-lane N1 Alternative, 6-lane N3 Alternative* – The 6-lane N1 and 6-lane N3 Alternatives would require approximately 0.47 acre of land in the form of an approximately 20-foot-wide by 1,000-foot long strip along the west side of the Wil-O-Way Underwood Special Recreation Center. This area consists of approximately 0.6 percent of the total Wil-O-Way land area and would not affect the outdoor recreation facilities. For the 6-lane N1 and N3 Alternatives, the new alignment would be approximately 40 feet closer to the playground and 45 feet closer to the building, making the new alignment approximately 42 feet from the playground and 168 feet from the building.
- *Reduced Impacts Alternative* – The Reduced Impacts Alternative would move the freeway closer to the Wil-O-Way Underwood Special Recreation Center, but no right-of-way would need to be acquired except for potentially a 0.01-acre acquisition at the south end of the center. Under the Reduced Impacts Alternative, the new freeway alignment would be 42 feet closer to the playground and 51 feet closer to the building, making the new freeway 40 feet away from the playground and 162 feet away from the building.

WisDOT met with the Milwaukee County Office for Persons with Disabilities, Goodwill Industries, Easter Seals, and UW-Extension in March 2009 to discuss potential impacts to the Wil-O-Way Underwood Special Recreation Center. The primary concern was noise impacts to the outdoor recreation area, especially for autistic children and elderly for whom overstimulation from noise is a concern. Blind people, who rely more heavily on their sense of hearing, would also find it more difficult to use the outdoor recreation areas.

Oak Leaf Trail. Under all alternatives, the Oak Leaf Trail crossings under US 45 and under I-94 would be closed temporarily during construction to accommodate freeway construction over the trail.

Avoidance Alternatives

Under the No-Build Alternative, no right-of-way would be acquired from Underwood Creek Parkway, the Oak Leaf Trail, the Wil-O-Way Underwood Special Recreation Center, and US 45 and its entrance/exit ramps would not be moved any closer to the Section 4(f) resources. As discussed in Section 2, Alternatives Considered, the No-Build Alternative is not a reasonable course of action because it would not address safety concerns, the deteriorating pavement and bridges, and future traffic demand of the study-area freeway system.

Given that Section 4(f) resources are located throughout this section of the study corridor and adjacent to the existing freeway and local arterial right-of-way, there are no prudent or feasible Modernization or Reduced Impacts Alternatives that would avoid Underwood Creek Parkway, the Oak Leaf Trail, and the Wil-O-Way Underwood Recreation Center. Both Underwood Creek Parkway and US 45 are linear corridors perpendicular to each other; therefore, it would not be possible to avoid a crossing of these two corridors.

Measures to Minimize Harm

The Modernization Alternatives and Reduced Impacts Alternative were designed to minimize the need to acquire new right-of-way. Measures to minimize harm to Underwood Creek Parkway and the Oak Leaf Trail include keeping the US 45 northbound exit ramp to Highway 100 as close to mainline US 45 as possible and providing a bridge over the Underwood Creek Parkway and Oak Leaf Trail, as opposed to an at-grade crossing, which would bisect the parkway and trail and not allow for a crossing for these facilities. Measures to minimize right-of-way acquisition from the Wil-O-Way Underwood Special Recreation Center will include retaining walls. Additionally, eliminating the ~~alternative that included an~~ interchange at Swan Boulevard minimizes impacts to the Wil-O-Way property. If a stormwater retention/detention pond is built in Underwood Creek Parkway on the west leg, south of I-94, WisDOT would provide landscaping around the pond.

Mitigation

Prior to reconstructing US 45, WisDOT will compensate Milwaukee County for the acquisition from the Underwood Creek Parkway/Oak Leaf Trail and Wil-O-Way Underwood Special Recreation Center.

WisDOT will coordinate with the Milwaukee County Parks Department to develop appropriate mitigation along Underwood Creek Parkway. Mitigation may include improving the vegetation surrounding the bridge or working with the Parks Department to add elements to the US 45 bridge over the parkway that would better blend the bridge in with the surrounding natural environment.

Wil-O-Way does not meet TRANS 405 criteria for a noise wall. WisDOT will construct visual screening between US 45 and Wil-O-Way that may include a berm, a screening wall, or both. WisDOT will continue to work with Milwaukee County Parks Department and the Office for Persons with Disabilities during the design phase.

WisDOT will work with the City of Wauwatosa Historic Preservation Committee during the community sensitive design process to develop an appropriate bike/pedestrian gateway at the Watertown Plank Road/Underwood Parkway intersection.

Coordination

The project team discussed the project's potential impacts to these Section 4(f) resources with County Parks' staff at the Technical Advisory Committee (TAC) meetings held in May, October, and November 2008, and January 2009. County Parks staff expressed no major concerns regarding the project's potential impact to Underwood Parkway, the Oak Leaf Trail, and the Wil-O-Way Underwood Special Recreation Center. In November 2008 and March 2009 ~~and March 2011~~, the project team also discussed the project's potential impacts to the Wil-O-Way facility with staff from Milwaukee County's Office for Persons with

Disabilities. Additional meetings will be held with the Office for Persons with Disabilities during the design phase to further investigate potential mitigation measures.

4.3.2 Milwaukee County Zoo

The Milwaukee County Zoo is located in the northwest quadrant of the Zoo Interchange (**Exhibit 4-1**). US 45 borders the County Zoo to the east and I-94 borders the County Zoo to the south. The Zoo's maintenance facility is connected to the Zoo by an underpass under I-94 and is located in the southwest quadrant of the Zoo Interchange, directly south of the main Zoo property.

Milwaukee County owns and administers the Zoo, which occupies more than 200 acres of county park system parkland. The Zoo was opened to the public at its present location on May 13, 1961. It is home to more than 1,700 mammals, birds, fish, amphibians, and reptiles with more than 350 species on exhibit. Along with the animals on exhibit and their living habitats, the site contains a large parking area, overflow parking area, Zoofari Conference Center, animal health center, conservation education center, a narrow-gauge train that travels around the Zoo, administration offices, food areas, and gift shops, among other amenities. The Zoo hosts many special events during the year, including concerts, Zoo a la Carte, and large group gatherings.

According to its mission statement, the Zoo is intended to inspire public understanding, support, and participation in global conservation of animal species and their environment. Funding for animal acquisitions, fundraising campaigns for building renovations and new exhibits, and financial support for research, conservation and educational programs are done through a public-private partnership with the Zoological Society of Milwaukee County.

The Zoo has its building maintenance shops in the Zoofari Conference Center on Bluemound Road. The Zoo also uses the Zoofari Center to store food service supplies. The Zoofari Center's meeting room is rented out approximately 3 days per week, and rental fees are used to maintain the building.

The Zoo's maintenance facility is located south of I-94 in the southwest quadrant of the Zoo Interchange. The maintenance facility has a storage area for Zoo maintenance vehicles and supplies, a fueling station for maintenance vehicles, and a greenhouse. The maintenance area is connected to the Zoo via a road and a box culvert under I-94. The ditch on the north side of I-94 lies on Zoo-owned property in the southwest corner of the Zoo.

Impacts on Section 4(f) Property

Modernization Alternatives

All Modernization Alternatives would acquire the 5.56-acre Zoo maintenance facility in the southwest quadrant of the existing Zoo Interchange, and approximately 8.9 acres along the eastern edge of the Zoo property, including the Zoofari Conference Center and 3.6 acres of the 5.51-acre overflow parking lot along US 45 (**Exhibit 4-4A**). The Zoo's animal exhibits would not be directly affected by any of the Modernization Alternatives.

The loop ramp connecting westbound I-94 to the Greenfield Avenue exit off I-894/US 45 would be located approximately 11 feet from the southeast corner of the Zoo. Further west, the 6-lane Modernization Alternatives would require grading for a ditch in a 0.5 acre area on the southwest edge of the Zoo, while the 8-lane Modernization Alternatives would require grading in a 0.75-acre area (a 25-foot strip). Few, if any, trees would need to be cut down as a result of the grading.

In total, the Modernization Alternatives would acquire approximately 15 to 15.27 acres of Zoo property for new right-of-way. Most of the 15 acres would be acquired in fee, but the grading for the ditch in the southwest corner of the Zoo could be accomplished through an easement.

Additionally, one or two overhead electrical transmission lines may be relocated to the north side of I-94, adjacent to the Zoo. If one transmission line is located in this area, it would be built close to I-94 and would not require acquisition of Zoo property. If two transmission lines are built in this area, some Zoo property would be acquired and part of the vegetative screening between I-94 and the Zoo would be permanently removed. As a result, I-94 and the transmission lines would likely be visible from the Zoo's miniature train and possibly from some animal exhibits.

The Milwaukee County Zoo expressed major concern over having any overhead electrical transmission lines in what is now the vegetative buffer area between I-94 and the Zoo because of the visual impact of the towers and wires and loss of the buffer. WisDOT and ATC continue to explore alternatives that would avoid easements and visual impacts to the Zoo.

Reduced Impacts Alternative

Under the Reduced Impacts Alternative (**Exhibit 4-4B**), no buildings would be acquired and the amount of land acquired from the Zoo would be reduced when compared to the Modernization Alternatives. The Reduced Impacts Alternative would acquire 6.46 acres of land along the east Zoo property border (including 3 acres of the 5.51-acre overflow parking lot along US 45). A 0.53-acre strip would be acquired from the maintenance facility but no buildings would be acquired. A 0.63-acre strip of land would be acquired from the Zoo at the south end of the property where an access road goes under I-94 to the maintenance facility. The Zoo's animal exhibits would not be directly affected by the Reduced Impacts Alternative.

No electrical transmission lines would be moved to the north side of I-94 under the Reduced Impacts Alternative.

Adjacent Arterials Component

Under the Adjacent Arterials Component (**Exhibit 4-4B**), 0.06 acre of land would be acquired from the northwest corner of the Zoo (the southeast corner of the Bluemound Road/Highway 100 intersection).

Avoidance Alternatives

Under the No-Build Alternative, no right-of-way would be acquired from the Milwaukee County Zoo and I-94 and US 45 and their entrance/exit ramps would not be moved any closer to the Zoo. As discussed in Section 2, Alternatives Considered, the No-Build Alternative is not a reasonable course of action because it would not address safety concerns, the existing deteriorating pavement and bridges, and future traffic demand of the existing study-area freeway system.

There are no prudent or feasible Build Alternatives that would avoid impacts to the Milwaukee County Zoo. A church, school, and apartment building are located east of US 45, across from the Zoofari Conference Center and the County Zoo's overflow parking lot. On the south side of the County Zoo, the animal exhibits lie north of I-94, and the maintenance facility is south of I-94, so the Modernization Alternatives cannot avoid Zoo property.

Measures to Minimize Harm

The Modernization Alternatives were designed to impact as little right-of-way as possible. WisDOT and FHWA have minimized impacts to the Milwaukee County Zoo during the study phase by pulling in the core Zoo Interchange ramps as tight as possible and potentially using retaining walls. WisDOT and FHWA will continue to refine the alignment of Zoo Interchange core to further reduce impacts to the Milwaukee County Zoo, if possible.

Mitigation

Prior to reconstructing the Zoo Interchange, WisDOT and FHWA will compensate Milwaukee County for property acquired from the Zoo. Under the Modernization Alternatives, WisDOT and FHWA would replace the buildings acquired (Zoofari Conference Center and maintenance facility) and overflow parking lot. The maintenance facility may be relocated to an unused area in the northwest corner of the Zoo property. Zoo officials identified this as a feasible location. The Zoofari Conference Center would also be replaced on Zoo grounds.

If any of the vegetative buffer on the southwest side of the Zoo is removed, mitigation will include screening walls or new landscaping. Additionally, WisDOT will mitigate the loss of parking from the overflow parking lot under the Modernization and Reduced Impacts Alternatives. This may include a parking structure or land in the ATC right-of-way south of the existing parking lot.

Coordination

The project team met with Milwaukee County Zoo officials and the Milwaukee Zoological Society in January, May, July, and October 2008, and February and March 2009. County Zoo officials noted that appropriate mitigation appears to be available for the potential impacts to County Zoo property and facilities. If the County Zoo impacts are mitigated to the County Zoo management's satisfaction, they have no objections to the project. However, if overhead electrical transmission lines are located adjacent to the County Zoo, County Zoo management has concerns over the visual impact of the towers and wires, as well as potential impacts to the County Zoo's electrical substation and deep well, supplying water to Lake Evinrude and other ponds on the grounds. [See Appendix F.](#)

Additional meetings will be held during the alternatives analysis phase to further discuss potential mitigation measures.

4.3.3 Chippewa Park

Chippewa Park is a 10.52-acre Milwaukee County Park located north of I-94 and approximately 0.20 mile west of Highway 100 (**Exhibit 4-1**). The park is bordered by Park Hill Avenue on the north and I-94 on the south. Currently, Chippewa Park is approximately 40 feet

(at its closest point) from the existing 6-lane I-94 on its east end. Chippewa Park contains a walking path, two children's play areas, one basketball court, and open areas with soccer goals.

Impacts on Section 4(f) Property

The 6-lane W-3 Modernization Alternative would acquire approximately 0.1 acre from Chippewa Park, which would come from a 5- to 15-foot strip of land in the southeast corner of the park, along the westbound I-94 entrance ramp from Highway 100. This is approximately one percent of Chippewa Park.

The 8-lane W-3 Modernization Alternative would acquire 0.18 acre from Chippewa Park (**Exhibit 4-5A**), which would come from a 15- to 25-foot strip of land in the southeast corner of the park, along the westbound I-94 entrance ramp from Highway 100.

This is approximately 2 percent of Chippewa Park. At the west end of the park, mainline I-94 would be located 21 feet closer to the park (76 feet away).

The Reduced Impacts Alternative would have similar impacts as the 8-lane W-3 Modernization Alternative (**Exhibit 4-5B**). An area of 0.31 acre would be acquired from the southeast corner of Chippewa Park. At the west end of the park, mainline I-94 would be located approximately 14 feet closer to the park (83 feet away).

Currently, the southeast corner of the park contains a wooded area that serves as a buffer between the park and I-94. The 6- and 8-lane W-3 Alternatives and the Reduced Impacts Alternative would remove some of the trees, but a wooded buffer between the park and I-94 would remain.

Avoidance Alternatives

Under the No-Build Alternative, no right-of-way would be acquired from Chippewa Park, and I-94 and its entrance/exit ramps would not be moved closer to the park. As discussed in Section 2, Alternatives Considered, the No-Build Alternative is not a reasonable course of action because it would not address safety concerns, the existing deteriorating pavement and bridges, and future traffic demand of the existing study-area freeway system.

Alternatives that avoid Chippewa Park would affect the HAST alignment. Shifting the alignment of the I-94 westbound entrance ramp from Highway 100 to the south to avoid impacts to Chippewa Park would impact the HAST, an important transportation facility in the Zoo Interchange study area.

Measures to Minimize Harm

The Modernization Alternatives and Reduced Impacts Alternative were designed to minimize the need to acquire new right-of-way from Chippewa Park. WisDOT and FHWA will continue to refine the alignment of I-94 and the Highway 100 entrance ramp to further reduce or eliminate impacts to Chippewa Park, if possible.

Mitigation

Prior to reconstructing US 45, WisDOT will compensate Milwaukee County for the acquisition from Chippewa Park. WisDOT will continue to work with Milwaukee County during the design phase to develop appropriate mitigation. If any vegetative buffer is removed, Chippewa Park mitigation will include screening walls or new landscaping.

Coordination

The project team presented the project's potential impacts upon the park to County Parks' staff at TAC meetings held in May, October, and November 2008.

4.3.4 Honey Creek Parkway

Honey Creek Parkway is a 94-acre parkway owned by Milwaukee County that follows Honey Creek. Honey Creek flows in a concrete-lined channel through much of the parkway, from I-94 on the south to Jacobus Park on the north (**Exhibit 4-1**). The parkway adjacent to I-94 contains no roadway, amenities, open space, or trails. The parkway was part of a master park and parkway plan developed in 1926 by the Milwaukee County Parks Commission. Construction of the parkway started in 1933 by the Works Progress Administration.

Both Honey Creek Parkway and the 84th Street Bridge over Honey Creek, located approximately 700 feet north of I-94, are eligible for the National Register. Both the bridge and parkway are eligible based on Criterion A, history, with the bridge also eligible due to Criterion C, engineering.

Impacts on Section 4(f) Property

Several alternatives for reconstructing I-94 adjacent to Honey Creek Parkway were considered (6-lane E1, 8-lane E1, 6-lane E3, 8-lane E3, 6-lane E1/E3 hybrid, 8-lane E1/E3 hybrid, Modified E3 Alternative, and the Reduced Impacts Alternative) (**Exhibits 4-6A and 4-6B**). For the Reduced Impacts Alternative alone, 0.2 acre of right-of-way would be required. None of the right-of-way acquisition for I-94 reconstruction and the Adjacent Arterials Component will affect the 84th Street bridge over Honey Creek.

Several acres of the parkway west of 84th Street may be converted to a stormwater retention/ detention pond. If the pond is built, Milwaukee County may maintain ownership of the land the pond lies within. Please refer to the text box to the right for more information.

Stormwater Retention/ Detention Ponds

As part of the project, stormwater retention/detention ponds may be constructed in the Honey Creek Parkway on the east leg, the Underwood Creek Parkway along the west leg and on the County Grounds near the County Parks Building. The ponds would not be converted to new highway right-of-way, and the Milwaukee County Parks Department could retain ownership of the land.

For Honey Creek Parkway, up to 3.5 acres of the parkway, west of 84th Street, may be converted to a 2.7-acre stormwater retention/ detention pond. To construct the pond, trees would be removed, and the concrete-lined stream bed would be realigned. The realigned stream would have a more natural stream bed than the existing concrete-lined channel, which was constructed in the 1960s, and would improve the creek's ability to support fish and wildlife. The pond would be dry at times and hold water for a period of time after rainfalls.

The Underwood Creek Parkway stormwater retention/detention pond along the west leg would be approximately 5 acres, located south of I-94. The stormwater retention/detention pond at the County Grounds near the Milwaukee County Parks Department building would be approximately 3 acres, located between the building and US 45.

The project team met with Milwaukee County Parks staff on November 13, 2008, to discuss the ponds. Milwaukee County Parks' staff was supportive of the concept of using existing park land for the stormwater detention ponds, pending further design and County Board approval.

Avoidance Alternatives

Under the No-Build Alternative, no stormwater retention/detention pond would be needed in the Honey Creek Parkway. The Modernization Alternatives and Reduced Impacts Alternative would require construction of a stormwater retention/detention pond along the east leg. Since open areas are scarce along the east leg, Honey Creek Parkway would be the best location for this pond. WisDOT will continue to look for alternative pond locations as well as other stormwater management options, such as in-line storage to avoid the need to construct a pond in Honey Creek Parkway.

Measures to Minimize Harm

If a stormwater retention/detention pond is built in Honey Creek Parkway, WisDOT would provide landscaping around the pond.

Mitigation

If a pond is built, WisDOT will continue to work with the Milwaukee County Parks Department during the design phase to develop appropriate mitigation for the impact. Initial discussion has focused on realigning Honey Creek and returning it to a more natural stream bed adjacent to the stormwater detention pond. Landscaping, plantings, and fencing would be installed around the pond.

Coordination

The project team discussed the project's potential impacts to Honey Creek Parkway with County Parks' staff at the TAC meetings held in May, October, and November 2008 and during a meeting in January 2009. They had no major concerns in regards to the potential impacts to Honey Creek Parkway, and have concurred that mitigation measures could include restoring the channel to a more natural state. See Appendix D, page D-69.

4.3.5 Milwaukee County Parks Building

The former Milwaukee County Home for Dependent Children Administration Building (currently the Milwaukee County Parks System headquarters) is listed on the National Register based on Criterion A, social history. Constructed by Milwaukee County in 1898, the building is located approximately 0.25 mile east of US 45, 975 feet east of the existing entrance ramp from Watertown Plank Road to US 45, and 319 feet north of Watertown Plank Road (**Exhibit 4-1**). This structure was listed on the National Register in 1999, was listed as a Milwaukee County Landmark in 1978, and is a City of Wauwatosa local landmark.

Impacts on Section 4(f) Property

- *6-lane N1 Alternative, 8-lane N1 Alternative* – Under the 6-lane and 8-lane N1 Modernization Alternatives, the existing US 45/Watertown Plank Road interchange would be reconstructed, and the northbound entrance ramp would be closer to the County Parks building. Under the N1 Modernization Alternatives, the on-ramp would be located approximately 533 feet west of the building (**Exhibit 4-7**). Watertown Plank Road would be reconstructed and realigned to the north to provide a safer and more efficient intersection with the freeway on/off ramps.

- *6-lane N3 Alternative, 8-lane N3 Alternative* – Similar to the N1 Modernization Alternatives, the 6-lane and 8-lane N3 Modernization Alternatives would involve the reconstruction of the US 45/Watertown Plank Road interchange, moving the northbound entrance ramp closer to the County Parks building. Under the N3 Modernization Alternatives, the entrance ramp would be located approximately 790 feet west of the County Parks building (**Exhibit 4-8**). Watertown Plank Road would be reconstructed and realigned to the north to provide safer and more efficient intersections with the freeway on/off ramps.

Under all four Modernization Alternatives, Watertown Plank Road would be moved approximately 95 feet closer to the building. The road would be about 224 feet south of the building rather than 319 feet as it is today. Several mature trees in front of the building would be removed. The building's driveway would be moved east but would still connect to the circle drive in front of the building's main entrance. Although Watertown Plank Road and the ramp to US 45 from Watertown Plank Road would be closer to the building than it is today, it would not affect the historic boundary of the building. The proposed improvements would not change the character of the property's use or physical features within the property's setting that contribute to its historic significance.

- *Reduced Impacts Alternative* – Under the Reduced Impacts Alternative the existing US 45/Watertown Plank Road interchange would be reconstructed with a loop ramp in the northeast quadrant (**Exhibit 4-9**). The northbound and southbound entrance ramps that border the loop ramp would be 429 feet from the County Parks building's historic boundary, compared to the existing interchange ramps that are 975 feet away from the building's historic boundary. Like the Modernization Alternatives, Watertown Plank Road would be reconstructed and moved to the north. The road would be 290 feet away from the building's historic boundary. Fewer mature trees would be removed than under the Modernization Alternatives. The building's driveway would be moved east but would still connect to the circle drive in front of the building's main entrance. Although Watertown Plank Road and the ramp to US 45 from Watertown Plank Road would be closer to the building than it is today, neither change would affect the historic boundary of the building. The proposed improvements would not change the character of the property's use or physical features within the property's setting that contribute to its historic significance.

Avoidance Alternatives

The Modernization Alternatives and the Reduced Impacts Alternative avoid physical impacts to the building and historic boundary. Under all the Modernization Alternatives, the alignment of Watertown Plank Road would be shifted about 95 feet to the north, placing the road approximately 224 feet south of the building. Under the Reduced Impacts Alternative, Watertown Plank Road would be 290 feet south of the building. Watertown Plank Road would be shifted to the north to provide a better intersection alignment with the northbound US 45 entrance and exit ramps which provides for a safer intersection.

Mitigation

As a result of moving Watertown Plank Road closer to the building, WisDOT will design and construct, in consultation with the UWM Real Estate Foundation (or current owner), landscaping that will visually buffer the Milwaukee County Parks Building from Watertown Plank Road.

Coordination

The project team discussed the project's potential impacts to the Milwaukee County Parks Building with County Parks staff at the TAC meetings held in May, October, and November 2008. The project team met with DPW in January 2009 to discuss the project's effects on the building. The project team met with the UWM Real Estate Foundation, the building's current owner, in April 2011. They had no concern about the proposed action's effect on these attributes of the building that make it eligible for the National Register.

4.3.6 Eschweiler Buildings

The Milwaukee County School of Agriculture and Domestic Economy Historic District (Eschweiler Buildings) is located approximately 575 feet east of US 45 and approximately 330 feet south of existing Swan Boulevard (**Exhibit 4-1**). This complex consists of four buildings constructed in 1912. The buildings were formerly used as a school and most recently as offices, but are currently vacant. Access to the buildings was from Watertown Plank Road until 2008 when Milwaukee County removed the only vehicle access. The district was listed in the National Register in 1998 and is also a Milwaukee County and City of Wauwatosa landmark. The historical significance of this district is based on Criterion A (education) and Criterion C (architecture).

The UWM Real Estate Foundation purchased land, including these buildings, from Milwaukee County to develop a new research campus. Part of the attractiveness of the site for UWM is its proximity to US 45.

Impacts on Section 4(f) Property

Modernization Alternatives. The Modernization Alternatives would not result in a change of property use. The existing roadway west of the buildings may be approximately 80 feet closer than it is today. Reconstructing the study-area freeway system would not result in a change in their current use nor preclude their redevelopment into a research campus. The proposed improvements would not change the character of the property's use or physical features within the property's setting that contribute to its historic significance:

- *6-lane and 8-lane N1 Alternative* – Under the N1 Modernization Alternative, the Swan Boulevard bridge over US 45 would be reconstructed, as would the Swan Boulevard connection to Watertown Plank Road (**Exhibit 4-10**).
- Swan Boulevard would be reconstructed in roughly the same footprint as its existing alignment. At its closest point, the reconstructed Swan Boulevard would be approximately 390 feet away from the closest building on the property, 3 feet closer than the existing distance.
- *6-lane and 8-lane N3 Alternative* – Under the N3 Modernization Alternative, the Swan Boulevard bridge over US 45 would be reconstructed, as would the Swan Boulevard connection to Watertown Plank Road (**Exhibit 4-11**). The existing Swan Boulevard–Watertown Plank connector road is 421 feet west of the closest of the four buildings; after reconstruction, it would be approximately 343 feet away. Swan Boulevard would also be reconstructed on the north side of the buildings, but would remain in roughly its same footprint.

Reduced Impacts Alternative

The Reduced Impacts Alternative would not result in a change of property use. The existing Swan Boulevard bridge over US 45 would be reconstructed and northbound Swan Boulevard west of the buildings would be removed. Swan Boulevard north of the buildings would be about 13 feet further from the buildings. No right-of-way would be acquired at this location (**Exhibit 4-12**).

Avoidance Alternatives

The Modernization Alternatives and Reduced Impacts Alternative avoid physical impacts to the building and historic boundary.

Coordination

The project team presented the project's potential impacts to the Eschweiler Buildings with County DPW staff at meetings held in November 2008 and January 2009. The project team met with the UWM Real Estate Foundation, the building's new owner, in April 2011. They had no concerns about the proposed action's effect on those attributes of the buildings that make them eligible for the National Register.

The project team met with the Milwaukee County Historical Society in June 2011. The Historical Society has concerns about vibration impacts from the Zoo Interchange project adversely affecting the Eschweiler Buildings.

Mitigation

WisDOT will conduct a crack and damage survey of the Eschweiler Buildings prior to construction and coordinate with the Historical Society during design to assess this issue when more is known about construction techniques that will be used. WisDOT will monitor vibration levels during construction. These measures are documented in the Memorandum of Agreement between FHWA and SHPO that was executed in September 2011 (the Memorandum of Agreement may be reviewed at the WisDOT SE Region office in Waukesha).

4.3.7 Union Pacific Railroad Truss Bridge

The Union Pacific Railroad's triple intersection Warren through truss bridge carries a Union Pacific rail line over a former Canadian Pacific Railway line (to be converted to the DNR's HAST) just south of I-94 (**Exhibit 4-1**). The bridge is eligible for the National Register as an example of the triple intersection Warren through truss bridge that integrates an additional through-plate girder concept between the deck beams that are tied to the lower chord. The bridge is located approximately 410 feet south of a modern railroad bridge over I-94 near Highway 100.

Impacts on Section 4(f) Property

Under all Modernization Alternatives and the Reduced Impacts Alternative the Union Pacific's modern railroad bridge over I-94 would be replaced by a new, longer bridge to accommodate the Zoo Interchange reconstruction (**Exhibits 4-13A and 4-13B**). The Union Pacific rail line near I-94 may remain in its existing alignment or be realigned approximately 30 feet to the east or west of its current location. If the tracks remain on their existing alignment, the truss bridge would likely remain in service. However, if the railroad alignment is shifted, the truss bridge would likely be removed from service, and replaced

with a new structure to its east or west. The railroad, as owner of the bridge, would have the option to keep the bridge in place or demolish the bridge. Even if the bridge remains in place but out of service, it would likely not be maintained, so an adverse effect would occur.

Avoidance Alternatives

Under the No-Build Alternative, no new rail bridge would be constructed over I-94. There would be no need to realign the tracks, and the truss bridge would remain in place and in service. As discussed in Section 2, Alternatives Considered, the No-Build Alternative is not a reasonable course of action because it would not address safety concerns, the existing deteriorating pavement and bridges, and future traffic demand of the existing study-area freeway system.

WisDOT is working with Union Pacific Railroad to determine if keeping the tracks in their current alignment is feasible and prudent.

Mitigation

WisDOT and FHWA have worked with the SHPO and the Union Pacific Railroad to develop appropriate mitigation measures if the rail line is realigned and the truss bridge taken out of service. Mitigation measures include photographic documentation of the bridge and offering the bridge to those interested in preserving the bridge. These measures are included in a Memorandum of Agreement executed by WisDOT, FWHHA and SHPO in September 2011 (the Memorandum of Agreement may be reviewed at the WisDOT SE Region office in Waukesha).

Coordination

The project team discussed the project's potential impacts to the bridge at meetings with the Union Pacific railroad and their representatives in January, September, and December 2008. In April 2009, Union Pacific Railroad said that it does not have concerns over potential removal of the bridge.

SHPO concurs that the potential impact to the Union Pacific truss bridge is the only potential adverse effect to historic resources.

4.3.8 Greenfield Avenue Presbyterian Church

The Greenfield Avenue Presbyterian Church, built in 1953, is eligible for the National Register under Criterion C, architecture, with regard to Criterion Consideration G: Properties that have achieved their significance within the last 50 years. The church is an example of the late 19th and 20th century revivals of the English colonial/period Georgian Revival style of architecture. The church is located on 97th Street, approximately 700 feet east of mainline I-894/USH 45 and 271 feet east of the exit ramp to Greenfield Avenue (**Exhibit 4-1**). The church is approximately 375 feet south of Greenfield Avenue. A parking lot, street, and foliage are located between the church and I-894/US 45. Aside from the freeway and commercial buildings along Greenfield Avenue, the church is in a residential area.

Impacts on Section 4(f) Property

Under all Modernization Alternatives, I-894/US 45 would be reconstructed and potentially widened, including the existing exit/entrance ramps to/from Greenfield Avenue (**Exhibit 4-14A**). The exit ramp to Greenfield Avenue would be 19 feet closer to the church than it is today (252 feet rather 271 feet). Greenfield Avenue would be reconstructed 500 feet east of its interchange with I-894/US 45. The project would not result in a change in use of the church

or its property. The proposed undertaking would not change the character of the property's use, physical features, or setting that contributes to its historic significance.

Under the Reduced Impacts Alternative I-894/US 45 would be reconstructed and potentially widened, including the existing exit/entrance ramps to/from Greenfield Avenue (**Exhibit 4-14B**). Under this alternative, the Greenfield Avenue interchange would be a diamond interchange and would not have any loop ramps. As a result, the exit ramp to Greenfield Avenue would be 220 feet farther from the church's historic boundary than it is today (385 feet versus 166 feet today). Greenfield Avenue would be reconstructed about 500 feet east of its interchange with I-894/US 45. The project would not result in a change in use of the church or its property. The proposed undertaking would not change the character of the property's use, physical features, or setting that contributes to its historic significance.

Avoidance Alternatives

The Modernization Alternatives and Reduced Impacts Alternative avoid physical impacts to the church building and historic boundary.

Coordination

The project team discussed the project's potential impacts to the church at a meeting with a church representative in November 2008 and a phone conversation in March 2011. The church representative concurred that the project would not have an adverse effect on the church.

4.3.9 Rockway and Brookside Places Residential Historic District

The Rockway and Brookside Places Residential Historic District is located in the northeast quadrant of the of the Bluemound Road/Glenview Avenue intersection. It consists of 15 single-family residences, fourteen of which are English-inspired Tudor Revival in style and were built between 1924 and 1937; the final house was built in 1973 and is considered to be non-contributing to the district. The 15 houses are located within a subdivision known as Brookside Addition, which was plotted in 1924. The district is eligible for the National Register under Criterion C, architecture (**Exhibit 4-1**).

Impacts on Section 4(f) Property

No freeway improvements associated with the Modernization Alternatives or Reduced Impacts Alternative would affect the district. The Adjacent Arterials Component would not acquire new right-of-way from the district, but the curb and gutter along Glenview Avenue would be replaced in the same location (**Exhibit 4-15**).

The project would not change the residential use of the district or individual properties within it. The proposed undertaking would not change the character of the district's use, physical features, or setting that contributes to its historic significance.

Avoidance Alternatives

The Modernization Alternatives, Reduced Impacts Alternative, and Adjacent Arterials Component would avoid physical impacts to the district and its historic boundaries.

Coordination

The project team met with residents of the neighborhood on March 1, 2011 and sent out a letter to all residents in March 2011.

St. Jude the Apostle Roman Catholic Church Complex

The St. Jude the Apostle Roman Catholic Church Complex is located on the east side of Glenview Avenue just north of the Glenview/Wisconsin Avenue intersection. The property includes a combined school and church, rectory and the former convent, and church. The rectory and convent are located adjacent to Glenview Avenue while the original church and school and the modern church are located around St. Jude Court, slightly to the east. The convent and rectory are eligible for the National Register under Criterion C (architecture) as examples of Collegiate Gothic style. In addition, the two buildings, along with the combined school and church and modern church are eligible under Criterion C as a complex.

Impacts on Section 4(f) Property

No freeway improvements associated with the Modernization Alternatives or Reduced Impacts Alternative would affect the complex. Under the Adjacent Arterials Component, Glenview Avenue would not be reconstructed but would be re-striped as a 3-lane roadway with a two-way left-turn lane in the center. No property would be acquired from St. Jude. (Exhibit 4-16).

The project would not change the use of the complex or individual buildings within it. The proposed undertaking would not change the character of the St. Jude complex's use, physical features, or setting that contributes to its historic significance.

Coordination

The project team discussed the project's potential impacts to representatives from St. Jude the Apostle at a meeting in May, 2011. St. Jude had expressed concern over the plan outlined in the Supplemental Draft EIS that would have widened Glenview Avenue and required property acquisition from the complex. St. Jude officials support the current 2-way left-turn lane proposal.

Muirdale Sanatorium

The former Muirdale Sanatorium property is located on the west side of Innovation Drive, south of Watertown Plank Road. The property includes a power plant and a multi-story hospital building constructed in 1915, used to isolate and treat people with tuberculosis. The sanatorium closed in 1969, but the building reopened in 1978 as the County Nursing Home/Infirmary. Since 1993, the building has become part of the Milwaukee County Research Park and houses various businesses.

The former sanatorium was designated a Milwaukee County landmark in 1980, and recommended as potentially eligible to the National Register in an extensive survey of Wauwatosa in 1996. The former sanatorium and power plant are eligible under Criterion C (architecture) for their Neoclassical style of architecture.

The Muirdale Sanatorium was evaluated in the project's Phase I historical investigation in 2008, but the property was determined to be outside of the area of potential effect. With the proposed improvements to Innovation Drive, as part of the Adjacent Arterials Component, the property is now considered to be within the area of potential effect.

Impacts on Section 4(f) Property

No freeway improvements associated with the Modernization Alternatives or Reduced Impacts Alternative would affect the Muirdale Sanatorium. The Adjacent Arterials Component would not acquire new right-of-way from the portion of the property where the former sanatorium is located; however, at the northeast corner of building, Innovation Drive would be 3 feet closer to the building (165 feet away).

The Adjacent Arterials Component would not acquire new right-of-way from the portion of the property where the former power plant is located. The sidewalk would be the same distance from the power plant (8 feet away) at the northwest corner of the building, but near the center of the building the new sidewalk would be 3 feet closer to the building (40 feet away) (**Exhibit 4-17**).

The project would not change the use of the former Muirdale Sanatorium property or two buildings on the property. The proposed undertaking would not change the character of the property, physical features, or setting that contributes to its historic significance.

Avoidance Alternatives

The Modernization Alternatives, Reduced Impacts Alternative, and Adjacent Arterials Component would avoid physical impacts to the Muirdale Sanatorium property and its historic boundaries.

Coordination

The project team coordinated with Milwaukee County Research Park officials in April 2011. They had no concerns about the proposed action's effect on those attributes of the buildings that make them eligible for the National Register.

4.4 Final Section 4(f) Finding

WisDOT and FHWA evaluated several alternatives for improving the study-area freeway system and adjacent arterials.

The No-Build Alternative would not be consistent with SEWRPC's regional transportation plan, *A Regional Transportation System Plan for Southeastern Wisconsin: 2035*, which recommends reconstructing and adding capacity to the study-area freeway system.

None of the Build Alternatives that meet the purpose and need of the project, including those eliminated from further consideration, would avoid use of the Section 4(f) properties identified. Only the No-Build Alternative would avoid use of all Section 4(f) properties, however this alternative is not a prudent and feasible course of action.

WisDOT and FHWA have minimized impacts to Section 4(f) resources during the study phase and will continue to refine the preferred alternative in an attempt to further minimize impacts. WisDOT will work with those with jurisdiction over the Section 4(f) resources to develop appropriate mitigation for the impact. Mitigation for the Union Pacific railroad bridge has already been documented in the Memorandum of Agreement with SHPO.

Based on the above considerations, there is no feasible and prudent alternative to the use of Section 4(f) resources. The proposed action includes all possible planning to minimize harm resulting from such use.

The Reduced Impacts Alternative causes the least overall harm in light of the Section 4(f) preservation purpose. The least overall harm is determined by balancing the following factors in 23 FCR 774.3(c)(1):

- i. The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property); Adequate mitigation measures exist for each Section 4(f) property.
- ii. The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection; The affected parks and the Milwaukee County Zoo would still retain the attributes and features that qualify them for protection under Section 4(f).
- iii. The relative significance of each Section 4(f) property; The Reduced Impact Alternative and the Modernization Alternative would affect the same Section 4(f) properties. The Reduced Impact Alternative would have less impact on the Milwaukee County Zoo than the Modernization Alternatives.
- iv. The views of the official(s) with jurisdiction over each Section 4(f) property; All of the affected Section 4(f) properties are owned by Milwaukee County. The project team met with Milwaukee County Zoo officials and the Milwaukee Zoological Society in January, May, July, and October 2008, and February and March 2009. County Zoo officials noted that appropriate mitigation appears to be available for the potential impacts to County Zoo property and facilities. If the County Zoo impacts are mitigated to the County Zoo management's satisfaction, they have no objections to the project. The project team discussed the project's potential impacts to County-owned parks with County Parks staff at the Technical Advisory Committee (TAC) meetings held in May, October, and November 2008, and January 2009. County Parks staff expressed no major concerns regarding the project's potential impact to Chippewa Park, Underwood Parkway, the Oak Leaf Trail, and the Wil-O-Way Underwood Special Recreation Center. In November 2008 and March 2009 and March 2011, the project team also discussed the project's potential impacts to the Wil-O-Way facility with staff from Milwaukee County's Office for Persons with Disabilities.
- v. The degree to which each alternative meets the purpose and need for the project; Both the Reduced Impacts Alternative and the 8-Lane Modernization Alternative meet the purpose and need for the project.

- vi. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and The Reduced Impact Alternative has overall lower impacts than the Modernization Alternatives.
- vii. Substantial differences in costs among the alternatives. The Reduced Impact Alternative has a lower cost than the Modernization Alternatives.

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Section 5

Public Involvement and Agency Coordination During Draft EIS Preparation and Following Draft EIS Availability

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SECTION 5

Public Involvement and Agency Coordination During Draft EIS Preparation and Following Draft EIS Availability

This section discusses community involvement activities and coordination with state and federal review agencies and other interest groups during the development and evaluation of alternatives and the preparation of the Draft EIS, including the public hearing following the Draft EIS approval. The study team offered numerous opportunities for citizens and state and federal review agencies to be involved in the Draft EIS process. In addition, study team members attended numerous meetings initiated by local officials and citizens. The public involvement process was open to all residents and population groups in the study area and did not exclude any persons because of income, race, national origin, sex, age, religion, or handicap. This section also describes the June 2009 public hearing and summarizes the comments received at the public hearing and during the Draft EIS comment period.

5.1 Public Involvement

WisDOT's public involvement plan for the Zoo Interchange corridor seeks to incorporate public input from all stakeholders in order to ensure that the recommended alternative best serves the needs of the public. To ensure that the EIS process involves all stakeholders, including potentially affected individuals, businesses, and communities, the study team outlined the following objectives for the public involvement plan:

- Get to know all the potentially affected interests and see the project through their eyes.
- Ensure that project communication is understandable to the public.
- Listen to and understand information that is communicated by the public.

Congress passed the *Safe, Accountable, and Flexible Efficient Transportation Equity Act—A Legacy for Users* (SAFETEA-LU) in August 2005. SAFETEA-LU includes several measures that require opportunities for public involvement during the development of the purpose and need statement and the identification of the range of alternatives to be considered.

WisDOT and FHWA followed SAFETEA-LU 6002 public involvement requirements:

- WisDOT and FHWA developed Impact Assessment Methodologies for each impact category. The impact categories are socioeconomic, commercial and residential, environmental justice, indirect and cumulative effects, agricultural, air quality, noise, wetlands, water resource and floodplain, upland habitat/wildlife, threatened and endangered species, public use lands, cultural resource, hazardous materials, aesthetic, and construction. These were shared with the public at the May 2008 public information meetings and were mailed to agencies for comment.

- A coordination plan was developed and shared with the coordinating and participating agencies in May 2008 and redistributed with revisions in August 2008. The Agency Coordination Plan and the Impact Analysis Methodologies documents were shown at the May 2008 public information meetings, providing the public the opportunity to comment on these documents.
- Agency review of the project's purpose and need statement took place in summer 2008. WisDOT and FHWA provided the project's purpose and need statement (Section 1) to the participating agencies and the Corps. All agencies either concurred with the purpose and need for the project or deemed it "sufficient for subsequent development of the EIS." Based on the feedback from the agencies, WisDOT and FHWA did not convene a meeting to discuss the purpose and need statement. The public was given the opportunity to comment on the various purpose and need elements at May 2008 public information meetings.
- Agency review and comment on the range of alternatives considered took place in fall 2008. WisDOT and FHWA provided the Alternatives Considered (Section 2) to the participating agencies and the Corps in September 2008. At the October and November TAC meetings, the attendees provided input on the range of alternatives considered; discussed the alternatives dropped from consideration; and discussed the merits of the remaining alternatives. All participating agencies, except the Corps and U.S. EPA, attended these meetings. The public was given the opportunity to be involved in the development of alternatives during the May 2008 public information meetings.

5.1.1 Summary of Activities

To identify public concerns regarding the project, WisDOT organized four open house design workshops in December 2007 and January 2008. One workshop focused on the needs of the Milwaukee County Research Park, one on the Milwaukee Regional Medical Center, and two on the issues of general public. Participants' issues were noted on project maps, catalogued, and incorporated into a geographic information system (GIS) to help set priorities for the project.

To open the lines of communication, the study team implemented several vehicles for receiving feedback from the community, including the following:

- A project phone hotline
- Web site and email link
- Pre-addressed comment forms at all public meetings
- Neighborhood meetings to work with potentially affected communities
- An education outreach initiative to engage local elementary students in a project focused on the Zoo Interchange corridor
- Project Information Centers at the Medical College of Wisconsin and the State Fair
- A truck/transportation event to identify issues from the transport industry

To keep the public updated, WisDOT held two sets of public information meetings. Each set included two meetings held at different locations and times of day to allow greater flexibility for individuals to attend. At the public information meetings, attendees were encouraged to review concepts and provide feedback. WisDOT also developed a database of residents,

businesses, and organizations interested in the project. Individuals and organizations in the database receive regular newsletters, factsheets, and meeting flyers. The study team also distributed postcards, maintained a Web site, exhibited at community events, and produced three-dimensional visualizations to aid the layperson in understanding the alternatives.

WisDOT met with groups and individuals that were potentially affected to provide accurate information regarding project activities and information. WisDOT organized neighborhood meetings for groups of potentially affected property owners. WisDOT also met with local officials, elected officials, faith-based groups, businesses groups, community-based organizations, schools, and anyone that requested a meeting. In addition, the study team was interviewed by local newspapers, radio stations, and television stations.

To gain greater insight and promote discussions regarding certain aspects of the project, WisDOT created five committees:

- The Strategic Advisory Committee (SAC) ensures that the project goal of implementing the purpose and need in a manner that best meets stakeholder needs is met (see page 5-22).
- The Technical Advisory Committee (TAC) engages local officials and agencies on key technical aspects of the study in order to help refine concepts (see page 5-24).
- The Community Advisory Committee (CAC) acts as a sounding board of stakeholder interests along the corridor and provides feedback on alternatives, issues, and concepts (see page 5-27).
- The Southeast Freeways Milwaukee County Urban DBE Advisory Committee improves coordination, communication, and planning of WisDOT programs and projects within the affected communities (see page 5-29).
- The Milwaukee County DBE Steering Committee involves key stakeholders, as well as a wide range of participants including residents, labor associations, and government agencies (see page 5-32).

5.1.2 Project Database

To maintain regular communication with stakeholders, WisDOT developed a database of property owners within 1 mile of the project limits. Other stakeholders, including local leaders, community-based organizations, and local and state elected officials, were also added to the database.

WisDOT uses the database to notify stakeholders of upcoming public information meetings and send regular updates through newsletters, flyers, and postcards. The database includes e-mail addresses whenever available and allows interested parties to select their preferred channel of communication: e-mail, post, or both. WisDOT collects stakeholder and interested party names and contact information on sign-in sheets at all meetings. Interested parties can request to be added to the database by contacting WisDOT staff, or through e-mail or phone.

Currently, the database contains over 15,000 property addresses, residents, businesses, organizations, local leaders, elected officials, and other interested parties.

5.1.3 Factsheets, Newsletters, and Meeting Flyers

To keep the public informed of new developments in the study, WisDOT published factsheets, newsletters, and meeting flyers. Each kind of informational material was designed to meet a specific project purpose.

The Zoo Interchange Corridor Study factsheets keep the public abreast of new developments. WisDOT staff distributed and mailed the factsheets to property owners, residents, and business owners along the corridor in September 2006 and December 2007.

The Zoo Interchange newsletters provide regular communication between WisDOT and the public. The newsletters were mailed in April and October 2008 to the entire project database. The newsletters are also posted on the project Web site (sefreeways.org).

Two meeting flyers were used to announce project information and acted as invitations to the neighborhood meetings. The flyers were distributed during the door-to-door outreach and other neighborhood outreach. Spanish versions of the flyers were also available as part of the outreach efforts. The second flyer had a tear-off questionnaire.

5.1.4 Dedicated Project Phone Hotline, E-mail Address, and Comment Forms

The study team implemented several vehicles for the public to contact WisDOT with questions and concerns, including a dedicated project phone hotline, a project-specific e-mail address, and distributing and collecting pre-addressed comment forms.

To help disseminate the project contact information, all printed material distributed to the public included the project phone number, e-mail address, and Web site. While conducting door-to-door outreach, project staff (see Section 5.1.6) distributed refrigerator magnets that included the project name, phone number, e-mail address, and Web site. The cards serve two purposes: to identify staff working on the project, and to provide contact information in case individuals have questions or concerns.

WisDOT distributes pre-addressed comment forms at all events and meetings. The comment forms allow individuals to raise concerns and provide feedback with ease. WisDOT gathers, reviews, and catalogues all comment forms, letters, and e-mails from the public. Telephone calls are also logged, summarized, and catalogued.

5.1.5 Neighborhood Meetings

In an effort to reach affected property owners, WisDOT held six neighborhood meetings within the study area. In addition to a presentation and staff on hand to answer questions, displays of project alternatives were available for the general public to review and provide comment. The six meetings held included the following:

- 95th and 97th Street Neighborhood, Wisconsin Avenue Park, August 13, 2008
- O'Connor/Dixon Street Neighborhood, Walter and Olive Stiemke Scout Service Center, 330 S. 84th Street, August 14, 2008
- South 98th Street Neighborhood, LaFollette Park Pavillion, August 20, 2008
- South 100th Street Neighborhood, Good Shepherd Evangelical Lutheran Church, 1235 S. 100th Street, August 21, 2008

- Adler Street Neighborhood, Faith United Methodist Church, 400 S. 91st Place, September 11, 2008
- Dixon/Chester Neighborhood, Cannon Park, 303 N. 95th Street, September 18, 2008

5.1.6 Door-to-Door Informational Campaigns

WisDOT project staff knocked on doors along several neighborhood streets within the study area, distributed literature and magnets with project contact information, and confirmed that residents were receiving information from WisDOT:

- Fisher Parkway: January 5, 2008
- South 100th Street: January 5, 2008
- South 108th Street: May 10, 2008
- West Adler: May 10, 2008
- North 92nd Street: May 10, 2008
- Fisher Parkway: May 10, 2008
- South 100th Street: May 10, 2008
- South 101st Street: May 10, 2008
- 79th Street: May 25, 2008
- 80th Street: May 25, 2008
- West Adler Street: May 29, 2008
- West Schlinger Avenue: May 29, 2008
- Bluemound Road: August 1, 2008
- Wisconsin Avenue: August 1, 2008
- West O'Connor Street: August 4, 2008
- West Dixon Street: August 4, 2008

The door-to-door campaign also included visits to area businesses along commercial corridors within the study area. WisDOT staff distributed literature and magnets with project contact information, ensured businesses were receiving project information, and created information centers in some cases where business patrons could view study information:

- Greenfield Avenue: January 31, 2008
- Mayfair Road: February 5, 2008
- Greenfield Avenue: February 18, 2008
- Burleigh Street: February 19, 2008
- Greenfield Avenue: February 26, 2008
- Greenfield Avenue: March 3, 2008
- South 108th Street: March 13, 2008
- South 108th Street: March 19, 2008
- South 108th Street: March 20, 2008
- Mayfair Road: March 26, 2008
- North Mayfair Road: April 3, 2008
- North Mayfair Road: April 7, 2008
- Mayfair Road: April 8, 2008
- West North Avenue: April 9, 2008
- West North Avenue: April 10, 2008
- Mayfair Road: April 15, 2008
- West Lincoln Avenue: July 17, 2008
- West Lincoln Avenue: July 23, 2008
- West Lincoln Avenue: July 24, 2008
- South 108th Street: July 25, 2008
- West National Avenue: July 28, 2008
- Greenfield Avenue: July 30, 2008
- Greenfield Avenue: July 31, 2008

In addition, the project team visited several area banking establishments in the study area on May 13, 2008. In some cases, the team left behind brochures in bank lobbies or common areas where patrons could access them.

5.1.7 December 2007 / January 2008—Design Workshops

At the onset of the project, WisDOT initiated a series of four design workshops designed to act as “listening” sessions for WisDOT to identify concerns and gather input from the public. Two sessions were by invitation and focused on issues specific to the Milwaukee County Research Park and the Regional Medical Center. Two meetings were open to the general public. Locations were selected based on their proximity to the project.

- December 17, 2007, Milwaukee County Research Park, Wauwatosa
- January 11, 2008, Regional Medical Center, Wauwatosa
- January 17, 2008, Zoofari Conference Center, 9715 W. Bluemound Road, Milwaukee
- January 23, 2008, Tommy Thompson Youth Center, 640 S. 84th Street, West Allis

Workshop Activities

The study team was on hand to interact with attendees at the workshops, and Spanish translators were available, if needed. Attendees viewed a presentation about the project and then provided input. Exhibits of existing conditions, aerial photography, system linkages, and the study schedule were available for attendees to review. A handout depicting the project background, study goals, and contact information was distributed at the events. Other handouts included a comment sheet and a project frequently asked questions sheet.

Upon arriving at the workshops, participants were first asked to register and then view a short presentation on the project’s background. Participants then identified areas of concern, suggested ideas, and defined priorities, all of which were recorded on corridor maps.

The hands-on style of the workshops encouraged the public to set priorities for WisDOT according to the needs of their communities. Over 320 participants attended the two public design workshops. In addition to interaction with staff, participants were given pre-addressed comment forms so they could respond with additional comments or ideas. Participants’ names and addresses were logged and entered into the project database.

Ideas and Areas of Concern

WisDOT collected comments from the public design workshop maps and catalogued them into a geographic information system (see **Table 5-1**).

5.1.8 May 2008—Public Information Meetings

WisDOT and FHWA generated a range of initial freeway corridor improvement alternatives that responded to the needs and issues identified by the public at the workshops. Spanish translation was available, if needed. WisDOT and FHWA introduced the alternatives to the public at the first set of public information meetings (PIMs) in May 2008:

- May 21, 2008, Tommy Thompson Youth Center, 640 S. 84th Street, West Allis
- May 29, 2008, Wauwatosa West High School, 11400 W. Center Street, Wauwatosa

Participant names and addresses were collected and added to the project database. Nearly 500 residents, property owners, businesses, and local leaders attended and commented on the concepts and exhibits presented during these meetings. **Table 5-2** summarizes the concepts.

TABLE 5-1
Issues Identified through Public Design Workshops

Area	Issue
Watertown Plank Road Area	<p>Congestion on Innovation Drive to the south; cut-through traffic on neighborhood streets</p> <p>Need for frontage roads between Watertown Plank Road and Bluemound Road to relieve traffic pressures from Research Park</p> <p>Need to enhance access to the freeway for both Research Park and the Regional Medical Center</p>
North Avenue to Center Street	Walls to mitigate traffic noise
West Bluemound Road	Noise issues; engine braking; tight curve on ramp
North 92nd Street to South 84th Street	Noise and light issues; engine braking on ramps; wildlife impacts during construction; residential relocations; property value; special events effect traffic
System Ramps to W. Greenfield Avenue and Union Pacific Railroad Bridge	Noise issues; community sensitive design/theme; suggest single-point interchange at Greenfield; open space and trail along Union Pacific Railroad; residential relocations; HAST; Union Pacific Railroad bridge is bottleneck in system; Importance of Schlinger Avenue for local circulation; parking
Swan Boulevard	Threatened species
West Wisconsin Avenue	Park impacts; local circulation; interchange suggestions
System Ramps to West Bluemound Road	Residential impacts; noise; freeway's proximity to Parkside Pool Apartments
West North Avenue to Underwood Creek Parkway	North Avenue south exit congestion; interchange spacing and congestion in southbound lanes; safety issue; u-turns to avoid left turn queue; dangerous crossing
Mayfair Road and West Wisconsin Avenue	Currently overloaded intersection
System Ramps	Traffic weaves and congestion; poor ramp geometry; drivers lost on local streets
North Mayfair Road at I-94	Very tight ramp curves and inability to merge at safe speed

TABLE 5-2
Alternatives Presented at May 2008 PIM

Concept	Number of Lanes	Replaces Structures	Favorable Comment	Unfavorable Comment	Safety	Traffic Congestion
No-Build	6	No	0	0	Not addressed	Not addressed
Replace-in-Kind	6	Yes	0	0	Not addressed	Not addressed
Spot Improvements (SI1, SI2, SI3)	6	Yes	0	12	Not addressed	Minimal improvement to congestion
Modernization Alternatives with Added Capacity	8	Yes	18	22	Corrects safety deficiencies	Improves traffic flow and relieves congestion

Ideas and Areas of Concern

Approximately 110 comments were collected, reviewed, and catalogued. Of the comments received, approximately 52 were alternative-specific, and the remaining comments were more general. Upon further review of the comments, four areas of concern became apparent:

- Traffic, mobility, and congestion concerns
- Noise concerns from traffic
- Property and real estate impacts
- Environmental impacts

Traffic, Mobility, and Congestion Concerns

- Concerns over the 84th Street interchange operations, specifically maintaining access and eliminating weaving movements at the ramps (12 comments)
- Concerns about access to the Research Park and the Regional Medical Center, and circulation that avoids traffic moving through the surrounding neighborhoods (6 comments)
- Desire for frontage roads along both sides of US 45 to promote local circulation (4 comments)
- Concerns about lack of transit in the region; can transit preclude the need for expansion (4 comments)
- Concerns that some of the alternatives would add additional traffic along 95th Street that would compete with neighborhood access needs (3 comments)
- Questions as to the feasibility of using the HAST corridor as a one-way reliever during special events in the area, such as at Miller Park or the State Fair Park (2 comments)

Traffic Noise

- Several residents who live near the study-area freeway system suggested WisDOT install noise barriers, with complaints that current traffic is already too noisy in many areas (12 comments)

Property and Real Estate Impacts

- Concerns over impacts to Parkside Pool Apartments, the desire to avoid impacts to the property (5 comments)
- Some residents near the freeway corridor would like their properties to be acquired due to existing noise issues (5 comments)
- Concerns over the relocation of the Boy Scout office building due to costs and the convenience of its current location (3 comments)
- Concerns over the impact of the south leg alternative on the utility corridor and if moving the utility corridor would require residential relocations (2 comments)

Environmental Impacts

- Desire to see the foliage preserved along the edges of the existing interchange. The green area is a storage area for water and preventing flooding (5 comments)

- Concern about the impact of widening the freeway near the 85th/Adler Street area, which has drainage problems (1 comment)
- The southeast corner of the US 45/Swan Boulevard interchange area is an important migration corridor for wildlife (1 comment)

5.1.9 October 2008—Public Information Meetings

WisDOT and FHWA held a second set of PIMs in October 2008 where the refined alternatives were presented to the public. Spanish translation was available, if needed. A total of 381 participants attended the PIMs, and their names and addresses were added to the project database:

- October 27, 2008, Tommy Thompson Youth Center, 640 South 84th Street, West Allis
- October 30, 2008, Wauwatosa West High School, 11400 West Center Street, Wauwatosa

Table 5-3 summarizes the comments.

TABLE 5-3
Alternatives Presented at October 2008 PIM

Concept	Number of Lanes	Replaces Structures	Favorable Comment	Unfavorable Comment	Safety	Traffic Congestion
No-Build	6	No	0	0	Not addressed	Not addressed
Modernization Improvements (M1, M3)	6	Yes	2	0	Corrects some safety deficiencies	Minimal improvement to congestion
Modernization Improvements with Added Capacity (M1, M3)	8	Yes	17	2	Corrects safety deficiencies	Improves traffic flow and relieves congestion

Approximately 99 comment forms were collected. Of the comments received, approximately 21 were specific to the alternatives. Upon review of the comments, the main areas of comment were related to traffic, noise, and real estate issues.

Traffic

- Concern regarding the 84th/76th exit and entrance systems (10 comments)
- Concern regarding the amount of traffic on local streets and in local neighborhoods (6 comments)

Noise

- Concern about current and future noise levels (16 comments)
- Concern about additional noise during construction (2 comments)
- Desire for noise barriers to be installed prior to construction (1 comment)

Real Estate

- Desire to sell property and move away from the freeway (5 comments)
- Concern about freeway moving closer to property (6 comments)
- Concern about timeliness of making a decision about home purchases (2 comments)

5.1.10 Notice of Public Involvement Activities

To ensure that all stakeholders were aware of the public information meetings and workshops, WisDOT provided meeting notices using the following outlets:

- Posted dates of all workshops and PIMs on the project Web site
- Printed invitations in the project newsletters which were sent to the project database
- Conducted door-to-door outreach in surrounding neighborhoods
- Placed advertisements in local and community newspapers
- Sent media advisories to local media outlets

Advertising

For the design workshops and public information meetings, WisDOT placed meeting notices in newspapers (**Table 5-4**). Advertisements were placed 1 to 2 weeks before each PIM and public design workshop.

TABLE 5-4
Ad Placements

Publication	Geographic Area
<i>Milwaukee Journal Sentinel</i>	Serving the Milwaukee Metropolitan area
<i>Community Journal</i>	Weekly African American newspaper serving the Milwaukee area
<i>Milwaukee Courier</i>	Weekly African American newspaper serving the Milwaukee area
<i>Milwaukee Times</i>	Weekly African American newspaper serving the Milwaukee area
<i>CNI Newspapers</i>	Neighborhood weekly newspaper serving the Milwaukee suburbs
<i>Spanish Journal</i>	Weekly Hispanic newspaper serving the Milwaukee area
<i>El Conquistador</i>	Weekly Hispanic newspaper serving the Milwaukee area
<i>Waukesha Freeman</i>	Serving the Waukesha area

Media Relations

Prior to the workshop and PIMs, media advisories were sent to 96 local media outlets, including print, television, and radio channels. Follow-up calls were made to targeted media.

5.1.11 Outreach Meetings

In addition to community workshops and public information meetings, WisDOT has met with numerous individuals and organizations. The study team's philosophy is that they are willing to meet with individuals and organizations at any time or location to discuss their concerns. WisDOT targeted property owners using door-to-door outreach and met with community organizations, neighborhood groups, businesses, labor organizations, schools, and local and elected officials.

Door-to-Door and Property Owner Visits

A "knock and drop" approach was used to reach homeowners with informational materials. If at home, homeowners were asked if they were aware of the project and whether they had

any specific questions or concerns. The door-to-door visits were generally made prior to public meetings as a way of personally inviting individuals to attend the meetings. Project staff worked to establish ongoing relationships with several people per block in an effort to build trust and establish credibility with the neighborhoods. Each homeowner received a refrigerator magnet listing the contact person, phone number, and e-mail information.

The study team also met with business owners and institutional property owners such as the Regional Medical Center. Over 60 property owners meetings were held.

Community-based Organizations and Neighborhood Groups

In an effort to reach larger numbers of people, the study team made presentations to numerous organizations and groups with key interests in the project. The meetings were targeted to neighborhoods surrounding the Zoo Interchange corridor and were held throughout the study area. **Table 5-5** lists the groups and organizations included in the meetings.

TABLE 5-5
Community-Based Organization and Neighborhood Block Meetings

Date	Group / Individuals	Topic	Notes / Issues
03/31/08	Story Hill Neighborhood Association	Project overview	Attended meeting to provide project information
04/28/08	Hmong American Friendship	Project overview	Provided information for distribution to the Hmong community
05/08/08	Surety Association of Wisconsin	Project overview	Attended meeting to provide project information
05/17/08	SDS Spring Resource Fair	Project overview	Attended meeting to provide project information
06/24/08	Glenview Heights Neighborhood Association	Project overview	Attended meeting to provide project information
08/13/08	95th and 97th Street Neighborhood	Project overview	Event to provide project information
08/14/08	O'Connor/Dixon Street Neighborhood	Project overview	Event to provide project information
08/20/08	South 98th Street Neighborhood	Project overview	Event to provide project information
08/21/08	South 100th Street Neighborhood	Project overview	Event to provide project information
09/11/08	Adler Street Neighborhood	Project overview	Event to provide project information
09/17/08	Dixon/Chester Neighborhood	Project overview	Event to provide project information
01/22/09	Washington Heights Neighborhood Association	Project overview	Event to provide project information
01/28/09	Wauwatosa Neighborhood Association Chair	Project overview	Event to provide project information
02/02/09	Story Hill	Project overview	Event to provide project information
02/11/09	Ravenswood Neighborhood Association	Project overview	Event to provide project information
02/12/09	Milwaukee Intercity Congregations Allied for Hope	Project overview and scope	Review of DBE/labor outreach efforts and programs
02/19/09	Black Health Coalition of Wisconsin	Project overview	Initiatives regarding the region's multi-modal planning effort
02/26/09	O'Connor/Dixon Street Neighborhood	Project update	Event to provide project information

Business and Labor

Businesses located near the corridor are often represented by area organizations such as chambers of commerce. Presentations and regular updates were provided to keep businesses informed of project milestones and important project information.

Labor-related organizations were interested in jobs and job training opportunities, especially those organizations serving minority populations in the area of employment and training opportunities. **Table 5-6** lists the businesses and labor organizations that received regular updates and presentations.

TABLE 5-6
Business and Labor Meetings

Date	Group / Individual	Topic	Notes / Issues
02/08/08	Boy Scouts of America	Project overview	Initial outreach
02/21/08	African American Chamber of Commerce	Project overview	Jobs/jobs training
02/25/08	Amcore Bank	Project overview	Initial outreach
02/25/08	State Central Credit Union	Project overview	Initial outreach
02/25/08	Tri-City Bank	Project overview	Initial outreach
02/26/08	Indian Groceries	Project overview	Initial outreach
02/26/08	Pick n Save	Project overview	Initial outreach
03/04/08	Aldi Foods	Project overview	Initial outreach
03/04/08	Sam's Club	Project overview	Initial outreach
03/14/08	Milwaukee Mile	Project overview	Initial outreach
03/25/08	Wisconsin Expo Center	Project overview	Initial outreach
03/31/08	Skilled Trade Cooperative	Project overview	Jobs/jobs training
03/31/08	Teamsters Local 200	Project overview	Jobs/jobs training
04/28/08	American Indian Chamber of Commerce	Project overview	Jobs/jobs training
05/01/08	Mayfair Mall	Project overview	Initial outreach
05/15/08	Geneva Management Systems	Review project options	Alternatives and process for feedback options
05/15/08	Boy Scouts of America	Review project options	Alternatives and process for feedback options
05/17/08	Hmong Radio Station	Guest speaker	
07/08/08	Parkside Pool Apartments	Review project options	Alternatives and process for feedback options
07/11/08	Hall Chevrolet	Review project options	Alternatives and process for feedback options
07/30/08	Milwaukee Kiwanis Club	Project overview	Informational meeting

TABLE 5-6
Business and Labor Meetings

Date	Group / Individual	Topic	Notes / Issues
08/04/08	St. Therese Church/Parish	Project overview	Discussion of project limits, scope and schedule; range of alternatives
09/12/08	Ronald McDonald House	Project overview	Presentation of project information; discussion of traffic issues
09/15/08	Children's Hospital	Project overview	Discussed current and future plans for expansion of the MRMC campus
10/16/08	Ronald McDonald House	Project overview	Presentation to Board of Directors
10/24/08	Mayfair Mall	Project overview	
11/04/08	Whitnall Rotary Club	Project overview	Presentation of project information
11/10/08	Hall Chevrolet	Project overview	Reviewed schedule and north leg alternative M1 and M3
11/13/08	West Allis Auto Club	Project overview	Explained M2 alternative on the south leg
11/19/08	Greenfield Avenue Presbyterian Church	Project overview	Historic structures; traffic; noise wall
11/19/08	Parkside Pool Apartments	Review status of study	Reviewed schedule and north leg alternative N1 and N3; noise wall
01/04/09	St. Therese Church/Parish	Project overview	Presentation; Q&A
01/20/09	Economic Development Corp	Project overview	Update on project schedule, progress to date and remaining activities
02/10/09	Irgens Development Partners	Project overview	North leg alternatives
02/11/09	Pettit center	Project overview	Review of east leg alternatives, E1 and E1/E3 hybrid
02/12/09	St. Camillus	Project overview	Presentation and Q&A
02/19/09	African American Chamber of Commerce	Project overview	Current efforts on DBE and Labor committee
02/23/09	Wangard Partners, Inc.	Project overview	North leg alternatives near Watertown Plank Road
02/23/09	Sierra Club	Project overview	
02/26/09	St. Charles Youth and Family Services	Project overview	Reviewed alternatives on east leg
03/05/09	Children's Health Alliance of Wisconsin	Project overview	Construction concerns relating to asthma
04/13/09	Wesley Park Men's Club	Project overview	Presentation and Q&A
04/16/09	Social Development Commission	Project update	
04/18/09	Community Planning Council	Project update	

Educational Institutions

An outreach initiative called “Careers in Motion” was presented at the Walker Elementary School located within the study area in the City of West Allis. This program offered a diverse population of students the opportunity to understand how building roads and transportation projects can offer long-term career opportunities. The program also increased awareness of the project among parents of the students who live in the neighborhood.

Table 5-7 lists the educational outreach, which included informational meetings and presentations.

TABLE 5-7
Meetings with Educational Institutions

Date	Group / Individual	Topic	Notes / Issues
11/27/07	UWM College of Engineering	Review project information	
01/25/08	Pius XI High School	Review project information	
01/25/08	Wisconsin Lutheran High School	Review project information	
01/25/08	St Jude Grade School	Review project information	
01/28/08	Wauwatosa West High School	Review project information	
03/19/08	Medical College of Wisconsin	Communications subcommittee	Project information packet for institutions to place on Web sites, etc.
05/05/08	Wisconsin Lutheran College	Review project information	Future growth plans and impacts from alternatives
06/03/08	Montessori School	Review project options	Impacts of acquisition; potential relocation hardship issues
06/12/08	Medical College of Wisconsin	Information session	Project information displayed
07/14/08	Montessori School	Review project information	Address concerns regarding impacts and special needs of the school
08/11/08	Wisconsin Lutheran College	Review project options	Impacts to Greenhouse site; future planned development
10/10/08	Montessori School	Review project options	Impacts, new locations for the school
10/29/08	UWM	Review project information	
10/30/08	Wisconsin Lutheran College	Review project information	
11/05 – 11/21/08	Walker Elementary School	Educational program on the history of transportation presented to fifth grade	A program to teach fifth graders about transportation careers. Students made commercials depicting one aspect of transportation safety.
11/06/08	Milwaukee Regional Medical College	Review project information	
12/04/08	Pius XI High School	Review project information	
01/09/09	MATC West Campus	Project overview	Concerns with traffic and local streets
03/06/09	Wil-O-Way Special Education Center	Project overview	North leg alternatives discussed; noise concerns

Elected Officials

Elected officials at the state and local level were kept informed of various milestones during the study process. They were regularly updated on key issues affecting their constituents via phone calls, e-mail updates, quarterly newsletters, and periodic meetings. WisDOT met with elected officials listed in **Table 5-8**.

TABLE 5-8
Meetings with Elected Officials

Date	Group / Individual	Topic	Notes / Issues
01/07/08	Alderman Jerry Stepaniak (C. of Wauwatosa)	Review project information	North study limit; funding; economic impacts
01/07/08	Senator Ted Kanavas	Review project information	Watertown Plank Road; potential contacts
01/09/08	County Executive Dan Vrakas (Waukesha County)	Review project information	Funding; limits; media; EA/EIS
01/10/08	Supervisor Jim "Luigi" Schmitt (Milwaukee County)	Review project information	Funding; neighborhood outreach; Research Park/Regional Medical Center Impacts
01/10/08	Mayor Jack Chiovatero (C. of New Berlin)	Review project information	Industrial parks; transit; water issues
01/18/08	Alderman Robert Bauman and James Bohl (C. of Milwaukee)	Review project information	Commuter rail; Hwy 100 businesses; traffic plan
01/18/08	Alderman Michael Murphy (C. of Milwaukee)	Review project information	Story Hill Neighborhood; regional medical center access; public design workshops
01/25/08	Supervisors Holloway & White (Milwaukee County)	Review project information	Funding; other projects; local elections and timing
02/08/08	Senator Spencer Coggs	Review project information	DBE Committee
02/15/08	Mayor Jeffrey Speaker (C. of Brookfield)	Review project information	Watertown Plank Road; public outreach; TAC; crash analysis; Bluemound Road project
02/15/08	Alderman Willie Hines (C. of Milwaukee)	Review project information	Relocations; local road impacts; southbound to westbound ramp
02/22/08	Mayor Theresa Estness (C. of Wauwatosa)	Review project information	Capacity expansion; noise; local roads; West Suburban TIA
02/26/08	Mayor Tom Barrett (C. of Milwaukee)	Review project information	West Suburban TIA; transit
03/14/08	Senator Jim Sullivan, Alderman Tom Treis (C. of Wauwatosa)	Update project information	Town Hall Meetings; PIM; water and air quality; West Suburban TIA; SAC; Research Park; DBE efforts
03/26/08	Mayor Jeannette Bell (C. of West Allis)	Review project information	Capacity; traffic staging; access; neighborhood encroachment
04/10/08	Alderman Michael Murphy (C. of Milwaukee)	Indirect and cumulative effects	Project budget; PIM; neighborhood impacts; transit; capacity issues; air quality
05/01/08	Alderman Michael Murphy (C. of Milwaukee)	Project schedule and impacts	Relocations; transit

TABLE 5-8
Meetings with Elected Officials

Date	Group / Individual	Topic	Notes / Issues
05/06/08	Wauwatosa Committee of the Whole	Review project information; alternatives	Burleigh Street; local roads; traffic projections; transit; West Suburban TIA; air quality
05/15/08	Senator Jim Sullivan, Alderman Mike Murphy (C. of Milwaukee)	Review study alternatives	Neighborhoods; stakeholders; area developments; HAST
06/02/08	Senator Jim Sullivan; Alderman Mike Murphy and Melissa Cook of Wisconsin DNR	HAST	Update on project status and coordination with HAST construction
06/10/08	Wauwatosa Traffic & Safety Committee	Review study alternatives	Traffic operations; increases due to future development
06/16/08	Milwaukee County Economic & Community Development Committee	Review project information; alternatives	Economic development; screening of alternatives and future meetings
07/17/08	Supervisor Michael Mayo & Holloway (Milwaukee County)	Review study alternatives	Purpose and need; acquisition of land
08/06/08	Supervisor Holloway (Milwaukee County)	Children's Hospital	Impact of suggested Connell Avenue closure
09/10/08	Milwaukee County Board Transportation/Public Works Committee	Review study alternatives	Access to Bluemound Road; Hoan Bridge; Regional Medical Center; property acquisitions
10/21/08	Wauwatosa Committee of the Whole	Review project information; alternatives	West Suburban TIA; SEWRPC Regional Transportation Plan; Meinecke Avenue Bridge
11/07/08	Mayor Dan Devine (C. of West Allis)	Review study alternatives	76th Street access; 84th Street redevelopment plans; relocations
11/18/08	Supervisor Michael Mayo (Milwaukee County)	Review project information	
11/18/08	Rebeca Lopez, Hope DeVougas (Senator Feingold's Office)	DBE Steering Committee participation/information meeting	
11/18/08	Khalif Rainey, Sheila Payton (congresswoman Gwen Moore's Office)	DBE Steering Committee participation/information meeting	
11/18/08	Leslie Jorgensen (Senator Sullivan's Office)	DBE Steering Committee participation/information meeting	
11/18/08	JoAnne Anton (Senator Herb Kohl's Office)	DBE Steering Committee participation/information meeting	
11/24/08	Mayor Tom Barrett (C. of Milwaukee)	Review project information	

TABLE 5-8
Meetings with Elected Officials

Date	Group / Individual	Topic	Notes / Issues
11/24/08	Stuart Ewy (Senator Carpenter's Office)	DBE Steering Committee participation/information meeting	
11/24/08	Eric Petersen (Senator Taylor's Office)	DBE Steering Committee participation/information meeting	
01/29/09	Alderman Bauman, Davis, Murphy, Hines, Hamilton, Witkowiak, Bohl, and Donovan	City Council Meeting – steering and rules	Presentation and explanation of east leg alternatives E1, E1/E3 Hybrid, and O'Connor Street options

Local Officials

Project and outreach staff worked closely with officials from several departments within the cities of Milwaukee, West Allis, and Wauwatosa, Milwaukee County, and various other communities located near the study area. **Table 5-9** lists the meetings with representatives of local governments.

TABLE 5-9
Meetings with Local Officials

Date	Group / Individual	Topic	Notes / Issues
12/06/07	SEWRPC	Review past studies	Regional Transportation Plan; Southeast Wisconsin Freeway Reconstruction Plan
01/15/08	Milwaukee County Zoo	Review project information	Impacts to Zoofari Conference Center and maintenance facility, access issues
01/21/08	City of Milwaukee Police Department – District #3	Introduce study; data collection	Hot spots; public involvement
01/21/08	City of Wauwatosa Police Department	Introduce study; data collection	Hot spots; public involvement
01/21/08	City of West Allis Police Department	Introduce study; data collection	Hot spots; public involvement
02/07/08	Wauwatosa Comprehensive Planning Committee	Future development	Comments and discussions on future developments
02/07/08	Milwaukee Regional Medical College Land Use and Planning Committee	Review project information	Issues and concerns regarding traffic in and around the MRMC
02/27/08	Milwaukee County Dept. of Public Works	Review study information	Watertown Plank Road; coordination; local roads; capacity expansion; County facilities; local development plans
03/06/08	City of West Allis Planning Department	Indirect & cumulative effects analysis	Redevelopment; master plan; bike trail; historic sites; stormwater management; local road capacity
03/10/08	Village of Elm Grove	Indirect & cumulative effects analysis	Redevelopment potential; Watertown Plank Road; municipal water service; stormwater; traffic; natural resources; commuter rail

TABLE 5-9
Meetings with Local Officials

Date	Group / Individual	Topic	Notes / Issues
03/10/08	City of Brookfield City Development	Indirect & cumulative effects analysis	Funding; capacity expansion; signage; cost-share; planned developments; local roads; natural resources and stormwater
03/13/08	City of Wauwatosa	Agency coordination	Would like to be a participating agency as defined in SAFETEA-LU 6002
03/13/08	Milwaukee County Economic Development	Indirect & cumulative effects analysis	RESEARCH PARK; local roads; access; impacts; area development plans
03/17/08	Milwaukee Department of City Development	Indirect & cumulative effects analysis	West Side Area Plan; CIP; traffic issues
04/03/08	Wauwatosa Community Development	Indirect & cumulative effects analysis	West Suburban TIA; Burleigh Rectangle (future redevelopment); future development locations; local roads; stormwater; population
05/01/08	Milwaukee Regional Medical College Land Use and Planning Committee	Preliminary improvement options were shared	Presented preliminary design alternatives; spot improvements and modernization alternatives were addressed
05/16/08	Milwaukee County Zoo	Review project options	Mitigation potential of impacts to parking, conference, and maintenance facilities
05/20/08	State Fair Park	Review project options	Impacts to Gate 7; mitigation of parking impacts; park sign
06/05/08	Port of Milwaukee	Review project information	Heavy trucks; operations and routes
06/16/08	State Fair Park Board	Study progress update	Alternatives and process for feedback
06/16/08	Milwaukee County Transit System	Introduce study; alternatives	Bus routes; park-and-ride lots; coordination of detours; special events
07/03/08	Milwaukee Regional Medical College Land Use and Planning Committee	Review alternatives	Discuss alternatives and MRMC's master plan
07/09/08	City of Milwaukee Department of Public Works	Study alternatives	Water mains; coordination with local projects to replace old infrastructure; traffic operations; County facilities
07/15/08	Milwaukee County Zoo	Follow-up on impact mitigation options	Parking structure; development plans
07/30/08	Wauwatosa Community Development	Study alternatives; media	Local road improvements; County facilities; various developments
08/26/08	City of Milwaukee Department of Public Works	Study alternatives	
09/25/08	Local developers, planners, and public works individuals from the local communities in the project area	Indirect and cumulative effects focus group meeting	The group was assembled to review the alternatives and to verify indirect and cumulative effects findings of how the alternatives would affect future developments. Smaller groups discussed how they felt the region would develop in the future with or without proposed Zoo Interchange improvements.

TABLE 5-9
Meetings with Local Officials

Date	Group / Individual	Topic	Notes / Issues
10/09/08	Milwaukee County Zoo	Review project information	Parking needs; Zoofari Conference Center; relocations; payments
10/23/08	Milwaukee County DPW	Review study alternatives	
10/24/08	Milwaukee County Transit System	Review study information	
11/06/08	Milwaukee County Transit System	Review study information	
11/06/08	Milwaukee Regional Medical College Land Use and Planning Committee	Overview of project	Discussed project schedule; reviewed alternatives and options for north leg M1
11/13/08	Milwaukee County Parks	Review study information	Study Alternatives, pre-meeting
11/20/08	Milwaukee County Departments Heads (Zoo, parks, public works, economic development and office of persons with disabilities)	Review alternatives and their potential impacts on county-owned facilities	Need to mitigate impacts; schedule
12/03/08	SEWRPC	Commissioners' meeting	
12/03/08	City of West Allis Planning Commission	Overview of project	Reviewed alternatives
12/10/08	MMSD	Lincoln Creek project; EIS; stormwater management	
12/15/08	Milwaukee County Board	Discuss potential impacts on county-owned facilities	
01/20/09	Milwaukee Regional Medical Center	Obtain input on North Leg	Discuss the Connell Avenue TIA
01/29/09	Milwaukee County Parks	Historic properties	Impacts to historical properties and Honey Creek and Underwood Creek Parkways
01/29/09	Milwaukee County Economic Development	Historic buildings	Discussed Eschweiler and County Parks buildings
02/05/09	Tosa Downtown BID	Project overview	
02/16/09	Milwaukee Metropolitan Sewerage District	Swan boulevard	Discuss Swan Boulevard and bridge carrying Bluemound road over Underwood Creek
02/17/09	State Fair Park Board	Project alternatives	Described current east leg alternatives. State Fair Park Board sent letter in response to this meeting to WisDOT in March 2009 (see Appendix D, pages D-33 through D-35)
02/19/09	Milwaukee County DPW/Transportation Department	Project updates	Watertown Plank Road and utility relocation

TABLE 5-9
Meetings with Local Officials

Date	Group / Individual	Topic	Notes / Issues
02/20/09	Milwaukee Fire Department	Project overview	Presentation; east leg alternative M3 and M1; access concerns to interstate (WB) from 84th Street
02/20/09	Milwaukee Regional Medical Center	Paramics demo	Project development, traffic modeling and alternative refinement
02/20/09	Milwaukee County Zoo	Project overview	ATC's tower relocation options
03/04/09	Milwaukee County Public Works and Transportation	Project overview	North leg alternatives; impacts to county facilities
03/05/09	Milwaukee Regional Medical Center Land Use Planning Committee	Traffic operations and paramics demo	Background on alternative developments
03/09/09	Milwaukee County Economic & Community Development Committee	Project overview	North leg alternatives; impacts to county facilities
03/10/09	Milwaukee County Parks Energy & Environment Committee	Project overview	Impacts to the county parks and county Zoo
03/12/09	Milwaukee County Department of Delinquency & Court Services	Project overview	Impacts to the Child and Adolescent Treatment Center buildings

5.1.12 Information Centers

In addition to regular meetings, information centers exhibited study information. The study had a significant presence at the Wisconsin State Fair, where attendees could view exhibits and interact with WisDOT staff. Additionally, staff was available at an information center in the Wisconsin Medical College Lobby where anyone visiting could stop by the center to ask questions or provide comments. The Children's Hospital conducted a Transportation Fair where study staff were present as part of an information center.

5.1.13 Television and Radio

Local television stations were present at the public information meetings and conducted interviews with the project staff. Project staff also provided a guest interview on Hmong Radio on May 18, 2008.

5.1.14 Project Web Site

The WisDOT Web site includes the Zoo Interchange as part of the "Plans & Projects" page. The Web site provides users with information on major freeway projects in the region. Study information available on the Web site includes the following:

- General information regarding the project, including a project overview, map of the project limits, and proposed study schedule
- Electronic versions of the project factsheets

- Public information meeting announcements
- Exhibits from the public information meetings and workshops
- Contact information
- Renderings and “fly through” views of alternatives

5.1.15 Bilingual Outreach

Even though there is not a high concentration of non-English speaking individuals within the Hispanic Community surrounding the study area, WisDOT worked to ensure that the Hispanic population had access to information. Meeting notices were produced in Spanish for release in Hispanic media, and project information was posted in Spanish on the project Web site. Based on public outreach and demographics of the study area, no other foreign language translations were deemed necessary.

As noted, WisDOT’s project director was interviewed on a Hmong radio program.

5.1.16 Committees

WisDOT interacted with the public through outreach meetings and PIMs. However, to formalize public interaction and to garner more in-depth input on issues affecting the public, WisDOT created five committees:

- The Strategic Advisory Committee
- The Technical Advisory Committee
- The Community Advisory Committee
- The Southeast Freeways Milwaukee County Urban DBE Advisory Committee
- The Milwaukee County DBE Steering Committee

Strategic Advisory Committee

The Strategic Advisory Committee (SAC) is made up of community leaders representing various public and private stakeholders with a major stake in the study area. Table 5-10 lists SAC participants and affiliations.

TABLE 5-10
Strategic Advisory Committee

Name	Title	Agency
Dave Alamshah	Director of Transportation Logistics	Harley-Davidson
Lyle Balistreri	President	Building & Construction Trade Council
John Balzer	President	Wauwatosa Economic Development Corp.
Peter Beitzel	Vice President	Milwaukee Metropolitan Association of Commerce
Donald Bernhardt	Facilities Manager – Research Park	GE Healthcare Technologies
T. Michael Bolger	President	Medical College of Wisconsin
Bob Dennik	Real Estate Manager Director	Milwaukee County
Marc DeVillers		Milwaukee Regional Medical Center, Inc.
Dan Devine	Mayor	City of West Allis
Jill Didier	Mayor	City of Wauwatosa

TABLE 5-10
Strategic Advisory Committee

Name	Title	Agency
Craig Dillmann	Real Estate Service Manager – Department of Administrative Economic Development	Milwaukee County
David Domres	Vice President of Asset and Property Management	Irgens Development Partners, LLC
William Drew	Executive Director	Milwaukee County Research Park
Theresa Estness	Interim Executive Director	Wauwatosa Economic Development Corp.
Margaret Farrow	President	Waukesha County Action Network
Jonathon Flyte	Senior Vice President of Facilities Development and Construction	Wheaton Franciscan Healthcare
Jacquelyn Fredrick	President and CEO	The Blood Center of Wisconsin
Vicki Hartig	Associate Vice President of Marketing and Communication	Wisconsin Lutheran College
William Hatcher	Executive Director	Milwaukee Regional Medical Center, Inc.
Mark Irgens	President	Irgens Development Partners, LLC
Greg High	Interim Director/Highway Commissioner	Milwaukee County Department of Transportation & Public Works
Dewayne Johnson	Director	SE Region, Wisconsin Department of Transportation
David Keller	President and CEO	Luther Manor
Suzanne Kelley	Regional Manager	GE Healthcare
Jeff Kruepke	Director of Transportation Services	Quad Graphics
Kathryn Kuhn	Vice President of Government Relations	Medical College of Wisconsin
Norma McCutcheon	President	Wisconsin Heart Hospital
Maureen McNally	Director, Government Relations	Froedtert Hospital
Joseph Muehlbach	Corporate Director of Facilities	Quad Graphics
Mike Richards	Government Relations	Harley-Davidson
Steve Roth	Director of Facilities Development	Children's Hospital of Wisconsin
Duane Schlomer	Vice President of Finance and Administration	Wisconsin Lutheran College
Steve Smith	Manager	Mayfair Shopping Center and Office Complex
Jack Takerian	Interim Director/Highway Commissioner	Milwaukee County Department of Transportation & Public Works
Ford Titus	CEO	ProHealth Care
Peggy Troy	President	Children's Hospital of Wisconsin
Steve Weiss	Director of Distribution Operations	Quad Graphics
Gilbert White, MD		Blood Center of Wisconsin
Deanna Zabel	Corporate Communications Manager	Briggs & Stratton Corp.

The role of SAC is defined as follows:

- Encourage project communication between project staff and key stakeholders.
- Act as liaisons to respective agencies and communities.
- Provide input into the various phases of the study.

SAC meetings and associated discussions were held on the following dates:

- **December 19, 2007, 9:00 A.M. at Milwaukee County Research Park**

Major items brought up by SAC members:

- What improvements to the local street system will be done to prepare them for added traffic during construction?
- Media relations for the project should portray local businesses as open during construction to avoid impacts.
- Public outreach should follow the same process as the Marquette Interchange reconstruction.
- Through traffic and Highway 100 issues make this a complex project.
- The results of the West Suburban TIA will be incorporated into community plans in some cases.
- Coordination of the traffic mitigation plan with local community projects will be important.

- **April 23, 2008, 1:30 P.M. at Milwaukee County Research Park**

Major items brought up by SAC members:

- Would completing an environmental assessment (rather than an EIS) limit the scope of the project? For example, could the construction limits be extended to include Burleigh Road under an environmental assessment?
- SAC members can act as a grassroots support group for the project.
- SAC should consider employees and the public that use the corridor to generate support for the project.
- Wisconsin is facing the same budgetary constraints as other states where infrastructure improvements are concerns – WisDOT should move forward with this project.
- There are other sources of funding that some SAC members felt could be explored, such as tolls and congestion pricing.
- When will local road improvement information be available (i.e., West Suburban TIA)?
- What are the Swan Boulevard access alternatives? Was there consideration to connect 92nd Street to Swan Boulevard?

- **October 8, 2008, 10:00 A.M. at Tommy Thompson Youth Center**

Major items brought up by SAC members:

- Discussion of public reception of alternatives and recognition by local groups that redesign is necessary.
- Desire to hold a mini-PIM for GE Healthcare and its staff.
- Discussion of alternatives and requests for copies of alternatives.
- Requests for additional meetings with land use plan committee, committee of the whole, and Regional Medical Center principals.

Technical Advisory Committee

The Technical Advisory Committee (TAC) is made up of public agency staff representing the communities within and surrounding the study area. **Table 5-11** lists TAC participants, including their names, titles, and affiliations.

TABLE 5-11
Technical Advisory Committee

Name	Title	Agency
Sue Black	Parks Director	Milwaukee County
Peter Daniels	Dept. of Public Works/Engineering	City of West Allis
Tom Grisa	Director of Public Works	City of Brookfield
Roberto Gutierrez	SE Freeways Chief	Wisconsin Department of Transportation
Kevin Haley	Planning & Development	Milwaukee County Parks
Robert Harris	City Planner	City of Milwaukee, Dept. of City Development
Greg High	Interim Director/Highway Commissioner	Milwaukee County Department of Transportation and Public Works
Tom Hoffman	Department of Public Works Engineering	Village of Menomonee Falls
Debra Jensen	Planning Services Supervisor	Milwaukee Metropolitan Sewerage District
Dewayne Johnson	Regional Director	SE Region, Wisconsin Department of Transportation
Sherry Kamke	Environmental Scientist	U.S. EPA, Region 5
William Kappel	Director of Public Works	City of Wauwatosa
James Keegan	Chief of Planning, Partnership and Policy	Milwaukee County Parks
Sandy Kellner		Milwaukee County Transit System
Magdalena Kolosovsky		WE Energies
Jeff Mantes	Commissioner of Public Works	City of Milwaukee
Rocky Marcoux	Commissioner of City Development	City of Milwaukee
Reggie Newson	Equal Opportunity Program Director	Wisconsin Department of Transportation
Jeff Polenske	City Engineer	City of Milwaukee Public Works
Dan Sande	Project Manager, Utility Coordination	We Energies
David Scott	Marquette/Southeast Freeway Coordinator	Federal Highway Administration
Dan Scudder	Bureau of Equity and Environmental Services	Wisconsin Department of Transportation

TABLE 5-11
Technical Advisory Committee

Name	Title	Agency
Jim Simmons		Milwaukee Metropolitan Sewerage District
John Stibal	Director	City of West Allis Development
Kim Stratton		American Transmission Company, LLC
Thomas Strock	Structural Engineer	Federal Highway Administration
Larry Sullivan	Harbor Engineer	Port of Milwaukee
Jack Takerian	Interim Director/Highway Commissioner	Milwaukee County Department of Transportation & Public Works
Michael Thompson	Liaison to WisDOT	Wisconsin Department of Natural Resources
John Venice	Manager Special Projects – Industry & Public Projects, Engineering Department	Union Pacific Railroad
Jay Waldschmidt	Air & Noise Engineer	Wisconsin Department of Transportation
Bill Wehrley	City Engineer	City of Wauwatosa
David Windsor		City of Milwaukee DPW
Ken Yunker	Director	Southeastern Wisconsin Regional Planning Commission
Dave Ziarek	Coordinator of Street Supervision	Milwaukee County Transit System

The role of TAC is defined as follows:

- Provide input on alternatives development, refinement, and selection
- Act as liaisons to their respective communities

TAC meetings and associated discussions were held on the following dates:

- **May 6, 2008, 1:00 P.M. at Teamsters Local 200**

Major items discussed:

- The median width does not consider multimodal use.
- A combination of community input and cost will determine the selection of the best alternative.

Major items brought up by TAC members:

- MMSD has a major investment in the Underwood Creek flood control area and would like the project to consider stormwater runoff.

- **June 25, 2008, 2:00 P.M. at Teamsters Local 200**

Major items discussed:

- Project purpose, goals, and objectives of TAC.
- Presented project alternatives and an overview of PIM 1.

Major items brought up by TAC members:

- Access to the research park without relying on the local road system.
- Flood management and increased runoff from impervious materials may require innovative ideas to mitigate impacts.
- Utility coordination is anticipated to increase as part of the design phase.
- Can the interchange design accommodate wide loads that currently have to travel through the City of West Allis?

- **October 14, 2008, 2:00 P.M. at Tommy Thompson Youth Center**

Major items discussed:

- Upcoming PIM 2, reviewed alternatives to be presented.
- Local access and use versus freeway access and use.
- Cost sharing opportunities.
- WisDOT is looking into local infrastructure needs related to the project.
- Summary of ongoing discussions with impacted local property owners, including real estate notification and potential impacts depending on the alternative chosen.

- **November 20, 2008, 10:00 A.M. at Tommy Thompson Youth Center**

Major items brought up by TAC members:

- City of Milwaukee supports Alternative E1 on the east leg.
- City of Wauwatosa Traffic and Safety Committee supports N3 on the north leg.
- City of West Allis supports the sub-alternative ramp from eastbound I-94 to Greenfield Avenue.
- City of West Allis supports Alternative E3 and the optional ramp connection from eastbound I-94 to Greenfield Avenue.
- American Transmission Company noted that moving their overhead electrical transmission lines may require additional residential relocations.

Community Advisory Committee

The Community Advisory Committee (CAC) is made up of homeowners, business owners, business associations, community-based organizations, and school representatives. **Table 5-12** lists participants' names and affiliations.

TABLE 5-12
Community Advisory Committee

Name	Title	Representing
Donald Bernhardt	Facilities Manager – Research Park	GE Healthcare Technologies
Gary & Cheryl Brautigam		Resident
Pam Buckley	Executive Director	Ronald McDonald House Charities of Eastern Wisconsin
Carol Bulgrin		Ronald McDonald House Charities
Tim Casey	Board Member	West Suburban Chamber of Commerce
Margaret Farrow	Director	Waukesha County Action League
Brian Foley		Resident
Jim Goulle	Executive Director	Park People of Milwaukee County
William Hatcher	Executive Director	Milwaukee Regional Medical Center, Inc.
Jeanette Heckert		Resident
Tom Howells	President	Wisconsin Motor Carriers Association
Joseph Jansky		Resident
Phil & Kathy Kirchmeier		Resident
James Kleist	Superintendent	Wisconsin Lutheran High School
Louis Kowieski		Resident
Joe & Laura Kreinus		Resident
Kathryn Kuhn	Vice President of Government Relations	Medical College of Wisconsin
Tim & Pam Losey		Resident
Guy Mascari		Milwaukee County Research Park
John & Sandy Pelkowski		Resident
Diane Perona		Resident
Jim & Fran Proulx		Resident
Ron Rasmussen		Resident
Joseph Schwarz		Resident
Steve & Kris Skattebo		Resident
Michelle Slichter		Resident
Stephen Smith	Agent	Mayfair Mall
Mary Van Derven	NAC President	Neighborhood Association Council (Wauwatosa)
Andrea Williams	Executive Director	1,000 Friends of Wisconsin

The role of CAC is defined as follows:

- Function as a sounding board for stakeholder interests along the corridor.
- Provide feedback on alternatives, issues, and concepts throughout the development of the EIS.
- Advise the project team—the group has no official capacity or voting authority.

Members were selected to participate on this committee based on one of the following criteria:

- Must represent an area of the project or a stakeholder group
- Must be a corridor stakeholder

CAC meetings and associated discussions were held on the following dates:

- **July 1, 2008, 6:00 P.M. at Harwood Place Retirement Center**

The project was introduced with a summary of the purpose, goals, and objectives of the CAC, general project overview, review of alternatives, and project update.

- Participants were led through an exercise to provide answers for the following questions:
 - ✓ What must WisDOT do to ensure that the implementation of the project meets the needs of the community?
 - ✓ Fill in the blank: “As long as WisDOT does something about _____, I will consider this project positive and successful.”
 - ✓ Besides mainstream media, such as newspaper and nightly news, by what other means do you and members of your community collect important public information?

Items brought up by CAC members:

- Can the HAST be used as an express lane for I-94?
- A traffic study should be conducted for Mayfair Mall and holiday traffic.
- The local road system and alternatives to US 45 and STH 100 were discussed. Currently, there are no other alternatives to mitigate congestion.
- What funds are available to local communities that will be affected by construction traffic issues?
- **October 14, 2008, 6:00 P.M. at Tommy Thompson Youth Center**
 - Noise levels and noise wall concerns for local neighborhoods and how these are measured/determined by project staff.
 - Cost estimates for project alternatives.
- **June 16, 2009, 6:00 P.M. at Wauwatosa Public Library**
 - Previewed alternatives to be presented at public hearing.
 - Previewed public hearing process and format.
 - Answered questions regarding project issues including cost/funding, noise barriers, stormwater, transit, and schedule.

Southeast Freeways Milwaukee County Urban DBE Advisory Committee

The Southeast Freeways Milwaukee County Urban DBE Advisory Committee was created to improve coordination, communication, and planning of WisDOT programs and projects within the communities affected. The committee consists of over 60 members representing a wide range of transportation industry businesses, agencies, and government.

The goals of the DBE Advisory Committee are as follows:

- Foster, nurture, and promote effective and community-oriented relationships with businesses.
- Identify appropriate and effective best practices to do business and disseminate to WisDOT's leadership, management team, and staff.
- Provide guidance in the areas of business training, technical assistance, and products to expand capacity and quality of life.
- Provide a mechanism for WisDOT to explain efforts and a community to relay expectations.

As part of its key activities, the DBE Advisory Committee will:

- Exchange and share information.
- Educate the community on WisDOT business opportunities.
- Understand potential barriers or challenges for achieving business participation on this project.
- Recommend training and support resources.
- Work within the timelines and measures to succeed.
- Track the deliverables and compile statistics.

The DBE Advisory Committee addressed DBE goal recommendations on a project-by-project basis, analyzed potential DBE participation, reviewed and analyzed DBE participation for construction work, and used a proven methodology to determine equitable DBE goals.

DBE Advisory Committee meetings and associated discussions were held on the following dates:

- **June 26, 2008, 5:30 P.M. at Tommy Thompson Youth Center**
 - Overview presentation and announcement that an environmental and engineering analysis had begun.
 - Announced that WisDOT was proceeding with the EIS; identified purpose and need elements of the project and initial alternatives.
- **August 21, 2008, 5:30 P.M. at Tommy Thompson Youth Center**
 - After a general overview presentation on the transportation improvement process, participants were divided into five groups to perform an exercise.
 - Participants were asked to identify opportunities for improvement in all stages of the planning, design, and construction process.

- **September 18, 2008, 5:30 P.M. at Tommy Thompson Youth Center**
 - Discussions included public outreach related to the reasons why certain decisions are made for project-related activities.
 - The members were broken into six groups and asked to provide input on the following three questions:
 - ✓ Who are the key stakeholders WisDOT should contact in the community?
 - ✓ Fill in the blank: “As long as WisDOT does something about _____, I will consider this project positive and successful.”
 - ✓ What must WisDOT do to ensure that the implementation of this project meets the needs of the community?
- **October 23, 2008, 4:30 P.M. at Milwaukee County Research Park**
 - Discussions included identifying barriers and challenges that could occur throughout the project and strategies to overcome them.
 - The retention of graduates as part of the TrANS Program was a concern. It was suggested that new students receive training on building relationships with banks and suppliers.
 - Refined Modernization Alternatives will be available at the second round of PIMs.
- **November 20, 2008, 4:30 P.M. at Tommy Thompson Youth Center**
 - Presented PowerPoint regarding the Careers In Motion program for 2008.
 - Presented a review of the public involvement process during mega projects.
 - Reviewed the history of the Zoo Interchange Study from start to present.
 - Announced that a final copy of the EIS should be available by end of 2009. Mitigation routes are anticipated to begin in 2012.
- **January 29, 2009, 4:30 P.M. at Tommy Thompson Youth Center**
 - Zoo Interchange is in a 24-month corridor study phase. The EIS is in progress.
 - The project limits relating to the Zoo Interchange were explained. There have been two public information meetings, and all alternatives have been refined with input obtained from these meetings.
- **February 19, 2009, 4:30 P.M. at Tommy Thompson Youth Center**
 - Conducting environmental and engineering work now through the end of 2009. The study phase includes developing alternatives to improve the corridor, evaluating impacts of those alternatives, preparation of a document that addresses environmental concerns, and selecting a preferred alternative.
 - Explained the project limits that relate to the Zoo Interchange project.

- **March 12, 2009, 4:30 P.M. at Tommy Thompson Youth Center**
 - Presented a general project overview. Noted that there has been a change in the construction start date from 2012 to 2013.
 - Reviewed future activities that will be undertaken by the DBE Advisory Committee.
 - In May, the educational phase of the Committee will be completed, and the Committee would split into two groups: one focusing on business concerns and the other on labor issues.
- **March 26, 2009, 4:30 P.M. at Tommy Thompson Youth Center**
 - An update of the Zoo Interchange project will be provided at the next meeting due to time constraints. The Web site address was referenced for project information.

Milwaukee County DBE Steering Committee

The Milwaukee County DBE Steering Committee was created to discuss labor opportunities for the freeway projects. The 56 invited committee members include management for key stakeholders, as well as a wide range of participants including residents, labor associations, and government agencies.

The goals of the Milwaukee County DBE Steering Committee are as follows:

- Review information on issues affecting equitable workforce participation of women and minorities on the project.
- Suggest key resources that will lead to resolution.
- Review goals and assess progress on attaining goals.
- The Milwaukee County DBE Steering Committee will address concerns and issues about access to jobs, evaluate training criteria and needs, monitor training and outcomes, review resource needs, and network with contractors to reinforce community expectations for hiring and monitoring discretionary goals.

Milwaukee County DBE Steering Committee meetings and associated discussions were held on the following dates:

- **June 4, 2008, 5:30 P.M. at Milwaukee County Research Park**
 - Presented PowerPoint on the Zoo Interchange.
 - Outlined common themes and concerns from the public workshops held in January.
 - Informed the group that a decision had been made to proceed with a full Environmental Impact Statement.
 - An explanation of the initial alternatives was presented.
- **September 10, 2008, 5:30 P.M. at Milwaukee County Research Park**
 - Discussions included an exercise explaining The Transportation Mega Program Process and how it relates to the NEPA process. There are five stages in the chart for reconstructing or building roadways.

- An update on the Zoo Interchange pertaining to the TMPP Chart and public involvement was given to the group.
- DBE and Labor strategies and best practices from the Marquette Interchange project were reviewed. Familiarity and reliability were explained to be key factors considered when hiring DBE's by prime contractors.
- A summary of WisDOT's TrANS Program for the group.
- **February 4, 2009, 4:30 P.M. at Milwaukee County Research Park**
 - Reviewed results from the Public Information Meetings and refined alternatives.
 - Reviewed DBE handouts with the Committee. Michele Carter Rutledge mentioned that WisDOT also worked outside of state offices to accommodate the community. She stated that WisDOT has a high priority on accountability and transparency regarding their strategies in contract unbundling, outreach, and training. WisDOT Deputy Secretary Ruben Anthony, Jr. pointed out a few key strategies on the DBE handouts to review with the Committee. He also stated that WisDOT is working to create additional TrANS classes that start earlier; and that the Driver License Recovery program is very successful in helping people get on the road to access jobs.
 - An exercise to illustrate possible scenarios regarding the WisDOT bidding process and contract rewards. Michele Carter Rutledge stated that WisDOT plans to involve local communities in the bidding process.
 - An exercise to illustrate the labor selection process for construction of Mega Projects.

5.2 Agency Coordination

The Notice of Intent to Prepare an Environmental Assessment appeared in the *Federal Register* on February 21, 2008. After the decision to prepare an EIS for the Zoo Interchange Corridor Study, a Notice of Intent to Prepare a Draft EIS appeared in the *Federal Register* on May 19, 2008.

Coordination with state and federal review agencies and Native American tribes began in January 2008 and continued through development and refinement of alternatives and preparation of the Draft EIS. **Table 5-13** summarizes key agency coordination activities. Appendix D contains all agency correspondence cited in this section.

Congress passed the SAFETEA-LU in August 2005. SAFETEA-LU includes several measures that require early coordination with a broad range of local, state, tribal, and federal agencies. SAFETEA-LU created a new category of agencies to participate in the environmental review process for EISs. Federal and non-federal governmental agencies that may have an interest in the project because of their jurisdictional authority, special expertise, and/or statewide interest are referred to as participating agencies in SAFETEA-LU. Participating agencies are formally invited to participate in the environmental review of a project.

WisDOT and FHWA followed SAFETEA-LU 6002 agency coordination requirements:

- WisDOT sent an Environmental Review Project Initiation letter to FHWA on June 11, 2007.
- WisDOT and FHWA sent an Agency Scoping Meeting invitation on January 24, 2008, inviting federal, tribal, state, and local agencies to participate. Federal agencies must decline

in writing to FHWA. The National Park Service and the U.S. Fish and Wildlife Service declined to be participating agencies (Appendix D, pages D-1 and D-13). State, tribal, and local agencies are required to accept in writing. The Natural Resource Conservation Service did not decline its invitation to be a participating agency but has not participated in the study. No tribal agencies accepted the invitation to be a participating agency.

- The following local, state, and federal agencies attended the February 2008 agency scoping meeting and accepted WisDOT and FHWA's invitation to be participating agencies:
 - Wisconsin DNR (DNR and WisDOT also have an existing cooperative agreement to coordinate on highway projects)
 - Corps of Engineers
 - U.S. EPA
 - City of Milwaukee
 - City of Wauwatosa
 - City of West Allis
- The Corps accepted FHWA's invitation to be a Cooperating Agency on May 19, 2008 (Appendix D, pages D-2 through D-3).
- WisDOT and FHWA developed Impact Assessment Methodologies for each of the impact categories. The impact categories are Socioeconomic, Commercial and Residential, Environmental Justice, Indirect and Cumulative Effects, Agricultural, Air Quality, Noise, Wetlands, Water Resource and Floodplain, Upland Habitat/Wildlife, Threatened and Endangered Species, Public Use Lands, Cultural Resource, Hazardous Materials, Aesthetic, and Construction. These were shared with the public at the May 2008 public information meetings and were mailed to agencies for comment in May 2008.
- A coordination plan was developed and shared with the coordinating and participating agencies in May 2008 and redistributed with revisions in August 2008. The Agency Coordination Plan and the Impact Analysis Methodologies documents were shown at the May 2008 public information meetings.
- Agency review of the project's purpose and need statement took place in summer 2008. WisDOT and FHWA provided the project's purpose and need statement (Section 1) to the participating agencies and the Corps. All agencies either concurred with the purpose and need for the project or deemed it "sufficient for subsequent development of the EIS". Based on the feedback from the agencies, WisDOT and FHWA did not convene a meeting to discuss the purpose and need statement (Appendix D, pages D-2 through D-3, D-9 through D-10, D-27 through D-28, D-44 through D-45, and D-49 through D-50).
- Agency review and comment on the range of alternatives considered took place in fall 2008 (Appendix D, pages D-4 through D-5, D-11 through D-12, D-29, and D-51 through D-54). WisDOT and FHWA provided the Alternatives Considered (Section 2) to the participating agencies and the Corps in September 2008. At the October and November TAC meetings, the attendees provided input on the range of alternatives considered; discussed the alternatives dropped from consideration; and discussed the merits of the remaining alternatives. All participating agencies, except the Corps and U.S. EPA, attended these meetings.

In addition to SAFETEA-LU agency coordination activities, WisDOT and FHWA engaged a wide range of local, state, and federal agencies in this study, which are discussed in detail in the following sections:

- Federal agency and tribal coordination
- State agency coordination
- Local government coordination

5.2.1 Federal Agency and Tribal Coordination

U.S. EPA and the Corps commented on the agency coordination plan, impact analysis methodology document, purpose and need, and alternatives considered. U.S. EPA had no comments on the agency coordination plan and the purpose and need. They commented on the impact assessment methodology document for wetland resources, specifically Advanced Identification (ADID) wetlands. No ADID wetlands would be affected in the Zoo Interchange project area. U.S. EPA's October 2008 (Appendix D, pages D-11 through D-12) letter noted that the range of alternatives considered is appropriate and requested impact summary information for the alternatives, which was provided to them at the November 2008 FHWA interagency meeting.

The Corps comments included the following:

- Asked that special attention be given to the ADID wetlands in the project area.
- Requested formal status as a Cooperating Agency.
- Asked whether merged NEPA/Section 404 coordination would be used.
- Asked to have the Corps' contact information updated.
- Asked whether the US 41/45 interstate conversion study should be incorporated into the purpose and need for the project.
- Commented that the purpose and need for the Zoo Interchange is sufficient.

No ADID wetlands would be affected in the Zoo Interchange project area; therefore, the Corps no longer felt the merged NEPA/Section 404 process was necessary. The Corps' contact information has been updated, and WisDOT responded to the Corps that the US 41/45 interstate conversion study is not part of the Zoo Interchange's purpose and need and therefore will not be included in this study.

The Corps' October 27, 2008, letter (see Appendix D, pages D-4 through D-5) raised several issues regarding the range of alternatives considered and the purpose and need statement. They had believed the alternatives were pre-determined, but later in a November 25, 2008, e-mail (see Appendix D, page D-8) to WisDOT stated that their concerns were adequately addressed.

In fall 2008, U.S. EPA and the Corps attended an FHWA-sponsored interagency meeting where the Zoo Interchange Corridor Study modernization alternatives were presented, as well as preliminary information on the impacts of the alternatives.

WisDOT and FHWA sent a project update to U.S. EPA and the Corps in May 2009, including an updated schedule.

WisDOT sent letters describing the Zoo Interchange Corridor Study to nine tribes that have requested notification about WisDOT projects in southeast Wisconsin. No tribal agencies accepted the invitation to be participating agencies. WisDOT also notified the Great Lakes Intertribal Council and the Bureau of Indian Affairs Midwest Regional Office.

One tribe responded, stating they are unaware of any historical cultural resources in the area, and requested to be notified if any cultural resources are discovered (see Appendix D, page D-17).

5.2.2 State Agency Coordination

Wisconsin Department of Natural Resources

WisDOT and DNR use the November 2002 Cooperative Agreement for agency coordination. In March 2007, DNR provided initial project scoping comments for the Zoo Interchange data collection study (see Appendix D, pages D-18 through D-20). DNR provided data on threatened and endangered species in the study area in May 2007 with revisions in August 2007 (see Appendix D, pages D-21 through D-25). DNR attended the agency scoping meeting in February 2008. As part of SAFETEA-LU, DNR accepted the invitation to be a participating agency in April 2008 (see Appendix D, page D-26). WisDOT met with DNR every 2 weeks over the first 18 months of the project to discuss the Zoo Interchange Corridor Study. WisDOT met with DNR staff to discuss the presence of, and potential impacts to, threatened and endangered species in January 2009. At the meeting it was agreed that mitigation, in the form of fencing around construction areas, will be needed at one location to protect the Butlers garter snake. Fencing to protect the Blanding's turtle may be required at one or more locations.

DNR concurred with the purpose of and need for the project in August 2008 (see Appendix D, pages D-27 through D-28). DNR commented on the range of alternatives considered in November 2008 and requested a description of the improved traffic operations for the 6-lane modernization alternative (see Section 2.2.4) and whether HOV/HOT lanes could be included in the study area (see Section 2.3.2 and Appendix D, page D-29).

WisDOT and FHWA sent a project update to DNR in May 2009, including an updated schedule.

Wisconsin State Historic Preservation Office (SHPO)

WisDOT informed SHPO of the Zoo Interchange Corridor Study in January 2008. SHPO did not respond to the invitation to be a participating agency. In April 2008, WisDOT submitted the Architecture/History survey report to SHPO, including four Determinations of Eligibility. In August 2008, WisDOT submitted an addendum to the Architecture/History survey report to notify SHPO of changes to the project limits. In August 2008, SHPO concurred with the recommendations in the Determinations of Eligibility, and the assessment that the extended project limits do not affect any properties eligible for the NRHP (see Appendix D, page D-32).

The potential adverse effect to the Union Pacific truss bridge on the west leg prompted WisDOT and FHWA to prepare Documentation for Consultation and a draft Memorandum of Agreement that contains several stipulations that WisDOT and FHWA would implement

if the truss bridge were removed or permanently taken out of service. The Memorandum of Agreement will be signed before the final environmental document is approved.

5.2.3 Local Government Coordination

WisDOT has met with local governments in the study area several times during the study. A key venue for local government coordination is the Technical Advisory Committee (TAC), which consists of planning and engineering staff. WisDOT invited local governments in the corridor to attend TAC meetings to receive updates on study progress and the alternatives under consideration. WisDOT also solicited input from local officials at these meetings. Six TAC meetings were held during the study:

- **May 2008.** WisDOT described the role of the committee, SAFETEA-LU elements, the project schedule, key project elements, and the range of alternatives considered.
- **June 2008.** WisDOT described the role of the committee, an overview of the PIMs, additional public outreach efforts, the project schedule, alternatives considered, and status and schedule of the EIS.
- **October 2008.** WisDOT described the alternatives in detail and showed the exhibits that would be presented at the October 2008 PIM the following week.
- **November 2008.** WisDOT described the public input received from the October 2008 PIM. WisDOT solicited input from TAC members regarding which alternatives were preferred, and presented the remaining study, design, and construction schedule.
- **May 2009.** WisDOT updated TAC members on the Draft EIS, and discussed the June public hearing (format, content, and process) and steps that would follow the public hearing. Questions and discussion on stormwater management, traffic impacts to 76th Street and Greenfield Avenue, relocations, transit, utility facilities, park-and-ride lots, noise walls, and overall project schedule were held.
- **July 2009.** WisDOT summarized input received at the June public hearings. TAC representatives provided their perspectives on various alternatives and their impacts, including indications of their preferred alternatives, segment-by-segment. There was also additional discussion about utility impacts, 76th Street traffic issues, and the Final EIS and Record of Decision process.

In addition to TAC, WisDOT met with elected officials and staff from each county, municipality, and town in the study area on several occasions. Key issues raised by local governments are discussed in the following sections (see **Table 5-9**).

City of Milwaukee

The City of Milwaukee had concerns over residential relocations and the effects on the tax base in the City of Milwaukee on the east leg of the study area, and impacts to the HAST and providing alternative routes to the trail during construction. WisDOT compared impacts of the 6-lane and 8-lane alternatives to show the impacts directly related to highway capacity expansion. The City of Milwaukee requested that the need for capacity expansion be verified, assuming the transit recommendations in the Regional Transportation Plan are implemented and with variable gasoline prices (Appendix D, pages D-44 through D-45).

Milwaukee County

Milwaukee County has several properties in the Zoo Interchange study area. WisDOT and Milwaukee County have discussed the impacts to the following properties: Milwaukee County Grounds, Department of Public Works service buildings and greenhouses, Behavioral Health Complex, Milwaukee County Zoo, Wil-O-Way Special Education Center, Underwood Creek Parkway, and Honey Creek Parkway. WisDOT and Milwaukee County will continue to coordinate and will work out mitigation for impacts to Milwaukee County properties.

WisDOT met individually with county agencies that have jurisdiction over county facilities potentially affected by the proposed action. On November 20, 2008, WisDOT met with all potentially affected county agencies and the County Executive's chief of staff. Each county agency summarized the potential impact to their facilities. The consensus at the meeting was that while several county facilities may be affected, there are potential mitigation measures and none of the county agency representatives indicated opposition to the project (see Sections 3.8, 3.25, and 3.26).

On March 11, 2009, WisDOT received a letter from the Milwaukee County Office for Persons with Disabilities regarding the Wil-O-Way Special Education Center expressing concern about US 45 moving closer to Wil-O-Way and the potential for an increased noise level at the site (Appendix D, pages D-36 through D-37). On May 7, 2009, WisDOT received a letter from Milwaukee County Department of Parks, Recreation, and Culture (dated April 9, 2009) stating that with appropriate compensation for the acquired real estate, site restoration, and replacement of vegetative screening at Chippewa Park and Underwood Creek Parkway, the Zoo Interchange reconstruction would not have an adverse effect on these parks. The Parks Department concurs with the concept of placing the stormwater retention/detention ponds in Honey Creek Parkway and Underwood Creek Parkway, providing that WisDOT complies with the list of conditions as mentioned in the letter (see Appendix D, pages D-69 through D-70). This concurrence on parks impacts and potential stormwater ponds is pending future County Board input and any pending design-related issues that may be identified in the project's design phase. On April 16, 2009, the Milwaukee County Department of Transportation and Public Works sent a letter to WisDOT in regards to potential impacts to the Eschweiler Buildings and the Milwaukee County Parks Administration Building. The letter noted that with "equitable compensation paid for the ROW acquisitions", Milwaukee County did not think there was an adverse effect on the Eschweiler Buildings and Parks Administration Building. The county did note that the reduction of open space in front of the Parks Administration Building could impact the aesthetic nature of the building (Appendix D, pages D-38 through D-39).

City of Wauwatosa

The City of Wauwatosa's May 30, 2008, letter (see Appendix D, page D-55) noted concerns over stormwater impacts (see Section 3.11), the floodplain for the Underwood Creek (see Section 3.13), and addressing alternate modes of transportation (see Section 2.1) in the Zoo Interchange study.

City of West Allis

The City of West Allis' November 20, 2008, letter (see Appendix D, pages D-51 through D-54) noted concerns over stormwater impacts (see Section 3.11) from the Zoo Interchange

reconstruction, traffic on 84th and 76th Streets during the Wisconsin State Fair, and added traffic on 76th Street under Modernization Alternative E1 (see Section 3.3), the West Allis bike trail (see Section 3.26), noise issues (see Section 3.19) and that they would like to have freeway access to Greenfield Avenue from all directions (see Section 2.2.4).

5.2.4 Utility and Railroad Coordination

Milwaukee Metropolitan Sewerage District

MMSD is responsible for flood control in its service area, which includes the entire study area. MMSD expressed concern that increased runoff from the study-area freeway system would increase the risk of downstream flooding (Appendix D, pages D-61 through D-64). MMSD asserts that WisDOT is subject to its Chapter 13 stormwater regulations that limit the amount of peak flow runoff from a property. WisDOT maintains that, as a state agency, it is not subject to local regulations. Nonetheless, WisDOT is committed to addressing the basis of MMSD's concerns (Appendix D, page D-65). WisDOT and MMSD have met on several occasions to discuss the issue—both agencies have explained the regulatory framework under which they operate and how each agency addresses stormwater quantity and quality. MMSD regularly participates in the TAC. Both agencies are working together to address stormwater runoff from the Zoo Interchange study area (see Section 3.11).

American Transmission Company and We Energies

The study team met with American Transmission Company and We Energies on several occasions. American Transmission Company, and part-owner We Energies, own the electrical power distribution and transmission lines in the study area. As noted in Section 3.4, Utilities, several electrical transmission and distribution lines will need to be moved to accommodate the modernization alternatives.

Union Pacific Railroad and Canadian Pacific Railway

The study team met with Union Pacific Railroad on several occasions to discuss potential impacts to railroad property. Union Pacific Railroad bridges over I-94, US 45 and possibly North Avenue would have to be reconstructed to accommodate the modernization alternatives (see Section 3.3).

On March 26, 2009, WisDOT sent a letter to the Union Pacific Railroad asking if it had any objections, for historic reasons, to the potential removal of the triple intersection Warren through truss bridge located south of I-94 (Appendix D, pages D-66 through D-67). The Union Pacific Railroad responded that it had no objection to the removal of the bridge (Appendix D, page D-68).

5.2.5 Summary of Key Agency Coordination Activities

SAFETEA-LU includes several measures that require early coordination with a broad range of local, state, tribal, and federal agencies. Coordination with these review agencies and Native American tribes began in January 2008 and continued through development and refinement of alternatives and preparation of the Draft EIS. **Table 5-13** summarizes key agency coordination activities.

TABLE 5-13
Agency Coordination Summary

Agency	Coordination Activities and Letters Received
Federal Agencies	
United States Army Corps of Engineers (Corps)	January 2008—WisDOT letter to the Corps informing them of the study and the agency scoping meeting
	February 2008—Participated in agency scoping meeting
	May 2008— Letter from the Corps with comments on project purpose and need, the agency coordination plan and the impact analysis methodology. The Corps also requested to be a cooperating agency in the letter. (Appendix D, pages D-2 through D-3)
	October 2008—Invite from WisDOT to the Technical Advisory Committee Meeting #3
	October 2008—Letter from Corps with comments on the range of alternatives considered (Appendix D, pages D-4 through D-5)
	November 2008—Letter from WisDOT to the Corps responding to comments on the range of alternatives (Appendix D, pages D-6 through D-7)
	November 2008 – E-mail from Corps to WisDOT clarifying point 5 of the WisDOT letter (Appendix D, page D-8)
United States Environmental Protection Agency (U.S. EPA)	April 2009—Update provided via e-mail by WisDOT and FHWA
	January 2008—WisDOT letter to U.S. EPA informing them of the study and the agency scoping meeting
	February 2008—Participated in agency scoping meeting
	June 2008—Letter from U.S. EPA concurring with project's purpose and need, the coordination plan, and the impact analysis methodology with comments on the Impact Analysis Methodology (Appendix D, pages D-9 through D-10)
	October 2008—Invite from WisDOT to the Technical Advisory Committee Meeting #3
United States Fish and Wildlife Service (FWS)	October 2008—Letter from U.S. EPA with concurrence the range of alternatives considered (Appendix D, pages D-11 through D-12)
	April 2009—Update provided via e-mail by WisDOT and FHWA
	January 2008—WisDOT letter to the FWS informing them of the study and the agency scoping meeting
	February 2008— Letter from FWS declining to be a participating agency (Appendix D, page D-13)
	March 2008—E-mail from WisDOT requesting information on federally listed threatened and endangered resources in the project area
U.S. Department of the Interior—National Park Service	March 2008—Letter from FWS stating that there are no federally listed threatened and endangered species data within the study limits (Appendix D, pages D-14 through D-15)
	January 2008—WisDOT letter to the National Park Service informing them of the study and the agency scoping meeting
U.S. Department of Agriculture—Natural Resource Conservation Service (NRCS)	April 2008—Postcard from National Park Service declining to be a participating agency (Appendix D, page D-1)
	January 2008—WisDOT letter to the NRCS informing them of the study and the agency scoping meeting

TABLE 5-13
Agency Coordination Summary

Agency	Coordination Activities and Letters Received
Advisory Council on Historic Preservation	<p>January 2009 – FHWA sent Documentation for Consultation to Advisory Council on Historic Preservation.</p> <p>March 2009 – Advisory Council on Historic Preservation sent letter to FHWA stating they do not need to be involved in Section 106 process (Appendix D, page D-16)</p>
Native American Tribes	
<p>Bad River Band of Lake Superior Chippewa Indians of Wisconsin, Forest County Potawatomi Community of Wisconsin, Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin, Sokaogon Chippewa Community Mole Lake Band, Prairie Band Potawatomi Nation, Menominee Indian Tribe of Wisconsin, Sac and Fox Nation of Missouri, Sac and Fox Nation of Oklahoma, Sac and Fox of the Mississippi in Iowa, Great Lakes Intertribal Council</p>	<p>February 2008—Letter from WisDOT to tribes informing them of the study and asking for comments on the study or information on cultural resources in the Zoo Interchange study area</p> <p>April 2008—E-mail from Prairie Band Potawatomi Nation stating they are unaware of any historical cultural resources in the area and requesting to be notified if any cultural resources are discovered (Appendix D, page D-17)</p>
State Agencies	
Wisconsin Department of Natural Resources (DNR)	<p>March 7, 2007—Letter from DNR with preliminary scoping comments and recommendations (Appendix D, pages D-18 through D-20)</p> <p>May 18, 2007 (revised August 8, 2007)—Letter from DNR with data on records of threatened and endangered species in the corridor (Appendix D, pages D-21 through D-25)</p> <p>January 2008—WisDOT letter to DNR informing them of the study and the agency scoping meeting</p> <p>February 4, 2008—Participated in agency scoping meeting</p> <p>February 27, 2008—WisDOT meeting to review project information and discuss HAST</p> <p>April 3, 2008—E-mail from DNR accepting the invitation to be a participating agency. (Appendix D, page D-26)</p> <p>May 5, 2008—WisDOT meeting to discuss the planned Forestry Education Center</p> <p>May 6, 2008—Participated in the Technical Advisory Committee #1</p> <p>June 25, 2008—Participated in the Technical Advisory Committee #2</p> <p>August 6, 2008—Letter from DNR with concurrence on project purpose and need, and comments on the agency coordination plan (Appendix D, pages D-27 through D-28)</p> <p>August 27, 2008—WisDOT meeting to discuss HAST</p> <p>October 14, 2008—Participated in the Technical Advisory Committee #3</p> <p>November 19, 2008—DNR comments on the range of alternatives considered (Appendix D, page D-29)</p> <p>November 20, 2008—Participated in the Technical Advisory Committee #4</p> <p>Beginning in January 2008, WisDOT and WDNR staff meet bi-weekly to discuss the Zoo Interchange Corridor Study</p>

TABLE 5-13
Agency Coordination Summary

Agency	Coordination Activities and Letters Received
Wisconsin State Historical Preservation Office (SHPO)	<p>January 2008—WisDOT letter to SHPO informing them of the study and the agency scoping meeting</p> <p>April 2008—WisDOT submitted Architecture/History survey report to SHPO (Appendix D, pages D-30 through D-31)</p> <p>April 2008—WisDOT submitted documentation to SHPO to document compliance with Section 106</p> <p>August 2008—Addendum to Architecture/History survey report sent to SHPO to notify them of the project limit change (Appendix D, page D-32)</p>
Local Agencies	Also see Tables 5-9, 5-10, and 5-11
Milwaukee County Historical Society, Wauwatosa Historical Society, West Allis Historical Society, City of Milwaukee Historic Preservation Commission	<p>September 2008—Calls made to the following historical societies: Milwaukee County Historical Society, City of Milwaukee Historic Preservation Commission, Wauwatosa Historical Society and West Allis Historical Society asking for membership addresses to mail Zoo Interchange information</p> <p>September 2008—Cultural Resources Update Letter mailed to the Milwaukee County Historical Society's membership informing them of the study and asking for input</p> <p>October 2008—Copies of the Cultural Resources Update Letter and History of Highways brochures mailed to the Wauwatosa Historical Society for dissemination to their membership at their meeting on November 11, 2008</p>
City of Milwaukee	<p>January 2008—WisDOT letter to the City of Milwaukee informing them of the study and the agency scoping meeting</p> <p>February 2008—Participated in agency scoping meeting</p> <p>March 2008—E-mail from the City of Milwaukee accepting the invitation to be a participating agency (Appendix D, page D-40)</p> <p>March 2008—WisDOT meeting with City Developers regarding the Indirect & Cumulative Effects Analysis</p> <p>April 2008 – Letter from City of Milwaukee advocating the need to study a rapid transit alternative (Appendix D, pages D-41 through D-43)</p> <p>May 2008—Participated in the Technical Advisory Committee #1</p> <p>June 2008—Participated in the Technical Advisory Committee #2</p> <p>June 2008—WisDOT meeting with Port to review project information</p> <p>July 2008—Letter from the City of Milwaukee with comments on the project's purpose and need and the impact analysis methodology, and no comments on the agency coordination plan (Appendix D, pages D-44 through D-45)</p> <p>July 2008—WisDOT meeting with Department of Public Works to discuss study alternatives</p> <p>August 2008—WisDOT met with the City of Milwaukee to discuss alternatives analysis</p> <p>October 2008—Participated in the Technical Advisory Committee #3</p> <p>November 2008—Participated in the Technical Advisory Committee #4</p>
City of Wauwatosa	<p>January 2008—WisDOT letter to the city of Wauwatosa informing them of the study and the agency scoping meeting</p> <p>March 2008—WisDOT met with the City of Wauwatosa to discuss participating agency status and the city agreed to be a participating agency</p> <p>April 2008—WisDOT meeting with the Community Development group regarding the Indirect & Cumulative Effects Analysis</p>

TABLE 5-13
Agency Coordination Summary

Agency	Coordination Activities and Letters Received
City of Brookfield	<p>May 2008—Participated in the Technical Advisory Committee #1</p> <p>May 2008—Letter from the City of Wauwatosa on the impact analysis methodology, with no comments on the agency coordination plan and no comments on the purpose and need (Appendix D, pages D-55 through D-58)</p> <p>June 2008—Participated in the Technical Advisory Committee #2</p> <p>July 2008—WisDOT meeting with the Community Development group to discuss alternatives</p> <p>October 2008—Participated in the Technical Advisory Committee #3</p> <p>November 2008—Participated in the Technical Advisory Committee #4</p>
	<p>March 2008—WisDOT meeting with the City Development group regarding the Indirect & Cumulative Effects Analysis</p>
	<p>May 2008—Participated in the Technical Advisory Committee #1</p>
	<p>June 2008—Participated in the Technical Advisory Committee #2</p>
	<p>October 2008—Participated in the Technical Advisory Committee #3</p>
	<p>November 2008—Participated in the Technical Advisory Committee #4</p>
City of Menomonee Falls	<p>May 2008—Participated in the Technical Advisory Committee #1</p>
	<p>June 2008—Participated in the Technical Advisory Committee #2</p>
	<p>October 2008—Participated in the Technical Advisory Committee #3</p>
City of West Allis	<p>January 2008—WisDOT letter to the City of West Allis informing them of the study and the agency scoping meeting</p>
	<p>February 2008—Participated in agency scoping meeting</p>
	<p>February 2008—E-mail from the City of West Allis accepting the invitation to be a participating agency (Appendix D, pages D-46 through D-47)</p>
	<p>March 2008—WisDOT meeting with the City Planning Department relating to the Indirect & Cumulative Effects Analysis</p>
	<p>May 2008—E-mail from the City of West Allis with comments the Impact analysis methodology and on the agency coordination plan, and no comments on the project's purpose and need (Appendix D, page D-48)</p>
	<p>May 2008—Participated in the Technical Advisory Committee #1</p>
	<p>June 2008—WisDOT responded to the City of West Allis' e-mail regarding the impact analysis methodology and on the agency coordination plan (Appendix D, pages D-49 through D-50)</p>
	<p>June 2008—Participated in the Technical Advisory Committee #2</p>
	<p>October 2008—Participated in the Technical Advisory Committee #3</p>
	<p>November 2008—Participated in the Technical Advisory Committee #4</p>
	<p>November 2008 – Letter from City of West Allis providing comments on the draft alternatives section of the Draft EIS focusing on 76th Street, S. 84th Street, west Greenfield Avenue off-ramp, storm water quality, Cross Town Connector, noise analysis and local traffic impact (Appendix D, pages D-51 through D-54).</p>
	<p>December 2008—WisDOT meeting with the Planning Commission to discuss the project and review alternatives</p>
Milwaukee County	<p>January 2008—WisDOT letter to Milwaukee County informing them of the study and the agency scoping meeting</p>

TABLE 5-13
Agency Coordination Summary

Agency	Coordination Activities and Letters Received
	January 2008—WisDOT meeting regarding impacts to the Zoofari Conference Center and maintenance facilities, access issues
	February 2008—WisDOT meeting with Public Works regarding Watertown Plank Road, local roads, capacity expansion, County facilities and local development plans
	March 2008—WisDOT meeting with the Economic Development Department regarding Indirect and Cumulative Effects Analysis April 2008—Invitation to the Technical Advisory Committee meeting #1
	May 2008—WisDOT meeting with the County Zoo to discuss potential impacts to parking, conference and maintenance facilities
	June 2008—County Parks staff attended the Technical Advisory Committee meeting #2
	June 2008—WisDOT meeting with the Transit System to introduce study and alternatives
	July 2008—WisDOT meeting with the County Zoo to follow-up on impact mitigation options
	October 2008—County Parks staff attended the Technical Advisory Committee meeting #3
	October 2008—WisDOT meeting with the County Zoo to review project information
	October 2008—WisDOT meeting with the Department of Public Works to review study alternatives
	October 2008—WisDOT meeting with the Transit System to review study information
	November 2008—WisDOT meeting with the Transit System to review study information
	November 2008—Invitation to the Technical Advisory Committee meeting #4
	November 2008—WisDOT met with county parks department to discuss Zoo Interchange alternatives
	November 2008—WisDOT meeting with several county departments regarding Zoo Interchange alternatives
	December 2008—WisDOT meeting with the County Board regarding potential impacts on county-owned facilities
	January 2009—WisDOT meeting with County Parks to discuss impacts to historical properties and parkways
	January 2009—WisDOT meeting with County Economic Development regarding Eschweiler and County Parks buildings
	February 2009—WisDOT meeting with Public Works and Transportation regarding Watertown Plank Road and utility relocation
	February 2009—WisDOT meeting with County Zoo regarding American Transmission Company's tower relocation options
	March 2009—WisDOT meeting with Public Works and Transportation regarding north leg alternatives and impacts to County facilities
	March 2009—WisDOT meeting with Economic & Community Development Committee regarding north leg alternatives and impacts to County facilities
	March 2009—WisDOT meeting with County Parks and Energy & Environment Committee regarding impacts to County Parks and County Zoo

TABLE 5-13
Agency Coordination Summary

Agency	Coordination Activities and Letters Received
Milwaukee Metropolitan Sewerage District (MMSD)	March 2009—WisDOT meeting with Department of Delinquency & Court Services regarding impacts to the Child and Adolescent Treatment Center buildings
	March 2009—Field review of County Zoo facilities
	March 2009—Letter from Office for Persons with Disabilities to WisDOT discussing Wil-O-Way potential impacts (Appendix D, pages D-36 through D-37)
	April 2009—Letter from Milwaukee County Department of Parks, Recreation, and Culture regarding impact to Chippewa Park, Underwood Parkway, and stormwater retention/detention pond issues (Appendix D, pages D-69 through D-70)
	April 2009—Letter from Transportation and Public Works to WisDOT discussing Eschweiler Buildings and Parks Administration Building potential impacts (Appendix D, pages D-38 through D-39)
	December 2007—MMSD letter to WisDOT outlining concerns over increased stormwater runoff from the study-area freeway system
	March 2008 —WisDOT-MMSD meeting to discuss stormwater quality issues
	April 2008—Letter from MMSD regarding Chapter 13 expressing concern that increased runoff from the study-area freeway system would increase the risk of downstream flooding (Appendix D, pages D-61 through D-64)
	May 2008—Letter from WisDOT to MMSD maintaining that, as a state agency, it is not subject to local regulations. Nonetheless, WisDOT is committed to addressing the basis of MMSD's concerns (Appendix D, D-65)
	May 2008—Participated in the Technical Advisory Committee #1
	June 2008—Participated in the Technical Advisory Committee #2
	August 2008—WisDOT-MMSD meeting to discuss potential impacts and utility upgrades
	August 2008—WisDOT-MMSD meeting to discuss storm water management
	September 2008—WisDOT-MMSD meeting to present each agencies regulatory framework regarding stormwater management
	October 2008—Participated in the Technical Advisory Committee #3
American Transmission Company	October 2008—WisDOT-MMSD meeting to begin discussing potential stormwater mitigation options
	November 2008—Participated in the Technical Advisory Committee #4
	December 2008—WisDOT-MMSD meeting to discuss stormwater management options
	February 2009—WisDOT meeting to discuss Swan Boulevard and bridge carrying Bluemound Road over Underwood Creek
We Energies	March 2008—General project update meeting
	May 2008—Joint meeting with We Energies
	September 2008—General project update meeting
	January 2009—Weekly joint meetings
	February 2009—Weekly joint meetings
	March 2008—General project update meeting
	May 2008—Joint meeting
	January 2009—Weekly joint meetings

TABLE 5-13
Agency Coordination Summary

Agency	Coordination Activities and Letters Received
Union Pacific Railroad	February 2009—Weekly joint meetings
	September 2007—Zoo Interchange kickoff meeting between WisDOT and Union Pacific
	January 2008—Operations Meeting
	August 2008—Conceptual Plan/Review Discussion (conference call)
	September 2008—Operations meeting October 2008—WisDOT submitted conceptual track re-alignment plans to Union Pacific
	November 2008—meeting with Union Pacific to discuss conceptual track re-alignment plans
	December 2008—Union Pacific concurs with conceptual track re-location plans
	March 2009—WisDOT letter to Union Pacific responds to questions on conceptual track re-alignment
	March 2009—WisDOT letter, including copy of Determination of Eligibility, requesting Union Pacific input on elements of the bridge that make it historic (Appendix D, pages D-66 through D-67)
April 2009—E-mail from Union Pacific indicating no concerns about the potential removal of the bridge, and no concerns about WisDOT's proposed handling of the bridge's historic preservation (Appendix D, page D-68)	

5.3 Comments and Coordination Following Draft EIS Availability and Public Hearing

5.3.1 Public Hearing

The public hearings were held on June 23 and 24, 2009, at the Tommy Thompson Youth Center, 640 S. 84th Street, West Allis. The first hearing was held from 2 P.M. to 7 P.M., and the second hearing was held from 4 P.M. to 8 P.M. A total of 245 people attended the hearings: 142 at the first hearing and 103 at the second.

The public hearing was an open house format, and representatives from WisDOT and the consultant team were available to review project alternatives, listen to comments, answer questions, and explain procedures for providing testimony. WisDOT real estate personnel and disadvantaged business enterprise support staff were also present to answer questions.

Both written testimony and oral presentations to a court reporter were received at the hearing. The comment forms could also be mailed or faxed in after the public hearing, or comments could be emailed to the project e-mail address (dotdtsdsezoo@dot.wi.gov), which was provided on the public hearing handout and on the project Web site. All forms of testimony were given equal consideration. The Draft EIS comment period was from May 29 to August 10, 2009.

The notice announcing the public hearing, comment period, and release of the Draft EIS was published in the Federal Register on May 29, 2009, and local newspapers of record. A display advertisement announcing the hearing dates and comment period also appeared in the *Milwaukee Community Journal*, *Milwaukee Courier*, *Milwaukee Times*, *Spanish Journal*,

Spanish El Conquistador, Waukesha Freeman, Milwaukee Journal Sentinel, and all *Community NOW* publications. In addition, a newsletter announcing the hearing dates, comment period, and what to expect at the public hearing was mailed to the project's mailing list, which includes approximately 1,300 individuals.

Exhibits at the public hearing included:

- Pavement Age
- Crash Rates
- Zoo Interchange Deficiencies
- Zoo Corridor Deficiencies
- Utilities and Railroads
- Existing AM Peak Hour Level of Service
- Existing PM Peak Hour Level of Service
- Future (2035) AM Peak Hour Level of Service
- Future (2035) PM Peak Hour Level of Service
- LOS Example Photos
- Purpose and Need
- Environmental Process
- Public Comments from October PIMs
- Public Comments from May PIMs
- HAST Extension Careers in Motion board
- Environmental Justice Boards, discussing guidelines and analysis factors
- Regional Trans Plan – Streets and Highways
- Regional Trans Plan – Transit
- 6-Lane Alternative – North Leg, South Half - M1
- 6-Lane Alternative – North Leg, North Half - M1/M3
- 6-Lane Alternative – North Leg, South Half – M3
- 6-Lane Alternative – West Leg – M3 with GF access
- 6-Lane Alternative – West Leg – M3 without GF access
- 6-Lane Alternative – East Leg – M1
- 6-Lane Alternative – East Leg – M1/M3 Hybrid
- 6-Lane Alternative – South Leg – M2
- 8-Lane Alternative – North Leg, South Half – M1
- 8-Lane Alternative – North Leg, North Half – M1/M3
- 8-Lane Alternative – North Leg, South Half – M3
- 8-Lane Alternative – West Leg – M3 with GF access
- 8-Lane Alternative – West Leg – M3 without GF access
- 8-Lane Alternative – East Leg – M1
- 8-Lane Alternative – East Leg – M1/ M3 Hybrid
- 8-Lane Alternative – South Leg - M2
- TIA Development Areas
- TIA Yr 2035 Improvement Plan
- TIA Intersection Improvements – M1
- TIA Intersection Improvements – M3
- TIA Intersection Improvements – RIK
- TIA – AAWDT
- ATC Relocation Alternatives
- Impact Comparison Tables
- Study Schedule
- Google Earth Sketch-up 3D vistas

A presentation detailing the project scope, alternatives, schedule, budget, contacts, environmental impacts, public involvement, the Draft EIS to Final EIS process, timeline, and procedures for providing oral and written testimony was given every hour. Comment forms were available at the public hearing.

5.3.2 Summary of Oral and Written Comments

During the public hearing and public comment period, over 400 written and oral comments were received. The hearing transcript is available from WisDOT by contacting the project manager identified on the cover of this Supplemental Draft EIS. **Table 5-14** summarizes the comments into categories. Comments that included more than one issue were noted in multiple categories.

TABLE 5-14
Public Comment Summary

Comment Category	Total
ALTERNATIVES	
Preferred Modernization Alternatives (8 Lanes – 48; 6 Lanes – 38)	86
Preferred No-Build Alternative	93
TRANSPORTATION CONCERNS	
Inclusion of Transit/Public Transportation	94
Concerned about Loss of Direct Access (Bluemound/Wisconsin)	71
ENVIRONMENTAL CONCERNS	
Concerned about Noise Impacts	51
Concerned about Stormwater Impacts	39
Concerned about Monarch Butterfly Habitat	54
Concerned about Air Quality	44
Concerned about Loss of Wildlife Habitat/Green Space	92
Concerned about Private Property Impacts	35

The public commented on four primary topics, including the need for transit/public transportation; support for the No-Build Alternative, the loss of wildlife habitat/green space, and the loss of interchange access via I-94 at Bluemound Road and Wisconsin Avenue. A brief characterization of the comments surrounding those issues is found below.

The comments received on mass transit varied from those who viewed transit as an alternative to adding lanes to those who wanted mass transit as part of a build alternative. Comments supporting mass transit as part of a build alternative noted that a better transit system and a modernized and expanded freeway system were necessary to ensure that the metropolitan area remains economically competitive.

Supporters of the No-Build Alternative regularly cited the lack of environmental and socioeconomic impacts as advantages of that alternative. Others supported the No-Build Alternative because it would avoid adverse effects to their properties. Many of the no-build comments also noted that money saved by selecting the No-Build Alternative should be spent on light rail or another type of mass transit.

The comments regarding the loss of wildlife habitat and green space included some focused on a specific location, such as the monarch butterfly habitat, and others were concerned

about the overall loss of green space. A number of comments stressed the need to protect green space because of the diminishing amounts in the project corridor and surrounding area. A number of those concerned about the loss of wildlife habitat and green space objected to the loss of parkland for proposed stormwater detention ponds. The majority of comments suggested that stormwater detention occur in underground cisterns.

WisDOT received comments that requested that access be re-introduced to Wisconsin Avenue or Bluemound Road from I-94. Most of these comments were from the institutions or staff at the Milwaukee Regional Medical Center, but representatives from the City of Milwaukee and the City of Wauwatosa expressed similar concerns. The reasons for needing access included the following:

- The Watertown Plank Road interchange alone cannot accommodate the projected volume of traffic.
- A secondary access point to the Milwaukee Regional Medical Center should be established for when Watertown Plank Road may be closed or congested or during emergency events.
- An alternative should be provided to allow full freeway system access on the southern edge of the Milwaukee Regional Medical Center and to give staff and visitors more flexibility in choosing routes into and out of the Milwaukee Regional Medical Center.

Beyond these, a few other comments were received that reflected process-related feedback. Some expressed an opinion that the format of the public hearing (open-house, with use of court reporters) did not constitute a legal public hearing (employing an open microphone with auditorium-style seating and a panel of project officials). Others expressed a desire for quick decision-making regarding a preferred alternative (without identifying a favored option), followed by timely implementation. Still others questioned when funding might become available, and from what sources, to initiate or complete construction.

5.3.3 Agency and Local Official Comments

State and federal review agencies and local governments received comments on the Draft EIS. **Table 5-15** summarizes these comments. Appendix E includes copies of the agency and local officials' comments and WisDOT's responses.

TABLE 5-15
Summary of Federal, State, and Local Government Comments

Agency	Comment
<i>Federal Agencies</i>	
U.S. EPA	August 3, 2009—Letter noting review of the Draft EIS document and a rating of "Environmental Concerns, Insufficient Information". U.S. EPA requires clarification as to why certain sub-alternatives were retained for further study. In addition, U.S. EPA requests inclusion of MSAT's mitigation measures in the Record of Decision. It is also recommended that the Final EIS address wetlands, surface water runoff management, and wildlife habitat.

TABLE 5-15
Summary of Federal, State, and Local Government Comments

Agency	Comment
U.S. Army Corps of Engineers	August 10, 2009—Letter pertaining to Section 404 permit requirements and relationship of project impacts to primary environmental corridor and ADID wetland areas. The Corps requests display depicting all alternatives discussed to be included in the Final EIS. Inclusion of new procedures implemented in May 2008 into the Final EIS, and consideration of removing discussion of on-site wetland mitigation requirements. In addition, remove references to public input opportunities related to Section 404 permitting process pending a review of the need for authorization under that process. Lastly, follow current Corps guidance for wetland delineation and consider that an update may be required if construction delayed for an extended period.
<i>State Agencies</i>	
Wisconsin DNR Southeast Region	August 10, 2009—Provided variety of comments focused on the Affected Environment and Environmental Consequences sections pertaining to water resources, land, and air quality. DNR recommends that the Draft EIS provide additional information about stormwater management, flood control, coordination with the Hank Aaron State Trail, and air quality analysis.
<i>Local Governments</i>	
City of Milwaukee – DPW	August 10, 2009—Recommendation to incorporate transit corridors into the alternatives in the Draft EIS. In addition, includes discussion to not provide 8-lanes on the east leg of the project.
Milwaukee County Supervisor Joseph Rice	June 25, 2009—Letter requesting direct access to Wisconsin Avenue and Watertown Plank Road be provided to ensure economic vitality of existing businesses surrounding the project.
Milwaukee County Department of Transportation and Public Works	August 10, 2009—Describing the impacts of the alternatives on County facilities including relocation challenges for the Children Adolescent Treatment Center and Highway Maintenance/Sheriff's Dept.
Wauwatosa Alderman Jerry Stepaniak	June 24, 2009—Requests an additional exit from US 45 to the Milwaukee Regional Medical Center due to concerns that 84th Street cannot handle the additional traffic that would be travelling from Watertown Plank Road exit.
Wauwatosa School District Facilities Manager Bruce Johnson	July 9, 2009—Request for improvements to the pedestrian bridge connecting West High School with Whitman Middle Schools to accommodate plowing and maintain existing pedestrian connectivity.
City of West Allis Mayor Dan Devine	August 7, 2009—Letter from the City indicates support for capacity expansion alternatives and concurrence with Draft EIS transit discussion to reduce the negative effects that congestion could have on development of Brownfield sites in the city. Includes concern over additional traffic on 76th Street due to the Texas U-turn alternative. Includes discussion of stormwater management, air quality, and noise mitigation concerns.
Milwaukee Metropolitan Sewerage District	August 10, 2009—Letter from MMSD indicated this project represents a unique opportunity to help restore Honey Creek, Underwood Creek, and the Menomonee River. They would like more information on the impacts the project will have on surface water hydrology and quality and downstream flood concerns. They also requested more information on the types and impacts of proposed stormwater BMPs.

Frequently Asked Questions and Comments

Following is a summary of, and responses to, common questions or themes from testimony received at the hearing pertaining to social, economic, or environmental comments or issues identified during the Draft EIS comment period.

1. Comment: The proposed 84th Street configuration includes too much indirection and adds additional traffic to 76th Street and the existing service roads on the north side of I-94.

Numerous requests were received to investigate options to recreate the existing access pattern at the 84th Street interchange with I-94. WisDOT and FHWA have developed an alternative (Modified E3) that mimics most aspects of the original E3 standard-diamond interchange geometry with fewer impacts to properties due to the shifting of the proposed ramp braid further east. There would be eight additional residential relocations required on the south side of I-94, along Adler Street (compared to the E1/E3 Hybrid Alternative).

2. Comment: Access to Wisconsin Avenue and Bluemound Road is important to the Milwaukee Regional Medical Center and other businesses along US 45 that currently have direct access from I-94.

A significant amount of testimony and comment was received requesting that WisDOT re-investigate the potential for providing access to and from Bluemound Road/Wisconsin Avenue with I-94. The existing freeway system allows that access today, though it is both dangerous (multi-lane weaves required, over very short distances) and occasionally unavailable (freeway signing prohibits these weaves during peak morning and afternoon periods).

WisDOT has studied the issue at length based on these requests. Due to the proximity of the core interchange (both Modernization and Reduced Impacts Alternative) with Bluemound Road, this access cannot be safely provided via the freeway system. The access could be provided via a new system of local frontage roads on both I-94 and US 45 between WIS 100 and 84th Street, and between Greenfield Avenue and Bluemound Road; however, it would require dozens of relocations and additional right-of-way.

FHWA and WisDOT have developed a specific set of improvements to the local road system to accommodate diverted traffic due to the lack of I-94 access to Bluemound Road and Wisconsin Avenue. These improvements are referred to as the Adjacent Arterials Component (see Section 2). Additional traffic studies were completed that quantified the amount of traffic required to use an enhanced Watertown Plank Road interchange and/or adjacent arterials. These studies confirm that the combination of these improvements will safely and economically handle the diverted traffic, and that the incremental impacts resulting from their construction are minimal and are outweighed by the safety and traffic benefits accrued.

3. Comment: If the Zoo Interchange project will be delayed beyond a 2012 start, consideration should be given to completing the Hank Aaron State Trail (HAST) past 94th Place in advance of Zoo reconstruction.

WisDOT continues to coordinate with the DNR on aspects of the design and construction timing of the HAST between 94th Place and the west Milwaukee County line. Once a timeline for the reconstruction of the Zoo Interchange is determined, further discussions with the DNR will occur.

4. Comment: The north and south berms are significant for Monarch butterfly migration. Please minimize impacts to these sensitive areas.

In response to testimony and comments received from stakeholders during the original Draft EIS availability period and the June 2009 public hearing, WisDOT and FHWA performed additional engineering analysis to investigate options that would balance traffic service, geometric improvements, and safety enhancements with a reduced freeway footprint throughout the project corridor. The Reduced Impacts Alternative reduces impacts to the north berm and Monarch Butterfly Trail on the Milwaukee County grounds.

5. Comment: The Draft EIS should consider property impacts to directly impacted properties and those adjacent to them that will be located closer to the new roadway.

With respect to direct property impacts, and based on testimony and comments received from stakeholders during the original Draft EIS availability period and the June 2009 public hearing, WisDOT and FHWA undertook additional engineering analysis to investigate options that would balance traffic service, geometric improvements, and safety enhancements with a reduced freeway footprint throughout the project corridor. The Reduced Impacts Alternative reduces, and in many cases eliminates, impacts to abutting landowners and other stakeholders in the corridor. Regarding actual or perceived indirect effects including reduced property values and increased proximity to, and/or visibility of improvements, WisDOT and FHWA acknowledge that different stakeholders view effects differently, and will continue to work with them as the project progresses.

6. The clear cutting of trees and the excavation of detention ponds in the Honey Creek and Underwood Parkways creates a significant loss to wildlife habitat and green space.

Several commenters shared their belief that the majority of required right-of-way for the project is green space and that large portions of the Honey Creek Parkway and Underwood Creek Parkway would be paved over. Not including potential stormwater ponds, the impacts to County parkland under the Draft EIS alternatives is 0.2 acre at Chippewa Park, 0.2 acre at Underwood Creek Parkway, and 0.5 acre at Wil-O-Way Underwood Recreation Center. If ponds are determined as the preferred stormwater management option, an additional 4 acres of Honey Creek Parkway would be impacted for a retention/detention pond and an additional 5 acres of the Underwood Creek Parkway would be impacted for a retention/detention pond.

WisDOT and FHWA performed additional engineering analysis specifically aimed at reductions in right-of-way acquisition, including building relocations, stormwater management, and impacts to natural resource areas. Under the Reduced Impacts Alternative, the impacts to County parkland are 0.3 acre at Chippewa Park, 0.2 acre at the Honey Creek Parkway, 0.45 acre at Underwood Creek Parkway, and 0.01 acre at Wil-O-Way Underwood Recreation Center. If ponds are determined as the preferred stormwater management option, the impacts at the Honey Creek and Underwood Creek would be slightly less than the Draft EIS alternatives due to a smaller increase in impervious surface. The current landowners, along with the responsible agencies, are favorable to construction of such stormwater management solutions. Such construction would include landscaping (plantings) and fencing.

The remaining right-of-way needs (the majority of the right-of-way required) would come from lands currently in commercial, residential, parking, utility, and other uses.

7. The Draft EIS should consider access changes from the project that could influence traffic patterns on the local arterial system.

As freeway alternatives were further investigated following the public hearing, WisDOT and FHWA determined that some amount of access to and from I-94, I-894, and/or US 45 to intersecting and parallel arterials was required. Because I-94 access to and from Bluemound Road, Wisconsin Avenue, the Milwaukee Regional Medical Center, and the Milwaukee County Research Park areas would be precluded by the Modernization and Reduced Impacts Alternatives, traffic will be required to use Highway 100, Watertown Plank Road, and 84th Street to get between these land uses and the freeway system. Improvements to these corridors will include adding additional lanes, improvements to intersection geometry, and access modifications.

8. The Draft EIS needs to consider a no-build option or replace the existing facility in kind with mass transit instead.

Many of the comments received suggested that a savings of environmental and monetary costs could be realized by either constructing a no-build option with a focus on mass transit such as light rail, or including mass transit in the alternatives. Federal funds allocated for highways are not transferable to rail/transit projects. Rail projects must go through a separate application process to apply for the use of federal funds that are set aside for rail. Further, the Wisconsin legislature has directed that local governments and regional transit authorities – not WisDOT – lead those efforts. Using fewer dollars on a highway project does not make those dollars available to use on rail transit. It must be noted that the SEWRPC regional transportation plan already includes an assumption that transit usage would double into its models for traffic growth on arterials and freeways throughout the region.

9. The current concepts could require 4 to 6 acres of property from State Fair Park, resulting in a critical impact on operations at the park.

The Reduced Impacts Alternative and the Modified E3 interchange at 84th Street each reduce impacts to the Wisconsin State Fair Park/Pettit National Ice Center when compared to those resulting from the Modernization alternatives (see **Exhibit 3-25**).

Approximately 2.7 acres would be acquired under the Reduced Impacts Alternative.

10. Alternatives in the Draft EIS adversely impact the Zoo property, including aesthetic impacts resulting from relocation of utilities.

The Reduced Impacts Alternative significantly reduces several impacts to the Zoo property. The modified configuration of the interchange core avoids the need to relocate the Zoo maintenance facilities and the Zoofari Conference Center, and eliminates the need for substantial relocation of ATC and We Energies transmission and distribution towers and other facilities adjacent to the freeway.

11. Portions of the corridor have noise walls while other areas that may require them do not.

Over the past 30 years, WisDOT has installed noise walls in locations throughout the project corridor. As part of this corridor study, WisDOT and FHWA have identified additional locations where barriers would be beneficial and cost-effective. As with any element of the proposed project, improvements including new and replacement noise barriers will be incorporated into the project subject to Wisconsin Administrative Code – Chapter TRANS 405 requirements and benefitted residence occupant/owners' input.

12. WisDOT's analysis of Title VI of the Civil Rights Act and Environmental Justice issues is inadequate.

The Draft EIS and Supplemental Draft EIS complies with federal laws and regulations.

13. The project's only benefit is to reduce traffic congestion, largely for white suburban commuters. Civil rights and environmental justice requirements mandate that persons of color receive a meaningful and proportionate share of the benefits of the project.

The project has several benefits besides reducing congestion (for both single-occupant vehicles and transit vehicles), namely improving user safety and replacing deteriorated pavement and aging bridges. Title VI of the Civil Rights Act requires that the federal government implement its programs without disparate treatment of impact, but it does not require that all populations benefit equally from each program.

14. Disproportionate spending on highways, without implementing transit improvements, harms minorities and low-income persons, and the EIS should evaluate the impacts of regional spending patterns for highway and bridge improvements.

Evaluating the levels of investment on highways and transit in southeast Wisconsin is beyond the scope of this EIS. SEWRPC's regional transportation system plan recommends a significant investment in mass transit in the region; however, neither WisDOT nor SEWRPC are responsible for implementing its recommendations. Several state statutes place responsibility for mass transit on local governments or regional transit authorities.

15. The Draft EIS fails to mention racial disparity in the Milwaukee area or whether reconstructing the Zoo Interchange will increase that or associated problems by making it easier for whites to work in Milwaukee and commute to suburbs west of Milwaukee County.

The indirect and cumulative effects analysis evaluates reasonably foreseeable indirect impacts. To assess which impacts are reasonably foreseeable, WisDOT met with the cities of Milwaukee, West Allis, and Wauwatosa, among others. Neither staff nor elected officials from the City of Milwaukee noted increasing patterns of racial segregation as a concern. The I-94 east-west corridor has been in place for nearly 50 years, and serves national, statewide, and regional commuting and travel patterns. The proposed action, which may or may not add capacity to the east-west corridor, would represent a modest decrease in travel times and will not dramatically affect regional travel or commuting patterns.

16. WisDOT's data and methodology wrongly minimizes concerns regarding direct adverse effects of the proposed expansion. WisDOT incorrectly compares the minority and low-income percentages of the neighborhoods adjacent to the study-area freeways system to the City of Milwaukee and Milwaukee County minority and low-income percentages.

WisDOT compares neighborhoods adjacent to the study-area freeway system to the respective city and county populations to assess whether the low-income or minority population adjacent to the study-area freeway system is appreciably different than the community as a whole.

17. WisDOT's measurement of impacts on schools also appears designed to minimize any discussion of disproportionate effects on students of color. The Draft EIS incorrectly states that the minority percentage of Wauwatosa West and Whitman Elementary students are lower than the City of Wauwatosa.

The Draft EIS mistakenly stated that the minority percentage of Wauwatosa West and Whitman Elementary students are lower than the City of Wauwatosa. This has been corrected in the Supplemental Draft EIS. Also, the Supplemental Draft EIS now compares the Wauwatosa West and Whitman Elementary schools student population to the City of Wauwatosa rather than the surrounding neighborhoods.

18. WisDOT fails to evaluate the likely health effects of construction and expansion, including whether those effects will be disproportionately borne by persons of color and persons with disabilities.

The Draft EIS explained that the population adjacent to the study-area freeway system does not differ significantly from the respective cities of Milwaukee, West Allis, and Wauwatosa with respect to diversity. The Draft EIS also evaluates the air quality impacts of the Build Alternatives and whether they meet applicable air quality standards.

19. The Draft EIS fails to evaluate the impact of air quality emissions and dust on schools adjacent to the study-area freeway system.

The air quality portion of Section 3 of the Draft EIS discusses air quality effects on residents and students in the study area. Also, Section 3 describes some of the specific air quality screening analysis at schools adjacent to the corridor. Particulate matter and MSATs are expected to decrease under the Build Alternatives.

20. WisDOT's analysis of MSAT impacts is incomplete because it does not analyze human exposure to these toxins. There are methodological tools available to assess the impacts of exposure to MSATS.

The U.S. EPA has not established the levels at which MSATs are a health concern. Due to cleaner burning fuels, cleaner burning engines, and higher freeway speeds, MSATs are expected to decline under all of the Build Alternatives. The findings of such analysis methodologies are unpredictable with respect to concentration and duration.

21. The Draft EIS ignores induced travel demand and the increased air pollution that will result.

Sections 2 and 3 document that the travel demand forecasts for the 8-lane alternatives are greater than the forecasts for the 6-lane alternatives. The travel demand forecasts are provided by SEWRPC and accepted by WisDOT. SEWRPC uses its regional travel demand model to generate the forecasts. The 2035 regional transportation plan estimates a 0.8 percent increase in vehicle miles of travel under the regional plan's Build versus No-Build alternatives.

SEWRPC has 40 years of traffic modeling experience, and the accuracy of its third-generation travel simulation model compares favorably to travel simulation models used by 10 other metropolitan planning organizations around the country. Further, SEWRPC's air quality conformity analyses also take into account changes in vehicle miles traveled based

on roadway type changes. Based on their analysis, SEWRPC recommends adding capacity to the study-area freeway system, as well as enhancing transit service.

22. The Draft EIS fails to consider the potential benefits to Milwaukee from not widening the highway.

Widening 3 to 3.5 miles of the east-west freeway corridor is not likely to noticeably affect development patterns in the City of Milwaukee, based on the input of the project's expert panel on indirect effects and from City of Milwaukee staff and elected officials, none of whom raised this as an issue.

23. WisDOT fails to address significant costs directly associated with the Zoo Interchange by low-income and minority utility customers. A significant share of utility relocation costs will be borne by We Energies, ATC, and AT&T.

Most utility relocation costs will be borne by WisDOT, not by the utilities themselves (costs which would theoretically, based on WisDOT's interpretation of the comment/FAQ provided, be passed along directly to customers). The Reduced Impacts Alternative significantly reduces utility relocation costs.

24. The Draft EIS does not state what WisDOT will do to implement the recommendations of the Governor's Global Warming Task Force.

The Global Warming Task Force's recommendations are exactly that. The Governor and legislature have not acted to implement any of the recommendations.

25. Future traffic demand projections were based on speculative fuel price assumptions that are now known to be inaccurate due to wild fluctuations in the actual price of fuel and anticipated cost increases as the economy recovers. SEWRPC's traffic volume projections, which WisDOT used in the Draft EIS, were based on an assumption that gasoline prices would be \$2.30 per gallon throughout the study's project lifetime.

This statement is not accurate. The travel forecasting conducted for the regional transportation plan and this study makes assumptions about the price of gasoline and the average fuel efficiency of cars and trucks. Together these factors result in a fuel cost per mile of travel.

The forecast of motor fuel cost per gallon is based on forecasts prepared annually by the U.S. Department of Energy. The forecast in early 2005 was \$2.19 per gallon, and in the year 2035, *in 2004 dollars*. At the time the gasoline forecast was made, gas prices were \$1.95 per gallon. Thus, the U.S. Department of Energy's forecast anticipated that the price of gas would increase at a rate higher than inflation. Over the past 25 years, the price of gas did not increase as quickly as inflation (gas prices increased 92 percent between 1980 and 2005; inflation increased 137 percent over the same period). Based on the U.S. Department of Energy forecast, the gas price used by SEWRPC in their 2035 traffic forecast was \$2.30 per gallon, in 2005 dollars. This was adjusted for inflation at 3 percent per year, which is typical of the last several years and slightly less than the last 25 years. This equates to a price of about \$5.60 per gallon in 2035.

SEWRPC also assumed that average fuel efficiency would increase from 22 miles per gallon to 30 miles per gallon. However, federal legislation has recently raised the mandated

average fuel efficiency standard to 35 miles per gallon for new vehicles by 2020. Therefore, the average vehicle fuel efficiency in 2035 may be expected to be 35 miles per gallon, higher than the forecast of 30 miles per gallon.

Accounting for this higher fuel efficiency under the SEWRPC 2035 forecast of 18.7 cents for gasoline cost per mile (\$5.60 per gallon divided by 30 miles per gallon) would result in an increase in the SEWRPC forecast of motor fuel to \$6.50 per gallon in the year 2035 (or about \$2.94 in 2008 dollars and expected to increase with inflation over the next 27 years to 2035). WisDOT concurs with this methodology.

26. The Draft EIS should consider the effect of regional transit improvements, such as the Kenosha-Racine-Milwaukee commuter rail, high-speed rail, and expanded Amtrak service and whether they may eliminate the need for freeway capacity expansion.

The 2035 regional transportation plan assumes that the Kenosha-Racine-Milwaukee commuter rail and several other transit systems will be implemented and determined that freeway capacity expansion is still needed. The addition of the Milwaukee-to-Madison high speed rail line will similarly not decrease travel demand in the I-94 corridor significantly enough to eliminate the need for capacity expansion throughout the Southeast Wisconsin freeway system. (See Section 2.)

27. The Draft EIS did not adequately respond to the Corps of Engineers' suggestion that a hybrid alternative incorporating TDM be evaluated.

Section 2 states why a TDM alternative is not feasible as a stand-alone alternative. As part of their comment, the Corps noted the following: "We have reviewed the Draft EIS provided, and are pleased with the purpose and need, range of alternatives given, and the level of public input requested to help drive development of a preferred alternative. We find that the document provides sufficient identification and evaluation of the impacts of the No-Build and Build Alternatives (Modernization), as well as the extent to which these alternatives address the project's purpose and need..."

28. Both the 2035 regional transportation plan and the regional freeway study anticipated that SEWRPC's preliminary travel demand projections would need to be updated and refined during later planning and project development stages.

The regional plan did not recommend refining travel demand forecasting during subsequent stages of project development. The regional plan did acknowledge and recommend that preliminary engineering and environmental analysis be conducted for each project. Specifically, the plan stated: "each proposed arterial street and highway improvement, expansion, and preservation project would need to undergo preliminary engineering and environmental studies by responsible State, county or municipal government prior to implementation. The preliminary engineering and environmental studies will consider alternative alignments and impacts, including a no-build option, and final decision as to whether to implement and how a planned project will proceed to implementation will be made by the responsible State, county, or municipal unit of government at the conclusion of preliminary engineering."

The emphasis of the work to be done by WisDOT, or other responsible government agencies, during the NEPA phase was not to re-evaluate project need (for example, through

refinement of travel demand models or further consideration of transit or other alternatives), but rather to more precisely identify potential alignments, environmental impacts, such as right-of-way acquisition, and to examine alternatives to avoid and mitigate those impacts.

29. The Draft EIS failed to adequately consider global warming and greenhouse gas emissions in assessing the need for increased highway capacity.

FHWA's position is that a single transportation project does not have a measurable effect on greenhouse gas emissions. Further, as discussed in the Draft EIS and Supplemental Draft EIS, improvements as proposed by the 6- and 8-lane Modernization Alternatives, as well as related to the Reduced Impacts Alternative and Adjacent Arterials Component, will reduce congestion on the freeway, thereby reducing CO and NOx emissions from the levels being generated under current traffic volumes.

30. The Draft EIS does not indicate that any consideration whatsoever was given to the impact on highway travel demand or any additional efforts to reduce carbon dioxide emissions, such as a cap and trade system, a carbon tax or other restrictions or efforts to limit fossil fuel use, which will increase the cost of automobile travel.

This issue is beyond the scope of this EIS.

31. The project will increase MMSD sewer overflows

WisDOT and FHWA have coordinated regularly with MMSD during this study. Stormwater generated by runoff from the reconstructed project will be handled more effectively (quantity, quality, time-to-outfall) than under the current drainage system. Project drainage will outlet to Underwood Creek, Honey Creek, and ultimately to the Menomonee River without entering MMSD's underground facilities. The addition of detention ponds and other facilities will meter out the flow from the freeway to these receiving waterways over a longer period of time, helping the long-term flows through the creek and river systems to Lake Michigan.

32. The Draft EIS provides no evidence that the proposed stormwater measures will eliminate flooding.

State law requires WisDOT to not make any existing flooding situation worse. WisDOT commits to that and has developed concepts to ensure that state law is satisfied.

33. WisDOT makes general statements about potential stormwater management measures but makes no commitments.

WisDOT will comply with NR 401, which regulates stormwater quality. As with every WisDOT project, detailed design to ensure compliance will be performed in a subsequent project phase.

34. WisDOT should consider including first flush treatment devices that either treat or send the first flush to MMSD, like what WisDOT did on the Marquette Interchange.

The Marquette Interchange is in MMSD's combined sewer service area, and the Zoo Interchange is not. The Zoo Interchange does not send any run-off to MMSD's sanitary sewer system.

35. The Draft EIS fails to perform the required “hard look” and instead essentially offers presumptuous statements regarding the project’s impacts that are over reliant on input from WisDOT’s unrepresentative exclusionary focus group.

This statement is not accurate. It is WisDOT’s policy and practice to meet the requirements of the “hard look doctrine” on all its environmental impact statements. The NEPA states that all federal agencies “to the fullest extent possible” must provide a detailed EIS (42 U.S.C. 4332). Neither Congress nor the courts have indicated precisely how much detail an EIS must contain. However, courts consistently have held that, at a minimum, NEPA imposes a duty on federal agencies to take a “hard look at environmental consequences” (Natural Resources Defense Council v. Morton, 458 F.2d 827, 838 [D.C. Cir., 1972]). The courts’ interpretation is that the agency has the “requirement of a substantial, good faith effort at studying, analyzing, and expressing the environmental issues in the EIS and the decision-making process, and a recognition that a rule of reason must prevail because an EIS which fully explores every relevant environmental detail could never be drafted” (Natural Resources Defense Council v. Morton, 458 F.2d 827, 838 [D.C. Cir., 1972]). If the EIS provides good faith analysis and sufficient information to allow a firm basis for weighing the risks and benefits of a proposed action, the court will find the EIS to be sufficient (County of Suffolk v. Secretary of the Interior, 562 F.2d 1368 [2nd Cir. 1977], cert. denied, 434 U.S. 1064 [1978]).

The analysis methodologies used in the Draft EIS were approved by regulatory review agencies at the start of the study. The Draft EIS clearly provides “sufficient information to allow a firm basis for weighing the risks and benefits of the propose action.” The document also underwent a legal sufficiency review and concurrence by FHWA.

36. The Draft EIS failed to evaluate whether savings from adopting the No-Build Alternative could be used to provide transit benefits.

SEWRPC’s traffic forecasts include an assumption that transit usage will double during the planning timeframe. Even with that increase (data suggests transit usage has held steady, or dropped slightly, over the past several years), the need for additional capacity on both freeway and arterial links throughout the metropolitan area remains necessary. Selection of a No-Build Alternative for this project will not change regionwide modal choices, much less redirect funds to transit solutions in this or any other corridor. See also the answer to FAQ #8.

37. The Draft EIS fails to include accurate cost estimates and a plan for financing the project. The cost estimate of \$2.3 billion is unrealistically low because a 4 percent inflation rate is too low. Because of state and federal budget deficits, there are plans for building more highway projects than the state can afford.

The rate of inflation is based on nationally accepted guidance on estimating future construction costs. After dramatic increases in construction costs in recent years, construction prices have fallen in the last 3 years. As with every project undertaken by WisDOT, implementation will occur only as project funds are secured. Should the full funding not be available upon initiation of construction, the project may be phased over a period of time, with needed improvements (compatible with the ultimate plan) being implemented on an as-needed basis.

38. WisDOT failed to hold an adequate public hearing.

WisDOT conducted what is referred to as an “open house” format for the June 2009 public hearing. The open house format opts for the use of court reporters and one-on-one testimony, rather than an open microphone, “town hall” format. The town hall format is typically referred to as a “formal” public hearing. As part of the Supplemental Draft EIS process, WisDOT and FHWA have undertaken for this project, another public hearing will be conducted. This public hearing will use both a “formal” and “open house” format.

39. The Draft EIS does not comply with the Federal Aid Highways Act (FAHA) pertaining to adverse affects of air pollution requiring separate analysis of greenhouse gas emissions specifically for the project.

See responses to Questions #19, #20, #21, #24, #29, and #30.

40. The format of the public hearing did not allow for direct communication of testimony between attending citizens and therefore violated the FAHA.

See response to Question #38.

41. When a federal agency writes an EIS it must consider all reasonable alternatives in depth.

This statement is incorrect. The Council on Environmental Quality (CEQ) is responsible for developing regulations to implement NEPA. The CEQ’s regulations address the issue of “all reasonable alternatives” versus “reasonable range of alternatives.” Citing the AASHTO Center of Environmental Excellence, Practitioner’s Handbook 07:

“Duty to Evaluate “All Reasonable Alternatives.” The CEQ regulations require an EIS to “rigorously explore and objectively evaluate all reasonable alternatives” and to “[d]evote substantial treatment to each alternative considered in detail . . . so that reviewers may evaluate their comparative merits.” The regulations also provide that “for alternatives which were eliminated from detailed study, [the EIS should] briefly discuss the reasons for their having been eliminated.”

“All Reasonable” vs. “Reasonable Range.” The reference in the CEQ regulations to “all reasonable alternatives” implies—if taken at face value—that *every* reasonable alternative must be rigorously evaluated, no matter how many reasonable alternatives exist. However, in many cases, the number of potentially reasonable alternatives is very large or even infinite. The CEQ has addressed this issue in guidance, stating that a “reasonable range” of alternatives can be studied when the number of potentially reasonable alternatives is very large: For some proposals, there may exist a very large or even an infinite number of possible reasonable alternatives. For example, a proposal to designate wilderness areas within a national forest could be said to involve an infinite number of alternatives from 0 to 100 percent of the forest. When there are potentially a very large number of alternatives, only a reasonable number of examples, covering the full spectrum of alternatives, must be analyzed and compared in the EIS. An appropriate series of alternatives might include

dedicating 0, 10, 30, 50, 70, 90, or 100 percent of the forest to wilderness. What constitutes a reasonable range of alternatives depends on the nature of the proposal and the facts in each case (CEQ, *“Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations”* Mar. 16, 1981, Question 1b). Therefore, despite the reference to “all reasonable alternatives” in the CEQ regulations, it is permissible to study a “reasonable range” of alternatives in an EIS. When relying upon this interpretation, it is important to ensure that the range of alternatives covers the “full spectrum” of potential reasonable alternatives.

- **What is a Reasonable Alternative.** The CEQ regulations do not define a “reasonable” alternative. The CEQ’s guidance states that “[i]n determining the scope of alternatives to be considered, the emphasis is on what is ‘reasonable’ rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.” (CEQ, *“Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations”* Mar. 16, 1981, Question 2a)”

42. The Zoo Interchange Draft EIS defined the purpose and need of the project too narrowly on page 1-4, contrary to the Supreme Court’s decision in *Simmons v Army Corps of Engineers*.

Page 1-4 is only the purpose of the project from page 1-4 of the Draft EIS. The need for the project is documented on the following 39 pages.

The two key findings in *Simmons v Corps of Engineers* are that 1) the Corps of Engineers stated that the purpose of the project was to build their proposed solution, in this case a dam and reservoir, and 2) the Corps used the purpose and need statement developed by the project’s proposer instead of independently developing its own purpose and need statement.

For the Zoo Interchange WisDOT and FHWA developed the purpose and need statement that defined the problems with the study-area freeway system rather than the solutions. The purpose and need statement was presented to the project advisory committee, the public, participating agencies (DNR, Corps of Engineers, US EPA, City of Milwaukee, City of West Allis and City of Wauwatosa). The purpose and need statement’s development was consistent with CEQ regulations implementing NEPA and relevant court decisions.

43. The TSM and TDM Alternatives were improperly screened out. Together with the Spot Improvements Alternative they would have met the project’s purpose and need statement.

The TSM and TDM alternatives were dismissed from consideration as stand-alone alternatives. Page 2-6 of the Draft EIS states that the “Modernization Alternatives assume certain TDM elements will be implemented, and would include certain TSM elements like ramp metering, variable message signs, crash investigation sites and closed-circuit television cameras.” Indeed, many of these elements are in place on the study-area freeway-system

today. The TDM alternative assumes a 100 percent increase in mass transit and the regional plan concludes that it will still not eliminate the need to add capacity to the study-area freeway system.

The Spot Improvement Alternatives were eliminated from consideration because they would not meet the purpose and need of the project, namely they would not adequately accommodate anticipated future traffic volumes. No local governments have advocated for the Spot Improvement Alternatives, and these alternatives have little public support. Also, the Spot Improvement Alternatives are not consistent with the regional transportation plan. See *Evaluation of Spot Improvements Against Purpose and Need*, Section 2.2.4.

44. A new roadway, referred to as the power Corridor Alternative through Waukesha and Washington Counties connecting I-94 and US Highway 41/45 is a better way to address congestion in the Zoo Interchange than the Modernization Alternatives.

The Power Corridor Alternative was proposed during the WIS 164 corridor study and documented in WisDOT and FHWA's EIS for the WIS 164 project, approved in 2001. The WIS 164 EIS documents the impacts and traffic carrying aspects of that alternative and why it was not selected for implementation. No local, county, regional, state or federal agencies asked WisDOT to consider it as part of the Zoo Interchange study. The Draft EIS did not mention the Power Line Corridor because there is no connection between the power line corridor 10-15 miles west of the project area and the deficiencies in the Zoo Interchange corridor. There is no provision in NEPA that requires all alternatives to be evaluated. The Power Corridor alternative failed to rise to the level of other alternatives considered that had the ability to address the project's need factors.

45. Federal regulations require a local, individualized analysis, not a discussion of broader regional issues, therefore just because the project is in a Transportation Improvement Program does not mean the project complies with federal regulations. The Draft EIS failed to analyze the adverse effects of greenhouse gases.

The Draft EIS and Supplemental Draft EIS document the project's air quality impact in Section 3.20. Certain pollutants like ozone cannot be evaluated on a project-level basis because ozone is a regional pollutant. Therefore the project's inclusion in a conforming regional transportation plan and Transportation Improvement Program is an appropriate and relevant evaluation tool.

Greenhouse gases are noted in the Draft EIS and Supplemental Draft EIS. The EPA has not yet developed criteria for greenhouse gas impacts. FHWA's position is that greenhouse gas emissions are a national issue, and cannot be meaningfully addressed on a project-level basis.

46. The public hearing was invalid and did not comply with federal law (23 CFR 777.111) because it did not offer an opportunity to address WisDOT and other hearing attendees publically.

23 CFR 777.111 makes no mention of the type of hearing that a sponsoring agency must provide. WisDOT and other state transportation agencies around the country have used the open house format for years. WisDOT and FHWA will conduct a hearing on the Supplemental Draft EIS that will include the opportunity to publically speak before WisDOT officials and other hearing attendees.

5.3.4 Project Meetings Since Draft EIS Approval

WisDOT and FHWA have met with a number of groups since the conclusion of the Draft EIS comment period and prior to the distribution of this Supplemental Draft EIS. Meetings with the following entities were conducted to seek clarification regarding comments provided on the alternatives and/or the Draft EIS, to seek their input on possible revisions to Draft EIS alternatives and possible new alternatives within the corridor, and/or to advise them of progress on the development, performance, and impacts resulting from the Reduced Impacts Alternative, the Adjacent Arterials Component, and the Modified E3 Alternative at 84th Street:

- Cities of Milwaukee, Wauwatosa, and West Allis
- Milwaukee County board, committees, and departments
- Milwaukee Regional Medical Center
- Milwaukee County Research Park
- Milwaukee County Zoo
- Various municipal, county, and state elected officials
- Several neighborhood groups, notably those along 84th Street between I-94 and Wisconsin Avenue
- Several businesses throughout the study corridor

Coordination with these and other stakeholders will continue through the Supplemental Draft EIS availability period, and through subsequent design phases for the project.

5.3.5 Agency Coordination Since Draft EIS Approval

WisDOT sent a letter to participating agencies in 2010 to advise them of the decision to prepare a Supplemental Draft EIS for the project (see **end of** Appendix E), and seek their input and feedback on that decision. No responses were received from the agencies regarding the decision.

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SECTION 6

Public Involvement and Agency Coordination Following Supplemental Draft EIS Availability and Public Hearing

This section discusses community involvement activities and coordination with state and federal review agencies and other interest groups following the release of the Supplemental Draft EIS, including the public hearing. The public involvement process was open to all residents and population groups in the study area.

6.1 Public Involvement

The public hearings were held on March 22 and 23, 2011 at the Tommy Thompson Youth Center, 640 S. 84th Street, Milwaukee. The first hearing was held from 2:00 p.m. to 7:00 p.m. and the second hearing was held from 4:00 p.m. to 8:00 p.m. A total of 533 people signed in at the hearings: 290 people on the 22nd and 243 people on the 23rd.

The public hearing had opportunities for testimony to a panel of WisDOT officials, testimony to a court reporter and WisDOT staff, and an open house component where representatives from WisDOT and the consultant staff were available to explain project alternatives, listen to comments, answer questions and direct participants to the areas available for testimony. WisDOT real estate staff was also present to answer questions for affected property owners.

Both written testimony and spoken testimony were accepted. The testimony to a panel was available from 3:00 p.m. to 7:00 p.m. on the 22nd and from 5:00 p.m. to 8:00 p.m. on the 23rd. Testimony to court reporters, with WisDOT personnel present to receive the testimony, was available from 2:00 p.m. to 7:00 p.m. on the 22nd and 4:00 p.m. to 8:00 p.m. on the 23rd. The self-addressed, postage-paid written comment forms were available at the hearing. The comment forms could be mailed, faxed or e-mailed in after the hearing. The email address for comments was provided in the hearing handout and on the project website. All forms of testimony were given equal consideration.

6.1.1 Advertising and Notices

The notice announcing the public hearing, comment period, and release of the Supplemental Draft EIS was published in the Federal Register on February 18, 2011.

A project newsletter was sent to a mailing list of over 15,000 people.

The meeting was advertised in the following newspaper publications:

Legal Notice – *Milwaukee Journal Sentinel* –
February 18, 2011

Display ad – *Milwaukee Journal Sentinel* –
February 18, 2011 and March 6, 2011

Display ad – all *Community NOW*
publications – March 10, 2011

NORTHSORE

Bayside
Brown Deer
Fox Point
Glendale
Mequon/Thiensville
Milwaukee (53224)
River Hills
Shorewood
Whitefish Bay

NORTHWEST

Butler
Germantown
Lannon
Menomonee Falls
Richfield

WEST

Brookfield/Elm Grove
Wauwatosa
Milwaukee (53222)

MIDWEST

West Allis
Greenfield
Milwaukee (53221)
Milwaukee (53215)

SOUTHWEST

Muskego
New Berlin
Big Bend

SOUTH

Oak Creek
Franklin
Greendale
Hales Corners

SOUTHSORE

Bay View
St. Francis
South Milwaukee
Cudahy

Display ad – *Milwaukee Community Journal*
– March 9, 2011

Display ad – *Milwaukee Courier* – March
12, 2011

Display ad – *Milwaukee Times* – March 10,
2011

Display ad – *Spanish Journal* (translated
into Spanish) – March 9, 2011

Display ad – *Spanish El Conquistador*
(translated into Spanish) – March 11, 2011

Display ad – *Waukesha Freeman* – March
12, 2011

6.1.2 Exhibits and Materials at the Hearing

The following exhibits were at the public hearing:

- Pavement Age
- Crash Rates
- Zoo Interchange Deficiencies
- Zoo Corridor Deficiencies
- Existing AM Peak Hour Level of Service
- Existing PM Peak Hour Level of Service
- Future (2035) AM Peak Hour Level of Service
- Future (2035) PM Peak Hour Level of Service
- LOS Example Photos

- Purpose and Need
- Public Comments from October 2008 public information meeting
- Public Comments from May 2008 public information meeting
- Public Comments from June 2009 Draft EIS Public Hearing
- Hank Aaron State Trail Extension
- 6-Lane Alternative - North Leg, - M1, M3
- 6-Lane Alternative - West Leg - M3 w/GF access
- 6-Lane Alternative - West Leg - M3 w/o GF access
- 6-Lane Alternative - East Leg - M1
- 6-Lane Alternative - East Leg - M1/M3 hybrid
- 6-Lane Alternative - South Leg - M2
- 8-Lane Alternative - North Leg, South Half - M1, M3
- 8-Lane Alternative - West Leg - M3 w/GF access
- 8-Lane Alternative - West Leg - M3 w/o GF access
- 8-Lane Alternative - East Leg - M1
- 8-Lane Alternative - East Leg -M1/ M3 Hybrid
- 8-Lane Alternative - South Leg - M2
- Reduced Impacts Alternative
- Adjacent Arterials – Highway 100
- Adjacent Arterials - Watertown Plank Road
- Adjacent Arterials - 84th Street
- West Suburban TIA – Average Weekday Traffic
- Impact Comparison Tables
- Project Schedule
- Google Earth
- Traffic model
- Copies of the Supplemental Draft EIS
- Copies of the legal notice

The following handout material was available at the hearing:

- Public hearing hand out packet
- Real Estate brochures:
 - Rights of landowners under Wisconsin eminent domain law
 - Wisconsin relocation rights for businesses, farms and nonprofit organizations
 - Wisconsin Relocation Rights – Residential
- I-94 east-west repaving project 2011-12
- Get Around Guide – I-94 north/south project
- Zoo Interchange project newsletter – March 2011
- Speaker registration forms
- Pre-addressed, postage -paid comment forms

A narrated presentation ran in a continuous loop throughout the hearing. The presentation detailed project purpose and need, alternatives under consideration, public input received to date, timelines, and procedures for providing spoken or written testimony.

6.2 Summary of Oral and Written Comments

During the public hearing and public comment period, approximately 579 people commented. The following table summarizes the comments into categories. Comments that included more than one issue were noted in multiple categories.

TABLE 6-1
Public Comment Summary

Comment Category	Total
don't use stormwater ponds/toxic pond concern/don't use open space for stormwater ponds	225
local road repair/operation (incl Glenview Ave, Chester St and extend 92nd St. to Wisconsin Ave)	117
concern for butterflies	106
preserve or enhance bike/ped/HAST/Oak Leaf bike trail	83
need more and better transit	74
support Reduced Impacts Alternative	67
concern over Bluemound Road/Highway 100 intersection (parking, intersection)	41
individual property concern	34
concern over freeway noise; want a noise barrier	29
don't impact Montessori School	28
support 8-lane freeway	27
miscellaneous	23
general environmental	22
support 6-lane freeway	12
improve safety	9
support No Build/Replace-in-Kind	7
ATC/power lines	5

*** In addition, there were 91 signatures asking DOT not to take away parking in the 109th St./Bluemound Rd. area.

Those who supported the Reduced Impact Alternative (67 comments) cited the alternative's smaller footprint, lower cost, no Texas U-turns, and simpler design.

Many who oppose the Reduced Impacts Alternative stated a preference for the No-Build Alternative or the Replace-in-Kind Alternative. Others felt that it should have more lanes.

Twice as many people wanted an 8-lane freeway (27 comments) than a 6-lane freeway (12 comments).

Stormwater management, preserving open space, and the potential use of ponds to collect and treat stormwater, was a key concern (225 comments).

A large number of the comments received on the project were related to arterial improvements (117 comments).

The proposed reconstruction of the Bluemound Road/Highway 100 intersection and its impacts on adjacent parking and access to adjacent businesses was a key concern (41 comments). The width of the intersection and the ability of pedestrians and bicyclists to safely cross the intersection was also cited as a concern. A petition from 91 people opposed reducing parking spaces in front of the office building in the southwest quadrant of the intersection.

The widening of Glenview Avenue is opposed by the City of Wauwatosa, three Wauwatosa aldermen, St. Jude the Apostle Church and school and many residents adjacent to Glenview Avenue.

Several comments suggested that 92nd Street should be extended between Bluemound Road and Wisconsin Avenue. Preserving Monarch butterfly habitat on the County Grounds was cited as a concern (106 comments).

Maintaining or enhancing bicycle and pedestrian accommodations was also a concern (83 comments).

Many comments said that transit options should be included in the preferred alternative (74 comments).

6.3 Agency and Local Official Comments

Comments on the Supplemental Draft EIS were received from state and federal review agencies and local governments. Table 6-2 summarizes these comments, and the comments are included in Appendix F. WisDOT and FHWA have developed responses to each comment. Coordinating responses are on the page opposite the agency's comments.

TABLE 6-2
Summary of Federal, State, and Local Government Comments

Agency	Comment
<i>Federal Agencies</i>	
U.S. Department of the Interior, Fish and Wildlife Service	No federal threatened or endangered species present; if wetland impacts cannot be avoided a wetland mitigation plan must be developed. (Appendix F, page F-2)
U.S. Army Corps of Engineers	Notes that no ADID wetland will be affected. Notes Corps' jurisdiction over Honey Creek in the event the creek is affected. Requests updated wetland delineations prior to Section 404 permit application. (Appendix F, page F-6)
U.S. EPA	Request more information on ADID wetland, mitigation for non-ADID wetland impacts, and commitment in Record of Decision on MSAT mitigation measures during construction. (Appendix F, page F-11)

TABLE 6-2
Summary of Federal, State, and Local Government Comments

Agency	Comment
<i>State Agencies</i>	
Wisconsin DNR – SE Region	Commits to working with WisDOT during design phases on real estate transfer, potential Oak Leaf Trail relocation, and pedestrian and bicycle accommodations (Appendix F, page F-18)
Wisconsin DNR – Bureau of Air Management	Concurrence that no air pollution control permit is needed for the project under Wisconsin Admin. Code NR 411.04(2)(c). (Appendix F, page F-20)
State Historic Preservation Officer	Notes that a Memorandum of Agreement will be developed to conclude the Section 106 process; will work with WisDOT and FHWA to assess any adverse effects to historic resources. (Appendix F, page F-21)
State Fair Park Board	Reduced Impact Alternative addresses their concern over access at I-94/84 th Street interchange. Very concerned about 2.5 to 3 acre loss of parking space; prefer Modified E3 Alternative in regard to its parking impact. (Appendix F, page F-23)
<i>Local Governments</i>	
City of Milwaukee Dept. of Public Works	Reduced Impacts Alternative is a vast improvement over Modernization Alternatives. Have concern over right-of-way impacts, noise barriers, Hank Aaron State Trail, traffic mitigation and local road design. City opposes the 18-foot-wide shoulder that could provide an additional travel lane in the future. Urges WisDOT to take a more comprehensive and balanced approach to providing transit options. (Appendix F, page F-27)
City of Milwaukee Common Council	Concur with City of Milwaukee DPW concerns and request that the project not acquire any property from Milwaukee Montessori School. (Appendix F, page F-40)
City of Wauwatosa	Concerned about loss of parking on Bluemound Road, widening of Glenview Avenue. Propose connecting 92 nd Street to Wisconsin Avenue. (Appendix F, page F-46)
Wauwatosa Alderman Dennis McBride	Concerned about traffic diverting from freeway to local streets and impacts of potential stormwater ponds. (Appendix F, page F-50)
Wauwatosa Alderwoman Nikceovich	Concerned about traffic diverting from freeway to local streets. Requests transit options. (Appendix F, page F-54)
Wauwatosa Alderman Roznowski	Concerned about traffic diverting from freeway to local streets and impacts of potential stormwater ponds. Requests transit options. (Appendix F, page F-60)
City of West Allis	West Allis “cautiously recommends” the Reduced Impacts Alternative. Concerned about traffic diverted to arterials. Supports 84 th Street and Greenfield Avenue configuration under Reduced Impacts Alternative. Concerned about stormwater quality and noise. (Appendix F, page F-63)
Milwaukee Metropolitan Sewerage District	Requests that surface release rates of 0.5 cfs per acre during a 1% probability recurrence and 0.15 cfs per acre during a 50% probability recurrence. (Appendix F, page F-70)

TABLE 6-2
Summary of Federal, State, and Local Government Comments

Agency	Comment
Milwaukee County Zoo	Concern over loss of access to Zoofari Conference Center, loss of parking, zoo entrance and exit drive, Highway 100/Bluemound intersection, potential loss of landscape buffer along the north side of I-94, maintaining the tunnel under I-94, and replacing lost income from billboard rental on zoo property. (Appendix F, page F-72)
Waukesha County Dept. of Public Works	Supports reconstruction of the Zoo Interchange. (Appendix F, page F-76)
Milwaukee County Department of Transportation & Public Works	Provided a letter after the comment period ended. It is not included in Appendix F. The letter noted several local road access issues, mostly related to access to County-owned facilities, that DPW would like modified or addressed.

At the conclusion of the 45-day comment period on the Supplemental Draft EIS WisDOT reviewed agency and public comments and selected the Reduced Impacts Alternative with the Adjacent Arterial Component as its preferred alternative. Following the SAFETEA-LU Section 6002 agency coordination requirements WisDOT and FHWA sent notice to the cooperating and participating agencies (see Section 5.2 for a list of these agencies) that the Reduced Impacts Alternative with the Adjacent Arterials Component is WisDOT's preferred alternative. Comments were received from the City of Wauwatosa, Corps of Engineers, Wisconsin DNR and U.S. EPA (see end of Appendix F).

The DNR and U.S. EPA concurred with WisDOT's decision. The Corps of Engineers identified the Reduced Impacts Alternative with the Adjacent Arterials Component as the least environmentally damaging practicable alternative. The City of Wauwatosa is "supportive" of the Watertown Plank Road plan and modifications to the Bluemound Road/Highway 100 intersection made after the March 2011 public hearings..

6.4 Frequently Asked Questions and Comments

1. **Comment: Transit projects should be included with the Zoo Interchange reconstruction.**

Numerous public comments suggested that WisDOT should invest in transit rather than, or in conjunction with, expanding the study-area freeway system. The comments state that WisDOT is too focused on highway improvements.

SEWRPC's 2035 regional transportation plan documents that the recommended transit improvements in the corridor, will not eliminate the need to add capacity to the study-area freeway system and that both highways and transit are needed to provide an efficient transportation network. The future traffic forecasts for the study-area freeway system assume full implementation of the regional transportation plan, including doubling bus mass transit, four potential commuter rail lines, and six potential light rail lines. WisDOT concurs with the regional transportation plan's recommendations for the transit improvements.

However, Wis. Stat. 59.58(6) places responsibility for “coordinating of transit and commuter rail programs in the region” on regional transit authorities rather than WisDOT (the most recent state budget repealed this statute). The state legislature, in the 2003–2005 biennial budget, created a commuter rail grant program that caps WisDOT’s funding of any commuter rail systems at 50 percent of the non-federal share or 25 percent of the total, whichever is less (Wis. Stat. 85.064). Furthermore, Statute 85.062 gives WisDOT authority to fund only three “major” (defined as over \$5 million) transit projects in the state: the Kenosha-Racine-Milwaukee commuter rail project, the outcome of the Dane County Commuter Rail study, and the outcome of the Milwaukee Connector project. WisDOT’s funding for these three projects is capped by the limits in Statute 85.064. Statute 85.022 establishes a multi-modal planning program, but the current state budget (fiscal year 2010 through 2011) provides no funding for this program.

In summary, WisDOT’s involvement in transit and the level of funding it devotes to transit is largely guided by state statute rather than the discretion of WisDOT.

Some comments on the Supplemental Draft EIS suggested that a north-south transit system should be provided between I-94 and the Regional Medical Center, or that a bus rapid transit system or light rail system operate connect downtown Wauwatosa to the Regional Medical Center. These comments urge WisDOT to develop these projects as part of the Zoo Interchange project. These suggested projects are not included in the approved regional transportation plan. Even if WisDOT had statutory authority to implement such a project, that project must be in an approved regional transportation plan in order for state or federal funds to be expended on it.

WisDOT’s preferred alternative does not preclude implementation of any transit projects that are in the approved regional transportation plan.

The current state budget directs WisDOT to provide \$106 million in 2012 and \$106 million in 2013 to support mass transit operating costs around the state.

2. Do not put stormwater ponds on County parkways. We need to preserve greenspace. Different methods for stormwater treatment should be considered. Do not remove the Oak Leaf Trail from Underwood Parkway to make room for a stormwater pond.

WisDOT will work with the DNR, MMSD and local communities to develop plans for stormwater management. The stormwater ponds shown at Honey Creek Parkway, Underwood Parkway, and the county grounds represent the worst case in terms of the locations and size of the ponds. During design WisDOT will evaluate other stormwater treatment measures like bioswales, in-line storage (in an oversized pipe), and smaller ponds in the existing WisDOT right-of-way. A combination of these measures may be implemented.

As part of its preliminary design WisDOT will complete an area-wide hydrologic analysis of Underwood Creek and Honey Creek (using a model developed by MMSD) to optimize its stormwater management. This analysis will allow WisDOT to determine the appropriate type and location of stormwater management facilities.

WisDOT would be responsible for maintaining any ponds that are built. If a pond is placed in the Underwood Parkway, the Oak Leaf Trail would be reconstructed and its connections

to the trail system north and south would be maintained. No ponds will be put on County-owned land without the approval of the Milwaukee County Parks Department and County Board. See April 9, 2009 letter from Milwaukee County Parks Department, page D-69.

3. Too much traffic will be diverted to local streets. Highway 100 is already too congested, and Glenview Avenue is a residential area with lots of kids walking to nearby schools. Keep local roads safe for bicyclists and pedestrians.

Traffic volumes on Highway 100, Watertown Plank Road, and Glenview Avenue will continue to increase in the future no matter what happens to the study-area freeway system. Several large-scale developments are planned on the County Grounds, County Research Park, and the Regional Medical Center. The Reduced Impacts Alternative will actually reduce traffic on some local streets by providing more capacity on the freeway system.

Currently there are 35,900 vehicles on Highway 100 between Bluemound Road and Wisconsin Avenue each day. The forecast amount of traffic in 2035 is:

- 40,000 vehicles per day under the No-Build alternative
- 46,000 vehicles per day under the Reduced Impact Alternative

Currently there are 13,100 vehicles on Glenview Avenue between Bluemound Road and Wisconsin Avenue each day. The forecast amount of traffic for 2035 is:

- 17,000 vehicles per day under the No Build alternative
- 17,000 vehicles per day under the Reduced Impact Alternative

Signal timing, advanced walk signals and the use of median for safe crossing will all be considered as designs for local roads move forward. WisDOT will be working with local communities on any improvements to local roads.

Based on additional coordination with the City of Wauwatosa after the Supplemental Draft EIS, Glenview Avenue will not be widened. It will be reconstructed to provide one lane in each direction and a two-way left-turn lane in the median. The reconstructed roadway would not be any wider than it is today.

4. Maintaining or enhancing bicycle and pedestrian accommodations

WisDOT will comply with TRANS 75, a new state statute that requires pedestrian and bicycle accommodations on highways. If a pond is placed in the Underwood Parkway, the Oak Leaf Trail would be reconstructed and its connections to the trail system north and south would be maintained. WisDOT will pave the Hank Aaron State Trail between 94th Place and the Oak Leaf Trail after the Zoo Interchange reconstruction is complete. A detour will be provided during construction.

WisDOT will construct a pedestrian overpass across Watertown Plank Road at 87th Street.

5. Protect the Monarch butterfly habitat on the County Grounds near the Eschweiler Buildings.

The oak trees on the north and west sides of the Eschweiler buildings used for roosting by the Monarch butterflies will not be affected by the project. The north berm, which is used by

the butterflies for nectaring, will be largely intact. The south berm will be affected by the Watertown Plank Road interchange reconstruction. WisDOT will minimize impacts to the south berm to the extent practicable.

After the March 2011 public hearing WisDOT decided that the loop ramp in the northeast quadrant of the Watertown Plank Road interchange should have a 30 mph design speed. This would make the ramp bigger and impact more of the Monarch Trail. It would, however, provide a big enough area inside the loop that the potential stormwater pond, if built, could be inside the loop ramp. This would reduce the area of the north berm affected by the Watertown Plank Road interchange.

6. Do not take land from the Milwaukee Montessori School.

Milwaukee Montessori School would not be relocated under any alternative. The freeway which is currently located behind the school play area will likely be closer to the school's play area. WisDOT will design the proposed freeway ramp to acquire as little property from the school as reasonably possible.

7. Don't take away parking in the lot in the southwest corner of the Bluemound Road/Highway 100 intersection.

Just west of Highway 100, the design for Bluemound Road will be narrowed to avoid impacting the municipal parking at 109th Street and Bluemound Road, alleviating the concern over parking availability.

8. Extend 92nd Street between Bluemound Road and Wisconsin Avenue and put in a freeway exit at 92nd Street.

An interchange at 92nd Street would be too close to the core of the Zoo Interchange to be viable.

6.5 Project Meetings After Supplemental Draft EIS Approval

After the Supplemental Draft EIS was approved in February WisDOT has continued to meet with adjacent property owners, local governments and other stakeholders. Key meetings are summarized below.

City of Milwaukee Common Council Public Improvements Committee (March 8). WisDOT updated the committee on the Reduced Impacts Alternative and Adjacent Arterials Component. Committee members expressed concern about the 18-foot-wide shoulders on I-94 through the core and the potential for them to be converted to an additional (third) travel lane.

City of Wauwatosa Mayor, Traffic Safety Committee. Several meetings were held with the City of Wauwatosa after the March public hearings primarily to discuss various aspects of the Adjacent Arterials Component. Letters from the mayor and three aldermen (see Appendix F) noted concern over the proposed widening of Glenview Avenue, the Bluemound Road/Highway 100 intersection. Based on these meetings WisDOT revised the plan for Glenview Avenue from a four-lane roadway to a three-lane roadway with a two-way left-turn lane. Glenview Avenue would not be widened under the new plan.

Glenview Avenue residents (March 1). WisDOT held a meeting at Wilson School on Glenview Avenue to inform nearby residents of the proposed reconstruction of Glenview Avenue to a four-lane roadway between Bluemound Road and a point north of Wisconsin Avenue. Several residents were concerned about the proposed widening and the potential for additional traffic on Glenview Avenue. Several noted that students at Wilson School, St. Jude and Wisconsin Lutheran High School walk along Glenview Avenue, and the residential nature of the neighborhood. Input from this meeting, other comments received during the public comment period and the City of Wauwatosa input led to the change from a 4-lane roadway to a 3-lane roadway with a two-way left-turn lane.

UWM Real Estate Foundation (May 13). WisDOT met with the UWM Real Estate Foundation to discuss the US 45 reconstruction adjacent to the UWM research campus construction on the County Grounds.

St. Jude (May 6). WisDOT met with the St. Jude principal and pastor to present the revised plan for Glenview Avenue. St. Jude has expressed their concern over the initially proposed widening to 4 lanes. The new 3-lane proposal addressed their concerns.

Participating and Cooperating Agencies, Key Stakeholders (May 13). WisDOT announced its preferred alternative at a meeting of participating agencies and other stakeholders.