**FHWA-WISC-EIS-2014-01-D**
INTERSTATE 43 NORTH-SOUTH FREEWAY
SILVER SPRING DRIVE TO WIS 60
Ozaukee and Milwaukee Counties, Wisconsin

WISDOT PROJECT I.D. 1229-04-01
DRAFT ENVIRONMENTAL IMPACT STATEMENT
and Section 4(f) Evaluation

SUBMITTED PURSUANT TO 42 USC 4332 (2) (c) AND 49 USC 303

BY THE

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION

AND

WISCONSIN DEPARTMENT OF TRANSPORTATION

AND

COOPERATING AGENCIES:

US ARMY CORPS OF ENGINEERS
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

3/12/14
Date of Approval

Rebecca Burkel
For Wisconsin Department of Transportation

3/17/14
Date of Approval

For Federal Highway Administration

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**FHWA will issue a single Final Environmental Impact Statement and Record of Decision document pursuant to Pub. L. 112-141, 126 Stat. 405, Section 1319(b) unless FHWA determines statutory criteria or practicability considerations preclude issuance of the combined document pursuant to Section 1319.**

## ABSTRACT

The proposed I-43 North-South Freeway Corridor Study will provide a safe and efficient transportation corridor to correct freeway deficiencies, improve highway safety, address growing traffic volumes and declining traffic operations, support regional land use and transportation plans, maintain a vital link with the highway network and other transportation modes, and to avoid and minimize impacts to the natural, cultural and built environment. This document reviews alternative actions to address these needs including modernization of the facility with or without additional lanes, the addition of an interchange at Highland Road, transportation system management, and travel demand management.

Comments on this Draft Environmental Impact Statement are due by May 12, 2014, or 45 days after the Notice of Availability is published in the *Federal Register*, whichever is later, and should be sent to **Steve Hoff, P.E., Project Manager, WisDOT Southeast Region, 141 NW Barstow St., Waukesha, WI 53187. Email: steve.hoff@dot.wi.gov.**

## NATIONAL ENVIRONMENTAL POLICY ACT

The National Environmental Policy Act (NEPA) of 1969, as amended in U.S. Code (USC) 42 USC § 4332, became effective Jan. 1, 1970. This law requires that all federal agencies prepare a detailed environmental impact statement (EIS) for major federal actions that will significantly affect the quality of the human environment. The Federal Highway Administration (FHWA) is therefore required to prepare an EIS on proposals that are funded under its authority if the proposal is determined to be a major action significantly affecting the quality of the human environment.

The EIS process is done in two stages: draft and final. The draft environmental impact statement (DEIS) is circulated for review and comment to federal, state and local agencies with jurisdiction by law or special expertise, and it is made available to the public. Pursuant to Code of Federal Regulations (CFR) 40 CFR § 1502.14(e), the preferred alternative is identified in the DEIS. The DEIS must be made available to the public at least 15 days before the public hearing and no later than the first public hearing notice. A minimum 45-day comment period is provided from the date the DEIS availability notice is published in the *Federal Register*. WisDOT must receive agency comments on or before the date listed on the front cover of the DEIS, unless a time extension is requested and granted by WisDOT. After the DEIS comment period has elapsed, work may begin on the final environmental impact statement (FEIS).

The FEIS includes the following:

1. Identification of the preferred course of action (alternative) and the basis for its selection.
2. Basic content of the DEIS, along with any changes, updated information, or additional information as a result of agency and public review.
3. Summary of, and responses to substantive comments on social, economic, environmental and engineering aspects received during the public hearing and the agency/public comment period on the DEIS.
4. Resolution of environmental issues and documentation of compliance with applicable environmental laws and related requirements.

The 2012 federal transportation bill, Moving Ahead for Progress in the 21st Century Act (MAP-21) includes several provisions designed to accelerate decision-making in project delivery, such as the concurrent issuance of an FEIS and a Record of Decision (ROD). Section 1319(b) of MAP-21 provides that the lead agency shall, to the maximum extent practicable, combine the FEIS and ROD unless (1) the FEIS makes substantial changes to the proposed action that are relevant to environmental or safety concerns; or (2) there are significant new circumstances or information relevant to environmental concerns and that bear on the proposed action or the impacts of the proposed action.

If no substantive new information is received at the public hearing, FHWA and WisDOT may proceed with the combined issuance of an FEIS and ROD. Both the DEIS and FEIS are full-disclosure documents, which provide a full description of the proposed project, the existing environment, and an analysis of the anticipated beneficial and/or adverse environmental effects.

**A federal agency may publish a notice in the *Federal Register,* pursuant to 23 USC §139(l), indicating that one or more federal agencies have taken final action on permits, licenses or approvals for a transportation project. If such notice is published, claims seeking judicial review of those federal agency actions will be barred unless such claims are filed within 150 days after the date of publication of the notice, or within such shorter time period as is specified in the federal laws pursuant to which judicial review of the federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the federal laws governing such claims will apply.**

## PROJECT LOCATION MAP

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# Abbreviations and Acronyms

| | |
|---|---|
| AADT | annual average daily traffic |
| AASHTO | American Association of State Highway and Transportation Officials |
| ADA | Americans with Disabilities Act |
| ADID | advanced identification of wetland disposal areas |
| APE | area of potential effect |
| CAC | community advisory committee |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| CSS | community sensitive solutions |
| DATCP | Wisconsin Department of Agriculture, Trade, and Consumer Protection |
| DEIS | draft environmental impact statement |
| DOA | Wisconsin Department of Administration |
| EIS | environmental impact statement |
| EPA | U.S. Environmental Protection Agency |
| FDM | Facilities Development Manual |
| FEIS | final environmental impact statement |
| FEMA | Federal Emergency Management Agency |
| FHWA | Federal Highway Administration |
| FTA | Federal Transit Administration |
| HOV | high-occupancy vehicles |
| INRA | isolated natural resource areas |
| LOS | level of service |
| LWCF Act | Land and Water Conservation Fund Act |
| MATC | Milwaukee Area Technical College |
| MCTS | Milwaukee County Transit Service |
| MLS | Multiple Listing Service |
| MMSD | Metropolitan Milwaukee Sewerage District |
| MOVES | Motor Vehicle Emission Simulator |
| MSATs | mobile source air toxics |
| NAAQS | National Ambient Air Quality Standards |
| NEPA | National Environmental Policy Act of 1969 |
| NHPA | National Historic Preservation Act |
| NRHP | National Register of Historic Places |
| OSHA | Occupational, Safety, and Health Administration |

# Abbreviations and Acronyms, continued

| | |
|---|---|
| ROD | Record of Decision |
| SEWRPC | Southeastern Wisconsin Regional Planning Commission |
| SHPO | State Historic Preservation Officer |
| SIP | state implementation plan |
| TAC | technical advisory committee |
| TCF | The Conservation Fund |
| TDM | travel demand management |
| TDML | total maximum daily load |
| THPO | Tribal Historic Preservation Officer |
| TIP | transportation improvement program |
| TMP | transportation management plan |
| TPC | Transportation Projects Commission |
| Trans 75 | *Wisconsin Administrative Code Chapter Trans 75: Bikeways and Sidewalks in Highway Projects* |
| TRB | Transportation Research Board |
| TSM | transportation system management |
| UP Railroad | Union Pacific Railroad |
| USC | U.S. Code |
| USACE | U.S. Army Corps of Engineers |
| USDOT | U.S. Department of Transportation |
| USFWS | U.S. Fish & Wildlife Service |
| VMT | vehicle miles traveled |
| vpd | vehicles per day |
| WCMP | Wisconsin's Coastal Zone Management Program |
| WDNR | Wisconsin Department of Natural Resources |
| WisDOT | Wisconsin Department of Transportation |

# EXECUTIVE SUMMARY

## PROPOSED ACTION

The Wisconsin Department of Transportation (WisDOT) and Federal Highway Administration (FHWA) are conducting the I-43 North-South Freeway Corridor Study to develop solutions for addressing deteriorated pavement, design deficiencies, safety concerns, growing travel demand and other existing and emerging problems in the corridor.

The proposed action would reconstruct I-43 between Silver Spring Drive in the city of Glendale (south limit), and WIS 60 in the village of Grafton (north limit) – a distance of about 14 miles (see **Project Location Map)**. The scope of the proposed action includes rebuilding the mainline roadway, bridges, and interchanges; replacing the existing partial interchange at County Line Road with a full-access interchange, or removing the interchange; constructing a new interchange at Highland Road; reconstructing local streets affected by the freeway reconstruction; and enhancing the aesthetic appearance of the reconstructed freeway.

Seven interchanges exist in the corridor: Silver Spring Drive, Good Hope Road, Brown Deer Road (WIS 100), County Line Road, Mequon Road (WIS 57/167), County C (Pioneer Road) and WIS 60.

### Purpose and Need for Proposed Action

The purpose of the I-43 North-South Freeway Corridor Study is to address emerging pavement and structural needs, safety issues, and design deficiencies while identifying methods to accommodate existing and projected future traffic volumes. The study also strives to minimize impacts to the natural, cultural and built environment to the extent feasible and practicable.

The need for the transportation improvements in the I-43 North-South Freeway study corridor is demonstrated through a combination of several key factors discussed in the sections below.

#### PAVEMENT AND DESIGN DEFICIENCIES

The corridor study freeway originally was constructed in the mid-1950s and mid-1960s. Although pavement maintenance and resurfacing has occurred since then, the structure of the I-43 pavement has exceeded its life expectancy. Complete reconstruction of the freeway's substructure and pavement is now required. The I-43 mainline has the following deficiencies:

- Inside and outside shoulders are too narrow and do not meet modern design standards in several locations.
- Vertical clearance (distance between I-43 and the bottom of a bridge over it) does not meet minimum standards in several locations.
- Stopping sight distance (minimum distance required by a driver traveling at a given speed to stop after seeing an object in the roadway) is inadequate in several locations
- The separation distance between the I-43 travel lanes and the parallel local service roads is severely deficient in some areas. For example, portions of Port Washington Road and Jean Nicolet Road are as close as 22 feet, but the recommended standard is 80 feet to 150 feet without retaining walls.
- "Lane continuity" means that drivers following a particular route do not need to change lanes or exit to remain on the route. Just south of Bender Road, I-43 drops one through-lane going

north and adds one through-lane going south. The lane drop contributes to the reduced traffic operations on the freeway.

The interchanges in the study corridor have the following deficiencies:

- Several interchange entrance and exit ramps are too short, making it difficult for drivers to merge on and off the I-43 mainline, or the ramps do not provide enough storage for exiting traffic.
- Local road intersections are too close to the interchange ramp terminals at some locations, causing back-ups and poor traffic operations.
- The County Line Road interchange at the Milwaukee/Ozaukee County line is a partial interchange that provides access to County Line Road via Port Washington Road as a northbound exit from I-43. The only access from County Line Road to I-43 is via a southbound entrance ramp. FHWA regulations call for interchanges on Interstate highways to provide for all traffic movements.

## SAFETY

Congestion and geometric deficiencies contribute to a high crash rate in the I-43 North-South Freeway study corridor. During a crash analysis period from 2006 through 2010, a total 1,087 crashes (excluding vehicle-deer crashes) occurred in the study corridor. Of these, 72 percent were property damage crashes, and 27 percent were crashes involving injuries or fatalities. Truck crashes accounted for about 11 percent of the total crashes.

The highest number of crashes on the freeway mainline occur between Good Hope Road and Silver Spring Drive. A majority of the crashes are characterized by rear-end and side-swipe crashes, which reflect locations where the drivers experience congestion and the roadway has geometric deficiencies. As traffic increases over time, crash rates in the corridor are expected to approach or exceed the statewide average rate.

Substandard design and traffic congestion at interchanges also contribute to crashes. The numbers of crashes at the Brown Deer Road and Mequon Road interchanges are approaching the statewide average for urban freeways.

## EXISTING AND FUTURE TRAFFIC

On an average weekday, existing traffic volumes on I-43 range from more than 85,000 vehicles per day (vpd) near Silver Spring Drive, to 49,000 vpd at WIS 60. Substantial traffic congestion occurs on a regular basis. Future projections show traffic growing to 112,500 vpd near Silver Spring Drive to 65,000 vpd at WIS 60 by 2040.

Heaviest traffic volumes typically occur during the morning peak-hour travel time (7 to 8 a.m.) and evening peak-hour travel time (4:30 to 5:30 p.m.).

Level of service (LOS) measures roadway congestion using rankings from A to F, with LOS A exhibiting free-flow traffic, and LOS F exhibiting severe congestion that approaches gridlock. FHWA guidance calls for Interstates to provide LOS C; however, LOS D can be acceptable in urban areas. Currently, just more than 60 percent of the study corridor freeway operates at LOS C or better during the morning peak-hour travel time; 70 percent operates at LOS C or better during the evening peak-hour travel time. LOS in the study corridor is worst from the Good Hope Road interchange to where a third southbound lane picks up just south of Bender Road.

Projected traffic volumes for 2040 show that more than 60 percent of the study corridor freeway would operate at LOS D or worse (20 percent at LOS F) during the morning peak-hour travel

time. Congestion is associated with the heavy southbound morning peak-hour traffic, with sections of the study corridor freeway operating at LOS E and LOS F as far north as Mequon Road in Ozaukee County. During the evening peak-hour travel time, northbound lanes throughout the entire corridor and most of the southbound lanes in Milwaukee County would operate at LOS D or worse.

## REGIONAL TRANSPORTATION PLANNING

Recommendations for improvements in the I-43 North-South Freeway study corridor are provided in the two reports published by the Southeastern Wisconsin Regional Planning Commission (SEWRPC): Planning Report No. 39: *A Regional Transportation System Plan for Southeastern Wisconsin: 2035* (June 2006) and Memorandum Report No. 197: *Review, Update and Reaffirmation of the Year 2035 Regional Transportation Plan* (June 2010).

Key regionwide recommendations in these reports include the following:

- Improve freeway system service interchanges:
  - Lengthen and widen ramp tapers.
  - Convert multipoint exits to single point exits.
  - Provide selected auxiliary lanes to address closely spaced interchanges.
- Improve I-43 mainline:
  - Improve freeway horizontal and vertical curvatures, grades, and vertical clearances to meet federal design standards.
  - Provide full inside and outside shoulders.

Specific recommendations for the I-43 North-South Freeway study corridor include the following:

- Provide six travel lanes on the I-43 mainline and add auxiliary lanes between interchanges.
- Reconstruct interchanges at County C, Mequon Road, County Line Road, Brown Deer Road, and Good Hope Road for improved ramp geometry and better operations.
- Investigate reconfiguration of Brown Deer Road interchange to a diamond style interchange.
- Add a new interchange at Highland Road.
- At the Silver Spring interchange, construct new pavement and preserve existing bridges and retaining walls because this freeway segment was recently reconstructed.
- Consider relocating the County Line interchange northbound exit ramp to Port Washington Road farther north.

## SYSTEM LINKAGE AND ROUTE IMPORTANCE

I-43 is a part of the National Highway System and is identified in WisDOT's statewide, multimodal transportation plan, *Connections 2030*, as a system-level priority corridor linking south-central and eastern Wisconsin. FHWA has identified and designated highways as part of the National Highway System to ensure connectivity to the national defense highway network and other important regional transportation routes, and to provide a high level of safety, design and operational standards. *Connections 2030* priority corridors are critical to Wisconsin's travel patterns and support the state's economy. I-43 is also a designated federal and state "long truck route," which allows longer commercial vehicles to use the freeway.

## Alternatives

The I-43 North-South Freeway Corridor Study evaluated a no-build alternative and a range of build alternatives that would address the study's purpose and need to varying degrees.

WisDOT and FHWA have identified in this draft environmental impact statement (DEIS) a preferred alternative that would address long-term needs in the study corridor while minimizing to the extent possible and practicable impacts to adjacent developments and environmental resources. WisDOT and FHWA will select a preferred alternative after reviewing input received at a public hearing and during the public comment period for this DEIS. The preferred alternative will be based on engineering and environmental factors, and input from citizens, state and federal resource agencies, cooperating and participating agencies, Native American tribes, local officials and other interested parties.

### NO-BUILD ALTERNATIVE

The No-Build Alternative serves as a baseline for impact comparison to the build alternatives. Under the No-Build Alternative, the study corridor freeway and its interchanges would be maintained in its current configuration. Over time and as needed, WisDOT would replace existing pavement, structures and other highway elements. This alternative does not provide capacity expansion, or design and safety improvements on the freeway mainline or at the interchanges. The No-Build Alternative would have fewer environmental impacts and would cost less than the build alternatives; however, it would not address substandard design elements, safety concerns, or forecast traffic volumes. Therefore, the No-Build Alternative is not a viable long-term solution for addressing current and emerging problems in the I-43 North-South Freeway study corridor.

### TRANSPORTATION SYSTEM MANAGEMENT AND TRAVEL DEMAND MANAGEMENT ELEMENTS

The build alternatives for I-43 and its interchanges as discussed in the "Project-Level Highway Improvements" subsection below include regionwide transportation system management (TSM) and travel demand management (TDM) elements recommended in SEWRPC's regional transportation plan. TSM elements in the I-43 North-South Freeway study corridor include ramp metering, traffic detectors, closed circuit television cameras, and crash investigation sites. TDM elements include rapid bus service and special event service in Milwaukee County provided by the Milwaukee County Transit System (MCTS) and the Ozaukee County Express. Transit improvements planned in the study corridor, such as rapid and express bus routes, would not be precluded or affected by the proposed highway improvements. Existing transit service or future expanded service would be enhanced by the study's proposed highway improvements due to safer and more efficient conditions that could also reduce transit travel times.

*TSM elements optimize existing transportation facilities to maximum carrying capacity and travel efficiency through freeway, and local road traffic management and other measures to help alleviate congestion. TDM elements reduce personal vehicular travel by increasing transit use or shifting personal vehicular travel to alternative times and routes, allowing for more efficient use of the existing transportation system's capacity.*

## PROJECT-LEVEL HIGHWAY IMPROVEMENTS

WisDOT developed, evaluated and screened an initial broad range of highway improvement alternatives based on purpose and need factors, costs, environmental constraints, impacts to natural resources and abutting development, and input from resource agencies, local officials, and the public. The initial range included the following build alternatives:

- Spot improvements
- I-43 mainline modernization with no capacity expansion (maintaining four traffic lanes)
- I-43 mainline modernization with capacity expansion (adding additional lane for six traffic lanes)

The South Segment of the I-43 mainline, between Silver Spring Drive and Green Tree Road, included several alignment alternatives that would reconstruct I-43 along its centerline, shifting east or west of its existing alignment or raising the alignment to minimize right of way impacts. The South Segment alternatives include reconstructing Jean Nicolet Road and converting Port Washington Road from two to four lanes. The North Segment of the I-43 mainline between Green Tree Road and WIS 60 included alignment alternatives generally centered on the existing alignment, but with widening options to the inside median or to the outside shoulders. WisDOT considered a range of interchange configurations at each interchange, including:

- Diamond
- Tight Diamond
- Diverging Diamond
- Split Diamond
- Horseshoe

**Section 2** provides detailed information about the initial range of alternatives considered and the screening process to determine the reasonable and preferred alternatives to be carried forward for detailed evaluation in the DEIS. The reasonable alternatives that best address current and future deficiencies, safety, and traffic demand while minimizing impacts to the natural and built environment are summarized in the next sections. The sections below also identify the preferred alternative for the I-43 mainline and interchanges.

### PREFERRED ALTERNATIVES

- **I-43 Mainline South Segment (Silver Spring Drive to Green Tree Road:** Modernization – 6 Lanes (Shifted East)
- **I-43 Mainline North Segment (Green Tree Road to WIS 60):** Modernization – 6 Lanes; additional lanes added to inside median
- **Good Hope Road Interchange:** Tight Diamond
- **Brown Deer Road Interchange:** Diverging Diamond
- **County Line Road Interchange:** Split Diamond Hybrid
- **Mequon Road Interchange:** Tight Diamond
- **Highland Road Interchange:** Tight Diamond
- **County C Interchange:** Diamond

*I-43 FREEWAY MAINLINE*

The Modernization – 6 Lanes (Mainline Shifted East) alternative was carried forward for detailed analysis and is WisDOT's preferred alternative in the South Segment. Under this alternative, I-43 would be reconfigured to six lanes between Silver Spring Drive and Bender Road with spot improvements that replace median barriers and improve inside and outside shoulders to current design standards. I-43 would then be widened with a "best fit" alignment between Bender Road and the Union Pacific (UP) Railroad bridge but generally offset to the east of the existing freeway centerline from the UP Railroad bridge to Green Tree Road. The alternative would include other alignment adjustments at spot locations to minimize impacts, and it would replace the UP Railroad bridge. Reconstruction would involve replacing pavement, correcting vertical profiles to increase clearances at all bridges and widening inside and outside shoulders to meet current standards. Under this alternative, Jean Nicolet Road would be reconstructed as a two-lane facility on its existing alignment with a sidewalk on the west side and a bike lane on both sides of the road. As proposed, Port Washington Road would be shifted east and reconstructed as a four-lane facility between Bender Road and Daphne Road, with sidewalk on the east side and bike lanes on both sides of the road.

Improvements in the North Segment I-43 mainline (Green Tree Road to WIS 60) also involve reconstructing the existing four-lane freeway to six lanes, replacing pavement, correcting vertical profiles to increase clearances at all bridges and reconstructing inside and outside shoulders to meet current standards. Widening is proposed to occur generally on the inside (median) to minimize right of way impacts in both the Milwaukee County and Ozaukee County portions of the I-43 mainline. Barrier treatment options in the median, which would be determined during the preliminary engineering phase, would include a concrete barrier or beam guard. The Modernization-6 Lanes alternative, with inside widening, is the preferred alternative for the North Segment of the I-43 mainline.

*I-43 INTERCHANGES*

The reasonable interchange alternatives retained for detailed study in this DEIS are summarized below. Further information about the initial range of alternatives considered and the screening process leading to the reasonable alternatives is provided in **Section 2**.

### *Silver Spring Drive*

The Silver Spring Interchange was reconstructed in 1992 and upgraded in 2006. It does not require improvements at this time. In the long term, the Silver Spring Drive interchange would be evaluated when I-43 mainline to the south of Silver Spring Drive is studied for possible future improvements.

### *Good Hope Road*

WisDOT's preferred alternative for the Good Hope Road interchange is a Tight Diamond, which would include the following elements:

- Reconstructs ramps to current design standards to improve safety.
- Ramps on east side pulled closer to I-43 to maximize distance between the ramps and the Port Washington Road/Good Hope Road intersection for better traffic operations.
- Retains the recently reconstructed Good Hope Road bridges over I-43.

### *Brown Deer Road*

WisDOT is considering two reasonable alternatives at the Brown Deer Road interchange. The Diamond alternative would include the following elements:

- Replaces existing loop ramps with standard Diamond ramps.
- Ramps on east side would be pulled closer to I-43 to maximize distance between ramps and the Port Washington Road/Brown Deer Road intersection for better traffic operations.
- Retains the recently reconstructed Brown Deer Road bridges over I-43.

WisDOT is also considering a Diverging Diamond interchange alternative. This alternative would include the following elements:

- Ramps on east side would be pulled closer to I-43 to maximize distance between ramps and the Port Washington Road/Brown Deer Road intersection.
- Eastbound and westbound traffic on Brown Deer Road cross to opposite lanes on the I-43 overpass bridge to facilitate turning movements.
- Retains the recently reconstructed Brown Deer Road bridges over I-43.
- Provides adequate capacity for a longer period beyond the design year of 2040, as compared with the Diamond interchange.

WisDOT's preferred alternative is the Diverging Diamond interchange.

### *County Line Road*

The County Line Road interchange is a partial interchange with I-43 access to and from the south only. FHWA regulations require that interchanges provide for all movements to and from Interstate freeways. Consistent with FHWA regulations, WisDOT is considering a No Access alternative, which removes the existing partial interchange, or reconstructing the interchange as a Split Diamond Hybrid to provide for all traffic movements. While the partial interchange does not meet FHWA's Interstate requirements, the city of Mequon asked WisDOT to submit a request to FHWA to consider an exception. A decision from FHWA is pending. WisDOT is retaining a Partial Diamond interchange alternative for detailed study. The Partial Diamond interchange alternative would extend the northbound exit ramp further north to terminate at the Port Washington Road/Katherine Drive intersection. Extending the ramp further north removes weaving conflicts with the northbound entrance ramp from the Brown Deer Road interchange. The southbound entrance ramp from County Line Road would be reconstructed at its existing location.

WisDOT's preferred alternative for the County Line Road interchange is the Split Diamond Hybrid, which would include the following elements:

- Shifts the northbound exit ramp further north to increase weaving distance between the exit ramp and the Brown Deer interchange northbound entrance ramp.
- Provides full access with ramps split between County Line Road and Port Washington Road.
- Maintains local access on Port Washington Lane.

The two subalternatives of the Split Diamond Hybrid feature different access options for the Katherine Drive/Port Washington Road intersection and the northbound entrance ramp.

The Split Diamond Hybrid (Grade Separation) would:

- Access the northbound entrance ramp from Port Washington Road.
- Construct a Port Washington Road bridge over Katherine Drive and route Katherine Drive to a new

intersection with Port Washington Road approximately 900 feet south of the existing intersection.

The Split Diamond Hybrid (without Grade Separation) would:

- Access the northbound entrance ramp from Katherine Drive.
- Reconstruct the existing Katherine Drive/Port Washington Road intersection in the same general location.

WisDOT would select a preferred subalternative after the public hearing and comment period on the DEIS. If either the No Access or Split Diamond Hybrid alternative is selected as the preferred alternative, SEWRPC would amend its long-range transportation plan before FHWA issues a Record of Decision (ROD) for the study. If FHWA approves the waiver for a Partial Diamond interchange, WisDOT may consider it as a preferred alternative.

#### *Mequon Road*

WisDOT's preferred alternative for the Mequon Road interchange is the Tight Diamond, which would include the following elements:

- Upgrades interchange to current FHWA design standards.
- Shifts I-43 mainline east and pulls southbound ramps closer to I-43 to maximize distance between the ramps and the Port Washington Road/Mequon Road intersection.

#### *Highland Road*

WisDOT is considering two reasonable alternatives at the Highland Road interchange. The Tight Diamond interchange, which is the preferred alternative, would provide new access to and from I-43 and would feature the following elements:

- Interchange ramps pulled in to minimize impacts to wetlands, the UP Railroad tracks east of I-43 and development west of I-43.
- Requires retaining walls.

Construction of a new Highland Road interchange will depend on agreement between WisDOT and the city of Mequon regarding construction funding. Without this agreement, WisDOT would implement the No Access alternative, which would not provide new access at Highland Road.

#### *County C*

WisDOT's preferred alternative for the County C interchange is the Diamond, which would include the following elements:

- Upgrades interchange to current FHWA design standards.
- Provides more storage space between west ramp terminals and intersection of Port Washington Road/County C intersection.

#### *WIS 60*

The existing ramps on the south side of the WIS 60 interchange would be adjusted slightly to accommodate the I-43 mainline transition from the new six-lane facility to the existing four-lane facility at this location. There would be no substantive changes to existing ramp geometry.

## Environmental Impacts

**Table S-1** summarizes environmental impacts of the reasonable build alternatives retained for detailed study. Detailed information on potential environmental effects, along with proposed mitigation measures for unavoidable adverse effects, is provided in **Section 3**.

## Time Frame for Implementing Proposed Action

If a build alternative is selected at the conclusion of the current environmental impact statement (EIS) phase, the I-43 North-South Freeway Corridor Study would be considered for funding enumeration by the legislative Transportation Projects Commission (TPC) in fall 2014 along with several other statewide major transportation projects. If this study is enumerated by the TPC, it will proceed to the engineering design phase. Construction would depend on funding availability. The earliest construction would likely start is year 2020.

## Other Federal or State Actions Required

If a build alternative is selected at the conclusion of the EIS process and the I-43 North-South Freeway Corridor Study proceeds to the engineering design phase, WisDOT will apply to the U.S. Army Corps of Engineers (USACE) for a permit to place fill in waters of the United States under Section 404 of the Clean Water Act. WisDOT will also request Water Quality Certification from the Wisconsin Department of Natural Resources (WDNR) under Section 401 of the Clean Water Act, consistent with standards contained in NR 103 and NR 299, Wisconsin Administrative Code.

Property acquisition and residential or business relocations will be done in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended by U.S. Code (USC) Title 49 USC § 24.

## Regulatory Compliance

Planning, agency coordination, community involvement and impact evaluation for the I-43 North-South Freeway Corridor Study has been conducted in accordance with the National Environmental Policy Act and Wisconsin Environmental Policy Act, Clean Water Act, Clean Air Act, Fish and Wildlife Coordination Act, Endangered Species Act, National Historic Preservation Act, Resource Conservation and Recovery Act, and other federal and state laws, policies and procedures for environmental impact analysis and preparation of environmental documents. This document is also in compliance with U.S. Department of Transportation (USDOT) and FHWA policies for implementing Presidential Executive Order on Environmental Justice 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations. Neither minority populations nor low-income populations will experience disproportionately high and adverse impacts if a build alternative is implemented.

## Local Concerns and Unresolved Issues

Some local residents in the vicinity of the County Line Road interchange have expressed concerns about the traffic impacts of a full access interchange. The city of Mequon has requested that WisDOT retain a partial interchange to minimize impacts and retain local access. WisDOT is retaining a Partial Diamond interchange alternative for detailed evaluation.

Because the partial interchange would not meet current Interstate interchange standards, both WisDOT and FHWA staff would continue to coordinate with the city to minimize impacts if the Split Diamond Hybrid alternative is selected as the preferred alternative after the public hearing on the DEIS.

The USACE does not concur with the preferred Highland Road Tight Diamond interchange alternative since the No Access alternative is the least environmentally damaging alternative to wetlands. The No Access alternative creates substantially greater traffic operations and business access impacts at the Port Washington Road/Mequon Road intersection, which requires added infrastructure to accommodate traffic volumes. The alternative does not meet the purpose and need of being consistent with SEWRPC's regional long-range transportation plans. But, if the city of Mequon determines not to participate in the local cost-share for interchange construction, WisDOT would move forward with the No Access alternative as the preferred alternative. Other known concerns and issues have been addressed to the extent practicable based on the level of engineering detail and environmental information available at this stage.

## Table ES-1: Impacts Summary

| Environmental Factors | Alternatives | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Brown Deer Road Interchange | | County Line Road Interchange | | | Highland Road Interchange | |
| | No-Build | Build[1] | Diamond | Diverging Diamond[2] | No Access | Split Diamond Hybrid[2, 3] | Partial Diamond | No Access | Tight Diamond[2] |
| New right of way (acres) | 0 | 23.12 | 1.84 | 2.14 | 1.59 | 1.72 | 1.72 | 0 | 1.32 |
| Traffic LOS in design year 2040 | E/F | C/D | C/D | C/D | NA | C | C | N/A | C |
| Residential relocations | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Commercial relocations | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total wetland (acres) | 0 | 20.3 | 0.75 | 0.72 | 1.01 | 1.03 | 1.03 | 2.10 | 5.43 |
| Advanced identification of wetland disposal areas (acres) | 0 | 2.51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Environmental corridors and isolated natural resource areas (acres) | 0 | 4.07 | 0 | 0 | 0 | 0 | 0 | 0 | 0.16 |
| Stream crossings | 21[4] | 20[4] | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| 100-year floodplain crossings | 8 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 100-year floodplain fill (acres) | 0 | 4.78 | 0 | 0 | 0 | 0 | 0 | 0 | 0.14 |
| Farmland (acres) | 0 | 9.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Threatened/endangered species (potential for impacts) | No | Yes[5] | Yes[5] | Yes[5] | Yes[5] | Yes[5] | Yes[5] | Yes[5] | Yes[5] |
| Historic structures/properties (North Shore Water Treatment Plant) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Archaeological sites | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Public use facilities (Craig Counsell Park, Nicolet High School land) | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Noise receptors impacted (design year 2040) | N/A | • 290 residences<br>• 2 school athletic fields<br>• 1 place of worship<br>• 1 day care center | • 290 residences<br>• 2 school athletic fields<br>• 1 place of worship<br>• 1 day care center | • 290 residences<br>• 2 school athletic fields<br>• 1 place of worship<br>• 1 day care center | • 280 residences<br>• 2 school athletic fields<br>• 1 place of worship<br>• 2 day care centers | • 279-280 residences[5]<br>• 2 school athletic fields<br>• 1 place of worship<br>• 1 day care center | • 280 residences<br>• 2 school athletic fields<br>• 1 place of worship<br>• 2 day care centers | • 290 residences<br>• 2 school athletic fields<br>• 1 place of worship<br>• 1 day care center | • 290 residences<br>• 2 school athletic fields<br>• 1 place of worship<br>• 1 day care center |

*Notes:*

*1. The build alternative includes the preferred I-43 mainline Modernization – 6 Lanes alternatives for the South and North segments, and preferred alternatives for the interchanges at Good Hope Road, Mequon Road and County C.*

*2. Preferred alternative.*

*3. Includes theSplit Diamond Hybrid grade separation/without grade separation subalternatives.*

*4. Stream crossings include Fish Creek, its tributaries and tributaries to the Milwaukee River, including Ulao Creek and Indian Creek. All existing structures are either concrete box culverts or pipe culverts.*

*5. Potential habitat for the seaside crowfoot (Ranunculus cymbalaria), a state-listed threatened species, observed in the study corridor. Impacts to other threatened and endangered species and their habitat in the study corridor can be avoided.*

*6. Residential noise receptors impacted: 279 with Split Diamond Hybrid (without Grade Separation); 280 with Split Diamond Hybrid (Grade Separation).*

| | Alternatives | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Brown Deer Road Interchange | | County Line Road Interchange | | | Highland Road Interchange | |
| **Environmental Factors** | **No-Build** | **Build[1]** | **Diamond** | **Diverging Diamond[2]** | **No Access** | **Split Diamond Hybrid[2, 3]** | **Partial Diamond** | **No Access** | **Tight Diamond[2]** |
| Potential contaminated sites (recommended for further investigation) | N/A | 30 | Part of corridorwide analysis; no difference among interchange alternatives | Part of corridorwide analysis; no difference among interchange alternatives | Part of corridorwide analysis; no difference among interchange alternatives | Part of corridorwide analysis; no difference among interchange alternatives | Part of corridorwide analysis; no difference among interchange alternatives | Part of corridorwide analysis; no difference among interchange alternatives | Part of corridorwide analysis; no difference among interchange alternatives |
| Air quality concerns | No | No | No | No | No | No | No | No | No |
| Indirect effects anticipated? | Land use effect: Increasing congestion could cause development to shift away from primary study area (and to a lesser extent within secondary study area) to locations within the region that have less congestion | Land use effect: Facilitates planned redevelopment and development within primary study area (and to a lesser extent within the secondary study area) | Limited land use effect: Maintains existing access; supports existing businesses and neighborhoods and planned redevelopment within Milwaukee County primary study area | Limited land use effect: Maintains existing access; supports existing businesses and neighborhoods and planned redevelopment within Milwaukee County primary study area | Limited land use effect: Established land uses minimize effect; changed travel patterns; access available from nearby interchanges | Limited land use effect: Established land uses minimize effect. Some local concerns about traffic impacts and travel indirection of the “Grade Separation” subalternative; the “without Grade Separation” subalternative minimizes indirection. Supports Port Washington Road business corridors in Mequon, Bayside and Fox Point. | No change from existing conditions | Limited land use effect: Planned land uses likely to occur regardless of interchange alternative; nearby freeway access is already available. | Improved access and local implementation of the Mequon East Growth Area Plan would facilitate planned land uses. |
| Cumulative effects anticipated? | No | Limited effect: Mitigation measures minimize effects | Limited effect: Mitigation measures minimize effects | Limited effect: Mitigation measures minimize effects | Limited effect: Mitigation measures minimize effects | Limited effect: Mitigation measures minimize effects | No change from existing conditions | Limited effect: Mitigation measures minimize effects | Limited effect: Mitigation measures minimize effects |
| Environmental justice effects anticipated? | No | Build alternative’s indirect and cumulative land use effects could facilitate employment land uses in areas that are not accessible by transit. | Part of corridorwide analysis; no difference among interchange alternatives | Part of corridorwide analysis; no difference among interchange alternatives | Part of corridorwide analysis; no difference among interchange alternatives | Part of corridorwide analysis; no difference among interchange alternatives | Part of corridorwide analysis; no difference among interchange alternatives | Part of corridorwide analysis; no difference among interchange alternatives | Part of corridorwide analysis; no difference among interchange alternatives |

*Notes:*

*1. The build alternative includes the preferred I-43 mainline Modernization – 6 Lanes alternatives for the South and North segments, and preferred alternatives for the interchanges at Good Hope Road, Mequon Road and County C.*

*2. Preferred alternative.*

*3. Includes theSplit Diamond Hybrid grade separation/without grade separation subalternatives.*

*4. Stream crossings include Fish Creek, its tributaries and tributaries to the Milwaukee River, including Ulao Creek and Indian Creek. All existing structures are either concrete box culverts or pipe culverts.*

*5. Potential habitat for the seaside crowfoot (Ranunculus cymbalaria), a state-listed threatened species, observed in the study corridor. Impacts to other threatened and endangered species and their habitat in the study corridor can be avoided.*

*6. Residential noise receptors impacted: 279 with Split Diamond Hybrid (without Grade Separation); 280 with Split Diamond Hybrid (Grade Separation).*

# 1. PURPOSE AND NEED FOR THE PROPOSED ACTION

The Wisconsin Department of Transportation (WisDOT) and the Federal Highway Administration (FHWA) initiated the I-43 North-South Freeway Corridor Study in northern Milwaukee County and southern Ozaukee County to address emerging pavement and structural needs, safety needs, design deficiencies and growing travel demand. The formal announcement of the I-43 North-South Freeway Corridor Study was published in the *Federal Register* on April 6, 2012.

Section 1.0 describes the purpose of the proposed project and the need for improvements being considered in the I-43 North-South Freeway study corridor. Purpose and need factors encompass improvements intended to correct existing problems, and problems that may occur later during the project's 30-year planning period, ending in the year 2040. This section highlights these problems in the corridor in detail.

Together, the purpose and need for improvements in the I-43 North-South Freeway study corridor will shape the range of alternatives developed and evaluated, leading to the preferred alternative. The alternatives evaluation process determines the most appropriate solution(s) to identified and anticipated problems. The preferred alternative will be selected, in part, based on how well it satisfies the study's purpose and need.

## 1.1. PROJECT LOCATION

The I-43 North-South Freeway study corridor encompasses about 14 miles of I-43 from Silver Spring Drive in the city of Glendale (south limit) to WIS 60 in the village of Grafton (north limit) (**Exhibit 1-1**). Other municipalities in the study area include the villages of River Hills, Fox Point, and Bayside; the city of Mequon; and the town of Grafton.

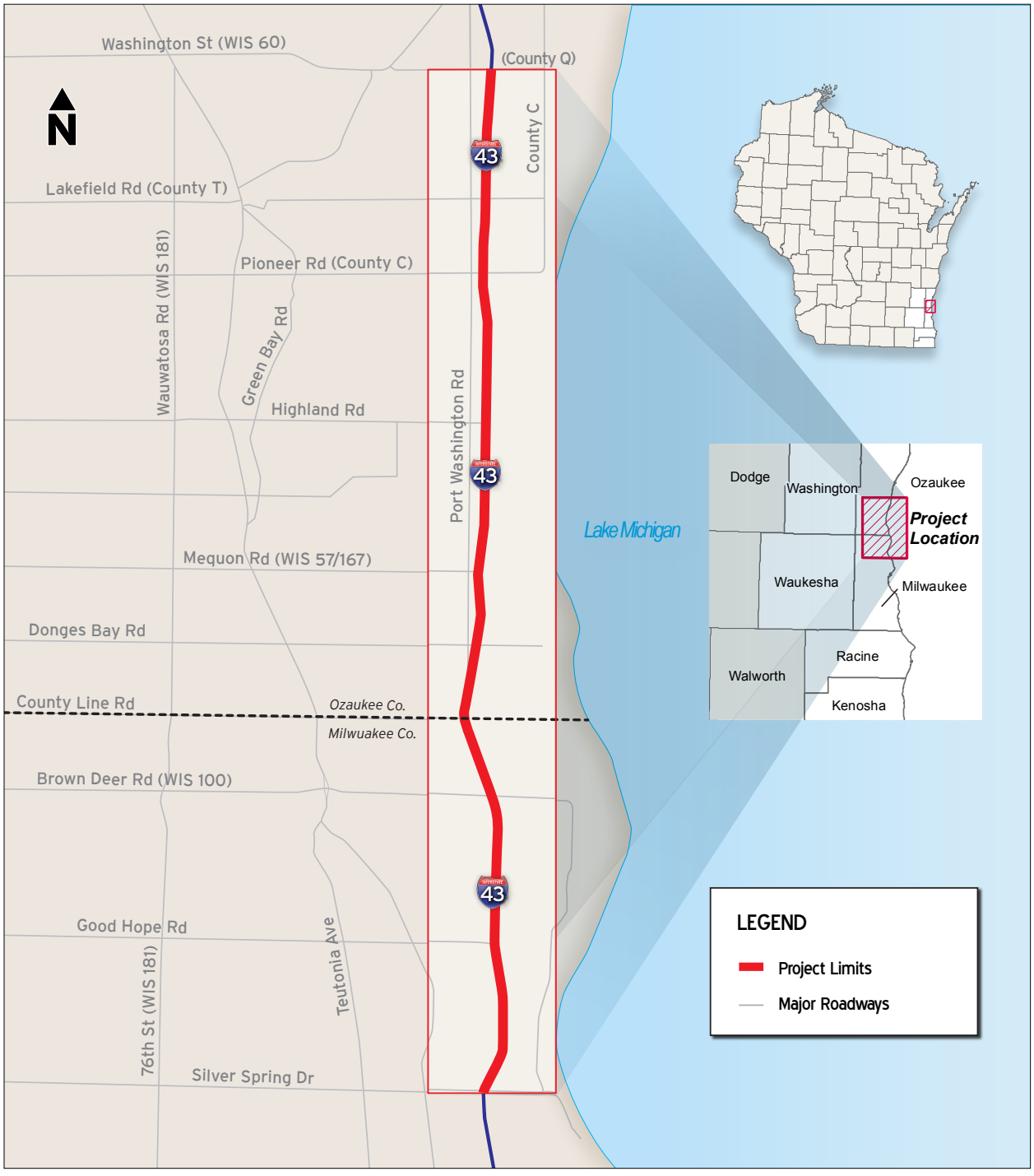
Seven interchanges exist in the corridor located at Silver Spring Drive, Good Hope Road, Brown Deer Road (WIS 100), County Line Road, Mequon Road (WIS 57/167), County C (Pioneer Road) and WIS 60.

WisDOT and FHWA considered projected future traffic volumes, design deficiencies, crash rates and other freeway features when they determined the project limits. The agencies specifically, for example, considered the drop from six lanes to four lanes on I-43 just north of Silver Spring Drive, and north of WIS 60, where the freeway becomes less urbanized. The project limits are consistent with the following criteria used by FHWA[1] to determine project termini:

- Connects logical termini and is sufficiently long enough to address environmental matters on a broad scope;
- Has independent utility or independent significance. That is, a proposed action is usable and a reasonable expenditure even if no additional transportation improvements in the area are made; and
- Does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

[1] *Code of Federal Regulations (CFR) 23 CFR § 771.111(f)*

## Exhibit 1-1: North-South Freeway Corridor Project Limits



## 1.2. PURPOSE OF THE PROPOSED PROJECT

The proposed I-43 North-South Freeway Corridor Study alternatives will provide a safe and efficient transportation system to serve existing and future travel demand, and support regional and local land use planning objectives articulated in the regional transportation plans. Study alternatives must also minimize impacts to the natural, cultural and built environment to the extent feasible and practicable.

*The purpose of the I-43 North-South freeway corridor study is to address emerging pavement and structural needs, safety issues and design deficiencies while identifying methods to accommodate existing and projected future traffic volumes.*

## 1.3. NEED FOR THE PROPOSED ACTION

The need for the proposed improvements sets the stage for developing and evaluating possible alternatives. The need for the transportation improvements in the I-43 North-South Freeway study corridor is demonstrated through a combination of factors including the following elements:

- Pavement, freeway design and geometric deficiencies;
- Safety;
- Existing and future traffic volumes;
- Regional land use and transportation planning; and
- System linkage and route importance.

### 1.3.1. Pavement, Freeway Design and Geometric Deficiencies

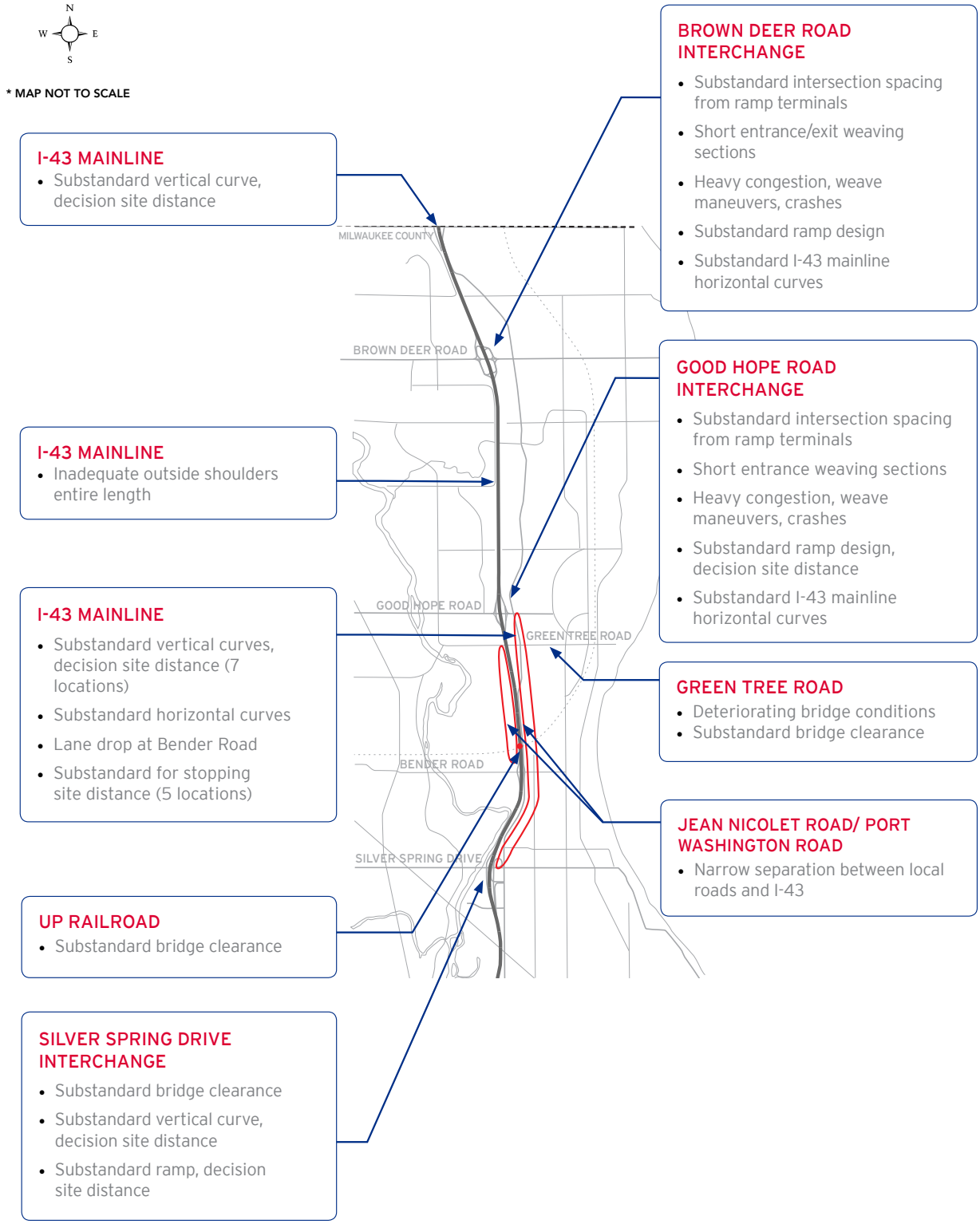
**Exhibit 1-2** and **Exhibit 1-3** summarize some of the key substandard road elements along the I-43 North-South Freeway study corridor that are discussed in greater detail in this subsection.

I-43 has six travel lanes with a narrow, barrier-separated median at Silver Spring Drive. Going north, I-43 narrows to four travel lanes just south of Bender Road. Between Bender Road and Good Hope Road, the median ranges in width from 22 feet to 48 feet, with either a concrete barrier or beam guard, and narrow curbed shoulders. Between Good Hope Road and County Line Road the freeway has flush, paved shoulders, and the median changes between concrete and grass with a concrete barrier or cable guard in the center. The remainder of the study corridor freeway north of County Line Road has a grass median between 60 feet and 70 feet wide, with paved shoulders ranging in width from 6 feet to 11 feet.

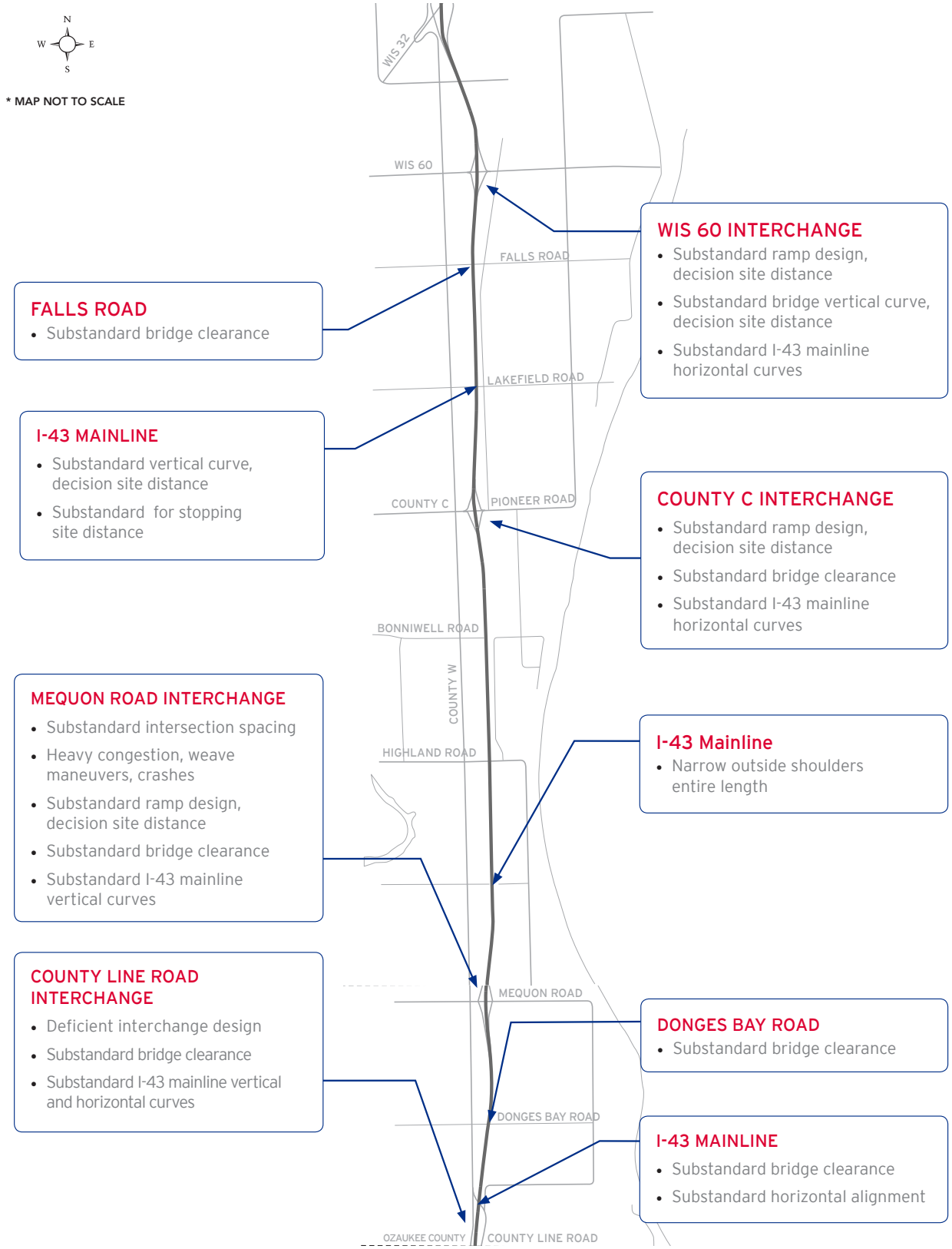
Seven service interchanges are located along the study corridor freeway. Interchanges in the corridor are about 2 miles apart in Milwaukee County, and between 3 and 4 miles apart in Ozaukee County. The greatest distance between interchanges is the 4 miles between Mequon Road and Pioneer Road (County C). The general rule for interchange spacing, according to the American Association of State Highway and Transportation Officials (AASHTO), is a minimum of 1 mile for freeways in urban areas and 2 miles in rural areas. The I-43 North-South study corridor freeway is considered urban.

*Service interchanges connect freeways with surface streets and cross roads.*

## Exhibit 1-2: I-43 Existing Substandard Road Elements, Milwaukee County



## Exhibit 1-3: Existing Substandard Road Elements, Ozaukee County



Several more local and county highways cross over or under the study corridor freeway. Union Pacific (UP) Railroad tracks pass over I-43 just north of Bender Road and run parallel along the east side of the freeway north of Donges Bay Road. Port Washington Road (County W) is the frontage road on the east side of I-43 from Silver Spring Drive to Daphne Road. Jean Nicolet Road is the frontage road from Montclaire Avenue to Green Tree Road on the west side of I-43.

## PAVEMENT CONDITION

WisDOT's evaluation shows that I-43's pavement has exceeded its life expectancy. The study corridor freeway first was constructed between the mid-1950s and mid-1960s. Concrete pavement eventually wears and cracks. As water enters the pavement, it rusts the tie bars that hold slabs of concrete together (**Exhibit 1-4**). Water also runs through the cracks to the gravel base under the pavement, washing out the finer gravel material and creating a void that makes the base for the pavement less stable. Heavy trucks, and hot and cold temperature extremes add to the stresses on the pavement.

WisDOT resurfaced I-43 in Milwaukee County with a layer of asphalt pavement in the late 1970s, and in Ozaukee County in the early 1980s. This effort returned the roadway to a smooth riding surface but did not address the cracks in the original pavement or possible voids in the gravel base under the pavement. WisDOT reconstructed I-43 between Silver Spring Drive and Bender Road in the early 1990s when it reconstructed the Silver Spring interchange.

WisDOT resurfaced I-43 from Bender Road to WIS 60 once again in the late 1990s, and it plans to overlay this segment again in 2014. The planned 2014 resurfacing will extend the life and drivable condition of the pavement for a few years until I-43 is reconstructed.

Each resurfacing has a shorter and shorter life span because the original pavement, still in place after more than 55 years, provides a less effective base as it continues to crack and deteriorate (**Exhibit 1-5**). A condition called "faulting" occurs in the joints that cross the roadway as slabs of concrete are pushed up at slightly different elevations, making for an uneven driving surface. The study corridor freeway asphalt overlay shows signs of chipping away in the joints between the lanes, resulting in a V-shaped depression in the roadway.

**Exhibit 1-4: Basic Pavement Components**

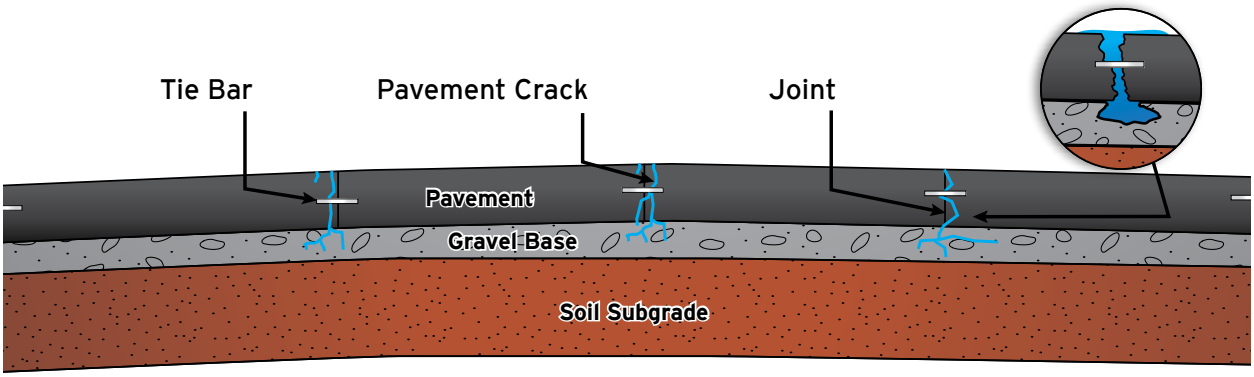
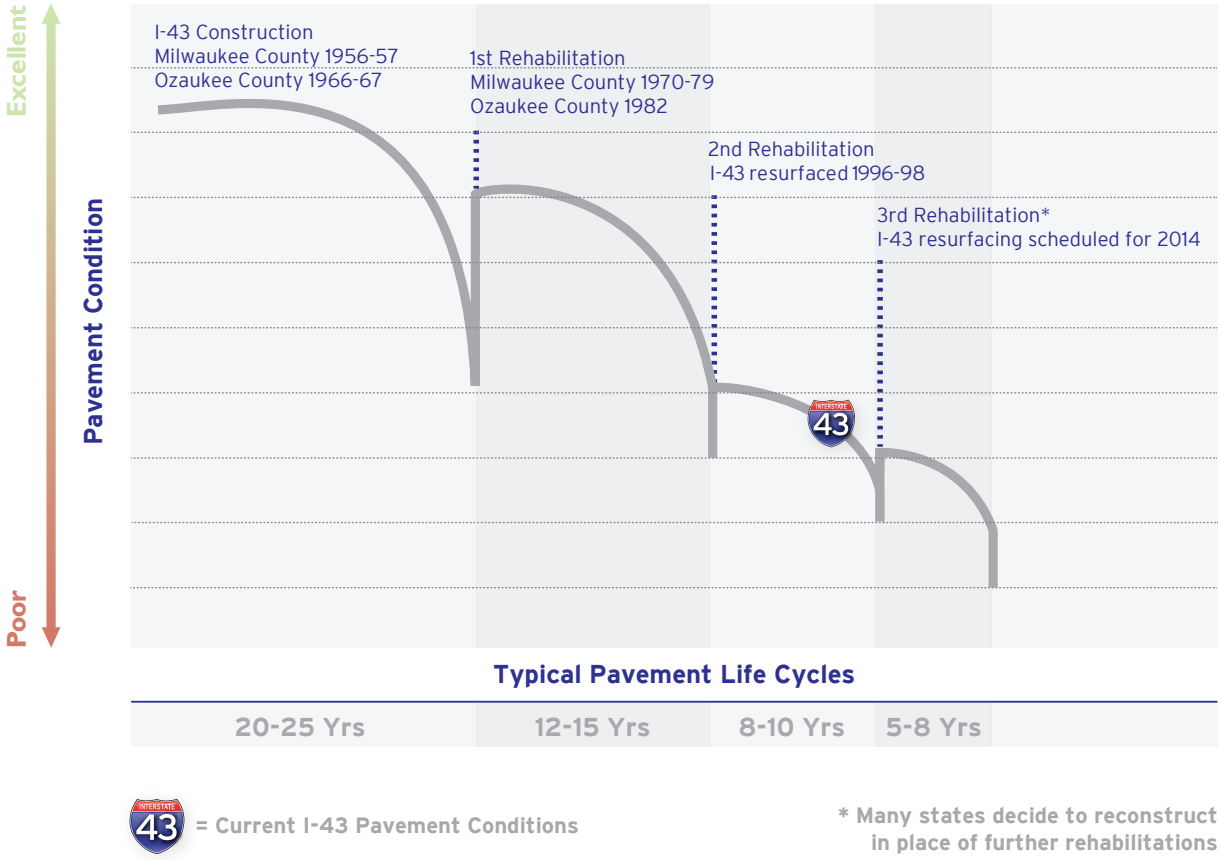


**Exhibit 1-5: Pavement Life**




## BRIDGE CONDITION

The bridges on the study corridor freeway generally are in fair or good condition, as measured by the FHWA's National Bridge Inventory, which evaluates bridges with a scale of 0 to 9. One exception is the Green Tree Road bridge over I-43, which has a rating of 4, defined as "meets minimum tolerable limits to be left in place as is." The Port Washington Road bridge crossing over I-43 has a rating of 5 (fair condition) and the rest have ratings of 6 (good condition) or higher. During the next 10 years, the condition of several of these bridges likely will deteriorate, even with routine maintenance and there will come a point when it becomes more cost effective to simply replace the bridges. Replacement also provides the opportunity to bring the basic design of the bridges up to current standards, including vertical clearance, discussed in greater detail later in this section.

## FREEWAY DESIGN DEFICIENCIES

This section describes various design-related deficiencies that exist along the I-43 North-South Freeway study corridor, including road separation, access control, interchange design, lane continuity and ramp design.

### *FREEWAY/OUTER ROAD SEPARATION*

The distance between I-43 and the parallel local service roads is severely deficient in some areas. Port Washington and Jean Nicolet roads, between Silver Spring Drive and Green Tree Road, are

only about 28 feet from I-43, with some areas as close as 22 feet.[2] Both WisDOT and AASHTO follow federal Interstate guidelines for freeway design. WisDOT design standards call for a desirable 85-foot separation between arterials and frontage roads in urban areas. AASHTO recommends outer separation widths between 80 feet and150 feet, although much narrower widths may be used in urban areas where retaining walls are used. Retaining walls can provide a measure of safety in such conditions; however, they are located only along a portion of this section of I-43.

*ACCESS CONTROL*

WisDOT has developed standards to control access between ramp termini and local roads and driveways, allowing interchanges to operate efficiently. For example, when a local road intersection is close to a ramp terminal, high traffic volume can cause substantial queuing, weaving and overall poor operations (**Exhibit 1-6**). WisDOT standards call for a desirable distance of 1,320 feet between a ramp terminal and an adjacent crossroad intersection to maintain interchange function.

Good Hope Road represents an example of how substandard spacing can impact traffic operations: The Port Washington Road/Good Hope Road intersection is 300 feet east of the northbound off- and on-ramps for the Good Hope Road interchange with I-43. This short distance between the intersection and the interchange ramps causes traffic queues.

**Table 1-1** identifies the study corridor freeway interchanges and their respective distances to the nearest cross-road intersection, many of which are less than 1,320 feet.

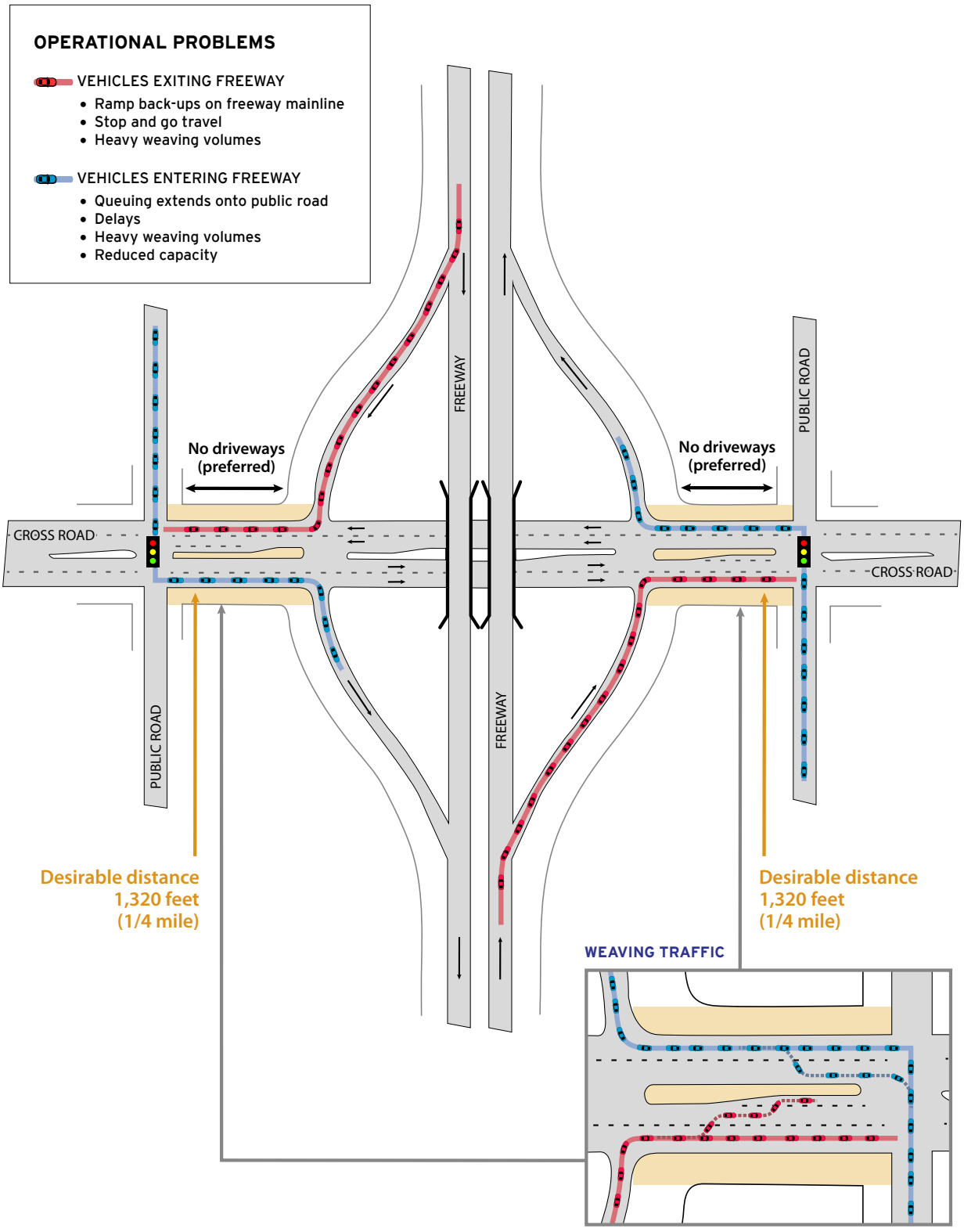
**Table 1-1: Existing Distances from Interchange Ramp Terminals to Nearest Roadway Intersections**

| I-43 Cross Road Interchange | Nearest Roadway Intersection to the West/North | Ramp Terminal to Intersection (Feet) | Nearest Roadway Intersection to the East/South | Ramp Terminal to Intersection (Feet) |
|---|---|---|---|---|
| Silver Spring Drive | Milwaukee River Parkway | 1000’ | Silver Spring Drive (ramp terminals intersect Port Washington Road) | 600’-800’ |
| Good Hope Road | Pheasant Lane | 475’ | Port Washington Road | 300’ |
| Brown Deer Road | Spruce Road | 1700’ | Port Washington Road | 800’ |
| Port Washington Road | Ravine Lane | 650’ | Laramie Lane | 150’ |
| County Line Road | Pheasant Lane | 360’ | Port Washington Road | 420’ |
| Mequon Road | Port Washington Road | 400’ | San Marino Drive | 830’ |
| County C | Port Washington Road | 530’ | Lake Shore Drive | 1550’ |
| WIS 60 | Port Washington Road | 1200’ | Washington Street | 360’ |

*Source: WisDOT*

[2] *Distances measured from the edges of travel lanes.*

## Exhibit 1-6: Substandard Access Control



Similar operational issues with interchanges can occur when local driveways are too close to ramp terminals. Locations that have driveways within 1,320 feet of an interchange ramp terminal include the following:

- Silver Spring Drive
  - Right-in/right-out driveway to businesses, south side of Silver Spring, west of Port Washington Road
- Brown Deer Road
  - Two right-in/right-out driveways to businesses, south side of Brown Deer Road, west of Port Washington Road
  - Five right-in/right-out driveways to businesses, north side of Brown Deer Road, west of Port Washington Road
- WIS 60
  - Right-in/right-out driveway to businesses, south side of WIS 60, east of Port Washington Road
  - Right-in/right-out driveway to businesses, north side of WIS 60, east of Port Washington Road

*PARTIAL INTERCHANGE*

WisDOT will also evaluate alternatives at the County Line Road interchange. The existing partial interchange at the Milwaukee/Ozaukee County line provides access to County Line Road via Port Washington Road as a northbound exit from I-43. The only access from County Line Road to I-43 is via a southbound entrance ramp. Because the Interstate serves broader regional and instate travel needs, FHWA policy states that all service interchanges on Interstate routes shall provide full access, serving all traffic movements.[3]

The County Line Road interchange does not provide an intuitive path to return to I-43 northbound. Drivers, especially those unfamiliar with the area, expect to be able to re-enter the freeway at the same location they exit.

*LANE CONTINUITY*

Lane continuity means drivers do not need to change lanes or exit to remain on a route. Just south of Bender Road, I-43 drops one through-lane going north and adds one through-lane going south. The lane drop contributes to the reduced level of service on the freeway.

*RAMP DESIGN DEFICIENCIES*

Several of the I-43 North-South study corridor freeway interchange ramps have design deficiencies that impact overall level of service and safety. Some key deficiencies are discussed below.

### *Ramp Taper Rate*

Adequate merging distance is often measured by a ramp's taper length, which should be between 50:1 and 70:1 for a freeway entrance ramp (the merge lane becomes 1 foot narrower every 50 feet), based on AASHTO standards. Using this criterion, several ramps on the study corridor are considered deficient (**Table 1-2**). While the existing ramps on I-43 are a taper type of ramp, AASHTO guidance calls for a preferable parallel type ramp (**Exhibit 1-7**), which allows vehicles more distance to get up to speed before entering traffic, or to slow down outside of active traffic lanes to exit the freeway.

[3] *The Code of Federal Regulations (CFR) 23 CFR §625.4 specifically lists "A Policy on Design Standards Interstate System" (AASHTO, January 2005) as an applicable standard.*

**Table 1-2: Deficient Ramp Tapers**

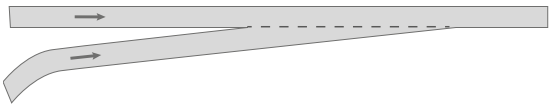
| Location | Taper Length |
|---|---|
| Good Hope Road | |
| Northbound entrance ramp | 30:1 |
| Southbound entrance ramp | 25:1 |
| Brown Deer Road | |
| Northbound entrance ramp | No taper; served by auxiliary lane |
| Mequon Road | |
| Northbound entrance ramp | 35:1 |
| Southbound entrance ramp | 45:1 |
| County C | |
| Northbound entrance ramp | 45:1 |
| Southbound entrance ramp | 40:1 |
| WIS 60 | |
| Northbound ramp | 45:1 |
| Southbound ramp | 30:1 |

*Source: WisDOT*

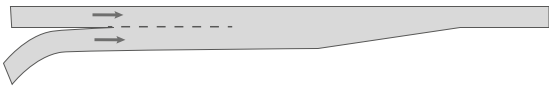
**Exhibit 1-7: Entrance and Exit Ramp Types**

## ENTRANCE RAMP

Taper Type

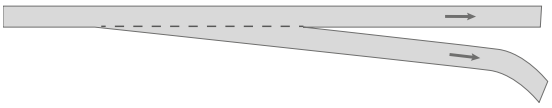


Parallel Type



## EXIT RAMP

Taper Type



Parallel Type

### *Acceleration/Deceleration Lanes*

Ramp design includes careful consideration for adequate deceleration lanes on exit ramps and acceleration lanes on entrance ramps. Deceleration lanes allow drivers to safely stop at the end of a ramp. Acceleration lanes allow drivers to get up to speed and enter the freeway at the same speed as the freeway traffic. A difference in speed, or speed differential presents a safety concern.

The required length of the acceleration/deceleration lanes varies depending on the tightness of curves on the ramp. An entrance ramp that has a gradual curve allows drivers to accelerate on the ramp, and therefore, the length of the acceleration lane need not be as long as an entrance ramp that has tighter curves.

The Good Hope Road and Brown Deer Road interchanges have substandard ramp lengths that make it difficult to merge into I-43 traffic, hence reducing the queue space to enter the freeway when the interchanges are congested. The Brown Deer Road interchange also has substandard curves within its loop ramps, which creates an inadequate acceleration lane. Currently, the Brown Deer Road interchange has the most design deficiencies and has the highest crash rate reported in the corridor.

Several of the entrance and exit ramps listed in **Table 1-3** have inadequate acceleration and deceleration lengths based on AASHTO freeway design guidelines.

### *Ramp Lane Width*

According to WisDOT guidelines, single-lane curbed freeway ramps should have a 22-foot width measured from face-of-curb to face-of-curb. Curbed ramps with a substandard width of less than 22 feet exist at the following locations:

- Good Hope Road southbound on-ramp: 19 feet wide
- Brown Deer Road northbound off-ramp (southeast quadrant): 20 feet wide
- Brown Deer Road northbound on-ramp (southeast quadrant): 20 feet wide
- Brown Deer Road northbound off-ramp (northeast quadrant): 20 feet wide
- Brown Deer Road northbound on-ramp (northeast quadrant): 19 feet wide
- Brown Deer Road southbound off-ramp (northwest quadrant): 20 feet wide
- Brown Deer Road southbound on-ramp (northwest quadrant): 20 feet wide
- Port Washington Road northbound off-ramp: 19 feet wide

## GEOMETRIC DESIGN DEFICIENCIES

Freeways must meet the minimum values for several controlling design criteria, such as freeway alignment, cross slopes, sight distances, lane and shoulder widths and vertical clearances. The design standards developed for the controlling criteria are based on guidelines in the AASHTO's *A Policy on Geometric Design of Highways and Streets* (2001) and *A Policy on Design Standards – Interstate System* (2005), and WisDOT's *Facilities Development Manual* (FDM). These standards are the basis for evaluating the study corridor freeway for acceptability, function and safety.

## Table 1-3: Ramp Acceleration and Deceleration Lengths

| Connecting Highway | Ramp | Approximate Existing Acceleration/Deceleration Length (Feet) | AASHTO-Recommended Minimum Acceleration/ Deceleration Length (Feet) |
|---|---|---|---|
| Silver Spring Drive | NB on* | 925 | 180 |
| | NB off* | 1,020 | 300 |
| | SB on* | 1035 | 300 |
| | SB off* | 745 | 350 |
| Good Hope Road | NB on | 460 | 1,020 |
| | NB off | 280 | 405 |
| | SB on | 415 | 1,020 |
| | SB off* | 425 | 240 |
| Brown Deer Road | NB on* | >1,020 | 1,020 |
| | NB on loop | 600 | 1,100 |
| | NB off | 30 | 405 |
| | NB off loop* | 600 | 430 |
| | SB on* | 930 | 180 |
| | SB on loop | 800 | 910 |
| | SB off | 30 | 430 |
| | SB off loop | 800 | 430 |
| Port Washington Road | NB off* | >480 | 480 |
| County Line Road | SB on | 400 | 1,100 |
| Mequon Road | NB on | 425 | 820 |
| | NB off | 50 | 390 |
| | SB on | 1,460 | 1,620 |
| | SB off | 35 | 490 |
| Pioneer Road (County C) | NB on | 475 | 1,000 |
| | NB off | 65 | 390 |
| | SB on | 430 | 1000 |
| | SB off | 30 | 390 |
| WIS 60 | NB on | 510 | 820 |
| | NB off | 30 | 390 |
| | SB on* | 1,200 | 820 |
| | SB off | 60 | 340 |

*Notes:*
1. *Non-deficient ramps noted by asterisk.*
2. *NB = northbound, SB = southbound*

*CROSS SLOPE*

In addition to 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 about ¼ inch for every 1 foot). Some mainline pavement in the study-area freeway system was originally constructed with less than the minimum 2 percent cross slope (**Table 1-4**).

**Table 1-4: I-43 Cross Slopes**

| Location | Cross Slope (Percent) |
|---|---|
| I-43 from Daphne Road to Green Tree Road | 1.3 to 1.4 |
| I-43 northbound and southbound from Green Tree Road to County Line Road | 1.0 |
| I-43 northbound and southbound from County Line Road to WIS 60 | 1.5 |

*Source: WisDOT*

*HORIZONTAL ALIGNMENT*

Horizontal alignment refers to the curvature of the road at a given design speed. Design speed is the maximum speed that can be safely maintained over a specific section of the highway. It is affected by factors such as highway type, topography, adjacent land use, and driver expectations. To account for a wide range of actual vehicle running speeds, the design speed is generally 5 mph greater than the posted speed limit. Several locations in the study area have substandard geometric features that equate to design speeds that are less than the recommended design speed. **Exhibit 1-2** and **Exhibit 1-3** call out the I-43 mainline locations that are below the minimum recommended design speed based on horizontal and vertical alignment.

*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. **Table 1-5** shows the sections in the study area that do not meet the recommended percent grade guidelines.

*Stopping sight distance can be inadequate even if vertical alignment is adequate, and vice versa. A crest in the road or median barriers can interfere with a 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 a driver's line of sight.*

*STOPPING SIGHT DISTANCE*

Stopping sight distance is the minimum distance required to stop for a driver traveling at a given speed after sighting an object in his or her path. Minimum stopping sight distance is based on the roadway's design speed. On hill crests, sight is obstructed by the roadway between the driver and an object; at hill bottoms, sight is restricted at night because headlights do not fully illuminate the roadway. Median barriers may reduce stopping sight distance around curves. **Exhibit 1-2** and **Exhibit 1-3** identify areas along I-43 where the minimum recommended design speed for stopping sight distance is not met.

**Table 1-5: Vertical Alignment – Substandard Locations**

| Location | Existing Grade (Percent) | Maximum Grade Recommended (Percent) |
|---|---|---|
| I-43 at Silver Spring Drive | 3.3 | 3.0 |
| I-43 North of Silver Spring Drive | 3.4 to 3.64 | 3.0 |
| | | **Minimum Grade Recommended (Percent)** |
| I-43 south of Calumet Road | 0.25 | 0.5 |
| I-43 north of Brown Deer Road | 0.37 | 0.5 |
| I-43 SB – South of County Line Road | 0.02 | 0.5 |
| I-43 NB – South of County Line Road | 0.20 | 0.5 |
| I-43 south of Donges Bay Road | 0.33 | 0.5 |
| I-43 north of Donges Bay Road | 0.20 | 0.5 |
| Mequon Road NB off-ramp to I-43 | 0.42 | 0.5 |
| Mequon Road SB on-ramp to I-43 | 0.16 | 0.5 |
| I-43 south of Highland Road | 0.00 | 0.5 |
| I-43 north of Highland Road | 0.40 | 0.5 |
| I-43 at Bonniwell Road | 0.03 | 0.5 |
| I-43 south of County C | 0.34 | 0.5 |
| I-43 south of County C | 0.25 | 0.5 |
| I-43 at County C | 0.07 | 0.5 |
| I-43 north of County C | 0.00 | 0.5 |
| County C SB on-ramp to I-43 | 0.31 | 0.5 |
| County C SB off-ramp to I-43 | 0.47 | 0.5 |
| County C NB on-ramp to I-43 | 0.42 | 0.5 |
| I-43 south of Lakefield Road | 0.00 | 0.5 |
| I-43 at WIS 60 | 0.00 | 0.5 |
| WIS 60 SB on-ramp to I-43 | 0.41 | 0.5 |
| WIS 60 SB off-ramp to I-43 | 0.26 | 0.5 |

*Source: WisDOT*
*Note: NB = northbound, SB = southbound*

*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 the 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 before exits, and at major forks and lane drops. The minimum decision sight distance is based on AASHTO's and WisDOT's design criteria. **Exhibit 1-2** and **Exhibit 1-3** identify areas along I-43 that do not meet AASHTO's or WisDOT's minimum standard for decision sight distance.

*CROSS SECTION ELEMENTS*

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. Narrow inside shoulders result in distressed vehicles having to cross over lanes of traffic to reach a safe area on the outside shoulder. In addition, shoulders provide room for drivers to avoid crashes and give space for snow storage and emergency vehicle access. WisDOT's and AASHTO's policies for roadways with three or more lanes call for 12-foot inside and outside shoulders; for two-lane roadways, policies calls or 6-foot inside and 12-foot outside shoulders. Locations with substandard inside or outside shoulder widths are listed below:

- I-43 northbound and southbound – Silver Spring Drive to Bender Road: outside shoulders 10 feet wide
- I-43 northbound and southbound – Bender Road to Green Tree Road: outside shoulder 8.5 feet wide
- I-43 northbound and southbound – Green Tree Road to Good Hope Road: outside shoulder 8 feet wide
- I-43 northbound and southbound – Good Hope Road to Brown Deer Road: outside shoulder 10 feet wide
- I-43 northbound and southbound – Near Brown Deer Road: outside shoulder ranges from 0 feet to 6 feet wide
- I-43 northbound and southbound – County Line Road to WIS 60: outside shoulder 10 feet to 11 feet wide

*VERTICAL CLEARANCE*

Vertical clearance is the distance between the top of a roadway and the bottom of 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. Because 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. **Table 1-6** lists the bridges in the I-43 North-South Freeway study area that do not meet the vertical clearance criteria.

**Table 1-6: Substandard Vertical Clearances**

| Location | I-43 | Structure Number | Existing Vertical Clearance (Feet-Inch) | Minimum Vertical Clearance Required for Reconstructed Bridge (Feet-Inch) |
|---|---|---|---|---|
| I-43 NB over Silver Spring Drive | Over | B-40-583 | 16’ | 16’-3” |
| I-43 NB-off over Silver Spring Drive | Over | B-40-586 | 15’-9” | 16’-3” |
| Railroad bridge over I-43 | Under | B-40-24 | 14’-8” | 16’-4” |
| Green Tree Road over I-43 | Under | B-40-149 | 14’-11” | 16’-4” |
| County Line Road over I-43 | Under | B-40-338 | 14’-7” | 16’-4” |
| Port Washington Road over I-43 | Under | B-45-17 | 14’-9” | 16’-4” |
| Donges Bay Road over I-43 | Under | B-45-18 | 15’ | 16’-4” |
| I-43 NB over Mequon Road (WIS 57/167) | Over | B-45-19 | 14’-10” | 16’-4” |
| I-43 SB over Mequon Road (WIS 57/167) | Over | B-45-20 | 14’-10” | 16’-4” |
| Pioneer Road over I-43 | Under | B-45-22 | 15’ | 16’-4” |
| Falls Road over I-43 | Under | B-45-25 | 15’-1” | 16’-4” |
| WIS 60 over I-43 | Under | B-45-15 | 16’-2” | 16’-4” |

*Source: WisDOT*

## 1.3.2. Safety

The frequency and severity of crashes help define highway safety. WisDOT maintains a database of crashes that occur annually on the state highway system. This section describes the nature of crashes on the I-43 North-South Freeway study corridor and overall crash rates compared the statewide average crash rate. Congestion and geometric and design deficiencies contribute to crashes in the corridor.

### MAINLINE CRASHES

**Table 1-7** shows the total number of crashes (not including deer/other animal crashes) on the I-43 North-South Freeway study corridor mainline from 2006 to 2010. In those five years, a total 1,087 crashes were reported between Silver Spring Drive and WIS 60. Seventy-two percent were property damage crashes, and 27 percent were injury or fatality crashes. Truck crashes[4] accounted for about 11 percent of the total crashes between 2006 and 2010.

**Exhibit 1-8** and **Exhibit 1-9** show the numbers and types of crashes from interchange to interchange between 2006 through 2010 in Milwaukee and Ozaukee counties. Crashes on I-43 from Silver Spring Drive to Good Hope Road show that almost a third of the total 312 crashes were rear-end crashes (110 northbound crashes and 44 southbound crashes) and another 56

[4] *Includes all vehicles requiring a commercial driver’s license; that is, trucks that weigh more than 26,000 pounds (medium-duty trucks, heavy-duty trucks and tractor-trailers) and passenger buses with 16 or more seats (including the driver).*

crashes (34 northbound and 22 southbound crashes) were side-swipe crashes. Rear-end and side-swipe crashes indicate congestion as well as inadequate acceleration/deceleration lanes, weaving and substandard ramp spacing. Just north of Silver Spring Drive and south of Bender Road, I-43 northbound drops from three to two lanes, causing traffic congestion most severely in the afternoon rush hour, with 110 northbound rear-end crashes reported.

**Table 1-7: Total Number of Crashes**

| Year | Property Damage Only | Crashes with Injuries | Crashes with Fatalities | Total |
|---|---|---|---|---|
| 2006 | 132 | 52 | 3 | 187 |
| 2007 | 176 | 64 | 1 | 241 |
| 2008 | 176 | 60 | 0 | 236 |
| 2009 | 136 | 57 | 0 | 193 |
| 2010 | 177 | 53 | 0 | 230 |
| Total | 797 | 286 | 4 | 1,087 |

*Source: WisDOT, 2012*

**Exhibit 1-8** shows a high number of rear-end crashes between Good Hope Road and Brown Deer Road. More than a third of the total 310 crashes in this section of I-43 were rear-end crashes (43 northbound crashes and 90 southbound crashes) and another 47 crashes (22 northbound and 25 southbound) were side-swipe crashes. Unlike the Silver Spring Drive to Good Hope Road section, this section presents more rear-end and side-swipe crashes in the southbound direction, reflecting heavy congestion in the morning peak hours.

While **Exhibit 1-9** does not show a large number of crashes from County Line Road to Mequon Road, the southbound rear-end crashes in that location are four times what they are in the northbound direction. Public comments received at an August 2012 public information meeting for the I-43 North-South Freeway Corridor Study confirmed that congestion during the morning rush hour in the southbound lanes near Mequon Road causes traffic backups on the I-43 mainline.

## CRASH RATES

WisDOT uses crash data and traffic volume to develop statewide average crash rates for urban and rural highways. These statewide average crash rates are the basis for the safety evaluation of the I-43 North-South Freeway study corridor. Crash rates are calculated as crashes per 100 million vehicle miles traveled.

**Exhibit 1-10** shows the crash rates in the corridor for the years 2006 to 2010 compared with the statewide urban freeway crash rate. The segments with the highest rates occur near the Brown Deer Road interchange in Milwaukee County and the Mequon Road interchange in Ozaukee County. The higher crash rates at these interchanges reflect the combined traffic congestion discussed above and geometric deficiencies discussed in subsections below. Freeway design deficiencies and increasing traffic congestion are expected to continue to push crash rates toward and beyond the statewide average.

## Exhibit 1-8: Crash Types (2006-2010) – Milwaukee County


**Brown Deer Rd to County Line Rd**

| | Northbound | Southbound |
|---|---|---|
| NO C | 19 | 23 |
| REAR | 5 | 10 |
| SSOP | 1 | 0 |
| ANGL | 0 | 0 |
| SSS | 1 | 4 |
| UNKN | 0 | 0 |
| BLNK | 0 | 0 |
| HEAD | 0 | 0 |
| TOTAL | 63 | |

**Good Hope Rd to Brown Deer Rd**

| | Northbound | Southbound |
|---|---|---|
| NO C | 46 | 62 |
| REAR | 43 | 90 |
| SSOP | 0 | 2 |
| ANGL | 4 | 10 |
| SSS | 22 | 25 |
| UNKN | 0 | 0 |
| BLNK | 0 | 1 |
| HEAD | 1 | 4 |
| TOTAL | 310 | |

**Silver Spring Dr to Good Hope Rd**

| | Northbound | Southbound |
|---|---|---|
| NO C | 57 | 35 |
| REAR | 110 | 44 |
| SSOP | 0 | 1 |
| ANGL | 4 | 3 |
| SSS | 34 | 22 |
| UNKN | 0 | 1 |
| BLNK | 0 | 0 |
| HEAD | 0 | 1 |
| TOTAL | 312 | |

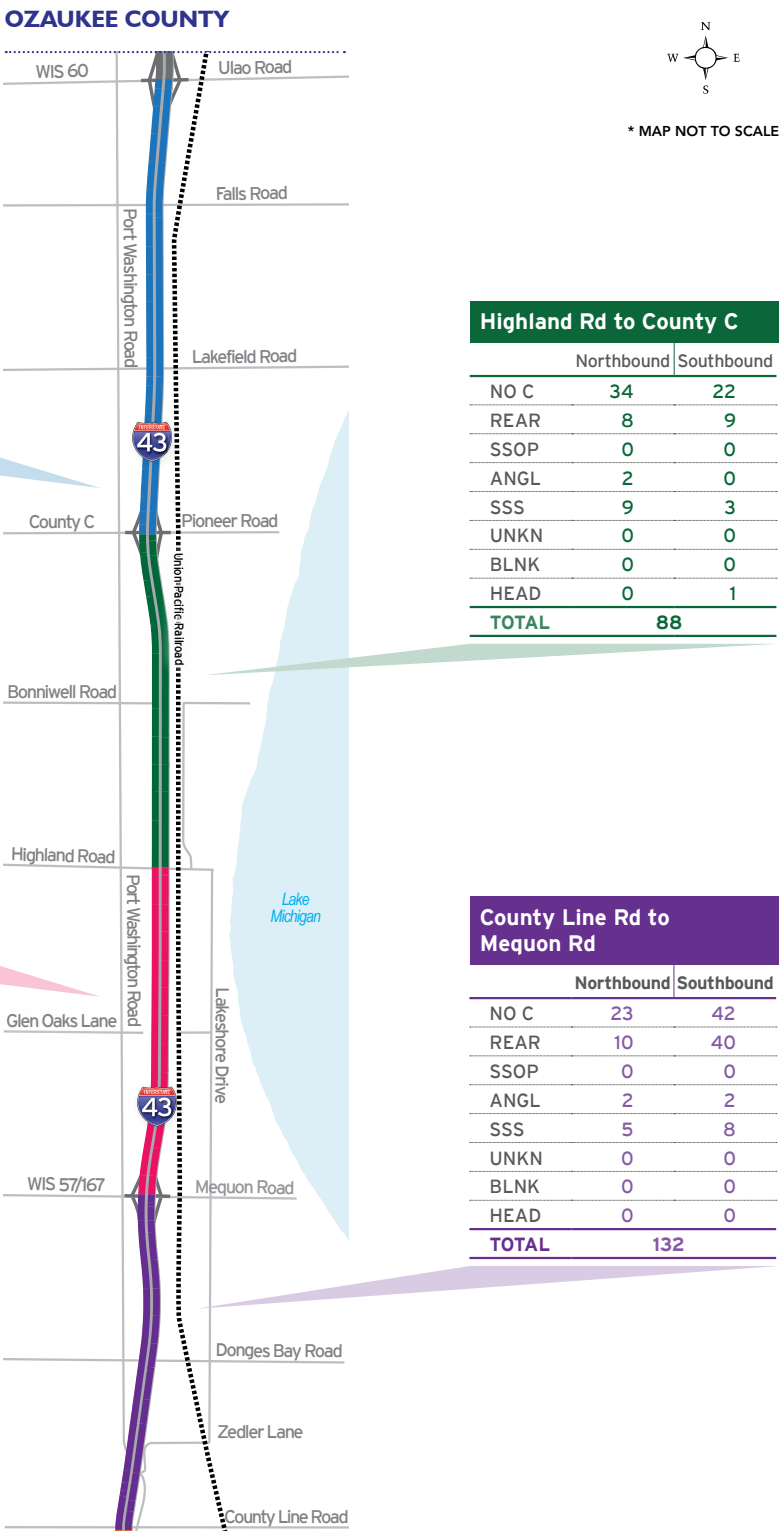
**LEGEND**

N W E S

* MAP NOT TO SCALE

| | |
|---|---|
| NO C | No Collision (single vehicle crash typically) |
| REAR | Rear-end |
| SSOP | Side swipe - opposite side |
| ANGL | Angle |
| SSS | Side swipe - same direction |
| UNKN | Unknown |
| BLNK | Blank (not recorded) |
| HEAD | Head-on |

# Exhibit 1-9: Crash Types (2006-2010) – Ozaukee County




**County C to WIS 60**

| | Northbound | Southbound |
|---|---|---|
| NO C | 36 | 52 |
| REAR | 7 | 7 |
| SSOP | 0 | 0 |
| ANGL | 3 | 7 |
| SSS | 4 | 10 |
| UNKN | 0 | 0 |
| BLNK | 0 | 0 |
| HEAD | 2 | 1 |
| TOTAL | 129 | |

**Highland Rd to County C**

| | Northbound | Southbound |
|---|---|---|
| NO C | 34 | 22 |
| REAR | 8 | 9 |
| SSOP | 0 | 0 |
| ANGL | 2 | 0 |
| SSS | 9 | 3 |
| UNKN | 0 | 0 |
| BLNK | 0 | 0 |
| HEAD | 0 | 1 |
| TOTAL | 88 | |

**Mequon Rd to Highland Rd**

| | Northbound | Southbound |
|---|---|---|
| NO C | 20 | 21 |
| REAR | 2 | 0 |
| SSOP | 0 | 0 |
| ANGL | 1 | 1 |
| SSS | 3 | 4 |
| UNKN | 0 | 0 |
| BLNK | 1 | 0 |
| HEAD | 0 | 0 |
| TOTAL | 53 | |

**County Line Rd to Mequon Rd**

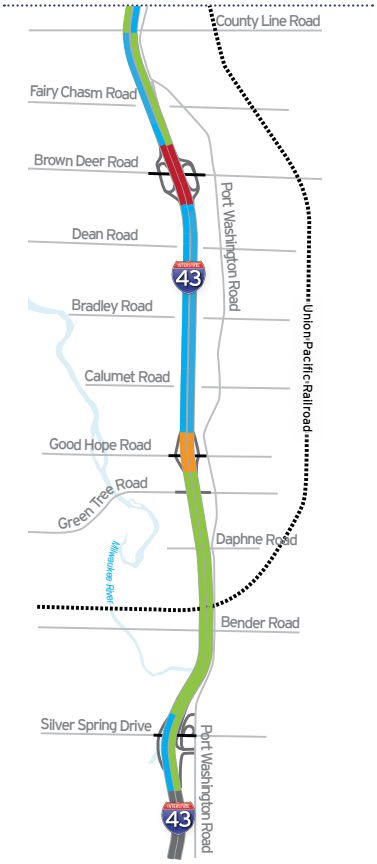
| | Northbound | Southbound |
|---|---|---|
| NO C | 23 | 42 |
| REAR | 10 | 40 |
| SSOP | 0 | 0 |
| ANGL | 2 | 2 |
| SSS | 5 | 8 |
| UNKN | 0 | 0 |
| BLNK | 0 | 0 |
| HEAD | 0 | 0 |
| TOTAL | 132 | |

**LEGEND**

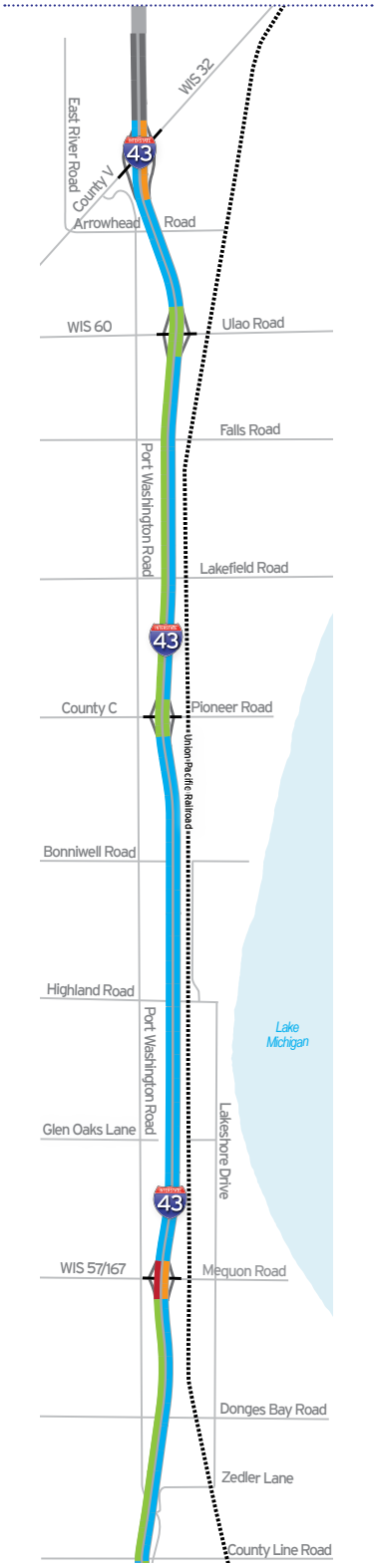
| | |
|---|---|
| NO C | No Collision (single vehicle crash typically) |
| REAR | Rear-end |
| SSOP | Side swipe - opposite side |
| ANGL | Angle |
| SSS | Side swipe - same direction |
| UNKN | Unknown |
| BLNK | Blank (not recorded) |
| HEAD | Head-on |

# Exhibit 1-10: Annual Average Crash Rate Summary

## MILWAUKEE COUNTY




## OZAUKEE COUNTY




**LEGEND**

I-43 North-South Freeway
Crash Rates (2006-2010)


* MAP NOT TO SCALE

Statewide Urban Freeway Average Crash Rate - 78

| Crash Rate (Crashes per 100 million vehicle miles traveled) | Percent of Statewide Urban Freeway Average Crash Rate |
|---|---|
| 0-23 | 0-30% |
| 24-47 | 30%-60% |
| 48-70 | 60%-90% |
| 70+ | 90% & Up |

## SERVICE INTERCHANGE CRASHES

**Table 1-8** summarizes crashes that have occurred on interchange ramps between 2006 and 2010. The crash data indicate a higher number of crashes associated with interchanges with substandard design and/or heavier traffic in Milwaukee County (Silver Spring Drive, Good Hope Road and Brown Deer Road). The higher number of crashes at Silver Spring Drive may be related to heavier traffic congestion where I-43 transitions from a six-lane to a four-lane facility. Ramp crashes on the Good Hope Road southbound ramp correlates with poor level of service, substandard design and heavy morning southbound traffic.

**Table 1-8: Ramp Crash Data**

| Interchange | Direction | Property Damage | Injury | Interchange Total |
|---|---|---|---|---|
| Silver Spring Drive | NB | 21 | 9 | 71 |
| | SB | 26 | 7 | |
| | Unknown | 7 | 1 | |
| Good Hope Road | NB | 6 | 1 | 49 |
| | SB | 29 | 7 | |
| | Unknown | 5 | 1 | |
| Brown Deer Road | NB | 15 | 11 | 49 |
| | SB | 13 | 4 | |
| | Unknown | 6 | 0 | |
| Port Washington and County Line Road | NB | 2 | 1 | 3 |
| | SB | 0 | 0 | |
| | Unknown | 0 | 0 | |
| Mequon Road | NB | 2 | 3 | 16 |
| | SB | 5 | 3 | |
| | Unknown | 1 | 2 | |
| County C | NB | 6 | 3 | 19 |
| | SB | 8 | 1 | |
| | Unknown | 1 | 0 | |
| WIS 60 | NB | 3 | 1 | 12 |
| | SB | 5 | 3 | |
| | Unknown | 0 | 0 | |
| *TOTAL* | | *161* | *58* | |

*Source: WisDOT*
*Note: NB = northbound, SB = southbound*

## 1.3.3. Existing and Future Traffic Volumes

Roadways are typically designed to accommodate traffic volumes projected to occur 20 to 25 years in the future. For the I-43 North-South Freeway Corridor Study, 2040 is used as the "design year." However, traffic volume is not the only factor that indicates how congested a roadway is, especially during heavy travel periods. Therefore, in addition to traffic volume, the term "level of service" (LOS) is used in this section. **Exhibit 1-11** illustrates the various levels of service. FHWA guidance calls for Interstates to provide LOS C, but LOS D can be acceptable in urban areas. The I-43 North-South Freeway study corridor will experience increased traffic growth and associated declining levels of service through the year 2040.

*Level of service is the measure of a roadway's congestion using rankings ranging from A to F. Freeway LOS is based on the number of cars per hour per lane mile, with LOS A exhibiting free-flow traffic and LOS F exhibiting severe congestion that approaches gridlock.*

**Exhibit 1-11: Levels of Service**

## EXISTING TRAFFIC VOLUMES

On an average weekday, traffic volumes on I-43 range from more than 85,000 vehicles per day (vpd) near Silver Spring Drive to 49,000 vpd at the north project limits at WIS 60 (**Table 1-9**).

**Table 1-9: Existing and Future Average Weekday Traffic**

| Freeway Segment | 2010 Existing (vpd) | 2040 Future (vpd) | 2010-2040 Traffic Growth (Percent) | 2010-2040 Annual Growth Rate (Percent) |
|---|---|---|---|---|
| WIS 60 to County C | 49,000 | 65,000 | 33 | 0.9 |
| County C to Mequon | 53,620 | 68,000 | 27 | 0.8 |
| Mequon Road to County Line Road | 54,940 | 75,000 | 37 | 1.0 |
| County Line Road to Brown Deer Road | 60,560 | 84,000 | 39 | 1.1 |
| Brown Deer Road to Good Hope Road | 75,000 | 104,000 | 39 | 1.1 |
| Good Hope Road to Silver Spring Drive | 85,460 | 112,500 | 32 | 0.9 |
| *Average growth* | | | *32* | |
| *Average growth rate* | | | | *0.93* |

*Source: Southeastern Wisconsin Regional Planning Commission*

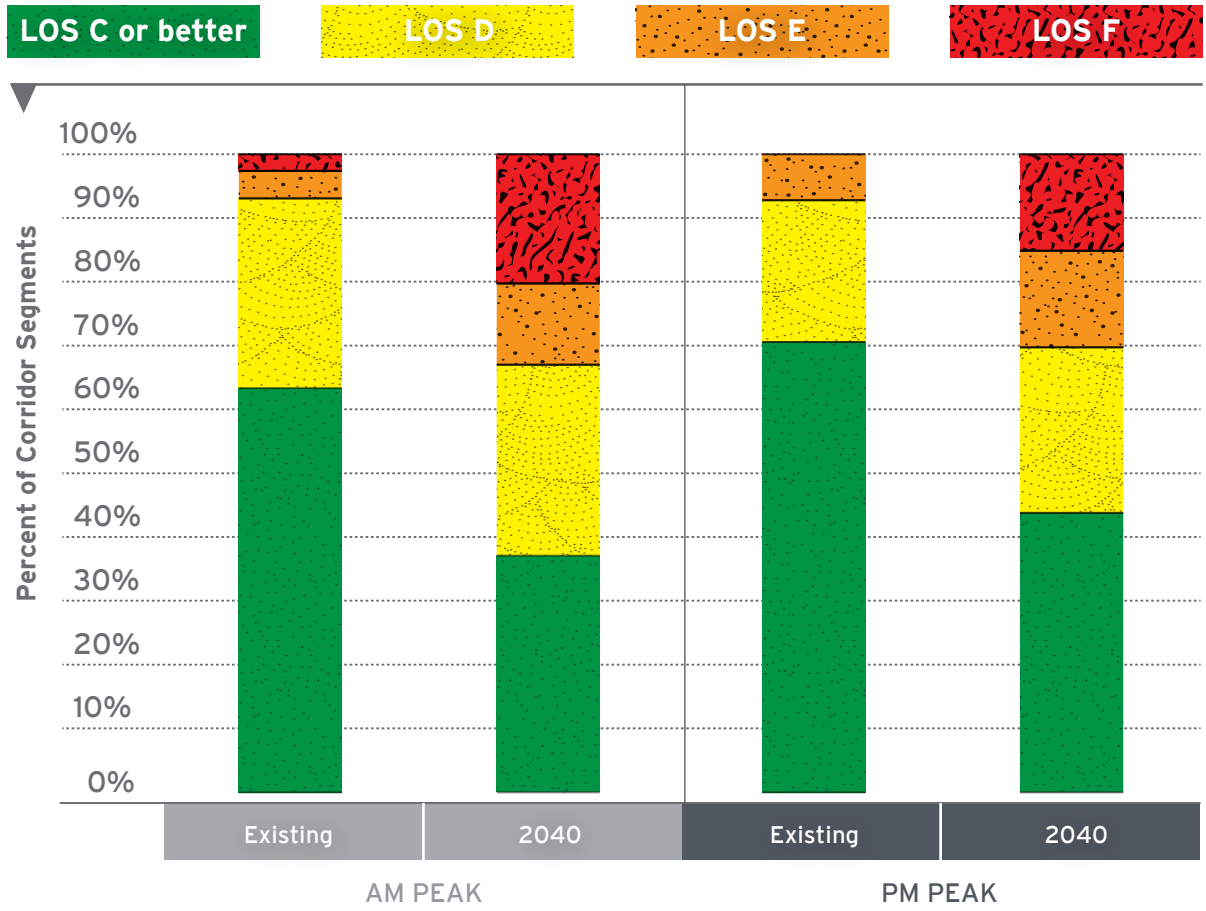
Heaviest traffic volumes are typically associated with morning (7 to 8 a.m.) and evening (4:30 to 5:30 p.m.) peak-hour commute times. **Exhibit 1-12** summarizes the existing overall freeway LOS, showing that just more than 60 percent of the corridor operates at LOS C or better during the morning peak travel time. **Exhibit 1-13** and **Exhibit 1-14** illustrate traffic operations by location throughout the study corridor for the morning and evening peak-hour LOSs. In general, morning LOS decreases as traffic travels southbound from Ozaukee County, and peak-hour traffic volumes increase, indicating a heavy morning commute into Milwaukee County. LOS is worst from the Good Hope Road interchange to where a third southbound lane picks up just south of Bender Road.

During the evening peak-hour travel time, 70 percent of the I-43 corridor operates at LOS C or better (**Exhibit 1-12**). As **Exhibit 1-14** shows, sections of I-43 with LOS D occur in both the northbound and southbound lanes in Milwaukee County, but northbound lanes also exhibit LOS E. This pattern indicates that evening travel may spread out over nonpeak travel times, or traffic is finding alternate routes.

## FUTURE TRAFFIC VOLUMES

According to projections from the Southeastern Wisconsin Regional Planning Commission (SEWRPC), traffic in the study corridor is expected to increase on average about 32 percent between 2010 and 2040, or just less than 1 percent growth per year (**Table 1-9**). LOS in the corridor is expected to decline by 2040 (**Exhibit 1-12**). More than 60 percent of I-43 would operate at LOS D or worse during the morning peak travel time. Notably, 20 percent of the corridor would operate at LOS F. **Exhibit 1-15** shows that, again, congestion is associated with

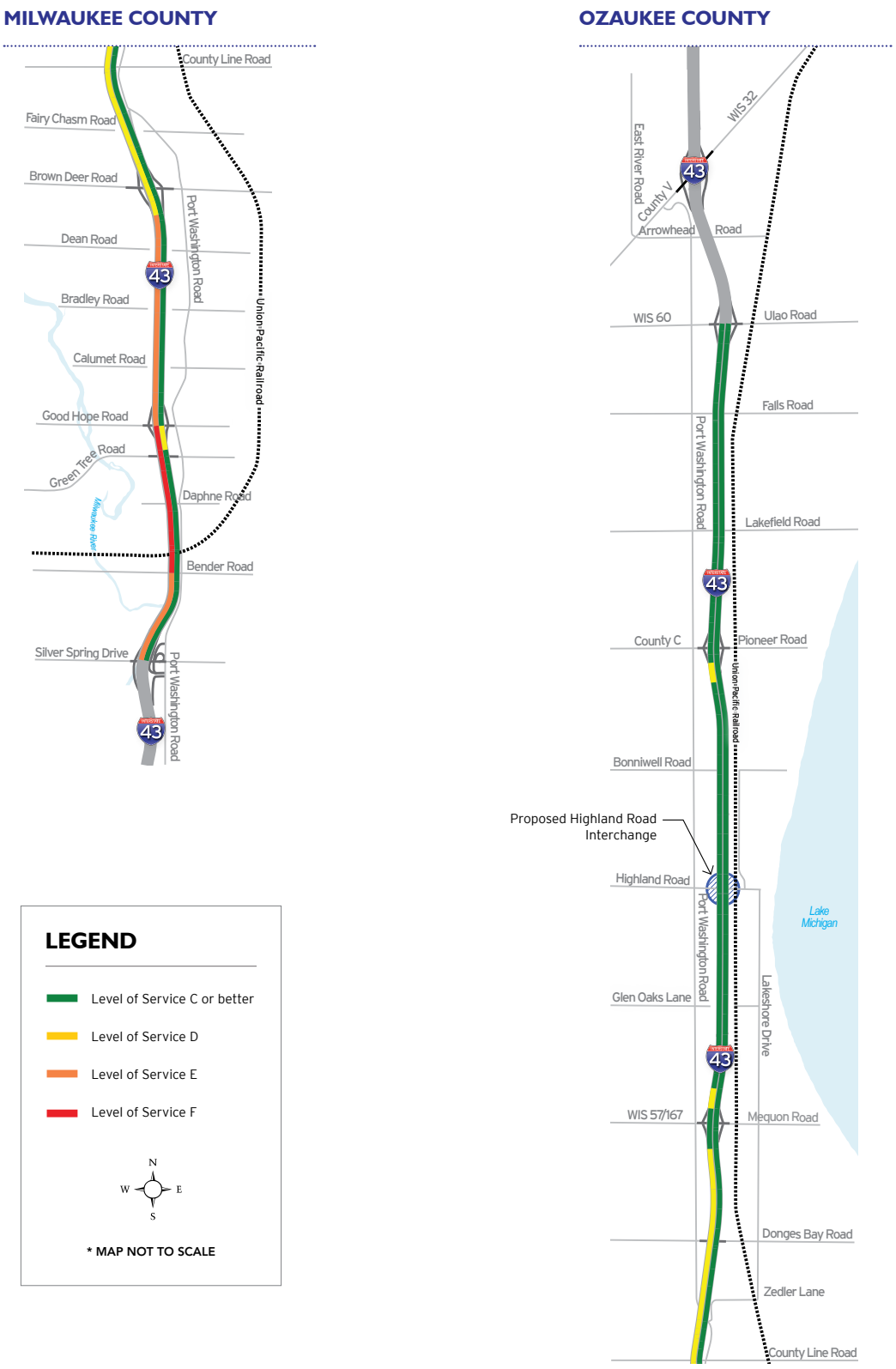
**Exhibit 1-12: I-43 North-South Freeway Study Corridor Level of Service**



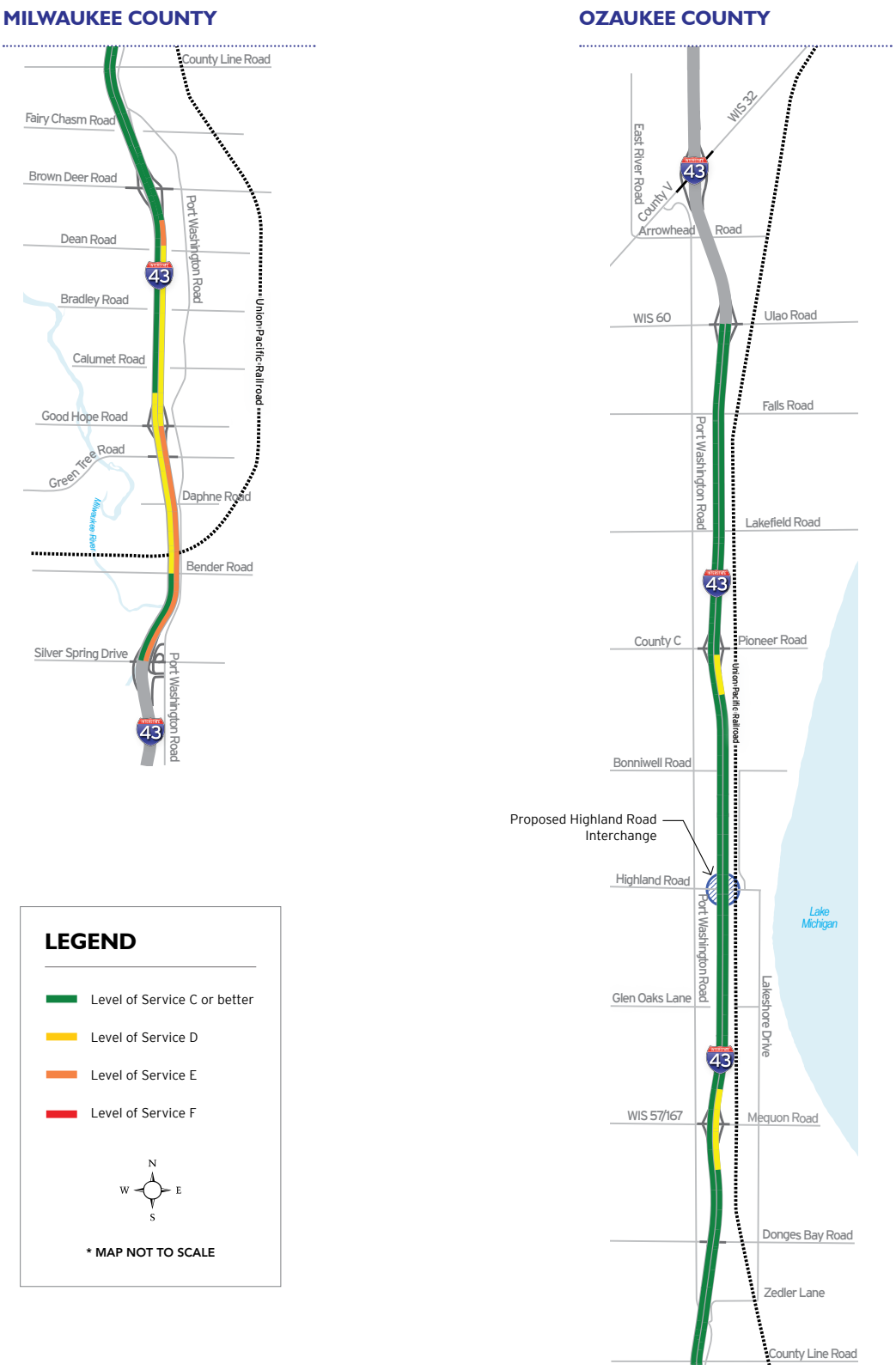

the heavy southbound morning peak hour traffic, with sections of the freeway operating at LOS E and F as far north as Mequon Road (County C).

During the 2040 evening peak hour, northbound lanes throughout the study corridor in Milwaukee and Ozaukee counties and most of the southbound lanes in Milwaukee County operate at LOS D or worse (**Exhibit 1-16**). As expected, congestion is worst in Milwaukee County where traffic volumes are highest.

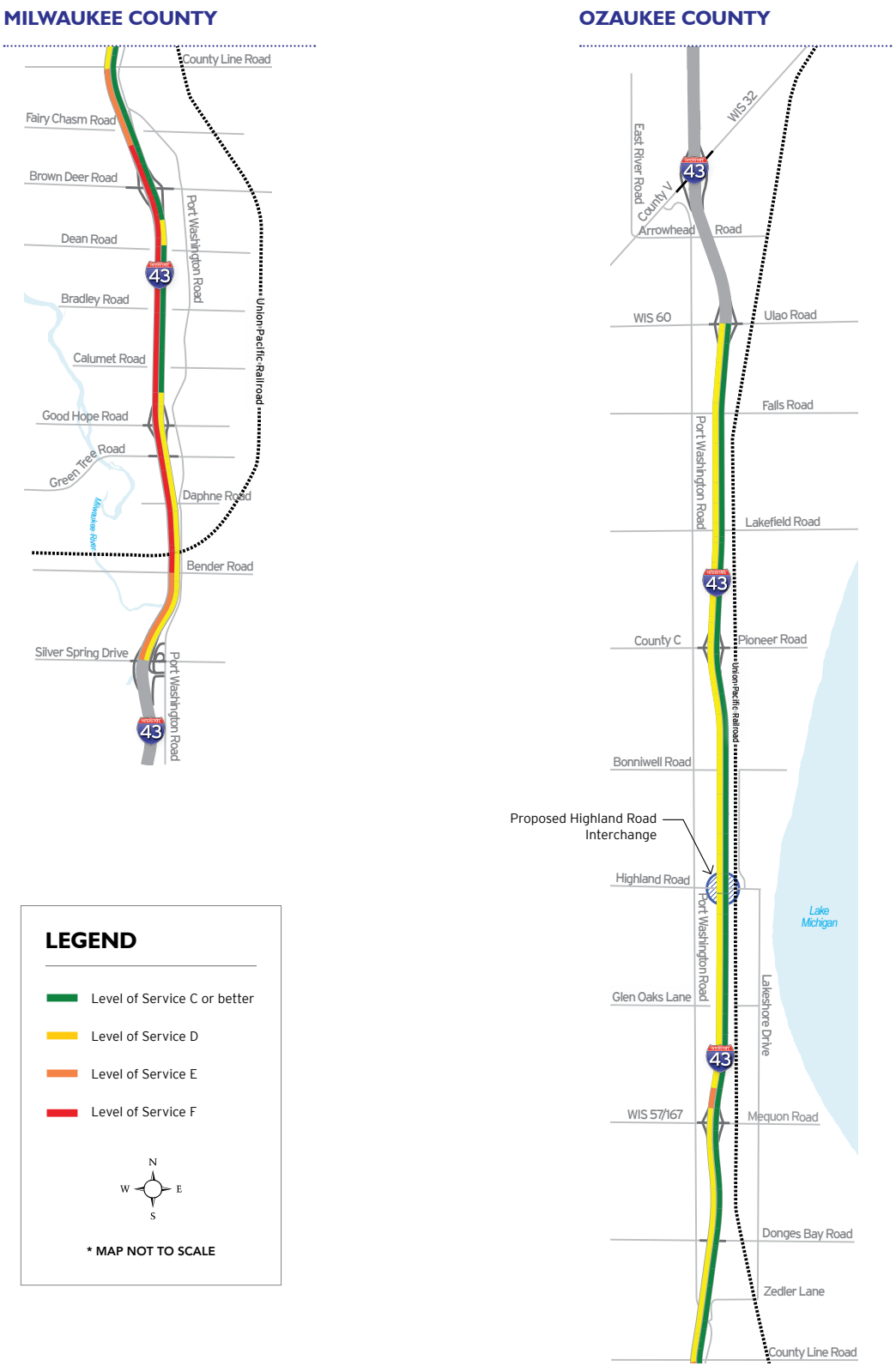
## Exhibit 1-13: Existing Traffic Operations, Morning Peak Hours (7 to 8 a.m.), Milwaukee and Ozaukee Counties



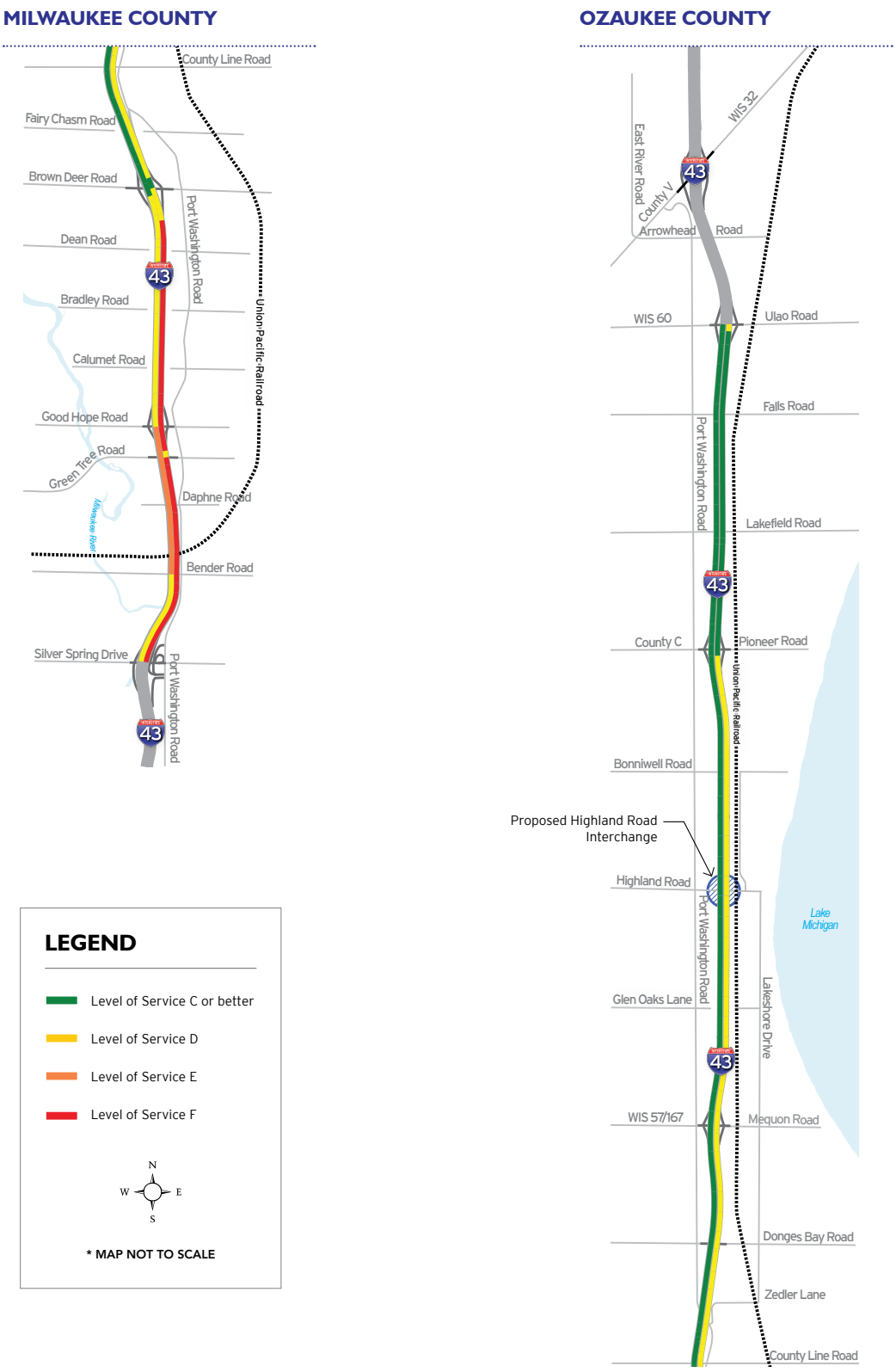
## Exhibit 1-14: Existing Traffic Operations, Evening Peak Hours (4:30 to 5:30 p.m.), Milwaukee and Ozaukee Counties



## Exhibit 1-15: Future (2040) Traffic Operations, Morning Peak Hours (7 to 8 a.m.), Milwaukee and Ozaukee Counties



## Exhibit 1-16: Future (2040) Traffic Operations, Evening Peak Hours (4:30 to 5:30 p.m.), Milwaukee and Ozaukee Counties



## 1.3.4. Regional Land Use and Transportation Planning

SEWRPC is the official planning agency for southeastern Wisconsin. SEWRPC's principal responsibility is to prepare an advisory comprehensive plan for the physical development of the region, including a regional land use plan, which is the basis of all other plan elements, including transportation.

### SEWRPC PLANS AND REPORTS

The implementation of SEWRPC plan recommendations, including the determination as to how much they are implemented, is the responsibility of local, state or other federal resource agencies, based on additional planning, programming and engineering/environmental studies. Adopted regional and statewide plans and studies relevant to the I-43 North-South Freeway Corridor Study are summarized below.

#### PLANNING REPORT NO. 47: A REGIONAL FREEWAY SYSTEM RECONSTRUCTION PLAN FOR SOUTHEASTERN WISCONSIN

SEWRPC published in 2003 a regional freeway system plan to address the anticipated need to reconstruct the southeastern Wisconsin freeway system during the next 30 years. SEWRPC conducted its 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.

The Southeastern Wisconsin Regional Freeway System Advisory 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, which include the following items:

- Improve freeway system service interchanges:
  - Lengthen and widen ramp tapers;
  - Convert multipoint exits to single point exits; and
  - Provide selected auxiliary lanes to address closely spaced interchanges.
- Improve freeway mainline:
  - Improve freeway horizontal and vertical curvatures, grades and vertical clearances to meet standards; and
  - Provide full inside and outside shoulders.

In addition to recommending six lanes throughout the study area, the 2003 regional freeway system plan also provides the following conceptual design recommendations:

- Reconstruct interchanges at Pioneer Road (County C), WIS 60, Mequon Road (WIS 57/167), Brown Deer Road (WIS 100), and Good Hope Road (County PP) for improved ramp geometry and better operations. Investigate reconfiguration of Brown Deer Road interchange to diamond style interchange;
- Add a new interchange at Highland Road;
- At the recently reconstructed Silver Spring interchange, construct new pavement with substandard shoulders, and preserve existing bridges and retaining walls because this freeway segment was recently reconstructed; and
- Add auxiliary lanes between interchanges. Also, consider relocating northbound exit ramp to Port Washington Road further north.

PLANNING REPORT NO. 48: A REGIONAL LAND USE PLAN FOR SOUTHEASTERN WISCONSIN: 2035

SEWRPC completed in June 2006 bits most recent regional land use plan. **Table 1-10** shows key growth projections in Milwaukee and Ozaukee counties between 2000 and 2035. The projections strongly influence transportation planning. In both counties, vehicle miles traveled increases at a faster rate than population, households or employment. While Ozaukee County is experiencing greater growth in all these categories, Milwaukee County still contains a significantly higher percentage of the region's population and employment.

**Table 1-10: Growth Projections**

| | Percent Increase (2000-2035) | | Percent of Region (2035) | |
|---|---|---|---|---|
| **Growth Factors** | **Milwaukee County** | **Ozaukee County** | **Milwaukee County** | **Ozaukee County** |
| Population | 7.1 | 22.8 | 44.3 | 4.4 |
| Households | 13.2 | 29.4 | 46.2 | 4.3 |
| Employment | <0.1 | 21.5 | 45.7 | 4.5 |
| Urban Land Use | 5.2 | 11.5 | 27.7 | 7.2 |
| Vehicle Miles Traveled | 16.0 | 42.7 | N/A | N/A |

*Sources:* A Regional Land Use Plan for Southeastern Wisconsin: 2035 *(Tables 28, 30, 31 and 35);* A Regional Transportation System Plan for Southeastern Wisconsin: 2035 *(Table 107)*

PLANNING REPORT NO. 39: A REGIONAL TRANSPORTATION SYSTEM PLAN FOR SOUTHEASTERN WISCONSIN: 2035 *AND* MEMORANDUM REPORT NO. 197: REVIEW, UPDATE AND REAFFIRMATION OF THE YEAR 2035 REGIONAL TRANSPORTATION PLAN

SEWRPC published its 2035 regional transportation plan in June 2006; in June 2010, the agency completed an interim review and update of the plan, which affirmed much of the plan, with minor modifications and updates. The plan forecasts traffic growth and transportation demand based on the regional land use plan data such as population, household and employment growth. The plan recommends freeway and surface arterial street improvements to address traffic congestion unlikely to be alleviated by future land use, systems management, demand management, bicycle and pedestrian facilities, and public transit measures that are proposed in the plan. Based on the plan's identified transportation needs, the 2035 regional transportation system recommends improvements to the I-43 North-South Freeway study corridor and incorporates the findings from its 2003 *A Regional Freeway System Reconstruction Plan for Southeastern Wisconsin*.

The 2035 regional transportation system plan also recognizes that WisDOT will conduct preliminary engineering and environmental impact studies for the 127 miles of freeway widening proposed in the plan, including the I-43 North-South Freeway study corridor. The plan acknowledges that, during preliminary engineering, alternatives will be considered including spot improvements and rebuilding to modern design standards, with and without additional lanes. A no-build alternative will also be considered. The plan further acknowledges that only at the conclusion of preliminary engineering would a determination be made as to how the freeway would be reconstructed.

A TRANSPORTATION IMPROVEMENT PROGRAM FOR SOUTHEASTERN WISCONSIN: 2011-2014

In accordance with the federal 1990 Clean Air Act Amendments, proposed highway improvements must be included in an approved transportation improvement program (TIP). The TIP lists state and local highway, public transit and other transportation improvement projects proposed for implementation over a four-year period. Transportation projects receiving U.S. Department of Transportation (USDOT) (which includes FHWA) funds should be included in the TIP. SEWRPC published in February 2011 its TIP titled *A Transportation Improvement Program for Southeastern Wisconsin: 2011-2014*. The I-43 North-South Freeway Corridor Study is included in the amendment to the 2011-2014 TIP as TIP No. 787: "Preliminary engineering for reconstruction of IH 43 from Silver Spring Drive to STH 60 in Ozaukee and Milwaukee Counties (14.11 mi)."

### STATEWIDE PLANS

CONNECTIONS 2030: STATEWIDE LONG-RANGE TRANSPORTATION PLAN

Adopted in October 2009, *Connections 2030* is WisDOT's long-range, statewide, multimodal transportation plan that serves as a vision for all transportation modes during the next 20 years. The plan identifies priority corridors throughout the state. These corridors all serve critical economic and population centers, are significant transportation corridors, have significant travel and economic development growth, and serve an important role for other transportation modes. I-43 is a priority corridor, connecting Milwaukee and Green Bay. The long-range plan recommended studying I-43 reconstruction between the Marquette Interchange in Milwaukee County and WIS 57 in Ozaukee County.

WISCONSIN ADMINISTRATIVE CODE CHAPTER TRANS 75:
BIKEWAYS AND SIDEWALKS IN HIGHWAY PROJECTS

Trans 75 (implemented in December 2010) states that WisDOT "shall include bikeways and sidewalks in all new highway construction and reconstruction projects funded in whole or in part from state funds or federal funds..." Trans 75 complies with USDOT's "Complete Streets" policy.[5] I-43 and the interchange ramps in the study area are exempt from Trans 75 requirements because bicycles and pedestrians are prohibited on these roadways; however, any local roadways reconstructed as part of this project would be subject to Trans 75 requirements. WisDOT will accommodate local pedestrian and bicycle facilities, where practicable and consistent with Trans 75 and USDOT policy, as part of the alternatives development process.

## 1.3.5. System Linkage and Route Importance

I-43 is a part of the National Interstate System and identified in the state's *Connections 2030* plan as a system-level priority corridor linking south-central and eastern Wisconsin. Priority corridors are "critical to Wisconsin's travel patterns and support the state's economy."[6] I-43 is also a designated federal and state "long truck route," allowing longer commercial vehicles to use the freeway.

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[5] *From USDOT Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations, signed March 11, 2010 and announced March 15, 2010: "The United States Department of Transportation (DOT) is providing this Policy Statement to reflect the Department's support for the development of fully integrated active transportation networks. The establishment of well-connected walking and bicycling networks is an important component for livable communities, and their design should be a part of Federal-aid project developments. Walking and bicycling foster safer, more livable, family-friendly communities; promote physical activity and health; and reduce vehicle emissions and fuel use. Legislation and regulations exist that require inclusion of bicycle and pedestrian policies and projects into transportation plans and project development. Accordingly, transportation agencies should plan, fund, and implement improvements to their walking and bicycling networks, including linkages to transit."*

[6] *http://www.dot.wisconsin.gov/projects/state/2030-maps.htm. Accessed Sept. 18, 2013.*

The National Highway System is a priority system of highways that have been identified and designated for the following reasons:

- Ensure connectivity to the national defense highway network and other important regional transportation routes; and
- Provide a high level of safety, design and operational standards.

The 190-mile-long I-43 corridor connects to I-39/I-90 in Beloit at the Wisconsin/Illinois border, and to US 41/US 141 in Green Bay in northeastern Wisconsin (**Exhibit 1-17**). The freeway is a gateway to popular tourist locations in northern Wisconsin and links major industrial centers in south-central Wisconsin, Milwaukee and Green Bay.

In the Milwaukee metropolitan area, I-43/I-894 is part of a bypass around the city of Milwaukee for through-traffic, and it provides an important freeway connection for several Milwaukee County communities. I-43 is concurrent with I-94 and US 41 between the Mitchell Interchange and the Marquette Interchange, serving as part of the north-south freeway link between Chicago and Milwaukee.

According to SEWRPC's 2003 regional freeway reconstruction plan, I-43 serves a substantial amount of through-traffic in southeastern Wisconsin. That is, more than 15 percent of weekday trips are defined as travel with neither end of the trip located within the county in which the freeway segment is located. The I-43 North-South Freeway study area also serves substantial intercounty traffic: trips have an origin in one county and destination in another county. Intercounty trips account for more than 20 percent of weekday traffic.

In addition to serving through trips, the study corridor freeway is an important commuter route for the about 480,000 employees who work in Milwaukee and Ozaukee counties.

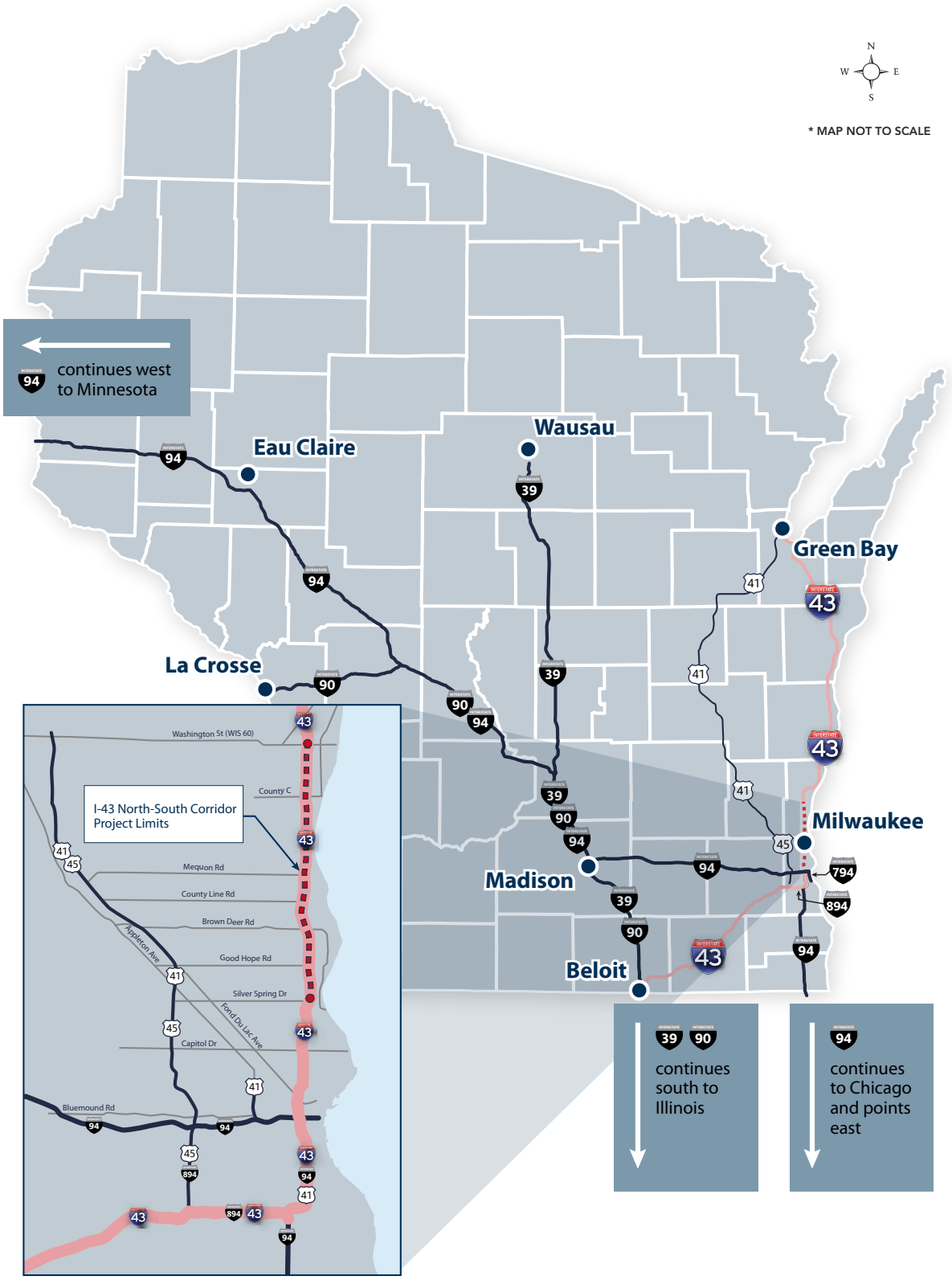
As a major north-south route through eastern Wisconsin, I-43 serves a network of connecting highways that carry traffic between Lake Michigan on the east, and destinations to the west (**Table 1-11** and **Exhibit 1-17**).

**Table 1-11: Highways Connecting to I-43**

| Connecting Highway | Average Daily Traffic (2010) | Regional Connections from I-43 |
|---|---|---|
| Silver Spring Drive | 21,500-42,200 | Links I-43 to US 41/45, city of Glendale, village of Whitefish Bay and Milwaukee's west side |
| Good Hope Road | 27,600 (2007) | Links I-43 to US 41/45, Milwaukee's west side, the village of Fox Point, and the city of Glendale |
| Brown Deer Road | 23,300 (2009) | Links I-43 to US 45/41, Milwaukee's northwest side, village of Brown Deer, village of Bayside and village of River Hills |
| County Line Road | 5,200 | Links I-43 to Milwaukee's northwest side and city of Mequon |
| Mequon Road | 28,700 | Links I-43 to US 41/45, city of Mequon and village of Germantown |
| County C | 12,900 | Links I-43 to Village of Cedarburg |
| WIS 60 | 15,600 | Links I-43 to village of Grafton, village of Jackson, US 45 and US 41 |

*Source: WisDOT*

## Exhibit 1-17: System Linkages



### INTERMODAL LINKAGE

In addition to highway system linkages, the I-43 North-South Freeway Corridor provides important connections to air, rail, intercity bus and water transportation in southeastern Wisconsin.

*AIRPORT ACCESS*

Wisconsin's two international airports include Austin Straubel International Airport, located north of the study area in Green Bay, and General Mitchell International Airport, located south of the study area in Milwaukee. I-43 is an important access route for passengers arriving and departing from these airports.

*INTERCITY BUS ACCESS*

Indian Trails, Jefferson Lines, Lamers and Greyhound bus companies utilize the study corridor freeway to provide intercity bus service.

*LOCAL BUS ACCESS*

Milwaukee County Transit Service (MCTS) uses I-43 for express bus service. In Milwaukee County, express buses connect northern Milwaukee county communities and the University of Wisconsin-Milwaukee and downtown Milwaukee. MCTS also operates the Ozaukee County Express, which provides service between Port Washington in Ozaukee County and downtown Milwaukee.

*PASSENGER TRAIN ACCESS*

An Amtrak Station is located at General Mitchell International Airport and at the Milwaukee Intermodal Station, about 7 miles south of the study area in downtown Milwaukee. I-43 provides a freeway access route for those in the study area to the Amtrak services.

*PORT ACCESS*

I-43 is part of the highway network serving the Port of Milwaukee, about 8 miles south of the study area. This port on Lake Michigan is a regional transportation and distribution center with a primary market that includes Wisconsin, northern and western Illinois, and Minnesota. The Lake Express Ferry operates out of the port, providing service between Milwaukee and Muskegon, Mich. I-43 also provides Interstate access to Manitowoc, where the Badger Ferry provides service to Ludington, Mich.

## 1.3.6. Environmental Aspects

As noted in **Subsection 1.2**, the purpose of the proposed action also includes minimizing impacts to the natural and built environment to the extent feasible and practicable. The I-43 study corridor travels through heavily developed and rural areas. Important natural resources throughout the corridor include wetlands, waterways, floodplains and managed open space. Many neighborhoods and commercial areas adjacent to the corridor will be sensitive to impacts to noise, air quality and local access. Cultural resources including parks, recreation areas, and historic resources are also present. WisDOT and FHWA consider, during the development, evaluation and refinement of the alternatives for implementing purpose and need, how to best avoid and minimize impacts to existing development and environmental resources.

The U.S. Army Corps of Engineers (USACE), a cooperating agency to this project, may adopt this environmental impact statement to fulfill its agency responsibilities pursuant to the National Environmental Policy Act of 1969 (NEPA) and to comply with Code of Federal Regulations (CFR) 40 CFR §§ 1500-1508.[7] For projects affecting resources protected under the Clean Water Act, the development of alternatives must consider 40 CFR § 230.404(b)(1), "Guidelines for Specification of Disposal Sites for Dredged or Fill Material."[8] These guidelines state that dredged or fill material should not be discharged into aquatic ecosystems, including wetlands, unless the following conditions are met:

- No practicable alternatives can be demonstrated;
- Such discharge will not have unacceptable adverse impacts; and
- All practical measures are taken to minimize negative effects.

## 1.3.7. Summary of Need

The purpose of the proposed I-43 North-South Freeway Corridor Study is to provide a safe and efficient transportation corridor that meets identified transportation needs while minimizing impacts to the natural, cultural and built environment. The study has identified the following key needs:

- **Pavement, design and geometric deficiencies along the I-43 North-South study corridor:**
  - The pavement has been rehabilitated and resurfaced twice since initial construction in the 1950s and '60s. These improvements help extend pavement life, but underlying deterioration continues to undermine its useful life. The planned pavement resurfacing in 2014 is expected to maintain the driving surface for a short period time before complete reconstruction is scheduled.
  - All the interchanges have substandard distances between ramp terminals and local intersections. Three interchanges have substandard distances between ramp terminals and local driveways.
  - All interchanges have substandard ramp design.
  - Ten locations along the freeway mainline have substandard horizontal or vertical curves.
  - Twenty-four areas along the freeway mainline have substandard vertical alignments.
  - Nearly the entire length of the freeway mainline has a substandard cross slope.
  - Six locations have substandard stopping sight distance, and 14 locations have substandard decision sight distance.
  - Twelve locations have substandard vertical clearance under bridges.
- **Highway safety:** The character of crashes and related crash rates reflect the design deficiencies and traffic congestion along the freeway corridor. The highest number of crashes occur in the more congested parts of the freeway corridor in Milwaukee County, between Good Hope Road and Silver Spring Drive. The highest crash rates occur at interchanges with substandard ramp designs.
- **Existing and future traffic volumes:** Traffic operations in Milwaukee County are poor in many sections of the freeway now, and poor operations are expected to expand throughout almost the entire corridor into Ozaukee County by the year 2040.

[7] *http://www.gpo.gov/fdsys/granule/CFR-2011-title40-vol33/CFR-2011-title40-vol33-part-id1102/content-detail.html. Accessed Sept. 18, 2013.*

[8] *Administered by U.S. Environmental Protection Agency (EPA) and USACE (1977)*

- **Regional land use and transportation planning:** SEWRPC's regional plans have identified the need to address improvements to the I-43 North-South Freeway study corridor to accommodate anticipated land use and travel patterns.
- **System linkage and route importance:** The I-43 North-South Freeway is a critical transportation corridor linking several economic activity areas, the highway network within and beyond Wisconsin. The corridor also provides access to multiple transportation modes, including regional airports, intercity and local bus service, passenger rail, ferry service, and the Port of Milwaukee.

## 1.4. LOCAL GOVERNMENT, PUBLIC AND AGENCY INPUT

### 1.4.1. Public Meetings

In August 2012, WisDOT held public information meetings at which the public could review exhibits illustrating the need for the study and speak with the study team members. WisDOT prepared the study purpose and need using input from the August 2012 public information meeting and data collected on the study corridor. Additional public information meetings in January 2013 and August 2013 provided input on alternatives WisDOT developed during the study. Public comments from the meetings assisted WisDOT in screening and refining the alternatives described in **Section 2**. **Section 5** provides additional information on comments received at the public meetings.

### 1.4.2. Stakeholder Meetings

WisDOT held initial stakeholder meetings in July 2012 and August 2012 to gather input from local governments and major retail, medical services and a high school in the study area. The stakeholders were in favor of capacity expansion while avoiding or minimizing socioeconomic and environmental impacts. Stakeholders noted traffic concerns with afternoon backups north of Silver Spring Drive at the point where I-43 tapers from three to two lanes, and the morning traffic backups just south of Pioneer Road in Ozaukee County. Others noted areas of congestion near the interchanges at Good Hope Road, Brown Deer Road, and Mequon Road. In general, stakeholders were in favor of a new interchange at Highland Road.

Other areas of concern the stakeholders identified are drainage and stormwater management; pedestrian and bicycle accommodations; park-and-ride lot locations; proximity to water utilities; the potential new interchange at Highland Road; potential changes to the partial interchange at County Line Road; and noise impacts, especially in the Milwaukee County portion of the project.

WisDOT continues to meet with stakeholders in local communities to receive input on the study alternatives and impacts. Additionally WisDOT established a Technical Advisory Committee (TAC) and a Community Advisory Committee (CAC) to provide input on the alternatives at study milestones. **Section 5** provides detailed discussion stakeholder outreach.

### 1.4.3. Agency Scoping Meeting

WisDOT and FHWA held an agency scoping meeting in August 2012 to discuss the corridor, purpose and need factors, the environmental process and the schedule. The participants included representatives from SEWRPC, the cities of Mequon and Glendale, U.S. Environmental Protection Agency (EPA), USACE, Wisconsin Department of Natural Resources

(WDNR), North Shore Water Commission and the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP). Agency representatives expressed concern about stormwater management and emphasized that WisDOT and FHWA follow the hierarchy of avoid, minimize and mitigate to address impacts from the build alternatives (**Section 2**).

## 1.5. RELATIONSHIP TO OTHER PROPOSED ACTIONS

WisDOT plans a pavement overlay project in 2014 for I-43 from south of Silver Spring Drive to WIS 32. The project will maintain the driving surface until the freeway can be reconstructed, pending the outcome of the I-43 North-South Freeway Corridor Study. WisDOT's conversations with other municipalities did not identify significant local projects in the study area at this time.

# 2. ALTERNATIVES CONSIDERED

Section 2 describes the range of alternatives developed to address the purpose and need factors identified in **Section 1** as follows:

- Pavement, freeway design and geometric deficiencies
- Safety
- Existing and future traffic volumes
- Regional land use and transportation planning
- System linkage and route importance

For the purposes of this draft environmental impact statement (DEIS), the Wisconsin Department of Transportation (WisDOT) and Federal Highway Administration (FHWA) have identified a preferred alternative that may best address the current and long-term needs in the I-43 North-South Freeway study corridor. See **Subsection 2.8** for more information.

As noted in **Subsection 2.9**, WisDOT and FHWA will review and consider input from the public hearing and public comment period on the DEIS and select a preferred alternative. The preferred alternative will be presented in the final environmental impact statement (FEIS), along with reasons for its selection.

## 2.1. DEVELOPMENT OF ALTERNATIVES

The regional transportation planning process establishes the basis for project-level alternatives developed for the I-43 North-South Freeway Corridor Study. The following subsections describe the regional planning context and the public and agency input that helped define the need for the I-43 North-South Freeway Corridor Study and establish the range of alternatives to be more fully developed for the study, which are described in **Subsection 2.2**.

### 2.1.1. Regional Planning Context

WisDOT, FHWA and local governments are partners with the Southeastern Wisconsin Regional Planning Commission (SEWRPC) in the regional transportation planning process and use as a basis for further study the recommendations in SEWRPC's *Planning Report No. 39: A Regional Transportation System Plan for Southeastern Wisconsin: 2035* (2035 regional transportation plan). As noted in the plan's introduction, SEWRPC's regional transportation planning is closely coordinated with WisDOT's statewide transportation planning to ensure consistency with statewide transportation plans and forecasts. At least every four years, FHWA and the Federal Transit Administration (FTA) must jointly verify that the metropolitan transportation planning process is being carried out in accordance with applicable provisions of federal law.

As part of the 2035 regional transportation plan, SEWRPC designed, tested and evaluated multiple regional plan scenarios to ensure that full and adequate consideration was given to resolving future transportation problems through land use decisions, public transit, bicycle and pedestrian facilities, transportation systems management (TSM) measures, and travel demand management (TDM) measures. SEWRPC considers these measures before evaluating highway projects that would potentially add capacity to existing arterial streets and highways or build new highway facilities.

Preliminary engineering/environmental corridor studies for arterial street and highway improvements are based on recommendations in the 2035 regional transportation plan. TSM

and TDM elements for specific highway projects rely on TSM and TDM recommendations from the regional transportation planning process. This is because TSM and TDM improvements generally need to be implemented on a broader scale than an individual highway corridor to maximize their effectiveness. The following alternative plan scenarios are presented in detail in the 2035 regional transportation plan.

## NO BUILD PLAN SCENARIO

This plan scenario would maintain the existing transportation system, including the existing public transit system as it existed in base year 2005, resurface and reconstruct the existing arterial street and highway system without additional traffic lanes, and operate and manage the transportation system as it was operated and managed in base year 2005.

## TRANSPORTATION SYSTEMS MANAGEMENT ONLY PLAN SCENARIO

SEWRPC's TSM Only Plan scenario includes both TSM and TDM elements. TSM elements optimize existing transportation facilities to maximum carrying capacity and travel efficiency through freeway traffic management, street and highway traffic management and other measures to help alleviate congestion. TDM elements reduce personal vehicular travel or shift such travel to alternative times and routes, allowing for more efficient use of the existing transportation system's capacity. The TSM Only Plan scenario would include all proposed improvements to the transportation system without highway capacity expansion.

SEWRPC's evaluation of the TSM Only Plan scenario included assignment of forecast travel demand to determine the extent to which such actions would meet current and future transportation needs and resolve traffic congestion problems. SEWRPC found that even with significantly expanded public transit, bicycle and pedestrian facilities, TSM and TDM measures implemented regionwide, traffic congestion on the regional highway system would double in the next 30 years. Because of these findings, the TSM Only Plan scenario was not selected as the recommended alternative by SEWRPC in the 2035 regional transportation plan.

Key **TSM** elements recommended in the 2035 regional transportation plan include the following:

- **Operational control:** Measures to improve freeway operations during average weekday rush hours and during traffic incidents, including freeway operating condition monitoring, ramp metering, freeway vehicular entrance control, and continuous use of traffic detectors to measure speed, volume and density of freeway traffic.
- **Advisory information:** Readily available information on travel conditions and travel times so motorists can choose more efficient travel routes resulting in a more efficient transportation system. Information sources include roadway variable message signs and the WisDOT Website, which contains maps showing areas with traffic congestion, incident locations and views of the freeway system from closed circuit television cameras. WisDOT also maintains a regional "511" call-in number that allows the public to get information about current travel conditions and construction.
- **Incident management:** Timely detection of freeway incidents through the use of closed circuit television, enhanced freeway location reference markers, freeway service patrols, crash investigation sites, ramp closure devices, and alternate route designations.
- **Arterial street and highway traffic management:** Improvements in this TSM category are typically implemented in the near-term (two to six years) and are similar to the spot improvements identified for the I-43 North-South Freeway Corridor Study (Subsection 2.3 through Subsection 2.5). For example, improvements could include adding turn lanes and

reconstructing intersections, improving signal timing, and adding auxiliary lanes or collector-distributor roads at select locations to improve traffic flow and safety.

Key **TDM** elements discussed in the 2035 regional transportation plan include the following:

- **Public transit:** The 2035 regional transportation plan recommends significant improvement and expansion of public transit in southeastern Wisconsin, including development of a rapid transit and express transit system, improvement of existing local bus service, and integration of local bus service with the recommended rapid and express transit service.

  Rapid transit bus service would operate over freeways connecting the urbanized areas, urban centers and outlying areas of the region. Express bus service would consist of a grid of limited-stop, higher speed routes located largely within Milwaukee County. The routes would connect major employment centers and shopping areas, other major activity centers, tourist attractions, entertainment centers and residential areas. None of the transit routes included in the 2035 regional transportation plan would use dedicated bus lanes on freeways.

  Altogether, recommended regional transit service in year 2035 would be increased by about 100 percent or double the service levels that existed in 2005, as measured in terms of revenue transit vehicle-miles of service provided.[1]
- **Preferential treatment for high-occupancy vehicles (HOV):** HOV provisions are intended to efficiently move transit vehicles, vanpools and carpools on the existing highway system. Such treatments include HOV bypass lanes at metered freeway on-ramps, reserved bus lanes along congested highways, transit priority signal system and dedicated parking for carpools and vanpools. Currently, HOV bypass lanes are on more than half of the metered freeway on-ramps in Milwaukee County, and at one on-ramp (Mequon Road) in Ozaukee County. Reserve bus lanes like those along Bluemound Road in Waukesha County allow buses to bypass traffic backups at traffic signals. Expanded use of reserve lanes is recommended on congested streets and highways. The 2035 regional transportation plan does not recommend bus lanes or HOV lanes on I-43.
- **Park-and-ride lots and other miscellaneous TDM measures:** The 2035 regional transportation plan recommends park-and-ride lots to promote carpooling and serve public transit, thereby reducing the number of cars on the freeway system. Park-and-ride lots are recommended at major intersections and interchanges where sufficient demand may be expected to warrant them. WisDOT has also implemented its RIDESHARE program that matches potential carpoolers based on route and personal preferences. Other TDM measures include telecommuting and flexible work schedules. These strategies can be recommended to area businesses, but the decision to provide these options to employees is at the discretion of the employer.

## TRANSPORTATION SYSTEMS MANAGEMENT PLUS HIGHWAY PLAN SCENARIO

Based on the outcome of evaluating the TSM Only Plan scenario, SEWPRC identified a number of arterial street and highway improvements to address congestion and deficiencies that would be expected to remain after full implementation of the TSM Only Plan scenario.

The TSM Plus Highway Plan scenario was selected as the recommended alternative in the 2035 regional transportation plan, based on the results of the assessment of the No Build and TSM Only scenarios and their inability to accommodate future travel demand within Southeastern

[1] *Since the 2035 regional transportation plan was adopted in 2006, fixed-route public transit service provided within Southeastern Wisconsin has been in decline. Between the years 2006 and 2012 fixed-route public transit revenue vehicle-miles of service declined by about 10 percent.*

Wisconsin. This assessment was conducted, in part, using SEWRPC's regional travel demand model, which is the technical basis for the regional traffic forecasts in the 2035 plan. The travel demand model, established in 1963, is now in its fourth generation and is the most effective method for evaluating travel demand in southeastern Wisconsin. The regional traffic forecasts are a key element in evaluating alternatives for street and highway improvements. The forecasts assume that all components of the TSM Only Plan scenario have already been implemented at the regional level. In other words, the traffic forecasts for the I-43 North-South Freeway Corridor Study and other highways in the southeast Wisconsin region represent the amount of "residual traffic" that will continue to use the arterial street and highway system and contribute to increasing congestion and safety concerns even after full implementation of public transit, bicycle and pedestrian, TSM and TDM elements of the 2035 regional transportation plan.

## WISDOT'S ROLE IN IMPLEMENTING THE TSM PLUS HIGHWAY PLAN SCENARIO

In selecting the TSM Plus Highway Plan scenario, SEWRPC's Advisory Committee on Regional Transportation System Planning (local officials and agency representatives who guide and direct the regional planning process) emphasized that proposed highway improvements including preservation projects, would need to undergo preliminary engineering and environmental studies by responsible state, county or municipal governments before implementation. The I-43 North-South Freeway Corridor Study by WisDOT and FHWA serves this purpose.

WisDOT has jurisdiction to implement TSM elements, some TDM elements and capacity expansion for highway projects, but does not have the jurisdiction to implement transit capital improvements. As stated in Wisconsin Statutes § 85.062(2), "No major transit capital improvement project may be constructed using any state transportation revenues unless the major transit capital improvement project is specifically enumerated under subsection (3)."

Implementing the 2035 regional transportation plan's transit recommendations depends on funding availability and commitments at the federal, state and local levels as well as fluctuations in revenue over time. For example, state funding to the Milwaukee County Transit System (MCTS) increased by 29 percent from 1995-2000, and by another 7 percent between 2000 and 2005. The 2011-2013 biennial budget decreased statewide transit funding by 10 percent and the current 2013-2015 biennial budget increases funding by 4 percent.

The regional transportation plan notes that implementation of the recommended public transit expansion would be dependent upon the continued commitment of the state to be a partner in the maintenance, improvement and expansion, and attendant funding of public transit. The state historically has funded 40 percent to 45 percent of transit operating costs, and has increased funding to address inflation in the cost of providing public transit, and to provide for transit improvement and expansion.

Moreover, implementing the recommended expansion of public transit in Southeastern Wisconsin depends on attaining dedicated local funding for public transit. Most public transit systems nationwide have dedicated local funding, typically a sales tax of 0.25 percent to 1.0 percent, and they are not nearly as dependent upon federal and state funding. This is not the case with Milwaukee and Ozaukee counties and as such, the counties rely heavily on property tax revenues. The local share of public transit funding in Southeastern Wisconsin is provided through county or municipal budgets, and represents about 15 percent of the total operating costs and 20 percent of the total capital costs of public transit. In Wisconsin, because the local share of funding public transit is largely provided by property taxes, public transit must annually compete with mandated services and projects. Increasingly, due to the constraints in property-

tax-based funding, counties and municipalities have found it difficult to provide funding to address transit needs, and to respond to funding decisions at the federal and state level.

It is appropriate for WisDOT to rely on SEWRPC's evaluation of transit options conducted as part of the regional transportation planning process, per FHWA's Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*. This technical advisory states that reasonable and feasible transit options should be considered on all proposed major highway projects in urbanized areas with more than 200,000 people, even though such options may not be within the existing FHWA funding authority. The technical advisory goes on to say that consideration of this alternative (transit) may be accomplished by reference to the regional or area transportation plan where that plan considers mass transit, or by an independent analysis during early project development.

### 2.1.2. Public and Agency Input

Alternatives development also includes extensive public and agency input. Building on the SEWRPC transportation planning process, FHWA uses a collaborative environmental review process during project studies[2] that includes a coordination plan and impact analysis methodology. The review process provides an opportunity for public and agency input on purpose and need, alternatives and impact assessment. Public outreach has included public information meetings, advisory committees, meetings with local officials and neighborhood groups. Coordination with state and federal review agencies has included a scoping meeting and additional meetings/correspondence regarding purpose and need, alternatives and impact assessment. The alternatives described in subsequent sections include alternatives derived from the SEWRPC planning process, suggestions from the public and agency review process to improve those alternatives, and suggestions of additional alternatives to consider. See **Section 5** for additional information about public involvement and agency coordination.

### 2.1.3. Reasonable Alternatives Concept

The Council on Environmental Quality's (CEQ) regulations for implementing the National Environmental Policy Act[3] (NEPA) require an environmental impact statement (EIS) to include detailed analysis of reasonable alternatives. Subsequent CEQ guidance states: "In 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."[4] The term "reasonable alternatives" is generally understood to mean alternatives that address project purpose and need, and that avoid, minimize or mitigate overall social, environmental and economic impacts to the extent practicable.

[2] *U.S. Code (USC) 23 USC § 139*

[3] *Code of Federal Regulations (CFR) 40 CFR § 1502.14*

[4] *"Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," 46 FR 18, 026, March 23, 1981. https://www.federalregister.gov/articles/2011/01/21/2011-1188/final-guidance-for-federal-departments-and-agencies-on-the-appropriate-use-of-mitigation-and. Accessed Sept. 23, 2013.*

## 2.2. INITIAL RANGE OF STUDY ALTERNATIVES CONSIDERED

WisDOT developed the project-level alternatives to address the study purpose and need, which includes the recommendations for the highway components in the 2035 regional transportation plan. If the I-43 North-South Freeway Corridor Study has recommendations that are different than those included in the 2035 regional transportation plan, the plan would be amended to reflect the conclusions of this more detailed level of study. The 2035 regional transportation plan recommends full implementation of all of the plan elements, which include public transit, bicycle and pedestrian, TSM, TDM and highway improvements.

At the outset of the study, WisDOT initiated public outreach activities and technical reviews to arrive at the initial range of alternatives and the alternatives selected for detailed analysis in this DEIS. Public outreach activities included a series of public information meetings to present the study purpose and need and the range of alternatives that could respond to needs. WisDOT also established a Technical Advisory Committee (TAC) and a Community Advisory Committee (CAC) to provide local input during the alternatives development process. The TAC provided input on technical aspects of the alternatives, while the CAC provided a local neighborhood and business perspective on alternatives. These meetings were also supplemented with meetings with local officials, neighborhoods and individuals to help refine alternatives. **Section 5** provides more detail about the TAC, CAC and public meetings.

WisDOT also conducted monthly reviews of alternatives with WisDOT and FHWA staff to obtain input on specific technical considerations through the development process. In addition to monthly technical reviews, WisDOT held a value engineering study and road safety audit for the study. The value engineering study convened outside experts to review alternatives and identify additional improvements and cost efficiencies. The road safety audit reviewed the alternatives to identify potential safety issues and to ensure that existing safety conditions in the I-43 North-South Freeway Corridor Study are addressed. The initial range of alternatives for the study corridor includes the following:

- No-Build Alternative (maintain existing highway configuration)
- Regionwide TSM and TDM elements
- Build alternatives – highway improvement components
  - Spot improvements (spot safety and operational improvements with minimal or no right of way acquired)
  - Reconstruct to modern design standards without capacity expansion (no additional lanes and minimal right of way acquired)
  - Reconstruct to modern design standards with capacity expansion (additional lanes and right of way acquired)

These alternatives are further described in the following subsections. The build highway improvement concepts, which also include TSM and TDM elements, are discussed by freeway mainline and interchange alternatives.

### 2.2.1. No-Build Alternative

As described in **Subsection 1.3.1**, I-43 is a four-lane freeway from just south of Bender Road to WIS 60, with varying median and shoulder widths, as well as several pavement, design and geometric deficiencies. Under the No-Build Alternative, I-43 would be maintained in its current configuration. Over time and as needed, WisDOT would replace existing pavement, structures,

and other highway elements. No capacity expansion, or design and safety improvements would occur on the freeway mainline or at the interchanges.

This is essentially the No Build Plan scenario developed and evaluated by SEWRPC in the 2035 regional transportation plan. That is, the alternative would maintain the existing transportation system, including the existing public transit system as it existed in base year 2005, resurface and reconstruct the existing arterial street and highway system without additional traffic lanes, and operate and manage the transportation system as it was operated and managed in base year 2005.

While the No-Build Alternative would address deteriorated pavement and structure conditions, have minimal environmental impacts and lower construction cost than the build alternatives, it would not meet the study purpose and need to address substandard design elements, safety concerns, or forecasted traffic volumes. Although the No-Build Alternative does not meet study purpose and need, it serves as the baseline for impact comparison to the build alternatives.

### 2.2.2. Regionwide TSM and TDM Elements

TSM and TDM elements recommended by SEWRPC's 2035 transportation plan already are in place on portions of the southeastern Wisconsin freeway system, or are planned for implementation over time on the entire freeway system, including I-43.

- **Ramp metering:** Traffic signals on freeway entrance ramps to control the rate of vehicle entry onto the freeway to reduce congestion on the adjacent and downstream freeway segments. To encourage ridesharing and transit use, preferential access for HOVs can be provided (if requested and justified by the transit authority) at ramp meter locations to allow such vehicles to bypass traffic waiting at a ramp meter signal. Existing ramp meters are located at the following interchanges:
  - Silver Spring Drive southbound on-ramp (includes HOV bypass lane)
  - Good Hope Road southbound on-ramp
  - Brown Deer Road eastbound to southbound on-ramp (includes HOV bypass lane) and westbound to southbound on-ramp
  - County Line Road southbound on-ramp
  - Mequon Road southbound on-ramp

  Ramp meters are proposed for all southbound entrance ramps in the study corridor, and also for all northbound ramps in Milwaukee County.
- **Traffic detectors:** Devices embedded in the pavement or mounted adjacent to the I-43 mainline at various intervals to detect travel speed and time, traffic congestion, traffic flow breakdowns and incidents, and to regulate ramp meters. Traffic detectors are in place at ramp meter locations, as well as on the I-43 mainline. Detectors would be placed at all additional metered ramps. Additional detectors in the freeway mainline would be determined during subsequent design phases.
- **Freeway monitoring/advisory information:** Permanently installed variable message signs to provide real time information to travelers on downstream freeway traffic conditions, current travel times to selected areas, and information on lane and ramp closures. There is a variable message sign at County Line Road for southbound I-43, and additional sign locations would be determined during subsequent design phases.
- **Closed circuit television cameras:** Provide live video images to WisDOT and local law enforcement, allowing for rapid confirmation of congested areas, incident location, and immediate

determination of the appropriate response. Closed circuit television cameras are currently located along I-43 at Silver Spring Drive, Daphne Road, Good Hope Road, Brown Deer Road and Mequon Road. Subsequent design phases would help determine locations for additional cameras.

- **Crash investigation sites:** Designated safe zones where motorists can go if they are involved in a crash or an incident on the freeway. Crash investigation sites are located at the northbound and southbound exit ramps for the Brown Deer Road interchange. WisDOT would determine additional site locations during subsequent design phases.
- **Enhanced mile-marker reference posts (with highway shield and mile number):** Assist motorists in identifying specific locations along the freeway when reporting incidents. These markers are not yet in place.

The following TDM elements, as recommended in SEWRPC's 2035 regional transportation plan, are currently in place in the I-43 North-South Freeway study corridor (see also **Subsection 3.2** for detailed description of transit services):

- In the Milwaukee County portion of the I-43 study corridor (Silver Spring Drive to County Line Road), MCTS provides rapid bus service on I-43 and regular bus service on Port Washington Road. MCTS also provides special event service between Milwaukee destinations (Henry Maier Festival Park, Miller Park, Wisconsin State Fair Park) and Brown Deer Road/WIS 100, utilizing the existing park-and-ride lot at the I-43/Brown Deer Road/WIS 100 interchange.
- The Ozaukee County Express (Route 143) provides bus service between Ozaukee County and downtown Milwaukee. It is operated by Ozaukee County under contract with MCTS. Route 143 generally follows I-43 between Port Washington and Milwaukee. Within the study corridor, park-and-ride lots are located at the Brown Deer Road/WIS 100, Pioneer Road/ County Road C, and Silver Spring Drive interchanges. Other stops along Port Washington Road serve area businesses and community facilities.

In addition to express bus service, the Ozaukee County Shared Ride Taxi service provides transportation to anywhere in the county. The service also provides paratransit services for special needs groups such as seniors, disabled, low-income or veterans.

Transit improvements planned in the study corridor, such as rapid and express bus routes, would not be precluded or affected by the proposed arterial street, interchange and highway improvements discussed in Subsection 2.3 through Subsection 2.5.

Existing transit service in the study corridor, as well as any future expanded service would be enhanced by the proposed highway improvements due to a safer and more efficient freeway that could also provide reduced transit travel times throughout the corridor.

### TIME OF DAY SHOULDER USE

During public meetings, WisDOT received comments about using highway shoulders as a temporary traffic lane (shoulder running lane) during peak travel times as an alternative to adding a general travel lane. WisDOT evaluated this TSM element assuming a 19-foot shoulder, consisting of a 14-foot travel lane and 5-foot shoulder (the typical dimensions for a median shoulder lane).[5]

Under future (year 2040) conditions, WisDOT's analysis found that an I-43 shoulder running lane between Silver Spring Drive and WIS 32 (in Ozaukee County) would be required for about seven hours using a 70 mph free-flow speed. Up to 13 consecutive hours of shoulder running

[5] *FHWA-HOP-10-023 publication "Efficient Use of Highway Capacity – A Summary."*

lane would be required when existing speed limits (55 mph in Milwaukee County and 65 mph in Ozaukee County) are assumed. Advantages to implementing shoulder running lanes include:

- Better incident management and emergency vehicle use during off-peak travel hours, when shoulder running is not allowed. If an incident occurs during off peak hours, the shoulder lane could be opened to mitigate unforeseen traffic congestion.
- Potential for express bus lane or other managed lane measures (HOV lane, high-occupancy/ toll lanes lane, etc.)
- Potentially less right of way cost.

Disadvantages to the implementation of shoulder running lanes include:

- Reduced access to incidents while shoulders are in use
- Less median-side shoulder space during peak traffic periods
  - Increased crashes
  - Increase in severity of crashes
- May impact future studies and designs of other freeway segments, which cannot accommodate time of day shoulder use
- Inability to handle traffic during construction

The extensive need for capacity and disadvantages of a very narrow shoulder when in use limits the effectiveness of this design. This also may limit the ability to provide a safe, efficient highway as called for in the study purpose and need. It is recommended that a design and operation of time-of-day-based shoulder running not be implemented.

### 2.2.3. Highway Improvement Element

As discussed in **Subsection 2.1**, SEWRPC's 2035 regional transportation plan recommends improvements to I-43, including capacity expansion, in conjunction with the TSM and TDM elements discussed in **Subsection 2.2.2**. The 2035 regional transportation plan also states that WisDOT will perform a preliminary environmental study and engineering (this DEIS) to develop and evaluate specific improvement options, including capacity expansion and alternative ways to provide it. While SEWRPC's 2035 regional transportation plan demonstrates the need for capacity expansion by adding travel lanes in the study corridor, WisDOT also considers other types of capacity expansion improvements at the project level to determine whether the purpose and need for the I-43 North-South Freeway Corridor Study could be met without adding travel lanes.

## 2.3. PROJECT-LEVEL BUILD ALTERNATIVES – I-43 MAINLINE

WisDOT developed project-level build alternatives based on recommendations in SEWRPC's 2035 regional transportation plan and the purpose and need factors discussed in **Section 1**. In addition to the study purpose and need factors, WisDOT considered costs, environmental constraints and input from resource agencies and the public to help adjust or screen alternatives. I-43 currently transitions from six travel lanes (three in each direction) to four travel lanes (two in each direction) near Bender Road, just north of Silver Spring Drive, to the study's north terminus at WIS 60. The 2035 regional transportation plan recommends a six-lane facility throughout the study limits. The alternatives represent efforts to present different impact tradeoffs to abutting development and ways to minimize impacts.

The highway improvements discussed in the following subsections are described by mainline

alternatives and by each interchange in the study corridor. For ease of discussion noted in **Subsection 2.3.1**, the I-43 mainline alternatives are described by the South Segment of the corridor, and the North Segment (**Exhibit 2-1**). All build alternatives include the TSM and TDM elements described in **Subsection 2.2.2**.

## 2.3.1. I-43 Mainline Alternatives – South Segment: Silver Spring Drive to Green Tree Road

Due to unique land uses and right of way constraints, the South Segment of I-43 is addressed separately from the rest of the I-43 mainline. The South Segment is about 2 miles long, extending from Silver Spring Drive to Green Tree Road. The main issues and concerns in the South Segment include tight right of way, a railroad crossing over I-43, and parallel side roads in close proximity to I-43 (Port Washington Road east of I-43 and Jean Nicolet Road west of I-43). There is also a safety concern related to the northbound third lane drop north of Silver Spring Drive. Alternatives are described below.

### ACTIONS COMMON TO SOUTH SEGMENT BUILD ALTERNATIVES

There are actions common to many of the South Segment Build Alternatives: reconstructing the Union Pacific (UP) Railroad bridge over I-43, providing pedestrian access between Nicolet High School and its athletic fields east of I-43 and reconstructing a portion of Port Washington Road to a four-lane roadway. Alternatives for each of these actions are described below.

#### *UNION PACIFIC RAILROAD BRIDGE*

Many of the South Segment alternatives would require reconstructing the UP Railroad bridge over Jean Nicolet Road, I-43 and Port Washington Road. WisDOT proposes to construct a new bridge immediately north of the existing bridge and match into the existing east and west bridge approaches. This alternative would avoid disrupting train traffic as the new bridge is constructed. Train traffic would use the existing bridge until the new bridge is complete and then switch to the new bridge. The existing bridge would be removed once trains switch to the new bridge.

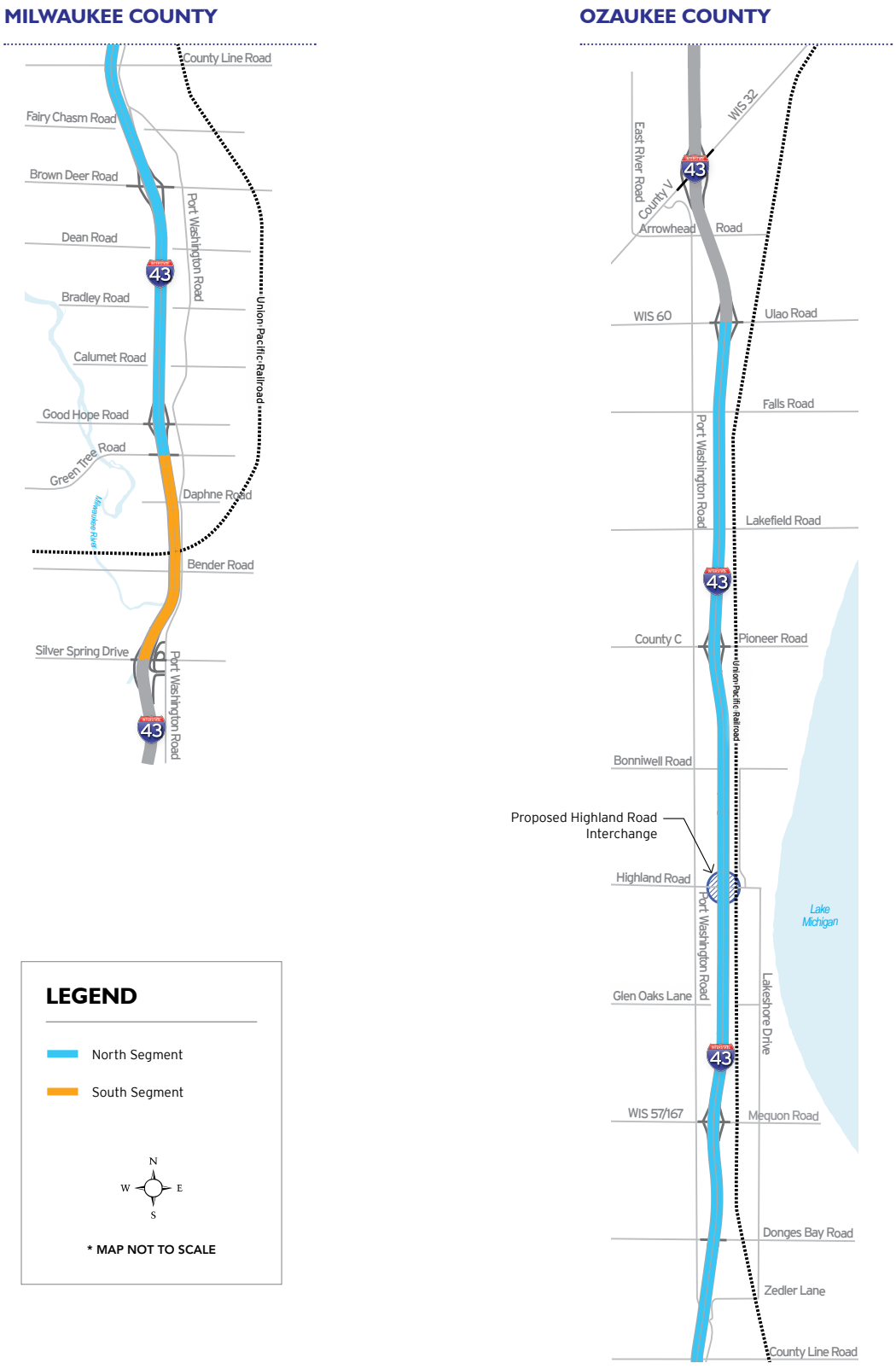
#### *NICOLET HIGH SCHOOL PEDESTRIAN ACCESS*

Currently, Nicolet High School maintains a tunnel that allows a pedestrian connection between the high school campus, west of I-43 to athletic fields east of I-43. The tunnel does not meet standards in accordance with the Americans with Disabilities Act (ADA), and there are safety concerns with the lack of lighting and visibility. As noted in alternatives descriptions below, many of South Segment build alternatives would replace the tunnel. Replacement options include a pedestrian tunnel or overpass bridge, or possibly a multiuse trail along Jean Nicolet Drive, Green Tree Road and Port Washington Road. WisDOT will develop a recommended alternative through additional coordination with Nicolet High School.

#### *RECONSTRUCT PORT WASHINGTON ROAD TO A FOUR-LANE ROADWAY*

Most of Port Washington is a local four-lane north-south arterial street in the city of Glendale, with the exception of a two-lane section between Bender Road and Daphne Road. The city of Glendale has long-term plans to widen Port Washington Road; however, the location of the existing UP Railroad bridge piers has prevented implementation in the past. The I-43 North-South Freeway Corridor Study is an opportunity for WisDOT to coordinate with the city to widen the remaining two-lane section of Port Washington Road. As a main north-south arterial, Port

## Exhibit 2-1: Location of I-43 Mainline North and South Segments



Washington Road is an alternate route for traffic diverting from the freeway during construction and incidents. Completing the four-lane section between Bender Road and Daphne Road would help make traffic operations more efficient. Most of the build alternatives for the South Segment of the I-43 mainline described below include a four-lane Port Washington Road. The city of Glendale also supports constructing Port Washington Road as a four-lane road (see **Appendix C**). Because Port Washington Road is a local road, the city and WisDOT will develop a cost-share agreement that defines the roles and responsibilities related to funding the four-lane construction.

## SPOT IMPROVEMENTS

This alternative addresses safety deficiencies and would retain the existing four-lane highway. A temporary concrete barrier is currently in place to transition traffic from six to four lanes from about 900 feet south of Bender Road to the UP Railroad bridge. WisDOT would remove the temporary barrier that shields the existing fence atop the retaining wall. Parapet (a type of permanent barrier) would be constructed on the existing retaining wall. The pavement would also be milled, overlain and restriped. A median shoulder and barrier would be added from Bender Road to Good Hope Road. Currently, there is no inside shoulder and the outside shoulder is substandard at 9 ½ feet wide. The median would have a 42-inch-high concrete barrier. Substandard shoulders would be reconstructed to provide 10-foot inside shoulders and 12-foot outside shoulders. The Green Tree Road bridge over I-43 is reaching the end of its useful life and would be replaced, along with correcting a substandard curve and bridge clearance. The existing UP Railroad bridge and the Nicolet High School pedestrian tunnel would remain in place. Port Washington Road would remain in its existing configuration. **Exhibit 2-2** illustrates spot improvement locations for the study corridor, including the South Segment.

## MODERNIZATION – 4 LANES (CENTERED)

This alternative would retain the existing four-lane highway and reconstruct it to modern design standards on its present alignment (**Exhibit 2-9**). Reconstruction would involve replacing pavement, correcting vertical profiles to increase clearances at all bridges to the current design standard of 16 feet 9 inches. The Green Tree Road overpass bridge would be replaced. The substandard vertical and horizontal curves noted in **Subsection 1.3.1**, would be corrected. Existing substandard shoulders would be reconstructed to paved to meet current standards. Barrier treatment in the median would include a 42-inch concrete barrier. Limited right of way would be required with this alternative. The Nicolet High School pedestrian tunnel would be replaced, but the existing UP Railroad bridge would remain in place and Port Washington Road would remain in its existing configuration.

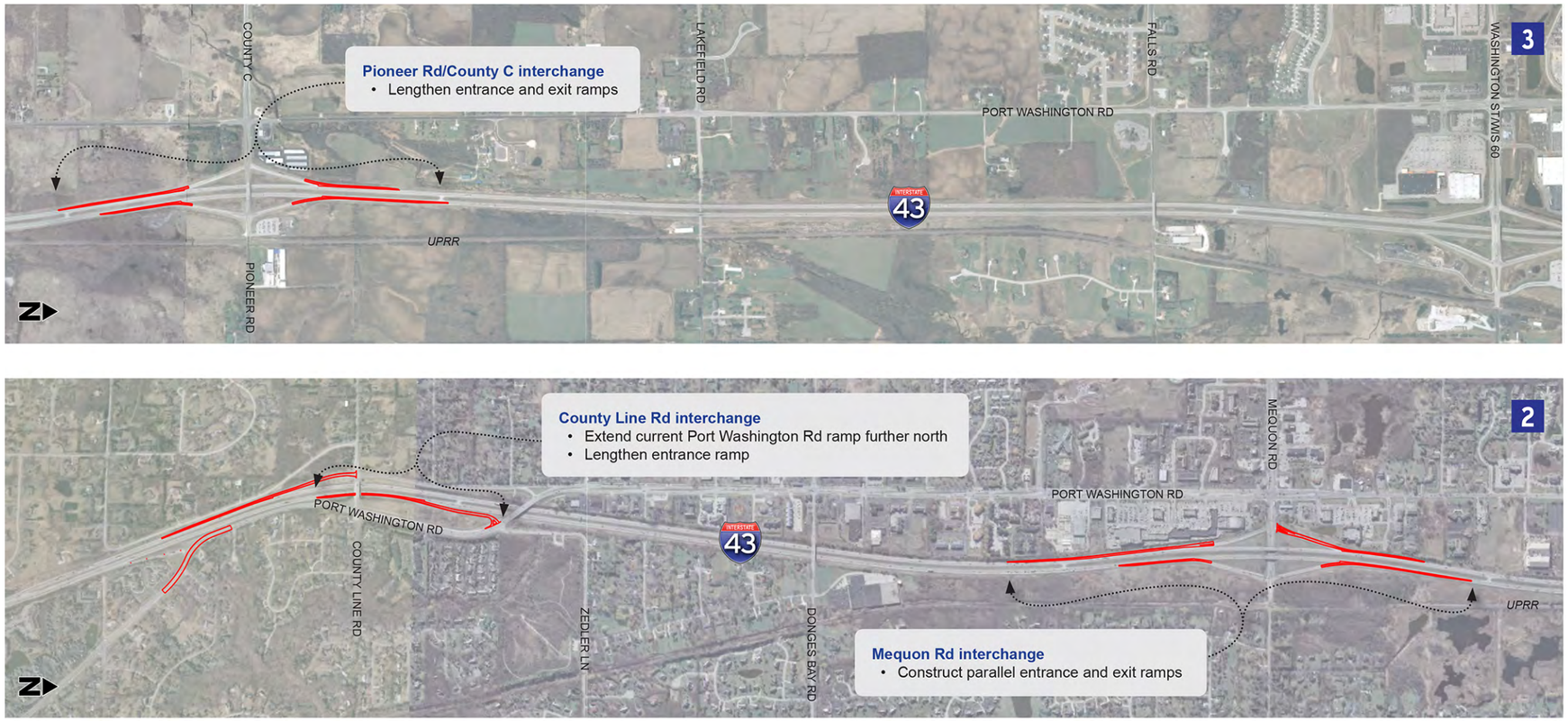
## MODERNIZATION – 6 LANES

WisDOT developed and evaluated several design options that would reconstruct the South Segment of the I-43 mainline to modern design standards and provide additional capacity. Key features of each alternative are summarized as follows.

### *MODERNIZATION – 6 LANES (CENTERED)*

I-43 would be centered and widened on both sides between the UP Railroad bridge and Daphne Road to accommodate an additional travel lane in each direction (**Exhibit 2-3**). I-43 would be widened with a “best fit” alignment (generally centered on the existing highway, but using slight

## Exhibit 2-2: I-43 North-South Corridor Spot Improvements





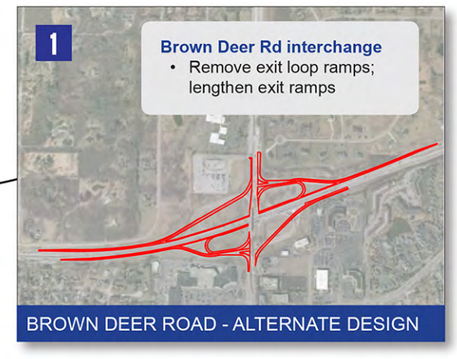
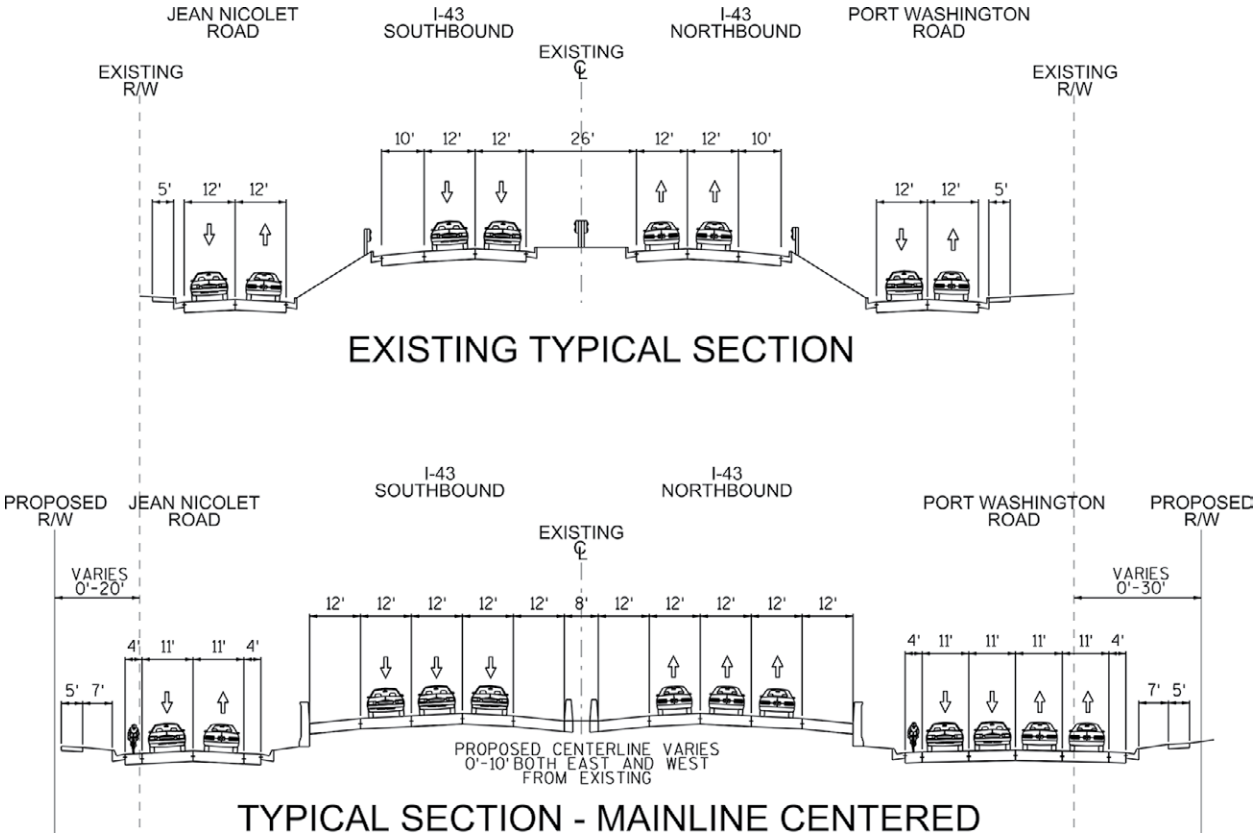


**Exhibit 2-3: Modernization – 6 Lanes (Centered)**

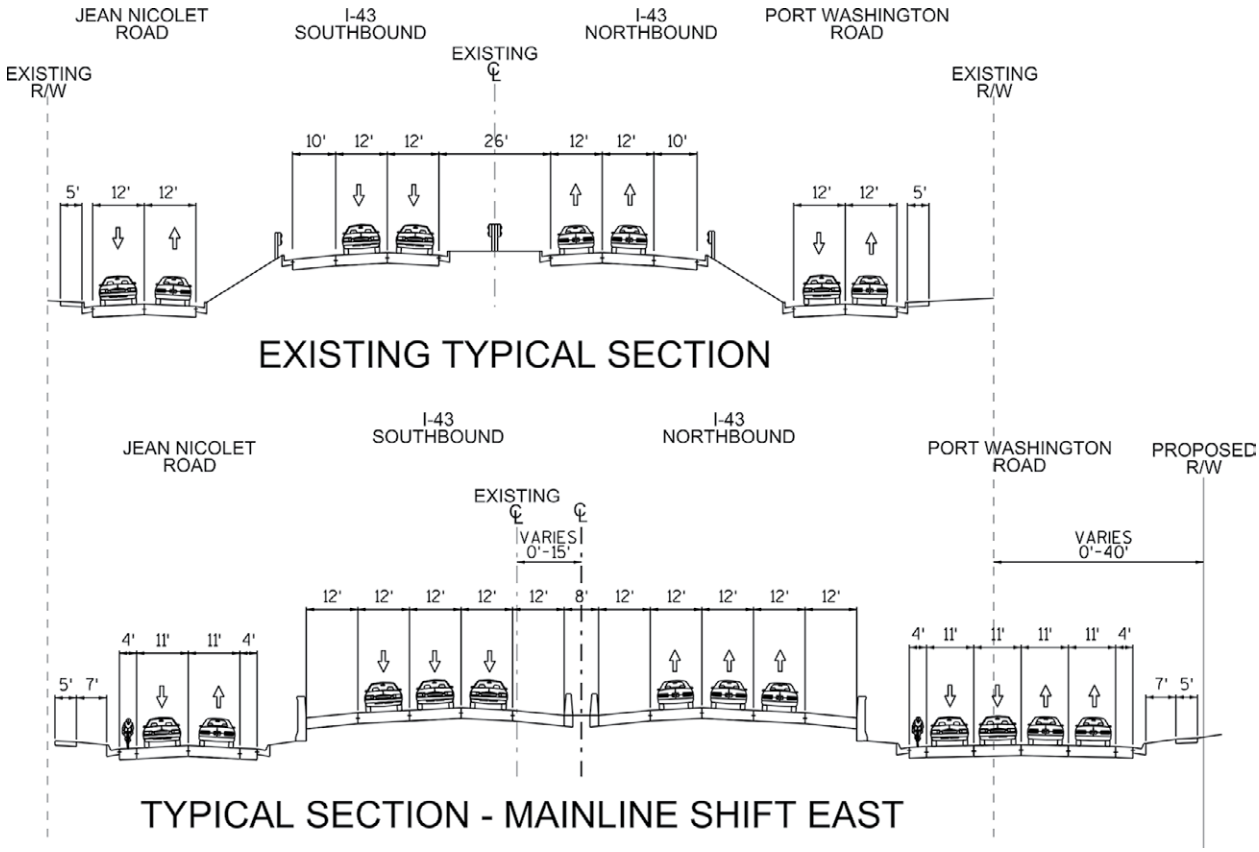



off-center shifts at key locations to minimize impacts) from Bender Road to the UP Railroad bridge and from Daphne Road to Green Tree Road. From about 700 feet south of Bender Road to Bender Road, where the six-lane-to-four-lane transition is located, I-43 mainline would be improved to bring it up to current design standards. Work would include removing the temporary barrier that currently channelizes the northbound lane drop, rehabilitating the existing retaining wall and parapet, mill and overlay the pavement to remove the lane drop, add lane striping and provide new pavement marking. Jean Nicolet Road would be shifted west and reconstructed as a continuous two-lane road from Montclaire Avenue south of Bender Road to Green Tree Road. The reconstructed road would include a sidewalk on the west side and bike lanes on both sides as required under *Wisconsin Administrative Code Chapter Trans 75: Bikeways and Sidewalks in Highway Projects* (Trans 75). Port Washington Road would be shifted east and reconstructed as a four-lane facility from Bender Road to Daphne Road. The roadway would include a sidewalk on the east side, and bike lanes on both sides. The UP Railroad bridge and Nicolet High School pedestrian tunnel would be replaced.

*MODERNIZATION – 6 LANES (MAINLINE SHIFTED EAST)*

I-43 would be shifted east between the UP Railroad bridge and Daphne Road and widened to accommodate an additional travel lane in each direction (**Exhibit 2-4**). I-43 would be widened with a “best fit” alignment (generally offset to the east of the existing centerline, but using shifts at key locations to minimize impacts) from Bender Road to the UP Railroad bridge and from

**Exhibit 2-4: Modernization – 6 Lanes (Mainline Shifted East)**

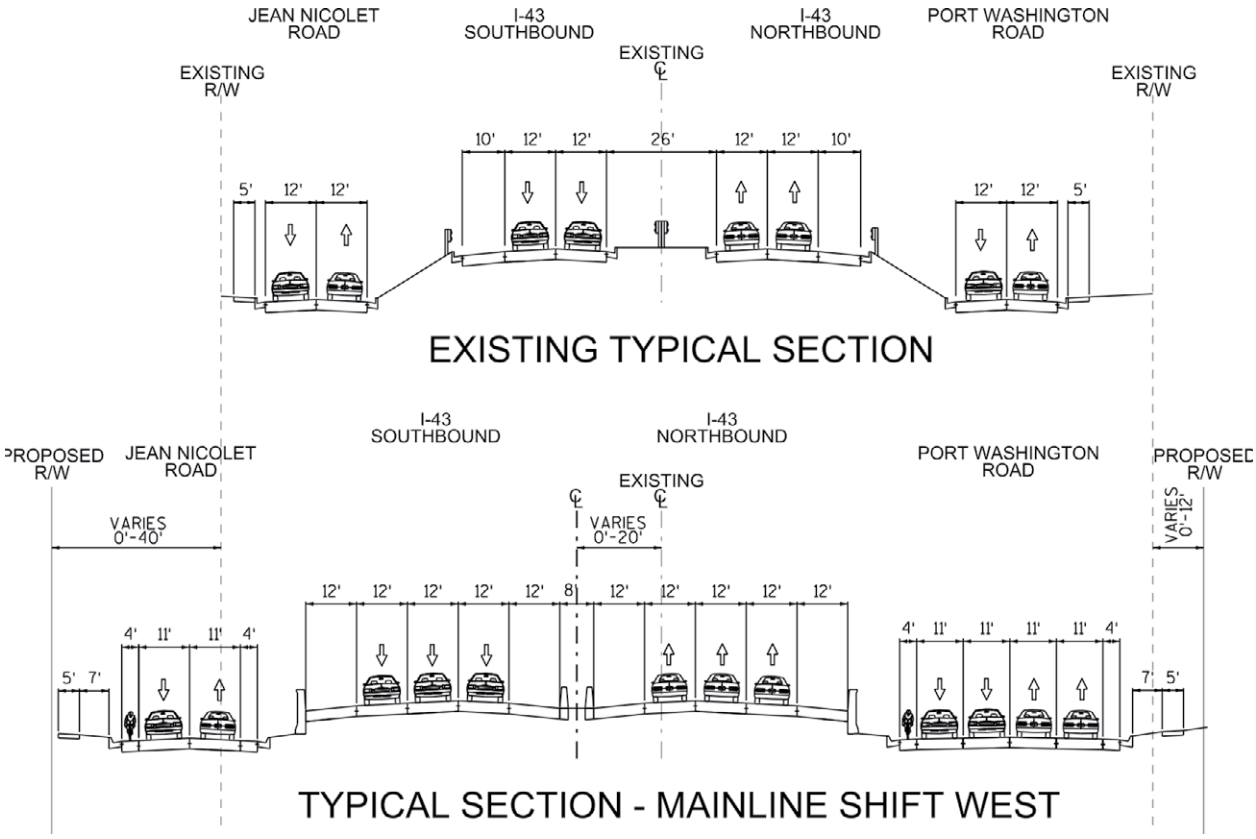



Daphne Road to Green Tree Road. From about 700 feet south of Bender Road to Bender Road, where the six-lane-to-four-lane transition is located, I-43 mainline would be improved to bring it up to current design standards. Work would include removing the temporary barrier that currently channelizes the northbound lane drop, rehabilitating the existing retaining wall and parapet, mill and overlay the pavement to remove the lane drop, add lane striping and provide new pavement marking. Jean Nicolet Road would be reconstructed on existing alignment as a continuous two-lane road from Montclaire Avenue to Green Tree Road. Similar to the Modernization – 6 Lanes (Centered) alignment, the reconstructed Jean Nicolet Road would include a sidewalk and bike lanes. Port Washington Road would be shifted east and reconstructed as a four-lane facility from Bender Road to Daphne Road. Similar to the Modernization – 6 Lanes (Centered) alignment, the reconstructed Port Washington Road would include a sidewalk and bike lanes. The UP Railroad bridge and Nicolet High School pedestrian tunnel would be replaced.

*MODERNIZATION – 6 LANES (MAINLINE SHIFTED WEST)*

I-43 would be shifted west between the UP Railroad bridge and Daphne Road and widened to accommodate an additional travel lane in each direction (**Exhibit 2-5**). I-43 would be widened with a “best fit” alignment (generally offset to the west of the existing centerline, but using shifts at key locations to minimize impacts) from Bender Road to the UP Railroad bridge and from Daphne Road to Green Tree Road. From about 700 feet south of Bender Road to Bender

**Exhibit 2-5: Modernization – 6 Lanes (Mainline Shifted West)**

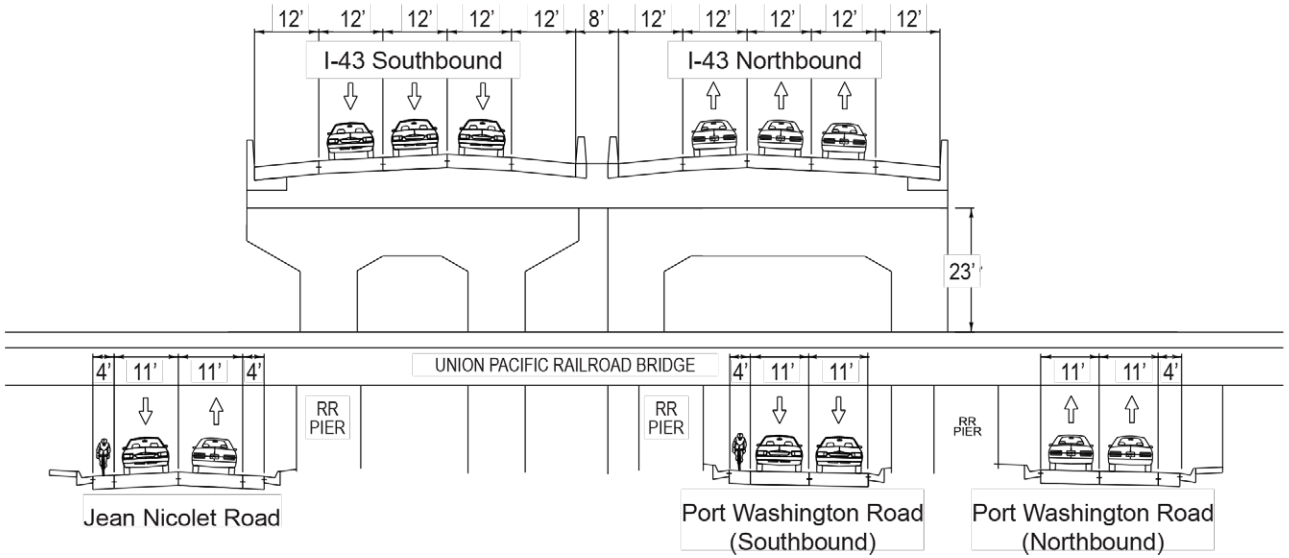


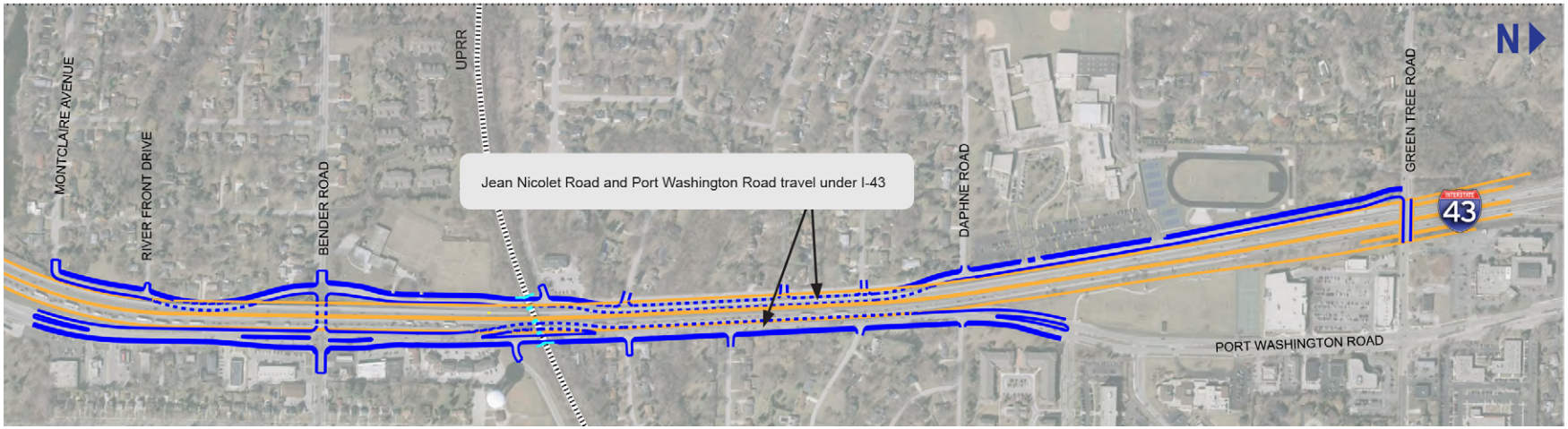

Road, where the six-lane-to-four-lane transition is located, I-43 mainline would be improved to bring it up to current design standards. Work would include removing the temporary barrier that currently channelizes the northbound lane drop, rehabilitating the existing retaining wall and parapet, mill and overlay the pavement to remove the lane drop, add lane striping and provide new pavement marking. Jean Nicolet Road would be shifted west and reconstructed as a continuous two-lane road from Montclaire Avenue to Green Tree Road. Similar to the Modernization – 6 Lanes (Centered) alignment, the reconstructed Jean Nicolet Road would include a sidewalk and bike lane. Port Washington Road is maintained on existing alignment and reconstructed as a four-lane facility from Bender Road to Daphne Road. Similar to the Modernization – 6 Lanes (Centered) alignment, the reconstructed Port Washington Road would include a sidewalk and bike lanes. The UP Railroad bridge and Nicolet High School pedestrian tunnel would be replaced.

## MODERNIZATION – 6 LANES (ELEVATED OVER UNION PACIFIC RAILROAD BRIDGE)

I-43 would be shifted west, widened to accommodate an additional travel lane in each direction, and elevated from south of Bender Road to south of Green Tree Road with I-43 going over the existing UP Railroad bridge. I-43 is about 33 feet above the UP Railroad bridge, or about 58 feet above existing I-43. The UP Railroad bridge would remain in place (**Exhibit 2-6**). Jean Nicolet Road would be reconstructed as a two-lane facility from Montclaire Avenue to Green Tree Road. Portions of Jean Nicolet Road travel under elevated I-43. The reconstructed road would include a sidewalk on the west side and bike lanes on both sides as required under Trans 75. Port

## Exhibit 2-6: Modernization – 6 Lanes (Elevated over Union Pacific Railroad Bridge)



Washington Road would be reconstructed as a four-lane facility from Bender Road to Daphne Road. Portions of Port Washington Road travel under elevated I-43. A sidewalk would be provided on the east side of the roadway, and bike lanes on both sides. The Nicolet High School pedestrian tunnel would be replaced.

### MODERNIZATION – 6 LANES (RAISED)

I-43 would be on a "best fit" alignment and widened to accommodate an additional travel lane in each direction; the highway profile would be raised from north of the UP Railroad bridge to the south of Green Tree Road (about 25 feet above existing I-43 near Coventry Court (**Exhibit 2-7**). From about 700 feet south of Bender Road to Bender Road, where the six-lane-to-four-lane transition is located, I-43 mainline would be reconstructed to bring it up to current design standards. Work would include removing the temporary barrier that currently channelizes the northbound lane drop, rehabilitating the existing retaining wall and parapet, mill and overlay the pavement to remove the lane drop, add lane striping and provide new pavement marking. Jean Nicolet Road would be partially removed from Montclaire Avenue to Green Tree Road; one of the following two access options would replace service (a sidewalk and bike lanes would be provided):

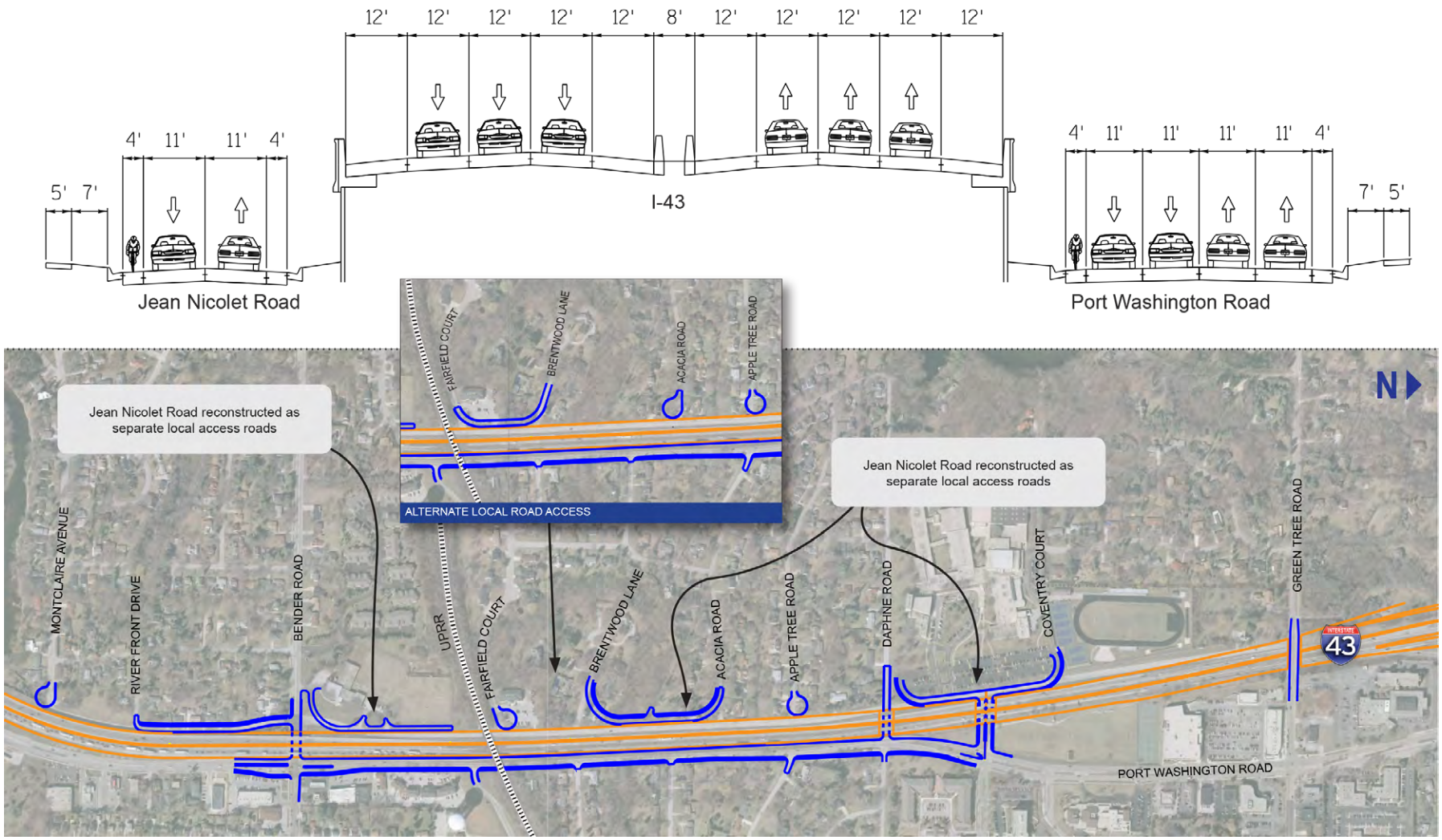
- Access option 1: Cul de sac Fairfield Court and Apple Tree Road; construct a local access road between Brentwood Lane and Acacia Road.
- Access option 2: Cul de sac Apple Tree Road and Acacia Road; construct a local access road between Fairfield Court and Brentwood Lane.

Alternative access to Nicolet High School on the west side of I-43 would be provided by a connection between Daphne Road and the remaining segment of Jean Nicolet Road. A new underpass at Coventry Court also provides vehicle and pedestrian access to Nicolet High School and the playing fields east of I-43. The Nicolet High School pedestrian tunnel would be removed. The UP Railroad bridge and would be replaced. Port Washington Road would be reconstructed as a four-lane facility from Bender Road to Daphne Road. Portions of Port Washington Road travel under elevated I-43. The reconstructed road would include a sidewalk and bike lanes.

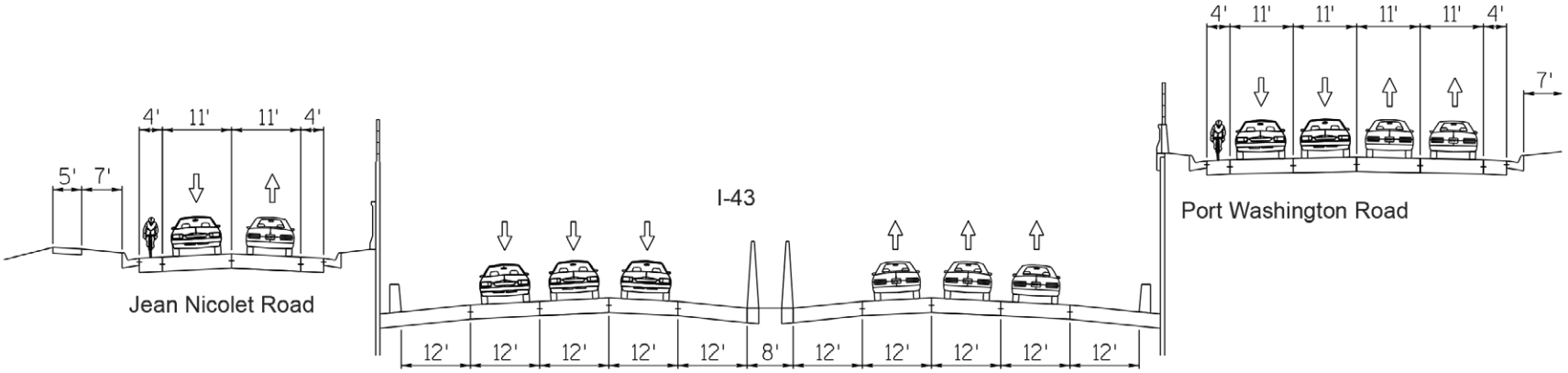
### MODERNIZATION – 6 LANES (DEPRESSED)

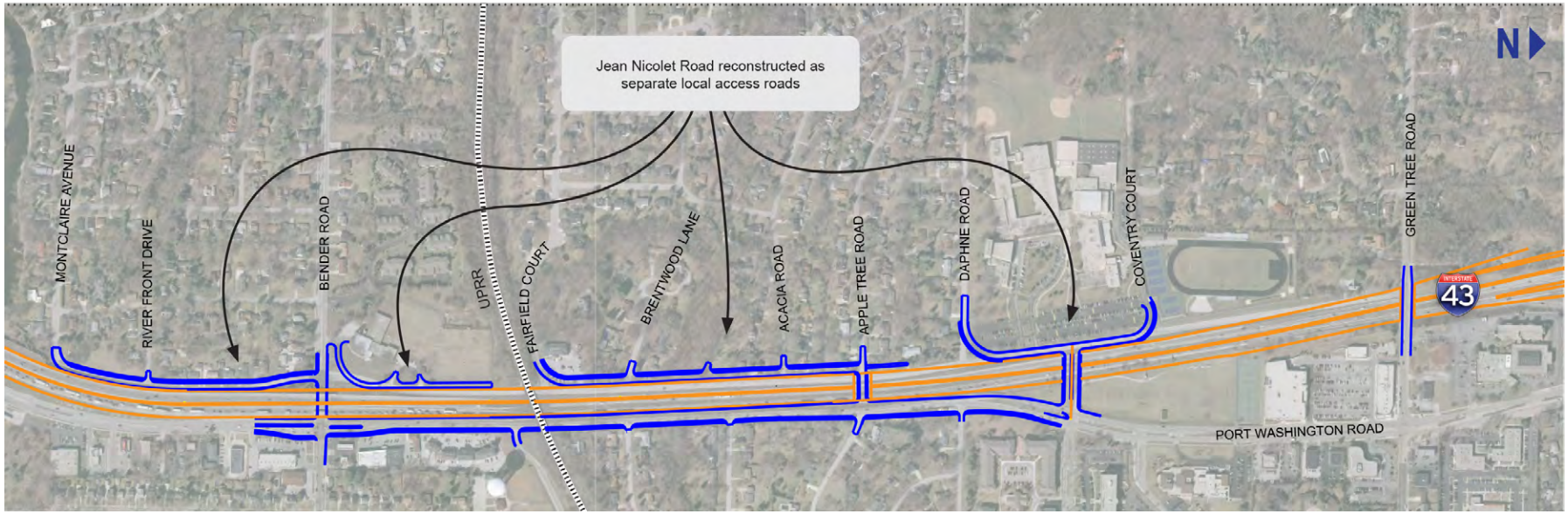
I-43 would be on a "best fit" alignment and widened to accommodate an additional travel lane in each direction. The highway profile would be lowered with retaining walls on both sides from north of the UP Railroad bridge to the south of Green Tree Road (about 20 feet below existing I-43 near Apple Tree Road (**Exhibit 2-8**). From about 700 feet south of Bender Road to Bender Road, where the six-lane-to-four-lane transition is located, I-43 mainline would be reconstructed to bring it up to current design standards. Work would include removing the temporary barrier that currently channelizes the northbound lane drop, rehabilitating the existing retaining wall and parapet, mill and overlay the pavement to remove the lane drop, add lane striping and provide new pavement marking. Jean Nicolet Road would be reconstructed as a local access road between Fairfield Court and Apple Tree Road. A sidewalk and bike lanes would be provided. Alternative access to Nicolet High School on the west side of I-43 would be provided by a local access road that connects to Daphne Road. A new overpass at Coventry Court also provides vehicle and pedestrian access to Nicolet High School and the playing fields east of I-43. The Nicolet High School pedestrian tunnel would be removed. Port Washington Road would be reconstructed as a four-lane facility from Bender Road to Daphne Road. Portions of Port Washington Road travel under elevated I-43. The reconstructed road would include a sidewalk and bike lanes. The UP Railroad bridge would be replaced.

## Exhibit 2-7: Modernization – 6 Lanes (Raised)



## Exhibit 2-8: Modernization – 6 Lanes (Depressed)



## 2.3.2. I-43 Mainline Alternatives – North Segment: Green Tree Road to WIS 60

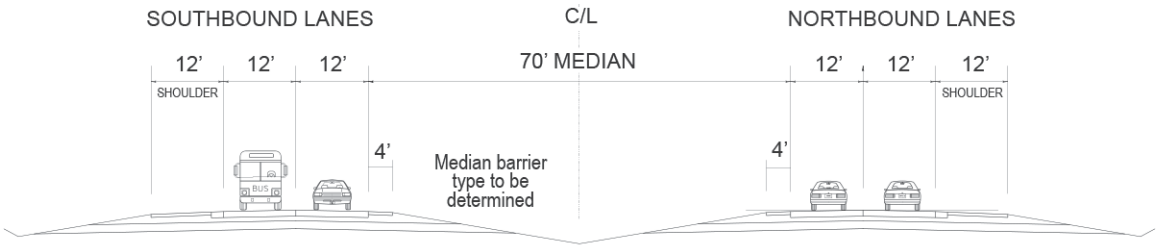
This section describes the two build alternatives for the North Segment of the I-43 mainline, from Green Tree Road to WIS 60, a distance of approximately 12 miles (**Exhibit 2-1**). In Milwaukee County, I-43 passes through a substantially developed corridor, ranging from dense residential, institutional and commercial development near the south study limits, to lower density suburban development toward the Milwaukee/Ozaukee County Line. The low-density development continues north into Ozaukee County, but becomes more rural in nature as I-43 continues north to the WIS 60 interchange.

The North Segment does not include spot improvements because most operational and safety deficiencies are located at interchanges. Pavement, design and geometric deficiencies are addressed under the "Reconstruct to Modern Design Standards" alternatives described below. Spot improvements for interchanges are described by interchange in Subsection 2.4.1 through Subsection 2.4.6.

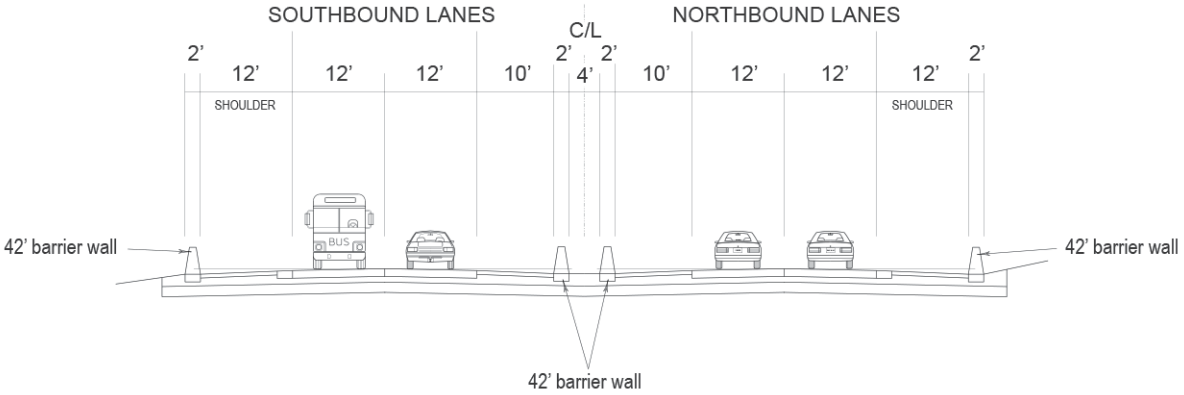
### MODERNIZATION – 4 LANES

This alternative would retain the existing four-lane highway and reconstruct it to current design standards generally on its current alignment (**Exhibit 2-9**). Reconstruction would involve replacing pavement, correcting vertical profiles to increase clearances at all bridges to the standard of 16 feet 9 inches. Substandard vertical and horizontal curves noted in **Subsection 1.3.1** would be corrected. Existing substandard shoulders would be reconstructed to meet

**Exhibit 2-9: I-43 Mainline North Segment Typical Section: Modernization – 4 Lanes**




I-43 – County Line Road to WIS 60 (Ozaukee County)




I-43 – Bender to County Line Road (Milwaukee County)

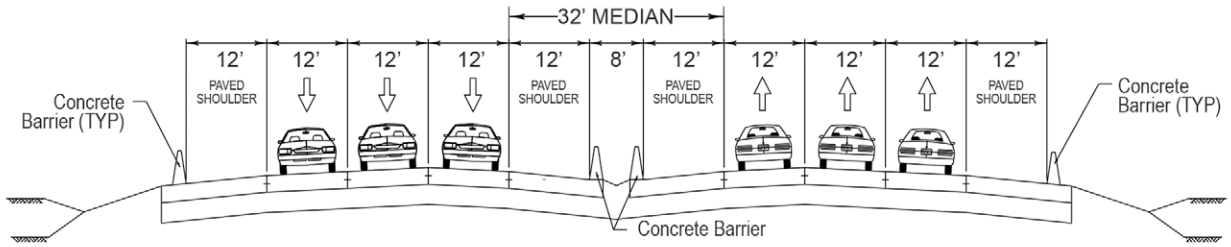
current standards. Barrier treatments in the median could range from a 42-inch concrete barrier or beam guard. No additional right of way would be required with this alternative. Overpass bridges at Donges Bay Road and Lakefield Road in Ozaukee County would be replaced to correct substandard bridge clearances. Bike and pedestrian facilities would be provided on roads crossing over or under I-43, as required by the ADA and Trans 75.

### MODERNIZATION – 6 LANES

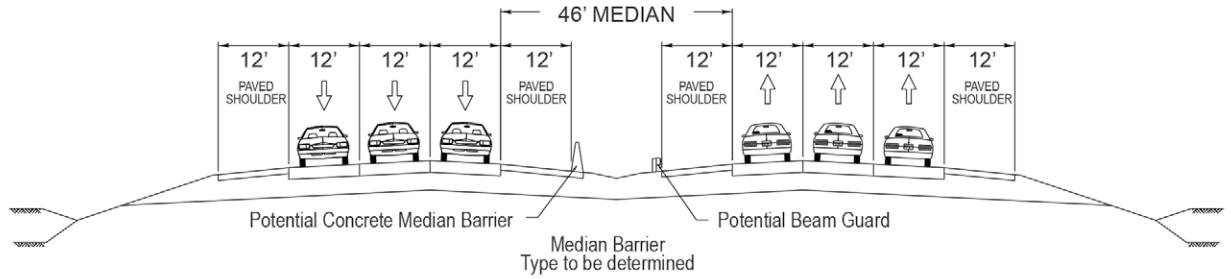
This alternative is similar to the Modernization – 4 Lanes alternative, except that I-43 would be widened to six lanes generally along the existing highway centerline (except the South Segment portion described in **Subsection 2.3.1**). Pavement would be replaced and all substandard features, including vertical clearances, vertical and horizontal curves, median and shoulders are reconstructed to current design standards. Overpass bridges at Donges Bay Road and Lakefield Road in Ozaukee County would be replaced to correct substandard bridge clearances. Bike and pedestrian facilities would be provided on roads crossing over or under I-43, as required by the ADA and Trans 75. Due to differing right of way constraints, the following widening options are described by county:

- **Milwaukee County option:** I-43 would be reconstructed to six lanes primarily by widening to the inside median to minimize right of way impacts in a densely developed corridor (**Exhibit 2-10**). Barrier treatment options in the median include a 42-inch concrete barrier and beam guard.
- There are two widening options for I-43 in **Ozaukee County**:
  - Inside widening (Option 1): This option is similar to inside widening in Milwaukee County.
  - Outside widening (Option 2): This option adds the third northbound and southbound lanes and outside shoulders to the outside of I-43 (**Exhibit 2-10**). Widening to the outside is being considered in Ozaukee County, where there are fewer right of way constraints. Barrier treatment options could range from a maintained wide median or beam guard.

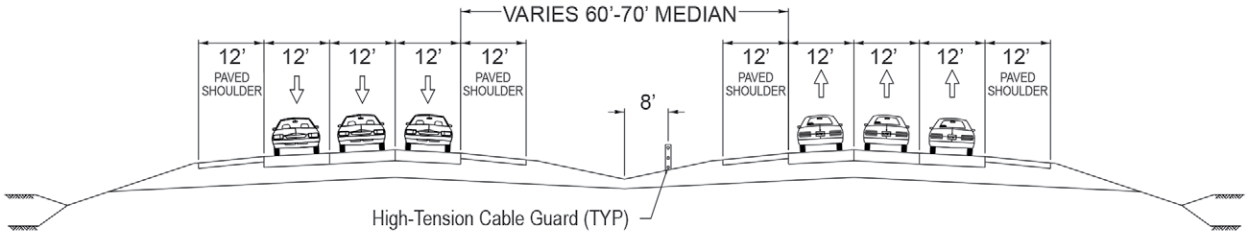
## Exhibit 2-10: I-43 Mainline North Segment Typical Section: Modernization – 6 Lanes




Proposed Typical I-43 Roadway Section
Widening to the inside
Milwaukee & Ozaukee County
Green Tree Road to Mequon Road




Proposed Typical I-43 Roadway Section
Widening to the Inside
Mequon Road to WIS 60




Proposed Typical I-43 Roadway Section
Widening to the Outside

## 2.4. PROJECT-LEVEL BUILD ALTERNATIVES – INTERCHANGES

Seven interchanges exist in the I-43 North-South Freeway study corridor at the following locations:

- Silver Spring Drive
- Good Hope Road
- Brown Deer Road
- County Line Road
- Mequon Road
- County C
- WIS 60

WisDOT is considering build alternatives at five of the interchanges and constructing a new interchange at Highland Road. No new work is proposed at either the Silver Spring Drive or WIS 60 interchanges.

The Silver Spring interchange was reconstructed in1992 and upgraded in 2006. The interchange is adequate in terms of pavement, design and geometry and operates at acceptable levels of service for traffic; it meets the study purpose and need. Because this interchange does not require improvements at this time, and because interchange traffic operations are influenced primarily by traffic coming from the south, no changes to the existing interchange are proposed as part of the current I-43 North-South Freeway Corridor Study. Long-term, the Silver Spring Drive interchange would be evaluated when the I-43 freeway to the south of Silver Spring Drive is studied for possible future improvements. The build alternatives primarily address the operational and safety concerns caused by the drop from six to four lanes just north of the interchange, and they would provide some improvements to the northbound movement from Silver Spring Drive as the lane drop on the curve at Bender Road would be removed. Traffic operations and safety analyses for the I-43 North-South Freeway Corridor Study indicate that improvements north of Silver Spring Drive will not force or preclude future improvement options south of Silver Spring Drive. For these reasons, Silver Spring Drive is also the logical southern terminus for this study.

The WIS 60 interchange was reconstructed in 2001, including the bridges over I-43. The interchange is adequate in terms of pavement, design and geometry and operates at acceptable levels of service for traffic; it meets the study purpose and need. The interchange does not require improvements at this time.

Similar to Silver Spring Drive, the WIS 60 interchange is in close proximity to an interchange to the north (WIS 32) and the interchange's operation is more influenced by the section of I-43 to the north and the WIS 32 interchange in particular. Projected travel demand, crash rates and land use transition at WIS 60. I-43 in Milwaukee County currently experiences congestion, and SEWRPC projects that traffic congestion will extend to WIS 60 by the year 2040, as noted in **Exhibit 1-12**. Crash rates north of WIS 60 (between WIS 60 and WIS 57) are about half the crash rates between Silver Spring Drive and WIS 60. Land use transitions substantially from urban/suburban development north of WIS 60, which is the northernmost access point to communities in the Milwaukee urbanized area, which includes the city of Mequon and the village of Grafton.

If capacity expansion is selected as part of the preferred alternative for the I-43 North-South Freeway study corridor, the three-lane section would transition at the overpass bridge of the WIS 60 interchange. The southbound on-ramp and the northbound off-ramp would be improved

at the connection point with I-43 to bring them up to current standards. This would involve adding additional ramp length to provide better merging and exiting movements. Long-term, the WIS 60 interchange would be evaluated when the I-43 freeway to the north of WIS 60 is studied for possible future improvements.

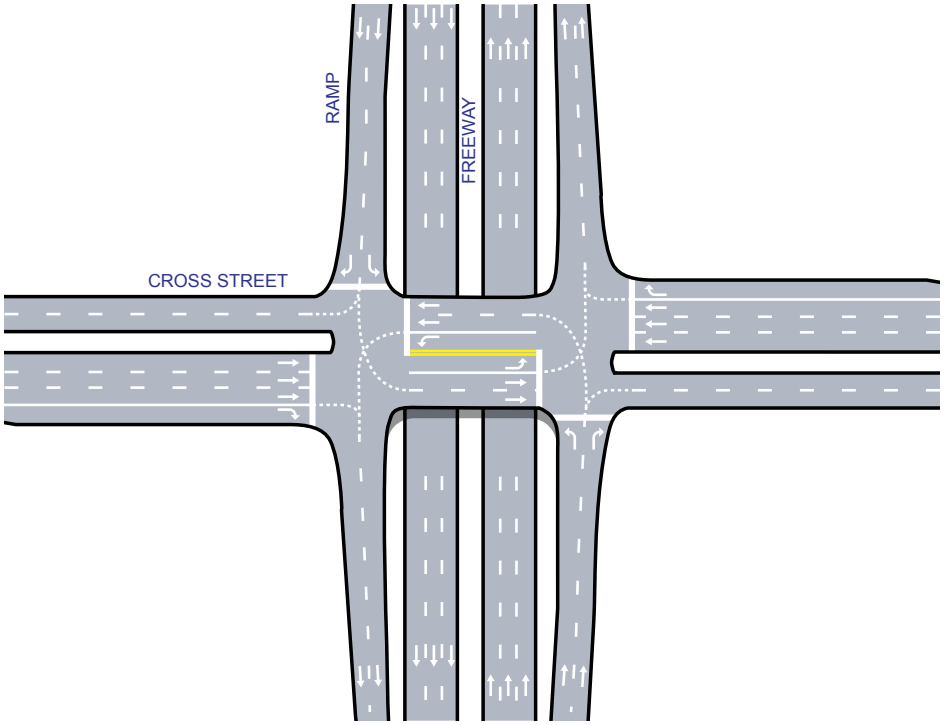
As noted for the Silver Spring interchange, traffic operations and safety analyses for the I-43 North-South Freeway Corridor Study indicate that improvements south of WIS 60 will not force or preclude future improvement options north WIS 60. For these reasons, WIS 60 is also the logical northern terminus for this study.

The remaining interchange alternatives are discussed individually in Subsection 2.4.1 through Subsection 2.4.6. All of the interchange alternatives would be compatible with either a four-lane or six-lane freeway facility.

The following information about interchange types is provided to assist reviewers in understanding the various types of interchanges considered and/or evaluated in the I-43 North-South Freeway Corridor Study:

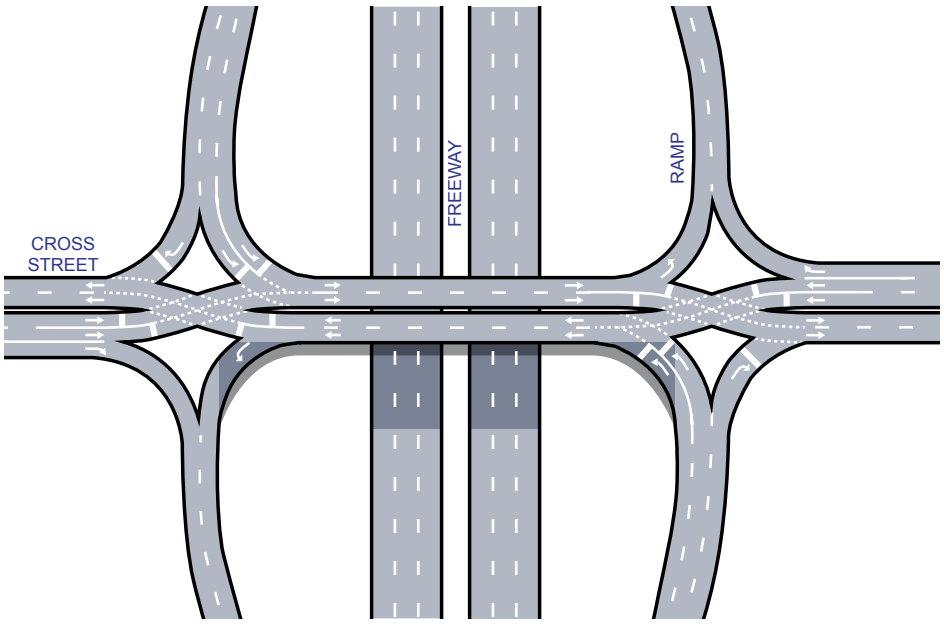
- A **diamond** is a traditional and common interchange type that has “diamond” on and off ramps (typically four, one in each quadrant) connecting a cross-street and freeway. The ramp intersections with the cross-street can have stop signs, traffic signals or roundabouts. A tight diamond interchange (**Exhibit 2-11**) is similar to a traditional diamond interchange except that ramps are located in closer to the freeway mainline. Tight diamond interchanges are typically constructed in dense urban or suburban areas where right of way is limited.

**Exhibit 2-11: Tight Diamond Interchange**



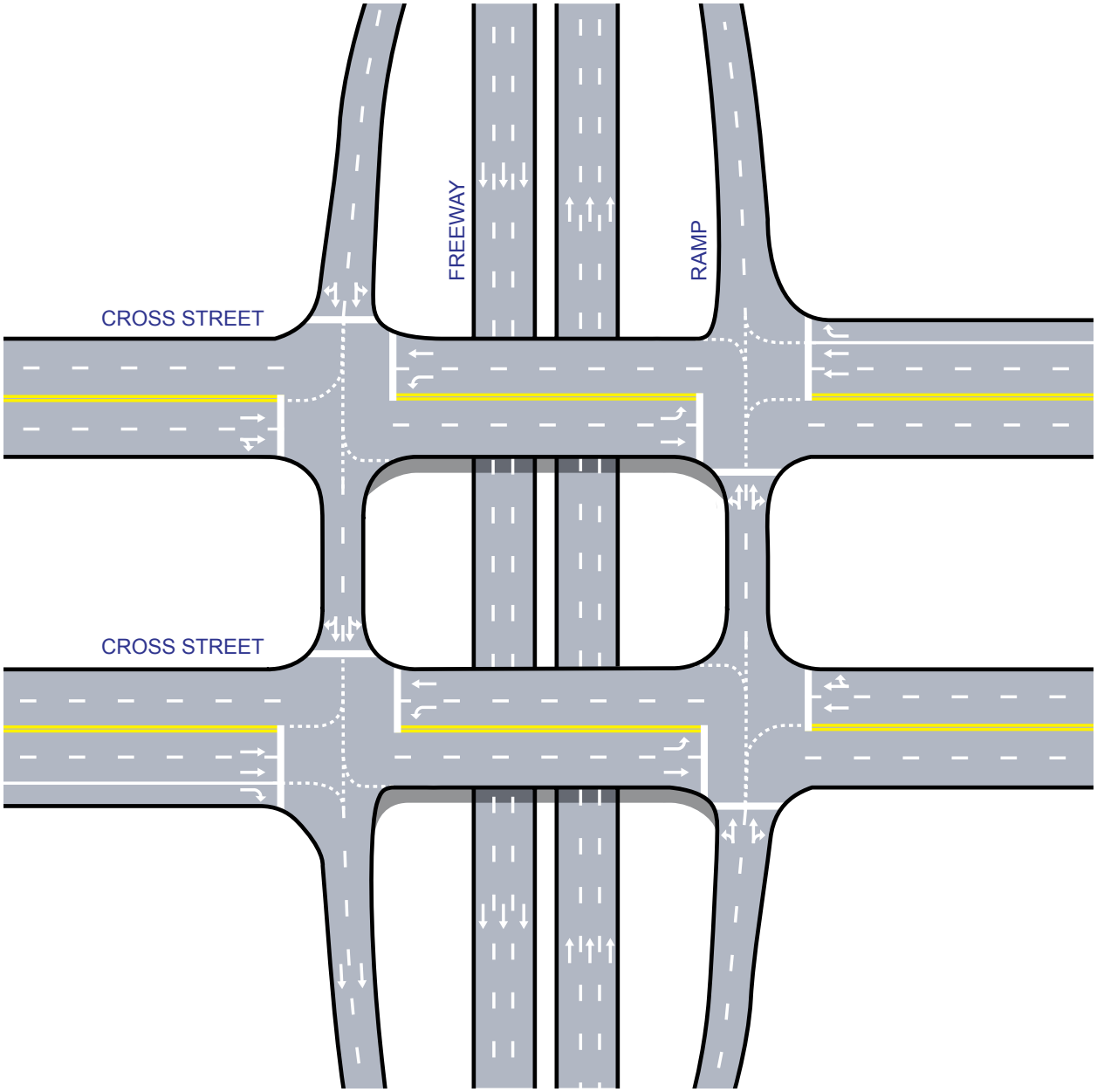
- A **diverging diamond interchange** (**Exhibit 2-12**) connects a freeway with a cross-street. The diverging diamond interchange is based on a standard diamond interchange with a shift in the cross-street traffic within the interchange that more safely and efficiently facilitates heavy left-turn movements. Within the interchange, traffic on the cross-street briefly drives on the opposite side of the road which allows left-turns to occur without stopping or crossing oncoming traffic. The intersecting ramps and cross-street roadways use directional lanes to cross over each other at a signalized intersection.

**Exhibit 2-12: Diverging Diamond Interchange**




- A **split-diamond interchange** (**Exhibit 2-13**) has half of a diamond interchange at one location and half at another location. Instead of having all of the on and off ramps at one location, they are split between the two locations with a frontage road or collector roadway system between them.
- A **single-point interchange** (**Exhibit 2-14**) connects a freeway with a cross-street. The name "single point" refers to the fact that all through traffic on the cross-street, as well as traffic turning left onto or off the freeway, can be controlled from a single set of traffic signals. This reduces traffic delay compared to a conventional diamond interchange. The free-flowing freeway can travel either over or under the signalized cross-street intersection. Typically, the right-turn movements to and from the cross-street are free-flowing but may need to be controlled for pedestrian accommodation.
- A **horseshoe interchange** (**Exhibit 2-15**) has both entrance ramps combined on the same U-shaped ramp. For example, northbound and southbound traffic is split on the ramp allowing for a long traffic weaving section and ramp storage.

## Exhibit 2-13: Split Diamond Interchange



## Exhibit 2-14: Single-Point Interchange

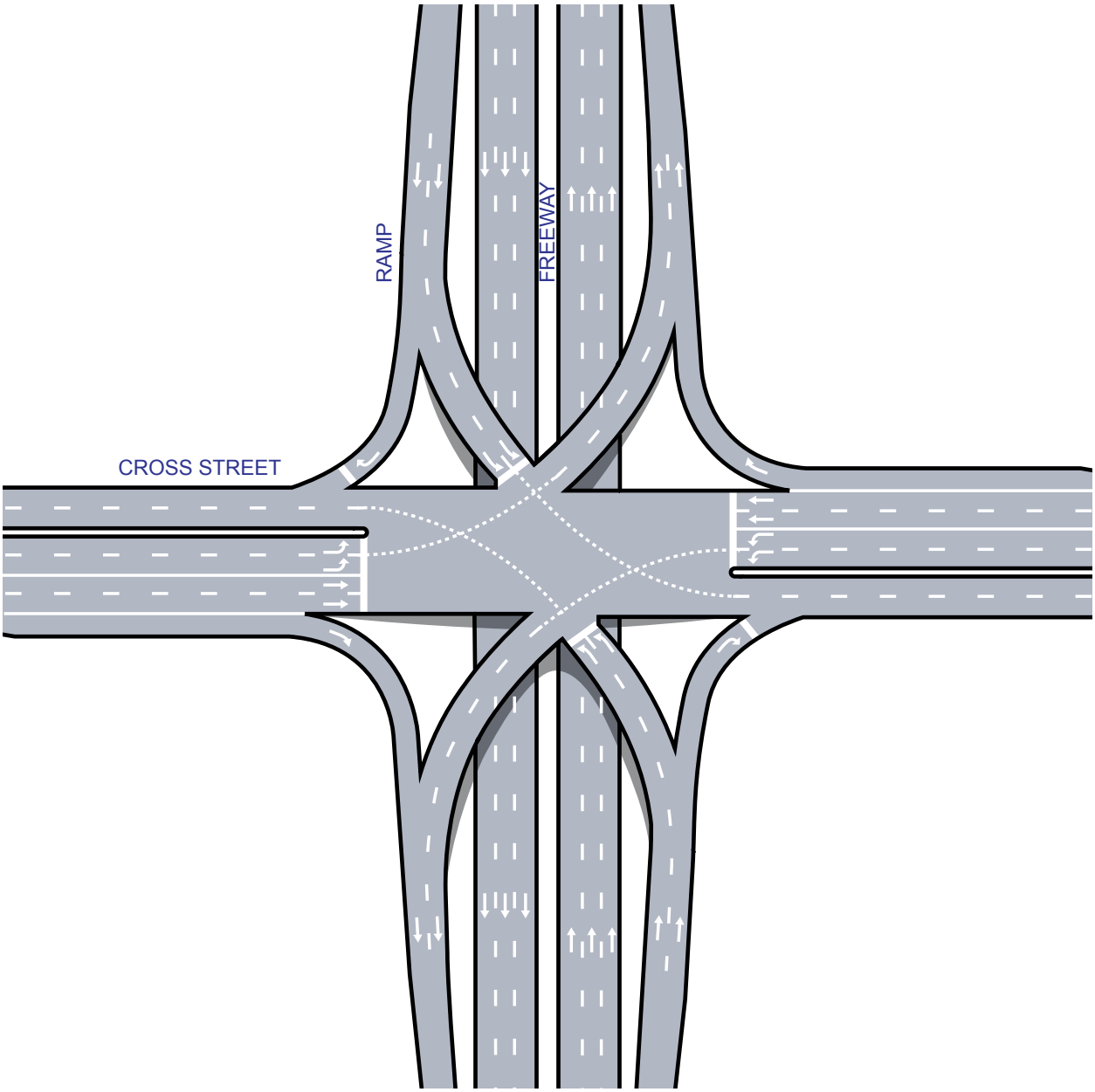
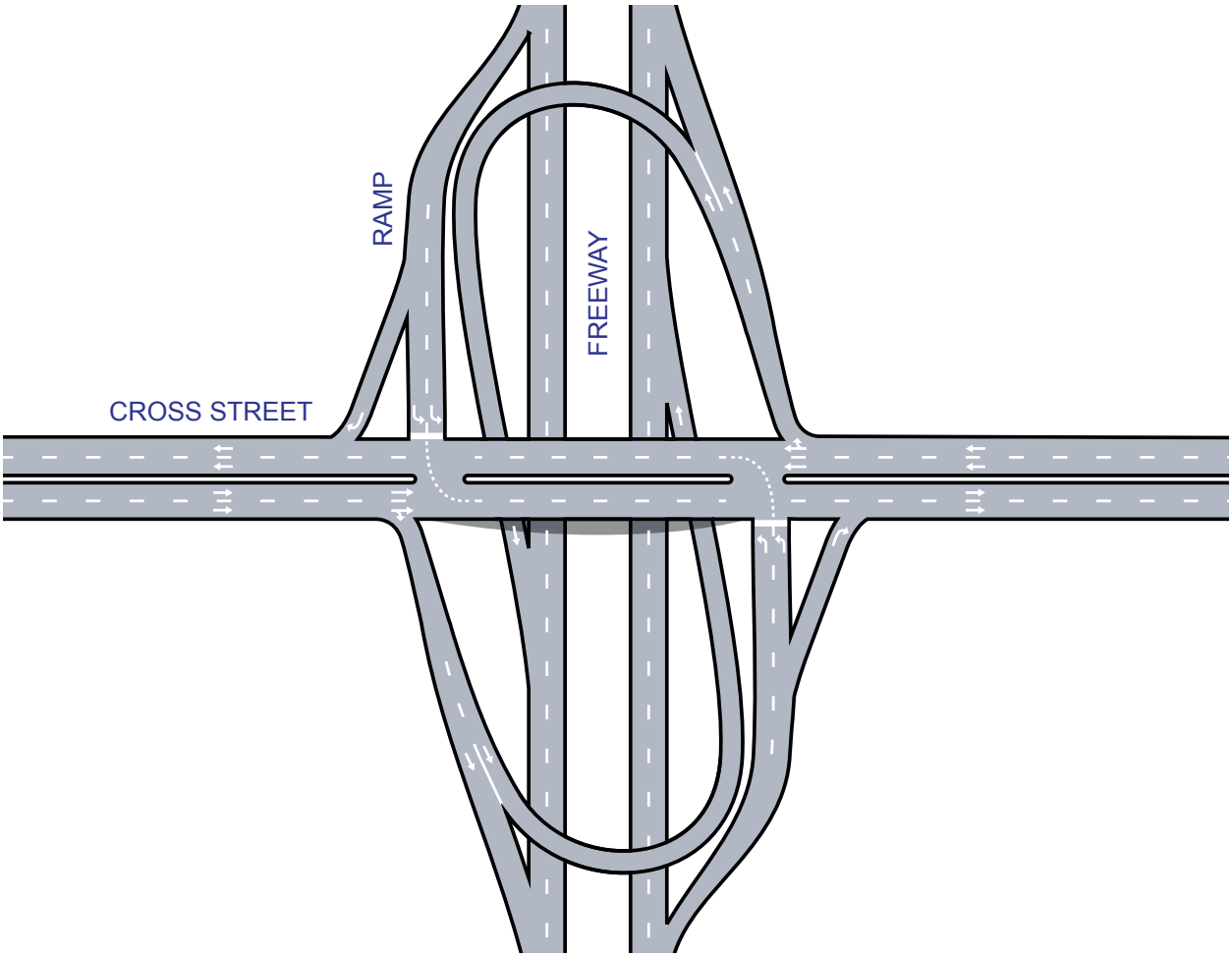


Exhibit 2-15: Horseshoe Interchange




## 2.4.1. Good Hope Road Interchange

The existing interchange has a standard diamond configuration. The main challenges in the Good Hope interchange area include the following:

- Close proximity of Port Washington Road/Good Hope Road intersection to the interchange ramp intersection on Good Hope Road.
- Inadequate ramp storage.
- High traffic volumes and congestion.
- Substandard acceleration and deceleration distances.
- The Good Hope Road bridges were replaced in 2010 and meet current design standards, including bicycle and pedestrian accommodations. It is desirable to maintain the existing bridges to minimize reconstruction costs.

## SPOT IMPROVEMENTS

This alternative adds parallel entrance and exit ramps, along with lengthening the southbound entrance ramp to current design standards. Spot improvements allow for more ramp storage and provide longer transition lengths for merging with mainline traffic. **Exhibit 2-2** illustrates Spot Improvements for the entire corridor, including the Good Hope Road interchange.

## TIGHT DIAMOND INTERCHANGE

As noted in **Subsection 2.4**, a tight diamond interchange minimizes the overall footprint of an interchange in a densely developed area. At the Good Hope Road interchange, a tight diamond also helps maximize traffic operations for movements between the ramp intersections and the Good Hope Road/Port Washington Road intersection. Bike and pedestrian access on Good Hope Road would be provided according to ADA and Trans 75 requirements. Three subalternatives were developed to address traffic operations and/or retain the recently reconstructed Good Hope Road bridges over I-43 (**Exhibit 2-16**).

### *TIGHT DIAMOND*

The I-43 mainline is maintained in its current location, but the northbound entrance and exit ramps are shifted closer to the mainline to minimize the interchange footprint and increase spacing between the Port Washington Road/Good Hope Road intersection and the interchange ramp intersection on Good Hope Road. This alternative also increases the weaving distance for traffic turning left from Port Washington Road onto Good Hope Road to access the I-43 northbound entrance ramp. This alternative retains the recently reconstructed Good Hope Road bridges over I-43.

### *TIGHT DIAMOND (MAINLINE SHIFTED WEST)*

The I-43 mainline and northbound entrance and exit ramps are shifted west to further increase spacing between the Port Washington Road/Good Hope Road intersection and the interchange ramp intersection on Good Hope Road. This alternative increases the weaving distance for traffic turning left from Port Washington Road onto Good Hope Road to access the I-43 northbound entrance ramp. This alternative would require replacing the recently reconstructed Good Hope Road bridges over I-43.

### *TIGHT DIAMOND INTERCHANGE WITH NORTHBOUND RAMP SPLIT (HOOK RAMP)*

This subalternative keeps the I-43 mainline on existing highway alignment to retain the existing Good Hope Road bridges. In order to facilitate traffic operations, this interchange splits the northbound exit into two movements; one for westbound movement onto Good Hope Road and the other is a “hook” ramp for northbound/southbound turns onto Port Washington Road. This alternative allows for increased weave distance for traffic turning left from Port Washington Road onto Good Hope Road to access the I-43 northbound entrance ramp.

## SPLIT DIAMOND INTERCHANGE

This alternative uses Green Tree Road to the south and Good Hope Road to split traffic movements between these two roadways (**Exhibit 2-16**). The northbound exit ramp and southbound entrance ramp are at Green Tree Road and the northbound entrance ramp and southbound exit ramp are at Good Hope Road. Collector-distributor roads are provided on both sides of I-43 between Green Tree Road and Good Hope Road. This alternative splits traffic

volumes between the Green Tree Road and Good Hope Road overpasses, thus making the diamond configuration function more efficiently. This alternative retains the existing Good Hope Road bridges. Bike and pedestrian access on Good Hope Road would be provided according to ADA and Trans 75 requirements.

### DIVERGING DIAMOND INTERCHANGE

This alternative features a northbound ramp terminal intersection pulled in tighter to the I-43 mainline to increase spacing between the interchange ramp intersection on Good Hope Road and the Port Washington Road intersection to the east. Eastbound and westbound traffic on Good Hope Road cross to opposite sides on the I-43 overpass bridge to facilitate turning movements (**Exhibit 2-16**). The existing Good Hope Road bridges are retained with this alternative. Bike and pedestrian access on Good Hope Road would be provided according to ADA and Trans 75 requirements.

### SINGLE-POINT INTERCHANGE

All ramps are brought together at one point on the Good Hope Road bridge over I-43 (**Exhibit 2-16**). This allows for a longer traffic weave section on Good Hope Road and greater intersection spacing between Port Washington Road and the interchange ramp intersection on Good Hope Road. It also creates a single intersection that's designed to handle high traffic volumes. The existing Good Hope Road bridges can be retained with this alternative. Bike and pedestrian access on Good Hope Road would be provided according to ADA and Trans 75 requirements. This alternative features a subalternative that further improves traffic operations at the northbound exit.

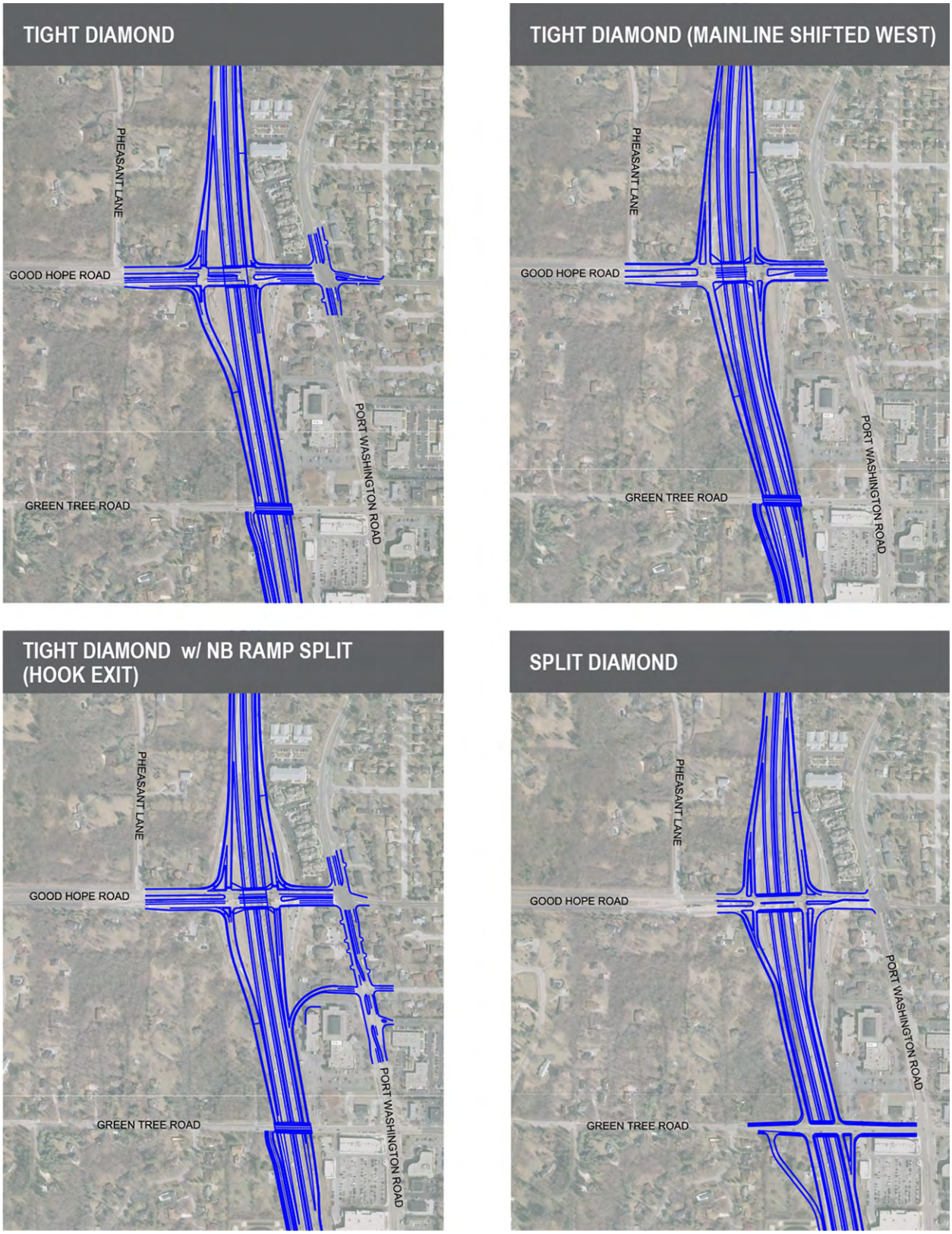
#### *SINGLE-POINT INTERCHANGE WITH NORTHBOUND RAMP SPLIT (HOOK RAMP)*

This alternative features a single-point interchange with split northbound exit movements. Westbound movements use the single point intersection on the Good Hope Road bridge over I-43. The "hook" exit ramp allows for northbound/southbound turns onto Port Washington Road. This configuration allows for increased weave distance for traffic turning left from Port Washington Road onto Good Hope Road to access the I-43 northbound entrance ramp. The existing Good Hope Road bridges are retained with this alternative.

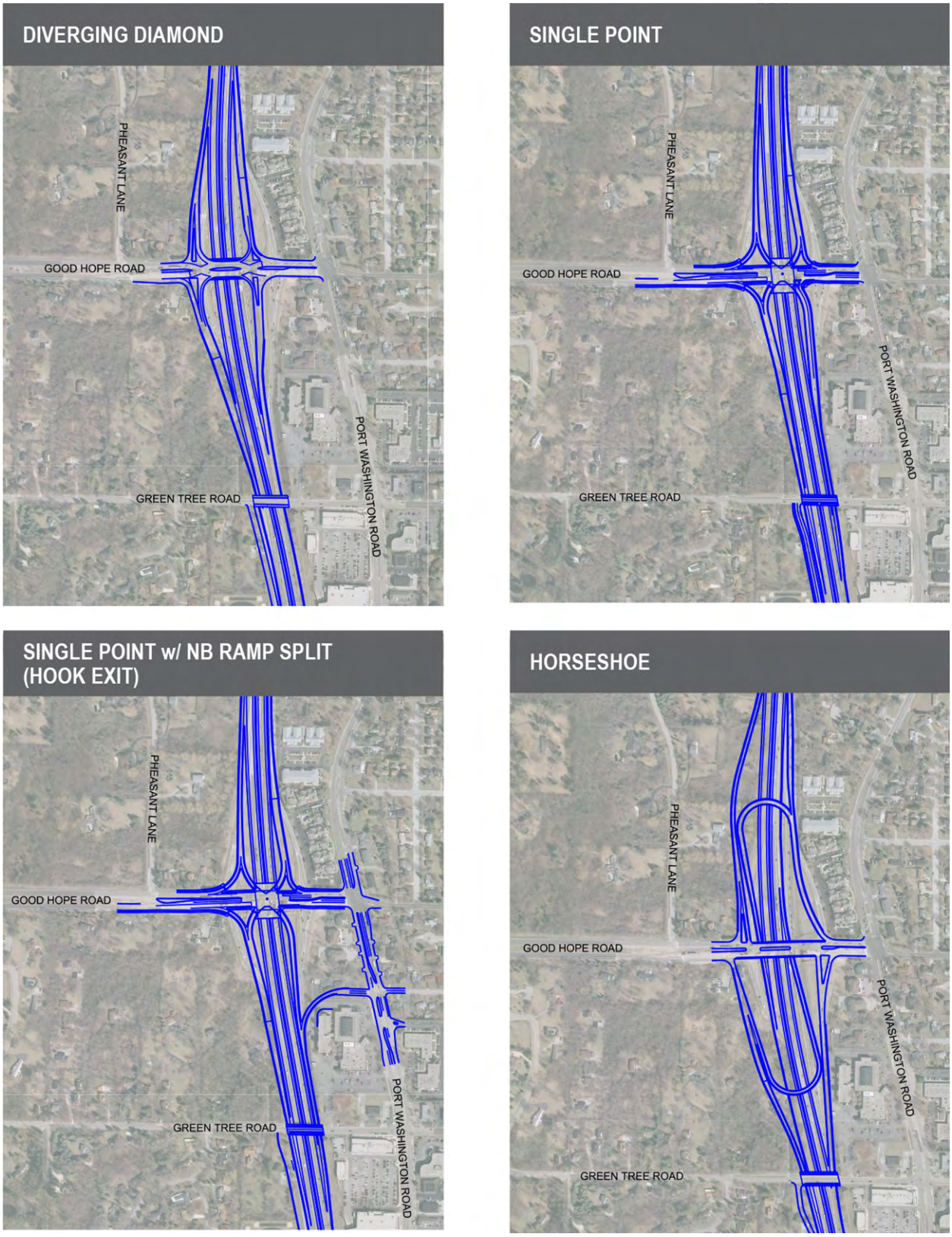
### HORSESHOE INTERCHANGE

Northbound and southbound entrance ramps are combined on a U-shaped ramp on each side of Good Hope Road. Northbound and southbound traffic is split on the ramp, allowing for a longer traffic weaving section and more ramp storage. The I-43 mainline and northbound entrance and exit ramps are shifted west to increase spacing between Port Washington Road and the interchange ramp intersection on Good Hope Road (**Exhibit 2-16**). This alternative increases ramp storage and the traffic weaving distance for traffic turning left from Port Washington Road onto Good Hope to access the I-43 northbound entrance ramp. This alternative would require replacing the Good Hope Road bridges. Bike and pedestrian access on Good Hope Road would be provided according to ADA and Trans 75 requirements.

## Exhibit 2-16: Good Hope Road Interchange Build Alternatives



## Exhibit 2-16: Good Hope Road Interchange Build Alternatives (continued)



## 2.4.2. Brown Deer Road Interchange

The existing interchange has a cloverleaf configuration with loop ramps in all four quadrants. The main challenges in the Brown Deer Road interchange area include:

- Speed differential between entering vehicles and I-43 mainline vehicles.
- Short traffic weaving maneuvers between exit and entrance loop ramps.
- Insufficient acceleration and deceleration lengths.
- High traffic volumes and congestion.
- Obsolete ramp design.
- Close proximity of Port Washington Road/Brown Deer Road intersection to the interchange ramp intersection on Brown Deer Road.
- The Good Hope Road bridges were replaced in 2010 and meet current design standards, including bicycle and pedestrian accommodations. It is desirable to maintain the existing bridges to minimize reconstruction costs.

### SPOT IMPROVEMENTS

This alternative features two spot improvement designs for the Brown Deer Road interchange. Both create a hybrid diamond/cloverleaf interchange to reduce traffic weaving maneuvers:

- Eliminate the entrance loop ramps in the southeast and northwest interchange quadrants and lengthen entrance and exit ramps to meet current design standards. This improvement allows for more ramp storage and provides longer transition lengths for merging with mainline traffic.
- Eliminate exit loop ramps in the southwest and northeast interchange quadrants and lengthen entrance and exit ramps to meet current design standards. This improvement allows for more ramp storage and provides longer transition lengths for merging with mainline traffic.

**Exhibit 2-2** shows illustrates spot improvements for the entire corridor, including the Brown Deer Road interchange.

### DIAMOND INTERCHANGE

This alternative reconstructs the existing cloverleaf interchange to a diamond configuration (eliminating the loop ramps). Ramps on the east side of I-43 would be pulled in tighter to the I-43 mainline to increase spacing between the Port Washington Road/Brown Deer Road intersection and the interchange ramp intersection on Brown Deer Road (**Exhibit 2-17**). This alternative increases the weaving distance for traffic turning left from Port Washington Road onto Brown Deer Road to access the I-43 northbound entrance ramp. Bike and pedestrian access on Brown Deer Road would be provided according to ADA and Trans 75 requirements. This alternative retains the Brown Deer Road bridges.

### DIVERGING DIAMOND INTERCHANGE

This alternative features a northbound ramp terminal intersection pulled in tighter to the I-43 mainline to increase spacing between the interchange ramp intersection on Brown Deer Road and the Port Washington Road intersection to the east. Eastbound and westbound traffic on Brown Deer Road cross to opposite lanes on the I-43 overpass bridge to facilitate turning movements (**Exhibit 2-17**). Bike and pedestrian access on Brown Deer Road would be provided according to ADA and Trans 75 requirements. This alternative retains the Brown Deer Road bridges.

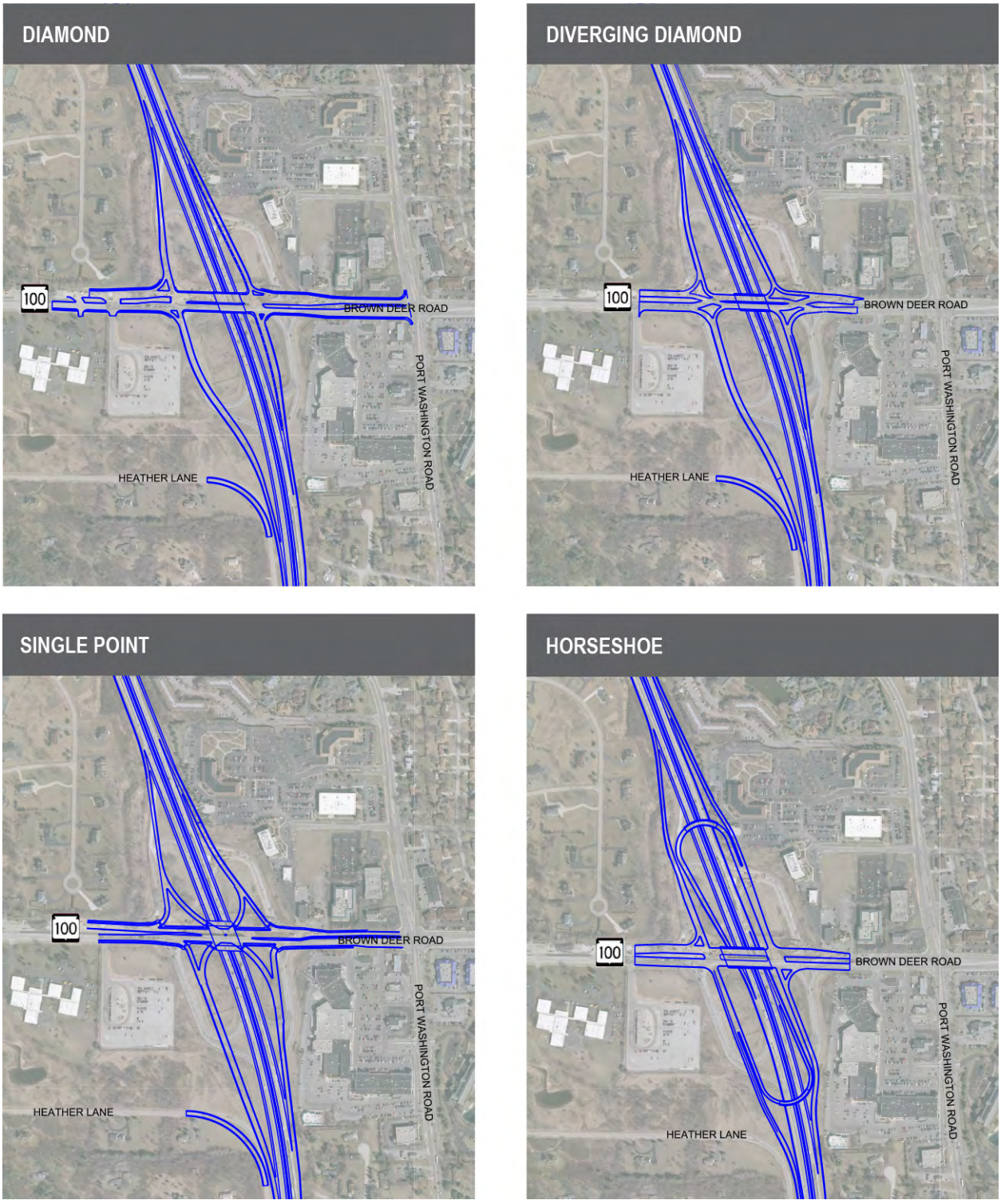
### SINGLE-POINT INTERCHANGE

All ramps are brought together at one point on the Brown Deer Road bridges over I-43 (**Exhibit 2-17**). This allows for a longer traffic weave section on Brown Deer Road and greater intersection spacing between Port Washington Road and the interchange ramp intersection on Brown Deer Road. It also creates a single intersection that's designed to handle high traffic volumes. The new I-43 mainline alignment closely matches the existing alignment in an effort to save the existing Brown Deer Road bridges over I-43. Bike and pedestrian access on Brown Deer Road would be provided according to ADA and Trans 75 requirements.

### HORSESHOE INTERCHANGE

Northbound and southbound entrance ramps are combined on a U-shaped ramp on each side of Brown Deer Road. Northbound and southbound traffic is split on the ramp, allowing for a longer traffic weaving section and more ramp storage. The I-43 mainline and northbound entrance and exit ramps are shifted west to increase spacing between Port Washington Road and the interchange ramp intersection on Brown Deer Road (**Exhibit 2-17**). This alternative increases ramp storage and the traffic weaving distance for traffic turning left from Port Washington Road onto Brown Deer Road to access the I-43 northbound entrance ramp. Bike and pedestrian access on Brown Deer Road would be provided according to ADA and Trans 75 requirements. This alternative would require replacing the Brown Deer Road bridges.

## Exhibit 2-17: Brown Deer Road Interchange Build Alternatives



## 2.4.3. County Line Road Interchange

The existing interchange is a partial modified diamond interchange providing access to County Line Road via Port Washington Road as a northbound exit from I-43. The only access from County Line Road to I-43 is via a southbound entrance ramp. The main challenges in the County Line Road interchange area include:

- Close proximity of I-43 exit ramp to the northbound Brown Deer interchange entrance ramp.
- Substandard vertical clearance at bridges.
- Substandard horizontal curves on I-43 mainline.

FHWA regulations and policy[6] call for interchanges to provide for all traffic movements. Because the County Line Road interchange only provides movements to and from the south, WisDOT reviewed alternatives that included providing full access and removing all access as part of the range of reasonable alternatives for the interchange location. SEWRPC must update its long-range transportation plan to account for either removing access or a full access interchange to comply with the Clean Air Act's transportation conformity requirements.[7]

### SPOT IMPROVEMENTS

The interchange would remain a partial interchange, but the existing Port Washington Road exit ramp would move further north to increase the weaving distance between that ramp and the Brown Deer Road entrance ramp to the south. **Exhibit 2-2** illustrates Spot Improvements for the entire corridor, including the County Line Road interchange. This alternative would not be consistent with FHWA's requirement for all traffic movements at interchanges.

### NO ACCESS

This alternative removes the existing northbound exit ramp and southbound entrance ramp at County Line Road. The Port Washington Road and County Line Road overpasses would be reconstructed. County Line Road traffic to and from I-43 would divert to either the Mequon Road or Brown Deer Road interchanges. No additional changes would be required at either of these interchanges to accommodate additional traffic. Additional turn lanes are required at the Port Washington Road/Brown Deer Road intersection, which are described further in **Subsection 3.2.2**.

### PARTIAL DIAMOND INTERCHANGE

This alternative moves the Port Washington Road exit ramp further north to terminate at the Port Washington Road crossing of I-43 near Katherine Drive. The southbound entrance ramp is reconstructed at its current location (**Exhibit 2-18**). Bike and pedestrian access on Port Washington Road would be provided according to ADA and Trans 75 requirements. This alternative would not be consistent with FHWA's requirement for all traffic movements at interchanges. The city of Mequon has requested that WisDOT and FHWA consider a partial interchange at County Line Road. WisDOT has evaluated FHWA policies, as well as local considerations from the city of Mequon, and is requesting that FHWA consider an exception to Interstate interchange requirements to allow reconstructing the partial interchange.

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[6] *23 CFR § 625.4 specifically lists A* Policy on Design Standards – Interstate System *(AASHTO, January 2005) as an applicable standard. See also* Interstate System Access Informational Guide *(FHWA, August 2010).*

[7] *In Southeast Wisconsin, SEWRPC must demonstrate in its long-range transportation planning process how the region will meet air quality standards under the Clean Air Act. This is referred to as transportation conformity. The I-43 North-South Freeway Corridor Study must conform by being accounted for in SEWRPC's long-range transportation plan and transportation improvement program (TIP) before FHWA completes its National Environmental Policy Act (NEPA) review with its Record of Decision (ROD).*

## SPLIT DIAMOND INTERCHANGE

This alternative provides full access to and from I-43 with ramps split between County Line Road and Port Washington Road. Full access is maintained on Port Washington Lane (**Exhibit 2-18**). Bike and pedestrian access on Port Washington Road would be provided according to ADA and Trans 75 requirements.

## SPLIT DIAMOND INTERCHANGE (KATHERINE DRIVE GRADE SEPARATION)

This alternative provides full access to and from I-43 with ramps split between County Line Road and Port Washington Road. Direct access from Port Washington Lane to County Line Road is restricted. Katherine Drive is reconstructed as an underpass to continue access to Port Washington Road (**Exhibit 2-18**). Bike and pedestrian access on Port Washington Road would be provided according to ADA and Trans 75 requirements.

## SPLIT DIAMOND HYBRID INTERCHANGE

Based on input from the third public information meeting and follow-up neighborhood meetings, WisDOT developed a Split Diamond Hybrid alternative to maintain full access for residents on Port Washington Lane while still maintaining traffic operations. Two subalternatives were developed to address Katherine Drive access to Port Washington Road (**Exhibit 2-18**).

### *SPLIT DIAMOND HYBRID (GRADE SEPARATION)*

This alternative provides full access to and from I-43, with the southbound entrance ramp maintained at County Line Road, and the remaining exit and entrance ramps located at Port Washington Road. The Katherine Drive/Port Washington Road intersection would shift about 900 feet south of the existing intersection via a Port Washington Road underpass. Full access is maintained on Port Washington Lane. Compared to the Split Diamond interchange, this interchange improves traffic operations for northbound exit and entrance movements on Port Washington Road. Bike and pedestrian access on Port Washington Road would be provided according to ADA and Trans 75 requirements.

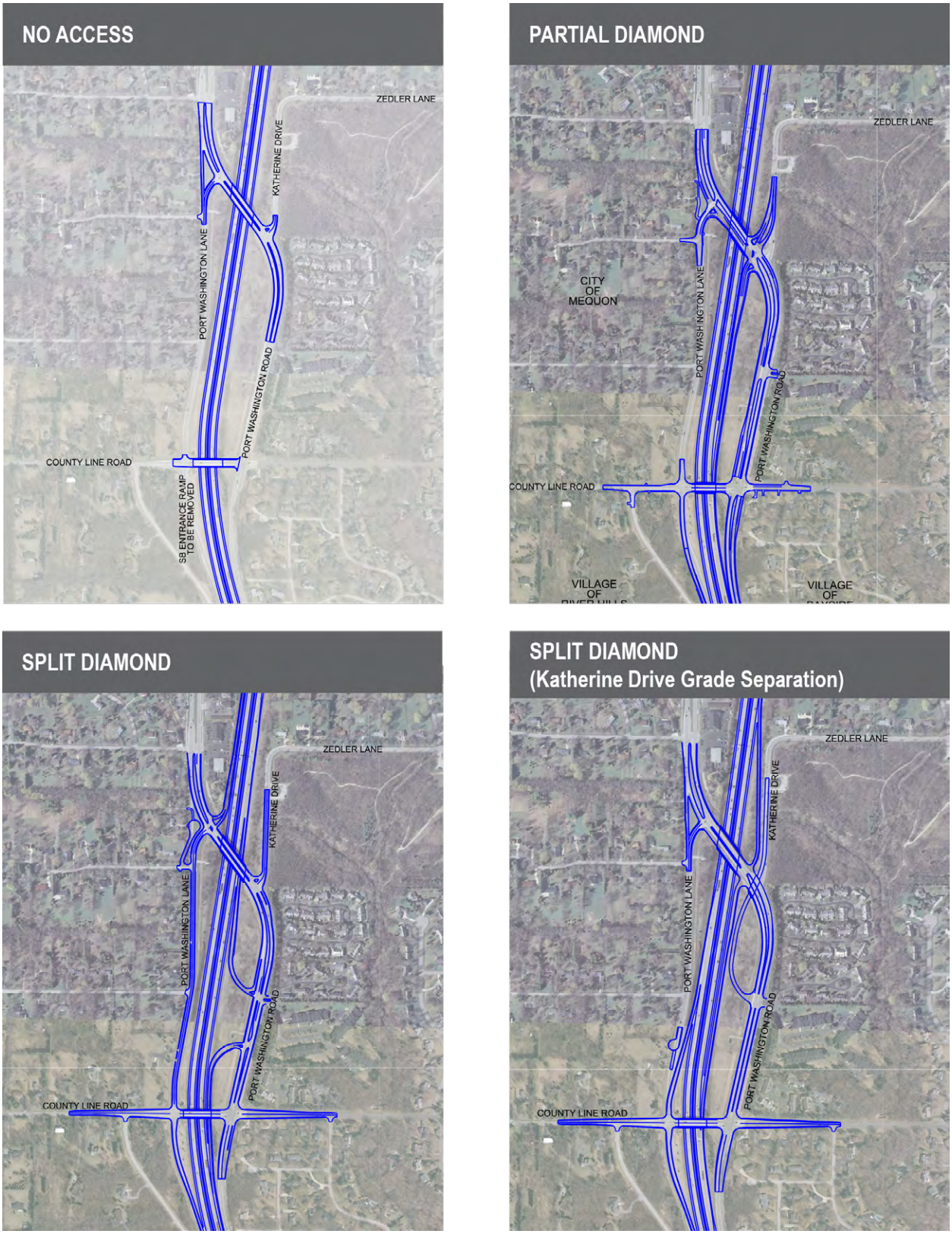
### *SPLIT DIAMOND HYBRID (WITHOUT GRADE SEPARATION)*

This alternative is similar to the Split Diamond Hybrid (Grade Separation) alternative, but it provides an at-grade intersection with Katherine Drive and Port Washington Road (**Exhibit 2-18**). Access to the northbound entrance ramp is from Katherine Drive. WisDOT developed this alternative in response to comments from some local property owners and the city of Mequon, who did not support the potential changes in local street traffic created by a Katherine Drive grade separation with the Split Diamond Hybrid (Grade Separation) alternative.

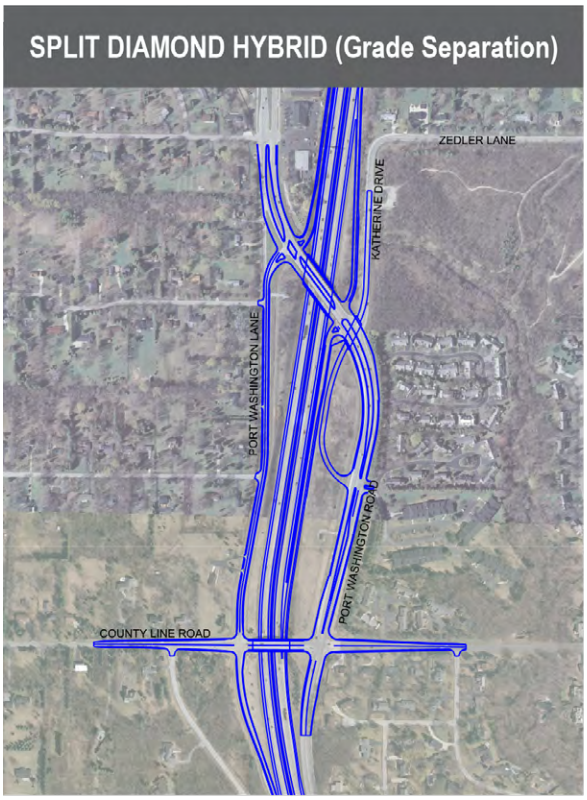
## FULL DIAMOND INTERCHANGE (KATHERINE DRIVE GRADE SEPARATION)

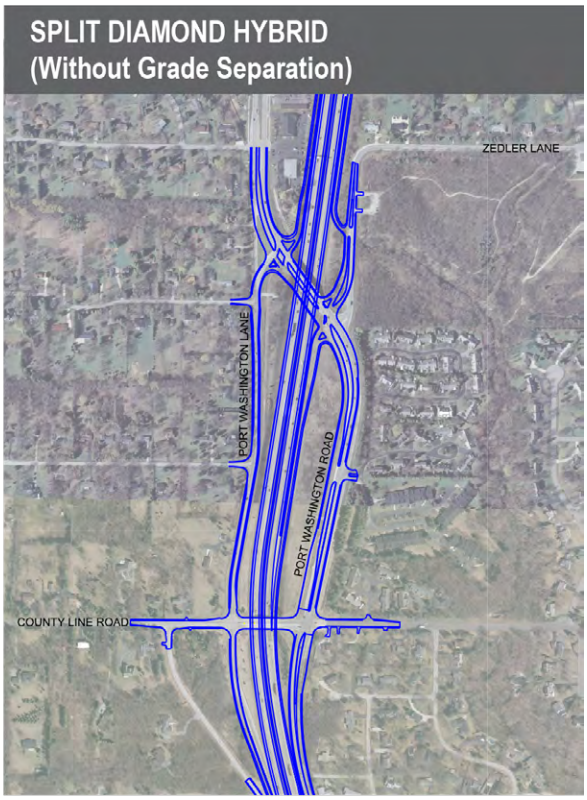
This alternative provides a Full Diamond interchange at Port Washington Road and eliminates the interchange ramps at County Line Road. Direct access from Port Washington Lane to Port Washington Road is restricted. A new Katherine Drive underpass would provide a connection to Port Washington Road (**Exhibit 2-18**). Bike and pedestrian access on Port Washington Road and the reconstructed Katherine Drive would be provided according to ADA and Trans 75 requirements.

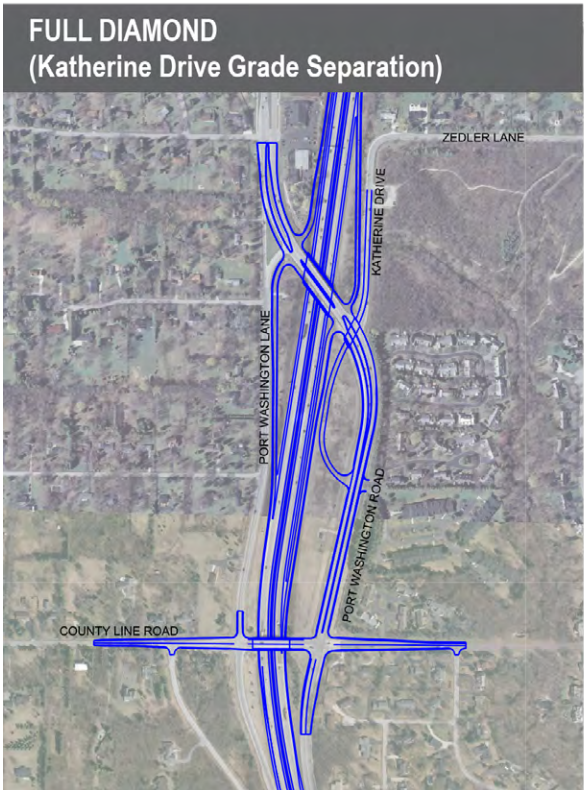
## Exhibit 2-18: County Line Road Interchange Build Alternatives

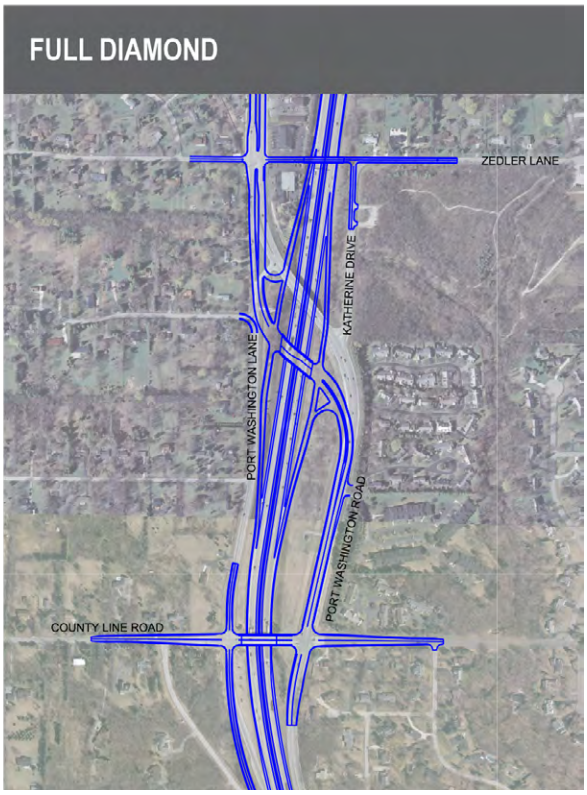


## Exhibit 2-18: County Line Road Interchange Build Alternatives (continued)



### FULL DIAMOND INTERCHANGE

This alternative provides a Full Diamond interchange at Port Washington Road and eliminates the interchange ramps at County Line Road. Direct access from Port Washington Lane to Port Washington Road is restricted. The existing Katherine Drive connection to Port Washington Road would be terminated at the entrance to Carpenter Park. Katherine Drive access to Port Washington road would be restored via a Zedler Lane overpass over I-43 (**Exhibit 2-18**). The overpass would require between six to nine residential relocations to accommodate the bridge structure. Bike and pedestrian access on Port Washington Road and the new overpass would be provided according to ADA and Trans 75 requirements.

## 2.4.4. Mequon Road Interchange

The existing interchange has a standard diamond configuration. The main challenges in the Mequon Road interchange area include:

- Traffic congestion and safety concerns related to proximity of the southbound interchange ramp intersection on Mequon Road to Port Washington Road west of I-43.
- High traffic volumes cause congestion during morning and evening peak travel times
- Substandard vertical clearance at bridges.
- Substandard ramp storage capacity.

All of the build alternatives assume that the Highland Road interchange is in place, about 2 miles north of Mequon Road. If the Highland Road interchange is not constructed, modifications are required at the Port Washington Road/Mequon Road intersection. See **Subsection 2.4.5** for additional discussion if the Highland Road interchange is not constructed.

### SPOT IMPROVEMENTS

Spot improvements would add parallel entrance and exit ramps to provide more traffic storage on the ramps and minimize the potential for traffic backups on I-43 mainline. **Exhibit 2-2** illustrates Spot Improvements for the entire corridor, including the Mequon Road interchange.

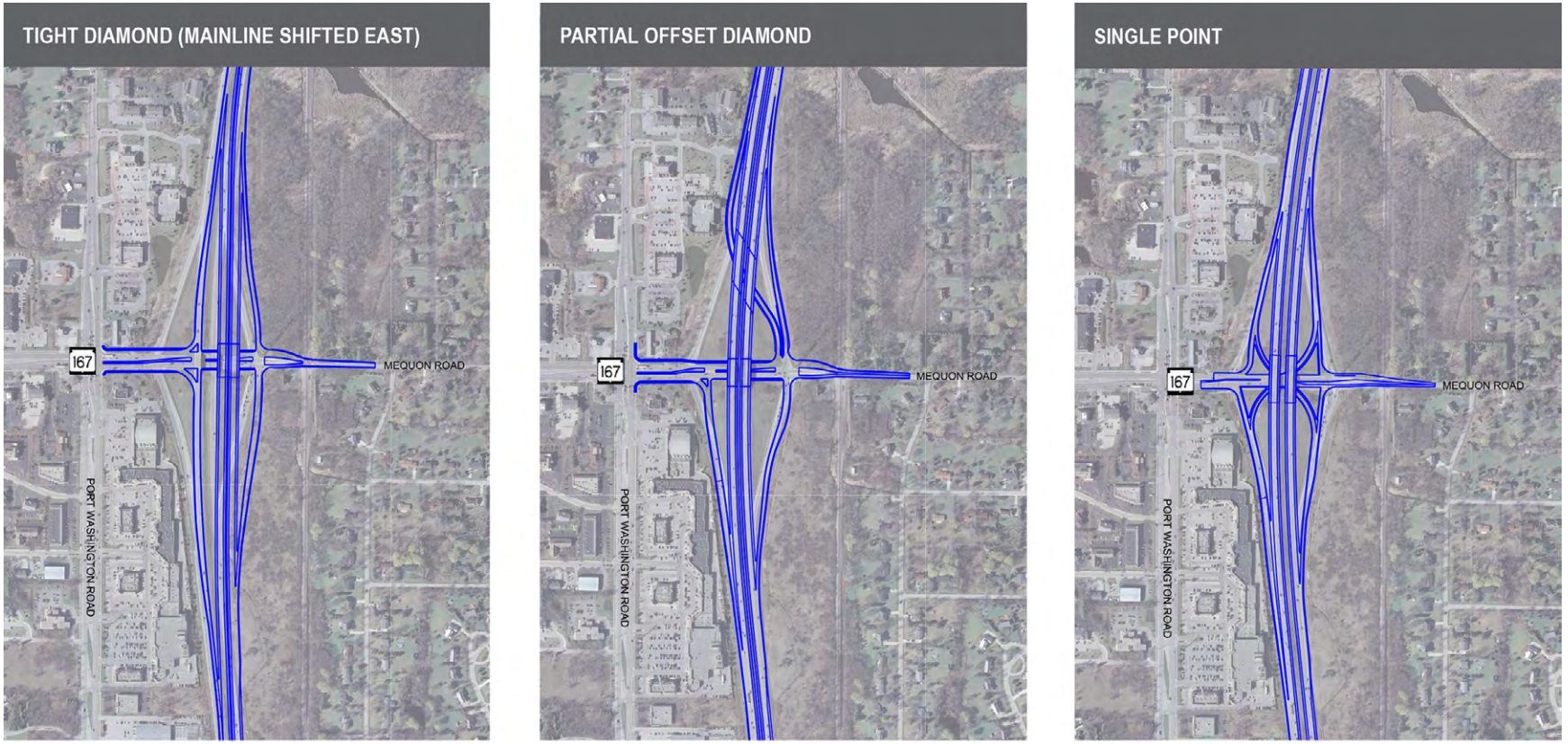
### TIGHT DIAMOND INTERCHANGE (MAINLINE SHIFTED EAST)

This alternative would reconstruct the existing interchange with tight urban-style ramps and the I-43 mainline is shifted east (**Exhibit 2-19**). This configuration increases the distance between Port Washington Road and the southbound interchange ramp intersection on Mequon Road. Bike and pedestrian access on Mequon Road would be provided according to ADA and Trans 75 requirements. Due to the close proximity of the Port Washington Road/Mequon Road intersection to the southbound entrance/exit ramps, additional intersection modifications are needed to improve traffic operations. In this alternative, the westbound approach to the Port Washington Road/Mequon Road intersection is modified to provide an additional westbound through lane and an additional left turn lane provides additional traffic impact discussion.

### PARTIAL OFFSET DIAMOND INTERCHANGE

This alternative would reconstruct the existing interchange as a diamond interchange with the southbound exit ramp shifted east, crossing beneath I-43 and terminating on the east side of I-43 adjacent to the I-43 northbound ramp intersection with Mequon Road (**Exhibit 2-19**). This configuration increases the distance between Port Washington Road and the southbound interchange ramp

## Exhibit 2-19: Mequon Road Interchange Build Alternatives



intersection on Mequon Road. This alternative requires the same modifications to the Port Washington Road/Mequon Road intersection for the Tight Diamond interchange described above. Bike and pedestrian access on Mequon Road would be provided according to ADA and Trans 75 requirements.

#### SINGLE-POINT INTERCHANGE

All ramps would be brought together at one point under the I-43 mainline (**Exhibit 2-19**), increasing the ramp intersection distance from Port Washington Road and creating a single intersection that is designed to handle high traffic volumes. This alternative would require the same modifications to the Port Washington Road/Mequon Road intersection as the Tight Diamond interchange described above. Bike and pedestrian access on Mequon Road would be provided according to ADA and Trans 75 requirements.

### 2.4.5. Highland Road Interchange

There is currently no interchange at Highland Road. Highland Road is a two-lane local arterial that crosses over I-43. The Highland Road/North Lake Shore Drive intersection is located east of I-43 and the UP Railroad closely parallels northbound I-43. As discussed in **Section 1**, SEWRPC recommends a new interchange to provide access to I-43 for existing and planned development in this area.

#### NO ACCESS

This alternative would not provide new access at Highland Road. If the Highland Road interchange is not built, additional modifications would be required at the Port Washington Road/Mequon Road intersection to accommodate future traffic volumes. Required improvements at the Port Washington Road/Mequon Road intersection would require adding a third southbound-to-eastbound left-turn lane.

No modifications are required at the Mequon Road interchange or the County C interchange, or the Port Washington Road/County C intersection.

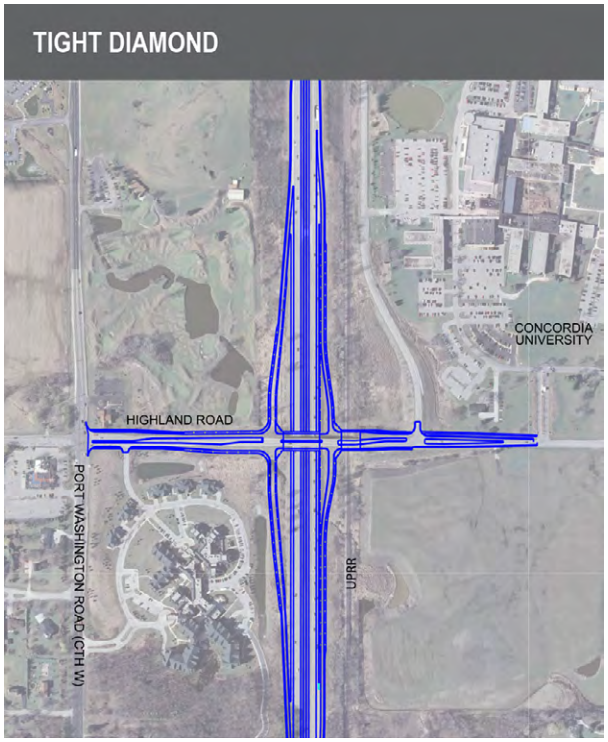
#### TIGHT DIAMOND INTERCHANGE

This alternative constructs a new tight diamond interchange to avoid impacts to the UP Railroad and adjacent development (**Exhibit 2-20**). Highland Road would be reconstructed as an urban two lane roadway between the Port Washington Road/Highland Road intersection on the west side of I-43 to the Concordia University entrance on the east side of I-43. The Highland Road bridge over the UP Railroad would also be replaced. Bike and pedestrian access on Highland Road would be provided according to ADA and Trans 75 requirements. Because the Highland Road interchange would be a new interchange that benefits the surrounding community, WisDOT would require an agreement with the city of Mequon to provide funding for a portion of the interchange construction cost. If the city chooses to not provide a local share of funding, the interchange would not be built.

### 2.4.6. County C Interchange

The existing interchange has a standard diamond configuration. The main challenge at this interchange is insufficient interchange ramp lengths create unsafe exit and entrance speeds.

**Exhibit 2-20: Highland Road Interchange Build Alternative**




### SPOT IMPROVEMENTS

Spot improvements lengthen the interchange ramps to meet current design standards. This would allow exiting traffic enough ramp length to slow down to safer speeds, and allow entering traffic more ramp length to increase speed to safely merge with mainline traffic. This alternative can accommodate a four-lane freeway, but not a six-lane freeway. **Exhibit 2-2** illustrates Spot Improvements for the entire corridor, including the County C interchange.

### DIAMOND INTERCHANGE

This alternative reconstructs the existing interchange to meet current design standards. This mainly involves lengthening the entrance and exit ramps and providing the required County C bridge clearance over I-43. The ramps on the west side of I-43 would be shifted slightly closer to I-43 to minimize impacts to adjacent development (**Exhibit 2-21**). Bike and pedestrian access on County C would be provided according to ADA and Trans 75 requirements. As noted in **Subsection 2.4.5**, if the Highland Road interchange is not constructed, an additional left-turn lane would be required at the northbound exit ramp.

## 2.5. COMBINED LOWER LEVEL IMPROVEMENTS AND TSM/TDM ELEMENTS

This alternative would combine TSM and TDM elements with “lower level” highway improvements in the I-43 North-South Freeway study corridor. Lower level highway improvements are those

**Exhibit 2-21: County C Interchange Build Alternative**


alternatives that do not include capacity expansion. The TSM and TDM elements applicable to the I-43 North-South Freeway study corridor are discussed in **Subsection 2.2.2**. Possible spot improvements for the I-43 mainline are discussed in **Subsection 2.3,** and spot improvements for the interchanges are discussed in **Subsection 2.4**. The alternative describing reconstructing I-43 to modern design standards without capacity expansion is described in **Subsection 2.3.1** and **Subsection 2.3.2**. See **Subsection 2.6.4** for more information.

## 2.6. ALTERNATIVES SCREENING

The alternatives described in Subsections 2.2 through 2.5 were evaluated based on their ability to meet the study's purpose and need as described in **Section 1** of this DEIS. The following key purpose and need factors were considered in evaluating and screening the initial range of alternatives:

- Address pavement, freeway design and geometric deficiencies
- Address safety concerns
- Accommodate existing and future traffic volumes at an acceptable level of service (LOS) and improve traffic operations
- Achieve compatibility with regional land use and transportation planning objectives.
- Maintain vital link in state and regional transportation network.

Other screening factors to determine which alternatives should be eliminated and which should be carried forward for detailed analysis included:

- Relative cost in terms of the overall construction cost for each design option and the overall impact footprint (right of way acquisition)

- General magnitude of overall environmental impacts
- Input from agencies, local officials, the public, and other stakeholders through the outreach activities discussed in **Section 5**.

### 2.6.1. No-Build Alternative

While this alternative would, over time, address deteriorated pavement and structure conditions, and have both fewer environmental impacts and lower construction cost than the build alternatives, it would not address substandard design elements, safety concerns or forecasted traffic volumes. Because it would not meet study purpose and need, the No-Build Alternative is not considered a reasonable course of action for addressing long-term mobility needs in the I-43 corridor. This alternative serves as a baseline for comparing impacts of the build alternatives.

### 2.6.2. Build Alternative: Spot Improvements

The spot improvements on the I-43 roadway mainline and at the interchanges (**Subsection 2.3** and **Subsection 2.4**) would rehabilitate pavement and address some safety issues that can be fixed with little to no right of way acquisition. However, this low level of improvement would not address existing design deficiencies, safety concerns (except at spot locations) or future traffic demand and was therefore dropped from further consideration.

### 2.6.3. Build Alternatives: Modernization

As discussed in **Subsection 2.3**, the range of modernization alternatives for the I-43 mainline includes reconstructing the existing four-lane facility to modern design standards, and widening I-43 to six lanes throughout the corridor as recommended in the 2035 regional transportation plan. Also, consistent with the regional transportation plan, the modernization alternatives implement the TSM and TDM measures described in **Subsection 2.2**. However, the Modernization – 4 Lanes alternative would not accommodate future traffic demand and was therefore dropped from further consideration. **Table 2-1** summarizes the I-43 mainline alternatives that are screened from further analysis and those carried forward for detailed evaluation.

As discussed in **Subsection 2.4**, the range of alternatives for the I-43 interchanges includes reconstructing the existing interchanges using existing configurations, and reconstructing interchanges with various possible new configurations. The alternatives also include the possibility of eliminating the interchange at County Line Road or reconstructing it as a full access interchange, and constructing an interchange at Highland Road where none exists today. Interchange alternatives were screened for various reasons summarized in **Table 2-2** at the end of this section, and those alternatives carried forward for detailed evaluation are described in **Subsection 2.8**.

### 2.6.4. Combined Lower Level Highway Improvements with TSM/TDM Measures

As discussed in **Subsection 2.1.1** numerous regionwide TSM and TDM measures are recommended in the 2035 regional transportation plan. The arterial street and highway improvements recommended in the 2035 regional transportation plan already assume maximum implementation of such TSM and TDM measures over time.

Project-level TSM and TDM measures applicable to the I-43 North-South Freeway Corridor Study are discussed in **Subsection 2.2.2**. While TSM and TDM measures contribute to overall operational efficiency and modal travel choices within and through the freeway corridor, such measures would not address key purpose and need factors, either as stand-alone alternatives or when combined with various lower level highway improvements.

The spot improvements on the I-43 roadway mainline and at the interchanges would rehabilitate the pavement and address some safety issues that can be fixed with minimal to no right of way acquisition. However, this low level of improvement would not address future traffic demand even when combined with full implementation of TSM and TDM measures. Further, spot improvements would not address design deficiencies.

The Modernization – 4 Lanes alternative and reconstructing the existing interchanges to meet modern design standards would address the poor pavement condition and most of the design deficiencies in the study corridor, but would not address future traffic demand even when combined with full implementation of TSM and TDM measures. As discussed in **Section 1**, traffic in the study corridor is expected to increase about 32 percent by 2040, more than 60 percent of the corridor would operate at LOS D or worse during the morning travel peak, and 20 percent of the corridor would operate at LOS F. The Modernization – 4 Lanes alternative would also not address congestion-related crashes, even when combined with full implementation of TSM and TDM measures. For example, as discussed in **Section 1,** the section of I-43 from Good Hope Road to Brown Deer Road has a high number of rear-end crashes (one-third of the total crashes in this 2-mile segment) which is indicative of the high traffic volumes and congestion in this area.

In summary, the Combined Lower Level Highway Improvements with TSM/TDM Measures Alternative has been eliminated from further consideration as a viable long-term improvement option in the I-43 corridor. This alternative would not meet key purpose and need factors (future traffic demand and safety concerns).

## 2.7. OTHER ALTERNATIVES CONSIDERED

Two other alternatives were considered and dismissed as described below:

### 2.7.1. Level of Service C Alternative

As noted in **Section 1**, freeway design guidance states that LOS C is the desirable freeway service level in urban areas, although LOS D can also be acceptable in densely developed urban areas. Based on this guidance, WisDOT and FHWA developed an alternative that would provide LOS C on the urban portion (Milwaukee County) of the I-43 North-South Freeway study corridor. This alternative would have roughly the same configuration as the Reconstruct to Modern Design Standards with Capacity Expansion alternative, but with additional capacity. I-43 would be widened to eight lanes from Silver Spring Drive to Brown Deer Road. Interchange ramps would require the same lanes as the six-lane alternative. The right of way and relocation impacts of this alternative would be much greater than the other build alternatives that remain under consideration. About 18 residences and 19 businesses would be relocated. Based on the high impact to surrounding neighborhoods and commercial areas, this alternative was eliminated from further consideration as it is not deemed a feasible alternative.

### 2.7.2. I-43 Mainline South Segment: Tunnel Alternative

The city of Glendale presented to WisDOT a tunnel alternative would depress I-43 to minimize property and visual impacts. The tunnel alternative would depress I-43 from Brentwood Lane to just south of Green Tree Road. The freeway would be covered such that portions of Jean Nicolet Drive and Port Washington Road could be relocated on top of the tunnel section. WisDOT analyzed the alternative and presented its findings at a Glendale neighborhood meeting, explaining why the alternative is not feasible. The Tunnel Alternative would not drain properly because the freeway would be depressed to near the Milwaukee River 100-year flood elevation. The actual footprint of the freeway would be larger compared with the other alternatives because of the space needed for the tunnel structure and ventilation infrastructure required for the tunnel to safely operate. The Tunnel Alternative would be difficult to construct, would create problems maintaining traffic during construction, and would also have inherent emergency access and safety issues when compared to the other build alternatives for the South Segment. For these reasons, but primarily due to drainage problems, the Tunnel Alternative was removed from further consideration as it is not deemed a feasible alternative.

## 2.8. ALTERNATIVES SCREENING SUMMARY

**Table 2-1** summarizes screening results for the build alternatives on the I-43 mainline, including TSM and TDM measures as a standalone alternative or when combined with lower level highway improvements. **Table 2-2** summarizes the screening results for the build alternatives at the interchanges in the I-43 North-South Freeway study corridor. The TSM and TDM measures are included in the Modernization – 6 Lanes and interchange alternatives, as recommended in SEWRPC's 2035 regional transportation plan.

The screening tables reflect a qualitative comparison among the I-43 mainline and interchange alternatives in terms of their abilities to meet key study purpose and need factors, relative cost and magnitude of environmental impacts. The alternatives also represent adjustments based on comments from public and agency meetings.

Based on the initial screening, alternatives retained for more detailed evaluation in **Section 3** of this DEIS are described in the subsections below. WisDOT's preferred alternatives for purposes of this DEIS are also indicated and listed as follows:

- **I-43 Mainline South Segment (Silver Spring Drive to Green Tree Road:** Modernization – 6 Lanes (Shifted East)
- **I-43 Mainline North Segment (Green Tree Road to WIS 60):** Modernization – 6 Lanes; additional lanes added to inside median
- **Good Hope Road Interchange:** Tight Diamond
- **Brown Deer Road Interchange:** Diverging Diamond
- **County Line Road Interchange:** Split Diamond Hybrid (see further discussion in **Subsection 2.8.2**)
- **Mequon Road Interchange:** Tight Diamond (see further discussion in **Subsection 2.8.2**)
- **Highland Road Interchange:** Tight Diamond
- **County C Interchange:** Diamond

### 2.8.1. I-43 Mainline: Modernization – 6 Lanes

This alternative involves widening I-43 to six lanes. The reasonable alternative retained for detailed study in the South Segment I-43 mainline is Modernization – 6 Lanes Shifted East, which also reconstructs Jean Nicolet Road and Port Washington Road between Bender Road and Green Tree Road. As part of the Port Washington Road reconstruction, it would be widened to four lanes between Bender Road and Daphne Road. Between Silver Spring and Bender Road, WisDOT would implement minor improvements, such pavement resurfacing and removing the lane-drop, as this section can accommodate a six-lane freeway with little reconfiguration of the freeway.

**Table 2-1** summarizes key reasons other alternatives eliminated from further analysis; but primarily because the other alternatives, while meeting purpose and need, did not minimize impacts compared to the Modernization – 6 Lanes (Mainline Shifted East) alternative. In the North Segment I-43 mainline, from Green Tree Road to WIS 60, the reasonable alternative retained for detailed study would widen I-43 to the inside (on a generally centered alignment) to minimize overall impacts to adjacent development and environmental resources. Some specific interchange locations may require slight shifts in alignment to minimize impacts or maximize traffic operations.

For purposes of this DEIS, the Modernization – 6 Lanes alternative is WisDOT's preferred alternative for the I-43 mainline in the South and North segments.

### 2.8.2. I-43 Interchanges

Specific interchange configurations that have been retained for detailed study are:

- **Good Hope Road – Tight Diamond:** This alternative met the study purpose and need while avoiding the greater relocation impacts of the Tight Diamond (Mainline Shifted West) alternative. The Tight Diamond alternative also retains the recently reconstructed Good Hope Road bridges over I-43. For these reasons, the Tight Diamond alternative is carried forward in this DEIS as the reasonable and preferred alternative for detailed study.
- **Brown Deer Road – Diamond and Diverging Diamond:** Both of these alternatives meet the study purpose and need and retain the recently reconstructed Brown Deer Road bridges over I-43. Direct impacts of the two alternatives are similar. The Diverging Diamond interchange alternative removes left turn conflicts, which facilitates traffic operations and capacity. The Diverging Diamond is a nontraditional interchange design that would require public education on how drivers utilize this new interchange configuration. For these reasons, the Diamond and Diverging Diamond interchange alternatives are carried forward as the reasonable alternatives for detailed study in this DEIS. WisDOT's preferred alternative is the Diverging Diamond primarily because it is expected to provide adequate capacity for a longer period beyond the design year of 2040 as compared with the Diamond interchange.
- **County Line Road – No Access, Partial and Split Diamond Hybrid:** Both of the Split Diamond Hybrid subalternatives meet the study purpose and need, meet FHWA requirements for full access, and also retain local access. The No Access alternative also meets the study purpose and need and would remove an interchange that is inconsistent with FHWA standards.

  While the Partial Diamond interchange does not meet FHWA requirements to provide for all traffic movements, WisDOT is retaining the alternative for evaluation. There are local concerns that a full interchange would have negative impacts, such as increased traffic in this primarily residential area. At the city of Mequon's request, WisDOT has asked FHWA for an

exception to FHWA Interstate requirements. A decision from FHWA is pending.

FHWA does offer some flexibility to justify not meeting interchange standards if there are no reasonable alternatives to meeting standards. Extensive environmental impacts and/or extreme costs are often factors that are taken into consideration when looking at prudent alternatives. The Split Diamond Hybrid alternative has very minimal environmental impacts, which are virtually the same impacts as the Partial Diamond alternative, and moderately higher construction costs than a partial interchange.

While FHWA gives appropriate consideration to local concerns, it is imperative that primary consideration is placed on the function of the overall Interstate facility and the importance in serving broader regional and Interstate traffic needs. Interstate drivers expect that interchanges provide for all movements and that if they exit at an interchange that they will be able to return to the Interstate in the same direction from the same interchange.

WisDOT screened out the other alternatives considered at County Line Road primarily because they created greater relocation or travel indirection impacts compared to the retained alternatives. The Full Diamond has substantially more relocations compared to other full access alternatives. The Full Diamond (Katherine Drive Grade Separation), Split Diamond and Split Diamond (Katherine Drive Grade Separation) alternatives modified local access and created greater indirection, which is not desirable for local residents on Port Washington Lane.

The Split Diamond Hybrid subalternatives meet the study purpose and need, but some local residents and the city of Mequon have raised concerns about the potential impact of travel indirection with a Katherine Drive grade separation. WisDOT's preferred alternative is the Split Diamond Hybrid because it meets current Interstate standards and maintains local access. If FHWA approves the waiver for a Partial Diamond interchange, WisDOT may consider it as a preferred alternative.

If either the No Access alternative or the Split Diamond Hybrid alternative is selected as a preferred alternative after the public hearing on this DEIS, SEWRPC will update its long-range transportation plan before FHWA issues a Record of Decision (ROD) for the study.

- **Mequon Road – Tight Diamond (Mainline Shifted East):** This alternative meets the study purpose and need, and it minimizes reconstruction costs compared with the Partial Offset Diamond alternative, which would have improved traffic operations but would also have an added cost to construct two new structures on the I-43 mainline over the relocated southbound exit ramp. The Tight Diamond (Mainline Shifted East) alternative manages future traffic volumes and operations. For this reason, the Tight Diamond (Mainline Shifted East) alternative is carried forward in this DEIS as the reasonable and preferred alternative for detailed study.
- **Highland Road – No Access and Tight Diamond:** The Tight Diamond alternative meets the study purpose and need, and is consistent with SEWRPC's 2035 long-range transportation plans. It is WisDOT's preferred alternative. The No Access alternative could meet the purpose and need for physical, traffic and safety improvements, but is not consistent with SEWRPC's long-range plans. The No Access alternative has greater impact to the local road system and access to businesses at the Port Washington Road/Mequon Road intersection. To accommodate increased future traffic volumes under the No Access alternative, the intersection reconstruction requires right of way along Port Washington Road and removes or modifies access to local businesses. If WisDOT and the city of Mequon do not achieve an agreement on construction funding participation, then WisDOT will recommend the No Access Alternative as the preferred alternative. SEWRPC would need to update its long-

range transportation plan if the No Access alternative is the preferred alternative. The Tight Diamond and No Access alternatives are carried forward in this DEIS as reasonable alternatives for detailed study, with the Tight Diamond being the preferred alternative.

- **County C – Diamond:** The Diamond alternative meets the study purpose and need and is carried forward in this DEIS as the reasonable and preferred alternative for detailed study.

## 2.9. SELECTION OF PREFERRED ALTERNATIVE

The DEIS identifies a preferred alternative that may best address the current and long-term needs in the I-43 North-South Freeway study corridor.

WisDOT and FHWA will select a preferred alternative in the FEIS after reviewing input received at the public hearing and during the public comment period for this DEIS. The preferred alternative will be based on engineering and environmental factors and input from citizens, state and federal resource agencies, cooperating and participating agencies, Native American tribes, and local officials. Selection of a preferred alternative will also be performed in accordance with the Clean Water Act's § 404(b)(1),[8] administered by the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE). 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 are undertaken to minimize adverse effects. The USACE does not concur with the preferred Highland Road Tight Diamond interchange alternative because the No Access alternative is the least environmentally damaging alternative to wetlands. The No Access alternative creates substantially greater traffic operations and business access impacts at the Port Washington Road/Mequon Road intersection, which requires added infrastructure to accommodate traffic volumes. The alternative does not meet the purpose and need of being consistent with SEWRPC's regional long-range transportation plans. But, if Mequon determines not to participate in the local cost-share for interchange construction, WisDOT would move forward with the No Access alternative as the preferred alternative.

[8] Guidelines for Specification of Disposal Sites for Dredged of Fill Material *(40 CFR § 230)*

## Table 2-1: Alternatives Screening Summary – I-43 Mainline

| Alternatives | Key Purpose and Need Factors | | | | Other Factors | | Retain Alternative for Detailed Study? |
|---|---|---|---|---|---|---|---|
| | Addresses Design Deficiencies? | Improves Safety? | Addresses Future Traffic Demand? | Consistent with Regional Plan? | Relative Total Cost (Construction, Right of Way Acquisition) | Magnitude of Environmental Impacts | |
| **SOUTH SEGMENT: SILVER SPRING DRIVE to GREEN TREE ROAD** | | | | | | | |
| Spot Improvements | NO<br>Deteriorated pavement not replaced. Substandard curves, bridge clearances, stopping site distance, decision site distance and shoulders not improved | YES<br>(limited) Ramp improvements create safer entrance/exit operations. Does not address congestion-related safety issues. Safety issues related to mainline design deficiencies not improved | NO<br>About 60% of the corridor operates unacceptably during peak hours in year 2040; About 20% of entire corridor operating at LOS F | NO<br>SEWRPC recommends added lanes, and interchange improvements | LOW<br>No right of way impacts | LOW<br>No impacts | NO<br>Does not address design deficiencies or future traffic demand; limited improvement of safety issues; not consistent with regional transportation plans |
| Modernization – 4 Lanes (Centered) | YES<br>Pavement replaced; substandard curves, bridge clearances and shoulders replaced | YES<br>(limited) Safety issues related to design deficiencies addressed; but congestion related safety issues not addressed | NO<br>See comment above | NO<br>SEWRPC recommends added lanes, | LOW<br>Limited widening and right of way impacts | LOW<br>Minimal impact | NO<br>Does not address future traffic demand; not consistent with regional transportation plans |
| Modernization – 6 Lanes (Centered) | YES<br>See comments above | YES<br>Safety issues related to design deficiencies and congestion addressed | YES<br>Entire corridor operates acceptably | YES<br>Consistent with SEWRPC long-range plan recommending 6-lanes | MODERATE<br>Right of way on Jean Nicolet Road and Port Washington Road | MODERATE/HIGH<br>11 residential and 1 business relocations; wetland impact, right of way impact to potential historic properties and Nicolet High School athletic field and east playfields similar to shift east and shift west alternatives | NO<br>Right of way and relocation impacts to both sides of highway with no added benefit |
| Modernization – 6 Lanes (Shifted East) | YES<br>See comments above | YES<br>See comments above | YES<br>See comments above | YES<br>See comments above | MODERATE<br>Right of way on Port Washington Road | MODERATE/HIGH<br>11 residential and 1 business relocations; 0.07 acre wetland impact; 0.22-acre impact to Nicolet High School east playfields, 0.16 acre impact to historic water treatment plant; 0.08 acre impact to Craig Counsell Park; avoids Clovernook Historic District. | YES *(Preferred Alternative)*<br>Maintains Jean Nicolet Road; minimizes right of way and relocation impacts on west side; profile depressed to minimize visual impacts; avoids impact to Clovernook Historic District compared to centered and shift-west alternatives; city of Glendale supports this alternative |
| Modernization – 6 Lanes (Shifted West) | YES<br>See comments above | YES<br>See comments above | YES<br>See comments above | YES<br>See comments above | MODERATE<br>Right of way on Jean Nicolet Road | MODERATE/HIGH<br>9 residential and 1 business relocations; 0.05 acre wetland impact; 0.22 acre-impact to Nicolet High School athletic field and parking area; 0.16 acre impact to historic water treatment plant; 0.08 acre impact to Craig Counsell Park; impact to Clovernook Historic District (4 relocations). | NO<br>Maintains continuous Jean Nicolet Road; minimizes right of way and relocation impacts on east side; profile depressed to minimize visual impacts; impacts Clovernook Historic District |
| Modernization – 6 Lanes (Elevated over UP Railroad) | YES<br>See comments above | YES<br>See comments above | YES<br>See comments above | YES<br>See comments above | HIGH<br>Substantial structures required and retaining walls | MODERATE/HIGH<br>2 residential relocations; impacts to potential historic properties; right of way impacts to Nicolet High School east playfield; changed travel patterns; visual impacts | NO<br>Limits right of way and relocation impacts; substantial visual impacts; not supported by local residents; no added benefit for cost of alternative |

| Alternatives | Key Purpose and Need Factors: Addresses Design Deficiencies? | Improves Safety? | Addresses Future Traffic Demand? | Consistent with Regional Plan? | Other Factors: Relative Total Cost (Construction, Right of Way Acquisition) | Magnitude of Environmental Impacts | Retain Alternative for Detailed Study? |
|---|---|---|---|---|---|---|---|
| Modernization – 6 Lanes (Raised) | YES<br>See comments above | YES<br>See comments above | YES<br>See comments above | YES<br>See comments above | HIGH<br>Retaining walls along I-43; additional bridges at new underpass locations | MODERATE/HIGH<br>11 residential and 1 business relocations; impacts to wetlands, potential historic properties; right of way impact to Nicolet High School east playfields similar to shift east alternative; visual impacts; changed travel patterns | NO<br>See access options below |
| *Raised – Jean Nicolet Access Option 1* | *See Raised Alternative Evaluation Factors above* | | | | | MODERATE/HIGH<br>See Raised Alternative Magnitude of Environmental Impacts above | NO<br>Discontinuous Jean Nicolet Road did not substantially reduce impacts compared to the shift-east or shift-west alternatives; substantial disruption to neighborhood access; not supported by local residents |
| *Raised – Jean Nicolet Access Option 2* | *See Raised Alternative Evaluation Factors above* | | | | | MODERATE/HIGH<br>See Raised Alternative Magnitude of Environmental Impacts above | NO<br>Discontinuous Jean Nicolet Road did not substantially reduce impacts compared to the shift-east or shift-west alternatives; substantial disruption to neighborhood access; not supported by local residents |
| Modernization – 6 Lanes (Depressed) | YES<br>See comments above; but drainage issues introduced | YES<br>See comments above; but drainage problems may create safety issues | YES<br>See comments above | YES<br>See comments above | HIGH<br>Retaining walls along I-43 | MODERATE/HIGH<br>11 residential and 1 business relocations; impacts to wetlands, potential historic properties and Nicolet High School east playfields similar to shift east alternative; changed travel patterns; drainage issues | NO<br>Developed in response to public comment; lowering I-43 creates drainage difficulties, as well as increasing construction complexity; minimal profile difference in area of concern with shift-east or shift-west alternatives |
| **NORTH SEGMENT: GREEN TREE ROAD to WIS 60** | | | | | | | |
| Modernization – 4 Lanes | YES<br>Pavement replaced; substandard curves, bridge clearances and shoulders replaced | YES<br>(limited) Safety issues related to design deficiencies addressed; but congestion related safety issues not addressed | NO<br>More than 60% of the corridor operates unacceptably during peak hour or worse in year 2040; 20% operates at LOS F | NO<br>SEWRPC recommends added lanes | LOW<br>Limited widening and right of way impacts | LOW<br>No relocations; minimal wetland impacts | NO<br>Does not address future traffic demand; not consistent with regional transportation plans |
| Modernization – 6 Lanes | YES<br>See comments above | YES<br>Safety issues related to design deficiencies and congestion addressed | YES<br>Entire corridor operates acceptably | YES<br>Consistent with SEWRPC long-range plan recommending 6-lanes | MODERATE<br>Right of way impacts | See Magnitude of Environmental Impacts below | See widening options below |
| *Milwaukee County Option – Inside widening* | *See Capacity Expansion Alternative Evaluation Factors above* | | | | | MODERATE<br>1.2 acres wetland impacts | YES *(Preferred Alternative)*<br>Addresses design deficiencies, improves safety concerns, future traffic demand and is consistent with regional plans |
| *Ozaukee County Option1 – Inside widening* | *See Capacity Expansion Alternative Evaluation Factors above* | | | | | MODERATE<br>11.4 acres wetlands impacts, includes 2.5 acres ADID wetland impacts in Ozaukee County | YES *(Preferred Alternative)*<br>Addresses design deficiencies, improves safety concerns, future traffic demand and is consistent with regional plans; responds to agency comments to minimize wetland impacts |

| Alternatives | Key Purpose and Need Factors | | | | Other Factors | | Retain Alternative for Detailed Study? |
|---|---|---|---|---|---|---|---|
| | Addresses Design Deficiencies? | Improves Safety? | Addresses Future Traffic Demand? | Consistent with Regional Plan? | Relative Total Cost (Construction, Right of Way Acquisition) | Magnitude of Environmental Impacts | |
| *Ozaukee County Option 2 – Outside widening* | *See Capacity Expansion Alternative Evaluation Factors above* | | | | MODERATE/HIGH<br>Right of way impacts | MODERATE/HIGH<br>15.6 acres impacts to wetlands, includes 4.7 acres ADID wetlands impacts.<br>Greater farmland impacts compared to inside widening; stream relocation | NO<br>Higher magnitude of impacts to wetlands, streams and farmland compared to widening to inside |
| **CORRIDORWIDE LOWER LEVEL IMPROVEMENTS** | | | | | | | |
| TSM and TDM Measures Only | NO<br>Deteriorated pavement not replaced. Substandard curves, bridge clearances, stopping site distance, decision site distance and shoulders not improved | NO<br>Safety issues related to design deficiencies addressed and congestion not addressed | NO<br>About 60% of the corridor operates unacceptably during peak hours in year 2040; About 20% of entire corridor operating at LOS F | NO<br>SEWRPC recommends TSM and TDM measures along with added lanes, and interchange improvements | LOW<br>Little to no right of way impacts | LOW<br>No impacts | NO<br>As stand-alone alternative, does not address design deficiencies, safety issues or future traffic demand; not consistent with regional transportation plans |
| TSM/TDM Plus Spot Improvements | NO<br>Deteriorated pavement not replaced. Substandard curves, bridge clearances, stopping site distance, decision site distance and shoulders not improved | YES<br>(limited locations) Ramp improvements create safer entrance/exit operations. Does not address congestion-related safety issues. Safety issues related to mainline design deficiencies and congestion not improved | NO<br>See comment above | NO<br>SEWRPC recommends TSM and TDM measures along with added lanes, and interchange improvements | LOW<br>Limited to no right of way impacts | LOW<br>No impacts | NO<br>Does not address design deficiencies or future traffic demand; limited improvement of safety issues; not consistent with regional transportation plans |
| TSM/TDM Plus Reconstruction without Capacity Expansion | YES<br>Pavement replaced; substandard curves, bridge clearances and shoulders replaced | YES<br>(limited)<br>Safety issues related to design deficiencies addressed; but congestion related safety issues not addressed | NO<br>See comment above | NO<br>SEWRPC recommends TSM and TDM measures along with added lanes, and interchange improvements | LOW<br>Limited right of way impacts | LOW/MODERATE<br>Minimal impact | NO<br>Does not address future traffic demand; not consistent with regional transportation plans |

## Table 2-2: Alternatives Screening Summary – Interchanges

| Alternatives | Key Purpose and Need Factors | | | | Other Factors | | Retain Alternative for Detailed Study? |
|---|---|---|---|---|---|---|---|
| | Addresses Design Deficiencies? | Improves Safety? | Addresses Future Traffic Demand? | Consistent with Regional Plan? | Relative Total Cost (construction, right of way acquisition) | Magnitude of Environmental Impacts | |
| **GOOD HOPE ROAD INTERCHANGE** | | | | | | | |
| Spot Improvements | NO<br>Deteriorated pavement not replaced; Substandard design and shoulders not improved | YES<br>(spot locations) Ramp improvements create safer entrance/exit operations | NO<br>Does not address operational problems between ramp terminal and Port Washington/ Good Hope intersection | NO<br>SEWRPC recommends interchange reconstruction to improve ramp geometry and traffic operations | LOW<br>No right of way (R/W) impacts | LOW<br>1 residential relocation; no wetland impacts | NO<br>Does not address design deficiencies or future traffic demand; limited improvement of safety issues; not consistent with regional transportation plans |
| Tight Diamond | YES<br>Addresses design deficiencies | YES<br>Addresses safety issues related to design deficiencies and traffic operations | YES<br>Interchange operates acceptably | YES<br>Addresses geometry deficiencies and traffic operations problems | LOW/MODERATE<br>Relatively low construction cost; retains Good Hope Road bridges; right of way impacts | MODERATE<br>1 residential relocation; 0.10 acre wetland impacts | YES (Preferred Alternative)<br>Maximizes distance between northbound ramp terminal intersection with Good Hope Road and the Good Hope Road/ Port Washington Road intersection; retains existing Good Hope Road bridges |
| Tight Diamond (Mainline Shifted West) | YES<br>See comment above | YES<br>See comment above | YES<br>See comment above | YES<br>See comment above | LOW/MODERATE<br>Relatively low construction cost; replaces Good Hope Road bridges; right of way impacts | MODERATE<br>2 residential relocations; 0.12 acre wetland impacts | NO<br>Further increases distance between northbound ramp terminal intersection with Good Hope Road and the Good Hope Road/ Port Washington Road intersection; additional relocation impacts with minimal added benefit compared to the Tight Diamond alternative |
| Tight Diamond with Northbound Ramp Split (Hook Ramp) | YES<br>See comment above | YES<br>See comment above | YES<br>See comment above | YES<br>See comment above | LOW<br>Relatively low cost to construct; retains Good Hope Road bridges; right of way acquisition | MODERATE<br>1 residential relocation and 1 commercial relocation; wetland impacts similar to Tight Diamond | NO<br>Local concerns about commercial relocation and neighborhood impacts of hook ramp |
| Split Diamond | YES<br>See comment above | YES<br>See comment above | NA<br>(Alternative eliminated; analysis not done) | YES<br>See comment above | MODERATE/HIGH<br>Multiple structures; high right of way acquisition; retains Good Hope Road bridges | MODERATE/HIGH<br>3 residential relocations; wetland impacts similar to tight diamond (Mainline Shifted West); increases traffic volume on Green Tree Road | NO<br>High cost; high right of way acquisition and relocation impacts; potential traffic increase in residential area; not locally supported |
| Diverging Diamond | YES<br>See comment above | YES<br>See comment above | NO<br>Does not provide sufficient distance between ramps and Port Washington/ Good Hope intersection | NO<br>Does not address traffic operations problems | LOW<br>Relatively low cost to construct; retains Good Hope Road bridges; lower right of way acquisition | MODERATE<br>1 residential relocation; wetland impacts similar to tight diamond | NO<br>Does not address future traffic demand; short weaving distance between ramp terminals and Port Washington Road; creates lane continuity issues at Port Washington Road |
| Single-Point | YES<br>See comment above | YES<br>See comment above | YES<br>with modification (tight right turn) | YES<br>Addresses geometry deficiencies and traffic operations problems | LOW/MODERATE<br>Relatively low cost to construct; widens existing Good Hope Road bridge; right of way acquisition | MODERATE<br>1 residential relocation; wetland impacts similar to tight diamond | NO<br>Substantial widening of Good Hope Road bridges needed to accommodate ramps; No added benefit compared to tight diamond alternatives |
| Single-Point with Northbound Ramp Split (Hook Ramp) | YES<br>See comment above | YES<br>See comment above | YES<br>Slightly better traffic operations compared to Single Point alternative | YES<br>See comment above | LOW/MODERATE<br>Similar to Single-Point, but slightly higher right of way impact | MODERATE<br>1 residential and 1 commercial relocation; wetland impacts similar to tight diamond | NO<br>Similar to Single Point, but traffic operations improved with separate northbound hook. Local concerns about commercial relocation and neighborhood impacts of hook ramp |

| Alternatives | Key Purpose and Need Factors | | | | Other Factors | | Retain Alternative for Detailed Study? |
|---|---|---|---|---|---|---|---|
| | Addresses Design Deficiencies? | Improves Safety? | Addresses Future Traffic Demand? | Consistent with Regional Plan? | Relative Total Cost (construction, right of way acquisition) | Magnitude of Environmental Impacts | |
| Horseshoe | YES<br>Addresses design deficiencies; but more complex bridge structures | YES<br>Addresses safety issues related to design deficiencies and traffic operations | NA<br>(Alternative eliminated; analysis not done) | YES<br>See comment above | MODERATE/HIGH<br>Multiple structures that present high maintenance cost compared to other alternatives; right of way impacts; replaces Good Hope Road bridges | MODERATE<br>2 residential relocations; wetland impacts similar to tight diamond | NO<br>Alternative has highest cost, right of way acquisition and relocations compared to other lower impact alternatives that address design deficiencies, safety issues and future traffic demand |
| **BROWN DEER ROAD/WIS 100 INTERCHANGE** | | | | | | | |
| Spot Improvements | NO<br>Deteriorated pavement not replaced. Substandard design and shoulders not improved | YES<br>(spot locations) Ramp improvements create safer entrance/exit operations | NO<br>Does not address operational problems between ramp terminal and Port Washington/ Good Hope intersection | NO<br>SEWRPC recommends interchange reconstruction to improve ramp geometry and traffic operations | LOW<br>Minimal structures and right of way impacts | LOW<br>Wetland impacts not calculated, but lower than build alternatives | NO<br>Does not address design deficiencies or future traffic demand; limited improvement of safety issues; not consistent with regional transportation plans |
| Diamond | YES<br>Addresses design deficiencies | YES<br>Addresses safety issues related to design deficiencies and traffic operations | YES<br>Interchange operates acceptably | YES<br>Addresses geometry deficiencies and traffic operations problems | LOW/MODERATE<br>Minimal structures and right of way impacts; retains but widens Brown Deer Road bridges | LOW/MODERATE<br>0.75 acre wetland impacts; no relocations, impacts earth berm in residential area | YES<br>Increases distance between ramp terminal and Brown Deer Road/Port Washington Road intersection; cost, traffic operations and right of way acquisition comparable to other alternatives |
| Diverging Diamond | YES<br>See comment above | YES<br>See comment above | YES<br>See comment above | YES<br>See comment above | LOW/MODERATE<br>Low right of way impacts; retains Brown Deer Road bridges | LOW/MODERATE<br>0.72 acre wetland impacts; no relocations; impacts earth berm in residential area | YES (Preferred Alternative)<br>Increases distance between ramp terminal and Brown Deer Road/Port Washington Road intersection; cost, traffic operations and right of way acquisition comparable to other alternatives |
| Single-Point | YES<br>See comment above | NO<br>Skewed angles not desirable | YES<br>See comment above | YES<br>See comment above | LOW<br>Minimal structures and right of way acquisition; retains Brown Deer Road bridges | LOW<br>No relocations; impacts earth berm in residential area; wetland impacts not calculated, but greater than Diamond interchange | NO<br>Skewed angle between I-43 and Brown Deer Road creates traffic safety concerns with this interchange configuration |
| Horseshoe | YES<br>Addresses design deficiencies; but more complex bridge structures | YES<br>Addresses safety issues related to design deficiencies and traffic operations | NA<br>(Alternative eliminated; analysis not done) | YES<br>See comment above | MODERATE/HIGH<br>Multiple structures that present high maintenance cost compared to other alternatives; right of way impacts; replaces Brown Deer Road bridges | MODERATE<br>1 commercial relocation; impacts earth berm in residential area; wetland impacts not calculated, but greater than Diamond interchange | NO<br>Alternative has highest cost, right of way acquisition and relocations compared to other lower impact alternatives that address design deficiencies, safety issues and future traffic demand |
| **COUNTY LINE ROAD INTERCHANGE** | | | | | | | |
| Spot Improvements | NO<br>Deteriorated pavement not replaced. Substandard design and shoulders not improved | YES<br>(spot locations) Ramp improvements create safer entrance/exit operations | NO<br>Does not address future traffic demand; does not resolve ramp spacing deficiency with Brown Deer Road interchange | NO<br>SEWRPC recommends interchange reconstruction to improve ramp geometry and traffic operations | LOW<br>Two ramps constructed; limited right of way required | LOW<br>No relocations; no wetland impacts | NO<br>Does not address design deficiencies or future traffic demand; limited improvement of safety issues; not consistent with regional transportation plans; does not provide for all traffic movements per federal policy |

*Note: All capacity expansion alternatives include TSM/TDM measures.*

| Alternatives | Key Purpose and Need Factors | | | | Other Factors | | Retain Alternative for Detailed Study? |
|---|---|---|---|---|---|---|---|
| | Addresses Design Deficiencies? | Improves Safety? | Addresses Future Traffic Demand? | Consistent with Regional Plan? | Relative Total Cost (construction, right of way acquisition) | Magnitude of Environmental Impacts | |
| No Access (Access Removed) | YES<br>Eliminates interchange and existing deficiencies | YES<br>Eliminates close ramp spacing with northbound Brown Deer interchange entrance ramp | NA | NO<br>SEWRPC would need to update the long-range plan to account for no access | LOW<br>Two ramps removed; new structures | LOW/MODERATE<br>No relocations; 1 acre wetland impacts; travel pattern changes for surrounding community; traffic diverted to other interchanges; | YES<br>Alternative would eliminate all access but does not adversely affect design deficiencies, safety issues or future traffic demand; consistent with federal policy to avoid partial traffic movements at interchanges; greater indirection for emergency services and local traffic |
| Partial Diamond | NO<br>Does not meet FHWA requirements to provide all traffic movements | YES<br>Addresses close ramp spacing with Brown Deer Road interchange | YES<br>Interchange operates acceptably | YES<br>Consistent with regional plans; does not meet FHWA requirements to provide all traffic movements | LOW | LOW/MODERATE<br>No relocations; 1 acre wetland impacts | YES<br>Does not provide for all traffic movements per federal policy; environmental impacts are similar to other alternatives that meet federal policy. At the city of Mequon's request, this alternative is retained for detailed study. |
| Split Diamond (Katherine Drive Grade Separation) | YES<br>Addresses design deficiencies | YES<br>Addresses close ramp spacing with Brown Deer Road interchange | YES<br>Interchange operates acceptably | NO<br>SEWRPC would need to update long-range plan to include a full access interchange | MODERATE<br>Constructs new full interchange; limited right of way required | LOW/MODERATE<br>No relocations; 1 acre wetland impacts; travel pattern and local access changes | NO<br>Provides for all traffic movements consistent with federal policy; minimizes impacts to surrounding homes and businesses; greater indirection for local traffic; grade separation not locally supported |
| Split Diamond | YES<br>Addresses design deficiencies | YES<br>Addresses close ramp spacing with Brown Deer Road interchange | YES<br>Interchange operates acceptably | NO<br>SEWRPC would need to update long-range plan to include a full access interchange | MODERATE<br>Constructs new full interchange; limited right of way required | LOW/MODERATE<br>No relocations; 1 acre wetland impacts; travel pattern and local access changes | NO<br>Provides for all traffic movements consistent with federal policy; minimizes impacts to surrounding homes and businesses; increased indirection for local traffic; not locally supported |
| Split Diamond Hybrid (Grade Separation) | YES<br>Addresses design deficiencies | YES<br>Addresses close ramp spacing with Brown Deer Road interchange | YES<br>Interchange operates acceptably | NO<br>SEWRPC would need to update long-range plan to include a full access interchange | MODERATE<br>Constructs new full interchange; limited right of way required | LOW/MODERATE<br>No relocations; 1 acre wetland impacts; travel pattern changes; maintains local access | YES *(Preferred Alternative, subalternative to be determined after public hearing)*<br>Provides for all traffic movements consistent with federal policy; minimizes impacts to surrounding homes and businesses; neighborhood concerns about travel indirection with grade separation |
| Split Diamond Hybrid (Without Grade Separation) | YES<br>Addresses design deficiencies | YES<br>Addresses close ramp spacing with Brown Deer Road interchange | YES<br>Interchange operates acceptably | NO<br>SEWRPC would need to update long-range plan to include a full access interchange | MODERATE<br>Constructs new full interchange; limited right of way required | LOW/MODERATE<br>No relocations; 1 acre wetland impacts; travel pattern changes; maintains local access | YES *(Preferred Alternative, subalternative to be determined after public hearing)*<br>Provides for all traffic movements consistent with federal policy; minimizes impacts to surrounding homes and businesses; maintains access for local traffic compared to grade-separated Split Diamond; based on local comment, eliminates Katherine Drive underpass. |

*Note: All build alternatives include TSM/TDM measures.*

| Alternatives | Key Purpose and Need Factors | | | | Other Factors | | Retain Alternative for Detailed Study? |
|---|---|---|---|---|---|---|---|
| | Addresses Design Deficiencies? | Improves Safety? | Addresses Future Traffic Demand? | Consistent with Regional Plan? | Relative Total Cost (construction, right of way acquisition) | Magnitude of Environmental Impacts | |
| Full Diamond (Katherine Drive Grade Separation) | YES<br>Addresses design deficiencies | YES<br>Addresses close ramp spacing with Brown Deer Road interchange | YES<br>Interchange operates acceptably | NO<br>SEWRPC would need to update long-range plan to include a full access interchange | MODERATE<br>Constructs new full interchange; right of way required | LOW/MODERATE<br>No relocations; 1 acre wetland impacts; travel pattern and local access changes | NO<br>Provides for all traffic movements consistent with federal policy; minimizes impacts to surrounding homes and businesses; greater indirection for local traffic |
| Full Diamond | YES<br>Addresses design deficiencies | YES<br>Addresses close ramp spacing with Brown Deer Road interchange | YES<br>Interchange operates acceptably | NO<br>SEWRPC would need to update long-range plan to include a full access interchange | MODERATE/HIGH<br>Constructs new full interchange; new overpass bridge; right of way impacts | MODERATE/HIGH<br>6 to 9 residential relocations for new overpass; 1.2 acre wetland impacts; changed travel pattern and access changes | NO<br>Provides standard full diamond interchange that provides for all traffic movements consistent with federal policy; substantial relocation impacts and relative costs with no added benefit |
| **MEQUON ROAD/WIS 167 INTERCHANGE** | | | | | | | |
| Spot Improvements | NO<br>Deteriorated pavement not replaced. Substandard design and shoulders not improved | YES<br>(spot locations) Ramp improvements create safer entrance/exit operations | NO<br>Does not address operational problems between ramp terminal and Port Washington/ Mequon Road intersection | NO<br>SEWRPC recommends interchange reconstruction to improve ramp geometry and traffic operations | LOW<br>No structure or right of way impacts | LOW<br>No wetland impact; no relocations | NO<br>Does not address design deficiencies or future traffic demand; limited improvement of safety issues; not consistent with regional transportation plans |
| Tight Diamond (Mainline Shifted East) | YES<br>Addresses design deficiencies | YES<br>Addresses safety issues related to design deficiencies and traffic operations | YES<br>Interchange operates acceptably | YES<br>Addresses geometry deficiencies and traffic operations problems | LOW/MODERATE<br>Minimal structures and right of way required | LOW/MODERATE<br>1 business and 1 business tenant relocation; 0.9 acre wetland impacts | YES *(Preferred Alternative)*<br>Improves traffic operations by increasing distance between Port Washing Road/ Mequon Road intersection and SB ramps; requires improvements to Port Washington Road/Mequon Road intersection |
| Partial Offset Diamond | YES<br>Addresses design deficiencies | YES<br>Addresses safety issues related to design deficiencies and traffic operations | YES<br>Interchange operates acceptably | YES<br>Addresses geometry deficiencies and traffic operations problems | MODERATE<br>More structures required; right of way required | LOW/MODERATE<br>1 business and 1 residential tenant relocation; 0.8 acre wetland impacts | NO<br>Improves traffic operations by further increasing distance between Port Washing Road/Mequon Road intersection and SB exit ramp; additional cost of new structures with no added benefit to traffic operations |
| Single-Point | YES<br>Addresses design deficiencies | YES<br>Addresses safety issues related to design deficiencies and traffic operations | NO<br>Insufficient distance between SB ramps and Port Washington Road/ Mequon Road intersection | YES<br>Meets interchange reconstruction recommendation, but does not resolve traffic operation problems | MODERATE<br>Larger overpass structures required | LOW<br>No relocations; wetland impact not calculated, but similar to Tight Diamond and Partial Offset Diamond | NO<br>Does not address traffic operations problems; highest cost alternative; eastbound to southbound turning movements are not improved |

*Note: All build alternatives include TSM/TDM measures.*

| Alternatives | Key Purpose and Need Factors | | | | Other Factors | | Retain Alternative for Detailed Study? |
|---|---|---|---|---|---|---|---|
| | Addresses Design Deficiencies? | Improves Safety? | Addresses Future Traffic Demand? | Consistent with Regional Plan? | Relative Total Cost (construction, right of way acquisition) | Magnitude of Environmental Impacts | |
| **HIGHLAND ROAD (no existing interchange at this location)** | | | | | | | |
| No Access | NA | NA | YES<br>Increased travel demand on local roads | NO<br>SEWRPC would need to update the long-range plan to account for no access | LOW<br>No interchange constructed | LOW/MODERATE<br>No relocations; 2.1 acres wetland impacts associated with I-43 mainline reconstruction; increased congestion and impacts at Port Washington Road/Mequon Road intersection | YES<br>No interchange would be constructed without a local cost-share agreement |
| Tight Diamond | YES<br>Would meet current design standards | YES<br>Building to current design standards maintains safety | YES<br>Interchange operates acceptably; accommodates travel demand | YES | MODERATE<br>Retaining walls required; right of way impacts | LOW/MODERATE<br>No relocations; 5.4 acres wetland impacts | YES *(Preferred Alternative)*<br>Alternative conforms to regional plans by creating a full interchange at this location; helps manage future traffic demand at Port Washington Road intersections with Mequon Road and County C; local support indicated at public meetings |
| **COUNTY C INTERCHANGE** | | | | | | | |
| Spot Improvements | NO<br>Deteriorated pavement not replaced. Substandard design and shoulders not improved | YES<br>(spot locations)<br>Ramp improvements create safer entrance/exit operations | NO<br>Does not address operational problems at ramp terminals | NO<br>SEWRPC recommends interchange reconstruction to improve ramp geometry and traffic operations | LOW<br>Structure replacement likely due to age | LOW<br>No relocations; wetland impacts not calculated, but lower than Diamond interchange | NO<br>Does not address design deficiencies or future traffic demand; limited improvement of safety issues; not consistent with regional transportation plans |
| Diamond | YES<br>Addresses design deficiencies | YES<br>Addresses safety issues related to design deficiencies and traffic operations | YES<br>Interchange operates acceptably | YES<br>Addresses geometry deficiencies and traffic operations problems | LOW<br>Structure replacement and right of way impacts | MODERATE<br>No relocations; 5.9 acres wetland impacts; includes 0.01 acre ADID wetland impact | YES *(Preferred Alternative)*<br>Maintains existing interchange configuration but improves traffic operations at ramp terminals |

*Note: All build alternatives include TSM/TDM measures.*

# 3. EXISTING CONDITIONS, ENVIRONMENTAL IMPACTS AND MEASURES TO MITIGATE ADVERSE EFFECTS

Section 3 discusses the anticipated effects on environmental characteristics, both natural and man-made, of the I-43 North-South Freeway study corridor. The section is organized by resource, and it includes background information on the resource and anticipated impacts of both the No-Build Alternative and build alternatives. Conceptual mitigation measures that minimize effects are also discussed for cases in which study alternatives cannot avoid adverse effects to resources. A description of the No-Build Alternative is found in **Subsection 2.2.1**. The build alternatives, which include the identified preferred alternatives, carried forward for detailed study in Section 3 are described in **Subsection 2.8** and summarized below. The preferred alternative is underlined for the mainline segments and interchanges.

- **I-43 Mainline South Segment (Silver Spring Drive to Green Tree Road):** Modernization – 6 Lanes (Mainline Shifted East); includes reconstructing the Jean Nicolet Road and widening Port Washington Road from two to four lanes
- **I-43 Mainline North Segment (Green Tree Road to WIS 60):** Modernization – 6 Lanes; additional lanes added inside median
- **Good Hope Road interchange:** Tight Diamond
- **Brown Deer Road interchange:** Diverging Diamond and Tight Diamond
- **County Line Road interchange:** No Access, Partial Diamond and Split Diamond Hybrid (Grade Separation and Without Grade Separation subalternatives)
- **Mequon Road interchange:** Tight Diamond
- **Highland Road:** No Access and Tight Diamond
- **County C interchange:** Diamond

The discussion of existing conditions, impacts and mitigation measures is arranged by the following topics:

- Land use
- Transportation
- Residential development
- Commercial and industrial development
- Institutional/public services
- Socioeconomics (including environmental justice)
- Utilities
- Agricultural resources
- Visual character
- Water resources
- Environmental corridors and natural areas
- Floodplains and hydraulics
- Wetlands
- Threatened and endangered species
- Other natural resources
- Noise
- Air quality
- Hazardous materials
- Historic sites
- Archaeological resources
- Recreational resources
- Construction
- Indirect and cumulative effects

The exhibits in **Appendix A** illustrate the build alternatives and environmental resources in the study corridor. **Subsection 3.22** considers the indirect effects of the study as well as cumulative effects resulting from the proposed build alternatives when added to other past, present and reasonably foreseeable future actions.

# 3.1. LAND USE

## 3.1.1. Geographic Setting

The I-43 North-South Freeway study corridor is located in Milwaukee and Ozaukee counties in Wisconsin. Communities adjacent to the corridor are listed in **Table 3-1**. See also **Exhibit 3-1** and **Exhibit 3-2**.

**Table 3-1: Study Corridor Communities**

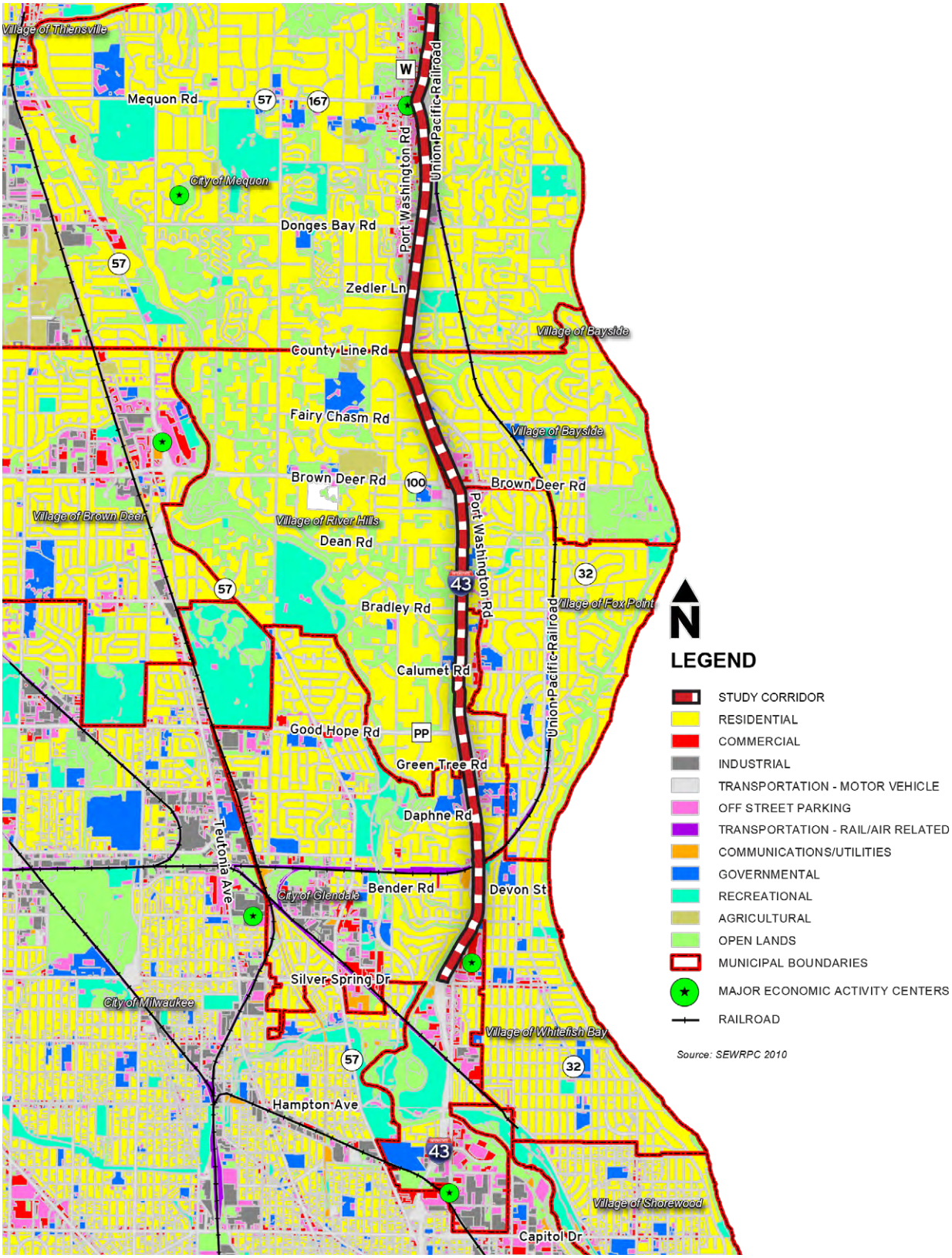
| Milwaukee County | Ozaukee County |
|---|---|
| City of Glendale | City of Mequon |
| Village of Whitefish Bay | Town of Grafton |
| Village of River Hills | Village of Grafton |
| Village of Fox Point | |
| Village of Bayside | |

Geographically, the study corridor lies just west of Lake Michigan and directly east of a subcontinental divide between the Mississippi River and Great Lakes drainage basins. The glaciated topography in the study corridor has elevations ranging from about 640 feet above sea level near Silver Spring Drive to about 740 feet above sea level near the village of Grafton. The topography is level to gently rolling.

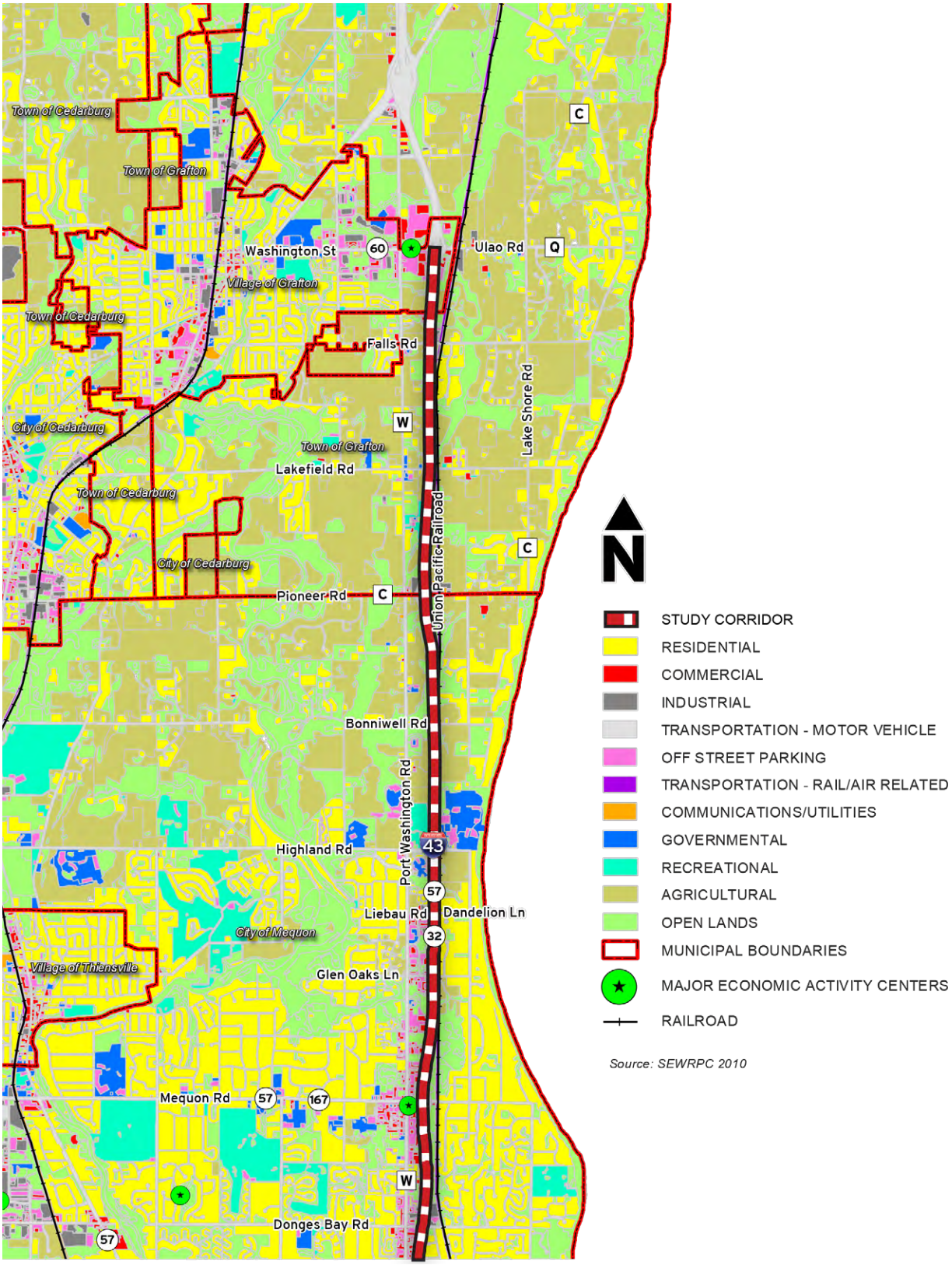
## 3.1.2. Existing Land Use

Existing land use in the study corridor ranges from urban/suburban residential and commercial development to undeveloped and agricultural land. The following subsections describe the different types of land uses in the study corridor. **Exhibit 3-1** and **Exhibit 3-2** present existing land use maps for the study corridor. The following subsections provide information about the land uses in the study corridor. See **Subsection 3.22** for a discussion about regional land use trends.

## Exhibit 3-1: Existing Land Use – South Segment



## Exhibit 3-2: Existing Land Use – North Segment



## MILWAUKEE COUNTY

Existing land uses are accessible to I-43 via interchanges at Silver Spring Drive, Good Hope Road, Brown Deer Road and County Line Road. Between these interchanges, the eastbound and westbound movement across I-43 is limited to the Devon Street/Bender Road underpass, the Green Tree Road overpass, and one pedestrian access tunnel under I-43 located to the south of Green Tree Road. The Union Pacific (UP) Railroad crosses over I-43 near the south end of the study corridor.

All of the communities along the the Milwaukee County portion of the study corridor are well-established with very few areas of undeveloped land (**Exhibit 3-1**). Residential land use abuts much of the west side of I-43 and large portions of the east side. Commercial development is primarily clustered near freeway interchanges and along Port Washington Road, which runs parallel along the east side of I-43 in Milwaukee County. There is a regional shopping mall – Bayshore Town Center – at the Silver Spring Drive/Port Washington Road intersection. A commercial node is also present east of I-43 at the Port Washington Road/Brown Deer Road intersection that contains regional and local-scale establishments. Other smaller commercial nodes are present at several arterial street crossings with Port Washington Road to the east of I-43, including Green Tree Road, Calumet Road and Bradley Road. No industrial areas are located adjacent to the freeway.

Parks and open space near the I-43 study corridor in Milwaukee County include Craig Counsell Park and the recreational fields at Nicolet High School and Maple Dale Middle School. In addition to Nicolet High School, other large institutional land uses are the North Shore Water Treatment Plant, which occupies a large parcel at the south end of the study corridor just west of I-43 and north of Bender Road, and Cardinal Stritch University, which is just east of Port Washington Road to the east of I-43, between Daphne Road and Green Tree Road.

## OZAUKEE COUNTY

Exiting land uses are accessible to I-43 via interchanges at County Line Road, Mequon Road, County C and WIS 60. Access across I-43 is available via Port Washington Road, Donges Bay Road, Highland Road, Lakefield Road and Falls Road. Also, unique to this area is the UP Railroad corridor, which parallels the east side of I-43 between Donges Bay Road and WIS 60.

North of the Milwaukee/Ozaukee county line, land use is primarily suburban in nature, continuing north to roughly Highland Road (**Exhibit 3-2**). Suburban residential uses are primarily low-density and single-family, and generally located at a distance from I-43. North of Highland Road, suburban-type development gives way to largely agricultural, rural residential and open space lands up to WIS 60 in the village of Grafton. Lands surrounding the WIS 60 interchange in the village of Grafton are undergoing continued suburban-type commercial development.

Commercial properties are located along the Port Washington Road corridor to the north and south of Mequon Road in the city of Mequon. The back sides of the properties abut the west side of I-43. Commercial uses are also located around the WIS 60 interchange in the village of Grafton. No industrial areas are located adjacent to the corridor.

Ozaukee County has a number of wetlands and streams associated with Ulao Creek and numerous tributaries of the Milwaukee River, many of which comprise environmental corridors and natural areas. Local and regional plans designate the natural areas as primary and secondary environmental corridors worthy of preservation. For example, a primary environmental corridor crosses I-43 south of the County C interchange, along with some secondary environmental corridors north of the same interchange (see **Subsection 3.14.1** for detailed descriptions of environmental corridors).

Another natural area near I-43 is the Milwaukee Metropolitan Sewerage District's (MMSD) Greenseams property, located northeast of the Mequon Road interchange. This 84-acre open area is designated by Ozaukee County as an "isolated natural resource area," denoting its local importance.

Public parks nearby include the Katherine Kearny Carpenter public park, which is east of I-43 and south of Zedler Lane. Concordia University, in the northeast quadrant of the Highland Road crossing of I-43, is a large institutional use along I-43. Two large hospitals are also in the study area: Columbia St. Mary's on Port Washington Road north of Highland Road, and Aurora Medical Center near the northwest quadrant of the WIS 60 interchange.

## 3.1.3. Future Land Use

Land use planning is carried out at the regional and local levels. This subsection summarizes additional regional and local planning efforts relevant to study corridor.

All of the communities through which I-43 travels have adopted comprehensive plans in conformity with Wisconsin's Comprehensive Planning Law.[1] These plans contain each community's vision for future land use.

### MILWAUKEE COUNTY

**Table 3-2** lists existing community plans within the Milwaukee County section of the study corridor. Milwaukee County does not have an adopted countywide comprehensive plan because each community has its own plan. Other county-level plans serve to guide local governments to preserve existing resources and maintain efficient land use patterns. The park and open space plan reinforces preserving critical open space and natural areas in a heavily urbanized setting by identifying existing parks, environmental corridors and open space features. The park and open space plan recommends certain acquisition and development activities; however, no major acquisition or development activities are proposed along the I-43 North-South Freeway study corridor.

All of the communities along the corridor in Milwaukee County are built out. Their plans consequently concentrate on the continued maintenance and improvement of the built environment, as well as infill and redevelopment opportunities that may present themselves as market demand allows.

**Table 3-2: Milwaukee County Community Land Use and Planning Documents**

| Community | Plan Document | Plan Adoption Year |
|---|---|---|
| City of Glendale | *City of Glendale Smart Growth Update* as relates to the comprehensive plan, city of Glendale and amendments thereto; series of subarea plans | 2011 |
| Village of Bayside | *Village of Bayside: Comprehensive Plan* | 2009 |
| Village of Fox Point | *Village of Fox Point Comprehensive Plan* | 2010 |
| Village of River Hills | *Village of River Hills Comprehensive Plan* (Draft No. 2) | 2009 |
| Milwaukee County | *A Park and Open Space Plan for Milwaukee County* | 1991 |

*Sources: Community websites, Wisconsin Department of Administration and Southeastern Wisconsin Regional Planning Commission*

[1] *s.66.101, Wisconsin State Statutes*

## OZAUKEE COUNTY

**Table 3-3** shows the existing community plans within the Ozaukee County section of the study corridor. **Exhibit 3-3** shows proposed land uses in Ozaukee County along the I-43 study corridor.

**Table 3-3: Ozaukee County Community Land Use Planning Documents**

| Community | Plan Document | Plan Adoption Year |
|---|---|---|
| Ozaukee County | *A Multi-Jurisdictional Comprehensive Plan for Ozaukee County: 2035* | 2008, amended 2009, 2013 |
| Ozaukee County | *A Park and Open Space Plan for Ozaukee County* (3rd Edition) | 2011 |
| Ozaukee County | *Land and Water Resource Management Plan 2011-2015* | 2011 |
| Ozaukee County | *A Farmland Preservation Plan for Ozaukee County: 2035* (Draft) | Pending |
| City of Mequon | *A 2035 Comprehensive Plan for the City of Mequon* | 2012 |
| Village of Grafton | *Village of Grafton Comprehensive Plan for 2035* | 2009 |
| Town of Grafton | *Town of Grafton Comprehensive Plan: 2035* | 2008, 2013 |

*Source: Community websites*

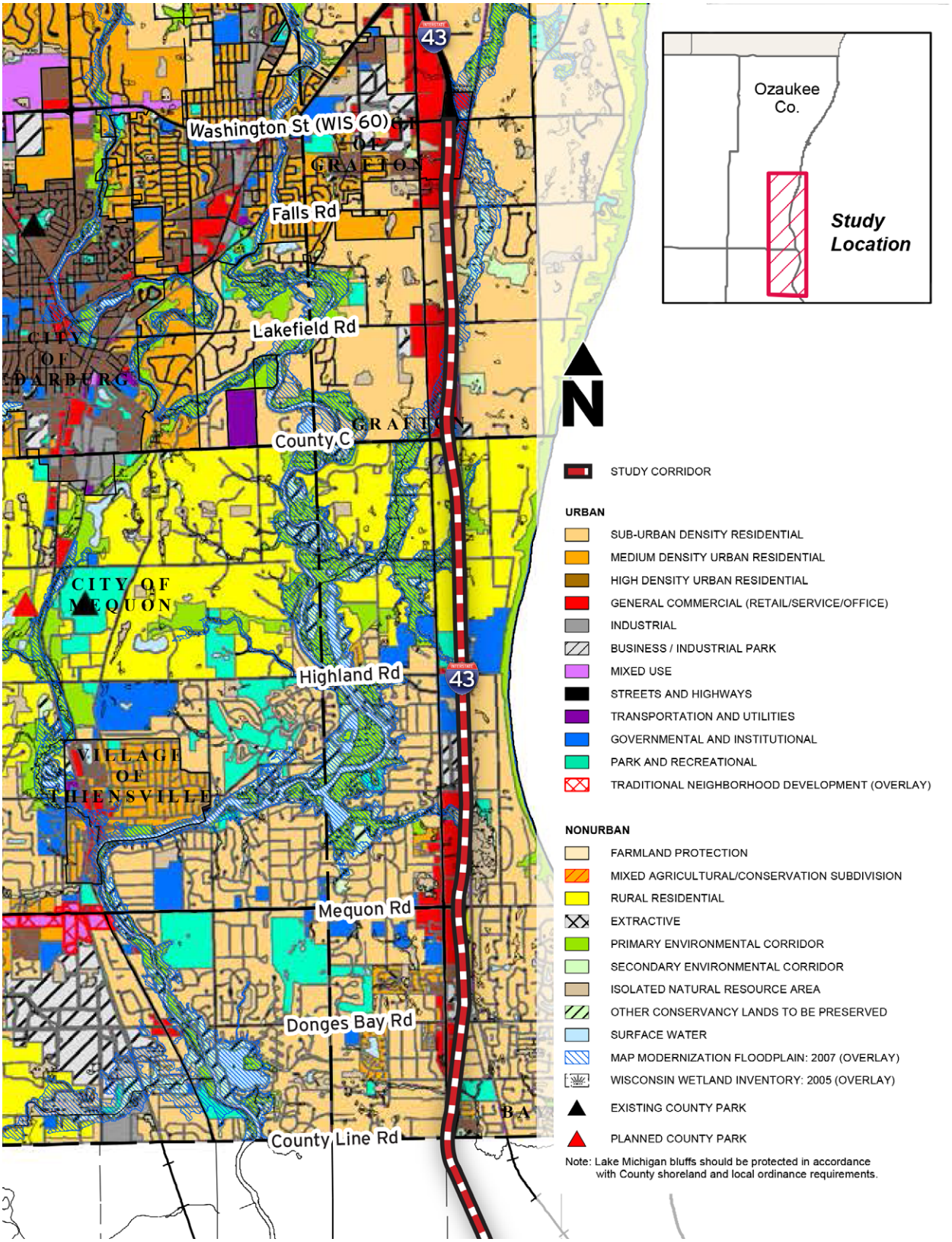
Beginning in 2004, 14 communities in Ozaukee County participated in a multijurisdictional planning process that resulted in an overall county plan and several individual plans for the participating communities. Within the I-43 study corridor, the town of Grafton, city of Mequon and village of Grafton participated in this cooperative planning effort. In conformity with Wisconsin's Comprehensive Planning Law, the adopted plans contain land use and transportation policies and future land use maps that indicate geographically where various types of land uses are desired. Ozaukee County has also prepared separate countywide planning documents for specific resources such as parks and open space and land and water resource management.

Applicable planning goals include: preserving and enhancing natural resources and agricultural land; preserving and enhancing the small-town character; and encouraging sustainable development for business and residential uses.

Ozaukee County wants to maintain and enhance new transportation routes that relieve congestion and reduce fuel consumption and air pollution. The county also supports a range of transportation choices. Adopted transportation goals include: providing an integrated; efficient and economical transportation system that affords mobility; convenience and safety; maintaining a street and highway system that efficiently serves the anticipated land use development pattern; and providing for a public transportation system in Ozaukee County that efficiently serves the anticipated land use development patterns. In addition, the plan calls for improved transportation access to Ozaukee County for passengers and freight. The Ozaukee County plan recommends a new interchange at I-43 and Highland Road, which is consistent with *Planning Report No. 49: A Regional Transportation System Plan for Southeastern Wisconsin: 2035* by the Southeastern Wisconsin Regional Planning Commission (SEWRPC) (**Subsection 1.3.4**). Within the I-43 North-South Freeway study corridor, the Ozaukee County plan recommends expanding the existing park-and-ride lot at County C, and adding a new lot in the vicinity of the Mequon Road interchange. This would increase the capacity of park-and-ride lots served by public transit.

The Ozaukee County plan encourages land use development patterns that are served by existing transportation corridors such as I-43. It recommends that local plans be prepared to consider land

## Exhibit 3-3: Ozaukee County Proposed Future Land Use



uses strategies around the I-43 interchanges. The plan encourages infill development that can be efficiently and effectively supported by public sanitary sewerage and water supply. Future land use plans show that the areas surrounding I-43 interchanges and along Port Washington Road are ultimately intended for development and not for agricultural preservation.

As reported in Ozaukee County's comprehensive plan, there is a demand for additional land to accommodate urban land uses at the same time that demand for agricultural land uses is diminishing. Local communities in Ozaukee County, including Mequon, the town of Grafton and the village of Grafton, have land use plans in place to ensure that growth occurs in an efficient pattern and can be served by existing public services.

The city of Mequon's land use plan shows that the area north of Highland Road is expected to be mostly low-density residential with a lot size minimum of 5 acres. However, the city is considering the implementation of an "East Growth Area" that would allow urban land uses west of the freeway, east of the Milwaukee River, south of County C and north of Highland Road. The area east of the freeway would not be affected by the East Growth Area plan. If implemented, the East Growth Area would contain primarily residential land uses between Port Washington Road and the Milwaukee River and a mixture of commercial, industrial and multifamily uses to the east of Port Washington Road. Retail nodes could be located at the intersections of Port Washington Road with County C and Highland Road. Several local actions will be required to implement the East Growth Area plan, including an extension of the sewer service area and a change in the zoning code.

The town of Grafton plans commercial land uses along both sides of the I-43 corridor, from the County C interchange north about a mile to the Lakefield Road underpass. Much of the town is currently in agricultural and open space uses, but is planned for future suburban-density residential uses. The town recently changed the areas zoned for 3-acre lots to 1-acre lots to encourage residential growth. Expansion of existing commercial areas is also planned near Falls Road and the WIS 60 interchange.

At the northern end of the study corridor, the village of Grafton has extended its sewer service area into undeveloped lands to accommodate commercial and mixed-use types of development around the WIS 60 interchange. Commercial development is planned for the village of Grafton's extraterritorial areas along both sides of the I-43 corridor in the town of Grafton.

## 3.1.4. Regional Planning

There are a number of regional plans that influence both regional and local land use and that address specific planning elements such as natural resources, bike and pedestrian access, transportation and water management. **Subsection 1.3.4** discusses the regional land use in a transportation planning context, which establishes a key need to study improvements in the I-43 North-South Freeway study corridor.

## 3.1.5. Land Use Impacts

### DIRECT LAND USE CHANGES

**Appendix A** shows potential new right of way required for build alternatives along the I-43 North-South Freeway study corridor. The following subsections describe the land uses that would be directly converted to highway right of way.

### NO-BUILD ALTERNATIVE

Under the No-Build Alternative, no lands would be acquired and no land uses would change as a result of highway right of way acquisition. However, the No-Build Alternative would not be consistent with SEWRPC long-range regional land use and transportation plans, and it would not meet the study purpose and need. This is further discussed in **Subsection 3.1.6**.

### BUILD ALTERNATIVES

The build alternatives would reconstruct the I-43 North-South Freeway study corridor and would acquire up to 28.3 acres of land, including partial acquisitions and relocations. These acquisitions are needed to accommodate proposed safety and operations improvements such as widening the mainline; interchange reconstruction; and a new interchange at Highland Road. Depending on the alternative chosen, about 13.9 to 14.2 acres in Milwaukee County and up to 14.1 acres in Ozaukee County would be acquired. Three commercial relocations and up to 12 residential relocations would be needed, which would change the land use of all or portions of those particular lots. The effects of these relocations are discussed in more detail in **Subsection 3.3** and **Subsection 3.4.**

In Milwaukee County, acquisitions would be a mix of denser residential and commercial land uses. Strip acquisitions at the North Shore Water Treatment Plant, Craig Counsell Park and Nicolet High School would convert institutional, park and government land uses to road right of way. Much of the direct land use conversion occurs between Bender Road and Coventry Court, where the build alternative widens and shifts I-43 and Port Washington Road reconstruction to the east into commercial and residential areas. Residential strip right of way acquisitions are primarily located around interchange reconstruction at Good Hope Road, Brown Deer Road and County Line Road. Right of way constraints north of Brown Deer Road require strips of commercial and residential land uses primarily on the east side of I-43. The No Access alternative at the existing County Line Road interchange would require strip right of way to reconstruct the Port Washington Road/Brown Deer Road intersection to accommodate traffic (see Sheet 5A of **Appendix A**).

In Ozaukee County, the acquisitions would be primarily a mix of less dense residential, commercial, agricultural and open space land.

Reconstructing the I-43 mainline in Ozaukee County would primarily involve widening the roadway into the existing median, which minimizes right of way impacts to adjacent land uses along the study corridor. The build alternatives would require strip right of way acquisition from commercial land uses on the west side of I-43, between Mequon Road and Highland Road, and from the railroad right of way on the east side. North of Highland Road, highway reconstruction would require strip acquisitions from mainly agricultural uses.

The Mequon Road Tight Diamond interchange would convert strips of commercial land to highway right of way in the southwest interchange quadrant. In the northeast quadrant, a strip of vacant land (zoned for residential use) would be converted. In the southeast quadrant, the alternative acquires a commercial property. The Port Washington Road/Mequon Road intersection would be reconstructed, depending on whether a new interchange is built at Highland Road (see also **Subsection 3.2.2** and **Subsection 3.4.2**). If a new interchange is built, strip right of way would be acquired from commercial properties on the north and south sides of Mequon Road. If no interchange is built at Highland Road, the intersection would be enlarged and additional strip right of way is required from properties along Port Washington Road (see Sheet 9 of **Appendix A**).

The Highland Road Tight Diamond interchange alternative would convert railroad right of way to highway right of way on the southeast and northeast quadrants of the interchange. Residential land use at a senior citizen housing complex would be converted to highway right of way in the southwest corner of the interchange quadrant. The County C Diamond interchange alternative converts strips of vacant land (currently zoned for residential use) and existing agricultural land (zoned for future business use) to highway right of way.

## 3.1.6. Conformity with Local and Regional Plans

### NO-BUILD ALTERNATIVE

The No-Build Alternative would not be consistent with SEWRPC's transportation plans. SEWRPC recommends improvements to Southeast Wisconsin freeway system, which includes I-43, and the addition of a new interchange at Highland Road (**Subsection 1.3.4**). If the No-Build alternative is selected as a preferred alternative after the public hearing on the draft environmental impact statement (DEIS), SEWRPC would need to update its 2035 transportation plan and transportation improvement program (TIP) to account for the alternative.

### BUILD ALTERNATIVES

**Section 1** discusses the regional planning context for the I-43 North-South Freeway Corridor and the build alternatives are consistent with both regional land use and transportation plans that recommend freeway modernization and additional lanes. As with the No-Build Alternative, SEWRPC would need to update its long-range plan if the No Access alternative is the preferred alternative at Highland Road, or if either the Split Diamond Hybrid or No Access alternative is selected at County Line Road. The plan currently assumes a partial interchange at County Line Road, which is not consistent with the Federal Highway Administration's (FHWA) requirement that interchanges allow for all traffic movements.

As discussed in **Subsection 3.1.3**, communities along the I-43 study corridor have comprehensive land use plans, and all of these communities depend upon I-43 to provide access to and from their communities. Most of the communities cite their proximity to I-43 as an amenity or strength. The build alternatives generally conform to local plan goals and policies. Some communities do not have goals specifically related to I-43; however, many do. Relevant goals for communities in the I-43 North-South Freeway study corridor are summarized below.

The city of Glendale's *Smart Growth Update* does not specifically identify transportation goals and objectives related to I-43. The update does reference the city's competitive advantage due to its access to I-43. However, the update also notes that its *Vision Plan* cites concerns about future reconstruction, such as continued access; further loss of land uses to highway right of way; noise impacts and aesthetic impacts. A key component of the I-43 North-South Freeway Corridor Study has been to work closely with the city of Glendale and its neighborhoods to identify alternatives that best serve travel needs while also minimizing adverse effects to the surrounding community.

The village of Fox Point sees I-43 at the Brown Deer Road interchange as a primary gateway to the community and views the enhancement of this interchange as a priority. Regarding the widening of I-43, it is a stated goal to minimize noise and maximize benefits to the village. If the preferred alternative for the I-43 North-South Freeway Corridor Study advances into additional engineering phases, the Wisconsin Department of Transportation (WisDOT) would implement a formal community sensitive solutions (CSS) process to gather more input from local communities on aesthetic treatments in the corridor. **Subsection 3.15** discusses noise impacts

and potential mitigation measures in greater detail.

The village of Bayside recommends consistency for any road alignments and circulation improvements in its land use plan, which seeks to maintain the current predominant residential land use. The I-43 North-South Freeway Corridor Study build alternatives would not change land use in Bayside, and is therefore consistent with the village's plan.

Regarding I-43, the village of River Hills' plan expresses concern about traffic noise. One of the village's policies is to work with WisDOT to address traffic noise problems along I-43, especially if expansion occurs. The plan states that there are inconsistencies between the I-43 reconstruction and the village's comprehensive plan in this regard. According to WisDOT's noise analysis and policy, noise barriers do not meet the reasonableness criteria to be considered as a mitigation measure. **Subsection 3.15** discusses noise impacts in greater detail.

The city of Mequon will consider SEWRPC's policies regarding a new interchange at Highland Road and widening of I-43 from four to six lanes from the county line to WIS 57. The city seeks to maintain the commercial and industrial development patterns to encourage easy truck access to I-43. One of the city of Mequon's transportation policies is to discourage traffic congestion in the study corridor by considering interregional transportation facilities and services. This includes supporting Ozaukee County's efforts to promote interregional connections to passenger rail, bus service and General Mitchell International Airport. Improvements through the I-43 North-South Freeway Corridor Study build alternatives are expected to improve access to these services, consistent with Mequon's plan.

The town of Grafton seeks to strengthen business development at interchanges within the township to make these locations attractive to businesses (see also **Subsection 3.22** for additional discussion of indirect effects). The town plan supports collaboration with WisDOT on modifications to existing interchanges and on any new interchanges. The I-43 North-South Freeway Corridor Study build alternatives are compatible with these goals. The town's plan also recommends improvements to I-43 through the length of the town.

The village of Grafton's extraterritorial planning area extends to the areas surrounding the I-43 interchange at WIS 60 and along the I-43 mainline as far south as Lakefield Road. The village supports the study of integrated land use and states that transportation planning around the I-43 interchanges should incorporate the land use and development pattern set forth by the village. The village plan also discourages traffic congestion on I-43 and interchange areas including WIS 60. The I-43 North-South Freeway Corridor Study build alternatives are consistent with the village's plan. See **Subsection 3.22** for additional indirect and cumulative effects on land use.

Ozaukee County's plan is consistent with SEWRPC's plans to make the proposed improvements to I-43. Milwaukee County does not currently have a countywide comprehensive plan as communities in the county are well-established and have their own plans in place.

# 3.2. TRANSPORTATION SERVICE

## 3.2.1. Affected Environment

### TRANSIT

Transit services in the I-43 North-South Freeway study corridor includes a variety of local, express and school-year bus routes offered by Milwaukee County Transit System (MCTS), as well as intercity buses, paratransit and shared-ride taxi. Regular transit routes within the I-43 study corridor are shown on **Exhibit 3-4** and described below:

- **Ozaukee Express (Route 143):** This route travels along I-43 between downtown Milwaukee and Port Washington (north of the study corridor) and serves park-and-ride lots and other designated stops in the study corridor. The service is provided during the weekday in both directions.
- **Freeway Flyer (Route 49):** The Brown Deer-Northshore Flyer is a weekday service between downtown Milwaukee and the village of Brown Deer, just west of the study corridor. The route includes stops along I-43 near the Brown Deer Road and Silver Spring Drive interchanges.
- **UBUS:** Two UBUS routes serve the study corridor during the fall and spring semesters. The Brown Deer UBUS (Route 49U) runs from the Downtown Transit Center to the Milwaukee Area Technical College (MATC) Mequon campus. The route connects several major destinations including MATC's downtown campus, the University of Wisconsin-Milwaukee, Bayshore Town Center, Concordia University, and MATC's Mequon campus. The Sixth Street-Port Washington Road UBUS (Route 42U) runs from MATC's Mequon campus on Highland Road to downtown Milwaukee using I-43 between Good Hope and Brown Deer roads. The route connects several major college and universities, including MATC's Mequon campus, Concordia University, Cardinal Stritch University and MATC's downtown campus.
- **Regular MCTS routes:** In addition to routes using I-43, MCTS also operates several routes that parallel or cross I-43 (**Exhibit 3-4**), including Routes 63, 10 and 15, which serve local and suburban riders in the Milwaukee metropolitan area.

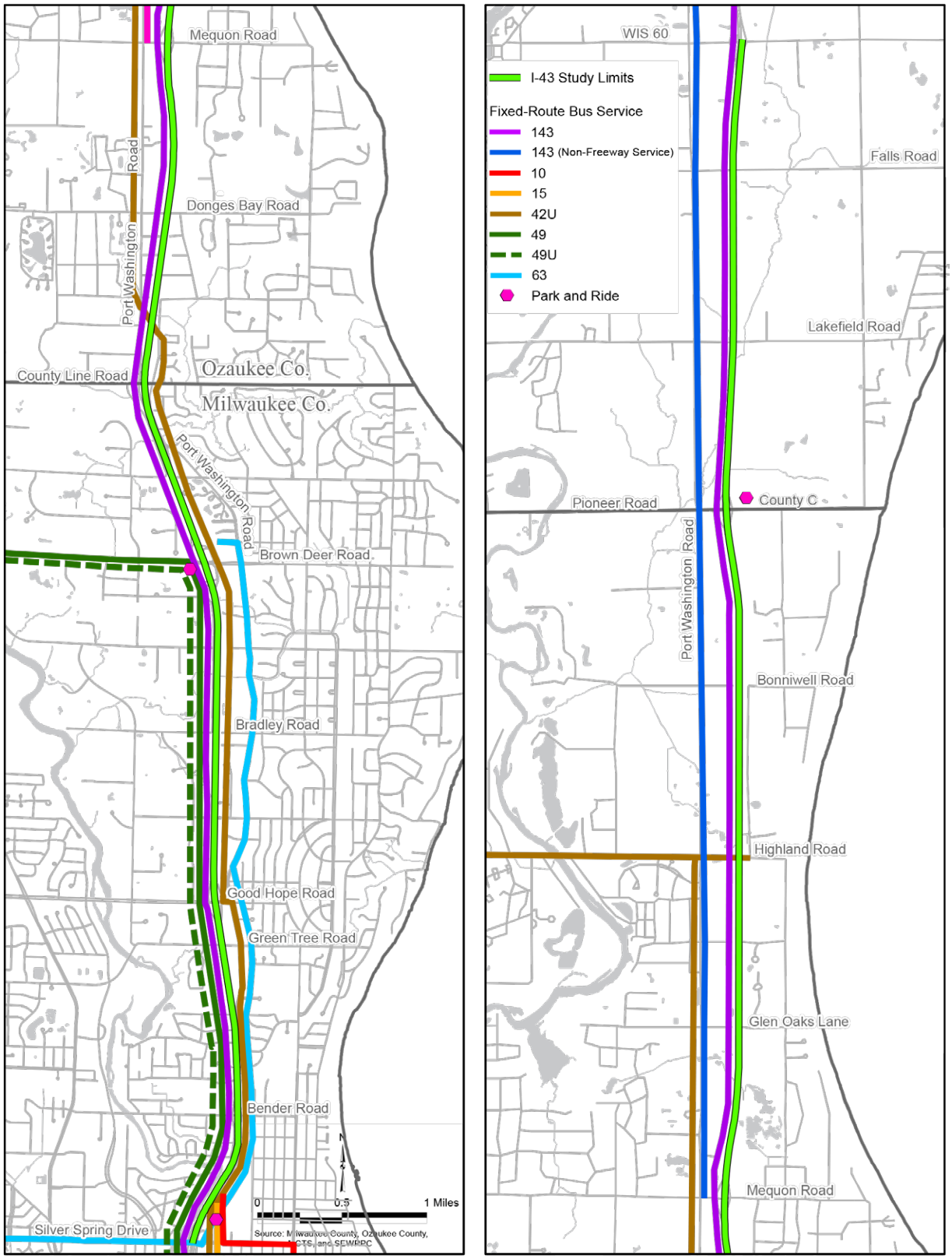
In addition to fixed-route bus service, MCTS also provides paratransit (Transit Plus) for people who are elderly, have disabilities or who have conditions that prevent them from using MCTS. Also, as part of its public transportation program, Ozaukee County offers shared-ride taxi service. Trips using the taxi service can be arranged in advance through a dispatch service.

Indian Trails, Jefferson Lines, Lamers, and Greyhound bus companies use the study freeway to provide bus service. None of these bus lines have stops along the study corridor.

### PARK-AND-RIDE FACILITIES

Three park-and-ride lots are located at interchanges along the study corridor (**Exhibit 3-4**). In Milwaukee County, there are two park-and-ride lots: one at Silver Spring Drive in Glendale that has 105 parking spots and another at Brown Deer Road in River Hills that has 358 parking spots. In Ozaukee County, the park-and-ride lot at County C has 99 parking spots. All of these lots serve as bus stops, and the Milwaukee County lots also provide bike parking. Staff from Ozaukee County stated that there is demand for additional capacity at County C as evidenced by the recent addition of a gravel overflow lot. SEWRPC's 2035 regional transportation plan recommends adding a park-and-ride lot in the vicinity of the Mequon Road interchange.

## Exhibit 3-4: Transit Routes and Park-and-Ride Lots in the Study Corridor



## RAIL SERVICE

The UP Railroad provides freight services through the study area. The rail line crosses over the study corridor just north of Bender Road and runs parallel just east of the freeway throughout Ozaukee County. Railroad crossings are located in close proximity (about 250 feet) to existing interchange ramp termini at Mequon Road and County C. The existing Highland Road structure crosses over the UP Railroad. Several additional local arterial road (at-grade) crossings with the UP Railroad are also located in close proximity (within 250 feet) of I-43 in Ozaukee County at Donges Bay Road, Lakefield Road and Falls Road. The UP Railroad line terminates just north of Manitowoc, WI, about 60 miles north of the study corridor.

## HIGHWAYS AND LOCAL STREETS

I-43 is the major north-south roadway in the corridor. East-west state highways that cross the study corridor are Brown Deer Road (WIS 100) in Milwaukee County, and Mequon Road (WIS 57/WIS 167) and WIS 60 in Ozaukee County. State highways near the corridor that run parallel to I-43 include WIS 57 and WIS 32, which are also partially co-located within the study corridor. Other crossroads that intersect I-43 are shown in **Exhibit 1-1** in **Section 1**.

I-43 and WIS 100 (Brown Deer Road) are designated as primary oversize-overweight vehicle routes. Vehicles that are larger and/or heavier than statutory limits must secure a permit to use the facilities.

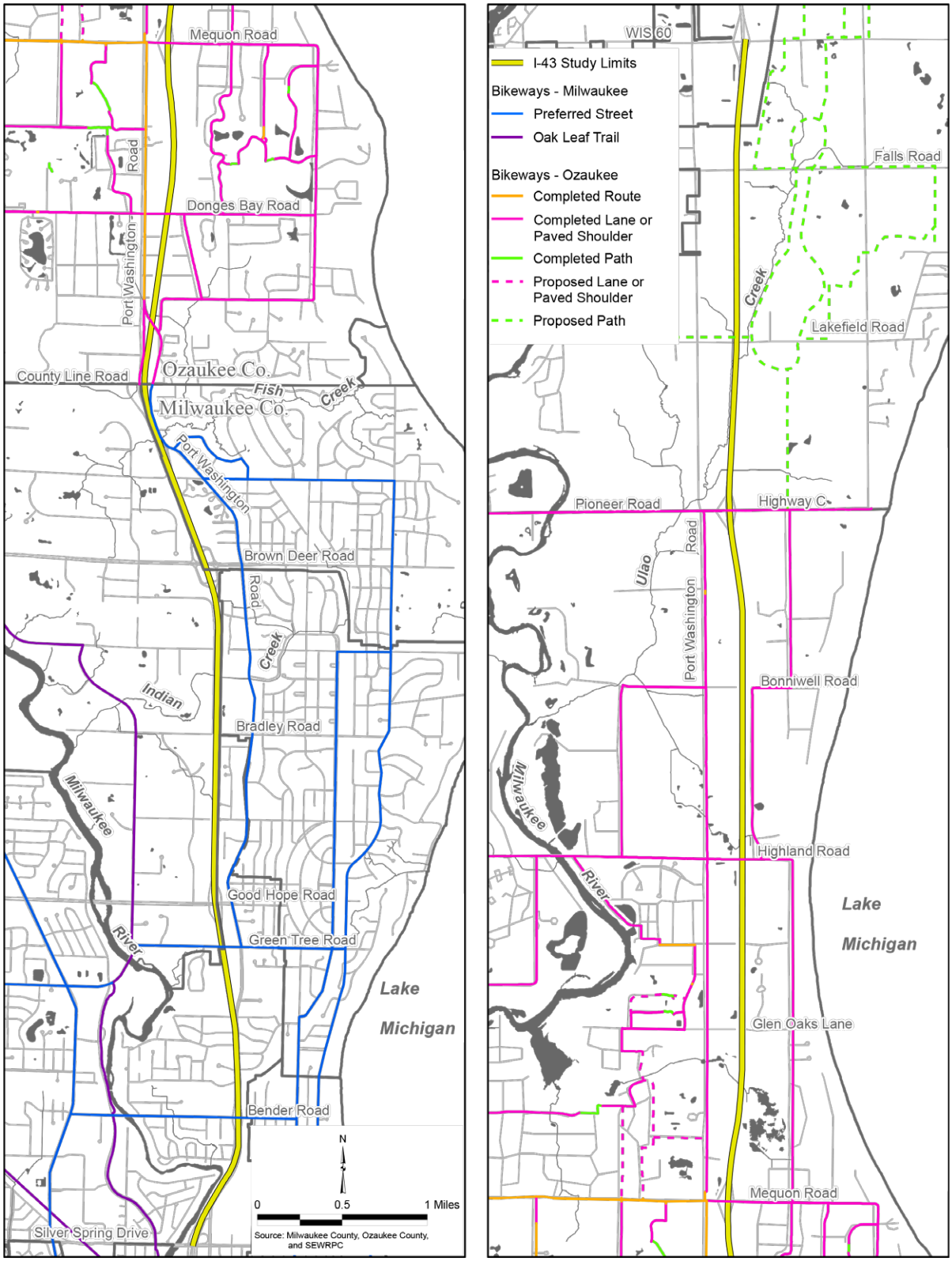
Port Washington Road serves as a frontage road on the east side of I-43 from Silver Spring Drive to Daphne Road in Milwaukee County. Port Washington Road is a local street south of Green Tree Road and a county highway (County W) north of Green Tree Road. From Montclaire Avenue to Green Tree Road, Jean Nicolet Road serves as a frontage road on the west side of I-43. The Port Washington Road/Good Hope intersection and the Port Washington Road/ Mequon Road intersection are in close proximity to the I-43 interchange ramp intersections with Good Hope Road and Mequon Road.

The only currently planned work in the corridor area is a resurfacing of I-43 from Silver Spring Drive to WIS 32 in 2014.

## BICYCLE AND PEDESTRIAN FACILITIES

Bicycling is not permitted on the study freeway; however, biking is permitted on surrounding local roads as well as the county and state highways in the study area (**Exhibit 3-5**). Some of these roads have striped or signed bike lanes. Sidewalks are present on some local streets that cross the study corridor.

## Exhibit 3-5: Bikeways in the Study Corridor



## 3.2.2. Impacts to Transportation

### MASS TRANSIT

#### NO-BUILD ALTERNATIVE

The No-Build Alternative would not directly affect mass transit services. However, continued deterioration of pavement and ongoing safety and congestion issues would not be addressed in the study corridor, which could reduce travel reliability.

#### BUILD ALTERNATIVES

The build alternatives would not directly affect any transit routes; all could continue to provide service along their existing routes. However, addressing deficiencies, safety issues and congestion would improve travel reliability. Local arterial street traffic volumes may be lower under the build alternatives, as some trips along the arterials may shift to the freeway, which may improve bus transit service. Streets that carry local bus service may be closed during construction, which would require a detour (**Subsection 3.21**).

The build alternatives would continue to serve existing park-and-ride lots in the study corridor, and could accommodate a future park-and-ride facility in Ozaukee County, potentially at a new interchange at Highland Road. The build alternatives would similarly improve travel reliability for intercity bus transit services.

### RAIL SERVICE

Under the build alternatives, the UP Railroad bridge that crosses over I-43 north of Bender Road would be replaced with a longer bridge to accommodate wider roadways. This new bridge would be rebuilt about 50 feet north of the existing structure.

The UP Railroad runs parallel to I-43 in Ozaukee County. The build alternatives would affect several crossings. The railroad crosses Mequon Road and County C about 250 feet east of the northbound interchange ramps. The build alternatives would reconstruct the Mequon Road and County C railroad crossings to better match the railroad profiles. Signal timing at both interchanges would be adjusted to avoid traffic queues across the railroad crossing. The potential Highland Road interchange includes a new bridge over the UP Railroad tracks that parallel I-43, about 150 feet to the east. The interchange includes retaining walls to avoid impacting the railroad corridor. Reconstructing the Donges Bay Road and Falls Road overpasses would also reconstruct the railroad crossing.

### HIGHWAY TRAFFIC AND OPERATIONAL CHARACTERISTICS

This section compares the No-Build Alternative with the build alternatives with respect to how traffic would flow on I-43, or how the freeway would operate. Level of service (LOS) is a key descriptor to measure traffic flow, and is explained in **Subsection 1.3.3** and illustrated in **Exhibit 1-12**. The following discussion focuses on traffic in the morning and afternoon peak hour in year 2040 because that represents the highest anticipated traffic volumes.

#### NO-BUILD ALTERNATIVE

Under the No-Build Alternative, the congestion described in **Subsection 1.3.3** would occur by 2040. Most segments of the corridor study area would operate at LOS E or F either in the morning or afternoon peak hour, or both.

### BUILD ALTERNATIVES

The build alternatives would improve traffic flow compared to the No-Build Alternative. The corridor study area would generally operate at level of service D or better during the morning and afternoon peak hour in 2040 (**Exhibit 3-6** and **Exhibit 3-7**). No freeway segment would operate at a level of service F. The build alternatives would continue to allow oversize/overweight vehicles on existing designated routes.

The No Access alternative at County Line Road would remove the existing interchange. As a result, more traffic would divert to the Brown Deer Road and Mequon Road interchanges, primarily via Port Washington Road. Similarly, the No Access alternative at Highland Road would divert traffic to the Mequon Road and County C interchanges. The proposed build alternatives at the Brown Deer Road, Mequon Road and County C interchanges could accommodate traffic under the No Access alternatives.

The No Access alternatives at the County Line Road interchange and Highland Road would require changes to local intersections with Port Washington Road as discussed under “Local Roads” subsection below.

## FREEWAY ACCESS CHANGES

### NO-BUILD ALTERNATIVE

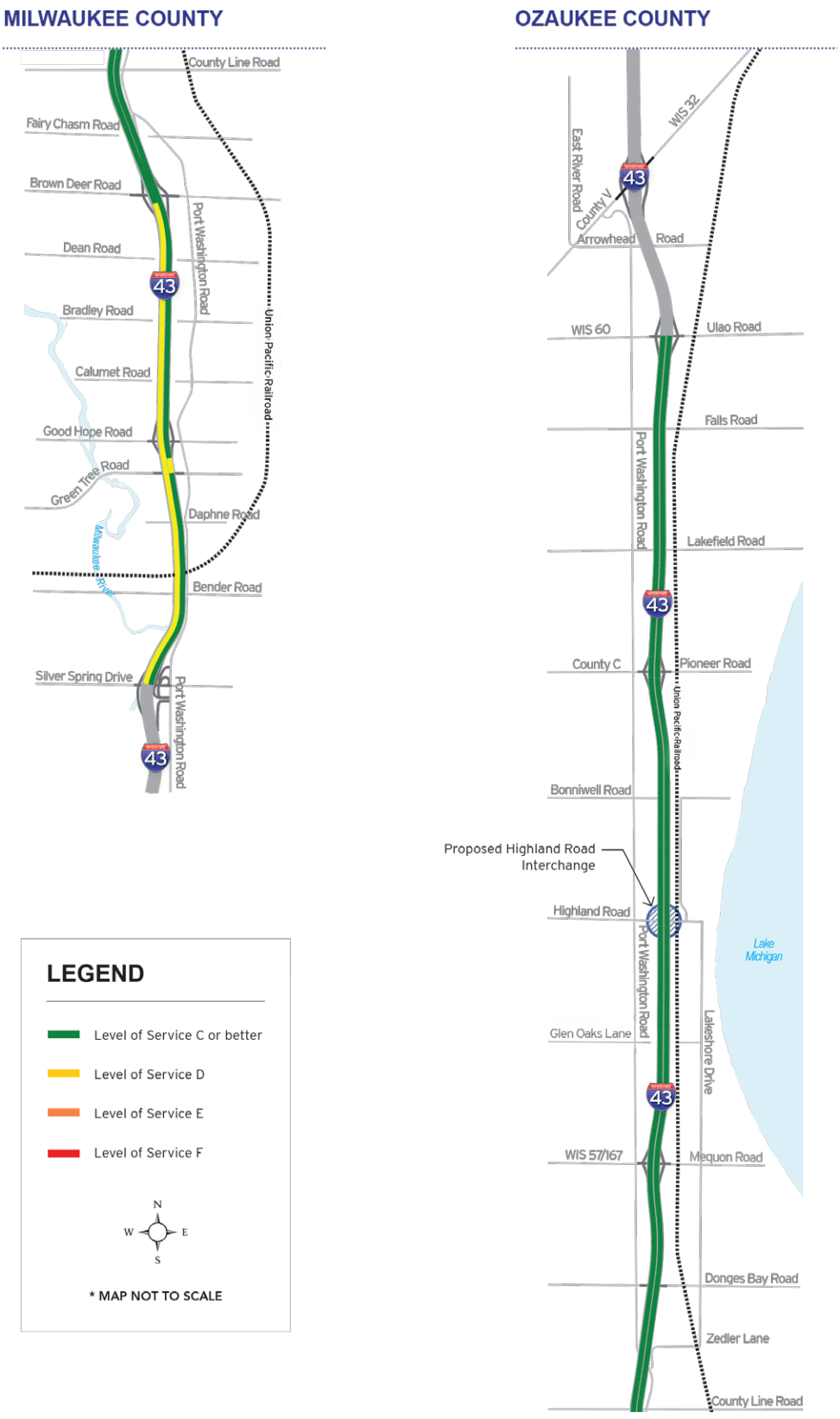
Freeway access will not change under the No-Build Alternative.

### BUILD ALTERNATIVES

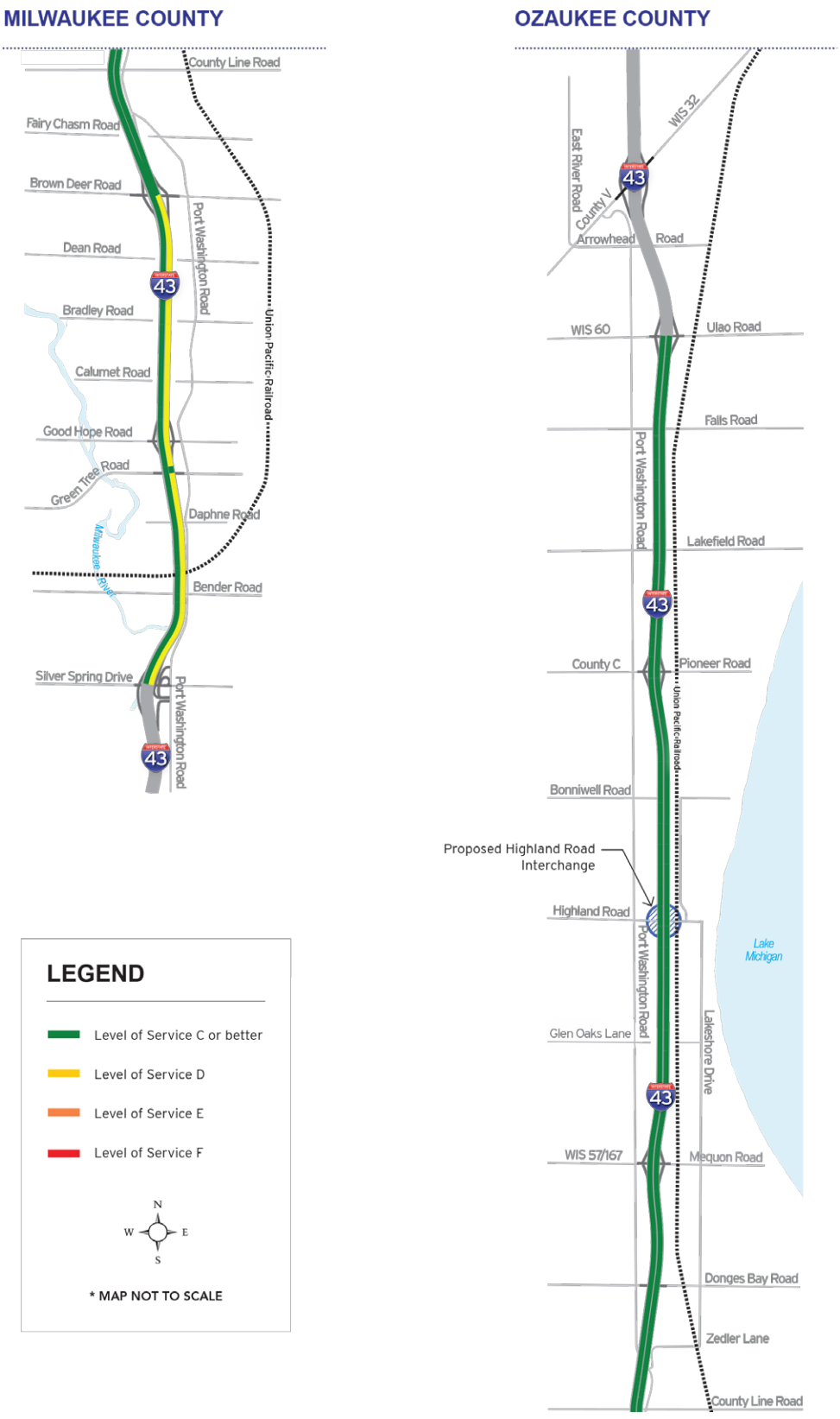
The build alternatives would possibly change freeway access at County Line Road and Highland Road. FHWA policy and regulation stipulates that newly constructed interchanges shall provide for full access. Therefore, replacing partial access is generally not desirable and would require an exception from FHWA. Under the Partial Interchange alternative, access to and from the south would be maintained. Under the Split Diamond Hybrid alternative, all traffic movements are allowed with the addition of northbound entrance and southbound exit ramps. Under the No Access alternative at County Line Road, the existing interchange would be removed and there would be no access to the local street network at this location. Traffic would divert to the Brown Deer Road or Mequon Road interchanges for access to and from I-43.

A new interchange at Highland Road would add full access to and from I-43. The decision to construct the interchange is contingent upon approval from FHWA and a local cost-share agreement with the city of Mequon.

## Exhibit 3-6: 2040 Build Alternatives A.M. Peak Travel Hours Level of Service



## Exhibit 3-7: 2040 Build Alternatives P.M. Peak Travel Hours Level of Service



## LOCAL ROADS

Local road access would largely remain similar under the No-Build Alternative and build alternatives, except as discussed below.

### NO-BUILD ALTERNATIVE

The No-Build Alternative would divert additional freeway traffic onto local streets, including Port Washington Road, during morning and afternoon peak hours because the study corridor would not have the capacity to handle the anticipated traffic volumes.

### BUILD ALTERNATIVES

Under the build alternatives, traffic modeling indicates that some traffic currently diverting to local streets due to congestion will return to I-43. The Split Diamond Hybrid alternative at the County Line Road interchange would provide full access to I-43, which would also redirect traffic from the local street network system. Under both the Split Diamond Hybrid subalternatives, Katherine Drive would still access Port Washington Road, but with slightly more indirection with the grade separation subalternative. The grade separation subalternative moves the Katherine Drive/Port Washington Road intersection about 900 feet further south of the existing intersection. The Split Diamond Hybrid (without Grade Separation) subalternative will require traffic to access the northbound entrance ramp via Katherine Drive.

The Partial Diamond alternative at County Line Road would replace partial access to I-43 to and from the south, similar to existing conditions. This alternative moves the exit ramp further north to terminate at the Port Washington Road crossing of I-43 near Katherine Drive to reduce weaving between that ramp and the Brown Deer Road entrance ramp to the south. The southbound entrance ramp location would remain at its existing location off of County Line Road. Traffic patterns on local roads would be unchanged from existing conditions.

Traffic flow on local roads is affected by the No Access alternative at Highland Road. If the Highland Road interchange is not constructed, the Mequon Road/Port Washington Road intersection near the Mequon Road interchange would require triple left-turn lanes for the southbound-to-eastbound movements on Port Washington Road. Also, the median crossing on Port Washington Road north of the intersection would be closed to avoid an unsafe median opening in a turn lane. **Exhibit 3-8** shows the alternatives for this intersection.

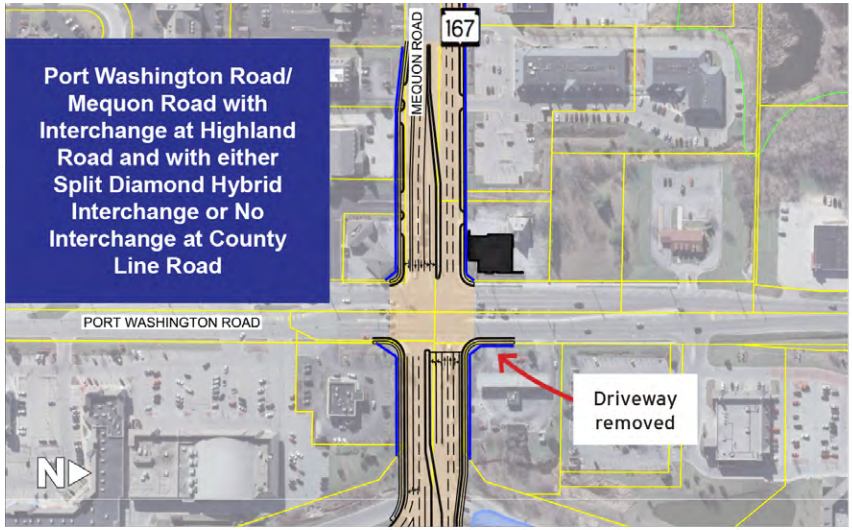
The No Access alternative at County Line Road would remove the existing interchange. As a result, more traffic would divert to the Brown Deer Road and Mequon Road interchanges, primarily via Port Washington Road. To accommodate additional traffic using the Brown Deer interchange, additional right-turn lanes from southbound Port Washington Road to westbound Brown Deer Road, and from westbound Brown Deer Road to northbound Port Washington Road would be required to maintain traffic operations. Two driveways on Port Washington Road would be closed (**Exhibit 3-8**). No additional modifications are required at the Port Washington Road/Mequon Road intersection. No additional capacity would be required on Port Washington Road between Brown Deer Road and Mequon Road.

In Glendale, widening Port Washington Road between Bender Road and Daphne Road would provide for traffic diverting from the freeway during construction and incidents. Depending on further coordination with the City of Glendale, local access onto Port Washington Road may also be modified as part of the road's reconstruction to four lanes. Cul de sacs could be installed at Brentwood lane and Apple Tree Road to reduce the number of intersection conflicts with Port Washington Road (see **Appendix A**). Access to and from the neighborhood would be available via Clovernook Lane and Daphne Road.

## BICYCLE AND PEDESTRIAN FACILITIES

Under the build alternatives, WisDOT would provide bicycle and pedestrian accommodations in accordance with *Wisconsin Administrative Code Chapter Trans 75: Bikeways and Sidewalks in Highway Projects* (Trans 75) on reconstructed cross streets, Jean Nicolet Road and Port Washington Road as noted in **Subsection 2.3.1**. The Diverging Diamond interchange alternative at Brown Deer Road would accommodate bicycles and pedestrians generally as illustrated in **Exhibit 3-9**. A pedestrian tunnel or bridge that is compliant with the Americans with Disabilities Act (ADA) would be provided for use by Nicolet High School in Glendale to replace the existing tunnel, which currently provides the school with access to various athletic fields located on the east side of I-43, but is not ADA-compliant.

## Exhibit 3-8: Port Washington Road Local Intersection Modifications



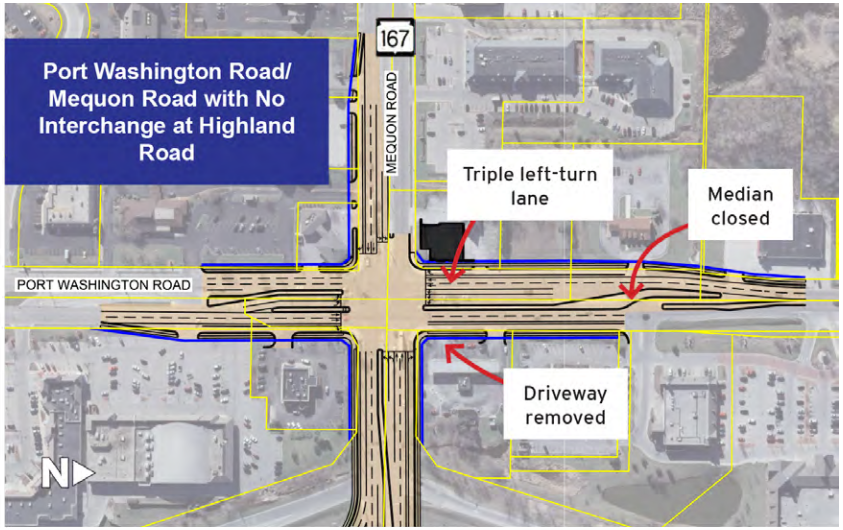
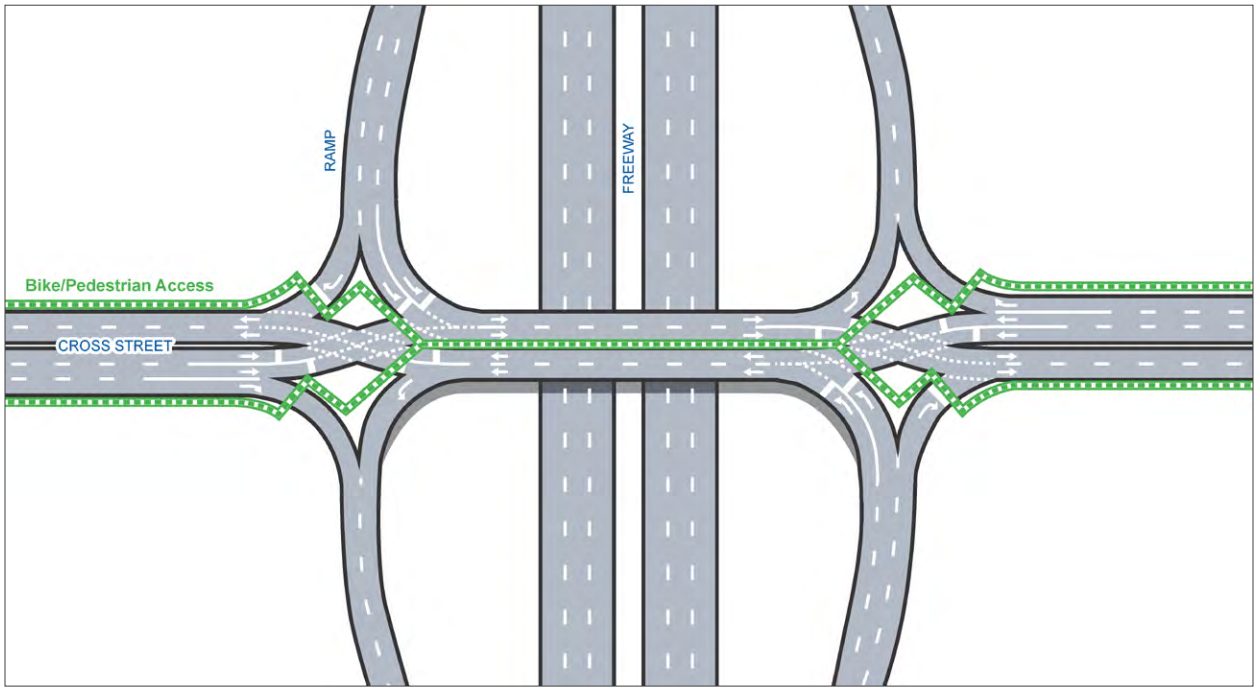




**Exhibit 3-9: Bicycle/Pedestrian Facilities within Diverging Diamond Interchange Alternative (Brown Deer Road)**




## SAFETY

### NO-BUILD ALTERNATIVE

Under the No-Build Alternative, none of the existing safety issues on the study corridor would be addressed. Congestion would continue to increase, which could further exacerbate safety problems in the corridor. 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.[2] Higher traffic volumes on local streets also increase the potential for car-pedestrian and car-bicycle crashes.

### BUILD ALTERNATIVES

The build alternatives would likely reduce crash rates by removing substandard design features that contribute to crashes. Available data on crashes does not allow WisDOT and FHWA to estimate the number of crashes that would be avoided by bringing the I-43 North-South Freeway corridor to current freeway design standards. However, a predictive safety analysis using the Enhanced Interchange Safety Analysis Tool (ISATe) was conducted for comparative purposes. The analysis showed that the build alternatives would result in a lower crash frequency than the No-Build Alternative. In particular, replacing the clover-leaf interchange at Brown Deer Road would help reduce ramp crashes.

[2] *http://www.dot.wisconsin.gov/drivers/drivers/traffic/crash/final.htm*

### 3.2.3. Mitigation of Adverse Transportation Impacts

**Subsection 3.21** describes measures to manage congestion during construction which would be a result of lane closures on the freeway system and local streets in the I-43 North-South Freeway study area. The possible expansion of Port Washington Road plays a factor in determining construction impacts. WisDOT will develop a transportation management plan (TMP) to coordinate and manage impacts associated with construction. TMP strategies for a work zone may include temporary traffic-control measures and devices; public information and outreach; and operational strategies such as travel demand management, signal retiming and traffic incident management.

WisDOT will coordinate with the MCTS to minimize impacts to bus services.

WisDOT and FHWA are coordinating at-grade railroad crossings and railroad bridge construction with the UP Railroad to minimize interruptions to rail service while replacing the railroad bridge over I-43. The new overpass bridge would be constructed north of the existing bridge so that train service can continue during construction.

## 3.3. RESIDENTIAL

### 3.3.1. Affected Environment

Residential developments that share a boundary with the I-43 North-South Freeway study corridor or that are in close proximity to I-43 are located throughout Milwaukee County. In southern Ozaukee County, residential developments are generally buffered from I-43 by commercial developments along Port Washington Road west of I-43 and the UP Railroad right of way east of I-43. North of Highland Road, residential developments are widely scattered among agricultural land uses, with most of the dense residential developments located well west of I-43 in the village of Grafton (**Exhibit 3-2**). Residential development in areas immediately adjacent to the study corridor is described in detail below.

#### SILVER SPRING DRIVE TO GREEN TREE ROAD

Residences are located either adjacent to or in close proximity to I-43. Between Bender Road and Daphne Road (immediately south of Nicolet High School), residences in the Clovernook Estates neighborhood are located very close to I-43 on both the east and west sides of the study corridor with Jean Nicolet Road and Port Washington Road situated between the residences and I-43. Generally, owner-occupancy rates exceed 80 percent along this segment, but two block groups adjacent to I-43 have owner-occupied housing unit percentages of 45 percent and 53 percent. These rates are comparable to the Milwaukee County average of 51 percent and due in part to multifamily housing located along Port Washington Road and North Green Bay Avenue.

#### GREEN TREE ROAD TO COUNTY LINE ROAD

West of the study corridor, residences are located adjacent to I-43 in the village of River Hills. Generally speaking, the residences in River Hills are located on relatively large, wooded lots with the structures located further from I-43 compared to neighborhoods in Glendale and Fox Point. Several residential developments are located to the east between I-43 and Port Washington Road within the city of Glendale and the villages of Fox Point and Bayside. Most of

the residential housing along this segment is owner-occupied (90 percent or more). However, the percentages of owner-occupied multifamily residential housing units in several block groups east of I-43 range from 49 percent to 68 percent, due in part to multifamily housing, such as the Coventry Apartments in Glendale, the North Port Village Senior Apartments in Glendale, the Porticos of Fox Point, and the Elizabeth Residence in Bayside.

### COUNTY LINE ROAD TO HIGHLAND ROAD

Port Washington Road crosses I-43 near County Line Road (southern border of the city of Mequon). Port Washington Road and I-43 follow roughly parallel alignments, separated by about ¼ mile between County Line Road and the northern end of the study corridor at WIS 60 in the village of Grafton. Most of the residential housing between County Line Road and Highland Road is owner-occupied (80 percent or higher). One notable exception is the area immediately west of Port Washington Road, between Donges Bay and Mequon roads, which has an owner-occupied housing rate of 60 percent – lower than the Ozaukee County average of 77 percent. Most of the residential development in the city of Mequon located close to the I-43 study corridor is in the southern and central portions of the city between County Line and Highland roads, west of Port Washington Road. Residences are located adjacent to the east of the study corridor between County Line Road and Donges Bay Road, and between I-43 and the UP Railroad. Residential developments are located east of the UP Railroad between Donges Bay and Highland roads.

### HIGHLAND ROAD TO COUNTY C

Relatively few residences are located along the study corridor in the northern portion of the city of Mequon. The scattered residences are generally located along Port Washington Road west of I-43; some of the homes located between Port Washington Road and I-43 are older farmsteads. Scattered residential developments are also located east of the UP Railroad right of way, between Bonniwell Road and County C. Most of the residential housing along this segment is owner-occupied (81 percent).

### COUNTY C TO WIS 60

Within this segment, there are a number of residential developments located within a half mile of I-43, on both the east and west sides of the study corridor. More recent developments include two residential developments located south of Falls Road; one located at the Falls Road/Port Washington Road intersection (Falls Crossing subdivision), and the other located at the Falls Road/Lakeshore Road intersection (Blank's Crossing Subdivision). Most residential developments are located well west of I-43, in the village of Grafton. A few scattered farmstead homes are also located between Port Washington Road and I-43 along this segment. Most of the residential housing along this segment is owner-occupied (80 percent or higher). The rates of owner-occupied housing dip to between 60 percent and 70 percent toward the center of the village of Grafton.

## 3.3.2. Impacts to Residences

Information for the following relocation discussion items was obtained from local government tax assessment rolls.

### NO-BUILD ALTERNATIVE

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

### BUILD ALTERNATIVES

Residential relocations would be required under the I-43 South Segment mainline build and the Good Hope Road interchange build alternatives. Residential relocations are summarized in **Table 3-4** and shown on map sheets in **Appendix A**. As noted in **Subsection 3.1.5**, strip residential right of way would be acquired throughout the study corridor to accommodate the build alternatives.

**Table 3-4: Residential Relocation Summary**

| Build Alternatives with Potential Relocations | Number of Residential Relocations |
|---|---|
| I-43 Mainline South Segment:<br>Modernization – 6 Lanes (Mainline Shifted East) | 11 total<br>(10 located along Port Washington Road)[1] |
| Good Hope Road interchange – Tight Diamond | 1 |

**Table 3-5** and **Table 3-6** summarize the characteristics of the residential relocations under each alternative. **Table 3-7** summarizes the availability of replacement housing in the communities that would be affected by the study. Current vacancy rates in the corridor communities indicate a range of replacement housing options. In total, 443 homes are for sale within the communities identified as having potential relocations. This information was based on a review of the Milwaukee-area Multiple Listings Service (MLS), a digital listing of available real estate, in July 2013.[3]

[3] *http://www.coldwellbankeronline.com/Property/PropertySearch.aspx.*

### Table 3-5: Residential Relocation Characteristics – Bedrooms

| Number of Bedrooms | Number of Residences |
|---|---|
| I-43 Mainline South Segment: Modernization – 6 Lanes (Mainline Shifted East) | |
| 1 | 0 |
| 2 | 1 |
| 3 | 4 |
| 4 | 5[1] |
| 5 | 0 |
| Good Hope Road interchange – Tight Diamond | |
| 1 | 0 |
| 2 | 0 |
| 3 | 0 |
| 4 | 1 |
| 5 | 0 |

*1. Information about the number of bedrooms for one home in River Hills was unavailable, so comparable number of bedrooms as other residential relocation in River Hills (four bedrooms) assumed.*

### Table 3-6: Residential Relocation Characteristics – Fair Market Value (Estimated)

| Fair Market Value (Est.) | Number of Residences |
|---|---|
| I-43 Mainline (South Segment): Modernization – 6 Lanes (Mainline Shifted East) | |
| Below $99,999 | 0 |
| $100,000 to $149,999 | 1 |
| $150,000 to $199,999 | 4 |
| $200,000 to $299,999 | 5 |
| Above $300,000 | 0 |
| Good Hope Road interchange – Tight Diamond | |
| Below $99,999 | 0 |
| $100,000 to $149,999 | 0 |
| $150,000 to $199,999 | 0 |
| $200,000 to $299,999 | 1 |
| Above $300,000 | 0 |

*Note: The business relocation along Port Washington Road, noted in **Subsection 3.4.2** includes a residential tenant.*

**Table 3-7: Availability of Replacement Housing in Corridor Communities**

| Price Range | 2 Bedrooms | 3 Bedrooms | 4 Bedrooms | 5+ Bedrooms |
|---|---|---|---|---|
| City of Glendale | | | | |
| Below $99,999 | 19 | 4 | 0 | 0 |
| $100,000 to $149,999 | 8 | 6 | 0 | 0 |
| $150,000 to $199,999 | 8 | 25 | 2 | 0 |
| $200,000 to $299,999 | 1 | 16 | 13 | 3 |
| Above $300,000 | 0 | 5 | 4 | 2 |
| Apartments $885-$1,685/mo. | 10 | 3 | 0 | 0 |
| Village of River Hills | | | | |
| Below $99,999 | 0 | 0 | 0 | 0 |
| $100,000 to $149,999 | 1 | 1 | 0 | 0 |
| $150,000 to $199,999 | 0 | 0 | 0 | 0 |
| $200,000 to $299,999 | 0 | 1 | 1 | 0 |
| Above $300,000 | 0 | 0 | 11 | 18 |

## 3.3.3. Mitigation of Adverse Impacts to Residences

Federal real property acquisition law[4] provides for payment of just compensation for residences displaced for a federally funded transportation project. 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. Before 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 Wisconsin Statutes Section 32.05. 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.

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

[4] *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act)*

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 the most recent editions of U.S. Environmental Protection Agency (EPA) regulations; National Emission Standards for Asbestos; Occupational, Safety, and Health Administration (OSHA) regulations on asbestos removal; local government regulations; and all other applicable regulations. 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 the Wisconsin Department of Natural Resources (WDNR) and Wisconsin Department of Health and Family Services at least 10 working days before starting the work, using WDNR 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 indicate that no age or income-level characteristics that would require special relocation consideration or services. WisDOT also coordinated with potential relocated residents prior to and during public meetings and no needed special relocation considerations or services were identified at those times. If unusual circumstances were to arise during real estate activities, WisDOT real estate personnel would be available to provide appropriate relocation services.

## 3.4. COMMERCIAL AND INDUSTRIAL

### 3.4.1. Affected Environment

I-43 is a major regional and local north-south route serving economic and commercial centers. The I-43 North-South Freeway study corridor is a vital link to and from downtown Milwaukee (about 7 miles south of the study corridor), which serves as the regional employment and entertainment center.

SEWRPC's 2035 regional land use plan reports that as of 2000, 45 major economic activity centers are located throughout the seven-county southeast Wisconsin region that includes Milwaukee and Ozaukee counties.[5]

Two major activity centers located in Milwaukee County are the area around Estabrook Corporate Park and Glendale Technology Center in the southern portion of the city of Glendale (near I-43 and Capitol Drive), and Bayshore Town Center at the I-43/Silver Spring Drive interchange, a recently redeveloped 50-acre mixed-use commercial center anchored by major chain retail stores. Two other major centers are located west of the corridor: One near the Teutonia Avenue/Mill Road area includes the Glendale Industrial Park; the other is a commercial area in the village of Brown Deer near Brown Deer Road and Green Bay Road (**Exhibit 3-1**).

Many smaller commercial areas are located along the study corridor as well. In the southern portion of the city of Glendale, Port Washington Road supports substantial commercial development spanning from about Marne Avenue north to the Bayshore Town Center. Toward the northern portion of the city of Glendale, the Glendale Market is a recently redeveloped neighborhood commercial area along the east side of I-43 at the Green Tree Road/Port Washington Road intersection. North of Glendale, in the village of Fox Point, the Riverpoint

[5] *A "major" activity center is a concentrated area of commercial and/or industrial land having a minimum of 3,500 total employees or 2,000 retail employees (source: SEWRPC* Planning Report 48: A Regional Land Use Plan for Southeastern Wisconsin: 2035*).*

Village and Audubon Court shopping centers are located at the Brown Deer Road/Port Washington Road intersection, east of I-43. Both centers provide access to nationally and locally owned retail stores and restaurants. Office buildings are located in this area as well.

In Milwaukee County, substantial industrial developments are located within 2 miles of the study corridor in the cities of Glendale and Milwaukee. The village of Brown Deer also has a number of industrial developments about 2 miles west of the study corridor associated with Brown Deer's major economic activity center along Teutonia Avenue and Green Bay Road/WIS 57.

North of the Milwaukee/Ozaukee county line, the city of Mequon is home to a 2-mile stretch of commercial developments along Port Washington Road between County Line Road and Glen Oaks Lane. This area is one of two major economic activity centers along the study corridor in Ozaukee County. Port Washington Road north of Mequon Road was improved in 2011. These improvements support access to ongoing redevelopment, including the recent opening of a 60,000-square-foot Metro Market grocery store. In addition to the multiple restaurants, boutique shops and grocery stores, the *Milwaukee Journal Sentinel*[6] reports that multiple buildings ranging in size from 6,000 square feet to 13,000 square feet are either under construction or have recently been constructed along Port Washington Road.

A second major economic activity center is located at the I-43/WIS 60 interchange in Grafton. The Gateway to Grafton and the Grafton Commons shopping centers serve local and regional customers with a variety of commercial and retail structures including Home Depot, Costco, Kohl's and Target.

In Ozaukee County, isolated industrial developments are located along the study corridor at Donges Bay Road, Liebau Road, County C, Falls Road, and WIS 60. Larger clusters of industrial developments are scattered about 2 miles to 3 miles west of the study corridor in the villages of Thiensville and Grafton, and the cities of Mequon and Cedarburg (**Exhibit 3-2**).

## 3.4.2. Impacts to Commercial and Industrial Properties and Access

Although the I-43 component of the study corridor is access-controlled (meaning no business entrances are connected directly to the freeway) commercial and industrial centers west of I-43 rely on access to the Interstate via interchanges throughout the corridor. Service-oriented businesses located near interchanges rely on freeway travelers for their continued viability. Additionally, numerous businesses along the study corridor are accessed from Port Washington Road. Impacts to commercial and industrial areas can include direct property impacts such as acquisitions and relocations, as well as access changes. Potential impacts are described below.

### RELOCATIONS AND PROPERTY ACQUISITIONS

#### NO-BUILD ALTERNATIVE

No property relocations or property acquisitions would be required under the No-Build Alternative. However, without improvements to the I-43 North-South Freeway study corridor, commercial and industrial businesses that rely on access to and from I-43 may experience deterioration in safety, traffic operations and overall travel time reliability.

[6] *June 30, 2012*

#### BUILD ALTERNATIVES

Up to two commercial properties are acquired and relocated. The I-43 mainline South Segment build alternative acquires a building that houses a medical supply business. The Mequon Road interchange Tight Diamond alternative acquires a commercial property in the southeast quadrant of the interchange. The property is a former residential home that is now used for two businesses: an acupuncture practice, and a financial services business. Both relocated business properties also house a residential tenant. Strip acquisitions of commercial properties would be required as noted in **Subsection 3.1.5**.

### COMMERCIAL AND INDUSTRIAL ACCESS CHANGES

#### NO-BUILD ALTERNATIVE

The No-Build Alternative would not change access to or from commercial or industrial areas. However, maintaining and replacing infrastructure in its current configuration would not address safety and operational problems at interchanges, nor would it address future traffic volumes that may cause additional congestion for vehicles entering and exiting I-43.

#### BUILD ALTERNATIVES

Build alternatives may reconstruct local roads and intersections that would result in modifications to median openings and driveway access points. At the Brown Deer Road interchange, WisDOT would investigate potential access modifications to address multiple existing driveways between the I-43 ramp terminals and Port Washington Road. The existing raised median along Brown Deer Road, between the northbound ramp intersections and Port Washington Road would remain in place. WisDOT would coordinate with local property owners during preliminary design to determine appropriate modifications.

The No Access alternative at County Line Road would require reconstructing the Port Washington Road/Brown Deer Road intersection. The reconstructed intersection would remove two driveways on the west side of Port Washington Road, north of Brown Deer Road. Access to the business in the northwest quadrant of the intersection would be available via a driveway on Brown Deer Road. See **Subsection 3.2.2** for intersection modifications under the County Line Road No Access alternative.

The decision to build a new interchange at Highland Road would affect local traffic volumes and the configuration of the Mequon Road/Port Washington Road intersection. If a new interchange is built, an existing driveway on the north side of Mequon Road, east of Port Washington Road would be closed. Access to the business would be available via an existing driveway on Port Washington Road.

If a new Highland Road interchange is not built, in addition to the driveway change above, the median opening immediately north of the Port Washington Road/Mequon Road intersection would be closed, allowing only right-in/right-out movements for business driveways at this location. See **Subsection 3.2.2** for intersection modifications with and without a new Highland Road interchange.

There are no anticipated access changes under the build alternatives for the Good Hope Road, County Line Road, Highland Road or County C interchanges, or at reconstructed cross streets.

### ACCESS DURING CONSTRUCTION

Access to businesses would be maintained during construction. Commuters, business patrons, shippers and suppliers would experience short-term inconvenience and additional travel time. Additional discussion about traffic impacts during construction is included in **Subsection 3.21**.

## 3.4.3. Mitigation of Adverse Impacts to Commercial and Industrial Areas

WisDOT researched current listings of potential replacement business sites located nearby that would be adequate for the business relocations needed on Port Washington Road and Mequon Road. The affected businesses at the Mequon Road interchange is in a former residential home. As of September 2013, local listings identified 10 business leases within a 10-block radius, and eight residential buildings for sale on major arterial streets within a mile of the Mequon Road interchange. Thirteen business leases are available within a 2-mile radius of the affected business on Port Washington Road. Based on MLS, enough properties are available to provide appropriate relocations for the displaced businesses. **Subsection 3.3.2** notes that there are available rentals in the study area that would be adequate for relocated residential tenants.

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 Wisconsin Statutes Section 32.05. 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 the WDNR and Wisconsin Department of Health and Family Services at least 10 working days before starting the work, using WDNR Form 4500-113: Notification of Demolition and/or Renovation and Application for Permit Exemption.

One of the two affected businesses is minority-owned. No known age, ethnic, disability or minority characteristics would require special relocation consideration for the other business displacement. No unusual requirements are anticipated that would preclude successful relocation.

# 3.5. INSTITUTIONAL AND PUBLIC SERVICES

## 3.5.1. Affected Environment

### FIRE, AMBULANCE AND POLICE PROTECTION

The North Shore Fire Department provides fire protection and emergency medical service to all the Milwaukee County communities along the study corridor. North Shore Fire Department has five fire stations. Three of these stations are located within the communities along the study corridor. The Mequon Fire Department provides fire protection and emergency medical services to the city of Mequon and operates two stations. The town and village of Grafton are served by the Grafton Fire Department.

Except for the town of Grafton, each community along the study corridor has its own police department. The Ozaukee County Sheriff's Department serves the town of Grafton. The recently constructed Consolidated Bayside Dispatch Center provides dispatch services for each of the following community police departments: Bayside, Brown Deer, Fox Point, Glendale, River Hills, Shorewood and Whitefish Bay. The dispatch center also provides dispatch services for the North Shore Fire Department. The locations of the study corridor communities' fire and police stations are shown on **Exhibit 3-10** and **Exhibit 3-11**.

### SCHOOLS

A number of school districts serve the eight communities along the study corridor. The student demographics of the school districts are summarized in **Table 3-8**

**Table 3-8: Demographic Characteristics of School Districts in I-43 North-South Study Corridor (2013-2014 Academic Year)**

| District | Percent White | Percent Minority | Percent Economically Disadvantaged[1,2] | Percent Not Economically Disadvantaged[1,2] |
|---|---|---|---|---|
| Glendale-River Hills | 53.3 | 46.7 | 26.1 | 61.1 |
| Maple Dale-Indian Hills | 69.2 | 30.8 | 12.5 | 73.8 |
| Nicolet High School[3] | 63.2 | 36.8 | 18.9 | 74.0 |
| Mequon-Thiensville | 81.2 | 18.9 | 8.1 | 80 |
| Grafton | 88.3 | 11.7 | 16.7 | 72.7 |

*[1] Economically disadvantaged status. An "economically disadvantaged" student is a student who is a member of a household that meets the income eligibility guidelines for free or reduced-price meals (less than or equal to 185% of Federal Poverty Guidelines) under the National School Lunch Program (NSLP). School districts are permitted to use their best local source of information about the economic status of individual students consistent with the DPI definition. In the absence of reliable student-level NSLP meals eligibility data, districts may consider using available county data, scholarship information, post-secondary options information, etc. Economic status codes must be reported whether or not the district participates in the National School Lunch Program.*

*[2] Combined figures will be less than 100 percent as economic status of some enrolled students is unknown.*

*[3] Nicolet High School is a single school district serving Maple Dale-Indian Hills and Glendale-River Hills school districts.*

*Source: Wisconsin Department of Public Instruction.*

The racial and income make-up of the students generally reflects the demographics of the communities along the I-43 study corridor. That is, Milwaukee County school districts (Glendale-River Hills, Maple Dale-Indian Hills and Nicolet High School) have higher minority populations compared to Ozaukee County schools (Mequon-Thiensville and Grafton). Low income students, as reflected by economic disadvantage status, which is highest in the Glendale-River Hills school district, is likely more reflective of lower income census tracts in Glendale compared to River Hills (see **Subsection 3.6.1**).

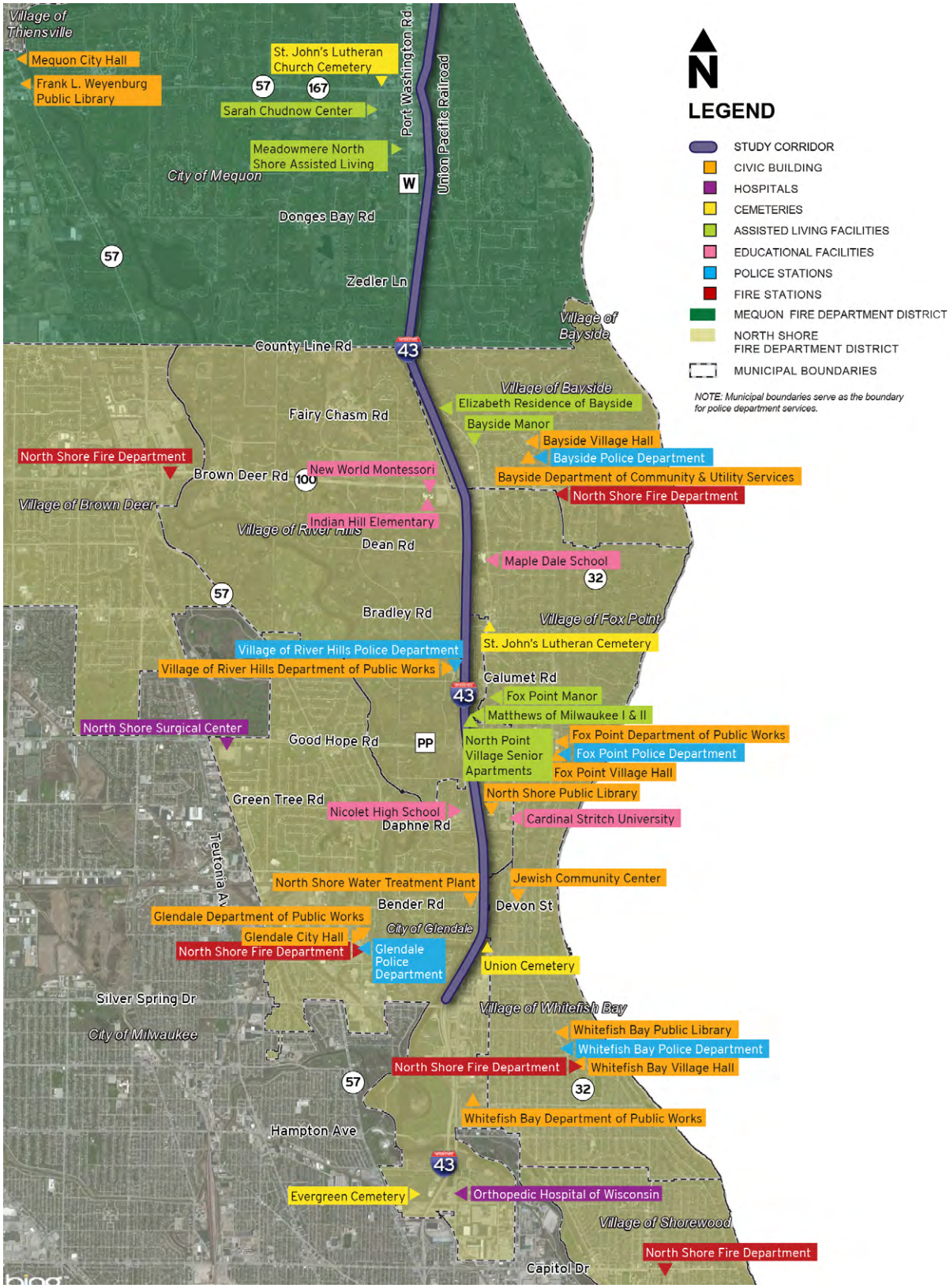
The following three public schools are located very close or adjacent to the study corridor: Nicolet High School (Glendale), Maple Dale Middle School (Fox Point) and Indian Hill Elementary School (River Hills). Concordia University, located on Highland Road/Lake Shore Drive, is adjacent to the study corridor, on the east side of the Union Pacific Railroad. Cardinal Stritch University is located east of Port Washington Road, in the vicinity of Nicolet High School.

Nicolet High School serves Glendale, Fox Point, Bayside, and River Hills and is located on Jean Nicolet Road, adjacent to the study corridor west of I-43. Some of Nicolet's athletic facilities, including a soccer field and tennis courts, are located east of I-43 and are connected to the main campus by a highway underpass.

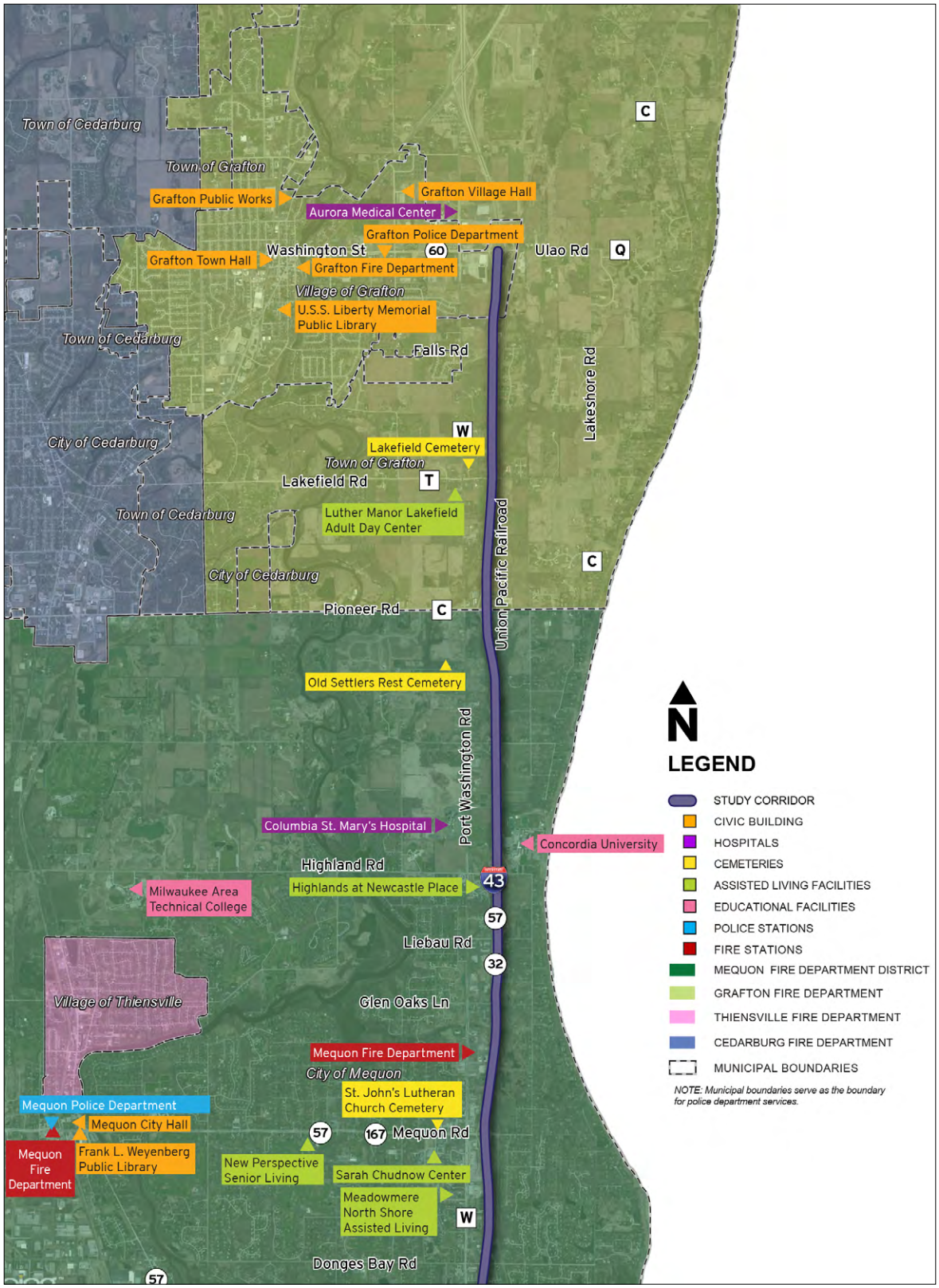
The Maple Dale-Indian Hill School District serves parts of Glendale, Fox Point, Bayside and River Hills. Maple Dale (Grades 3-8) abuts I-43 on the east and is located south of Dean Road. Maple Dale's play and athletic fields are located immediately adjacent to the study corridor. Indian Hill School (prekindergarten-Grade 2) is located along the south side of Brown Deer Road, adjacent to the Brown Deer Road Park and Ride lot located in the southwest quadrant of the I-43/Brown Deer Road interchange. Indian Hill School is also home to the New World Montessori School, which leases space from the Maple Dale-Indian Hill School District.

The MATC Mequon campus is located on the south side of Highland Road, about 3 miles west of I-43.

## Exhibit 3-10: Existing Community Facilities – South Segment



## Exhibit 3-11: Existing Community Facilities – North Segment



## PLACES OF WORSHIP

A number of places of worship are located throughout the study corridor communities. Several churches and a synagogue are located adjacent to or in close proximity to I-43 and along Port Washington Road. A unique feature in the study corridor is the presence of eruvin. An eruv is a ritual enclosure that some Jewish communities construct in their neighborhoods. The enclosure allows Jewish residents or visitors to carry objects from a private residence to a public domain on Shabbat (the Jewish day of rest, from Friday evening to Saturday night). These physical boundaries are maintained by the Jewish community. Three eruvin are present in the study corridor, in Glendale, Bayside and Mequon.

## ASSISTED-CARE AND ASSISTED-LIVING FACILITIES

Multiple assisted-care and assisted-living facilities are located throughout the study corridor communities. These facilities provide care for individuals with developmental and physical disabilities, substance abuse, advanced age, emotionally disturbed/mental illnesses, and terminal illnesses. Most of these facilities are located a substantial distance from the study corridor, nine are located close to I-43, predominantly along Port Washington Road. Four of the nine facilities are located in Ozaukee County and five are located in Milwaukee County.

## CEMETERIES

Five cemeteries are located in the general vicinity of the study corridor. Most cemeteries are not located close to the study corridor. The closest cemeteries to the study corridor, Union Cemetery and Lakefield Cemetery, are located along Port Washington Road in the city of Glendale and in the town of Grafton, respectively. Cemeteries are noted on **Exhibit 3-10** and **Exhibit 3-11**.

## HOSPITALS

Two hospitals are located along the study corridor in the city of Mequon and the village of Grafton (**Exhibit 3-10** and **Exhibit 3-11**). Columbia Saint Mary's Hospital is located on the west side of Port Washington Road, between Highland Road and Bonniwell Road, and it serves Milwaukee, Ozaukee, Sheboygan and Washington county communities. The Aurora Medical Center is a recently constructed hospital in the village of Grafton, located just west of I-43, near the northwest quadrant of the Port Washington Road/WIS 60 intersection. Both hospitals provide emergency room services. Supporting medical services centers are also located throughout the study corridor along Port Washington Road.

## COMMUNITY CENTERS AND FACILITIES

Municipal facilities and community centers are located throughout the study corridor communities, with most located well away from the study corridor (**Exhibit 3-10** and **Exhibit 3-11**). Three exceptions are the North Shore Water Treatment Facility (Bender Road), North Shore Public Library (south of Green Tree Road), and the village of River Hills Department of Public Works and Village Hall (Calumet Road), which are close to I-43.

The North Shore Water Commission owns and operates a municipal water treatment plant located at the intersection of Bender and Jean Nicolet Roads, on the west side of the study corridor. The plant is a conventional water treatment facility. The plant also serves other growing communities indirectly through the Mequon Water Utility. The plant draws water from a single intake in Lake Michigan which is about 4,000 feet offshore from Klode Park (village of Whitefish Bay). Water is

pumped 1 mile west, beneath I-43, through a single transmission main. The facility includes four underground reservoirs that can store 7 million gallons of water.

The village of River Hills Department of Public Works, Police Department, and village hall are located along the west side of I-43 just north of Calumet Road. The garage and communication towers are located immediately west of the I-43 right of way. The village hall is located on the west side of the property, closer to Pheasant Lane. The village of River Hills maintains Memorial Park with several walking paths and park benches north of the village hall.

The North Shore Library, located in the first floor of an office building on Port Washington Road, serves North Shore communities. The library is planning to relocate to a new stand-alone facility in the nearby area. No site has been selected at this time.

Located at the south end of the study corridor, the Jewish Community Center is a nonprofit social organization that provides diversified social, educational, recreational and cultural programs to the community within a Jewish setting. The center, which is located on a 28-acre campus in Whitefish Bay, serves multiple functions within the community. An access road from the Jewish Community Center to Port Washington Road travels through Craig Counsell Park. This access was included as one of the recent renovations to the facility to minimize traffic impacts to residential neighborhoods associated with deliveries to the Jewish Community Center.

## 3.5.2. Impacts to Institutional and Public Services

### IMPACTS TO FIRE, AMBULANCE AND POLICE PROTECTION

#### NO-BUILD ALTERNATIVE

The No-Build Alternative would not impact fire, ambulance or police services along the study corridor. However, design deficiencies and poor traffic operations would continue to persist, which would affect travel reliability and safety.

#### BUILD ALTERNATIVES

Because the build alternatives would be reconstructed largely on the existing alignment, access points to and across I-43 would be maintained, and no reduced accessibility for emergency service is anticipated. If a new interchange is constructed at Highland Road, access to emergency medical services would be enhanced. Both of the Split Diamond Hybrid interchange subalternatives at County Line Road would provide access for all traffic movements compared with the existing partial interchange, which could improve emergency response times. The No Access alternative at County Line Road would create more indirection for emergency services responding to incidents between County Line Road and Brown Deer Road. Vehicles would need to travel to the Mequon Road interchange to access I-43 southbound lanes.

### IMPACTS TO SCHOOLS

#### NO-BUILD ALTERNATIVE

The No-Build Alternative would not impact schools located along the study corridor.

#### BUILD ALTERNATIVES

The build alternatives discussed below would impact schools at specific locations along the

corridor. Overall, the build alternatives would not affect access to study corridor schools or affect school functions or district boundaries.

The Modernization – 6 Lanes alternative would require strip acquisitions from the Nicolet High School campus on the east and west sides of I-43. This alternative would impact about 0.58 acre of strip right of way along both the east and west sides of I-43. This alternative would not impact existing athletic facilities, which include tennis courts, track and field structures, soccer fields and a football field. The alternative includes acquiring 0.35 acre of residential property and a house owned and rented by the school. Additionally, the pedestrian underpass beneath I-43 would be removed and replaced with either a tunnel or pedestrian bridge. The replaced access would comply with the ADA.

Both build alternatives at the Brown Deer Road interchange may require minor strip right of way acquisition at Indian Hill Elementary School (also the site of New World Montessori School and daycare facilities). Neither alternative would impact school facilities, functions, parking or structures.

A new interchange at Highland Road would require property (0.20 acre) from land owned by Concordia University, on both the north and south sides of Highland Road. The build alternatives could include the reconstruction at the university's entrance on the north side of Highland Road and the driveway leading to a newly constructed parking lot located south of Highland Road. The interchange would not impact school functions, parking or campus structures. A new interchange would provide direct access to Concordia University, and provide a more direct route to MATC.

## IMPACTS TO PLACES OF WORSHIP

### NO-BUILD ALTERNATIVE

The No-Build Alternative would not impact churches, synagogues and other places of worship located along the study corridor.

### BUILD ALTERNATIVES

The Modernization – 6 Lanes alternative would acquire property from Ozaukee Congregational Church in the town of Grafton. About 0.83 acre of property, immediately west of I-43, would be required. The right of way impact would not affect structures or functions of the church. The remainder of the build alternatives would not impact activities or access to churches, synagogues or other places of worship. WisDOT would coordinate with local Jewish communities to maintain eruvin that may be affected by construction activities.

## IMPACTS TO ASSISTED-CARE AND ASSISTED-LIVING FACILITIES

### NO-BUILD ALTERNATIVE

The No-Build Alternative would not directly affect assisted care and living facilities.

### BUILD ALTERNATIVES

The build alternatives could require strip acquisitions from assisted care and living facilities at specific locations along the corridor. Overall, the build alternatives would not impact activities or access to facilities along the study corridor.

The Good Hope Road Tight Diamond interchange alternative would require a strip right of way acquisition from the Port Village senior apartment complex (0.04 acre). The acquisition would

occur along the west side of the parcel and would not affect parking, access to, or the function of the facility or any of the residential units.

Reconstructing Port Washington Road for the County Line Split Diamond Hybrid interchange, Partial Diamond and No Access alternatives would acquire about 0.32 acre of right of way from the Elizabeth Residence of Bayside. The acquisitions would occur along Port Washington Road and would not affect parking, access to, or the function of the facility or any of the residential units.

The Highland Road Tight Diamond interchange alternative would require a strip right of way acquisition at the Highlands at Newcastle Place in the city of Mequon (1.05 acres). Most of the acquisition would occur along I-43 and would not affect parking, access to, or the functions of the facility or any of the residential units. This build alternative includes reconstructing Highland Road between Port Washington Road and I-43, which acquires strip right of way in the northwest corner of the property, adjacent to the Highland Road/Port Washington Road intersection. This build alternative would also reconstruct New Castle Place's driveway along Highland Road.

## IMPACTS TO CEMETERIES

### NO-BUILD ALTERNATIVE

The No-Build Alternative is not expected to directly affect cemeteries along the corridor.

### BUILD ALTERNATIVES

Under the build alternative, Port Washington Road would be reconstructed north of Union Cemetery in the city of Glendale. No construction is proposed at the Port Washington Road/ Lakefield Road intersection where Lakefield cemetery is located; therefore, the build alternative is not expected to directly affect cemeteries along the corridor.

## IMPACTS TO HOSPITALS

### NO-BUILD ALTERNATIVE

The No-Build Alternative would not directly affect hospitals in the study area or their services. However, traffic operations and safety would continue to decline with a lack of investment in modernizing and adding capacity to the freeway. The No-Build Alternative could impact overall travel reliability to and from hospitals, including emergency access.

### BUILD ALTERNATIVES

None of the build alternatives impact hospitals in the study corridor. The Modernization – 6 Lanes alternative for the I-43 mainline would improve safety and travel reliability for facilities including Columbia Saint Mary's Hospital, Aurora Medical Center and other medical services providers near the study corridor. Access to Columbia Saint Mary's Hospital would be enhanced under the build alternative that constructs a new interchange at Highland Road.

## IMPACTS TO COMMUNITY CENTERS AND FACILITIES

### NO-BUILD ALTERNATIVE

The No-Build Alternative would not impact community centers and facilities located along the study corridor.

#### BUILD ALTERNATIVES

The I-43 Mainline South Segment Modernization – 6 Lanes (Mainline Shifted East) alternative would require 0.16 acre of strip right of way from the North Shore Water Treatment Facility property. The right of way would be required along the east side of the treatment plant property and would avoid the plant's facilities and maintain the existing driveway access on Port Washington Road. The build alternatives would not impair the uses of community centers or facilities in the study corridor.

### 3.5.3. Mitigation of Adverse Impacts to Institutional and Public Services

WisDOT and FHWA will fairly compensate schools, churches and other institutions for land acquired as part of the study. WisDOT will continue to coordinate with affected institutions and other community stakeholders to minimize property impacts with future design refinements. Among specific issues, WisDOT will also continue coordination with the North Shore Water Commission to minimize impacts to operations and Nicolet High School regarding pedestrian access to the athletic fields east of I-43.

During preliminary engineering, WisDOT would begin its Community Sensitive Solutions (CSS) process, which would develop aesthetic concepts through coordination with study corridor communities and stakeholders. WisDOT is developing a traffic mitigation plan, which will include coordination with emergency service providers and other stakeholders to mitigate traffic impacts and maintain access during construction. WisDOT will coordinate with local Jewish communities to maintain eruvin that may be affected by construction activities.

## 3.6. SOCIOECONOMIC CHARACTERISTICS

### 3.6.1. Affected Environment

The study corridor is located in both Milwaukee and Ozaukee counties in southeastern Wisconsin. Communities adjacent to the study corridor are listed in **Table 3-1**. The following subsections describe the demographic and economic characteristics of the study corridor communities.

#### POPULATION CHARACTERISTICS

**Table 3-9** shows the 2000 and 2010 population figures for the state of Wisconsin, the southeastern Wisconsin region, Milwaukee and Ozaukee counties, and the eight communities along the study corridor.

Between 2000 and 2010, the state's population increased by 6 percent and the region's population increased by 4.6 percent. Milwaukee County, which is the most populous county in the state and the region, had a slight population increase of 0.8 percent during this timeframe. This was the county's first 10-year population increase since the 1960s. All five Milwaukee County communities along the study corridor experienced slight decreases in population (-0.4 percent to -4.4 percent). Ozaukee County, which is the least populous county in the region, increased in population by 5.0 percent between 2000 and 2010. This was the county's slowest rate of growth in several decades. The populations in the city of Mequon and village of Grafton increased at a faster pace than the county at 6.0 percent and 11.1 percent, respectively. The town of Grafton had a slight decrease in population at 1.9 percent.

**Table 3-9: Past Population – State, Region, Counties and Community**

| Place | 2000 Population | 2010 Population | Difference | Percent Change |
|---|---|---|---|---|
| State of Wisconsin | 5,363,675 | 5,686,986 | 323,311 | 6.0 |
| Southeast Wisconsin Region | 1,931,165 | 2,019,970 | 88,805 | 4.6 |
| Milwaukee County | 940,164 | 947,735 | 7,571 | 0.8 |
| City of Glendale | 13,367 | 12,872 | -495 | -3.7 |
| Village of Bayside | 4,518 | 4,389 | -129 | -2.9 |
| Village of Fox Point | 7,012 | 6,701 | -311 | -4.4 |
| Village of River Hills | 1,631 | 1,597 | -34 | -2.1 |
| Village of Whitefish Bay | 14,163 | 14,110 | -53 | -0.4 |
| Ozaukee County | 82,317 | 86,395 | 4,078 | 5.0 |
| City of Mequon | 21,823 | 23,132 | 1,309 | 6.0 |
| Village of Grafton | 10,312 | 11,459 | 1,147 | 11.1 |
| Town of Grafton | 4,132 | 4,053 | -79 | -1.9 |

*Source: U.S. Census Bureau, 2010, and SEWRPC*

SEWRPC's projected population trends are shown in **Table 3-10** for the region and Milwaukee and Ozaukee counties. The population for the region is expected to increase 16.5 percent between 2010 and 2050. The projected population growth for Milwaukee County at 3.1 percent is expected to be slower than the regional growth in population. Ozaukee County's population is projected to increase at a faster pace than the region at 26.3 percent. This rate of growth is slower in comparison to the previous 40 year period (1970 to 2010) when Ozaukee County's population increased by 58.6 percent.

**Table 3-10: Population Projections – Milwaukee and Ozaukee Counties and Region**

| Place | 2010 | 2020 | 2030 | 2040 | 2050 | Difference (2010-2050) | Percent Change (2010-2050) |
|---|---|---|---|---|---|---|---|
| Milwaukee County | 947,735 | 959,830 | 970,831 | 973,264 | 976,704 | 28,969 | 3.1 |
| Ozaukee County | 86,395 | 92,031 | 99,123 | 104,657 | 109,075 | 22,680 | 26.3 |
| Southeast Wisconsin Region | 2,019,970 | 2,109,005 | 2,207,828 | 2,285,766 | 2,354,040 | 334,070 | 16.5 |

*Source: SEWRPC's Technical Report No. 11: The Population of Southeastern Wisconsin Preliminary Draft (5th Edition). Dec. 17, 2012.*

**Table 3-11** shows the Wisconsin Department of Administration (DOA) population projections for the study corridor communities between 2010 and 2040. The Milwaukee County corridor communities are expected to have fairly stable populations with some communities having a slight decline in population, while Whitefish Bay shows a population increase. The corridor communities in Ozaukee County are expected to increase in population.

**Table 3-11: Population Projections – Corridor Communities**

| Place | 2000 | 2030 | Difference (2010-2030) | Percent Change (2010-2030) |
|---|---|---|---|---|
| Milwaukee County Communities | | | | |
| City of Glendale | 12,872 | 12,660 | - 212 | -2% |
| Village of Bayside | 14,110 | 15,010 | 900 | 6% |
| Village of Fox Point | 6,701 | 6,270 | - 431 | -6% |
| Village of River Hills | 1,597 | 1,615 | 18 | 1% |
| Village of Whitefish Bay | 4,389 | 4,355 | - 34 | - 1% |
| Ozaukee County Communities | | | | |
| City of Mequon | 23,132 | 25,510 | 2,378 | 10% |
| Village of Grafton | 11,459 | 12,770 | 1,311 | 11% |
| Town of Grafton | 4,053 | 4,505 | 452 | 11% |

*Source: DOA*

## HOUSEHOLDS

**Table 3-12** shows the number of households for the state of Wisconsin, the southeastern Wisconsin region, Milwaukee and Ozaukee counties and study corridor communities. Between 2000 and 2010, the number of households in the state of Wisconsin increased 9.4 percent and the region's households increased by 6.8 percent.

Milwaukee County experienced a relatively small increase of households (1.6 percent) between 2000 and 2010, reflecting the relatively built-out nature of Milwaukee County's communities. Household figures for the Milwaukee County study corridor communities were fairly stable between 2000 and 2010, ranging from a 2.8 percent decline to a 3.5 percent increase.

The growth in Ozaukee County households (10.9 percent) increased at a somewhat faster pace than the state and the region between 2000 and 2010. The three Ozaukee County study corridor communities experienced growth in households ranging between 2.7 percent in the town of Grafton and 20.1 percent in the village of Grafton. Household growth in the city of Mequon (9.4 percent) was the same as the state, but slightly less than the countywide household growth rate of 10.9 percent.

The difference in growth rates between population and households in communities along the corridor are consistent with regionwide trends. According to SEWRPC, households in the region have increased at a faster rate than the regional population for each decade going back to at least 1950. Since 1950, the number of households in the region increased by about 126 percent, while the total population increased by about 63 percent.[7] The difference in growth rates between population and households is a result of a long-term decrease in household size in the region. According to SEWRPC, the average household size for the region decreased from 2.52 in 2000 to 2.47 in 2010. In Milwaukee County and Ozaukee County the average household size decreased from 2.43 to 2.41 and 2.61 to 2.47, respectively, during this same timeframe. The historic decline in household size is due to the fact that non-family households (one-person households and households comprised of unrelated persons) have been increasing more rapidly than family households for the past several decades. This trend explains why some

[7] *SEWRPC. Technical Report No. 11: The Population of Southeastern Wisconsin Preliminary Draft (5th Edition). Dec. 17, 2012.*

communities experienced increases in the number of households while experiencing a slight decrease in population during the same time period.

**Table 3-12: Households – State, Region, County and Community**

| Place | Households (2000) | Households (2010) | Difference (2000-2010) | Percent Change (2000-2010) |
|---|---|---|---|---|
| State of Wisconsin | 2,084,544 | 2,279,768 | 195,224 | 9.4 |
| Southeast Wisconsin Region | 749,039 | 800,087 | 51,048 | 6.8 |
| Milwaukee County | 377,729 | 383,591 | 5,862 | 1.6 |
| City of Glendale | 5,772 | 5,815 | 43 | 0.7 |
| Village of Bayside | 1,769 | 1,831 | 62 | 3.5 |
| Village of Fox Point | 2,825 | 2,747 | -78 | -2.8 |
| Village of River Hills | 590 | 595 | 5 | 0.8 |
| Village of Whitefish Bay | 5,457 | 5,355 | -102 | -1.9 |
| Ozaukee County | 30,857 | 34,228 | 3,371 | 10.9 |
| City of Mequon | 7,861 | 8,598 | 737 | 9.4 |
| Village of Grafton | 4,048 | 4,863 | 815 | 20.1 |
| Town of Grafton | 1,569 | 1,612 | 43 | 2.7 |

*Source: U.S. Census Bureau, 2000, 2010*

**Table 3-13** shows SEWRPC's household projections for the region and Milwaukee and Ozaukee counties. Households for the region are expected to increase 21.5 percent between 2010 and 2050. The projected growth in households for Milwaukee County and Ozaukee County are expected to be 6.8 percent and 26.6 percent, respectively. The household growth in Milwaukee County and Ozaukee County would account for about 15 percent and 6 percent, respectively, of the region's total household growth between 2010 and 2050. According to SEWRPC, the long standing trend of declining household size is expected to continue through 2050. The average household size between 2010 and 2050 for the region, Milwaukee County and Ozaukee County is expected to decrease from 2.47 to 2.36, 2.41 to 2.32 and 2.47 to 2.39, respectively.

**Table 3-13: Household Projections – Milwaukee and Ozaukee Counties and Region**

| Place | 2010 | 2020 | 2030 | 2040 | 2050 | Difference (2010-2050) | Percent Change (2010-2050) |
|---|---|---|---|---|---|---|---|
| Milwaukee County | 383,591 | 392,111 | 399,756 | 403,930 | 409,624 | 26,033 | 6.8 |
| Ozaukee County | 34,228 | 36,720 | 39,868 | 42,340 | 44,474 | 10,246 | 29.9 |
| Southeast Wisconsin Region | 800,087 | 844,043 | 892,407 | 932,899 | 972,423 | 172,336 | 21.5 |

*Source: SEWRPC's* Technical Report No. 11: The Population of Southeastern Wisconsin Preliminary Draft (5th Edition). *Dec. 17, 2012.*

## AGE

The I-43 North-South Freeway study corridor extends through several communities with relatively older populations. **Table 3-14** provides an overview of the percentages of individuals who are 65 years or older for the state of Wisconsin, Milwaukee and Ozaukee counties and the municipalities along the study corridor. As of 2010, 13.7 percent of the state's population was 65 years or older. In comparison to the state, the percent of people 65 years and older was less in Milwaukee County (11.5 percent) and greater in Ozaukee County (15.3 percent).

The percentage of people 65 years and older within the Milwaukee County corridor communities typically exceeded the countywide percentage. The city of Glendale had the highest percent of persons 65 years and older at 22.6 percent. The village of Whitefish Bay at 10.6 percent was the only Milwaukee County corridor community that had a senior population percentage below the countywide percentage. In Ozaukee County, the village and town of Grafton had senior populations of 15.3 percent and 15.7 percent, respectively, which was about the same as the countywide percentage. Mequon at 17.3 percent had a higher percentage of seniors in comparison to the county, but it was still below most of the corridor communities in Milwaukee County.

**Table 3-14: Persons 65 Years or Older (2010) – State, County and Community**

| Place | Total Population | 65 and Older | Percent older than 65 |
|---|---|---|---|
| State of Wisconsin | 5,686,986 | 777,314 | 13.7 |
| Milwaukee County | 947,735 | 109,133 | 11.5 |
| City of Glendale | 12,872 | 2,908 | 22.6 |
| Village of Bayside | 4,389 | 915 | 20.8 |
| Village of Fox Point | 6,701 | 1,236 | 18.4 |
| Village of River Hills | 1,597 | 305 | 19.1 |
| Village of Whitefish Bay | 14,110 | 1,492 | 10.6 |
| Ozaukee County | 86,395 | 13,208 | 15.3 |
| City of Mequon | 23,132 | 4,003 | 17.3 |
| Village of Grafton | 11,459 | 1,751 | 15.3 |
| Town of Grafton | 4,053 | 636 | 15.7 |

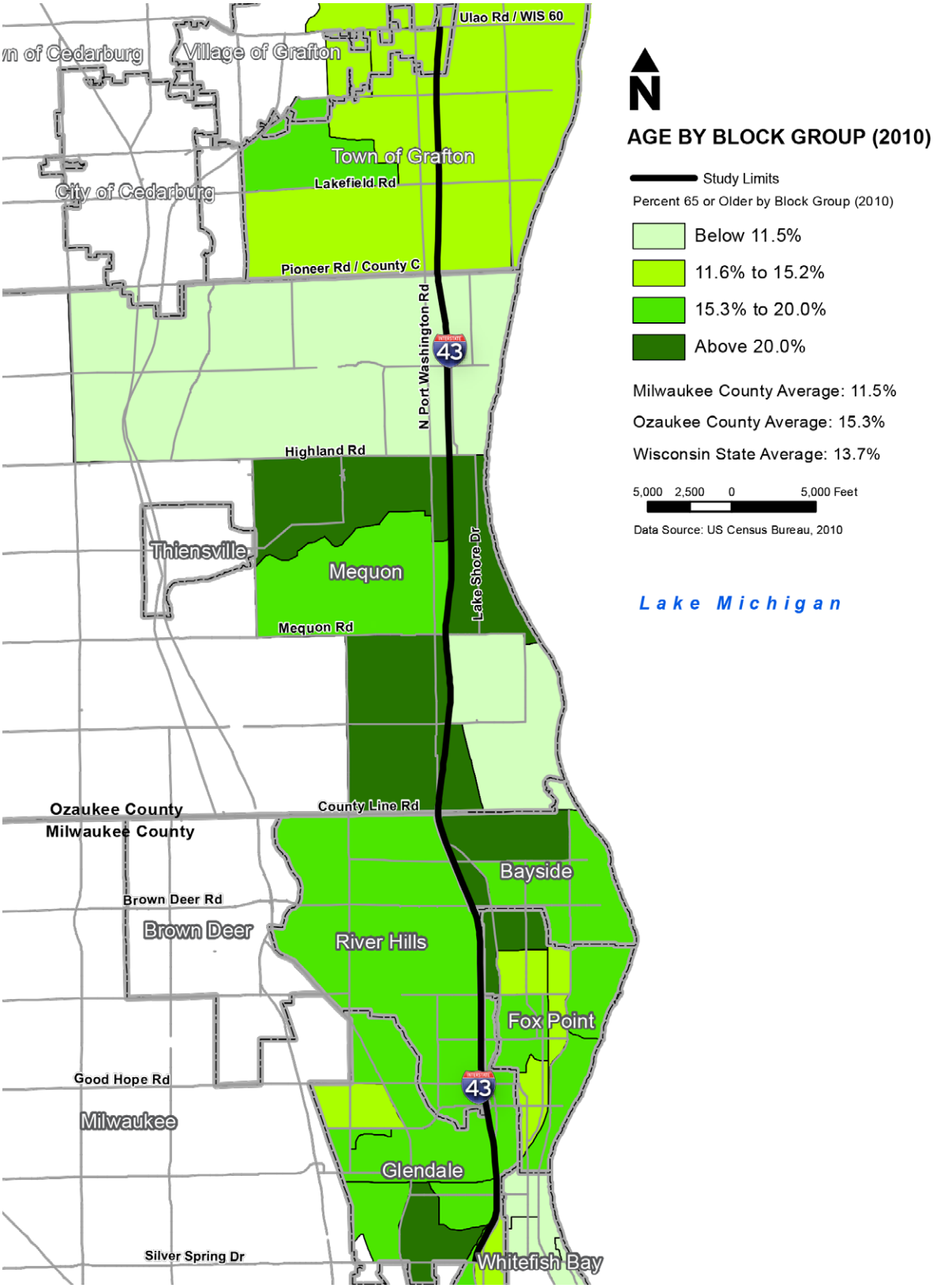
*Source: U.S. Census Bureau, 2010*

**Exhibit 3-12** shows the percentage of people 65 years and older by census block group for the study corridor.

A few areas have substantially higher percentages of seniors living along the study corridor. One area is located in the southern portion of the city of Mequon between County Line Road and Mequon Road; the percentages of seniors in the area's three block groups range from 32.1 percent to 37.8 percent. Another area is located in the city of Glendale, west of the study corridor, in the Silver Spring Drive and Bender Road area. The percentage of seniors in this block group is 42.2 percent. Other block groups that have a high percentage of seniors (above 20 percent) are located in the northern half of the city of Mequon and in the villages of Bayside and Fox Point.

Several senior and assisted-living housing facilities are located along the study corridor, which may contribute to the relatively higher percentage of seniors along the corridor.

## Exhibit 3-12: Persons 65 Years and Older by Block Group (2010)



## DISABILITY

**Table 3-15** provides an overview of the percentages of individuals with a disability for the state of Wisconsin, and Milwaukee and Ozaukee counties. Milwaukee County (12.1 percent) has a slightly higher percentage of disabled individuals than the state of Wisconsin (10.8 percent). Ozaukee County (8.5 percent) has a lower percentage of disabled individuals than the state. Disability status is currently not available at the municipal or block group level.

**Table 3-15: Disability Status of the Civilian Noninstitutionalized Population (2010) – State and Counties**

| Place | Total Civilian Noninstitutionalized Population | Number of People with a Disability | Percent of People with a Disability |
|---|---|---|---|
| State of Wisconsin | 5,613,402 | 605,869 | 10.8 |
| Milwaukee County | 940,063 | 113,986 | 12.1 |
| Ozaukee County | 86,303 | 7,328 | 8.5 |

*Source: U.S. Census Bureau, 2006-2010 American Community Survey*

## INCOME AND POVERTY

The I-43 North-South Freeway study corridor extends through communities with low poverty rates and high median incomes. **Table 3-16** provides an overview of the median household incomes and family poverty rates for the state of Wisconsin, Milwaukee and Ozaukee counties, and the corridor communities as of 2010.

The study corridor communities in Milwaukee County have higher median household incomes relative to Milwaukee County ($43,215) and the state of Wisconsin ($51,598). Median incomes range from $60,437 in the city of Glendale to $186,154 in the village of River Hills. Reflective of the high income levels, the Milwaukee County corridor communities have a lower percentage of families in poverty compared to Milwaukee County (14.9 percent) and the state (7.7 percent). Family poverty rates for the corridor communities range from 1.4 percent in the village of Bayside to 3.2 percent in the city of Glendale.

Ozaukee County's median household income ($74,966) was the second highest in the state as of 2010. The median incomes along the study corridor range from $65,544 in the village of Grafton to $107,429 in the city of Mequon. The percentage of families in poverty was lower in the city of Mequon (0.9 percent) and the town of Grafton (1.0 percent) compared to Ozaukee County (2.4 percent). The village of Grafton's family poverty rate (3.7 percent) was slightly higher than the countywide poverty rate, but lower than the state's family poverty rate.

**Exhibit 3-13** shows the median household incomes by block groups along the study corridor in Milwaukee and Ozaukee counties in 2010. Median household incomes in block groups along the corridor range from $40,190 to $250,000.

The block groups with the lowest median household incomes are at the southern end of the study corridor in the city of Glendale. The highest median household incomes are typically found in the center of the study corridor in Mequon, Bayside and River Hills.

**Exhibit 3-14** shows percentage of families in poverty by block group along the study corridor in 2010. The vast majority of block groups along the corridor had family poverty rates below the Ozaukee County percentage of 2.4 percent and many block groups had no families in poverty.

Four block groups had percentages higher than 5 percent and were located in Milwaukee County. The block group with the highest percentage of families in poverty (20.8 percent) is located west of the study corridor in the city of Glendale, where low income housing and assisted living facilities are located.

**Table 3-16: Median Household Income and Percent Families below Poverty Level (2010) – State, County and Community**

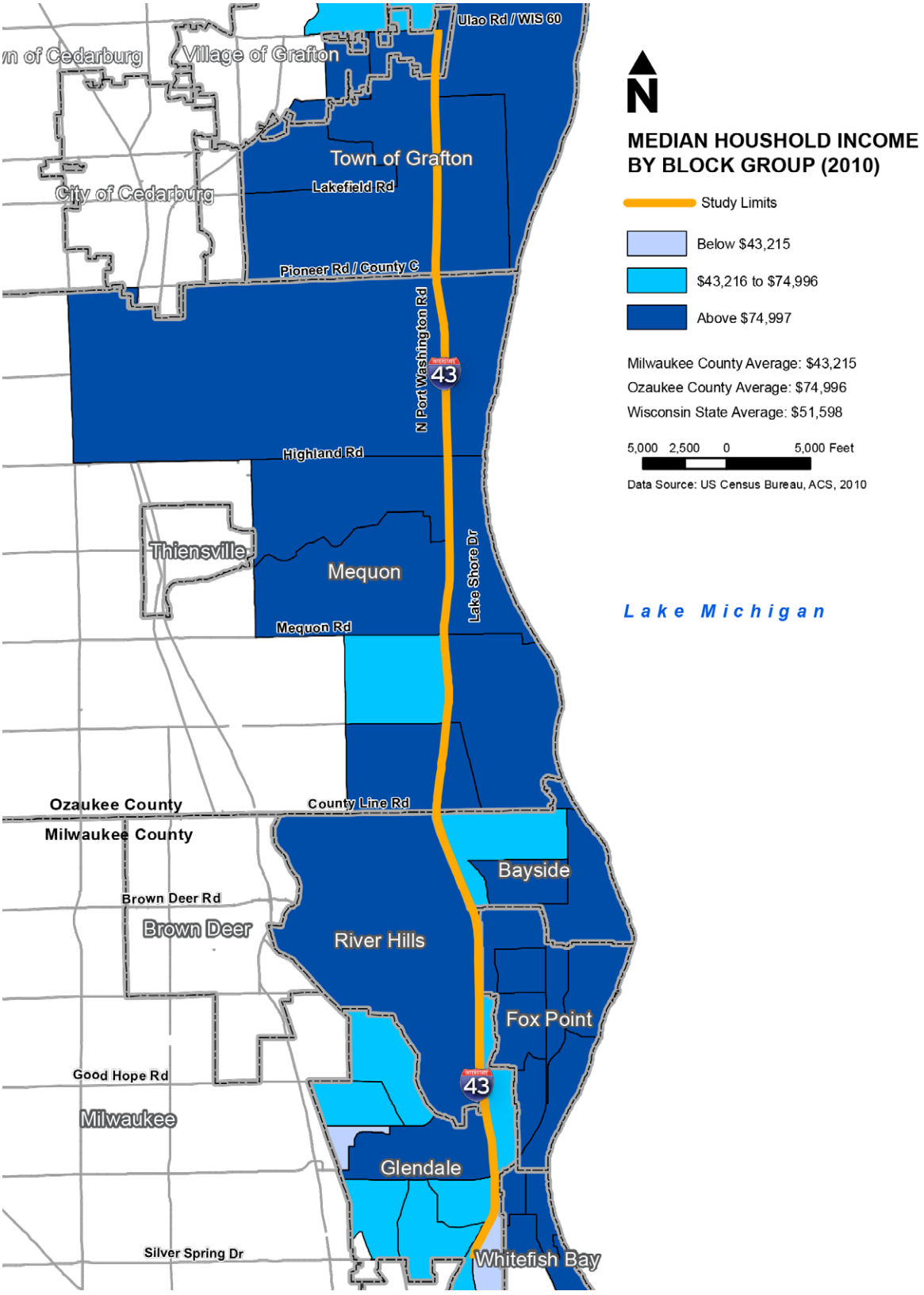
| Place | Median Household Income | Percent Families Below Poverty Level | |
|---|---|---|---|
| | | Number | Percent |
| State of Wisconsin | $51,598 | 113,928 | 7.7 |
| Milwaukee County | $43,215 | 32,661 | 14.9 |
| City of Glendale | $60,437 | 106 | 3.2 |
| Village of Bayside | $82,930 | 18 | 1.4 |
| Village of Fox Point | $96,350 | 43 | 2.3 |
| Village of River Hills | $186,154 | 7 | 1.4 |
| Village of Whitefish Bay | $106,845 | 97 | 2.5 |
| Ozaukee County | $74,996 | 580 | 2.4 |
| City of Mequon | $107,429 | 60 | 0.9 |
| Village of Grafton | $65,544 | 110 | 3.7 |
| Town of Grafton | $83,293 | 13 | 1.0 |

*Source: U.S. Census Bureau, 2006-2010 American Community Survey*

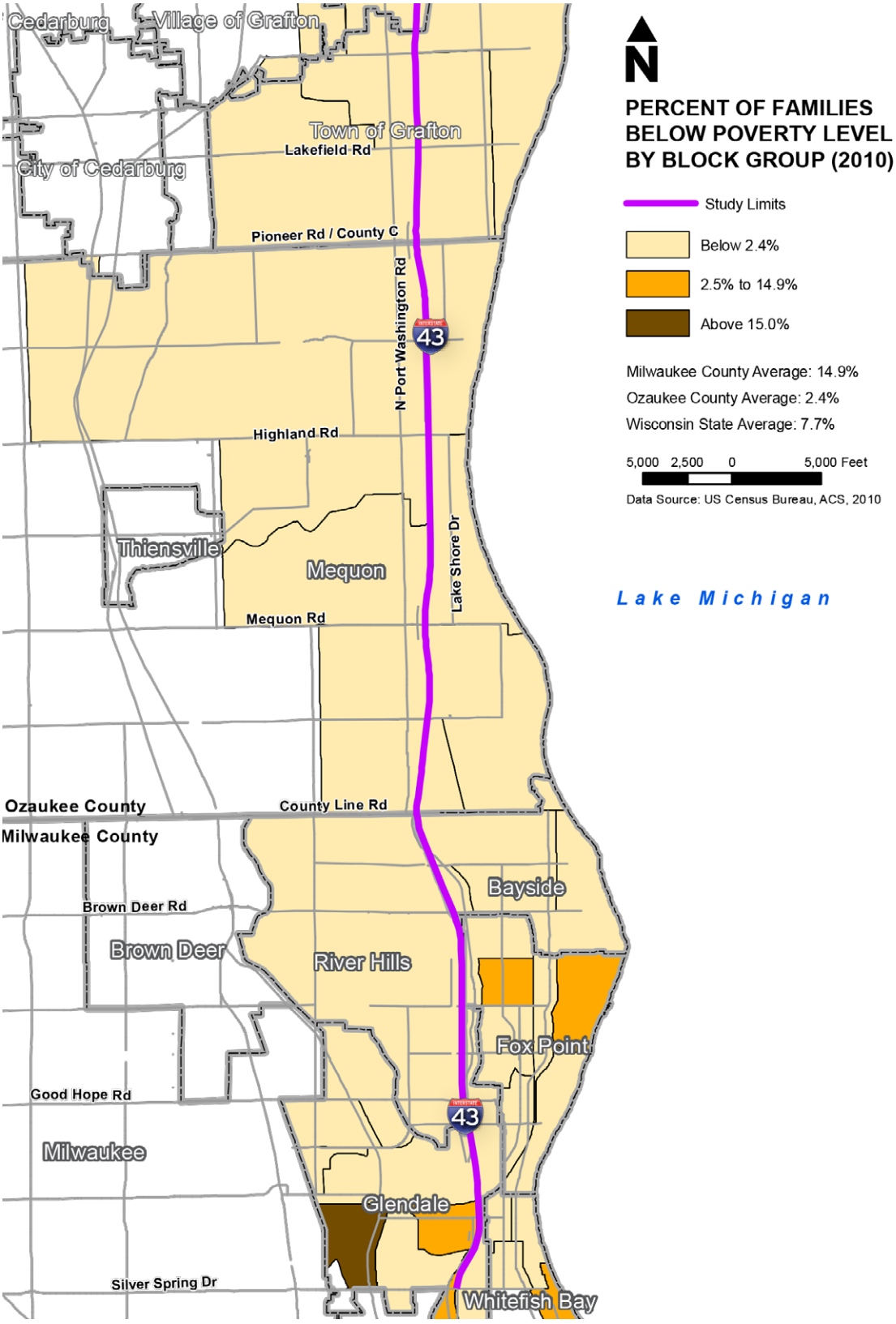
The block group poverty data discussed above was obtained to help identify low income persons as part of the environmental justice analysis discussed in **Subsection 3.6.4**, Environmental Justice. FHWA Order 6640.23, Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, issued in 2012, defines low income as a person whose median household income is at or below the U.S. Department of Health and Human Services (HHS) poverty guidelines. The HHS poverty guidelines are a simplified version of the U. S. Census Bureau poverty thresholds. The HHS poverty guidelines are used to determine financial eligibility for a number of Federal programs. The U.S. Census Bureau poverty threshold figures vary by household size and number of dependents, whereas the HHS poverty guidelines vary by household size only. According to HHS, the 2014 poverty guideline for a family of four is $23,850.[8] Because the HHS does not tabulate the number of people below the poverty guidelines for specific geographic areas, the poverty thresholds determined by the U.S. Census Bureau provide the most appropriate approximation of families below the HHS poverty guidelines.

[8] *http://aspe.hhs.gov/poverty/14poverty.cfm*

## Exhibit 3-13: Median Household Income by Block Group (2010)



## Exhibit 3-14: Percentage of Families below Poverty Level by Block Group (2010)



## VEHICLE OWNERSHIP

The percentage of households with no vehicles available in Milwaukee County (13.8 percent) is about twice that of the state of Wisconsin (6.8 percent) while the percentage in Ozaukee County (3.2 percent) is about half the state average. The percentages of households with no vehicles available are relatively low among the study corridor communities ranging from 0.6 percent to 3.8 percent. One exception is the city of Glendale which has a somewhat higher percentage (9.5 percent) of households with no vehicles available, although it is still lower than the Milwaukee County percentage.[9]

In Milwaukee County, 5.8 percent of the workers 16 years and older use public transportation as a means of transportation to work. This rate is higher compared to workers who use public transit at the regional and state level, which is 3.1% and 1.8%, respectively. Transit utilization within the Milwaukee County corridor communities is lower than the countywide percentage and ranges from 0.7 percent in the village of River Hills to 2.0 percent in the village of Whitefish Bay. In Ozaukee County, which has limited transit service, only 0.4 percent of workers 16 years and older use public transportation as a means to work. Transit utilization is also very low for the Ozaukee County corridor communities ranging from 0.2 percent in the village of Grafton to 0.6 percent in the city of Mequon.[10] **Subsection 3.2.1** provides more information on transit service in the study corridor.

## RACE

**Table 3-17** shows the racial distribution for the state of Wisconsin, Milwaukee and Ozaukee counties and the corridor communities. The state had a minority population of 16.7 percent in 2010. Black or African American (6.2 percent) was the largest minority group in the state followed by Hispanic (5.9 percent) and Asian (2.3 percent).

In Milwaukee County, the minority population accounted for 45.7 percent of the population in 2010, which is substantially higher compared to the statewide percentage. Black or African American (26.3 percent) was the largest minority group followed by Hispanic (13.3 percent). All the Milwaukee County corridor communities had minority population percentages lower than the countywide percentage. The city of Glendale (23.1 percent) and the village of River Hills (20.0 percent) were the only Milwaukee County corridor communities with minority percentages that exceeded the state's minority percentage.

Ozaukee County's minority population was 6.6 percent in 2010, which was lower than the statewide percentage. The largest minority group in the county was Hispanic (2.3 percent) followed by Asian (1.7 percent) and Black or African American (1.3 percent). The city of Mequon's minority percentage (9.6 percent) was higher than the countywide percentage and the village of Grafton's minority percentage (6.0 percent) was just below the countywide percentage. The town of Grafton had the lowest minority percentage (4.1 percent) within the corridor communities. Asians made up the largest percentage of minorities in the city of Mequon and Hispanics made up the largest percentage of minorities in the village and town of Grafton.

**Exhibit 3-15** shows the percentages of minority populations along the study corridor by block group as of 2010. The block groups that have the highest percentages of minorities are generally located at the southern end of the study corridor in the city of Glendale. In the city of Mequon, a block group located east of I-43, between Highland and Mequon roads also has a relatively high percentage of minorities (26.4 percent).

[9] *U.S. Census Bureau, 2006-2010 American Community Survey*

[10] *U.S. Census Bureau, 2006-2010 American Community Survey*

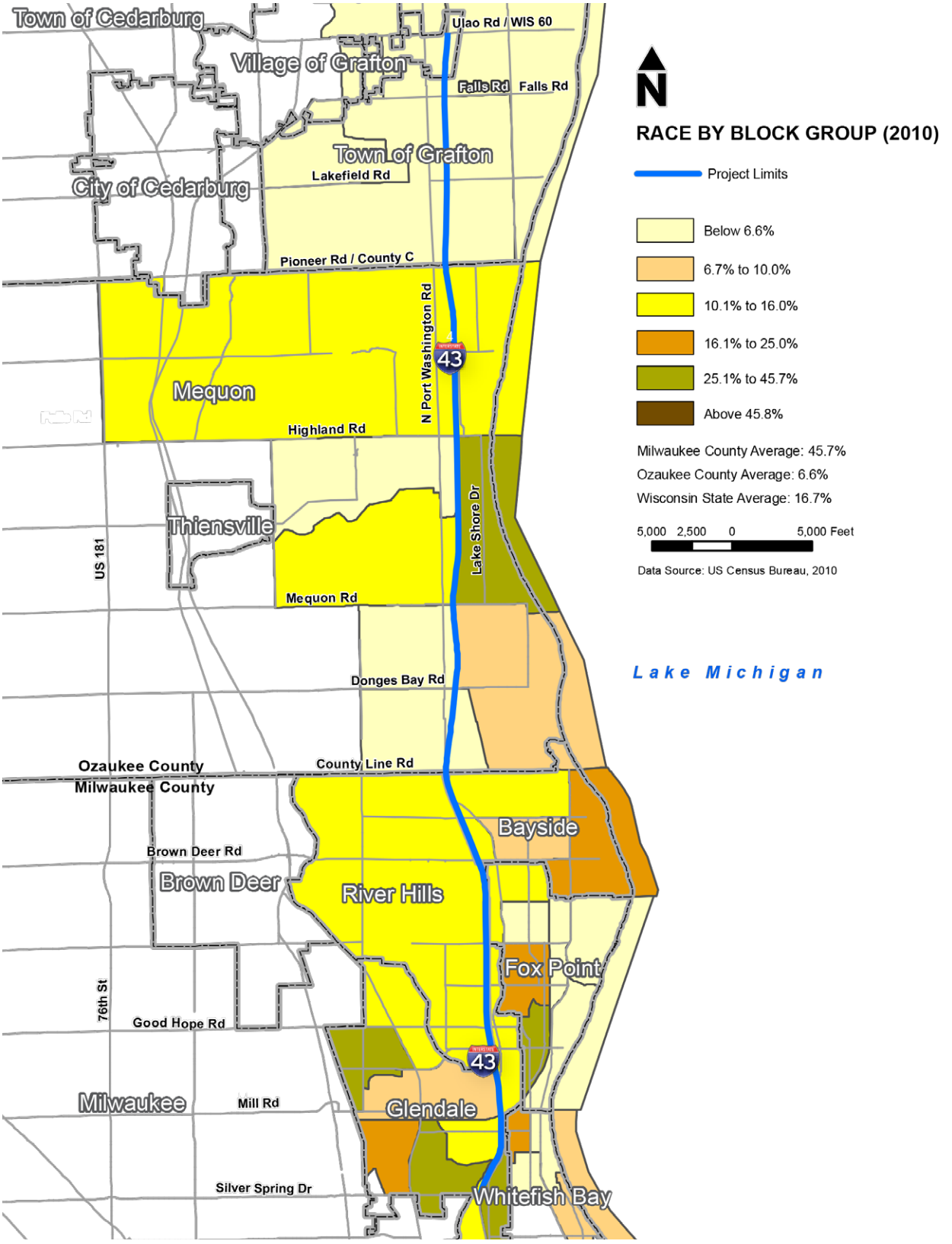
## Table 3-17: Percentages of Racial Composition (2010) – State, County and Community

| Place | Total | White | Black or African American | American Indian/ Alaska Native | Asian | Native Hawaiian/ Other Pacific Islander | Other | Two or More Races | Hispanic | Total Minority Population |
|---|---|---|---|---|---|---|---|---|---|---|
| State of Wisconsin | 100% | 83.3% | 6.2% | 0.9% | 2.3% | 0.0% | 0.1% | 1.4% | 5.9% | 16.7% |
| Milwaukee County | 100% | 54.3% | 26.3% | 0.6% | 3.4% | 0.0% | 0.1% | 2.0% | 13.3% | 45.7% |
| City of Glendale | 100% | 77.0% | 13.8% | 0.2% | 3.2% | 0.1% | 0.2% | 2.0% | 3.6% | 23.1% |
| Village of Whitefish Bay | 100% | 89.7% | 1.9% | 0.1% | 3.6% | 0.0% | 0.2% | 1.7% | 2.8% | 10.3% |
| Village of Fox Point | 100% | 89.6% | 2.7% | 0.1% | 3.7% | 0.0% | 0.2% | 1.3% | 2.4% | 10.4% |
| Village of River Hills | 100% | 80.0% | 6.0% | 0.2% | 7.5% | 0.0% | 0.1% | 2.1% | 4.1% | 20.0% |
| Village of Bayside | 100% | 88.4% | 3.4% | 0.3% | 3.6% | 0.1% | 0.1% | 1.4% | 2.8% | 11.7% |
| Ozaukee County | 100% | 93.4% | 1.3% | 0.2% | 1.7% | 0.0% | 0.1% | 1.0% | 2.3% | 6.6% |
| City of Mequon | 100% | 90.4% | 2.7% | 0.1% | 3.6% | 0.0% | 0.1% | 1.1% | 2.0% | 9.6% |
| Village of Grafton | 100% | 94.0% | 0.7% | 0.3% | 1.7% | 0.0% | 0.1% | 0.9% | 2.3% | 6.0% |
| Town of Grafton | 100% | 95.9% | 0.5% | 0.1% | 0.7% | 0.0% | 0.2% | 0.9% | 1.6% | 4.1% |

*Source: U.S. Census Bureau, 2010*

*Note: Minority population includes persons reported in the U.S. Census as being of Hispanic origin or reporting their race as non-Hispanic Black or African American, American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander, some other race, or more than one race.*

## Exhibit 3-15: Percent Minority by Block Group (2010)



## LANGUAGE

**Table 3-18** shows the language spoken at home for the population 5 years and older for the state, Milwaukee and Ozaukee counties and the corridor communities in 2010. As shown in the table, English is the dominate language in the state with 91.6 percent of the population speaking English at home. Only 3.2 percent of the state's population spoke English less than "very well" as of 2010.

In Milwaukee County, 84.3 percent of the population spoke only English at home and 6.7 percent of the population spoke English less than "very well" in 2010. In comparison to the countywide percentage, most of the study corridor communities have lower percentages of individuals that speak English less than "very well," ranging from 1.4 percent in the village of Whitefish Bay to 4.5 percent in the village of River Hills. The village of Bayside is the only corridor community in Milwaukee County that has a slightly higher percentage (7.2 percent) than the county.

In Ozaukee County, 6.4 percent of the population spoke a language other than English at home and 1.8 percent spoke English less than "very well" in 2010. These percentages are lower compared to Milwaukee County and the state. The city of Mequon (2.6 percent) and the village of Grafton (2.8 percent) had slightly higher percentages of people who spoke English less than "very well" at home compared to Ozaukee County, but were still lower than the statewide percentage.

Among individuals who speak a language other than English, Indo-European languages were the most commonly spoken throughout the communities located along the study corridor. However, the data indicates that these individuals generally speak English proficiently, with only a relatively low percentage of these individuals speaking English less than "very well."

**Table 3-18: Language Spoken at Home (2010) – State, County and Community**

| Place | Population 5 Years and Older | English Only (Percent) | Language Other than English (Percent) | Speak English Less than "Very Well" (Percent) |
|---|---|---|---|---|
| State of Wisconsin | 5,283,093 | 91.6 | 8.4 | 3.2 |
| Milwaukee County | 869,764 | 84.3 | 15.7 | 6.7 |
| City of Glendale | 12,113 | 89.5 | 10.5 | 3.1 |
| Village of Bayside | 4,084 | 80.5 | 19.5 | 7.2 |
| Village of Fox Point | 6,320 | 88.7 | 11.3 | 3.6 |
| Village of River Hills | 1,583 | 86.3 | 13.7 | 4.5 |
| Village of Whitefish Bay | 13,008 | 89.7 | 10.3 | 1.4 |
| Ozaukee County | 81,342 | 93.6 | 6.4 | 1.8 |
| City of Mequon | 22,260 | 89.2 | 10.8 | 2.6 |
| Village of Grafton | 10,538 | 93.5 | 6.5 | 2.8 |
| Town of Grafton | 3,965 | 95.0 | 5.0 | 1.0 |

*Source: U.S. Census Bureau, 2006-2010 American Community Survey*

## COUNTY EMPLOYMENT

**Table 3-19** shows the employment levels for Milwaukee and Ozaukee counties and the Southeastern Wisconsin region between 2000 and 2010 and the projected employment levels for 2050. Employment levels for the region in 2010 were at 1,176,600, which was a 2.7 percent

decrease from 2000. According to SEWRPC, prior to the 2000s, the region had experienced a substantial net increase in jobs each decade going back to at least 1950. Job losses during the 2000s were due to the national economic recession that occurred in the late 2000s. By 2050, the region's employment is projected to increase to 1,386,900, which is a 17.9 percent increase from 2010.

Milwaukee County is the largest county in the region in terms of employment. It had 575,400 jobs in 2010. Within the region, Milwaukee County was the hardest hit by the economic recession of the late 2000s and lost 42,900 jobs between 2000 and 2010. Prior to the 2000s, Milwaukee County had relatively slow, but stable employment growth. Milwaukee County's employment is projected to increase to 608,900 in 2050, which is a 5.8 percent increase from 2010.

Within the region, Ozaukee County contains the smallest number of jobs. In 2010, the county had 52,500 jobs, which was a slight increase of 2,100 jobs since 2000. Ozaukee County's employment growth during the 2000s (4.2 percent) was much slower compared to the county's employment growth experienced during the 1990s (43.6 percent) and the 1980s (24.5 percent). Ozaukee County's employment is projected to increase to 69,300 in 2050, which is a 32 percent increase from 2010.

**Table 3-19: Employment – Milwaukee and Ozaukee Counties and Region**

| Place | 2000 | 2010 | Difference (2000-2010) | Percent Change (2000-2010) | 2050 Projection | Percent Change (2010-2050) |
|---|---|---|---|---|---|---|
| Milwaukee County | 618,300 | 575,400 | -42,900 | -6.9 | 608,900 | 5.8 |
| Ozaukee County | 50,400 | 52,500 | 2,100 | 4.2 | 69,300 | 32.0 |
| Southeast Wisconsin Region | 1,209,800 | 1,176,600 | -33,200 | -2.7 | 1,386,900 | 17.9 |

*Source: SEWRPC's Technical Report No. 10: The Economy of Southeastern Wisconsin Preliminary Draft (5th Edition). Jan. 23, 2013.*

**Table 3-20** shows the breakdown of employment by industry in 2010 for Milwaukee County as reported by the Wisconsin Department of Workforce Development. According to this source, Milwaukee County supported more than 465,000 jobs in 2010 with a total payroll of $21.5 billion. The education and health industry and the trade, transportation and utilities industry made up Milwaukee County's largest employment sectors, accounting for 44 percent of the county's jobs and 41 percent of the total payroll in 2010. The professional services industry was also a significant industry, accounting for another 15 percent of the county's jobs and 17 of the total payroll. Johnson Controls, with over 2,500 employees, is located less than 2 miles west of the study corridor, north of Silver Spring Drive in the city of Glendale.

**Table 3-20: Employment Sectors – Milwaukee County (2010)**

| Industry | Annual Average Number of Jobs | | Total Payroll | |
|---|---|---|---|---|
| | Number | Percent | Dollars (Millions) | Percent |
| Natural resources | 85 | <1 | 4 | <1 |
| Construction | 10,594 | 2 | 621 | 3 |
| Manufacturing | 52,141 | 11 | 3,149 | 15 |
| Trade, transportation and utilities | 78,609 | 17 | 3,003 | 14 |
| Financial | 34,686 | 7 | 2,259 | 11 |
| Professional and business services | 69,880 | 15 | 3,657 | 17 |
| Education and health | 127,239 | 27 | 5,756 | 27 |
| Leisure and hospitality | 43,556 | 9 | 874 | 4 |
| Other | 16,719 | 4 | 406 | 2 |
| Public administration | 21,965 | 5 | 1,184 | 6 |
| **All industries** | **465,103** | **–** | **21,506** | **–** |

*Source: Wisconsin Department of Workforce Development, 2011.*

*Note: The "All industries" subtotals do not sum to the "All industries" total due to suppressed data associated with Information and Unassigned industry sectors.*

**Table 3-21** provides information regarding the annual average number of jobs and the total payroll (in millions of dollars) in Ozaukee County. According to this data source, there were more than 37,000 jobs in Ozaukee County in 2010, with a total payroll exceeding $1.4 billion. The manufacturing industry and the education and health industry were Ozaukee County's largest employment sectors, accounting for 42 percent of the total jobs and 51 percent of the total payroll in 2010. Three of the top employers in Ozaukee County, Columbia St. Mary's Group, Concordia University and Aurora Medical Center Grafton, are located close to the study corridor.[11] See **Subsection 3.4** for more information on major economic centers in the vicinity of the corridor.

[11] *http://worknet.wisconsin.gov/worknet/jsprofile_results.aspx?menuselection=js&area=089*

**Table 3-21: Employment Sectors – Ozaukee County (2010)**

| Industry | Annual Average Number of Jobs | | Total Payroll | |
|---|---|---|---|---|
| | Number | Percent | Dollars (Millions) | Percent |
| Natural resources | 193 | 1 | 6 | <1 |
| Construction | 1,100 | 3 | 50 | 3 |
| Manufacturing | 8,216 | 22 | 425 | 29 |
| Trade, transportation and utilities | 6,574 | 18 | 207 | 14 |
| Financial | 2,118 | 6 | 121 | 8 |
| Professional and business services | 4,248 | 11 | 196 | 13 |
| Education and health | 7,588 | 20 | 328 | 22 |
| Leisure and hospitality | 4,102 | 11 | 52 | 3 |
| Other | 1,257 | 3 | 27 | 2 |
| Public administration | 1,678 | 5 | 58 | 4 |
| **All industries** | **37,404** | **–** | **1,489.5** | **–** |

*Source: Wisconsin Department of Workforce Development, 2011*

*Note: The "All industries" subtotals do not sum to the "All industries" total due to suppressed data associated with Information and Unassigned industry sectors.*

## 3.6.2. Impacts to Socioeconomic Characteristics

### NEIGHBORHOOD AND COMMUNITY COHESION

The impacts of reconstructing and adding capacity to the study corridor relate to changes in the physical and social setting, community services and other factors that promote a sense of community among residents along the study corridor. Community cohesion encompasses buildings and services provided along the corridor such as churches, commercial development, social services, municipal buildings and services, parks, and schools. Neither the No-Build Alternative nor build alternatives split any neighborhoods; all existing roads across I-43 would be maintained. The I-43 mainline and related interchanges, overpasses and underpasses would remain largely within the existing freeway footprint and maintain or enhance bike and pedestrian accommodations on overpasses, underpasses and interchanges. The visual impacts would be minor and would not alter existing conditions.

During public information meetings, some comments received from local residents near the proposed Highland Road interchange expressed concern about increased traffic through residential areas west of I-43. Additional traffic may divert to Highland Road but increased traffic is also related to land uses, which influence traffic demand. **Subsection 3.22** provides detailed information about potential indirect and cumulative effects of the study alternatives.

## CHANGES IN TRAVEL PATTERNS

### NO-BUILD ALTERNATIVE

No substantial changes in travel patterns are expected under the No-Build Alternative. I-43 is already a well-established travel route with limited alternative north-south travel options. As congestion increases on I-43, local traffic may use Port Washington Road and Lake Drive as alternative north-south routes, causing additional congestion on local roads.

### BUILD ALTERNATIVES

I-43 mainline build alternative along with the interchange build alternatives would not substantially change travel patterns in this well established travel corridor. It is expected that some traffic currently using local streets to avoid congestion on I-43 would divert back to the freeway. The expansion of Port Washington Road between Bender and Daphne roads to four lanes would serve existing travel patterns along this local road. Specific locations where travel patterns could change are at Highland Road and County Line Road, as discussed below.

A new interchange at Highland Road would change travel patterns. Destinations such as Concordia University, MATC, Columbia St. Mary's hospital and other businesses along Port Washington Road would be more accessible by the new interchange. Traffic would divert from the Mequon Road and County C interchanges, as well as Port Washington Road and Lakeshore Drive, since the new interchange would provide more direct access. Under the No Access alternative for Highland Road, the existing travel patterns would remain.

The Partial Diamond interchange alternative at County Line Road would not change travel patterns, but moves the northbound exit ramp further north to terminate at the Port Washington Road crossing of I-43 near Katherine Drive to reduce weaving between that ramp and the Brown Deer Road entrance ramp to the south. Both Split Diamond Hybrid interchange subalternatives at County Line Road also move the existing northbound exit ramp, similar to the Partial Diamond alternative, and adds a northbound entrance ramp and southbound exit ramp. The Split Diamond Hybrid (Grade Separation) subalternative has slightly more indirection for Katherine Drive access to Port Washington Road compared to existing access. The Katherine Drive/Port Washington Road intersection is moved approximately 900 feet south of the existing intersection. The Split Diamond Hybrid (without Grade Separation) subalternative maintains the intersection largely at its current location. These subalternatives would thus divert some traffic that currently uses the Brown Deer Road and Mequon Road interchanges. Access to and from County Line Road would be available via Port Washington Road. Port Washington Lane would remain to serve local residents. Under these full access subalternatives for County Line Road, local officials and some residents have raised a concern about additional traffic using local roads as shortcuts to destinations. This potential impact could be moderated by the fact that the County Line Road interchange primarily serves a residential area. Plus, non-local traffic using the interchange for access to commercial destinations on Port Washington Road are likely to remain on Port Washington Road since it is the most direct route to commercial areas.

Under the No Access alternative for County Line Road, traffic would divert to the Brown Deer Road and Mequon Road interchanges for access to and from I-43. Modifications to the Port Washington Road intersections with Mequon Road and Brown Deer Road are discussed in **Subsection 3.2.2**

## BICYCLE AND PEDESTRIAN ACCOMMODATIONS

### NO-BUILD ALTERNATIVE

The No-Build Alternative would not change existing bicycle or pedestrian accommodations in the study corridor.

### BUILD ALTERNATIVES

Existing pedestrian and bicycle access along the study corridor would remain under the build alternatives, and access would be added or improved in certain locations. Sidewalks and bike lanes would be added where Port Washington and Jean Nicolet roads are reconstructed. Bike and pedestrian accommodations also would be included as part of reconstruction activities at cross streets at interchanges, overpasses and underpasses along the study corridor. If a build alternative is selected, the pedestrian tunnel under I-43 at Nicolet High School would be replaced to accommodate bicyclists and pedestrians and comply with ADA requirements. **Subsection 3.2.2** provides additional discussion on transportation impacts.

## CHANGES IN PROPERTY VALUES

The build alternatives would require property acquisition and relocation along the study corridor, and WisDOT would fairly compensate relocated stakeholders and property owners whose property is acquired as part of a future project.

Residents who live near I-43 have expressed concern about the potential for their property values to decrease if I-43 is expanded and reconstructed, which also potentially contributes to increased noise levels along the corridor. Property values are frequently cited as a concern regarding highway reconstruction projects, but home property values are affected by numerous variables, including location, home condition, mortgage rates and the economy. Although studies have not provided conclusive evidence that highway noise reduces property values, there are strong indications that highway noise does affect values when the property use is incompatible with the highway.[12] The FHWA and WisDOT have an established process to evaluate noise impacts and potential mitigation measures, which is discussed in more detail in **Subsection 3.15**.

## IMPACTS TO TAX BASE

Infrastructure improvements can permanently remove property from the local tax base, which could impact tax revenues in a community. The tax base impact for each alternative was determined using 2012 assessment figures from the Wisconsin Department of Revenue.[13] The analysis used the full assessed value for properties that would be relocated. For those properties where only a portion of land would be acquired (partial or strip acquisitions), the land value from county assessment data was used to determine the value of land to be acquired.

### NO-BUILD ALTERNATIVE

The No-Build Alternative would not affect local governments' property tax receipts.

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[12] *FHWA Office of Planning, Environment, & Realty, The Audible Landscape, http://www.fhwa.dot.gov/environment/noise/noise_compatible_planning/federal_approach/audible_landscape/al07.cfm*

[13] *http://www.revenue.wi.gov/pubs/slf/tvc12.pdf*

## BUILD ALTERNATIVES

Under the build alternatives, some buildings and private property would be acquired, thereby removing the property from the tax rolls. Potential impacts by community and by alternative are summarized in **Table 3-21**.

### *MILWAUKEE COUNTY COMMUNITIES*

#### *City of Glendale*

The city had a full tax base of $1,909,411,000 and a total property tax of $54,713,436 in 2012. The gross property tax rate was 2.87 percent. The build alternatives for the I-43 mainline South Segment and the Good Hope Road interchange could reduce the city of Glendale's overall tax base by up to $2,673,478 and decrease the tax levy by up to $76,595.

#### *Village of Whitefish Bay*

There are no impacts to the tax base in the village.

#### *Village of Bayside*

The village had a full tax base of $561,263,900 and a total property tax of $16,212,302 in 2012. The gross property tax rate was 2.89 percent. The build alternatives for the I-43 mainline North Segment, and Brown Deer Road and County Line Road interchanges could reduce the village of Bayside's overall tax base by up to $865,502 and decrease the tax levy by up to $25,022.

#### *Village of Fox Point*

The village had a full tax base of $1,030,559,100 and a total property tax of $29,325,561 in 2012. The gross property tax rate was 2.85 percent. The build alternatives for the I-43 mainline North Segment and Brown Deer Road interchange would reduce the village of Fox Point's overall tax base by up to $21,331 and decrease the tax levy by up to $607.

#### *Village of River Hills*

The village had a full tax base of $470,716,900 and a total property tax of $12,807,911. The gross property tax rate was 2.72 percent. The build alternatives for the I-43 mainline North Segment, and the Good Hope Road, Brown Deer Road and County Line Road interchanges could impact the village's overall tax base by up to $593,250 and decrease the tax levy by up to $15,666.

### *OZAUKEE COUNTY COMMUNITIES*

#### *City of Mequon*

The city had a full tax base of $3,972,167,500 and a total property tax of $71,489,490. The gross property tax rate was 1.80 percent. The build alternatives for the I-43 mainline North Segment, and County Line Road, Mequon Road, Highland Road and County C interchanges could decrease Mequon's overall tax base by up to $1,157,435 and decrease the tax levy by up to $20,834.

WisDOT requires local participation in funding the Highland Road interchange. The city may increase property taxes to raise the required funds. The city of Mequon's communitywide survey said property taxes could increase $30 to $50 per year over 20 years, depending on the value of the property.[14]

### *Town of Grafton*

The town had a full tax base of $532,014,900 and a total property tax of $9,536,053. The gross property tax rate was 1.79 percent. The build alternatives for the I-43 mainline North Segment and County C interchange would impact the town of Grafton's overall tax base by $165,335 and decrease the tax levy by $2,963.

### *Village of Grafton*

The build alternatives would not impact the village tax base.

**Table 3-22: Build Alternatives Impacts to Property Tax Revenues**

| | Estimated Tax Revenue Impacts[1] | | | | | |
|---|---|---|---|---|---|---|
| **Build Alternative Name** | **Glendale** | **Bayside** | **Fox Point** | **River Hills** | **Grafton** | **Mequon** |
| I-43 Mainline South Segment Modernization – 6 Lanes | | | | | | |
| Mainline Shifted East | $70,330 | – | – | $7,347 | – | – |
| I-43 Mainline North Segment: Modernization – 6 Lanes | | | | | | |
| Milwaukee County | – | $74 | $318 | $21 | – | – |
| Ozaukee County | – | – | – | – | $2,573 | $6,178 |
| Good Hope Road interchange | | | | | | |
| Tight Diamond | $6,295 | – | – | $6,312 | – | – |
| Brown Deer Road interchange | | | | | | |
| Diamond | – | $12,481 | $287 | $1,478 | – | – |
| Diverging Diamond | – | $20,563 | $289 | $1,221 | – | – |
| County Line Road interchange | | | | | | |
| No Access | – | $4,385 | – | $508 | – | $520 |
| Partial Diamond | – | $4,385 | – | $508 | – | $644 |
| Split Diamond Hybrid (both subalternatives) | – | $4,385 | – | $508 | – | $644 |
| Mequon Road interchange | | | | | | |
| Tight Diamond (Mainline Shifted East)[2] | – | – | – | – | – | $12,399 |
| Highland Road interchange | | | | | | |
| Tight Diamond | – | – | – | – | – | $1,465 |
| County C interchange | | | | | | |
| Diamond | – | – | – | – | $390 | $148 |
| Total Impact | $76,559 | $16,940-$25,022[3] | $605-$607[3] | $15,409-$15,666[3] | $2,963 | $20,710-$20,834[3] |

*Source: http://www.revenue.wi.gov/pubs/slf/tvc12.pdf*

*1. Estimated tax revenue impacts calculated by sum partial acquisitions and relocations multiplied by 2012 gross property tax rate by community.*

*2. With or without Highland Road interchange.*

*3. Impact depends on selection of Diverging Diamond or Tight Diamond interchange at Brown Deer Road interchange and No Access or Split Diamond Hybrid at County Line Road interchange.*

[14] *http://www.ci.mequon.wi.us/vertical/sites/percent7BEC6048ED-C06B-457B-A49D-CC38EE9D051C percent7D/uploads/07-23-13_COW_packet.pdf, Page 25 of 45.*

## EFFECTS ON SOCIAL GROUPS

WisDOT assessed the study's potential effects on several social groups through corridor research and its public involvement program. **Section 5** summarizes the study's public and agency outreach activities.

### *SENIORS*

Based on census data, the majority of the block groups located along the study corridor have higher percentages of people 65 years or older than Milwaukee and Ozaukee county averages.

#### NO-BUILD ALTERNATIVE

The No-Build Alternative would not directly affect elderly residents.

#### BUILD ALTERNATIVES

Under the build alternatives, minor strip acquisitions would be required from properties with multifamily housing along the corridor including units in the city of Glendale, village of Fox Point and city of Mequon. Some of these multifamily housing developments, such as the North Port Village Senior Apartments (Glendale), Elizabeth Residence of Bayside and Newcastle Place (Mequon) are examples of known multifamily senior living facilities. Right of way acquisitions from these properties would not impact services to these facilities.

The build alternatives could have an overall benefit to senior citizens who use the I-43 corridor by providing a safer design that meets current design standards and can accommodate future travel demand. WisDOT conducted a road safety audit of the I-43 North-South Freeway study corridor in spring 2013. Recommendations from the study's safety audit would benefit all users, including senior citizens. Among the audit's recommendations that could be considered during subsequent design phases are simplistic signs and messages to assist seniors by allowing them to process one item at a time. Decision points along the corridor could be separated so seniors can respond accordingly. The build alternatives would not directly affect senior citizens who do not drive.

### *PEOPLE WITH DISABILITIES*

There are multiple assisted care and living facilities throughout the study corridor communities.[15]

#### NO-BUILD ALTERNATIVE

The No-Build Alternative would not directly affect populations of people who have disabilities.

#### BUILD ALTERNATIVES

Under the build alternatives, strip acquisitions would be required from several parcels that house assisted care and living facilities noted above, but WisDOT is not aware of any direct impacts to disabled residents. The acquisitions would be minor and would not require relocations of residents, or impact functions that these facilities provide.

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[15] *Wisconsin Department of Health Services: http://www.dhs.wisconsin.gov/; calls to Ozaukee County Aging and Disability Resource Center: http://www.co.ozaukee.wi.us/adrc/ and Milwaukee County Disabilities Services Division: http://county.milwaukee.gov/dsd.htm*

*NON-DRIVERS AND PEOPLE WHO ARE TRANSIT-DEPENDENT*

NO-BUILD ALTERNATIVE

The No-Build Alternative would not directly impact non-drivers and people who are transit-dependent; however, decreasing safety and increased congestion could indirectly impact travel times and reliability for transit users.

BUILD ALTERNATIVES

Transit routes and transit riders that use the I-43 corridor would benefit from the improved safety and traffic operations under the build alternatives. The build alternatives also include transportation system management (TSM) measures and transportation demand management (TDM) measures that would benefit transit services in the study corridor. The I-43 Mainline Modernization – 6 Lanes alternative would improve travel time reliability by providing freeway capacity to the study corridor.

## 3.6.3. Mitigation of Adverse Impacts to Socioeconomic Characteristics

WisDOT will continue to coordinate with communities to minimize unavoidable socioeconomic impacts during future design phases for a preferred alternative. Improved travel reliability and safety in the study corridor can also support local economic development efforts, which can help offset unavoidable impacts to the local tax base. **Subsection 3.22** discusses the indirect and cumulative effects of the build alternatives. Measures to mitigate relocations and adverse noise impacts are further discussed in **Subsection 3.3.3** and **Subsection 3.15**, respectively.

## 3.6.4. Environmental Justice

The key legislation 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 1964 prohibits intentional discrimination, as well as disparate impact discrimination, which results when a seemingly neutral policy has disparate impacts on protected population groups.[16] President Clinton issued Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The Executive Order requires each federal agency to address the impacts of their programs with respect to environmental justice. To the extent practicable and permitted by law, minority and low-income populations cannot experience disproportionately high and adverse impacts as a result of a proposed project. The order also requires that representatives of low-income populations or minority populations that could be affected by the study are given the opportunity to be included in the impact assessment and public involvement process.

FHWA guidance on environmental justice and NEPA[17] outlines the elements to consider and the steps to be followed in addressing environmental justice during the NEPA review, including documentation requirements as follows:

[16] *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."*

[17] *FHWA*. Guidance on Environmental Justice and NEPA. *Dec. 16, 2011*.

- Identification of existing populations;
- Explanation of the process involved in coordination, access to information, and participation; and
- Identification of disproportionately high and adverse effects.

As part of the I-43 North-South Freeway Corridor Study, WisDOT and FHWA conducted an environmental justice analysis to determine the potential for disproportionately high and adverse effects[18] on minority populations and low-income populations.[19] If high and adverse impacts were found to be borne disproportionately by minority populations and low-income populations, further analysis would be necessary to 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 2012. In conducting the environmental justice analysis, WisDOT and FHWA assessed the impacts to natural resources, the impacts to the general public and the impacts to minority populations and low-income populations, with a focus on whether or not the impacts were disproportionately borne by minority groups and low-income groups.

## IDENTIFYING EXISTING MINORITY POPULATIONS AND LOW-INCOME POPULATIONS

WisDOT performed an analysis to identify socioeconomic characteristics of the corridor and to identify minority and low-income populations. The analysis also reviewed age, disability, vehicle ownership, and language characteristics. The analysis used U.S. Census Bureau block groups within a mile of the study corridor that are in communities adjacent to I-43, and it was supplemented by the I-43 North-South Freeway Corridor study team's public involvement program.

In addition to analyzing census data, WisDOT sought to identify minority and low-income populations through stakeholder interviews, contact with local property owners and discussions with elected officials and municipal staff. The study corridor block groups contain a predominately white, non-minority population with small numbers of minority residents. Some census block groups next to the study corridor have percentages of minority populations that are higher than the average percentage of minority populations in Milwaukee and Ozaukee counties. Overall, the study corridor block groups have high median household incomes and no substantial areas in the immediate study corridor have low-income populations. See **Subsection 3.6.1** for more information about race, income and language characteristics in the I-43 North-South Freeway study corridor.

## COORDINATION, ACCESS TO INFORMATION AND PARTICIPATION

WisDOT developed a Public Involvement Plan, which describes the process to share information and to receive input on the I-43 North-South Freeway Corridor study. **Section 5** describes the public involvement process for the study. WisDOT contacted local municipalities, specifically the city of Glendale, where relatively higher minority populations reside, to identify if any specific environmental justice populations were present in the study corridor. While no

*[18] 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 human-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.*

*[19] 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 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.*

specific groups were identified, the study team attempted to contact property owners who could be directly impacted by the build alternatives. Public information meetings were locally advertised and flyers were mailed out to residents and businesses within 1 mile of the study corridor. WisDOT held public meetings in Glendale, including Nicolet High School and St. Eugene Church, so that meeting sites were readily accessible to surrounding neighborhoods directly affected by the study alternatives. Transit service is limited in Ozaukee County; however, all the public information meeting sites in Milwaukee County were accessible by transit routes.

In addition to public information meetings, WisDOT study team members met with stakeholders throughout the corridor, including a neighborhood meeting with Glendale residents directly affected by the build alternatives. Members of minority community groups and organizations that serve low-income populations were also invited to and participated in the Indirect and Cumulative Effects focus group meeting conducted in July 2013.

## IDENTIFYING DISPROPORTIONATELY HIGH AND ADVERSE EFFECTS

### NO-BUILD ALTERNATIVE

While the No-Build Alternative would not have as many direct environmental impacts as the build alternatives, failure to address the condition of the I-43 North-South Freeway Corridor may have an adverse effect on low-income and minority residents, as well as the general population, because safety and traffic operations would continue to decline, compared with the build alternatives.

### BUILD ALTERNATIVES

#### *SOCIOECONOMIC EFFECTS*

The build alternatives would require relocating up to 12 residences and up to three businesses adjacent to the study corridor. Before public information meetings, WisDOT attempted to contact the households and businesses that may be relocated and determined that one minority business may be relocated under the build alternative for the Mequon Road interchange, and one minority resident may be relocated as part of the I-43 Mainline South Segment Modernization – 6 Lanes (Mainline Shifted East) alternative.

Property would be required from the Ozaukee Congregational Church (0.83 acre) under the I-43 mainline North Segment build alternative. Property would also be required from Nicolet High School under both I-43 Mainline South Segment Modernization – 6 Lanes alternatives. The property impacts are not anticipated to impact the functions of the church or the school. The limited potential right of way impacts to the school and the churches would not result in disproportionate impacts to low-income populations or minority populations. **Subsection 3.3** and **Subsection 3.4** describe measures to mitigate relocation impacts. There are available business and residential properties available in the study area communities (Mequon and Glendale) that will allow the affected business and resident to relocate within the same community. Impacts could be further minimized during construction with steeper slopes and the use of retaining walls, where appropriate. Potential indirect and cumulative socioeconomic effects are discussed in detail in **Subsection 3.22**. See discussions under **Subsection 3.22.1** “Step 6: Assess Consequences and Identify Mitigation Activities” and **Subsection 3.22.2** “Regional Land Use Patterns.”

#### *PHYSICAL AND NATURAL ENVIRONMENTS*

The build alternatives would result in temporary construction impacts, greater stormwater runoff volumes and increased noise levels along the corridor. The study is not expected to

have adverse air quality effects on residents or students adjacent to the study corridor. See **Subsection 3.16.2** for air quality discussion, **Subsection 3.21.4** for construction impacts on air quality, and **Subsection 3.22.2** for cumulative effects analysis on air quality. Future construction activities could also impact travelers in the vicinity of the study corridor resulting in inconveniences and additional delays during construction.

The proposed reconstruction of the I-43 North-South Freeway Corridor and local roadway system would comply with regulations regarding stormwater runoff from highways. As a result, less pollution and suspended solids would be discharged from I-43 and the local roadway system into streams compared to the No-Build Alternative. Increased stormwater runoff quantities due to likely increases in impervious surfaces would be addressed through compliance with statewide drainage regulations and using best management practices for stormwater management.

The study's noise impacts are localized and confined to areas adjacent to the study corridor (**Subsection 3.15**). Air quality impacts of the study alternatives are described in **Subsection 3.16**. The study is not expected to have an adverse effect on residents or students adjacent to the study corridor. Carbon monoxide levels are expected to be below national standards and particulate matter concentrations should decrease based on decreases in diesel truck emission rates. Mobile source air toxics (MSATs) are expected to diminish under the build alternatives, primarily as a result of reduced emissions from new motor vehicles corridor.

*TRANSPORTATION*

The I-43 Mainline Modernization – 6 Lanes alternatives, along with the interchange build alternatives, would not substantially change travel patterns in this well-established travel corridor. The build alternatives would enable I-43 to continue to serve as an important link connecting low-income or minority communities with jobs. The addition of a new Highland Road interchange would divert traffic entering and exiting I-43 from other interchanges due to improved access to destinations in the immediate area. The expansion of Port Washington Road between Bender Road and Daphne Road to four lanes would serve existing travel patterns along Port Washington Road. See **Subsection 3.2** and **Subsection 3.22** for additional discussion of transportation effects.

## SUMMARY

All residents and businesses would benefit to some extent through the efficient movement of goods and services. Based on WisDOT's public outreach, those directly affected by the study No-Build Alternative or build alternatives, through property acquisition, relocation, noise and other impacts, generally reflect census data for neighborhoods adjacent to the study corridor. WisDOT reviewed the census data and conducted extensive public outreach efforts which generally indicated that minority populations are present and low-income populations are not widespread in the vicinity of the study corridor.

Based on the above discussion and analysis, the build alternatives will not cause disproportionately high and adverse effects on any minority populations or low-income populations in accordance with the provisions of Executive Order 12898 and FHWA Order 6640.23. No further environmental justice analysis is required.

# 3.7. UTILITIES

## 3.7.1. Affected Environment

Underground and overhead utilities are located throughout the study corridor. Typical and notable utilities in the study corridor are described below.

- No major transmission lines cross I-43 in the study area. Underground and overhead electric utilities cross the corridor in several locations to provide electricity for local businesses and residences. Overhead electric lines run parallel to the UP Railroad throughout the study corridor.
- Gas mains run parallel to the corridor and cross I-43 within the study area. One high-pressure natural gas main crosses I-43 diagonally about 0.4 miles south of County Line Road, north of Fairy Chasm Road.
- Water mains cross I-43 in the study corridor. The cities of Mequon and Glendale and the village Fox Point receive municipal water service. The Milwaukee Water Works provides drinking water to Mequon. The North Shore Water Commission serves Fox Point, Glendale and Whitefish Bay, and it operates a the North Shore Water Treatment Plant along the west side of I-43 on Jean Nicolet Road in Glendale. Underground storage tanks for the water treatment plant are located along the existing right of way. A large intake main crosses I-43 at Bender Road to supply water from Lake Michigan to the water treatment plant. The Grafton Water and Wastewater Utility serves the village of Grafton.
- Drinking water in the village of River Hills and town of Grafton is via private wells; private wells and municipal service from Mequon provide drinking water in the village of Bayside.
- Several metropolitan interceptor sewers cross I-43. MMSD provides sanitary sewer service to most of the study corridor communities. The sanitary sewer in Grafton is maintained by the Grafton Water and Wastewater Utility.
- WisDOT has communication lines, electric lines, and storm sewers in the freeway right of way.
- WisDOT, AT&T and CenturyLink have underground fiber optic lines in the study area.

## 3.7.2. Impacts to Utilities

### NO-BUILD ALTERNATIVE

Under the No-Build Alternative, utility impacts would be those associated with normal roadway maintenance.

### BUILD ALTERNATIVES

The build alternatives may require relocation or replacement of overhead or buried utilities that would be in conflict with roadway improvements. Currently, several utility lines parallel or cross the study area freeway. The extent of utility relocations would be determined based on more detailed design during a future engineering phase. Utility impacts may include:

- Relocating electrical distribution lines and power poles;
- Relocating water mains and sewer lines;
- Relocating fiber optic lines (AT&T, CenturyLink and WisDOT);
- Relocating gas mains; and
- A small strip acquisition from the North Shore Water Commission, involving about 0.16 acres.

The underground storage tanks and operation of the plant would not be impacted.

### 3.7.3. Mitigation of Adverse Impacts to Utilities

WisDOT and FHWA will continue coordinating with utilities, municipalities, and Milwaukee and Ozaukee counties during the design process to avoid or minimize utility impacts, and avoid service interruptions during construction.

## 3.8. AGRICULTURAL RESOURCES

### 3.8.1. Affected Environment to Agricultural Resources

In Milwaukee County, no agricultural lands are adjacent to or near the study corridor.

In Ozaukee County, agriculture is a prevalent land use and an important economic activity. According to *Planning Report No. 87: A Farmland Preservation Plan for Ozaukee County: 2035*, in 2007, farming made up about 53 percent of the land cover and generated about $59 million in sales and revenue. Dairy farming makes up just more than half of this total, with various types of crop and livestock farming making up the remainder.[20]

According to the Natural Resource Conservation Service's soil survey, the soil in Ozaukee County is well-suited for farming. Soil associations are a distinctive pattern of soils and provide a general idea of the soils located within an area. Within the corridor area, the main soil association is Kewaunee-Manawa, which contains well-drained to somewhat poorly drained soils that have a subsoil of clay to silty, clay loam formed in thin loess, and silty clay loam till on uplands. Erosion control and drainage of low, wet areas are the main concerns in managing these soils.

Along the study corridor, agricultural land uses are limited to the northern portion of the city of Mequon and the town of Grafton. Although farming is still prevalent in Ozaukee County, it is a declining land use in the county and in the study corridor. *Planning Report No. 87: A Farmland Preservation Plan for Ozaukee County: 2035* shows that from 1980 to 2007, agricultural land uses in Ozaukee County decreased by almost 17 percent. As of August 2013, no parcels along the study corridor participate in the state's Working Lands Initiative, a program that provides income tax credits with the goal of preserving eligible farmland. Further, Ozaukee County future land use plans show all of the existing farmland along the study corridor in the city of Mequon and town of Grafton being converted to residential uses.

### 3.8.2. Impacts to Agricultural Resources

The build alternatives for the I-43 North-South Freeway study corridor would directly convert up to 9.6 acres of land that is currently farmed. Impacts are a result of strip acquisitions along the I-43 corridor in Ozaukee County, largely north of Highland Road, for the Modernization – 6 Lanes alternative and the County C Diamond interchange alternative. Most acquisitions from individual parcels are less than an acre in size, excepting one parcel where up to 2 acres would be acquired. No farm buildings would be acquired and no parcels are severed. Farm access would not be altered.

WisDOT completed the federal farmland impact rating form, which indicates that the build alternatives would not cause substantial impact to farmland (**Appendix C**).

[20] Planning Report No. 87: A Farmland Preservation Plan for Ozaukee County: 2035

WisDOT prepared an Agricultural Impact Notice for the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP). DATCP responded that the potential impacts to agricultural lands are not significant and therefore an Agricultural Impact Statement would not be necessary (**Appendix C**).

### 3.8.3. Mitigation of Adverse Impacts to Agricultural Resources

WisDOT will continue to evaluate measures to further minimize unavoidable impacts to farmlands through preliminary engineering. During preliminary design, WisDOT will follow up with Ozaukee County to confirm that no affected properties are in wetland reserve program or conservation reserve programs.

## 3.9. VISUAL CHARACTER AND AESTHETICS

### 3.9.1. Affected Environment

In general, the topography of the corridor is level to gently rolling, with low-lying areas associated with stream crossings or wetland areas. The freeway is level with the surrounding landscape for most of the study corridor and clearly visible from the surrounding area.

The viewshed in the southern portion of the corridor contains a built environment. East of the freeway, large-scale commercial activity is visible near Silver Spring Drive as well as strip commercial development. On the west side, noise walls restrict the view of people traveling on the study corridor. North of the UP Railroad overpass, the viewshed is largely suburban, with well-established residential areas, commercial shopping centers and institutional uses, most notably Nicolet High School and its associated athletic fields. Many of the residential areas are screened by substantial tree lines. Earthen berms along both sides of I-43, located on private properties, are a noteworthy feature in the southern part of the study corridor. Within the Village of River Hills, substantial landscaped berms are located on the west side of the freeway, from just south of Bradley Road to Dean Road, and then north of Brown Deer Road to just north of Fairy Chasm Road. These berms provide a visual barrier to the freeway for some of the residences close to the freeway; they also restrict views from the freeway. There are also three berms on the east side of I-43. The first, between Bradley Road and Maple Dale Middle School, provides a visual barrier for the Porticos apartments. Two berms, located between County Line Road to Katherine Drive provide a visual barrier for residences.

In Ozaukee County, the views from I-43 are generally more rural. The wide, grass median conveys the rural character of the area. Within the city of Mequon, commercial and residential development on Port Washington Road is visible from the freeway, particularly at the Mequon Road interchange. Throughout the rest of Ozaukee County, the view from the highway includes woodlots; rolling terrain of farmland and fields; residences dotting the landscape; and some nodes of commercial and institutional uses at overpasses and interchanges.

Regarding the existing freeway design, members of the public have commented that the existing beam guard in the median and on the outside near Bender Road where the freeway narrows down into two lanes is unattractive and detracts from the overall aesthetics of the area.

## 3.9.2. Impacts to Visual Character and Aesthetics

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 impact exists, an environmental study should identify the impacts to the existing resource, the relationship of the impact to potential viewers of and from the freeway, as well as measures to avoid, minimize or reduce the adverse impact.

### NO-BUILD ALTERNATIVE

The No-Build Alternative would not change the visual environment.

### BUILD ALTERNATIVES

The Modernization – 6 Lanes alternative in the I-43 mainline South Segment features profile changes that may impact the visual quality of the viewshed to or from I-43 (**Exhibit 3-16**).

## Exhibit 3-16: Corridor Visual Characteristics and Aesthetics

**Jean Nicolet Road, looking north, near Nicolet High School**

*Build alternative*

**I-43, looking north, near Nicolet High School**

*Build alternative*


*Existing*


*Existing*

The Modernization – 6 Lanes alternative would adjust the I-43 mainline to correct substandard design, which changes the freeway profile between Bender Road and Green Tree Road. In some locations, I-43 would be lower than its existing profile (such as near Apple Tree Road and Green Tree Road), and higher in other locations (near Nicolet High School, for example). In general, the overall effect of these alternatives would be to make the freeway less visible in some locations, which would benefit local stakeholders, but it may be more prominent at the Nicolet High School athletic field on the west side of the freeway, which may be perceived as a negative impact.

In addition to profile changes, additional visual impacts may occur due to relocations. WisDOT would relocate one home next to Jean Nicolet Road and 9 homes along Port Washington Road. Removing the impacted homes would expose the second row of homes to views of the freeway.

The No Access alternative at County Line interchange would remove the existing interchange. This alternative would remove the existing ramps and they would no longer be visible from Port Washington Road and Pheasant Lane. Overall, the Modernization – 6 Lanes alternative for the I-43 mainline North Segment would not substantially change the view from the freeway. The reconstructed highway would feature a beamguard or concrete median barrier, as opposed to the existing grass median with cable guard. This may change the corridor to have a more suburban or urban feel. The freeway would be widened to the inside to minimize impacts to wetlands and streams adjacent to the study freeway. A new interchange at Highland Road would introduce new highway infrastructure for ramps and replace the existing bridge that crosses over I-43 and the UP railroad.

Several temporary visual impacts throughout the study corridor, such as exposed earth, job-site equipment and vegetation loss, would occur during construction. Construction of feasible and reasonable noise barriers in the study corridor could eliminate views of and from the freeway in several locations.

### 3.9.3. Mitigation of Adverse Impacts to Visual Character and Aesthetics

If the I-43 North-South Freeway Corridor Study proceeds to preliminary engineering for a preferred alternative, WisDOT will initiate a community sensitive solutions (CSS) process to identify measures to enhance visual quality of the freeway corridor. WisDOT will form a CSS committee of local stakeholders to identify aesthetic treatments and beautification measures to ensure the freeway complements surrounding communities' cultural context, including their architectural, historic and natural features. The build alternatives could create excess fill material during construction, which may offer WisDOT an opportunity to coordinate with local communities to identify suitable locations for earth berms to block views of the freeway. WisDOT will continue during design to quantify available fill and work with local communities to refine potential berm locations if fill material is available.

# 3.10. WATER RESOURCES

## 3.10.1. Affected Environment

### SURFACE WATER AND FISHERY

The majority of the study area corridor is contained in the southern branch of the Milwaukee River Watershed. A portion of the study area corridor drains directly to Lake Michigan via Fish Creek. Several tributary streams cross the study corridor. The subsections below describe watersheds in the study area corridor.

*MILWAUKEE RIVER WATERSHED*

The Milwaukee River Watershed, part of the Milwaukee River Basin, consists of 204 miles of river and streams and drains 168 square miles in Milwaukee and Ozaukee counties. The Milwaukee River Watershed includes the Indian Creek and Ulao Creek subwatersheds, as well as their tributaries. All of these streams cross the freeway system within the I-43 North-South Freeway study area (**Exhibit 3-17**).

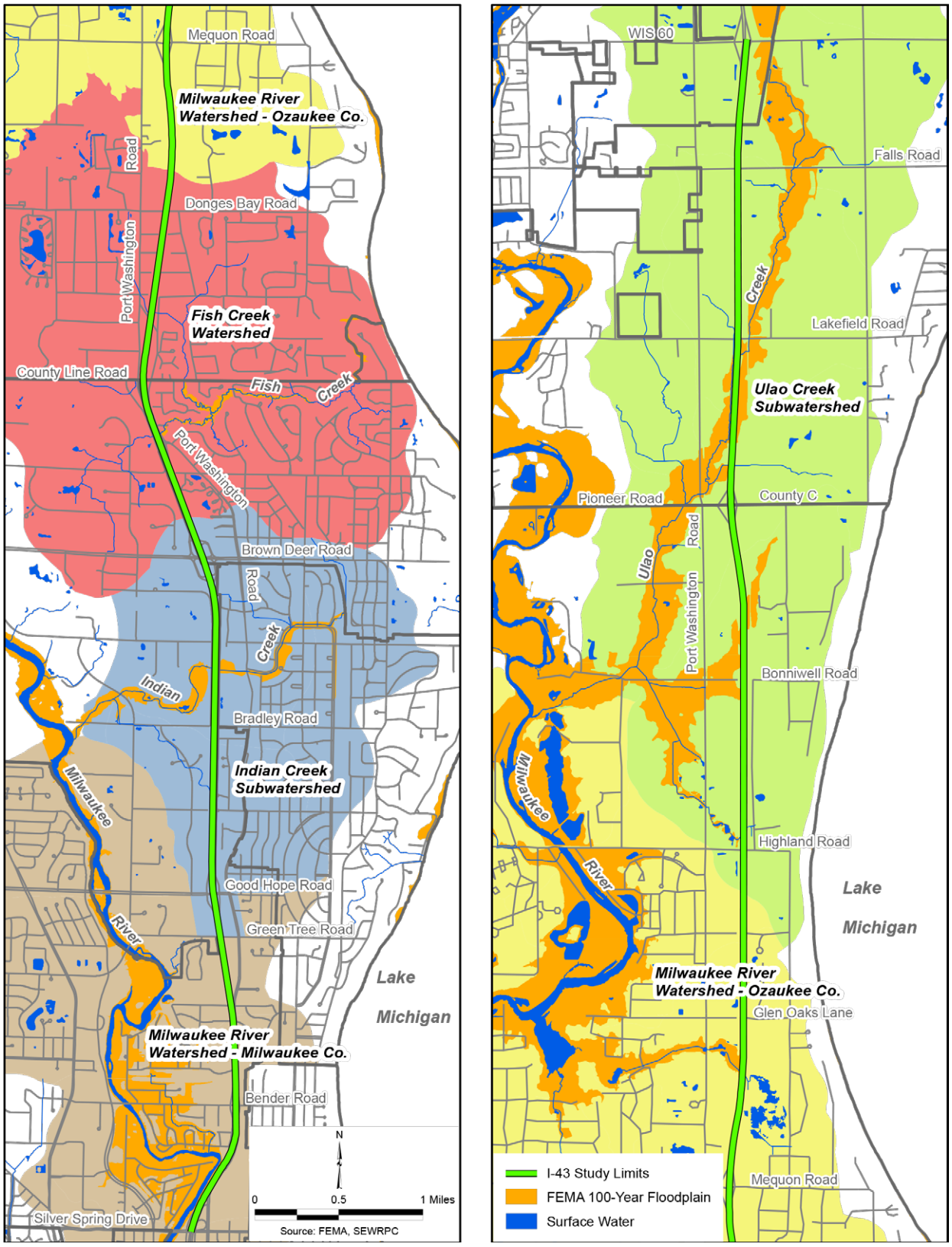
Indian Creek is a 2.6-mile-long stream that crosses the study area under I-43 south of the Brown Deer Road interchange in two 15-foot-by-15-foot box culverts. It flows primarily southwest to join the Milwaukee River near Bradley Road in Glendale. According to the Wisconsin Administrative Code (NR 104.03), Indian Creek is designated for a special variance use, meaning it is unable to support full warm-water fish communities. Indian Creek is listed as impaired water under Section 303(d) of the Clean Water Act, which refers to water bodies that do not meet Federal Clean Water Act standards. Pollutants of concern in Indian Creek include high levels of suspended solids, phosphorus and metals. Indian Creek is impaired with elevated water temperature, chronic water toxicity, a degraded biological community and habitat, and low dissolved oxygen.

*Without sufficient oxygen in the water, desirable species of fish and 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 major contributors to degraded water and habitat quality within the Milwaukee River Watershed.*

Ulao Creek, an unofficially named tributary of the Milwaukee River, is an 8.6-mile-long perennial stream that crosses I-43 within the study area. Ulao Creek passes under I-43 approximately 0.9 miles north of County C in three 6-foot-by-9-foot concrete box culverts, and it joins the Milwaukee River near Bonniwell Road in Mequon. Ulao Creek is considered swimmable and fishable, and is not listed as impaired water under Section 303(d) of the Clean Water Act. However, Ulao Creek does cause flooding problems. The Ozaukee County Planning and Parks Department's Ecological Division's Ozaukee Fish Passage Program is working to complete a large-scale habitat improvement and restoration project along the Milwaukee River and its tributaries, including Ulao Creek. This program is intended to improve the connectivity of Ulao Creek to allow for access to high quality habitat for native fish and wildlife.

Several small unnamed tributaries to the Milwaukee River cross I-43 within in the study area via culverts.

## Exhibit 3-17: I-43 North-South Freeway Study Corridor Watersheds and Floodplains



## FISH CREEK WATERSHED

Fish Creek is a tributary of Lake Michigan that passes under I-43 north of the County Line Road interchange via a box culvert that is 8 feet by 4 feet. It flows primarily southeast for about 3.4 miles, until joining Lake Michigan at the Milwaukee/Ozaukee county line. An unnamed tributary of Fish Creek crosses under I-43 approximately 100 feet south of County Line Road. Fish Creek is not listed as impaired waters under Section 303(d) of the Clean Water Act.

## WILD AND SCENIC RIVERS

No designated wild and scenic rivers are located within the study corridor.

## STORMWATER

In the study area, the majority of runoff from the freeway system is collected either by inlets and conveyed in storm sewer pipes or by overland flow through ditches. The storm sewer system, like most in urban areas, empties directly into streams and rivers. From the southern limits of the study area to about 0.1 miles north of Good Hope Road, runoff is collected via storm sewer and transported to the Milwaukee River. From about 0.1 miles north of Good Hope Road to the northern ramps of the Brown Deer Road interchange, runoff drains to Indian Creek (Indian Creek Subwatershed) via storm sewer and ditches. Stormwater drains via storm sewer and ditches, to Fish Creek, a tributary of Lake Michigan, beginning at the north ramps of the Brown Deer Road interchange to 0.75 miles south of Mequon Road (Fish Creek Watershed).

From 0.75 miles south of Mequon Road to Highland Road, stormwater drains to the Milwaukee River via ditch flow. From Highland Road to the northern limits of the study area, WIS 60, runoff drains to Ulao Creek via ditch flow (Ulao Creek Subwatershed).

Residents and local officials have commented on flooding problems in the study corridor along Indian Creek. Another notable problem area is at Nicolet High School, where an existing WisDOT storm sewer collects runoff from I-43, a roughly 70-acre area east of the freeway and, until recently, runoff from the high school campus. After a severe flood event in 2010, Nicolet High School constructed infrastructure on its property to manage the campus stormwater. Stormwater from the campus no longer drains via the WisDOT storm sewer.

The MMSD is developing total maximum daily load (TMDL) limits on behalf of the Wisconsin Department of Natural Resources for the watersheds within the Milwaukee area, including the Milwaukee River and its tributaries. TMDL is the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards. The TMDL pollutants of interest are fecal coliform bacteria, phosphorus and sediment. EPA anticipates approving a TMDL Implementation Plan to meet water quality standards in the Milwaukee River watershed in late 2014. Additionally, EPA is planning to update standards for post-construction stormwater runoff volumes. WisDOT has coordinated with MMSD and WDNR regarding the current status of TMDL requirements and other standards that may be implemented in the future, but will continue to comply with current TRANS 401 requirements for stormwater management.

## GROUNDWATER AND WATER SUPPLY

Groundwater sustains lake levels, provides the base flows for regional streams, and makes up a major source of water supply for domestic, municipal and industrial users. Like surface water, groundwater is susceptible to depletion in quantity and deterioration in quality.

Three major aquifers underlie the I-43 North-South Freeway Corridor study area. From the land surface downward, the three aquifers are the sand and gravel deposits of glacial origin; the shallow dolomite strata of the underlying bedrock; and the deeper sandstone, dolomite and siltstone complex. These aquifers yield water to wells, springs, lakes and streams. Because of their relative proximity to the land surface and their hydraulic interconnection, the first two aquifers are commonly referred to collectively as the "shallow aquifer," while the latter is commonly referred to as the "deep aquifer." The shallow and deep aquifers are separated by the Maquoketa shale formation, which provides a relatively impermeable barrier between the two aquifer systems.

Within the study area, the water supply is provided via wells and public utilities (see **Subsection 3.7**). According to EPA's list of designated sole-source aquifers, no sole-source aquifers – as defined by Section 11424(e) of the Safe Drinking Water Act[21] – are in Wisconsin.

WisDOT contracts with Milwaukee and Ozaukee counties to clear the corridor of snow and ice. Road salt (sodium chloride) is applied to I-43 within the study corridor during winter weather conditions, and WisDOT sets guidelines on when and how much salt is applied. Milwaukee and Ozaukee counties submit 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.

## 3.10.2. Impacts to Water Resources

### WATER QUALITY

Water quality impacts can occur due to stormwater runoff [22] from highways and 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.

> *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, along with pesticides, fertilizers and litter. These contaminants are carried into lakes, rivers and streams and have the potential to affect water quality, vegetation and associated aquatic life.*

The effects of pollutants from stormwater runoff would be worst at locations that discharge directly to waterways. Winter maintenance includes applying deicing agents, usually 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 the Special Report 235 by the Transportation Research Board (TRB)

[21] *EPA, 2004*

[22] *EPA, 1995*

titled *Highway Deicing: Comparing Salt and Calcium Magnesium Acetate* (1991), the impacts of road salt can adversely affect roadside vegetation, streams and groundwater; however, these impacts depend on a wide range of factors. Traffic levels, wind direction and intensity, and the 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.[23] 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 corridor. Studies have found that concentrations are highest within 5 feet to 10 feet of the edge of pavement; 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 build alternatives would increase the amount of stormwater runoff and runoff rate from the roadway compared with that of the No-Build Alternative. **Table 3-23** provides the estimated maximum amount of impervious area in each subwatershed for the No-Build Alternative and build alternatives, as well as the percent increase in the number of impervious acres when comparing the No-Build Alternative with the build alternatives. While the impervious area of the build alternatives increases, it represents less than a 2 percent increase of impervious area in the Fish Creek watershed, and only a 0.2 percent increase of impervious area in the Milwaukee River watershed. At the subwatershed level, the percent increase of impervious area is greatest in the Ulao Creek subwatershed, which is relatively small and much less developed compared to the urbanized areas of the Milwaukee River watershed.

WisDOT is also coordinating with the city of Glendale to determine if the existing storm sewer on the Nicolet High School campus will have adequate capacity after reconstruction of I-43, or if it will be necessary to create separate drainage systems for I-43 and the area east of the freeway. Regarding Indian Creek, the MMSD has already begun implementation of flood control measures to alleviate the flooding problems that exist there. The I-43 reconstruction project will be designed such that there will be no increase in peak discharge rates of runoff from the right of way, and there will be no adverse hydraulic impacts at the freeway crossing.

[23] *Caltrans and Nevada DOT, 1990*

## Table 3-23: Alternatives Comparison for Subwatershed Impervious Area

| | Subwatershed | | No-Build/Existing Conditions | | | Build/Proposed Conditions* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| County | Name | Area (acres) | I-43 Impervious Surface (acres) | Total Impervious Surface (acres) | Total Percent Impervious | I-43 Impervious Surface | Percent Increase Impervious Surface | Total Percent Impervious | Percent Increase in I-43 Impervious Surface | Percent Incease in Total I-43 Impervious Surface* |
| Milwaukee | Ulao Creek | 10,240 | 48 | 307 | 3.0% | 78 | 337 | 3.3% | 63% | 9.8% |
| | Milwaukee River (North) | 8,203 | 28 | 2,461 | 30.0% | 39.6 | 2,473 | 30.1% | 41% | 0.5% |
| | Indian Creek | 2,240 | 25.4 | 464 | 20.7% | 35.9 | 474 | 21.2% | 41% | 2.3% |
| | Milwaukee River (South) | 3,293 | 20.6 | 2,305 | 70.0% | 33.6 | 2,318 | 70.4% | 63% | 0.6% |
| | Milwaukee River (Remaining) | 424,024 | 0 | 36,466 | 8.6% | 0 | 36,466 | 8.6% | - | - |
| Milwaukee River Watershed TOTAL | | 448,000 | 122 | 42,003 | 9.4% | 187 | 42,068 | 9.4% | 53% | 0.2% |
| Fish Creek | | 3,432 | 23.1 | 618 | 18.0% | 34.9 | 630 | 18.3% | 51% | 1.9% |

*Notes:*

*Indian Creek – 3.5 sq mi (MMSD Indian Creek Study), % imp computed using subbasin CNs from study.*

*Ulao Creek – 7,941 ac south of WIS 60 (I-43 Corridor Drainage Map), 16 sq mi total (Ulao Creek Partnership), % imp from Ulao Creek Watershed Restoration and Stewardship Plan.*

*Milw R North – 8,203 ac (I-43 Corridor Drainage Map), % imp estimated relative to other subwatersheds, land use and TR-55.*

*Milw R South – 3,293 (I-43 Corridor Drainage Map), % imp estimated based on land use and TR-55.*

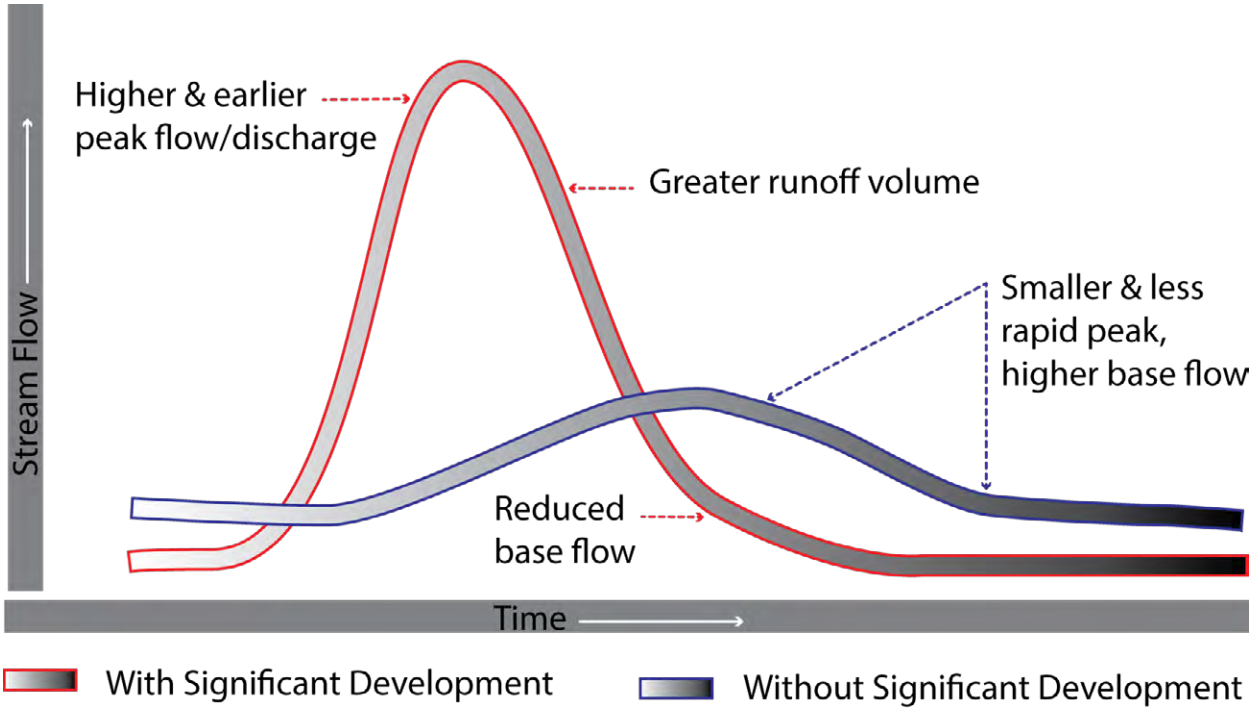
*Milw R Total – 700 sq mi (SEWRPC 208 Plan Update), % imp computed based on land use from Plan and TR-55.*

*Fish Creek – 3,432 ac (I-43 Corridor Drainage Map), % imp estimated relative to Indian Creek subwatershed.*

**Assumes full access interchange at County Line Road and Highland Road*

The amount of stormwater runoff from highways increases proportionately to the amount of impervious surface (pavement). Therefore, greater impervious surface can increase the amount of water in area streams above their carrying capacities, resulting in more frequent and severe flooding. An increase in runoff volume can also extend the period of high flow rates and velocities in stream channels, thus increasing the potential for erosion and sedimentation[24]. The potential impacts of greater impervious surface are a concern of the MMSD, which has an ongoing program of rehabilitating major streams in the Milwaukee area. **Exhibit 3-18** illustrates the relationship between impervious area and stream flow.

**Exhibit 3-18: Relationship between Impervious Areas 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 by removing sediment and pollutants (**Subsection 3.10.3**). WisDOT is also coordinating with the city of Glendale to determine if the existing storm sewer on the Nicolet High School campus will have adequate capacity for storm events.

WisDOT and the WDNR have a cooperative agreement that 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 the *Wisconsin Administrative Code NR 216*.[25]

*Wisconsin Administrative Code Chapter Trans 401* outlines stormwater-management and erosion-

[24] *Bent et al., 2001*

[25] Wisconsin Administrative Code Natural Resources Chapter 216

control procedures for WisDOT projects. *Trans 401* follows stormwater performance standards set forth in NR 151 and stormwater permit code set forth in NR 216. As applied to the I-43 North-South Freeway Corridor Study, *Trans 401* requires removal of 40 percent of total suspended solids for the study area, buffer areas upstream of waterways and wetlands, and maintain existing drainage conditions.

## STREAM CROSSINGS

All creeks and tributaries along the I-43 North-South corridor are conveyed under the highway via pipe or box culverts. The build alternatives would either replace or extend existing culverts to accommodate new construction. Culvert design would incorporate features to maintain low flow conditions.

Culverts and pipes have a greater effect on stream hydrology than bridges. The normal stream bottom transitions to a human-made bottom. In low-flow conditions, flat culvert bottoms tend to spread the stream flow very thinly, sometimes making it difficult for fish to swim through the culvert. Erosion at the down-stream exit of the culvert or pipe can result in a “perched” outfall, making stream passage difficult.

Ulao Creek runs parallel to I-43 on the west side, for about 2,000 feet between Lakefield Road and County C. The proposed design includes features such as steeper sideslopes to avoid impacts to the creek.

Fish passage in Ulao Creek is of special concern in the study area. Ozaukee County’s Fish Passage Program is in the process of improving connectivity of Ulao Creek, including maintaining passage under I-43. The culvert design criteria for the build alternative would include the county’s criteria to allow for aquatic organism passage.

## GROUNDWATER AND WATER SUPPLY

According to TRB *Special Report 235 titled Highway Deicing: Comparing Salt and Calcium Magnesium Acetate* (1991), road salt can enter water supplies by percolation through soil and into groundwater. Upon entering fast-moving streams and larger rivers, salt water usually has little or no effect because concentrations are quickly diluted. In general, only wells near salt-treated highways are susceptible to salt infiltration. Wells most likely to be affected are those within 100 feet down gradient of the roadway in the direction of groundwater movement. Wells may be located on properties adjacent to the I-43 corridor in the villages of River Hills and Bayside and the town of Grafton.

### NO-BUILD ALTERNATIVE

Under the No-Build Alternative, the current level of stormwater quality control (i.e. suspended solids removal) would continue. South of Good Hope Road, stormwater would continue to drain off the existing pavement and enter area waterways essentially untreated. North of Good Hope Road, stormwater runoff would continue to be treated by the existing grass roadside swales. The current volume and discharge rates of stormwater would drain off the study corridor and local roadway system into Fish Creek, Indian Creek, Ulao Creek and, subsequently, the Milwaukee River. Existing culverts would not be replaced and, therefore, any existing barriers to fish passage would remain. The No-Build Alternative would not change existing groundwater conditions or the drinking water supply.

### BUILD ALTERNATIVES

No new water crossings would be required. The build alternatives require replacing and/or extending all 21 existing culverts carrying waterways under the study corridor. The build alternatives could require up to 5,000 feet of culvert replacement. Some existing culverts could be left in place and extended based on the culverts’ structural condition. WisDOT will work

with the WDNR during the design of new or extended culverts to facilitate a natural streambed condition and maintain or improve aquatic organism passage and with Ozaukee County with regards to Ulao Creek and any work already performed through the Fish Passage Program.

Peak flows and total suspended solids increase because of increased impervious surface. MMSD has expressed concern about an increase in the volume of stormwater runoff from the study corridor, noting that increased runoff could increase the likelihood of stream bank erosion and downstream flooding. Stormwater best management practices have been evaluated for effectiveness throughout the study limits in available open spaces or where the roadway alternatives leave the exiting alignment, creating available space. Stormwater peak flows and total suspended solids will be controlled to meet *Trans 401*.

The build alternatives are not expected to adversely affect the drinking water supply or localized groundwater at or near the surface. Because sizeable dewatering or depressurizing activities during construction are not anticipated, 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. Stormwater directed to storm sewers and ditches would help avoid impacts to wells that may be present on nearby properties.

## 3.10.3. Mitigation of Adverse Impacts to Water Resources

WisDOT will implement stormwater-management techniques for the build alternatives. The build alternatives would increase impervious area and therefore increase the amount of stormwater runoff from the study area freeway and local roadway system. However, these alternatives also provide the opportunity to implement best management practices to treat the runoff and bring the study corridor and local roadway system in compliance with state stormwater-management regulations that limit the amount of pollution in runoff.

Stormwater treatment measures will be evaluated during the study's design phase. Best management practices can be utilized for stormwater management. Best management practices options are listed below and shown in **Exhibit 3-19**.

- **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 devices such as trenches or grass swales are used to slow the water flow so that more water is absorbed into the ground, and more pollutants are removed from runoff.
- **Grass ditches:** This best management practice generally helps reduce total suspended solids to meet the regulatory goal of *Trans 401*. The majority of the stormwater quality-control in Milwaukee and Ozaukee counties would be achieved with this best management practice.
- **Trapezoidal swale through infield:** This best management practice combines grass ditch treatment with peak flow reduction, and it is considered to provide the same level of total suspended solids control as grass ditches.

## Exhibit 3-19: Examples of Stormwater Best Management Practices

*Wet Detention Basin*

*Dry Detention Basin*

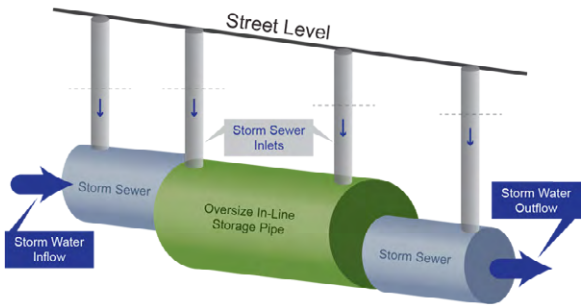
*Infiltration Devices*

*Grass Ditch*

*Trapezoidal Swale*

*Vegetated Rock Filter*

*Swale Block/Ditch Check*




*In-line Pipe Storage*

- **Vegetated rock filters:** This best management practice 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 are constructed in the bottom of ditches at regular intervals to detain runoff from frequent storms. This best management practice provides reduced peak flow and possible infiltration benefits depending on soil.
- **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, and then the water is gradually released after the rain event ends.

Due to space limitations, cost and the urban nature of the corridor from the southern study limits to Good Hope Road, best management practices will include street sweeping and in-line pipe storage. North of Good Hope Road to Mequon Road, ditches and detention basins may be used in addition to street sweeping and in-line pipe storage. The study corridor becomes fully rural north of Mequon Road, and roadside and median ditches along the I-43 corridor become viable best management practices to reduce total suspended solids. Preliminary estimates show that maximizing opportunities for best management practices using open space at the northern end of the corridor will reduce total suspended solids in excess of *Wisconsin Administrative Code Trans 401* requirements for the entire study corridor.

During preliminary engineering, WisDOT will continue coordination with the city of Glendale to determine if the existing storm sewer at Nicolet High School will have adequate capacity. If the storm sewer will not have adequate capacity, WisDOT will consider a range of options that could include adding capacity to the existing stormsewer or separating freeway runoff from non-freeway sources.

To comply with State Statute 87.30 and *Wisconsin Administrative Code NR 216*,[26] and to address concerns raised by MMSD, WisDOT and FHWA are investigating retention and detention basins to manage stormwater from the proposed improvements. The retention and detention basins would also improve water quality by allowing solid pollutants such as sand and grit to settle out of the water before it flows into storm sewers or streams. If these retention basins, detention basins or both are built, WisDOT would landscape the area around the basin. Wetlands within the study area limit space for retention and detention basin placement. Potential locations for retention basins, detention basin or both include:

- Milwaukee County: Stormwater detention basins may be located within the infields at the Brown Deer Road interchange.
- Ozaukee County: Stormwater detention basins may be placed within the right of way along the west side of I-43 at the Mequon Road interchange, both north and south of Mequon Road.

WisDOT will further assess the water quality and quantity management options during the design phase. WisDOT will coordinate with EPA and Milwaukee and Ozaukee counties to meet any new runoff volume standards when necessary. WisDOT will continue to coordinate with Ozaukee County to incorporate design criteria to accommodate fish passage at stream crossings to the greatest extent practicable.

[26] Wisconsin Administrative Code NR 216 *states that WisDOT bridge "construction may not cause any obstruction to flood flows."*

# 3.11. FLOODPLAINS AND HYDRAULICS

## 3.11.1. Affected Environment

Floodplains provide natural flood control by decreasing water velocities and temporarily storing flood water, thus also removing pollutants and excess nutrients, and providing erosion control. Floodplains also carry regional flood discharges, provide wildlife habitat, and supply corridors for wildlife movement. These functions vary among locations depending upon vegetative cover, waterway hydrology, and distance from the waterway.

*The 100-year floodplain is the area predicted to flood during a 100-year storm. A 100-year storm is a storm that has a 1 percent chance of occurring in any given year. Areas within the 100-year floodplain may flood during smaller storms too. The Federal Emergency Management Agency uses the 100-year floodplain as a basic mapping tool for its federal flood insurance program, and many municipalities use it to regulate development.*

I-43 crosses or lies adjacent to floodplains at several locations along the study corridor. The floodplain includes the floodway, flood fringe, shallow-depth flooding, flood storage and coastal floodplain areas.[27]

The floodway is considered the channel of a river or stream. The portions of the floodplain adjoining the channel are required to carry regional flood water.[28] The flood fringe is the portion of the floodplain outside of the floodway, which is covered by the flood water during the regional flood. The term flood fringe is generally associated with standing water rather than flowing water.[29] Shallow-depth flooding areas do not exceed a flooding depth of 1 foot or duration of six hours during a flooding event.[30] Flood storage consists of the floodplain areas that store flood water and reduce the regional flood discharge.[31] The nearest coastal floodplain is along the coast of Lake Michigan,[32] outside of the I-43 North-South Freeway Corridor study area.[33]

**Table 3-24** shows where the 100-year floodplain crosses or is in close proximity to the study corridor. **Exhibit 3-17** in **Subsection 3.10.1** illustrates floodplain locations in the I-43 North-South Freeway Corridor study area. Residents and local officials have commented on flooding problems in the study corridor along Indian Creek.

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[27] Wisconsin Administrative Code NR 116.03(16)

[28] Wisconsin Administrative Code NR 116.03(22)

[29] Wisconsin Administrative Code NR 116.03(14)

[30] Wisconsin Administrative Code NR 116.03(42)

[31] Wisconsin Administrative Code NR 116.03(21)

[32] Wisconsin Administrative Code NR 116.03(4)

[33] *WDNR, 1986*

**Table 3-24: 100-Year Floodplain Locations and Crossings**

| County | Location | Source |
|---|---|---|
| Milwaukee | Immediately west of I-43 from Silver Spring Drive to Montclaire Avenue | Milwaukee River |
| Milwaukee | Between Bradley and Dean Roads | Indian Creek |
| Milwaukee | Immediately east of Port Washington Road and I-43, about 0.3 miles south of County Line Road | Fish Creek |
| Ozaukee | Immediately west of I-43 about 0.7 miles north of Mequon Road | Unnamed stream |
| Ozaukee | Immediately west of I-43 about 80 feet north of Highland Road | Unnamed tributary to Ulao Creek |
| Ozaukee | Crosses I-43 southwesterly, just south of County C/ Pioneer Road to near Bonniwell Road | Unnamed tributary to Ulao Creek |
| Ozaukee | Crosses the freeway near Lakefield Road and runs in north-south direction along freeway for approximately 1.5 miles to County C | Ulao Creek |
| Ozaukee | Immediately east of I-43/WIS 60 interchange | Unnamed stream |

*Source: National Flood Insurance Program Flood Insurance Rate Map*

## 3.11.2. Impacts to Floodplains

Executive Order 1198 on Floodplain Management, and Code of Federal Regulations (CFR) 23 CFR § 650A – Bridges, Structures, and Hydraulics, direct federal agencies to take action to reduce the risk of flood loss; minimize the impacts of floods on human safety, health and welfare; and to restore and preserve the natural and beneficial values served by floodplains. The executive order also requires agencies to elevate structures above the flood base wherever possible. The purpose 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 wherever there is a practicable alternative.

Through the WisDOT-WDNR cooperative agreement, WisDOT is required to determine the impact of new or modified bridges and box culverts on the 100-year flood elevation.[34] 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 Wisconsin DNR are notified if the base 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 its zoning ordinance for submittal to the Federal Emergency Management Agency (FEMA), if requested. WisDOT provides the results of the analysis, the hydraulic models developed, mapping, and other exhibits developed for analysis.

[34] *WDNR and WisDOT, 2002*

#### NO-BUILD ALTERNATIVE

No floodplains would be affected under the No-Build Alternative.

#### BUILD ALTERNATIVES

The build alternatives would result in roughly 4.92 acres of fill being placed in the 100-year floodplain, including both floodway and flood fringe impacts. The I-43 mainline crosses floodplain associated with Ulao Creek and its tributaries in the vicinity of Bonniwell Road and the County C interchange. Filling impacts are primarily limited to areas where freeway mainline must be expanded to the outside and for culvert replacement or extension. The greater share of impact is related to the Modernization – 6 Lanes alternative for the I-43 mainline in Ozaukee County. A new Highland Road interchange and the County C interchange would impact a small area of floodplains associated with Ulao Creek and its tributaries. **Table 3-25** summarizes alternatives where floodplain impacts would occur. See also **Appendix A** for location of 100-year floodplains in the study corridor.

**Table 3-25: Alternatives Comparison for 100-Year Floodplain Impacts**

| Alternative | Floodplain Impact (acres) | Comments |
|---|---|---|
| I-43 Mainline: Modernization – 6 Lanes | | |
| Ozaukee County | 4.22 | Impacts to Ulao Creek and its tributaries, and tributaries to the Milwaukee River |
| Highland Road interchange | | |
| Tight Diamond | 0.14 | Impacts to Ulao Creek tributary |
| County C interchange | | |
| Diamond | 0.56 | Impacts to Ulao Creek tributary |
| *Total range of impact of build alternatives* | *4.92* | |

## 3.11.3. Mitigation of Adverse Impacts to Floodplains

Consistent with 23 CFR § 650A, WisDOT will minimize risks associated with unavoidable floodplain impacts to the greatest extent practicable. The build alternatives include measures to minimize impacts by widening the I-43 mainline to the inside and steepening sideslopes where practicable. All structures would have adequate capacity for 100-year flood flow without public or emergency vehicle interruption from damage to the roadway or structures. The structures would not increase the base flood 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, which include maintaining the natural and beneficial floodplain values and avoiding support of incompatible floodplain development. Additionally, floodplain crossings would be designed to avoid impacts to existing flood profiles on adjacent landowners' properties. The build alternatives do not support development in floodplains, as communities surrounding the I-43 North-South Freeway Corridor study area have floodplain management regulations in place to prevent inappropriate development.

# 3.12. WETLANDS

The U.S. Army Corps of Engineers' (USACE) *Wetland Delineation Manual* (1987) defines wetlands as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions." According to the manual, an area must meet three criteria to be considered a jurisdictional wetland: a prevalence of hydrophytic vegetation; the presence of hydric soils; and wetland hydrology.

> ***Hydrophytic vegetation*** *is plant life that thrives in wet conditions.* ***Hydric soils*** *are soils formed under wet conditions such as flooding or ponding for a time period long enough during the growing season to create anaerobic conditions, or reduced oxygen, in the soil.* ***Wetland hydrology*** *is a term that describes the various conditions that indicate wet or saturated soils during the growing season. Such conditions can include drift lines, water marks, soft or waterlogged ground or thin layers of sediment deposits in the area.*

Wetlands are important because they:

- Provide vital plant and animal habitats.
- Improve water quality by cleansing water of pollutants.
- Control flooding.
- Provide recreation areas.

Wetlands provide function and value depending on their position in the landscape and proximity to other plant communities, wildlife and associated habitats, and the built environment. Wetland functions include floral diversity, wildlife habitat, fishery habitat, flood/storm water attenuation, water quality protection, shoreline protection and groundwater, as well as aesthetics, recreation, and education. 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 I-43 North-South Freeway Corridor study area were not formally assessed on an individual basis as part of the preliminary investigation, their positions in the landscape and proximity to the existing roadway corridor suggests that they improve water quality by removing sediment and nutrients, and providing flood attenuation by storing water and slowing runoff velocity.

## 3.12.1. Affected Environment

WisDOT made a preliminary determination of wetland boundaries in the study corridor in May 2012. Wetland determinations and boundaries were estimated based on vegetation and obvious wetland hydrology field indicators. Once identified, the wetlands were then grouped by wetland classification. Preliminary investigations of the study corridor identified a total 158 wetlands. Wetland locations are shown on maps in **Appendix A**. **Appendix D** includes a table describing wetlands mapped in the study corridor. If a build alternative is selected at the conclusion of the EIS process, official wetland delineations would be conducted in a subsequent engineering phase in accordance with the USACE 1987 *Wetland Delineation Manual* and the *2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual; Northcentral and Northeast Region (Version 2.0)*. **Appendix D** also provides a preliminary indication if the USACE has jurisdiction over the listed wetlands.

Milwaukee County contains 51 of the identified wetlands, none of which are located within an environmental corridor or an isolated natural area. Ozaukee County contains 107 identified wetlands: 12 are within a primary environmental corridor; seven are within secondary environmental corridors; and three are within an isolated natural resource area (see **Subsection 3.14.1** for descriptions of environmental corridors and natural areas). In both counties, the majority of the wetlands are associated with roadway ditches. Of the 158 wetlands, 10 are considered high quality or possibly high quality, due to a relative lack of disturbance. Most of these high-quality wetlands are located within primary and secondary environmental corridors.

EPA, in cooperation with USACE, has implemented an advanced identification of wetland disposal areas (ADID) program to identify wetlands and other waters that are inappropriate for the disposal of fill or dredged material. In southeastern Wisconsin, SEWRPC and the WDNR are consulted during advanced identification of such wetlands to support the objectives of the areawide water-quality management plan, which 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 to conform with the Clean Water Act's Section 404(B)(1) guidelines.

Six ADID wetlands are in the study corridor: Three are associated with the primary environmental corridor found in Mequon; one is within an isolated natural resource area at the MMSD Greenseams property in the northeast quadrant of the I-43/Mequon Road interchange; and the other two are outside of designated environmental corridors or natural areas. Maps in **Appendix A** show locations of ADID wetlands.

## WETLAND CLASSIFICATIONS

WisDOT's *Wetland Mitigation Banking Technical Guideline* (WisDOT, 2002) was used to classify wetlands in the I-43 North-South Freeway Corridor study area. Classifications of wetlands identified within the study corridor include wet meadow, shallow marsh, riparian wetland-emergent, riparian wetland-forested, shrub-scrub and wooded swamp. Many of the wetlands identified include more than one wetland classification, with multiple wetland types interspersed within a complex of wetlands. A description of each classification follows.

### *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 are often 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.

### *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 are 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.

*RIPARIAN WETLAND – EMERGENT OR FORESTED (RPE/RPF)*

Riparian land refers to terrain adjacent to rivers and streams that is subject to periodic or occasional flooding. Riparian wetlands are typically narrow, wet areas that are adjacent to streams. They are periodically saturated or inundated because both surface and subsurface water flows toward them. The plant species that grow in riparian areas are adapted to tolerate wide fluctuations in hydrology.

Emergent riparian wetlands typically consist of riparian wet and sedge meadows, bars and mud flats. Vegetation within these areas is similar to that found in similar wetland communities not associated with stream or riverine systems. Riparian vegetation plays a role in many physical processes within stream and riverine systems. Shading provided by riparian vegetation helps to moderate water temperatures, keeping waters cool in the summer and providing an insulating effect in the winter. Emergent vegetation in riparian systems acts as a filter for sediment, fertilizers, pesticides, herbicides and road-related runoff such as petrochemicals generated on adjacent lands. Riparian vegetation also promotes bank stability and contributes organic matter and large woody debris to some stream systems, which is an important component of in-stream habitat.

*SHRUB-SCRUB WETLAND (SS)*

Scrub-Shrub wetlands, also known as shrub swamps, are similar to forest swamps but with vegetation less than 20 feet tall. 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 are sometimes inundated by as much as a few feet of water.

*HARDWOOD (WOODED) SWAMP (WS)*

Forested or wooded swamp wetlands 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.

## 3.12.2. Impacts to Wetlands

### NO-BUILD ALTERNATIVE

No wetlands would be affected under the No-Build Alternative.

### BUILD ALTERNATIVES

The build alternatives could impact a maximum of 27.46 acres of wetlands as a result of filling for the I-43 North-South Freeway Corridor Study mainline and interchange alternatives. **Table 3-26** summarizes a comparison of wetland impacts by location and mainline and interchange build alternatives. **Appendix D** provides a summary table summarizing each wetland in the I-43 North-South Freeway Corridor study area and their respective anticipated impacts. Of the total wetland acres impacted, about 2.51 acres are ADID wetlands, largely occurring along the I-43 freeway mainline.

## Table 3-26: Alternatives Comparison for Wetland Impacts

| Impacted Wetland Type | I-43 Mainline South Segment Modernization – 6 Lanes | Good Hope Rd Interchange | Brown Deer Rd Interchange | | County Line Rd Interchange | | | Mequon Rd Interchange | Highland Rd Interchange | | County C Interchange | WIS 60 Interchange | I-43 Mainline North Segment Modernization – 6 Lanes | Minimum Wetland Impact (acres) | Maximum Wetland Impact (acres) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Shifted East (acres) | Tight Diamond (acres) | Diamond (acres) | DDI[2] (acres) | Split Diamond Hybrid[3] (acres) | No Access (acres) | Partial Diamond (acres) | Tight Diamond (acres) | Tight Diamond (acres) | No Access (acres) | Diamond (acres) | Reconstruct Ramps (acres) | Green Tree Rd to WIS 60 (acres) | | |
| Wet Meadow (M) | | 0.03 | 0.53 | 0.51 | 1.01 | 1.01 | 1.01 | 0.90 | | 0.01 | 0.71 | 0.26 | 3.05 (includes 0.35 acre ADID wetlands) | 6.47 | 6.50 |
| Wet Meadow/Riparian wetland (M/RPF) | | | | | | | | | | | | | 0.09 | 0.09 | 0.09 |
| Wet Meadow/Shallow Marsh (M/SM) | | | | | | | | | 1.11 | 0.33 | 1.56 | 0.54 | 2.54 | 4.97 | 5.75 |
| Wet Meadow/Shallow Marsh/Hardwood Swamp (M/SM/WS) | | | | | | | | | 1.24 | 0.60 | | | 1.69 (includes 1.16 acres ADID wetlands) | 2.29 | 2.93 |
| Wet Meadow/Scrub-Shrub (M/SS) | | | | | | | | | 2.55 | 0.76 | 1.59 | | 0.24 (includes 0.19 acre ADID wetlands) | 2.59 | 4.38 |
| Wet Meadow/Hardwood Swamp (M/WS) | | | | | | | | | | | 0.11 | | 1.03 | 1.14 | 1.14 |
| Wet Meadow/Floodplain Forest (RPE/RPF) | | | | | | | | | | | 0.05 | | | 0.05 | 0.05 |
| Shallow Marsh (SM) | | | 0.22 | 0.21 | | | | | | | 0.40 (includes 0.01 acre ADID wetlands) | 0.48 | 0.64 | 1.73 | 1.74 |
| Shallow Marsh/ Hardwood Swamp (SM/ WS) | | | | | | | | | | | 0.54 | | 1.46 (includes 0.80 acre ADID wetlands) | 2.00 | 2.00 |
| Scrub-Shrub (SS) | | | | | | | | | | | | | 0.01 | 0.01 | 0.01 |
| Scrub-Shrub/Hardwood Swamp (SS/WS) | 0.54 | 0.01 | | | | | | | | | | | | 0.55 | 0.55 |
| Shallow Marsh/ Scrub-Shrub (SM/SS) | | | | | | | | | | | 0.23 | | 0.11 | 0.34 | 0.34 |
| Wooded Swamp (WS) | 0.14 | 0.07 | | | 0.02 | | 0.02 | 0.01 | 0.53 | 0.40 | 0.67 | | 0.57 | 1.86 | 2.01 |
| *Total* | *0.68* | *0.11* | *0.75* | *0.72* | *1.03* | *1.01* | *1.03* | *0.91* | *5.43* | *2.10* | *5.86* | *1.28* | *11.43* | *24.09* | *27.49* |

*1. Includes 0.61 acres of wetland impacts from Union Pacific RR relocation.*
*2. DDI = Diverging Diamond interchange.*
*3. Impacts are the same under both subalternatives (grade separation/without grade separation).*

The I-43 Mainline North Segment Modernization – 6 Lanes alternative has the greatest overall impact to wetlands, potentially filling just over 11 acres of wetlands, largely in Ozaukee County where there is more open, undeveloped land surrounding the study corridor. Impacted wetlands consist of wet meadow wetlands and wetland complexes consisting of wet meadow, shallow marsh and hardwood swamp. Both a new interchange at Highland Road and a reconstructed diamond interchange at County C each would impact the largest acreage of wetlands among the interchanges in the study corridor.

## 3.12.3. Mitigation of Adverse Impacts to Wetlands

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. FHWA regulations 23 CFR 777 also provide policy and procedures for mitigating adverse environmental impacts to wetlands and natural habitat.

The Clean Water Act's Section 404(b)1 Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 CFR § 230) are administered by EPA and USACE. 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.

WisDOT has initiated – and will continue – coordination with resource agencies including the WDNR, USACE and EPA to evaluate avoidance measures, as well as minimization and mitigation measures for unavoidable impacts. The USACE does not concur with the preferred Highland Road tight diamond interchange alternative since the No Access alternative is the least environmentally damaging alternative to wetlands. The No Access alternative creates substantially greater traffic operations and business access impacts at the Port Washington Road/Mequon Road intersection, which requires added infrastructure to accommodate traffic volumes. The alternative does not meet the purpose and need of being consistent with SEWRPC's 2035 regional transportation plan. But, if Mequon determines not to participate in the local cost-share for interchange construction, WisDOT would move forward with the No Access alternative as the preferred alternative. See **Subsection 5.2** for a summary of coordination activities.

### MEASURES TO MINIMIZE HARM

In accordance with state and federal agency policies and regulations for wetland preservation, including the Section 404(b)(1) guidelines, the following sections describe wetland mitigation strategies for the I-43 North-South Freeway Corridor Study alternatives.

#### *AVOID AND MINIMIZE WETLAND IMPACTS*

Because wetlands are scattered along the study corridor, including in the ditches that drain the freeway, it would not be possible to avoid wetland impacts completely during freeway reconstruction. Of the 158 wetlands identified within the study corridor, the build alternatives would avoid impacts to approximately 71 wetlands. By widening to the inside of the freeway mainline, the Modernization – 6 Lanes alternative avoids about 2.7 acres of wetlands. Additional minimization

measures such as steepening slopes avoids an additional 3.7 acres of ADID wetlands.

WisDOT will investigate additional measures to avoid and 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; using equalizer pipes to maintain wetland hydrology; minimizing sedimentation and siltation into adjacent wetlands by using strict erosion-control measures; and using detention ponds, where feasible, to reduce pollutant loading and protect streams from sedimentation.

*WETLAND COMPENSATION*

If a build alternative is implemented, a wetland mitigation plan would be developed during the future project's design phase, in consultation with state and federal agencies. Where there is no practicable alternative to filling wetlands, state and federal regulations require compensatory mitigation. Compensation for unavoidable wetland loss will be done in accordance with the July 2012 WisDOT-WDNR memorandum of understanding titled *Compensatory Mitigation for Unavoidable Wetland Losses Resulting from State Transportation Activities*.

The memorandum of understanding on compensatory mitigation states that mitigation banking is the preferred compensation option, though WisDOT and WDNR agree that other practicable and ecologically valuable project specific opportunities may be pursued on a case-by-case basis. Consistent with federal rules and the *Wetland Mitigation Banking Technical Guideline*, the mitigation goal is to compensate wetland loss as near as practicable to the area where the loss occurs, recognizing important factors such as land acquisition availability, resource sensitivity, project schedules, and the linear nature and length of WisDOT projects that may cross multiple watersheds.

The mitigation banking guidelines also recommend compensation ratios for wetland debits from an established wetland mitigation bank site. The wetland compensation ratios reflect the types of impacted wetlands versus types available at the established mitigation site and whether the mitigation site is in the same watershed as the impacted wetlands.

Compensation will also be done in accordance with WisDOT's *Wetland Mitigation Banking Technical Guideline* developed in 1993 and updated in 1997 and 2002, in cooperation with the WDNR, USACE, EPA, FHWA and U.S. Fish & Wildlife Service (USFWS), and in accordance with the regulations for compensatory wetland mitigation issued jointly by USACE and EPA in 2008 (33 CFR § 325 and 33 CFR § 332; and 40 CFR § 230 (April 10, 2008).

# 3.13. THREATENED AND ENDANGERED SPECIES

## 3.13.1. Affected Environment

WisDOT contacted the WDNR Bureau of Endangered Resources and the USFWS to identify threatened and endangered species that may be present in the I-43 North-South Freeway Corridor study area. USFWS indicated that no federally listed threatened or endangered species are known to occur in the study area (**Appendix C**). Other protected species and critical habitat are discussed in this section.

### STATE-LISTED SPECIES

The WDNR indicates the following threatened and endangered species may be present in the

study corridor (see WDNR letters in **Appendix C** dated May 8, 2012, and Nov. 6, 2012):

- Endangered plants: none indicated.
- Threatened plants
  - Forked aster (Aster furcatus)
  - Hairy beardtongue (Penstemon hirsutus)
- Endangered animals: striped shiner (Luxilus chrysocephalus).
- Threatened animals
  - Redfin shiner (Lythrurus umbratilis)
  - Greater redhorse (Moxostoma valenciennesi)

WisDOT also conducted a wetland plant species field review in September 2012 and found one threatened plant species in the study corridor – the seaside crowfoot (Ranunculus cymbalaria) – that was not indicated by the WDNR. Although the forked aster and hairy beardtongue were not observed in the field, suitable habitat does occur along the study corridor.

## OTHER PROTECTED SPECIES

Barn swallows commonly nest under highway bridges. Under the U.S. Migratory Bird Treaty Act, destruction of swallows and other migratory birds or their nests is unlawful unless a permit has been obtained from the USFWS. It is, however, permissible to net or knock down nests without eggs. The WDNR also requires minimization measures to protect bats that may use bridges for summer roosting.

## CRITICAL HABITAT AREAS

Critical species habitat areas are tracts of land or water that support state- or federally listed rare, threatened and/or endangered plant or animal species. No federally designated habitat areas are present in the I-43 North-South Freeway Corridor study area.

Various state-designated critical aquatic habitat areas are located along the study corridor in Milwaukee and Ozaukee counties. The Milwaukee River is a major aquatic habitat and supports multiple fish species.

The Milwaukee River runs generally from north to south west of I-43, and it is considered a critical aquatic habitat area for various aquatic species. Upstream from Port Washington Road to Brown Deer Road, critical fish species are present in the river, including the endangered striped shiner and threatened redfin shiner and greater redhorse. This section of the Milwaukee River runs just along the west side of I-43 between Silver Spring Drive and Montclaire Avenue.

Between Brown Deer and Mequon roads, the Milwaukee River also provides a rare species habitat, particularly for the threatened greater redhorse.

Upstream from Mequon Road to County C, the Milwaukee River supports diverse fish and mussel populations. This reach of the Milwaukee River bends east and lies as close as 0.6 miles west of I-43 between Highland Road and Glen Oaks Lane.

From County C to WIS 57, the Milwaukee River is considered an aquatic area of countywide or regional significance and supports critical fish species such as the threatened greater redhorse and redfin shiner, along with the endangered striped shiner.

SEWRPC also identifies an area near the I-43 North-South Freeway Corridor study area as a critical species habitat because it supports a population of the threatened forked aster plant.

## 3.13.2. Impacts to Threatened and Endangered Species

### NO-BUILD ALTERNATIVE

The No-Build alternative would not affect state-listed or federally listed threatened and endangered species. No critical species habitat areas would be impacted under the No-Build Alternative.

### BUILD ALTERNATIVES

The build alternatives could impact state-listed threatened and endangered species.

Potential habitat for the seaside crowfoot may be impacted due to widening and reconstruction activities in wetlands and streams throughout the corridor. Critical species habitat for the forked aster may also be impacted by construction activities. All other critical species habitat areas would be avoided.

Work in any of the streams in the study corridor could impact the striped shiner, redfin shiner and greater redhorse. Bridge replacement could also adversely affect nesting migratory birds and roosting bats.

## 3.13.3. Mitigation of Adverse Impacts to Threatened and Endangered Species

Impacts to threatened and endangered species can be avoided through mitigation measures.

### PLANTS

To avoid and minimize impacts to the forked aster and the seaside crowfoot, WisDOT would physically relocate any plants found. If needed, field surveys would be conducted during design if a build alternative is selected at the conclusion of the environmental study phase. The need for and extent of field surveys would be determined in consultation with the WDNR and other interested agencies. The timing of the field survey would coincide with the optimal identification periods established by the WDNR. If a particular plant species is found to be within the study's area of potential effect, further measures to avoid or minimize impacts would be evaluated. Where avoidance is not possible, WisDOT would coordinate with the WDNR on possible mitigation measures such as transplanting affected plants outside the area of potential effect.

### FISH

To avoid and minimize impacts to listed fish species, WisDOT would use erosion-control best management practices, incorporate fish passage design criteria (**Subsection 3.10.3**) and follow the restriction dates listed below for work in streams to protect endemic fish spawning activities:

- Fish Creek: Implement cold water and warm water restriction of work (no in-stream work between Sept. 30 and June 15).
- All other stream crossings: Implement warm water restrictions (no in-stream work between March 15 and June 15).
- As long as physical work is done within the construction window (such as installing cofferdams), then work could continue in protected area (such as working within the cofferdam).

### BIRDS

In the winter/early spring prior to construction, WisDOT would inspect bridges for the presence of nesting birds, remove empty nests and install netting on the structure before May 1.

### BATS

Minimization measures are required to protect bats that may use bridges for summer roosting. WisDOT would use the following WDNR protocol:

- Demolitions occurring from Aug. 16 to May 31 do not have any restrictions.
- Demolitions between June 1 and August 15 have restrictions. Unless bats are excluded before April to prevent them from using the bridge, demolition may not occur from June 1 to Aug. 15.

# 3.14. OTHER NATURAL RESOURCES

## 3.14.1. Affected Environment

Many of the natural resources in the I-43 North-South Freeway Study corridor occur within environmental corridors and natural areas. In addition to wetland and stream resources, the study corridor also contains upland habitat and associated wildlife. These resources are discussed in below.

### ENVIRONMENTAL CORRIDORS

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. **Exhibit 3-20** shows the locations of environmental corridors in the study corridor.

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 corridor.

Secondary environmental corridors contain substantial, but smaller, concentrations of natural resources and generally connect to primary environmental corridors. Secondary environmental corridors are at least 100 acres in size and 1 mile long.

Smaller concentrations of natural resources 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 large and 200 feet wide, are defined as isolated natural resource areas (INRAs) (**Exhibit 3-20**).

Primary environmental corridors, secondary environmental corridors, and isolated natural resource areas are found in both Milwaukee and Ozaukee counties. The following designated environmental corridors and natural areas lie adjacent to or cross the I-43 corridor study area.

*PRIMARY ENVIRONMENTAL CORRIDORS*

- Along the Milwaukee River in the city of Glendale, adjacent to the west side of I-43 from Silver Spring Ave, north for about half a mile, to just south of Montclaire Avenue.
- Along Fish Creek in village of Bayside, about 500 feet east of I-43 and 400 feet east of Port Washington Road, just south of County Line Road.
- Wetlands and woodlands in the city of Mequon, east and west of I-43, extending for about a mile south of the County C interchange to just south of Bonniwell Road.

*SECONDARY ENVIRONMENTAL CORRIDORS*

- Along Ulao Creek in the town of Grafton, crossing I-43 between County C and Lakefield Road.
- In the village of Grafton, wetlands in the northeast quadrant of the WIS 60 interchange.

*ISOLATED NATURAL RESOURCE AREAS*

- Woodlands in the village of River Hills, west of I-43, between Dean and Bradley roads on residential properties.
- Wetlands in the city of Mequon, north of Mequon Road; wetlands are predominately east of I-43 but also extend west across I-43 south of Glen Oaks Lane.[35]
- Woodlands in the city of Mequon, west of I-43 and south of the senior living center at Highland Road.
- Woodlands in the town of Grafton, west of I-43 and south of County C.
- Woodlands in the town of Grafton, west of I-43, east of Port Washington Road, south of Falls Road.
- Woodlands in the village of Grafton, about 350 feet west of I-43, east of Port Washington Road, and south of WIS 60.

Milwaukee and Ozaukee counties are designated as a coastal area by Wisconsin's Coastal Zone Management Program (WCMP); however, no special coastal areas are located in the study area. Based on WisDOT's review, the study appears to be consistent with the WCMP's goals.

## NATURAL AREAS

Natural areas include tracts of land or water so minimally modified by human activities that they are believed to represent examples of pre-settlement landscape. SEWRPC provides information about known natural areas in southeastern Wisconsin in *Planning Report No. 42: A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin.* Natural areas are categorized as having significance of statewide or greater (NA-1), countywide or regional (NA-2), local (NA-3), or critical species habitats [36]. Natural areas tend to be located within a primary environmental corridor, a secondary environmental corridor or an isolated natural resource area. SEWRPC surveyed the following plant communities in order to assess each natural area: prairies, oak openings, lake dunes, upland woods, lowland hardwoods, tamarack relicts, bogs, fens, and miscellaneous wetlands such as shrub-carrs, sedge meadows, and deep and shallow marshes.

[35] *SEWRPC notes that this is a planned primary environmental corridor.*

[36] *SEWRPC, 1997*

## MILWAUKEE COUNTY

According to SEWRPC,[37] two natural areas in Milwaukee County are in proximity to the I-43 study corridor (**Exhibit 3-20**):

- Kletzsch Park Woods in the city of Glendale is a natural area of local significance located in a primary environmental corridor. Owned and maintained by Milwaukee County, this site is a located along the west bank of the Milwaukee River and features remnant, disturbed mesic and dry-mesic forest, as well as diverse flora.
- The Schlitz Audubon Center Woods and Beach is also a natural area of local significance within a primary environmental corridor along the shores of Lake Michigan. Located in the village of Bayside about a mile east of I-43 and privately owned by the National Audubon Society, the 54-acre site includes sand beaches, mesic woods and a steep ravine.

Given their distances from I-43, it is unlikely that any future project in the I-43 North-South Freeway Corridor study area would affect these natural areas.

## OZAUKEE COUNTY

SEWRPC[38] identifies the following two natural areas near or along the I-43 North-South Freeway Corridor study area in Ozaukee County:

- Fairy Chasm is a natural area of statewide or greater significance. Located in a primary environmental corridor, it runs along Fish Creek to Lake Michigan (**Exhibit 3-20**). Fairy Chasm is owned by the Ozaukee Washington Land Trust and is a designated state natural area. Fish Creek flows through a 100-foot-deep chasm in this natural area. Unique conditions have created a microclimate for species typically found further north. It is not open to the public. The site extends south into Milwaukee County.
- The Mequon Wetland, along the east side of I-43 between Mequon Road and West Glen Oaks Lane, is a natural area of local significance located in an isolated natural resource area (**Exhibit 3-20**). MMSD owns the land as part of its Greenseams flood management program,[39] and SEWRPC recommends that it be preserved without additional protective ownership.

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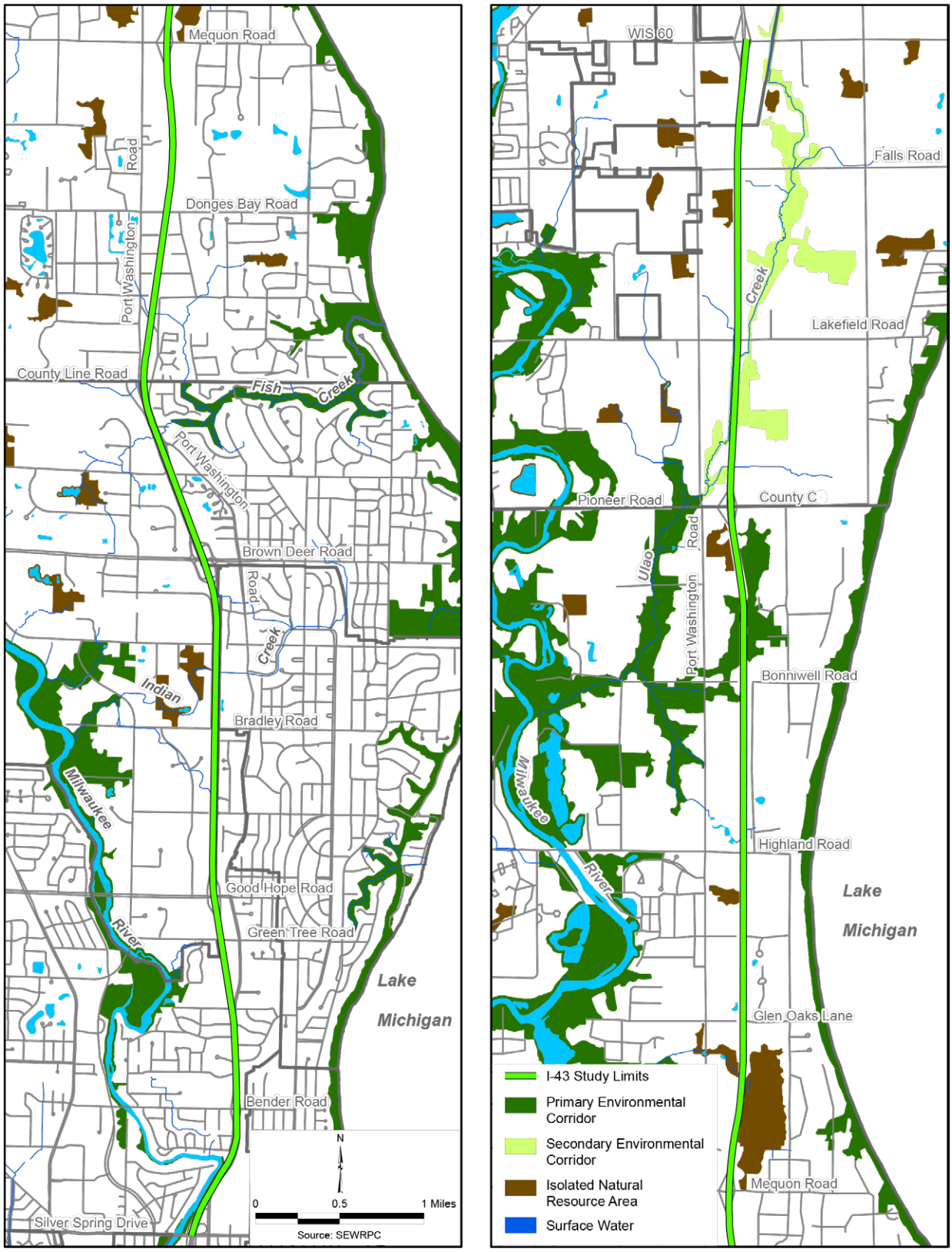
[37] *Planning Report No. 42: A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin*

[38] *Planning Report No. 133. A Park and Open Space Plan for Ozaukee County (Third Edition)*

[39] *MMSD*

## Exhibit 3-20: Locations of Environmental Corridors and Natural Resource Areas



## UPLAND HABITAT AND WILDLIFE

Primary and secondary environmental corridors and isolated natural resource areas contain some of the best remaining wildlife habitat in southeastern Wisconsin and include upland and wetland areas. This section refers to only nonagricultural upland cover types. Wetland cover types are discussed in **Subsection 3.12**.

## UPLAND HABITAT

In the I-43 North-South Freeway Corridor study area, upland habitat occurs in environmental corridors, isolated natural resource areas, and other tracts of land that have forested or grassland cover. Although much of the land adjacent to the study corridor is developed or used for agriculture, upland habitat areas are scattered throughout the study corridor, particularly in residential areas, parks and open space, and adjacent to wetlands or waterways.

Uplands in southeastern Wisconsin can be categorized as woodlands, shrub communities or grasslands.[40] Upland plant communities in the study area provide habitat for a variety of common amphibians, reptiles, birds and mammals. Upland habitat areas, particularly those in environmental corridors, are part of an important wildlife corridor system.

### *WOODLANDS*

Woodlands – or upland woods – provide vital wildlife habitat and outdoor recreation opportunities. Woodlands' indirectly valuable functions include reducing soil erosion and stream sedimentation, reducing stormwater runoff, and promoting groundwater recharge, which helps maintain water tables and stream and lake levels. There are limited woodlands located adjacent to the study corridor. During wetland field reviews, WisDOT identified scattered high-quality remnant woodlands throughout the corridor. Woodlands, as identified by SEWPRC's 2035 regional land use plan are primarily located in the village of River Hills along I-43; along Fish Creek in the village of Bayside near the Mequon Road interchange; and along Ulao Creek in the town of Grafton. Upland woods plant communities are also located in the aforementioned Fairy Chasm State Natural Area and the Donges Bay Gorge, Kletzsch Park Woods and Schlitz Audubon Center Woods natural areas.

No land in the I-43 study area is enrolled in Wisconsin's Managed Forest Law program,[41] which provides tax incentives to landowners who adhere to sustainable forestry practices.[42]

### *WILDLIFE*

Wetlands and uplands in the study corridor provide habitat for a variety of mammals, songbirds, waterfowl, raptors, amphibians, insects and reptiles. Common mammals found in upland habitats include white-tailed deer, opossums, shrews, gray and red squirrels, red foxes, raccoons, striped skunks, cottontail rabbits, coyotes, woodchucks, mice, gophers, chipmunks, voles and weasels. Common bird species include American goldfinches, wild turkeys, sparrows, owls, wrens, thrushes, warblers, hawks, woodpeckers, and vireos. Common reptiles include brown snakes, garter snakes, Eastern milk snakes, fox snakes and turtles.

SEWRPC identifies wildlife habitat areas in the Milwaukee River Watershed in *Planning Report No. 13: A Comprehensive Plan for the Milwaukee River Watershed*.[43] The wildlife areas are categorized into those of high, medium and low values. In the I-43 North-South Freeway

[40] *SEWRPC, 1995*

[41] *Sections 77.80 to 77.91, Wisconsin Statutes;* Wisconsin Administrative Code NR 46

[42] *WDNR, 2013*

[43] *SEWRPC, 1970*

Corridor study area, wildlife habitat areas of all three classes are largely found in Ozaukee County within a primary or secondary environmental corridor or an isolated natural resource area.

## 3.14.2. Impacts to Environmental Corridors and Isolated Natural Areas

### NO-BUILD ALTERNATIVE

Under the No-Build Alternative, no environmental corridors or designated natural areas would be affected.

### BUILD ALTERNATIVES

*ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL RESOURCE AREAS*

The build alternatives would impact primary and secondary environmental corridors and isolated natural resource areas at limited areas in Ozaukee County (**Table 3-27**). Impacts to primary and secondary environmental corridors would be located immediately next to the I-43 mainline in and at the County C interchange. Isolated natural resource areas would be impacted along the I-43 mainline and at the Mequon Road, Highland Road and County C interchanges.

*NATURAL AREAS*

The build alternatives would avoid designated natural areas.

**Table 3-27: Alternatives Comparison for Impacts to Environmental Corridors**

| Alternative | Primary Corridor Impacts (acres) | Secondary Corridor Impacts (acres) | Isolated Natural Resource Area Impacts (acres) |
|---|---|---|---|
| I-43 Mainline Modernization – 6 Lanes | 1.32 | 1.19 | 0.37 |
| Mequon Road interchange – Tight Diamond | 0.00 | 0.00 | 0.14 |
| Highland Road interchange – Tight Diamond | 0.00 | 0.00 | 0.16 |
| County C interchange - Diamond | 0.05 | 0.38 | 0.76 |
| *Total* | *1.37* | *1.57* | *1.29* |

## 3.14.3. Mitigation of Adverse Impacts to Environmental Corridors and Natural Areas

While no mitigation measures are proposed, WisDOT will minimize impacts to environmental corridors, isolated natural resources, and natural areas adjacent to the study corridor, the Modernization – 6 Lanes alternative for the freeway mainline would be widened to the inside in the existing median. WisDOT would consider design measures such as steepened slopes to further avoid and minimize impacts. Such measures would be determined in coordination with the WDNR during preliminary engineering.

Through avoiding and minimizing impacts to primary and secondary corridors, isolated natural resource areas, and designated natural areas, impacts to upland and wildlife habitat can also be avoided and minimized. During preliminary engineering, WisDOT will coordinate with Ozaukee County to confirm no affected properties are in conservation or wetland reserve programs.

# 3.15. NOISE

## 3.15.1. 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 (dB), the unit of measurement for sound.

The decibel scale audible to humans spans about 140 dBs. A level of 0 dB corresponds to a lower limit of audibility, while 140 dBs 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 by 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 dBs 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 nonlinear 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 nonlinearity 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: ambient (background) noise and urban noise.

Background noise generated by wind and distant traffic makes up the acoustical environment surrounding the project. These sounds are not readily recognized, but they combine to produce a nonirritating ambient sound level. This background sound level varies throughout the day, being lowest at night and highest during the day. 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 Leq. Leq is the constant, average sound level that during a period of time contains the same amount of sound energy as the varying levels of the traffic noise. The Leq 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 one hour. Therefore, the unit of measure for traffic noise is Leq(1h) dBA.

Highway noise sources have been divided into five types of vehicles: automobiles, medium trucks, heavy trucks, buses and motorcycles. Each vehicle type is defined as follows:

- **Automobiles:** All vehicles with two axles and four tires, includes passenger vehicles and light trucks weighing less than 10,000 pounds.
- **Medium trucks:** All vehicles having two axles and six tires with a vehicle weight between 10,000 and 26,000 pounds.
- **Heavy trucks:** All vehicles with three or more axles with a vehicle weight greater than 26,000 pounds.

- **Buses:** All vehicles designed to carry more than nine passengers.
- **Motorcycles:** All vehicles with two or three tires and an open-air driver/passenger compartment.

Noise levels produced by highway vehicles can be attributed to three 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 May 16, 2013, at 26 representative residential areas adjacent to the I-43 North-South Freeway Corridor study area: one at Craig Counsell Park, and one at Nicolet High School. The measurements were made in accordance with FHWA guidelines using integrating sound level analyzers 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. **Table 3-28** presents the data collected at the 28 sites. The locations of the field sites are shown in **Appendix E**.

## COMPARISON OF FIELD DATA VERSUS MODELED NOISE LEVELS

The FHWA Traffic Noise Model® (TNM) Version 2.5 was used to model the field measurements, utilizing traffic data collected 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 with the field-measured noise levels confirms the applicability of the computer model to this study. Traffic counts concurrent with the noise measurements were taken at all 28 of the measurement sites. The traffic data from these 28 sites were used in the model. The modeled traffic counts at 27 of the 28 sites compared within ±3 dBs of the measured levels. Field site 14 (FS-14) had a difference of 4 dBs; this represents reasonable correlation because the human ear can barely distinguish a 3-dB change in the Leq(1h) noise level in the urban environment. The site-by-site comparison is presented in **Table 3-29**.

## Table 3-28: Measured Existing Noise Levels

| Field Site | Site Description and Distance from Road | Noise Level dBA Leq (h) |
|---|---|---|
| 1 | Residence, 540 ft. east of I-43 edge of pavement, just south of sidewalk on West Monrovia Avenue, in line with western edge of home at 130 West Monrovia Avenue. | 53 |
| 2 | Craig Counsell Park, 353 ft. east of I-43 edge of pavement, on pitcher's mound of northwest most softball field. | 58 |
| 3 | Residence, 697 ft. east of I-43 edge of pavement, 12 ft. south of edge of pavement on West Clovernook Lane, in line with western edge of home at 192 West Brentwood Lane. | 50 |
| 4 | Residence, 131 ft. east of I-43 edge of pavement on edge of pavement on West Clovernook Lane, just west of driveway on a home at 318 West Clovernook Lane. | 64 |
| 5 | Residence, 841 ft. west of I-43 edge of pavement, on edge of pavement on West Apple Tree Road, on western edge of driveway of home at 621 West Apple Tree Road. | 54 |
| 6 | Residence, 81 ft. west of I-43 edge of pavement, 11 ft. south of edge of pavement on West Apple Tree Road, in line with eastern edge of 405 West Apple Tree Road. | 70 |
| 7 | Nicolet High School, 397 ft. west of I-43 edge of pavement, 15 ft. east of southeast corner of Nicolet High School's Fine Arts Building; in line with southern edge of Fine Arts Building. | 63 |
| 8 | Residence, 606 ft. west of I-43 edge of pavement, 15 ft. east of edge of pavement on North Ironwood Lane, 15 south of driveway for home at 6904 North Ironwood Lane. | 54 |
| 9 | Residence, 400 ft. east of I-43 edge of pavement, 5 ft. south of edge of pavement on West Fransee Lane, in line with eastern edge of driveway for home at 519 West Fransee Lane. | 59 |
| 10 | Residence, 74 ft. east of I-43 edge of pavement, at the center of landscaped cul-de-sac on West Fransee Lane. | 73 |
| 11 | Residence, 1,055 ft. west of I-43 edge of pavement, on North Pheasant Lane edge of pavement at northeast corner of 7805 North Pheasant Lane. | 53 |
| 12 | Residence, 444 ft. west of I-43 edge of pavement, at northern end of hedge of home at 7790 North Pheasant Lane, 32' east of edge of home at 7790 North Pheasant Lane. | 60 |
| 13 | Residence, 133 ft. east of I-43 edge of pavement, at northwest corner of northwest parking lot at The Porticos apartment complex, 48 ft. south of tennis courts, 38 ft. east of base of berm. | 64 |
| 14 | Residence, 230 ft. east of I-43 edge of pavement, 1.5 ft. north of West Bergen Drive, in line with eastern edge of home at 522 West Bergen Drive. | 60 |

| Field Site | Site Description and Distance from Road | Noise Level dBA Leq (h) |
|---|---|---|
| 15 | Residence, 314 ft. west of I-43 edge of pavement, 16 ft. east of North Lodgewood Road, 59 ft. north of driveway for home at 89660 North Lodgewood Road. | 54 |
| 16 | Residence, 97 ft. east of I-43 edge of pavement, in the center of bench and grilling area just west of 905 West Fairy Chasm Road. | 63 |
| 17 | Residence, 94 ft. east of I-43 edge of pavement, on southern edge of cul-de-sac at West Sierra Lane, 35 feet from right-of-way fence, in line with western edge of home at 1111 West Sierra Lane. | 68 |
| 18 | Residence, 1,108 ft. east of I-43 edge of pavement, 15 west of home 712 North Haddonstone Place, in line with northern edge of home at 712 North Haddonstone Place. | 48 |
| 19 | Residence, 1,228 ft. east of I-43 edge of pavement, 2 ft. north of West Revere Road, in line with hydrant in front yard of home at 108 West Revere Road. | 51 |
| 20 | Residence, 345 ft. east of I-43 edge of pavement, 5 ft. north of West Dandelion Lane, west of driveway entrance at 810 West Dandelion Lane. | 56 |
| 21 | Residence, 1,727 ft. east of I-43 edge of pavement, 5 ft. south of West Seacroft Court, in line with western edge of home at 423 West Seacroft Court. | 47 |
| 22 | Residence, 231 ft. west of I-43 edge of pavement, in the southeast corner of parking area in front of wing at Newcastle Place. | 68 |
| 23 | Residence, 354 ft. east of I-43 edge of pavement, 5 ft. north of West Bonniwell Road, in line with western corner of home at 600 West Bonniwell Road. | 59 |
| 24 | Residence, 264 ft. west of I-43 edge of pavement, at end of cul-de-sac on Fox Tail Lane, at entrance of driveway for 740 Fox Tail Lane. | 56 |
| 25 | Residence, 666 ft. east of I-43 edge of pavement,26 ft. south of Lakefield Road centerline near home at 1142 Lakefield Road, in line with eastern edge of 1138 Lakefield Road. | 66 |
| 26 | Residence, 425 ft. east of I-43 edge of pavement, at western edge of driveway to home at 1019 West Shaker Circle, in line with western edge of home at 1019 West Shaker Circle. | 56 |
| 27 | Residence, 169 ft. west of I-43 edge of pavement, at eastern edge of driveway to home at 1311 West El Rancho Drive, 65 ft. west of stop sign, in line with eastern edge of home at 1311 West El Rancho Drive. | 64 |
| 28 | Residence, 101 ft. west of I-43 edge of pavement, 31 ft. west of North Pheasant Lane edge of pavement, 6 ft. south of driveway entrance pillar for home at 9355 North Pheasant Lane, east of berm. | 72 |

*Source: HNTB Corporation, May 16, 2013*

**Table 3-29: Field Site Validation**

| Field Site | Noise Level, dBA Leq | | Difference in Noise Level, dBA Leq (Modeled Noise Level Minus Measured Noise Level) |
|---|---|---|---|
| | Measured | Modeled | |
| 1 | 53 | 56 | 3 |
| 2 | 58 | 60 | 2 |
| 3 | 50 | 53 | 3 |
| 4 | 64 | 67 | 3 |
| 5 | 54 | 54 | 0 |
| 6 | 70 | 73 | 3 |
| 7 | 63 | 61 | -2 |
| 8 | 54 | 57 | 3 |
| 9 | 59 | 61 | 2 |
| 10 | 73 | 73 | 0 |
| 11 | 53 | 52 | -1 |
| 12 | 60 | 59 | -1 |
| 13 | 64 | 62 | -2 |
| 14 | 60 | 64 | -4 |
| 15 | 54 | 54 | 0 |
| 16 | 63 | 65 | -2 |
| 17 | 68 | 71 | -3 |
| 18 | 48 | 49 | -1 |
| 19 | 51 | 52 | -1 |
| 20 | 56 | 59 | -3 |
| 21 | 47 | 47 | 0 |
| 22 | 68 | 66 | -2 |
| 23 | 59 | 57 | -2 |
| 24 | 56 | 56 | 0 |
| 25 | 66 | 66 | 0 |
| 26 | 56 | 56 | 0 |
| 27 | 64 | 63 | -1 |
| 28 | 72 | 71 | -1 |

## 3.15.2. 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 within the framework of WisDOT's *Facilities Development Manual Chapter 23: Noise* (FDM 23 Noise), effective July 28, 2011. FDM 23 Noise is WisDOT's FHWA-approved interpretation of 23 CFR § 772. The noise level criteria (NLC) for considering barriers abutting various land uses are presented in **Table 3-30**. The noise level descriptor used is the equivalent sound level, Leq(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 3-30**, 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 3-30**. The WisDOT has defined an increase over existing noise levels of 15 dBs or more as being a noise impact.

**Table 3-30: Noise Level Criteria for Considering Barriers**

| Activity Category | Leq (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. |

*Source: WisDOT FDM 23 Noise, Effective July 7, 2011.*

*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.*

FHWA's TNM was used to model existing (2010) and the 2040 build alternative noise levels. The following parameters were used in this model to calculate an hourly Leq(h) at a specific receiver location:

- Distance between roadway and receiver
- Relative elevations of roadway and receiver (ground-level receivers are assumed to be 5 feet above the ground; second- and third-story receivers are assumed to be 15 feet and 25 feet above the ground, respectively)
- Hourly traffic volume in light-duty vehicles (two axles, four tires); medium-duty vehicles (two axles, six tires); and heavy-duty vehicles (three or more axles)
- Vehicle speed
- Roadway grade
- Topographic features including retaining walls and berms
- Noise source height of the vehicles

**Appendix E** shows 836 representative receiver locations numbered N1 through N674, plus 98 second-story and 37 third-story receivers, along with the noise measurement locations FS-1 through FS-28. These receivers were selected to model the noise impacts at outdoor areas of frequent human use for 1,215 receptors representing 1,184 residences (including apartments), seven schools, three parks, six places of worship, three daycare centers, two hospitals, two hotels, a library and an active sports area. The results of the computer modeling are presented in **Appendix E**.

Increases in future traffics volumes throughout the entire corridor, as well as changes to the horizontal and vertical alignments of the proposed improvements, would create changes in noise levels along the corridor.

**Appendix E** provides detailed information on impacts at individual receptors by alternative. Depending on the combination of alternatives at County Line Road (No Access alternative, Partial Diamond alterntive and Split Diamond Hybrid subalternatives) and Highland Road (No Access and Tight Diamond), between 1,008 to 1,036 receptors would experience a change of ± 3 decibels. A few receptors would experience a decrease in levels, with a maximum decrease of 7 decibels occurring at two receptors with three of the alternatives. The maximum increase would be 9 decibels and that increase would occur at one receptor under one alternative.

The following are the projected range of numbers of receptors that would be exposed to design year (2040) noise levels that approach or exceed the levels in **Table 3-30**.

- Residential: 279-285
- Parks: 0
- Schools: 0
- School – active sports area: 2
- Places of worship: 1
- Day care centers: 1-2
- Hospitals: 0
- Hotels: 0
- Active sports areas: 0
- Libraries: 0

None of the receptors would be exposed to a noise impact based on WisDOT's increase over existing criteria of 15 decibels.

## UNION PACIFIC RAILROAD RELOCATION

The UP Railroad relocation would shift the existing mainline track approximately 45 feet north of the existing track at the nearest residence. The Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment[44] guidance manual and a "supplemental freight rail analysis spreadsheet tool, developed for the Chicago Rail Efficiency And Transportation Efficiency (CREATE) program using the FTA procedures,"[45] was used to develop the existing and future noise and vibration levels in the area of the track relocation.

The FTA noise impact criteria are based on a comparison of existing and future outdoor noise levels. In areas were existing rail noise is present, the criteria is the allowable increase in noise exposure when the increase in project noise is compared to the existing noise. The criteria were developed to address potential annoyance in a residential environment using Ldn as the noise descriptor. The Ldn noise level descriptor is defined as the 24-hour Leq where the nighttime noise, 10:00 pm to 7:00 am, is increased by 10 decibels prior to including the noise levels in the 24-hour calculation.

The FTA ground-borne vibration and noise are based on human sensitivity. The most appropriate descriptor for human response to vibration is velocity. One single number descriptor, VdB, is used to assess transit vibration. Vibration velocity in decibels is ratio of the rms velocity amplitude to the reference velocity amplitude. Ground-borne noise is the rumbling sound created by the vibration of a room's surfaces. The descriptor used is the A-weighted sound level, dBA.

The FTA noise and vibration criteria are presented in **Appendix E**.

The factors considered in developing the existing and future Ldn noise levels and vibration levels include:

- Distance between track and residences;
- Operation speed;
- Number of locomotives;
- Number of cars;
- Track condition;
- Number of train operations during the day, 7 a.m. to 10 p.m.;
- Number of train operations during the night, 10 p.m. to 7 a.m.; and
- The Ldn noise level from I-43.

The existing Ldn noise levels in the area of the proposed relocated track, including traffic noise from I-43, range from 57 to 73 dBA Ldn. The future Ldn noise levels with the relocated track would range from 58 to 71 dBA Ldn. The proposed relocated rail track, based the noise criteria presented in **Appendix E**, would create no noise impact at 20 residences and a moderate noise impact at three residences next to the proposed relocated track. The FTA noise impact criteria presented in **Appendix E** is based on the increase in noise levels over existing noise levels. "Since the noise impact criteria are delineated as bands or ranges, project noise can vary 5-7 decibels within the band of Moderate Impact at any specific ambient noise level. If the project and ambient noise plot falls just below the Severe range (**Appendix E**), the need for mitigation is strongest. Similarly, if the plot falls just above the No Impact threshold, there is less need."[46]

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[44] *Transit Noise and Vibration Impact Assessment, Prepared by Harris Miller Miller & Hanson, Inc., Federal Transit Administration, FTA-VA-90-1003-06, May 2006.*

[45] *http://www.fra.dot.gov/Page/P0216, accessed January 10, 2014.*

[46] *Transit Noise and Vibration Impact Assessment, page 3-12.*

The moderate impact for the proposed relocation is less than one decibel above the Moderate Impact curve based on an existing Ldn noise level of 64 dBA (**Appendix E)**. Therefore, noise mitigation has not been considered.

The existing ground-borne vibration levels in the area of the proposed relocated track range from 61 to 74 VdB. The ground-borne noise levels range from 26 to 39 dBA. The future ground-borne vibration levels in the area of the proposed relocated track would range from 62 to 79 VdB, while the ground-borne noise levels would range from 27 to 44 dBA. The vibration levels are below the FTA's Category 2 Infrequent Events criteria presented in **Appendix E**.

## 3.15.3. Noise Impact Mitigation

Based upon the requirements of 23 CFR § 772 and within the framework of 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; acquiring property for construction of noise barriers or berms; acquiring property 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-dB design goal for the noise barrier to be considered for reasonableness.
- A noise barrier must reduce noise levels by a minimum of 8 dBs 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 benefited receptor.
- 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.
- WisDOT 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

WisDOT analyzed the feasibility and reasonableness of 14 noise barriers at 13 locations including historic sites, Section 4(f) lands and two day care centers adjacent to the freeway system within the I-43 North-South Freeway Corridor study area. **Table 3-30** presents the results of the barrier analysis including barrier locations; future Leq(h) noise levels without and

with a barrier; barrier lengths and heights; estimated costs; the number of residential units benefited; the noise reduction provided by the barriers; and the cost per residential unit. Maps and **Appendix E** identify barrier locations that are feasible and resonable. Thirteen of the 14 noise barriers analyzed would meet WisDOT's feasibility criteria, of which five noise barriers would meet both of the FDM 23 Noise definitions for feasible and reasonable noise mitigation.

## SECTION 4(F) PROPERTIES

The following section describes the noise mitigation elvaluation for Section 4(f) properties in the study corridor. WisDOT analyzed each 4(f) property as being one receptor for the noise barrier feasible and reasonableness analysis. The FHWA concurs with WisDOT's reasoning for addressing each 4(f) property as one receptor.

*CRAIG COUNSELL PARK 4(F) (N21, N22 AND FS-2)*

The build alternative would increase noise levels within the park 2 to 4 dBA. The resulting noise levels would range from 56 to 59 dBA Leq, which is below the of 67 dBA Leq Noise Level Criteria. Therefore, noise mitigation for the park was not analyzed.

*CLOVERNOOK HISTORIC DISTRICT (N99, N104, N105, N110)*

At this location, the I-43 mainline profile would be lower than the existing freeway north of Acacia Road, which lowers the future noise levels at the homes in the historic district fronting I-43 between 3 to 4 dB. Noise levels at homes south of Acacia Road, that front I-43 would see noise levels increase 4 to 6 dB. While noise levels decline at some locations, three of the four homes in the historic district that front I-43 would exceed the noise level criteria for considering noise barriers (**Table 3-30**). **Appendix E** presents a table and a corridor map showing noise levels for the Clovernook Historic District. WisDOT evaluated a noise barrier for this area. However, as shown in **Table 3-31**, Noise Barrier 2 was feasible but not reasonable at this location.

*NICOLET HIGH SCHOOL ATHLETIC FIELD 4(F) SECTION (N65 – N70)*

Under the build alternative, the I-43 mainline profile would be lower than the existing freeway, which lowers the future noise levels at the athletic fields between 1 to 5 dBA. There would be a noise impact at two locations east of I-43 at the soccer field at the south end of the athletic fields and at the tennis court nearest the freeway on the north end of the athletic fields. While noise levels decline at both locations, 5 dB for the soccer field and 4 dB for the tennis court, future noise levels would be 66 and 68 dBA Leq(h), respectively, which exceeds criteria presented in **Table 3-30**. See **Appendix E** for a table and a corridor map showing noise levels for the Nicolet High School Athletic Field. The athletic field is considered 1 representative receptor. Feasible noise abatement for one receptor is not reasonable. A similar example of a noise barrier modeled for one receptor is Noise Barrier 8, as shown in **Table 3-31**.

*MAPLE DALE SCHOOL ATHLETIC FIELD 4(F) SECTION (N241 – N244)*

Traffic noise from the build alternative would increase noise levels 3 dB to 69 dBA Leq(h) at one location, the baseball diamond nearest I-43, N244. This noise level exceeds the criteria in **Table 3-30**. Maple Dale School sits between two residential developments. The noise barrier analyzed for this area was found to be feasible and reasonable, **Table 3-31**, Noise Barrier 3. See **Appendix E** for a table and a corridor map showing noise levels for the Maple Dale School Athletic Field.

*KATHERINE CARPENTER PARK (N452 – N458)*

The build alternatives would increase noise levels within the park 1 to 3 dBA. Depending on the alternative, the resulting noise levels would range from 54 to 65 dBA Leq, which are below the of 67 dBA Leq Noise Level Criteria. Therefore, noise mitigation for the park was not analyzed.

*HENNINGS FARMSTEAD (N667)*

Noise levels would increase 3 dB to 69 dBA Leq(h) at N667, which exceeds the criteria in **Table 3-30**. See **Appendix E** for a table and map showing the noise level information for N667. As shown in **Table 3-31**, noise mitigation for this location, Noise Barrier 13, was found to be feasible, but not reasonable.

*HENNINGS HOUSE (N672)*

Under the build alternative, noise levels would increase 5 dBA to 67 dBA at the house, which exceeds the noise level criteria for considering noise barriers. See **Appendix E** for a table and map for additional information on the Hennings House. Feasible noise abatement for one receptor is not reasonable. A similar example of a noise barrier modeled for one receptor is Noise Barrier 8, as shown in **Table 3-31**.

## SUMMARY OF NOISE IMPACT MITIGATION

Based on the noise analysis, WisDOT would be likely to incorporate the feasible and reasonable noise barriers shown in **Table 3-31** into the project's final design if a build alternative is selected. During the design phase of the project the location of feasible and reasonable noise mitigation would be reassessed. If final design results in substantial changes in roadway design from the conditions modeled for the DEIS or FEIS, noise abatement measures would be reviewed. A final decision about whether to install abatement measure(s) would be made upon completion of the project's final design and through the public involvement process, which would solicit input from residents and property owners who would benefit from the construction of feasible and reasonable noise barriers.

## Table 3-31: Noise Barrier Summary

| Barrier Number | Locations | Existing Leq(h) Noise Levels, dBA | Range of Future Leq(h) 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) | | | | |
| 1 | East of I-43 from UP Railroad to Daphne Road | 48-69 | 51-67 | 48-69 | 2-7 | 1,763 | 24 | $761,418 | 0 | - | N |
| 2 | West of I-43 from the UP Railroad to Nicolet High School | 50-72 | 50-75 | 48-64 | 8-9 | 2,991 | 12-18 | $857,772 | 7 | $122,539 | N |
| 3 | East of I-43 from Good Hope Road to Brown Deer Road | 45-75 | 48-77 | 45-66 | 8-16 | 8,999 | 9-24 | $3,088,098 | 104 | $29,693 | Y |
| 4 | West of I-43 from Dean Road to Brown Deer Road | 56-70 | 58-72 | 56-63 | 8-9 | 1,800 | 9-18 | $534,546 | 2 | $267,273 | N |
| 5 | East of I-43 from Brown Deer Road to County Line Road | 44-72 | 46-76 | 40-65 | 8-14 | 4,699 | 9-24 | $1,409,238 | 108 | $13,049 | Y |
| 6 | West of I-43 from Fairy Chasm Road to County Line Road | 54-71 | 58-73 | 56-65 | 8-11 | 2,499 | 9-18 | $664,092 | 6 | $110,682 | N |
| 7 | West of I-43 from County Line Road to Port Washington Road | 54-66 | 56-69 | 55-64 | 8-9 | 1,357 | 9-24 | $446,634 | 3 | $148,878 | N |
| 8 | West of I-43 from Port Washington Road to Zedler Lane | 70 | 73 | 64 | 9 | 600 | 9-15 | $140,382 | 1 | $140,382 | N |
| 9 | East of I-43 from Port Washington Road to Donges Bay Road | 53-71 | 55-72 | 50-65 | 8-13 | 2,600 | 9-24 | $1,058,382 | 11 | $96,217 | N |
| 10 | West of I-43 from Winesap Court to Baldwin Court | 41-73 | 44-76 | 44-68 | 8-13 | 998 | 9-21 | $291,114 | 10 | $29,111 | Y |
| 11 | East of I-43 from Glen Oaks Lane to Dandelion Lane | 55-66 | 53-71 | 52-63 | 8-9 | 4,089 | 9-24 | $1,450,818 | 6 | $241,803 | N |
| 12 | West of I-43 from Liebau Road to Highland Road | 35-73 | 37-76 | 35-67 | 8-16 | 2,977 | 21 | $1,125,414 | 91 | $12,367 | Y |
| 12A | West of I-43 from Liebau Road to Highland Road (Highland Road No Access alternative) | 35-73 | 37-77 | 37-77 | 8-16 | 3,008 | 21 | $1,136,988 | 92 | $12,369 | Y |
| 13 | West of I-43 at Lakefield Road | 57-67 | 62-70 | 58-62 | 8-9 | 1,004 | 12-21 | $314,000 | 2 | $157,005 | N |

[a] *Based on $18.00 per square foot*

[b] *Did not attain noise design goal and is not feasible.*

# 3.16. AIR QUALITY

## 3.16.1. Affected Environment

The Clean Air Act of 1970 requires the EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to protect public health, and the environment. To date, NAAQS have been established for six criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide ($NO_2$), ozone ($O_3$), particulate matter ($PM_{10}$ – levels of 10 microns and smaller, and $PM_{2.5}$ – levels of 2.5 microns and smaller), and sulfur dioxide ($SO_2$). **Table 3-32** presents the National and Wisconsin Ambient Air Quality Standards.

Exceeding the NAAQS pollutant level does not necessarily constitute a violation of the standard. Some of the criteria pollutants (including carbon monoxide) 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 3-32** lists the allowable exceedances for EPA criteria pollutants.

The Clean Air Act Amendments (CAAA) of 1977 and 1990 required all states to submit a list to EPA identifying air quality regions or portions thereof that 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 nonattainment areas for that pollutant. The CAAA also established time schedules for states to meet the NAAQS.

States that have nonattainment areas are required to prepare State Implementation Plans (SIP) that lay out a plan to show how the state will improve the air quality to attain the NAAQS. Both new and improvement highway projects must be contained in the area's Regional Transportation Plan (RTP) and the Transportation Improvement Program (TIP). The SEWRPC along with the state of Wisconsin is responsible for preparing the RTP and TIP. Once the RTP and TIP are completed, they are submitted to the FHWA for review and approval according to the requirements of the CAAA and related implementation regulations.

The primary pollutants from motor vehicles are unburned hydrocarbons, nitrogen oxides, carbon monoxide, and particulates. Volatile organic compounds and nitrogen oxides can combine in a complex series of reactions catalyzed by sunlight to produce photochemical oxidants, such as nitrogen dioxide and ozone. Because these reactions take place during a period of several hours, maximum concentrations of photochemical oxidants are often found far downwind from their sources. These pollutants are regional problems.

Carbon monoxide is a colorless, odorless gas that is the byproduct 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 before complete engine warm up (within about eight minutes of starting). Congested urban roads tend to be the principal problem areas for carbon monoxide.

Particulate matter includes both airborne solid particles and liquid droplets. These liquid particles come in a wide range of sizes. $PM_{10}$ particulates are coarse particles, such as windblown dust from fields and unpaved roads. $PM_{2.5}$ particulates are fine particles generally emitted from activities such as industrial and residential combustion and from vehicle exhaust. Particulates from transportation can be a localized issue when a project is determined to be a project of air quality concern for either $PM_{10}$ or $PM_{2.5}$ emissions.

## Table 3-32: National and Wisconsin Ambient Air Quality Standards

| Pollutant | Primary/ Secondary | Averaging Time | Level | Form |
|---|---|---|---|---|
| Carbon monoxide | Primary | 8 hours | 9 ppm | Not to be exceeded more than once per year |
| | | 1 hour | 35 ppm | |
| Lead | Primary and secondary | Rolling 3-month average | 0.15 µg/m3[1] | Not to be exceeded |
| Nitrogen dioxide | Primary | 1 hour | 100 ppb[5] | 98th percentile, averaged over 3 years |
| | Primary and secondary | Annual Mean | 53 ppb[2] | Annual Mean |
| Ozone – WI | Primary and secondary | 1 hour | 0.12 ppm[3] | |
| | | 8 hours | 0.08 ppm | |
| Ozone | Primary and secondary | 8 hours | 0.075 ppm[4] | Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years |
| $PM_{2.5}$ | Primary | Annual | 12 µg/$m_3$ | Annual mean, averaged over 3 years |
| | Secondary | Annual | 15 µg/$m_3$ | Annual mean, averaged over 3 years |
| | Primary and secondary | 24 hours | 35 µg/$m_3$ | 98th percentile, averaged over 3 years |
| $PM_{10}$ | Primary and secondary | 24 hours | 150 µg/$m_3$ | Not to be exceeded more than once per year on average over 3 years |
| Sulfur dioxides | Primary | 1 hour | 75 ppb[4] | 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years |
| | Secondary | 3 hour | 0.5 ppm | Not to be exceeded more than once per year |

*Source: http://www.epa.gov/air/criteria.html. Accessed May 29, 2013.*

*Notes:*

*1. Final rule signed Oct. 15, 2008. The 1978 lead standard (1.5 µg/$m_3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.*

*2. The official level of the annual $NO_2$ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the one-hour standard.*

*3. Wisconsin Administrative Code, Chapter NR 404.04, November 2011.*

*4. Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth highest daily maximum eight-hour concentration, averaged over three years) and related implementation rules remain in place. In 1997, EPA revoked the one-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The one-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.*

*5. Final rule signed June 2, 2010. The 1971 annual and 24-hour SO2 standards were revoked in that same rule-making; however, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.*

The freeway system within the I-43 North-South Freeway Corridor study area is located within the Southeastern Wisconsin Intrastate Air Quality Control Region #239. Ozaukee County is currently in attainment status for five of the six criteria pollutants, and has been redesignated to a maintenance area for the eight hour ozone standard. Milwaukee County is currently in attainment status for four of the six criteria pollutants, has been redesignated to a maintenance area for the eight hour ozone standard and is in nonattainment for $PM_{2.5}$. As such, the I-43 North-South Freeway Corridor Study is required to meet Transportation Conformity Rule requirements found in 40 CFR § 93. This project is included in an amendment to SEWRPC's transportation improvement program (TIP) *A Transportation Improvement Program for Southeastern Wisconsin: 2011-2014.*[47] The TIP amendment was approved on Jan. 19, 2012, by Resolution No. 2012-01. The I-43 North-South Freeway Corridor Study is also identified in the updated 2013-2016 TIP.

The FHWA and FTA determined on Oct. 18, 2012, that SEWRPC's 2035 regional transportation plan – as updated in *Memorandum Report No. 197: Review, Update and Reaffirmation of the Year 2035 Regional Transportation Plan* and *A Transportation Improvement Program for Southeastern Wisconsin: 2011-2014* – conforms with the transportation planning requirements of U.S. Code (USC) Titles 49 and 23, the Clean Air Act Amendments, and related regulations.

In addition to the NAAQS criteria for air pollutants, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, nonroad 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 § 202(l), EPA signed a final rule titled "Control of Hazardous Air Pollutants from Mobile Sources," which sets standards to control MSATs. Under this rule, EPA set standards on fuel composition, vehicle exhaust emissions, and evaporative losses from portable containers. Beginning in 2011, refineries were 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 are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are carbon dioxide, methane, nitrous oxide and fluorinated gases.[48]

## 3.16.2. Air Quality Impacts

The air quality impact analysis for this project was conducted in accordance with WisDOT, FHWA and EPA technical guidance and procedures. Recent FHWA technical guidance provided methodologies on when, and recommendations on how to perform an MSAT analysis. As a result WisDOT and FHWA performed a qualitative analysis of MSAT emissions. The results of the MSAT analysis are summarized in this subsection. More information about MSATs is presented in **Appendix F**.

[47] *TIP 787: "Preliminary engineering for reconstruction of IH 43 from Silver Spring Dr. to STH 60 in Ozaukee and Milwaukee Counties (14.11 mi)."*

[48] *http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html. Accessed October 30, 2013.*

## CARBON MONOXIDE

FHWA Technical Advisory 6640.8A states the following:

> *"Carbon monoxide is a project-related concern and as such should be evaluated in the draft EIS. A microscale CO analysis is unnecessary where such impacts (project CO contribution plus background) can be judged to be well below the 1- and 8-hour National Ambient Air Quality Standards (or other applicable State or local standards). This judgment may be based on (1) previous analyses for similar projects; (2) previous general analyses for various classes of projects; or (3) simplified graphical or "look-up" table evaluations. In these cases, a brief statement stating the basis for the judgment is sufficient."*

WisDOT compared the projected 2040 design-year traffic volumes for the I-43 North-South Freeway Corridor Study with the 2035 design-year traffic volumes that served as the basis for the CO modeling conducted for the Zoo Interchange project. The mainline, cross street and ramp volumes for the Zoo Interchange project were all greater than the projected volumes for the I-43 North-South Freeway study. The CO concentrations modeled for the Zoo Interchange project were less than 75 percent of the NAAQS; therefore, the CO concentrations would be well below the CO NAAQS for the I-43 North-South Freeway study.

## MOBILE SOURCE AIR TOXICS ANALYSIS

EPA announced in December 2010 that its Motor Vehicle Emission Simulator (MOVES) would be required for use on projects after Dec. 20, 2012. On Dec. 6, 2012, FHWA issued its *Interim Guidance Update on Mobile Source Air Toxics Analysis in NEPA* requiring the use of MOVES for air quality analysis on documents prepared in accordance with the National Environmental Policy Act (NEPA). FHWA has developed a tiered approach to analyzing MSATs in NEPA documents that includes the following three levels of analysis:

- No analysis for projects with no potential for meaningful MSAT effects.
- Qualitative analysis for projects with low potential for MSAT effects.
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Annual average daily traffic (AADT) for the 2040 Modernization – 6 Lanes alternative ranges from 67,800 at the northern terminus of the study corridor to 120,500 at the southern terminus. Based on FHWA's three levels of analysis, the I-43 North-South Freeway Corridor Study has a low potential for meaningful increases in MSAT emission (**Appendix F**); therefore, a qualitative analysis was performed in the study area.

The amount of MSAT emissions emitted for the No-Build Alternative and the Modernization – 6 Lanes build alternatives presented in this DEIS would be proportional to the vehicle miles traveled (VMT), assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for the build alternatives would be slightly higher than that for the No-Build Alternative, as the build alternatives' AADT is 11 percent to 14 percent greater than the No-Build Alternative. This slight change is because the additional capacity of the build alternatives increases the efficiency of the roadway and attracts rerouted trips from other highways in the transportation network including US 45, US 41, WIS 145 and WIS 57. The resulting increase in VMT would lead to higher MSAT emissions for the build alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes.

The emissions increase is offset somewhat by lower MSAT emissions rates due to increased speeds. According to EPA's MOVES2010b model, emissions of all of the priority MSATs decrease

as speed increases. Because the estimated VMTs under the No-Build Alternative and build alternatives vary by less than 15 percent, no appreciable difference in overall MSAT emissions is expected between the two alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs, which are projected to reduce annual MSAT emissions by more than 80 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures; however, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

FHWA and WisDOT have provided a qualitative analysis of MSAT emissions relative to the No-Build Alternative and Modernization – 6 Lanes alternatives. The FHWA and WisDOT have acknowledged that a future project in the study area may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain. Because of this uncertainty, the health effects from these emissions cannot be reliably estimated.

### $PM_{2.5}$ HOT-SPOT ANALYSIS

The Transportation Conformity Rule was amended by 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 $PM_{10}$ nonattainment and maintenance areas. 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."

Representatives from WisDOT, FHWA Wisconsin Division, EPA, WDNR and SEWRPC comprise an interagency consultation team that is in the process of determining whether the I-43 North-South Freeway Corridor Study would or would not be considered "a project of air quality concern." If the project is determined to be "a project of air quality concern," a quantitative hot-spot analysis for the preferred alternative would be performed.

With the assistance of SEWRPC and preliminary comments from EPA, WisDOT, FHWA and WDNR prepared a "$PM_{2.5}$ Project Summary Form" for review by the interagency consultation team (see **Appendix C**, page C-98). The EPA, FHWA and FTA have provided preliminary concurrence on WisDOT's position (see **Appendix C**, C-94 through C-96). WisDOT will hold an interagency consultation prior to approving the FEIS to confirm the findings. The Project Summary Form submitted to the interagency consultation team for review and comment presents WisDOT's position that the proposed improvements for the I-43 corridor do not make the I-43 project a project of air quality concern.

## 3.16.3. Measures to Mitigate Adverse Air Quality Impacts

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, and neither carbon monoxide nor $PM_{2.5}$ levels will exceed the air quality standards. Therefore, no measures to mitigate air quality impacts have been identified.

# 3.17. HAZARDOUS MATERIALS

## 3.17.1. Affected Environment

WisDOT conducted a Phase I Hazardous Material Survey Assessment that included a records search referencing databases, aerial photographs, topographic maps, historical as-builts, Sanborn maps and windshield surveys. Sources reviewed for information included regulatory agency (EPA and WDNR) 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. WisDOT also conducted a survey of the structures in the corridor to determine the potential presence of lead-paint and asbestos. A summary of the initial findings include the following:

*Both asbestos and lead-based paint pose a health risk if inhaled or ingested.*

- The Phase I Assessment identified 100 potentially hazardous materials sites or parcels adjacent to the I-43 North-South Freeway study corridor. Of the 100 sites identified, 30 are recommended for further investigation, including field sampling and testing. Additional investigations may not necessarily occur at all of the 30 recommended sites, as some sites might not be impacted by construction activities.
- Additional hazardous materials investigation, including field sampling and testing may occur at sites identified in the Phase I Assessment; but are not included in the 30 sites already recommended. These sites would be assessed on a case-by-case basis and this determination would depend upon the anticipated construction activities that may occur on, or adjacent to those sites.
- Of those 30 sites recommended for further investigation, half include leaking underground storage tanks. Other potential concerns include historical gas stations, historical auto repair sites, historic dry cleaner sites, underground storage tanks and aboveground storage tanks. Fourteen sites have already been screened for the environmental repair program, indicating contaminated soil or groundwater. Contaminated soils, groundwater or underground storage tanks may be encountered if future utilities or roadway excavations occur at these sites.
- Two additional sites were associated with historical oil fill pipes.
- The Phase I Assessment also indicated that any soils to be disturbed within the UP Railroad ROW would most likely be impacted with industrial railroad contamination.
- WisDOT also conducted a survey of all the structures in the study area to determine the presence of asbestos-containing materials. Of the 30 structures within the study area (two box culverts, one pedestrian tunnel, 26 roadway or freeway bridges, and one railroad bridge), 10 contain asbestos, including freeway bridges at Green Tree Road, County Line Road, Port Washington Road, Donges Bay Road, Mequon Road (2 structures), CTH C, Lakefield Road (2 structures) and Falls Road.
- Bridges to be demolished in the study corridor may contain lead-based paint.

## 3.17.2. Hazardous Materials Impacts

### NO-BUILD ALTERNATIVE

The No-Build Alternative would not affect any potentially contaminated sites.

### BUILD ALTERNATIVES

The build alternatives would affect many of the potentially contaminated sites recommended for further analysis. The WDNR and other affected parties will be notified of the results of field sampling and testing. WisDOT will work with concerned parties to ensure disposition of any contamination is to the satisfaction of the WDNR, WisDOT Environmental Services Section and FHWA.

Ten of the structures that would be replaced within the freeway system of the I-43 North-South Freeway study corridor contain asbestos-containing materials. WisDOT considers all paint on bridges to be lead-based paint. Buildings to be acquired under the build alternatives could also contain asbestos-containing materials or lead-based paint.

## 3.17.3. Mitigation of Adverse Hazardous Materials Impacts

If a build alternative is selected, WisDOT would conduct a follow-up Phase 2 survey to determine if sites present an environmental risk. WisDOT would develop remediation measures for contaminated sites that cannot be avoided during the design phase. Disturbance near potentially contaminated sites would be minimized to the extent possible and practicable. As applicable, the contract special provisions would include a Notice to Contractor describing the potential contamination with names and locations of the sites. The areas of potential contamination would be marked on the plan sheets with reference to check the Notice to Contractor in the special provisions.

WisDOT will include special provisions to notify contractors of potential presence of oil storage tanks or potential contaminated soils before proceeding with any construction activities at those sites. The Phase I Assessment also indicated that any soils to be disturbed within the UP Railroad right of way would most likely be impacted with industrial railroad contamination. Any excavated contaminated materials within the UP Railroad corridor areas should be characterized and managed appropriately during construction activities.

The regional WisDOT office would work with concerned parties to ensure that the disposition of any petroleum contamination is resolved to the satisfaction of the WDNR, WisDOT and FHWA before acquiring any questionable site, and before advertising a future project for letting.

Nonpetroleum sites would be handled on a case-by-case basis, with detailed documentation and coordination with the FHWA as needed. During the future project's real estate acquisition phase, WisDOT would survey all buildings that need to be demolished to determine whether asbestos is present. A predemolition inspection should be completed at any relocated structures to determine the presence of additional hazardous materials. A notification of demolition and/or renovation and application for permit exemption (WDNR Form 4500-113) must be submitted to the WDNR 10 days before demolition or abatement activities.

During the future project's real estate acquisition phase, WisDOT will survey all buildings that need to be demolished to determine whether asbestos is present.

Standard special provision 203-005, Abatement of Asbestos Containing Material Structure __ (bid item 203.0210.S), will be included in the plan. The contractor will be responsible for completion of the Notification of Demolition and/or Renovation (WDNR Form 4500-113).

# 3.18. HISTORIC SITES

WisDOT completed a survey of historic and potentially historic resources in 2012. The department established an area of potential effect (APE) within which it conducted the survey. The APE included properties adjacent to the I-43 corridor, Jean Nicolet Road, Port Washington Road in Milwaukee County and arterial street intersections with Port Washington Road in Ozaukee County. To account for potential work on crossing streets, the APE included adjacent properties along cross streets and their intersection with Port Washington Road, which runs closely parallel to I-43.

Buildings and structures are historically significant if listed on the National Register of Historic Places (NRHP) or meet criteria for eligibility to be listed in the NRHP. Eligibility for the NRHP relies on three criteria including:

- **Criterion A:** Structures associated with events that have made a significant contribution to broad patterns of history.
- **Criterion B:** Structures associated with the lives of persons significant in the 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.

## 3.18.1. Affected Environment

The historic survey identified 10 properties that warranted further detailed investigation. An additional historic district was also identified during detailed investigations. The detailed study determined that five properties and a residential historic district are eligible for listing on the NRHP. An additional residential property in the APE is already listed on the NRHP. All of the properties are significant under the architecture Criterion C. The properties are noted in **Table 3-33**. **Section 4** provides detailed descriptions of the properties.

**Table 3-33: Historically Significant Properties**

| Property | Address | Description |
|---|---|---|
| North Shore Water Treatment Plant | 400 Bender Road, city of Glendale, Milwaukee County | Distinctive example of Contemporary style architectural style; eligible for NRHP |
| Clovernook Estates Residential Historic District | Properties on Acacia Road, West Apple Tree Road, West Clovernook Lane, West Daphne Road, North Elm Tree Road and North River Road; city of Glendale, Milwaukee County | Significant concentration of Period Revival-style homes and structures; eligible for NRHP |
| Elderwood/The House in the Woods | 6789 N. Elm Tree Road, city of Glendale, Milwaukee County | Significant for German cottage architecture, listed on NRHP |
| Phillips Petroleum Company Service Station | 7575 Port Washington Road, city of Glendale, Milwaukee County | Highly intact example of a mid-20th century gas station; eligible for NRHP |
| Johann Friederich and Catherine Hennings Farmstead | 1143 Lakefield Road, town of Grafton, Ozaukee County | A good example of farmstead property type; eligible for NRHP |
| Henry and Mary Hennings House | 745 Port Washington Road, town of Grafton, Ozaukee County | Distinctive example of quarried stone construction eligible for NRHP |

## 3.18.2. Impacts to Historic Sites

### NO-BUILD ALTERNATIVE

The No-Build Alternative would not impact historic properties.

### BUILD ALTERNATIVES

The impacts of the build alternatives are summarized in **Table 3-34**. **Section 4** provides detailed discussion of effects of the build alternatives. WisDOT initiated Section 106 consultation with SHPO, which may determine other effects.

**Table 3-34: Historic Site Impacts**

| Property | Impact |
|---|---|
| North Shore Water Treatment Plant | Reconstruction of the I-43 mainline South Segment would impact about 0.16 acre of the property between its boundary and the plant's fence line. The acquisition would not physically impact the underground reservoirs located inside the fence. |
| Elderwood/The House in the Woods | An underground stormwater pipe runs within a WisDOT easement on the Elderwood property. The existing stormwater pipe would be replaced within the existing easement, which avoids impact to the house and surrounding property. Construction to excavate and replace the pipe would occur within the easement. There would be temporary impacts of ground disturbance within the easement. |

## 3.18.3. Section 106 Consultation

WisDOT and FHWA have consulted with SHPO as required under Section 106 of the National Historic Preservation Act (NHPA). The SHPO concurred that the study alternatives will not have an adverse effect on historic properties (see **Appendix C**, page C-74).

WisDOT also coordinated with Tribes that may be interested in participating in the Section 106 consultation process. WisDOT sent initial coordination letters to tribes in July 2012 to invite them to become consulting parties. The Forest County Potawatomi Tribe expressed interest in the study and requested results from cultural resource studies (see **Appendix C**, page C-71).

Additional Tribal coordination continued through the study with WisDOT providing updates through WisDOT's coordination meetings held with Tribal Historic Preservation Officers in October 2012 and April 2013. Subsequent to the April 2013 meeting, WisDOT sent out additional correspondence to Tribes to request further participation in the Section 106 consultation process. The Ho-Chunk Nation expressed interest in the study (see **Appendix C**, page C-69).

In October 2013, WisDOT forwarded copies of the Phase I archeolgical survey for I-43 North-South corridor to both the Forest County Potawatomi and Ho-Chunk Nation.

# 3.19. ARCHAEOLOGICAL RESOURCES

## 3.19.1. Affected Environment

WisDOT completed a Phase I Archaeological survey of the I-43 North-South Freeway study corridor in June 2013. Survey methodology included literature and records review and field survey. Records and field review identified three sites of archaeological significance within the study area – a campsite/village and two cemeteries. The site of the campsite/village was paved and included a storage building; the site was not relocated. Both cemeteries are located along Port Washington Road. Lakefield cemetery is located just north of Lakefield Road, about 800 feet west of the I-43 freeway. Union cemetery is located about 1,300 feet south of Bender Road, about 100 feet east of Port Washington Road. The survey encountered no archaeological resources in the study corridor.

*Archaeological surveys find whether an area being considered for development is likely to contain significant archaeological resources. The surveys help agencies assess whether archaeological remains can be avoided or if resource recovery is needed before development work begins.*

## 3.19.2. Impacts to Archaeological Resources

### NO-BUILD

The No-Build Alternative will not affect archaeological resources.

### BUILD ALTERNATIVES

The build alternatives would not impact archaeological resources or cemeteries in the study corridor. The I-43 Mainline Modernization – 6 Lanes alternatives would be largely confined to the existing freeway footprint and would not affect Lakefield cemetery. Similarly, neither reconstruction of the I-43 mainline or Port Washington Road would impact Union Cemetery. **Sheets 1 and 16 in Appendix A** show the relationship of the cemeteries to the build alternatives.

# 3.20. RECREATIONAL RESOURCES AND PUBLIC LAND USES

Public and private parks, recreation and conservation properties are located near the I-43 North-South Freeway Corridor study area. **Exhibit 3-21** and **Exhibit 3-22** show the parks and recreation areas within the vicinity of and next to the study corridor, which are discussed below. **Section 4**, the Section 4(f) Evaluation, provides detailed information on public recreation properties.

## 3.20.1. Affected Environment

### PUBLIC PARKS AND RECREATION AREA/PUBLIC USE LANDS

There are seven public park and recreation areas and public use lands in the study corridor as summarized below.

- **Craig Counsell Park:** The village of Whitefish Bay owns this park located on the east side of Port Washington Road, just south of the UP Railroad bridge.
- **Nicolet High School athletic fields:** The 46-acre school campus includes a 6-acre upper athletic field on the east side of I-43 and track and field facilities, a football field, tennis courts and softball fields on the west side of the freeway.
- **River Hills Memorial Park:** The approximately 2.35-acre park is part of the 11-acre village of River Hills' village hall and public works facilities.
- **Maple Dale Middle School Playground:** The 12-acre school property includes a public playground adjacent to the east side of I-43.
- **Katherine Kearney Carpenter Park:** This 35-acre park is in the city of Mequon, just north of County Line Road, east of I-43.
- **MMSD Greenseams Property:** The Greenseams property, also known as the Mequon wetland, is a 84-acre conservation property for stormwater management and water quality protection. It is located east of I-43 and north of Mequon Road.
- **Bonniwell Wildlife Habitat Area:** The 30-acre open space is located in the southeast corner of Port Washington Road/Bonniwell Road intersection, about 1,100 feet west of I-43.

### PRIVATE RECREATION AREAS

Notable private recreation areas in the study area include the following:

- **Missing Links Golf Course and Driving Range:** This facility is a privately run par-3 golf course and driving range in the northwest quadrant of the Highland Road crossing of I-43.
- **The Family Farm:** The Family Farm is a 46-acre privately owned and operated farmstead established for petting and feeding farm animals.
- **Other recreation resources:** A number of privately owned and operated riding stables are in the town of Grafton. Horse trails traverse through the town and cross under I-43 on public right of way on Lakefield Road.

## 3.20.2. Impacts to Public Parks and Recreation Areas/Public Use Lands

### NO-BUILD ALTERNATIVE

The No-Build Alternative would not affect park or recreation areas.

### BUILD ALTERNATIVES

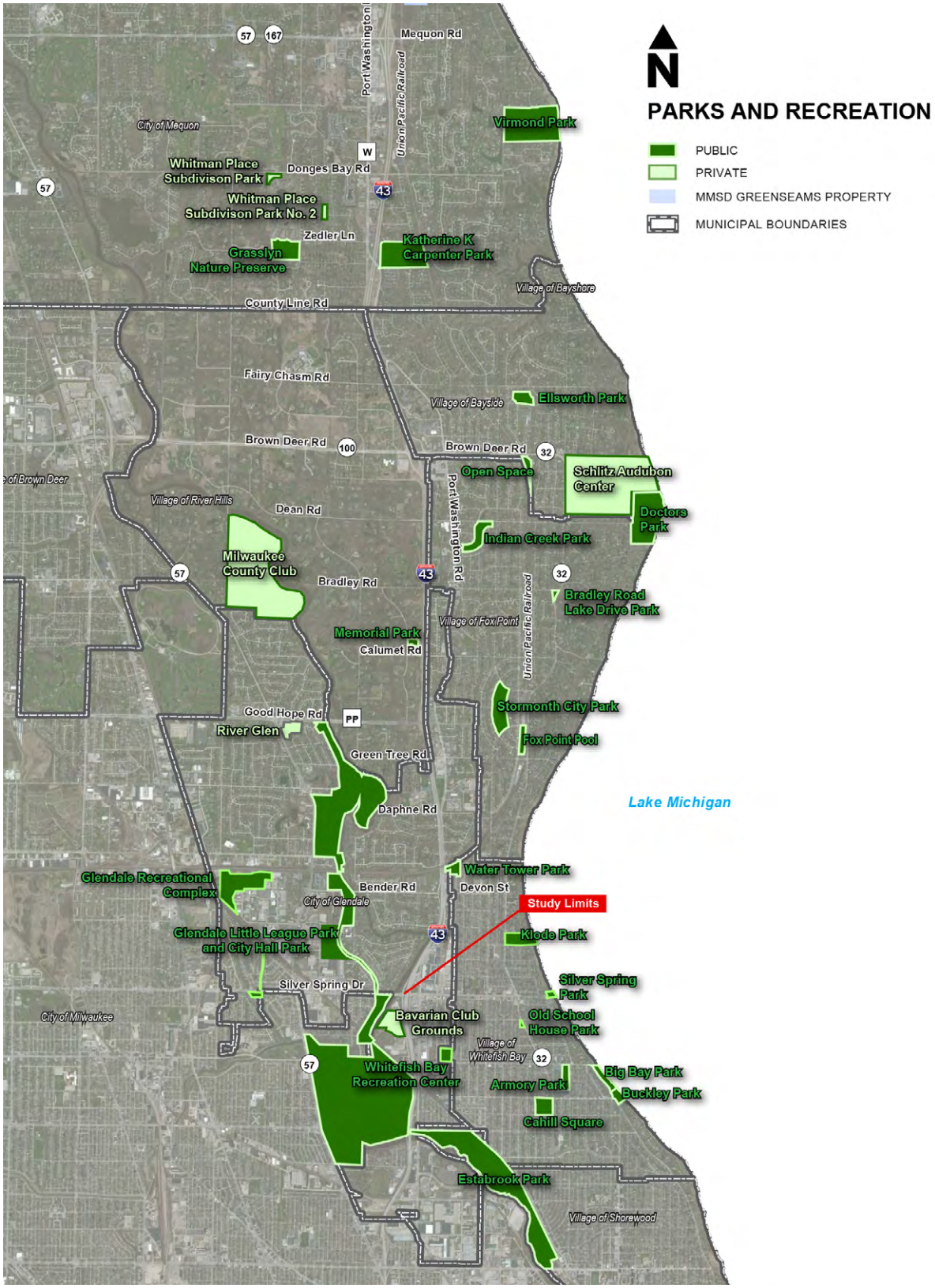
The Modernization – 6 Lanes alternative directly impacts Craig Counsell Park and Nicolet High School athletic fields. Under the build alternative, reconstructing Port Washington Road to four lanes would acquire up to 0.05 acres of strip right of way at Craig Counsell Park. At Nicolet High School, reconstructing I-43 and replacing the existing pedestrian tunnel under the highway would acquire up to 0.28 acres of strip right of way from the portion of the school property with athletic facilities on the east side of I-43. **Section 4** provides more discussion of impacts.

No impacts are anticipated at the identified private recreational properties along the I-43 North-South Freeway study corridor. The new Highland Road interchange would be constructed within existing right of way, avoiding the Missing Links Golf Course. The widening that would be done under the I-43 mainline Modernization – 6 Lanes alternative would occur within existing right of way at the Family Farm. The I-43 overpass at Lakefield Road would be reconstructed to allow horse-riding passage within the Lakefield Road right of way.

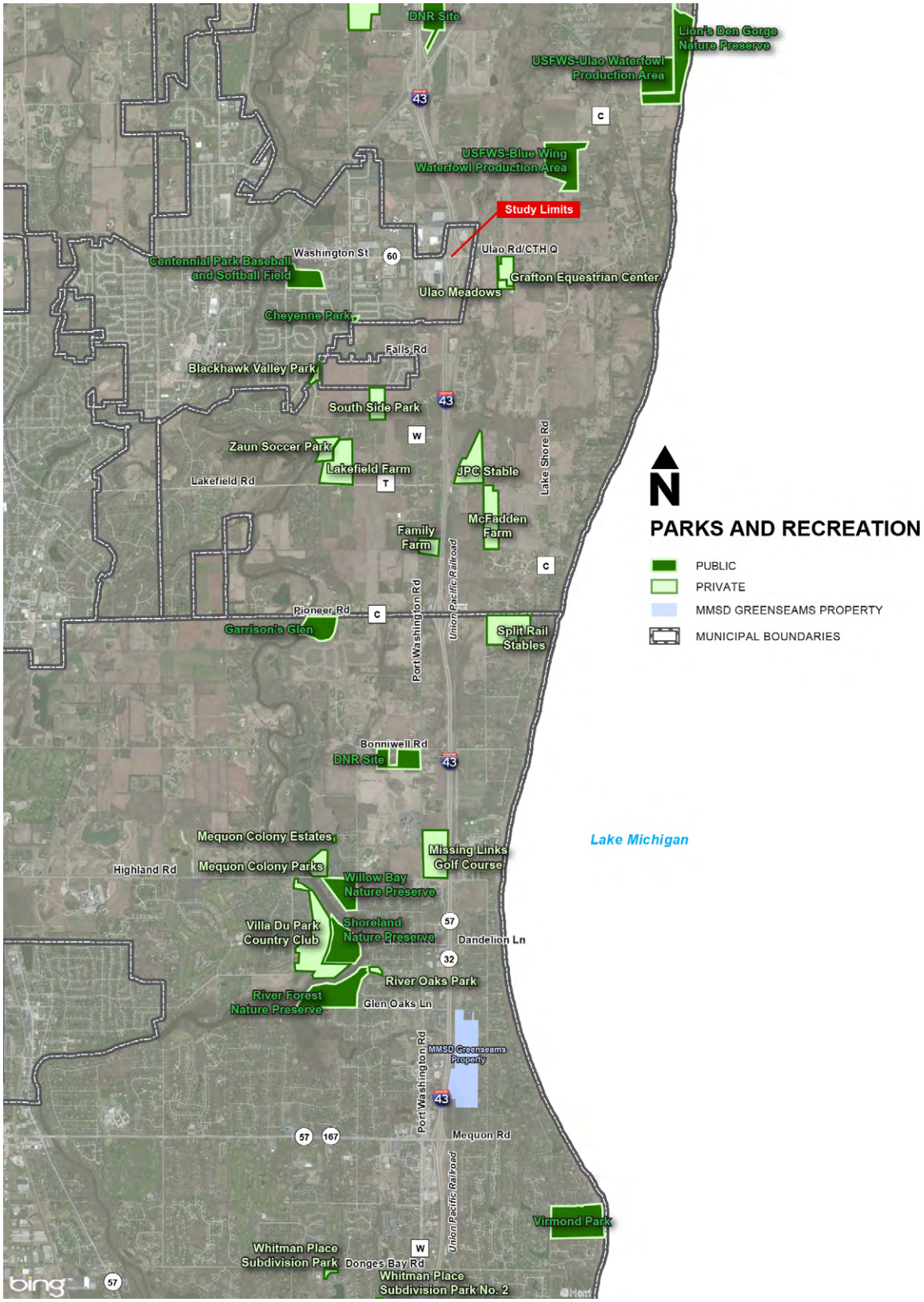
## 3.20.3. Mitigation of Adverse Impacts to Public Parks and Recreation Areas/Public Use Lands

WisDOT used measures to avoid and minimize impacts to public parks and recreation areas, by reducing roadway footprints to the greatest practicable extent by using retaining walls. The pedestrian tunnel replacement between Nicolet High School main campus and its upper athletic fields would benefit public recreational uses on the school property by providing an ADA-compliant connection that can be used by both pedestrians and bicyclists. Steeper slopes at Craig Counsell Park minimize the amount of right of way needed to reconstruct Port Washington Road. WisDOT will evaluate providing sufficient room at the I-43 overpass at Lakefield Road to allow horse-riding passage. Additional information on avoidance and minimization measures and coordination with local officials can be found in **Section 4**.

## Exhibit 3-21: Locations of Parks, Recreation and Open Space in the South Segment



## Exhibit 3-22: Locations of Parks, Recreation and Open Space in the North Segment



# 3.21. CONSTRUCTION

This section identifies effects that would be expected during the construction phase. Construction activities for the I-43 North-South Freeway Corridor study area would include removing existing structures and roadways, bridge construction and widening, retaining wall construction, earthwork, utility relocations, drainage improvements, traffic control, traffic signals, barrier installation, lighting and paving.

Many factors would influence actual construction. Funding is not yet available for the construction of an alternative selected through this study. For this reason, the expected construction duration is not known at this time. Like most transportation projects, construction details cannot be fully defined until design advances past the conceptual stage. All of the build alternatives would have similar construction impacts and are therefore discussed generally.

## 3.21.1. Construction Costs

### NO-BUILD ALTERATIVE

The No-Build Alternative would not initially incur construction costs. However, the study corridor would eventually have to be replaced, which would incur future construction costs.

### BUILD ALTERNATIVES

The immediate economic impact of the build alternatives would be expenditure of state and federal funds to reconstruct the I-43 North-South Freeway Corridor Study corridor. **Table 3-35** summarizes the construction costs. The estimate includes real estate acquisition, design costs, construction cost and contingency.

**Table 3-35: Build Alternative Construction Costs**

| Build Alternative | Construction Cost (2013) |
|---|---|
| I-43 Mainline Modernization – 6 Lanes and interchanges at Good Hope Road, Brown Deer Road, County Line Road, Mequon Road, Highland Road and County C | $ 452 million |

WisDOT has tentatively scheduled construction to begin as early as 2020, depending on funding availability and legislative approval. WisDOT and FHWA will use annual inflation rates tied to the Global Price Index, which vary from year to year.

## 3.21.2. 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 freeway, 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 bear the increased costs associated with crashes and reduced travel reliability compared with the build alternatives.

#### BUILD ALTERNATIVES

Maintenance costs under the build alternatives would be less than for the No-Build Alternative because the pavement, bridges and interchanges would be new.

## 3.21.3. Construction Employment

#### NO-BUILD ALTERNATIVE

No substantial short-term economic impacts associated with construction employment would result from the No-Build Alternative.

#### BUILD ALTERNATIVES

Substantial short-term economic impacts would result from the build alternatives compared with the No-Build Alternative. These impacts may be measured by increases in state output and 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 businesses 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 resulting from the build alternatives would consist of a combination of new jobs and shifting of existing construction jobs to the I-43 North-South Freeway Corridor study area. The types of construction jobs required for reconstructing a highway include:

- Concrete workers
- Asphalt workers
- Truckers
- Heavy equipment operators
- Electricians
- Iron workers
- General laborers
- Engineers
- Surveyors
- Landscapers

## 3.21.4. Construction Impacts and Mitigation

#### NO-BUILD ALTERNATIVE

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 corridor 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 the freeway are replaced.

BUILD ALTERNATIVES

The section identifies impacts associated with the build alternatives and possible mitigation measures. Commitments would be addressed throughout planning, design and construction phases. Many of these commitments are made as part of construction specifications and implemented during the construction process.

## NOISE

Noise would be generated by construction equipment used to reconstruct the study corridor 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 would 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 3-36**.

**Table 3-36: Typical Construction Site Noise Levels**

| 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: EPA and WisDOT*

Variations in building setbacks and land use, local intensity of specific construction activities, and sequencing and timing of construction would result in varying degrees of exposure to construction noise and subsequent varying levels of resulting impacts. Adverse effects related to construction noise are anticipated to be of a localized, temporary and transient nature.

To reduce the potential impact of construction noise, WisDOT's construction contract will contain provisions requiring 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 a construction site. All motorized construction equipment would be required to have mufflers constructed in accordance with the equipment manufacturer's 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.

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, ground-borne 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 would coordinate with adjacent property owners before construction to determine if any buildings near construction areas are in poor structural condition. In communities that do not have vibration ordinances, WisDOT would comply with the Wisconsin Department of Workforce Development vibration regulations.

## 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 study area. Equipment-related particulate emissions could be minimized if the equipment is well-maintained. The potential air quality impacts would 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. All contractors would be required to comply with all applicable air quality regulations. Dust suppression measures would be implemented throughout the construction process including covering loads of soil, debris and other materials during transport on streets or highways; stabilizing and covering stockpile areas as necessary to avoid windblown dust impacts; and stabilizing and revegetating exposed areas after construction.

Several air quality construction mitigation best management 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, EPA has set emissions standards for engines used in most new construction equipment. However, it may be several years before all equipment in use is equipped with engines that meet 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.
- Retrofitting diesel engines with diesel emission-control devices.

By reducing unnecessary idling at the construction site, emissions would be reduced and fuel would be saved. Proper maintenance of the diesel engine would 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.47 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, which may include the following: frequent watering of construction sites that have large expanses of exposed soil; watering debris generated during demolition; washing construction vehicle tires before they leave construction sites; and securing and covering equipment and loose materials before travel.

Dust control during construction would be accomplished in accordance with WisDOT's Standard Specifications for Road and Bridge Construction, which requires 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 WDNR regarding air quality standards and emissions. Any portable material plants would be operated in accordance with WDNR air quality requirements and guidelines. Demolition and disposal of residential or commercial buildings is regulated under WDNR's asbestos renovation and demolition requirements.[49]

## TRAFFIC/CONCEPTUAL CONSTRUCTION STAGING

During construction, traffic would be diverted from the study corridor freeway system. Other freeways and local streets would experience increased traffic volumes as drivers avoid construction.

After the construction staging plan is developed, WisDOT would analyze how much traffic would divert from the study corridor freeway system to local streets adjacent to the study corridor such as Port Washington Road, Jean Nicolet Road, Lake Shore Drive and other north-south routes. WisDOT would develop a TMP to minimize delay and disruption in the construction area. Transportation management strategies for a work zone include temporary traffic control measures and devices, public information and outreach, and operational strategies such as transportation operations and incident management strategies. During the design phase, WisDOT and FHWA would evaluate 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.

*49 Wisconsin Administrative Code Chapter NR 447*

- Encouraging businesses to modify their work schedules and/or shipping schedules to avoid peak traffic hours.

## TRANSIT, PEDESTRIAN AND BICYCLE IMPACTS

MCTS routes that use the study corridor would be able to continue service using normal routes, but they may experience delay depending on the nature of construction work at any specific time. It is anticipated that MCTS routes using Port Washington Road would largely be able to continue on existing routes, with some temporary modifications, depending on construction activities. Construction activities may require temporarily relocating bus stops if Port Washington Road is expanded to four lanes.

Local street closures and entrance and exit ramp closures may require bus route modifications. MCTS routes that pass over or under the study corridor on Brown Deer Road may have to be modified if the street is closed during construction where it passes over I-43.

Pedestrians and bicyclists that cross over or under the study corridor 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.

## EROSION/WATER QUALITY

Construction in and near waterways would be performed in accordance with WisDOT's *Standard Specifications for Road and Bridge Construction*; *Wisconsin Administrative Code Trans 401* chapter titled "Construction Site Erosion Control and Stormwater Management Procedures"; and the WisDOT-WDNR cooperative agreement.

There is potential for erosion during construction as soils are disturbed by excavation and grading. Appropriate techniques and best management practices would be employed to prevent erosion and to minimize siltation to environmentally sensitive resources in the study area. Erosion-control devices would be installed before erosion-prone construction activities begin. WisDOT would consult with the WDNR to agree on specific erosion-control measures to include in construction plans and contract special provisions. The construction contractor would be required to prepare an erosion-control implementation plan that includes all erosion-control commitments made by WisDOT while planning and designing the future project. The WDNR reviews the erosion-control implementation plan. The following erosion-control 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-WDNR cooperative agreement, *Memorandum of Understanding on Erosion Control and Stormwater Management*, disturbed land would be re-seeded with a mix of fast growing grasses following construction. 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.
- Storage 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 WDNR would then be notified to provide additional instructions regarding cleanup and 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 WDNR 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.

**Subsection 3.10.3** provides additional information about water quality mitigation and best management practices.

## 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 materials source and 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 future 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 managed to prevent erosion, and WDNR would be able to review site plans including any gravel-washing operations, high-capacity wells, and site closure and restoration.

## INVASIVE SPECIES

WDNR promulgated an invasive species rule in August 2009 (*Wisconsin Administrative Code NR 40*, "Invasive Species Identification, Classification and Control"). The rule states that reasonable precautions should be taken to prevent or minimize the transport, introduction, possession or transfer of invasive species. Reasonable precautions include best management practices such as those recommended by the Wisconsin Clean Boats, Clean Water program and Stop Aquatic Hitchhikers campaign.

In response to *Wisconsin Administrative Code NR 40*, the Wisconsin Council on Forestry led development of invasive species best management practices for utility and transportation corridor construction and maintenance activities. This effort included representatives from WisDOT, WDNR, utilities, highway construction industry, Wisconsin County Highway Association, Wisconsin Towns Association, and the Public Service Commission. A manual titled *Invasive Species Best Management Practices for Transportation and Utility Rights-of-Way* (latest version Jan. 6, 2009) provides best management practices that reduce the impact of non-aquatic invasive species. The manual is intended to help utility and transportation practitioners comply with the reasonable precaution requirements in *Wisconsin Administrative Code NR 40* and it has been made available to statewide to contractors by the Wisconsin Transportation Builders Association. The manual contains the following best management practices on soil disturbance and transport of material:

- Plan activities prior to construction to limit the potential introduction and spread of invasives
- Manage the load of transported materials to limit the spread of invasives
- Establish staging areas and temporary facilities in locations free of invasives
- Use soil and aggregate material from sources free of invasives
- Manage stockpiles to limit the spread of invasives
- Clean equipment prior to moving between infested and non-infested areas.
- Minimize soil disturbance by using existing roads, access points and staging areas
- Stabilize disturbed soils as soon as possible and use non-invasive seed for revegetation.

In addition, contractors would be required to follow WDNR 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.

## CULTURAL RESOURCES

If previously unrecorded cultural resources are found during construction, activities in the site area would be immediately halted, and the project manager would immediately notify WisDOT's Bureau of Technical Services, who would then notify FHWA and any interested consulting parties.

# 3.22. INDIRECT AND CUMULATIVE EFFECTS

This subsection summarizes the indirect and cumulative effects (ICE) analyses of the I-43 North-South Freeway Corridor Study alternatives. A more detailed discussion of indirect and cumulative effects is provided in the *I-43 North-South Freeway Corridor Study Indirect and Cumulative Effects Analysis* report (WisDOT 2013), which is included as **Appendix I** on the CD included with this EIS.

The CFR Title 40 defines indirect and cumulative effects as follows:

- Indirect effects are caused by the action (the I-43 North-South Freeway Corridor Study alternatives) 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).

## 3.22.1. Indirect Effects

The indirect effects analysis used the following systematic six step approach as outlined in WisDOT's *Guidance for Conducting an Indirect Effects Analysis* (WisDOT 2007):

- Step 1: Scoping, selecting activities, and determining 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

Each step is summarized in the following subsections.

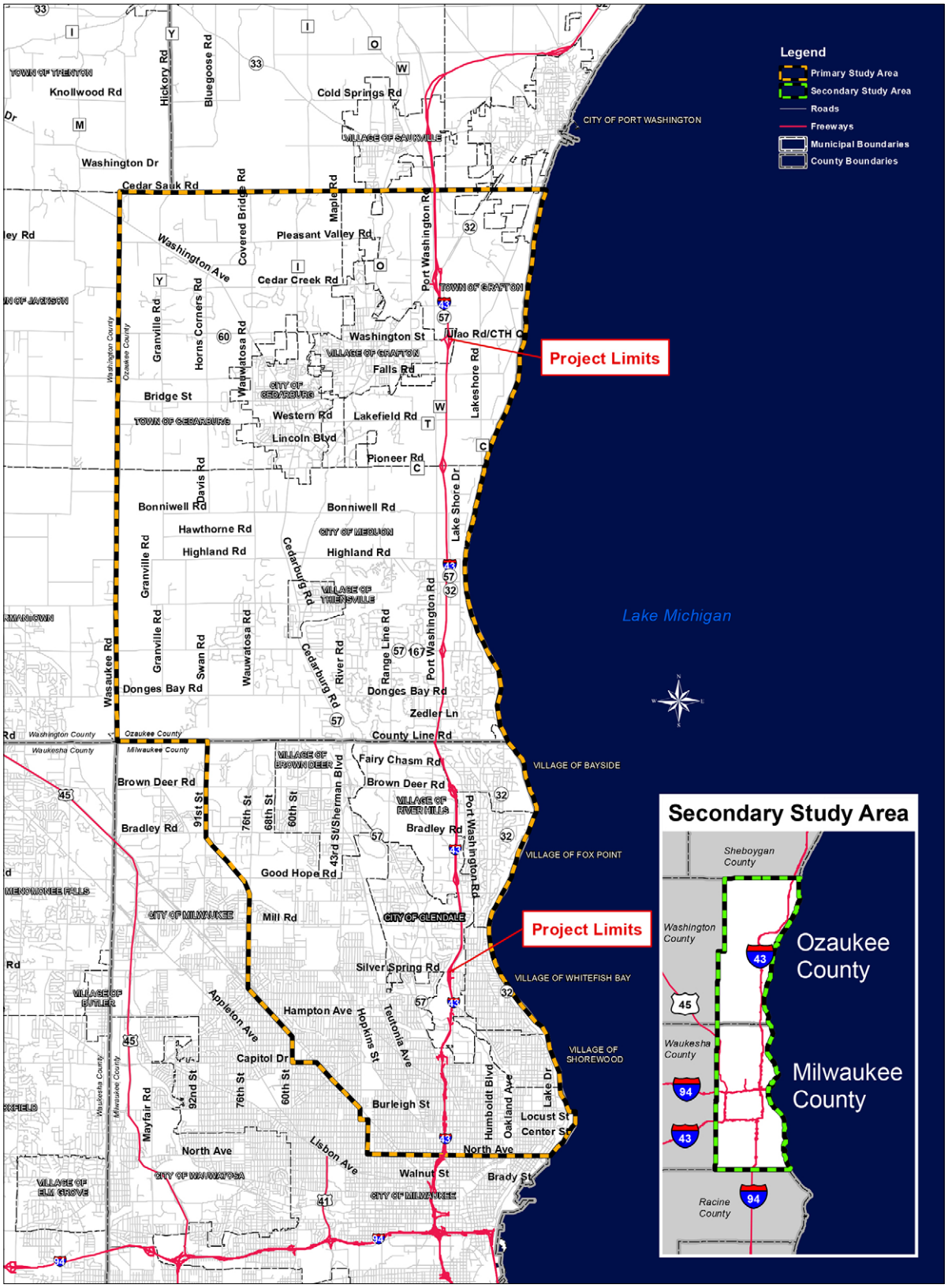
### STEP 1: SCOPING, SELECTING ACTIVITIES AND DETERMINING THE STUDY AREA

WisDOT developed a qualitative approach for the indirect effects analysis, which is based on trend data, land use and economic development plans, natural and historic resource inventories, and input from local and regional stakeholders.

Stakeholder input was an important component of the analysis. Stakeholder input helped determine the indirect effects study area, collect information about the study area and identify potential indirect effects. WisDOT conducted stakeholder interviews early on in the study process (January-March 2013) with local government representatives and economic development organizations. Additional stakeholder interviews were conducted in October 2013. WisDOT held a focus group meeting on July 11, 2013, to obtain input on the indirect effects analysis and to finalize the study area boundary. Meeting documentation is provided in the ICE report.

The study area for the indirect effects analysis is based on information collected and analyzed in Step 2 below and stakeholder input. Two study areas, a primary and a secondary, were evaluated for the indirect effects analysis. The study areas are shown on **Exhibit 3-23.**

## Exhibit 3-23: Indirect Effects Analysis Primary Study Area



The primary study area contains areas that have the greatest likelihood for indirect effects. The boundary for the primary study area, with the exception of the city of Milwaukee, follows civil divisions for the following communities in Milwaukee and Ozaukee counties:

- Milwaukee County: city of Milwaukee (only a portion of the city), city of Glendale and the villages of Shorewood, Whitefish Bay, Fox Point, Bayside, River Hills and Brown Deer.
- Ozaukee County: cities of Mequon and Cedarburg, the villages of Thiensville and Grafton and the towns of Cedarburg and Grafton.

The primary study area encompasses the existing commercial and industrial areas served by the I-43 North-South corridor that could be susceptible to change over the transportation planning horizon of 2040. It also includes planned residential and business areas that may be developed by 2040. In addition, the primary study area contains residential neighborhoods, business districts and environmental resources that could be indirectly affected by potentially induced land use effects and the encroachment of infrastructure. The most detailed information was collected for the primary study area.

The secondary study area includes the areas in Milwaukee and Ozaukee counties outside the primary study area. The purpose of the secondary study area is to provide an understanding of intraregional demographic and land use trends that may be influenced by the I-43 North-South corridor beyond the primary study area boundaries. Milwaukee and Ozaukee counties were selected for the secondary study area because I-43 is the major transportation corridor that links communities and businesses along the corridor within the two counties.

The timeframe for the analysis is 2040—20 years after construction—which coincides with the design year of the freeway project and the availability of population, employment and land use information.

## STEP 2: INVENTORY THE STUDY AREA AND NOTABLE FEATURES

This section summarizes the population, employment, and land use trends for the primary and secondary study areas and inventories natural and cultural resources. More detailed information is provided in the ICE report and in **Subsection 3.6** and Subsections 3.10 to 3.14.

### *POPULATION TRENDS*

Milwaukee and Ozaukee counties are located within the southeastern Wisconsin region, which is comprised of Milwaukee, Racine, Kenosha, Ozaukee, Washington, Waukesha and Walworth counties. According to SEWRPC, the region had a population of 2,019,970 in 2010, which was a 4.6 percent increase since 2000.

Milwaukee County is the most populous county in the region with a population of 947,735 as of 2010. After several decades of population decline, the county's population increased slightly by 7,571 (0.8 percent) between 2000 and 2010. Ozaukee County is the least populous county in the region with a population of 86,395 as of 2010. Ozaukee County's population has been steadily increasing for several decades. Between 2000 and 2010, the county's population increased by 4,078 (5 percent), which was its slowest rate of growth in several decades.

Milwaukee County's share of the regional population has been declining for the past several decades. In 1960 Milwaukee County contained 65.8 percent of the region's population, and 46.9 percent of the region's population in 2010. Ozaukee County's percentage of the regional population has increased slightly from 2.5 percent in 1960 to 4.3 percent in 2010.

SEWRPC's 2050 population projections show both counties are expected to gain population. Milwaukee County is expected to add nearly 28,969 persons between 2010 and 2050, which is a 3.1 percent increase. Ozaukee County is expected to add nearly 22,680 persons by 2050, which is a 26.3 percent increase.

While population has increased overall in Milwaukee and Ozaukee counties, the primary study area contained 298,051 people in 2010, which was a 2.2 percent decrease since 2000. The Milwaukee County portion of the primary study area had a total population of 239,000 in 2010, which was a decrease of just over 9,600 (-3.9 percent) since 2000. The Ozaukee County portion of the primary study area had a population of 59,051 in 2010, which was a 5.1 percent increase since 2000.

*EMPLOYMENT TRENDS*

Employment levels for the southeastern Wisconsin region in 2010 were at 1,176,600, which was a 2.7 percent decrease from 2000. According to SEWRPC, prior to the 2000s, the region had experienced a substantial net increase in jobs each decade going back to at least 1950. Job losses during the 2000s were due to the national economic recession that occurred in the late 2000s.

Milwaukee County is the largest county in the region in terms of employment. It had 575,400 jobs in 2010. Within the region, Milwaukee County was the hardest hit by the economic recession of the late 2000s and lost 42,900 jobs between 2000 and 2010. Prior to the 2000s, Milwaukee County had relatively slow, but stable employment growth. Within the region, Ozaukee County contains the smallest numbers of jobs. In 2010, the county had 52,500 jobs, which was a slight increase of 2,100 jobs since 2000. Ozaukee County's employment growth during the 2000s (4.2 percent) was much slower in comparison to the employment growth experienced during the 1990s (43.6 percent) and the 1980s (24.5 percent).SEWRPC's employment projections show that both counties are expected to gain employment between 2010 and 2050. Milwaukee County is expected to add over 33,000 jobs and Ozaukee County is expected to gain nearly 17,000 jobs.[50]

According to the U.S. Census Transportation Planning Package (CTPP) place of work data, the city of Milwaukee contains the largest number of jobs at 288,037 (whole city) as of the 2006-2010 reporting period, which was a gain of 2,677 employees since 2000. The city of Mequon, city of Glendale and village of Brown Deer contained the next largest amounts of employment at 14,635, 14,454 and 8,712, respectively, during the 2006-2010 reporting period. The city of Mequon gained over 1,300 employees between 2000 and the 2006-2010 reporting period, while Glendale and Brown Deer saw a reduction of 446 and 698 jobs, respectively. The remaining communities within the primary study area had employment levels under 6,000 during the 2006-2010 reporting period. Of these communities, the villages of Whitefish Bay and Fox Point had an increase in employment, while the village of Shorewood, city of Cedarburg and village of Grafton experienced a slight decline in employment.

*EXISTING LAND USE*

This subsection provides an overview of the existing land uses for the study areas as of 2010. In Milwaukee County, urban land uses made up 82 percent of the land area and nonurban land uses made up 18 percent. Ozaukee County, in contrast to the urbanized character of Milwaukee County, contained 26 percent urban land uses and 74 percent nonurban land uses. Residential land uses make up the largest percentage of urban land uses for both counties. Ozaukee

[50] *SEWRPC. Technical Report No. 10: The Economy of Southeastern Wisconsin Preliminary Draft (5th Edition). Jan. 23, 2013.*

County has a higher percentage of urban land in residential use at 51.3 percent compared to Milwaukee County at 40.7 percent. Transportation uses, which include all motor vehicle, air and rail related uses, is the second largest urban land use category for both counties, accounting for about 25 percent of the land area of each county. Milwaukee County contains 6.3 percent of commercial land use and 5.9 percent of industrial land use. These are slightly higher percentages in comparison to Ozaukee County that is 3 percent commercial and 4.5 percent industrial. The largest percentage of nonurban land uses in Milwaukee County is natural areas (43.7 percent), which include wetlands and woodlands. In Ozaukee County, the largest nonurban land use category is agricultural at 67.9 percent.

For the primary study area, urban land uses comprise 91.1 percent of the Milwaukee County portion of the primary study area, which is higher compared to the county as a whole. The Ozaukee County portion of the primary study area contains 40.3 percent urban land uses, which is also higher compared to the county as a whole. This is expected because the Ozaukee County portion of the primary study area contains the most urbanized areas of the county.

The distribution of most urban land uses categories within the primary study area is similar to the distribution of land uses within the individual counties as a whole. One slight difference is with industrial land uses. The Milwaukee County portion of the primary study area has a slightly higher percentage of industrial land uses (7 percent) compared to the county as a whole (5.9 percent). Industrial land uses for the Ozaukee County portion of the primary study area (3 percent) have a slightly smaller percentage of industrial land uses compared to the county as a whole (4.5 percent).

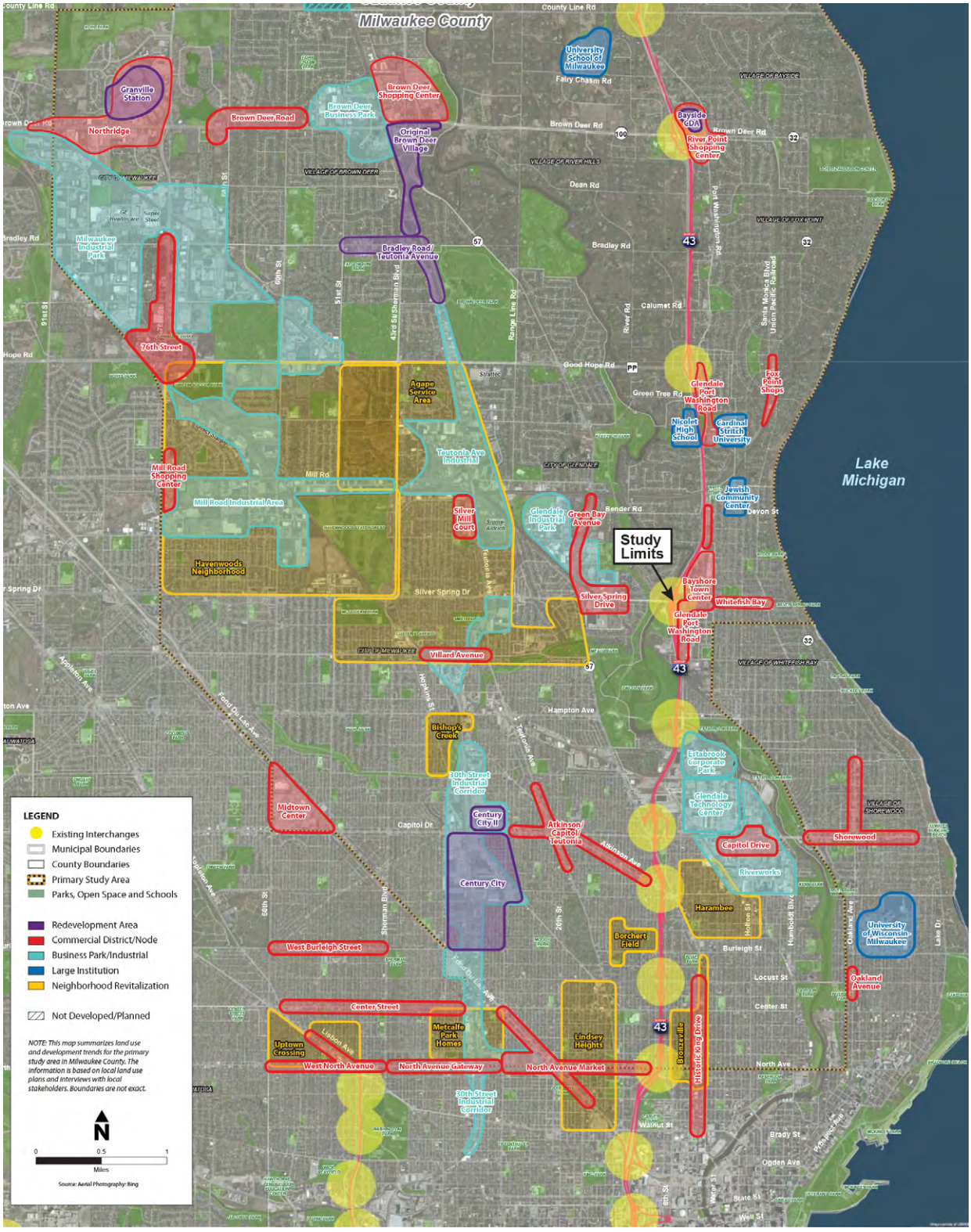
Nonurban land uses for the Milwaukee County portion of the primary study area comprise a smaller percentage of the land area (8.9 percent) compared to the county as a whole (18 percent). Natural areas comprise the majority (53.8 percent) of nonurban land uses within the Milwaukee County portion of the primary study area. Although, natural areas comprise a fairly small percentage (4.8 percent) of the overall land area within the Milwaukee County portion of the primary study area.

The Ozaukee County portion of the primary study area contains 59.7 percent nonurban land uses, which is less than the county as a whole (74 percent). Agricultural land uses make up the largest percentage (60.2) of nonurban land uses for the Ozaukee County portion of the primary study area. However, agricultural uses comprise a much smaller percentage (35.9 percent) of the overall land area of the Ozaukee County portion of the primary study area compared to the county as a whole (50.2).

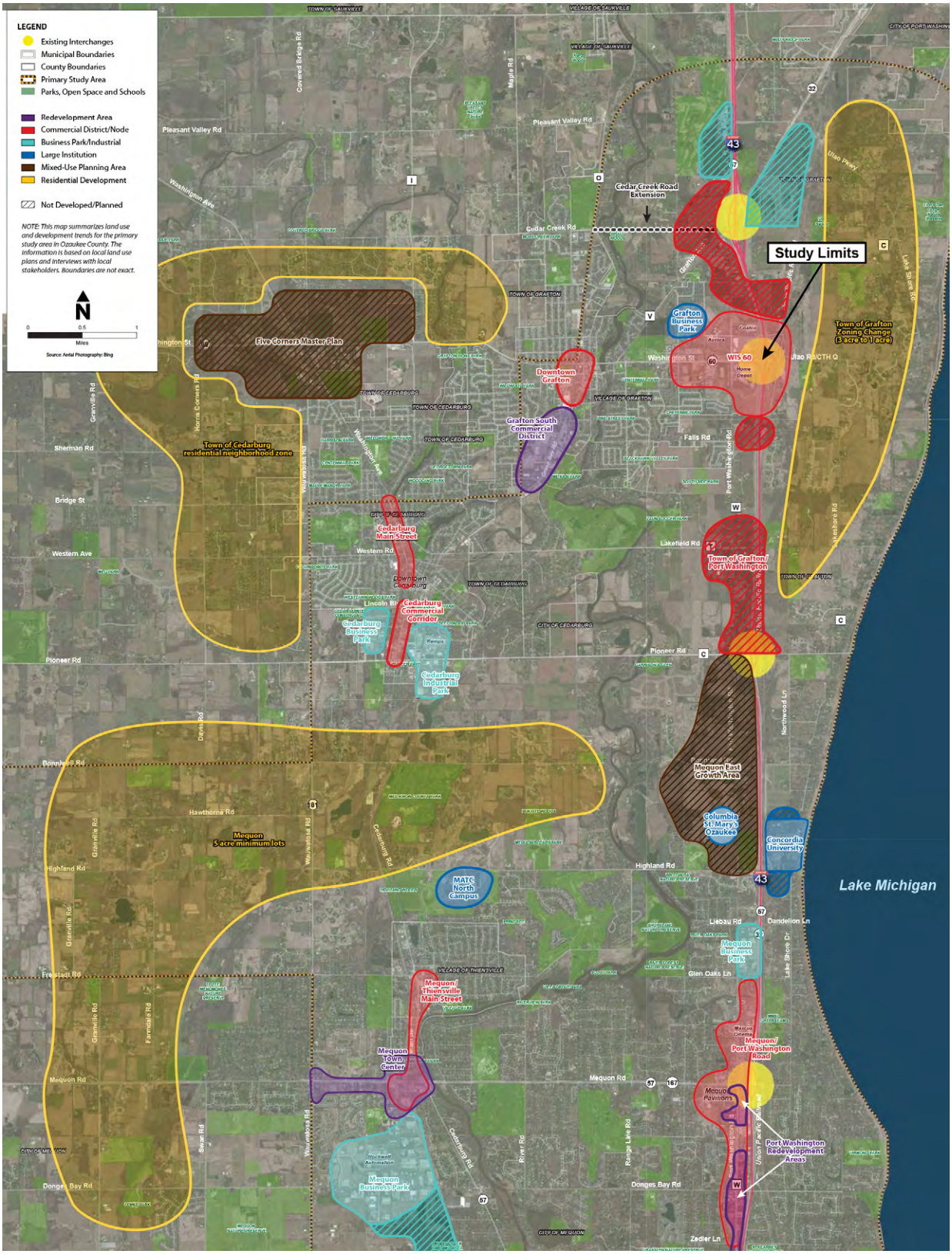
*LAND USE TRENDS*

This section summarizes the land use and development trends within the primary study area. **Exhibit 3-24** and **Exhibit 3-25** depict the development trends within the Milwaukee County and Ozaukee County primary study areas. A community-by-community description is provided in the ICE report.

## Exhibit 3-24: Land Use Trends for Primary Study Area – South Segment



## Exhibit 3-25: Land Use Trends for Primary Study Area – North Segment



### *Milwaukee County*

Land uses in the Milwaukee County portion of the primary study area can generally be characterized by fully developed mature urban areas. The area includes portions of the north and northwest sides of the city of Milwaukee as well as the seven Milwaukee County suburbs that are known as the “North Shore.”

The residential neighborhoods within the Milwaukee County portion of the primary study range from very affluent North Shore suburban communities to some neighborhoods that are more fragile or even distressed within the city of Milwaukee. According to the SEWRPC 2035 regional land use plan, high density housing (at least 7 units/acre) is located in the southern half of the Milwaukee County portion of the primary study area and portions of the city of Milwaukee’s northwest side. The higher density areas typically follow a street grid pattern. The North Shore communities of Glendale, Fox Point, Bayside and Brown Deer contain mostly medium density housing (2.3 to 6.9 units/acre) with some areas of low density urban housing (0.7 to 2.2 units/acre) mostly along Lake Michigan. These areas tend to have a more suburban street pattern. The village of River Hills is the only Milwaukee County suburb that has a rural density residential (no more than 0.2 units/acre) classification.

The commercial areas within the Milwaukee County portion of the primary study area are located along the east-west arterials, Port Washington Road and at I-43 interchanges. The Bayshore Town Center near I-43 and Silver Spring Drive is the main regional shopping center in the Milwaukee County portion of the primary study area. Community scale commercial districts include the Brown Deer Shopping Center, River Point Shopping Center, Capitol Drive, Midtown and the former Northridge Mall/Granville Station area. Several neighborhood level commercial districts are present such as the Mill Road Shopping Center, the Fox Point Shops, the Whitefish Bay commercial district along Silver Spring Drive and the Historic King Drive district.

The Milwaukee County portion of the primary study area contains a relatively large amount of industrial land uses. The 30th Street Industrial Corridor, which includes the Century City redevelopment area, is located on the southern end of the Milwaukee County primary study area. The Estabrook Corporate Park, Glendale Technology Center and Riverworks are located on the east side of I-43 in the southern portion of the Milwaukee County primary study area. Other industrial clusters include Teutonia Avenue and Havenwoods areas and the Milwaukee Industrial Park on the city’s northwest side. The Village of Brown Deer also contains several industrial businesses.

Redevelopment opportunities within the North Shore communities are largely limited by well-established land use patterns, a large amount of land dedicated to residential uses and local land use policies that tend to favor smaller-scale developments. The city of Milwaukee portion of the primary study area presents the greatest opportunities for redevelopment at the Century City industrial park and the former Northridge Mall/Granville Station area.

### *Ozaukee County*

The Ozaukee County portion of the primary study area encompasses the southern portion of the county. It can be characterized by established urban areas with adjacent tracts of undeveloped land and low intensity development. It is the most urbanized portion of the county and contains the county’s primary economic centers.

The urbanized areas of the Ozaukee County portion of the primary study area contain concentrations of low and medium density residential development within the urban service areas.

The non-urbanized areas have been infilling with residential uses that currently have a more scattered large lot development pattern. The communities' land use plans anticipate agricultural lands will continue to transition to residential uses over time and do not have agricultural preservation ordinances.

The Ozaukee County primary study area has two commercial districts along I-43 at Mequon Road and WIS 60. In addition, Mequon/Thiensville, the city of Cedarburg and the village of Grafton have small downtown areas with smaller scale retail and service uses. Additional community- serving commercial areas are located along Cedarburg Road at the south end of the city of Cedarburg, the south commercial district in the village of Grafton and the Five Corners area in the town of Cedarburg. The WIS 60 commercial area is the newest district within the Ozaukee County portion of the primary study area and its business base is continuing to expand. The Mequon Road district is undergoing a redevelopment phase as are the downtown districts in Grafton and Mequon/Thiensville. Historic downtown Cedarburg continues to be a draw for tourists.

The three existing business parks in the Ozaukee County portion of the primary study area are located in Grafton, Cedarburg and Mequon.

Future residential and business development is planned as part of Mequon's East Growth Area, the Five Corners Master Plan and the WIS 60 and WIS 32 interchange areas.

*NATURAL AND CULTURAL RESOURCES*

The Milwaukee River watershed encompasses most lands within the Milwaukee County and Ozaukee County portions of the primary study area. The primary study area also includes the Fish Creek watershed, which directly flows to Lake Michigan, and a portion of the Sauk Creek watershed in the Port Washington area.

In the Milwaukee County portion of the primary study area, the remaining natural, biological, and recreational resources generally lie within narrow bands of environmental corridors along the Milwaukee River and the Lake Michigan shoreline. The WDNR identifies the Milwaukee River as one of six legacy places in Milwaukee County, meaning the river is critical to meet the State's conservation and recreation needs over the next 50 years.[51] Also, SEWRPC classifies the Milwaukee River and Lake Michigan shoreline as a primary environmental corridor, which designates these resources as areas that contain the best remaining elements of the natural resource base in Southeast Wisconsin that are a priority for preservation. Many of the parks and public recreation resources in Milwaukee County are also located in these environmental corridors as well.

Other natural resources are also found along tributaries to the Milwaukee River and Fish Creek that cross I-43, including Indian Creek. Much of the land within the environmental corridor along the Milwaukee River is publicly owned, which preserves the resource in perpetuity. Other notable natural areas include the Kletzsch Park Woods along the Milwaukee River, Schiltz Audubon Center./ Doctors Park Woods and Beach and Fox Point Bluffs and Ravines. SEWRPC notes each of these areas contain diverse and native mesic, dry-mesic woodland habitats.

Ozaukee County is less urban than Milwaukee County and contains extensive open and undeveloped lands. As a result, the county has an extensive natural resource base. In the Ozaukee County portion of the primary study area, primary environmental corridors are located adjacent to the Milwaukee River and the many streams that feed into the river, and along the

*51 SEWRPC. A Land and Water Resource Management Plan for Milwaukee County: 2012-2021. August 2011.*

Lake Michigan shoreline. In its park and open space plan for Ozaukee County,[52] SEWRPC identified several notable natural areas, many of which are located along the Milwaukee River, Ulao Creek and the Lake Michigan shoreline. Some of the more substantial resources in the primary study area include:

- Fairy Chasm State Natural Area – Fish Creek flows through this area, which is a deep wooded ravine leading to Lake Michigan. The area is significant because cold air flow enables plants with more northerly affinities to grow this far south..
- Donges Bay Gorge – A deep ravine leading to Lake Michigan containing northern relict species.
- Abbott Woods and Ravine – A ravine along Lake Michigan with mesic woods and white cedar.
- Kurtz Woods State natural Area – A southern mesic hardwood, remnant of pre-settlement forests that once dominated the area.
- Ville du Parc Riverine Forest – One of the last remnants of riverine forest along the Milwaukee River.
- Mequon Wetland – An extensive mixed wetland area adjacent to I-43. It is part of the Milwaukee Metropolitan Sewerage District's (MMSD) Greenseams Program to preserve important tracts of land for flood management.
- Grafton Woods – A mesic woodlands near the Milwaukee River with diverse species.
- Cedar Heights Gorge – A gorge leading to Lake Michigan, dominated by white cedar.
- Ulao Lowland Forest – A large lowland hardwoods that contain headwaters of Ulao Creek.
- Lions Den Gorge – A deep ravine leading to Lake Michigan, dominated by white cedar and hardwoods with herbs and some northern relicts.

Many of the federal, state and county-owned park and open space sites in Ozaukee County are associated with the sites listed above, including Lion's Den Gorge Nature Preserve, U.S. Fish and Wildlife waterfowl production areas and WDNR wildlife areas. The Milwaukee River also supports a number of threatened and endangered fish species as described in **Subsection 3.13**.

Ozaukee County has been implementing a Fish Passage Program to improve watershed habitat along the Milwaukee River. The goal of the program is to reconnect 158 stream miles that lead to Lake Michigan by reducing aquatic invasive species, replacing culverts, removing a dam and creating naturelike fish-passage ways. The projects will help to reestablish lake sturgeon, walleye and northern pike fish populations.

SEWRPC notes that more than 240 historic places and districts in Milwaukee County are currently on the National Register of Historic Places (NRHP), and 34 listed properties and districts on the NRHP are in Ozaukee County. A far higher number of properties are included in the State's Wisconsin Architecture and History Inventory.[53]

WisDOT identified three new properties in Milwaukee County and two additional properties in Ozaukee County that are potentially eligible for listing on the NRHP (see **Subsection 3.18**).

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[52] *SEWRPC. Planning Report No. 133: A Park and Open Space Plan for Ozaukee County. Community Assistance (3rd Edition). June 2011.*

[53] *SEWRPC, 2011*

## STEPS 3 AND 4: IDENTIFY IMPACT CAUSING ACTIVITIES OF THE PROPOSED PROJECT ALTERNATIVES AND IDENTIFY POTENTIALLY SIGNIFICANT INDIRECT EFFECTS

The build alternatives were reviewed to determine the activities that have the potential to cause indirect effects. It was determined that the following impact causing activities may contribute to indirect effects as follows:

- Adding a new travel lane in each direction of the mainline freeway could indirectly affect land uses within the primary and secondary study areas by enabling faster and more reliable travel between Milwaukee and Ozaukee counties.
- Building a potential new interchange at Highland Road could facilitate planned development within the Ozaukee County primary study area, especially within the city of Mequon.
- Reconstructing existing interchanges could help facilitate development within existing redevelopment sites and planned development sites in the Milwaukee and Ozaukee primary study areas.
- Expanding Port Washington Road would help support existing land use patterns within the Milwaukee County primary study area, especially within the city of Glendale.
- The encroachment of the freeway could indirectly affect the quality of residential neighborhoods, business districts and natural resources.

## STEP 5: ANALYZE THE INDIRECT EFFECTS AND EVALUATE ASSUMPTIONS

Step 5 evaluates the likelihood and magnitude of the indirect effects under the build alternatives and compares the effects to the No-Build Alternative. The subsequent sections first discuss potential land use effects. Then, the second section evaluates the potential for encroachment-alteration effects.

### *LAND USE EFFECTS*

Several research studies have proven that transportation and land use are highly linked and that land use effects can occur as a result of improved transportation accessibility that enables faster or more reliable travel between destinations or by enabling new access to destinations. The most recent research on this topic was published in 2012 by the Transportation Research Board (TRB). The report, *Interactions Between Transportation Capacity, Economic Systems, and Land Use*, analyzed 100 transportation case studies.[54] According to the TRB report, the case studies confirmed the following typical sequence of impacts that can occur over time as a result of improved transportation accessibility:

- Land becomes more attractive as a place to live, work or recreate.
- Building construction and investment occurs.
- Residential and employment growth occurs.
- Local tax revenues rise and sales and income taxes increase.

Improved transportation accessibility alone is not enough to effect land use change. As documented in the TRB report, other non-transportation local factors such as market demand, availability of land, local government development policies, availability of sewer and water services and local economic conditions will affect the magnitude of a transportation project's long-term economic impact. According to the report, transportation case studies with supportive

[54] *Interactions Between Transportation Capacity, Economic Systems, and Land Use. SHRP2 Capacity Research. Report S2-C03-RR-1. Transportation Research Board. 2012.*

local factors were most likely to create positive economic development outcomes and case studies that lacked local supporting factors or had distressed economies inhibited economic development.

The following subsections evaluate the magnitude of potential land use effects that could result from the impact causing activities identified in Steps 3 and 4 above and considers the presence of supportive other non-transportation local factors.

#### *New Travel Lanes*

Under the build alternatives, transportation accessibility and reliability would be improved by adding one new through-travel lane in each direction throughout the study corridor for a total of six lanes. This could reduce travel times during peak travel periods and it could make travel times more consistent.

Under the No-Build Alternative, most segments of the study corridor would operate at level of service E or F either in the morning or afternoon peak hour, or both. Under the build alternatives traffic flow would improve and the study corridor would generally operate at level of service D or better during the morning and afternoon peak hour in 2040. The addition of new travel lanes would also improve traffic flow to the south of the study corridor by eliminating a known traffic bottleneck along I-43 near Bender Road in Glendale. Currently, this location is the transition between four and six freeway lanes. Six lanes are provided south of Bender Road and four lanes are provided to the north of Bender Road.

Land use effects related to the addition of new lanes are considered for the Milwaukee County and Ozaukee County primary study area because this is the area that has the most supportive non-transportation factors present and is the focus of most urban development within Ozaukee County. Effects to the secondary study are also considered for this impact causing activity because capacity expansion could have more dispersed effects that can be spread over a larger area.[55]

**Milwaukee County Primary Study Area.** New travel lanes are likely to facilitate planned redevelopment within the Milwaukee County primary study. This was confirmed with participants at the July 11, 2013 focus group meeting that said the I-43 corridor is highly interconnected with local land use and development because it is the primary transportation route that serves the businesses and communities within the Milwaukee County portion of the primary study area. Overall, the focus group participants believed that a modernized I-43 freeway corridor that includes capacity expansion, safety enhancements and improved aesthetics was needed to help maintain the competitiveness of the communities and business districts that are served by I-43. Also, an improved I-43 corridor could help facilitate access to employment within the county and adjacent counties because I-43 serves as the main commuting route for many Milwaukee County primary study area residents. In addition, new travel lanes could increase the competiveness of the industrial areas within the Milwaukee County primary study area by improving the efficiency of freight movements. According to local stakeholder input, transportation improvements that benefit industrial areas in Milwaukee County subsequently help to revitalize and strengthen urban neighborhoods by creating transit-accessible jobs in close proximity to minority and low-income individuals who more often than the general population need to rely on transit to reach employment.

[55] *Interactions Between Transportation Capacity, Economic Systems, and Land Use. SHRP2 Capacity Research. Report S2-C03-RR-1. Transportation Research Board. 2012.*

Other supporting non-transportation local factors are present within the Milwaukee County primary study area to help facilitate planned redevelopment. According to stakeholders and local land use plans, communities within the Milwaukee County portion of the primary study area are taking steps to revitalize distressed neighborhoods, encourage redevelopment and create industrial development. Several non-supportive local factors are also present that influence the magnitude of this land use effect. The Milwaukee County portion of the primary study area contains mature communities that are fully developed and the local population growth rates are relatively slow or declining. Also, some areas within the city of Milwaukee have high poverty rates, which can make it challenging to encourage private sector development. In addition, redevelopment opportunities within the North Shore communities are limited due to a prevalence of residential land uses and government zoning policies that protect residential neighborhoods.

**Ozaukee County Primary Study Area.** Adding new travel lanes would facilitate planned development within the Ozaukee County portion of the primary study area by reducing commuting times between Ozaukee and Milwaukee Counties. The Ozaukee County primary study area is an attractive place for commuters to live given its close proximity to higher paying jobs in Milwaukee County. Only about seven percent of Ozaukee County's workers are employed within Ozaukee County and just over 50 percent of the county's workforce is employed in Milwaukee County. As a result, capacity expansion may encourage more people to live in Ozaukee County, and in turn, would encourage additional commercial and industrial development (in conformance with local plans). Capacity expansion could also facilitate the continued redistribution of population between Milwaukee and Ozaukee counties. According to SEWRPC, about 9,600 people moved from Ozaukee County to Milwaukee County between 2000 and 2010 and 16,840 people moved from Milwaukee County to Ozaukee County resulting in a net in-migration of 7,200 people for Ozaukee County.[56]

Several supportive non-transportation local factors are present to support these findings. SEWRPC's projections indicate that Ozaukee County is expected to continue to increase its population and employment over the next 40 years. Also, the communities in the Ozaukee County portion of the primary study area have available land to accommodate growth either within their existing municipal boundaries or through annexation. The communities' land use plans anticipate agricultural lands will continue to transition to residential uses over time and do not have agricultural preservation ordinances. The primary study area communities in Ozaukee County are planning for new development areas and at the same time are taking steps to redevelop older business corridors. Pro-development public sector actions taken by communities within the Ozaukee County portion of the primary study area include extending sewer and water services, annexing land when petitioned by private developers, making zoning changes and creating tax increment districts and other financial incentives to promote development. Furthermore, the southern portion of Ozaukee County is desirable for business development because it is close to the existing population base and supply of labor. Even though the recession of the late 2000s has resulted in a historically slow development pace throughout the late 2000s and early 2010s, some new development is occurring within the Ozaukee County portion of the primary study area. As the economy continues to recover, it is likely that the pace of development would increase.

The magnitude of this land use effect discussed in the previous paragraphs is expected to be moderated by several factors. The original construction of I-43 greatly improved accessibility

[56] *SEWRPC. Technical Report No. 11: The Population of Southeastern Wisconsin Preliminary Draft (5th Edition). Dec. 17, 2012.*

to Ozaukee County and most likely helped to facilitate the spread of development along the I-43 corridor in Ozaukee County. The addition of new travel lanes is expected to have a smaller effect on land use for the following reasons.

- **Mature transportation system:** I-43 is an existing multi-lane, limited-access freeway corridor that is part of a mature regional transportation system that already has a high degree of accessibility. The Ozaukee County portion of the primary study area has seven existing interchanges along I-43, and SEWRPC's 2035 regional transportation plan recommends one new interchange at Highland Road. Nine interchanges are available in the Milwaukee County portion of the primary study area and all these access points would be maintained.
- **Limited travel time savings:** Although travel time reliability would be improved by the build alternatives, the improvement to travel times is not expected to be great enough to substantially change regional land use patterns since I-43 is an existing limited-access freeway corridor. Adding new travel lanes would not shorten the distance between destinations, nor would it serve lands that do not already have access to the freeway. Furthermore, during non-peak travel times, the new travel lanes would not affect travel times as traffic is currently typically free flow. Also, the speed limit would not be increased.
- **Established land use patterns/planned growth:** The communities within the Ozaukee County primary study area already have fairly established land use patterns with designated residential and business areas that are already served by the freeway system and the local arterial street network. The growth and intensity of development outside the urbanized areas is limited by a lack of sewer and water services, large lot zoning requirements, conservation easements and environmental corridors that are protected by local zoning or conservation easement. For planned development, the communities utilize comprehensive plans and supporting development policies to promote an efficient growth pattern that is consistent with existing and planned public services and the county's comprehensive plan.[57]

**Milwaukee County Secondary Study Area.** Adding new travel lanes to I-43 could help facilitate investment in downtown Milwaukee by allowing workers from the regional area easier access to employment. According to interviews with downtown stakeholders, less congestion along I-43 and other freeway corridors that serve downtown would make properties within downtown easier to market to prospective employers who need to attract employees from the region. The build alternatives could also help facilitate access to employment for downtown residents that work outside of downtown and in Ozaukee County. Since 2000, downtown households and population have increased by 27.2 percent and 25.5 percent, respectively.[58] According to local stakeholder input, the younger generations are very interested in living in downtown and this is encouraging new housing developments.

The western and southern areas of the Milwaukee County portion of the secondary study area are not expected to be affected by the addition of new travel lanes on the I-43 study corridor. However, less congestion may benefit some employment centers within these areas that need to attract a workforce from the regional area. These include employers that are located at the Milwaukee County Grounds and the Northwestern Mutual campus in Franklin.

**Ozaukee County Secondary Study Area.** New travel lanes would help facilitate local land use plans within the Ozaukee County portion of the secondary study area by making the commute

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[57] *A Multi-Jurisdictional Comprehensive Plan for Ozaukee County: 2035 was approved in 2008. The plan was undertaken by Ozaukee County, 14 participating local governments, SEWRPC and UW-Extension.*

[58] *2012 Market Profile: Downtown Milwaukee. Prepared by Progressive Urban Management Associates, Inc. on behalf of Downtown Milwaukee Business Improvement District 21.*

between northern Ozaukee County and Milwaukee County easier. This could encourage more people to live within the communities that are located within the secondary study area in Ozaukee County and in turn would encourage additional business development. This was confirmed at the July 11, 2013 focus group meeting and with local stakeholder interviews.

This effect has some non-transportation local factors that support this conclusion. The communities within the secondary study area have land available within their existing municipal boundaries for additional residential development and business development. Plus, some of the townships allow large lot single-family homes sites and small subdivisions. Also, local land use plans have identified planned development areas that could be annexed and served with sewer and water services in the future. In addition, land is less expensive in northern Ozaukee County compared to southern Ozaukee County, which may support new industrial and residential development.

Other non-supportive local factors are present that would substantially minimize the magnitude of this land use effect. According to local stakeholder interviews, the pace of new development in the northern portion of Ozaukee County is very slow and very little new construction has occurred in the recent years. Also, businesses tend to be reluctant to go north of WIS 60 in Grafton due to the greater distance from the existing workforce, making it difficult to attract employees. Retail development can also be challenging because the area is farther from the population base and the communities have fairly small populations. In addition, some of the communities in this area are reluctant to extend sewer and water services to new businesses park areas. According to local stakeholder interviews, the communities prefer to wait for residential subdivisions to first pay for the majority of the cost to extend the services before sewers are extended to industrial land. Plus, several of the existing business parks have some vacant parcels to accommodate new construction.

#### *New Interchange at Highland Road*

A new interchange at Highland Road is proposed as part of the I-43 build alternatives. A new interchange would improve transportation accessibility to the Highland Road corridor and would help facilitate the city of Mequon's planned land uses by making lands near the interchange more desirable for development.

Several non-transportation local factors are present to support this finding. The city of Mequon has developed the East Growth Area Plan, which includes the area west of the freeway, east of the Milwaukee River, north of Highland Road and south of County C. The area is currently zoned for residential homes with a minimum of five-acre lots and much of the land has remained undeveloped. If Mequon implements the plan, a mixture of uses would be permitted including single-family and multifamily homes and office, industrial and retail development. The city of Mequon must take several actions for the plan to be implemented including amending the city's land use plan, changing the zoning code and extending sewer and water services. City staff has been directed by the City Council to undertake the necessary studies to facilitate these actions.

Assuming Mequon continues to implement the plan, development of this area would occur even without a Highland Road interchange. This was confirmed by local stakeholder input. The area already has transportation access to the Port Washington Road corridor, which connects to the Mequon Road interchange on the south and the County C interchange on the north. Also, Mequon is desirable from a market standpoint because of its high median household income and its close proximity to the large population base and labor force in southern Ozaukee County and Milwaukee County.

A new interchange at Highland Road could also make large lot subdivisions to the west of the Milwaukee River in Mequon occur at a faster pace. This effect is not likely to be substantial because according to local stakeholder input most of the land north of Highland Road, south of Bonniwell Road, east of the Milwaukee River and west of Wauwatosa Road is already committed for existing residential subdivisions, preserved as public parks or owned by the Ozaukee Washington Land Trust. Undeveloped lands north of Bonniwell Road are available for low density residential development, but this area already has nearby freeway access with the County C corridor and interchange. Lands to the west of Wauwatosa Road, according to local stakeholder input, tend to be more influenced by the US 45 corridor to the west, rather than the I-43 corridor and are therefore not likely to be affected by the Highland Road interchange. Furthermore, the interchange would not facilitate a change in land use type or densities to the west of the Milwaukee River because Mequon is not likely to consider a land use plan amendment for this area within the timeframe of this analysis, according to the local planning director.

#### *Reconstructing Existing Interchanges*

Five interchanges would be reconstructed as part of the project: Good Hope Road, Brown Deer Road, County Line Road, Mequon Road and County C. The interchanges would be reconstructed to modern design standards to improve safety and to handle current and projected traffic operations.

Reconstructing the interchanges would help facilitate existing land use patterns and planned development or redevelopment within the Milwaukee County and Ozaukee County primary study areas. According to local stakeholder input, these access points are essential for the continued vitality of the business districts and neighborhoods that are served by these interchanges.

A discussion of the existing land use patterns that would be facilitated by interchange improvements is provided below.

- **Good Hope Road:** This interchange provides freeway access to the Port Washington Road commercial corridor on the north side of Glendale and to Cardinal Stritch University. It is also a designated state truck route that serves industrial areas in the Mill Road/Teutonia Avenue area and the Milwaukee Industrial Park area near Good Hope Road and 76th Street. Maintaining and improving this access point would help to facilitate these existing development areas.
- **Brown Deer Road:** This interchange is a gateway to several communities along Brown Deer Road, including the villages of River Hills and Bayside. Other nearby municipalities and developments served in this corridor are the village of Brown Deer, Milwaukee's Granville neighborhood and Fox Point. It serves shopping centers, office users and industrial development in Brown Deer and provides another access point to the freeway for the Milwaukee Industrial Park. Brown Deer Road is a designated state long truck route. In addition, the Brown Deer Road corridor serves future redevelopment at the former Northridge Mall/Granville Station Shopping Center and it serves the commercial areas in Bayside and Fox Point that are immediately east of the interchange. The village of Bayside is planning for redevelopment in the northeast quadrant of the interchange to encourage new office development. Many stakeholders have mentioned the current configuration of the interchange is unsafe and the proposed improvements for the interchange would help to maintain the Brown Deer Road corridor as a viable gateway that supports the various business districts it serves.
- **County Line Road:** The County Line Road interchange currently is a partial interchange configuration that provides an on ramp to southbound I-43 at County Line Road and an exit

ramp from northbound I-43 at Port Washington Road. The interchange primarily serves access to adjacent fully developed residential neighborhoods. It also provides some secondary access to Port Washington Road business districts in Mequon, Bayside and Fox Point. The project is currently evaluating full access, partial access and no access alternatives for this interchange. The full access interchange would increase access to Port Washington Road. This alternative would support the existing commercial areas and planned commercial redevelopment areas in Mequon, Bayside and Fox Point. This land use effect is not expected to be substantial because these commercial corridors are primarily served by nearby freeway access points at the Mequon Road and Brown Deer Road interchanges. Plus, the land surrounding the interchange is fully developed with mostly residential land uses that are not subject to change per local plans and zoning. The partial interchange alternative would provide the same level of freeway access in comparison to existing conditions. As a result, this alternative is not expected to contribute to indirect land use effects. The No Access alternative would reduce access in the area, but this is not expected to have a substantial land use effect. The Port Washington Road business districts in Mequon, Bayside and Fox Point primarily rely on the Mequon Road and Brown Deer Road interchanges for freeway access. Plus, the proposed designs for the interchanges at Mequon Road and Brown Deer would be able to accommodate traffic that is diverted from a County Line Road No Access alternative.

- **Mequon Road:** This interchange is the main route into the city of Mequon and serves the commercial areas along Port Washington Road to the north and south of Mequon Road. The city of Mequon has implemented two tax increment districts to the south of Mequon Road along Port Washington to encourage redevelopment of older commercial uses. The reconstruction of the interchange would help to facilitate existing and future commercial developments in this area north and south of Mequon Road.
- **County C:** The County C interchange provides access to the town of Grafton, Mequon and Cedarburg. The reconstructed interchange would help to support existing and planned development served by this interchange. Examples include the town of Grafton commercial/business corridor that is planned along Port Washington Road north of County C, existing industrial/business park areas in Cedarburg, the historic downtown of Cedarburg, Mequon's East Growth Area and the town of Grafton's planned 1-acre residential growth areas. This effect is not expected to be substantial because freeway access is already provided at County C. Other limiting factors include a lack of sewer and water services in the town of Grafton and Mequon and the presence of environmental corridors associated with the Milwaukee River and Ulao Creek that are protected from development through local zoning codes.

#### *Expansion of Port Washington Road In Glendale*

Port Washington Road between Bender Road and Daphne Road would be expanded to four lanes of traffic as part of the I-43 build alternatives. This is currently the only section of Port Washington Road in Glendale that is two lanes.

The expansion of Port Washington Road would support existing development and future redevelopment by improving traffic flow between two commercial areas within Glendale, the Bayshore Town Center and the retail node at Port Washington and Green Tree roads.

It is the project team's position that this land use effect would not be substantial because the land surrounding the road expansion area contains residential neighborhoods. Plus, the opportunities for larger scale redevelopment in this area have already occurred under existing roadway conditions. The Bayshore Town Center redevelopment was completed in 2006 and the retail node at Port Washington and Green Tree roads is fully developed. The remaining

redevelopment opportunities in this area are of much smaller scale. The Bayshore Town Center is planning to redevelop the very northern end of the site after the lease for the Sears Department store expires.

Redevelopment would occur regardless of the Port Washington Road improvements because access is already available and the property owner is already planning for redevelopments under existing conditions. Other non-transportation factors such as market demand are more likely to influence when redevelopment would occur.

#### *Land Use Effects of the No-Build Alternative*

This section discusses the land use effects of the No-Build Alternative for the study areas.

**Milwaukee County.** Over time, the No-Build Alternative could hinder the economic development potential of the Milwaukee County primary study area (and to a lesser extent the secondary study area) as access to local destinations becomes increasingly difficult due to increasing congestion, safety concerns and deterioration of infrastructure. The No-Build Alternative could cause development to shift away from the Milwaukee County portion of the primary study area and move to areas that have modern transportation facilities and better traffic flow. According to local stakeholder input, the I-43 corridor is the main gateway to adjacent communities and a modern freeway is needed to maintain the area's economic competitiveness within the region.

Under the No-Build Alternative, truck shipments that originate from industrial land uses in the Milwaukee County primary study area would become less efficient over time as congestion increases and travel becomes less reliable. Also, it would become increasingly difficult for the area's large labor force to access employment in Milwaukee County and other areas of the region since I-43 is the main route used by commuters. The No-Build Alternative would affect traditional commuters as well as reverse commuters. Reverse commuting has been increasing as a result of business development in Ozaukee County and increasing population in downtown Milwaukee neighborhoods.

This effect would be moderated by the fact that the Milwaukee County primary study area contains established land use patterns and has a mature transportation system in place that includes highways and a local network of arterial roadways. Plus, the area is already served by I-43 and existing interchange access points.

**Ozaukee County.** The No-Build Alternative could hinder the economic development potential of the Ozaukee County primary study area (and to a lesser extent the secondary study area) over time as congestion increases and commuting between Ozaukee and Milwaukee counties becomes increasingly challenging. However, the redistribution of population and employment between Milwaukee and Ozaukee counties is likely to continue because I-43 already connects the two counties and provides access to lands in Ozaukee County at the existing interchanges. Plus, the southern portion of Ozaukee County is a desirable location for residential and business development given its close proximity to a large population base and large pool of labor. In addition, quality of life issues such school districts, housing style choices and access to open space would continue to attract people to Ozaukee County regardless of the alternative.

*ENCROACHMENT-ALTERATION EFFECTS*

These types of indirect effects are from alterations to the behavior and function of the physical environment farther from the corridor and later in time. Encroachment-alteration effects are often associated with direct project impacts that could alter neighborhood quality of life, the vitality of business districts or the quality of natural resources. The potential for encroachment effects is discussed in the subsections below.

### *Neighborhoods*

The greatest potential for neighborhood encroachment effects would occur in the Milwaukee County portion of the study corridor where residential neighborhoods are located in close proximity to the freeway. Residents have expressed concerns that direct project impacts such as property acquisitions, noise impacts and potential air quality impacts could diminish the quality of life for neighborhoods adjacent the study corridor. They are concerned that these potential direct impacts could indirectly affect the area by making the neighborhoods a less desirable place to live, which could diminish the value of homes or increase the amount of time it takes to sell a home.

It is the project team's position that indirect effects to neighborhoods under the build alternatives would not be substantially greater in comparison to the No-Build Alternative for several reasons. First, the overall character and setting of the neighborhoods would not change. The neighborhood areas would remain intact and local traffic patterns would not be affected. Second, the neighborhoods next to the freeway are already likely experiencing freeway proximity effects. For example, existing noise levels on the south end of the study corridor already exceed the criteria that WisDOT utilizes to assess noise impacts and a noise impact would continue to be present under the build alternative. In addition, a local real estate agent that attended the July 11, 2013, focus group meeting acknowledged that some properties near the freeway already take longer to sell. Lastly, the project would not contribute to any violation of the National Ambient Air Quality Standards (NAAQS) and, based on projected traffic volumes, FHWA expects there would be no appreciable differences in MSAT emissions between the No-Build and build alternatives.

The No-Build Alternative would not create the potential for neighborhood encroachment effects because no property acquisitions would be required and the footprint of the freeway would not change. However, the No-Build Alternative would not provide the opportunity to construct noise barriers and the freeway infrastructure would continue to deteriorate. Maintaining infrastructure is important to a community's quality of life. Also, the increasing congestion on the freeway would continue to increase air pollution emissions from idling and stop-and-go traffic.

### *Businesses*

The build alternatives would require a total of three commercial business relocations. This direct effect is not expected to indirectly affect the local economy or the vitality of business corridors within the primary study area for the following reasons. The commercial businesses that would be relocated are small in size and are not considered anchor establishments that generate a substantial amount of customers for other adjacent businesses. In addition, the build alternatives are expected to strengthen local economic conditions by facilitating planned development within the primary study area as discussed in the Land Use Effects subsection above. According to a 2012 Transportation Research Board report that reviewed 100 transportation case studies, negative job impacts due to right of way takings were offset by new activity that occurs somewhere else nearby in nearly all the case studies that were analyzed.[59]

If a Highland Road interchange is not constructed, traffic at the Mequon Road and Port Washington Road intersection would increase. Increased congestion makes access more challenging, which could indirectly affect this business district by diminishing the area's attractiveness for existing businesses and ongoing redevelopment efforts. This effect is not

[59] *Interactions Between Transportation Capacity, Economic Systems, and Land Use. SHRP2 Capacity Research. Report S2-C03-RR-1. Transportation Research Board. 2012.*

expected to be substantial because the Port Washington Road and Mequon Road intersection would be reconfigured to handle traffic at an acceptable level of service.

The No-Build Alternative would not acquire businesses, but it would not create the potential to facilitate development within the primary study area as discussed in the Land Use Effects subsection above.

#### *Natural and Cultural Resources*

Potential indirect effects to natural resources can include reduced wetland functions and value, further habitat degradation by creating smaller habitat patches, stream bank erosion from increased stormwater volume and potential stream flow disruption and aquatic and wildlife species passage caused by box and pipe culverts. Historic properties are located along the freeway corridor. One aspect of significance for these historic properties is derived from their setting, which is an area much larger than their recorded historic boundary. This larger setting provides the context from which to interpret the historic resource, and the widened footprint of transportation systems can alter a resource's setting and context.

## STEP 6: ASSESS CONSEQUENCES AND IDENTIFY MITIGATION ACTIVITIES

This section assesses the social, economic and environmental consequences of the indirect land use and encroachment-alteration effects that were discussed in Step 5 above. It also discusses potential mitigation measures that could help avoid or minimize negative indirect effects and identifies local, regional, state and federal agencies that have the authority to implement mitigation measures.

### *LAND USE EFFECTS*

This subsection discusses the consequences and mitigation measures related to indirect land use effects for the Milwaukee County and Ozaukee County study areas.

#### *Milwaukee County Study Areas*

As discussed in the Land Use Effects subsection above, the build alternatives are expected to help maintain the competitiveness of the communities within the primary study area (and to a lesser extent within the Milwaukee County secondary study area) and help facilitate planned redevelopment. The build alternatives are also expected to facilitate access to employment within the region since I-43 is the main commuting route for many residents in the Milwaukee County primary study area. In addition, the build alternatives could benefit industrial areas by improving the efficiency of freight movements. Strong industry in Milwaukee County helps revitalize urban neighborhoods by creating transit-accessible jobs in close proximity to minority and low-income individuals that tend to rely on transit to reach employment more often than the population in general.

Redevelopment that would be facilitated by the build alternatives in Milwaukee County would be seen as positive by local communities as it would increase local tax bases and help pay for the cost of public services that are already in place. Also, redevelopment helps maintain the viability of existing urbanized areas and reduces the pressure to develop in outlying areas of the region. In addition, redevelopment promotes a compact land use pattern that minimizes the impact of development on the land. According to an EPA report, compact communities reduce environmental impacts and allow people to travel shorter distances for everyday activities.[60]

[60] *U.S. Environmental Protection Agency. "Our Built and Natural Environments: A Technical Review of the Interactions Among Land Use, Transportation, and Environmental Quality." Second Edition. June 2013. 78-80.*

The EPA report states compact communities also make public transit, sidewalks, and bike paths more practical and cost-effective because destinations are closer together.

Tools that can be implemented by local governments to aid redevelopment efforts include tax increment financing, business lending programs, business improvement districts and redevelopment authorities. Tax credit zones, Community Development Block Grant funds and brownfield remediation grants are also available from state or federal agencies in some areas of the Milwaukee County primary study area. Many of these tools are already being utilized by the local communities within the study area to create jobs, revitalize neighborhoods and reuse lands that would otherwise be underutilized or vacant.

Potential negative consequences of redevelopment that could be facilitated by the build alternatives include:

- An increase in the intensity of land uses in some areas.
- More traffic on local streets.
- Increased demand for onsite and off-street parking.
- Demolition or alteration of unprotected historic structures.
- Increased stormwater runoff that impacts water quality and increases the risk of flooding.

The best way to manage any negative effects associated with redevelopment is through local government land use and development policies. In Wisconsin, local governments have the authority under state statues to control land use decisions. Municipalities in the primary study area are already using a number of tools to manage development within their communities including comprehensive plans, subarea plans and zoning regulations. These tools help local governments determine the amount and location of development and its type and density. Plan commissions are present in all primary study area communities. One of the primary responsibilities of plan commissions is to make sure development is being implemented in accordance with local plans and ordinances.[61] Some communities within the primary study area also have architectural review boards and historic preservation commissions that create an extra layer of oversight on development aesthetics and historic resources.

Stormwater within the Milwaukee County primary study area and nearly all communities within the Milwaukee County secondary study area are under the jurisdiction of MMSD. All communities within the MMSD service area are required to follow the MMSD Chapter 13 Surface Water and Storm Water Rules to control stormwater runoff. These regulations help protect water quality and minimize the risk for flooding.

All communities within Milwaukee County, as required by Section 87.30 of the Wisconsin State Statues, have floodplain zoning in place. Minimum standards for floodplain regulations are provided in NR 116 of the Wisconsin Administrative Code. Floodplain regulations govern filling and development activities within the 100-year floodplain and prohibit nearly all forms of development in the floodway and restrict filing and development within the flood fringe. Also, all communities within Milwaukee County have shoreland-wetland regulations in place, as required by Section 62.231 and 61.351 of the Wisconsin Statues. NR 117 of the Wisconsin Administrative code establishes minimum standards for zoning ordinances that include the protection of wetlands five acres in size lying in shoreland areas.

[61] *Plan Commission Handbook. Second Edition. 2012. Center for Land Use Education. University of Wisconsin-Stevens Point.*

Many of Milwaukee County's remaining natural resources are publicly owned primarily through the Milwaukee County Park System to ensure their preservation.

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

#### *Ozaukee County Study Areas*

The I-43 build alternatives would facilitate planned development within the Ozaukee County portion of the primary study area (and to a lesser extent within the Ozaukee County secondary study area) by improving commuting between Ozaukee and Milwaukee counties, improving accessibility to lands near the proposed Highland Road interchange and modernizing existing access points. The extent of this effect is expected to be much smaller in comparison to the original construction of I-43 in the 1960s because the transportation system is mature and already has a great deal of accessibility. Plus, development has already spread into southern Ozaukee County and portions of northern Ozaukee County.

Planned development that would be facilitated by the build alternatives would be seen as positive by most communities within the Ozaukee County primary and secondary study areas because it would help accomplish their land use plans and economic development goals.

Potential negative consequences of development that could be facilitated by the build alternatives include:

- Changes in community character.
- Increased cost for community services such as emergency services and schools.
- Extensions of sewer and water services.
- Annexation of land in townships by cities and villages.
- Reduction in the amount of natural resources.
- Conversion of agricultural uses to urban uses.
- Increased local traffic that may require the expansion of roadway infrastructure.
- Increased impervious space that increases stormwater runoff and affects water quality and quantities.

The best way to manage negative effects associated with development that may be facilitated by the build alternatives is through local land use and development policies that are under the jurisdiction of local governments. As discussed previously, local governments have the authority under Wisconsin state statues to control land use decisions. Municipalities within the Ozaukee County primary and secondary study areas are already using a number of tools to manage development within their communities including comprehensive plans, zoning regulations and land division ordinances. These tools help local governments determine the amount and location of development and its type and density. As discussed above, plan commissions are present in all study area communities in Ozaukee County. One of the primary responsibilities of plan commissions is to make sure development is being implemented in accordance with local plans and ordinances.[62] Some communities within the primary study area also have architectural review boards, historic preservation and landmark commissions and open space commissions

[62] *Plan Commission Handbook. Second Edition. 2012. Center for Land Use Education. University of Wisconsin-Stevens Point.*

that create an extra layer of oversight for the development review process.

In 2008, Ozaukee County in coordination with SEWRPC prepared a multijurisdictional plan for Ozaukee County. The process included participation from all 14 local governments in Ozaukee County. The plan set forth a vision for future development and natural resource protection throughout the county and included the preparation of local government comprehensive plans for all the communities in Ozaukee County.

Municipalities can utilize cooperative boundary agreements as authorized under Section 66.0307 of the Wisconsin State Statutes to determine boundary lines between cities, villages and towns. These agreements allow communities to proactively manage their borders instead of reacting to individual requests for annexation. The city and town of Port Washington have a boundary agreement in place.

Capital improvement plans are an effective way for local governments to match future capital expenditures for things such as roads, sewers, water systems and government buildings and equipment with projected revenues.[63] These plans help local governments determine if its available financial resources are consistent with their comprehensive plan.

In Ozaukee County, impacts to natural resources would be managed by local zoning ordinances that preserve environmental corridors with overlay districts and conservation districts, and by floodplain and shoreland zoning ordinances that are required by Wisconsin Statues. Other programs preserving natural areas in Ozaukee County include MMSD's Greenseams program, and the Ozaukee Washington Land Trust (OWLT) and Ulao Creek Partnership. Through the Greenseams program, MMSD purchases and manages open tracts of land for flood and water quality management. The OWLT partners with public and private landowners to preserve natural areas, typically through conservation easements. Similar activities occur in the Ulao Creek watershed through the Ulao Creek Partnership. According to SEWRPC's park and open space plan for Ozaukee County, as of 2009, 32.5 square miles of environmental corridors and isolated naturals, or 72 percent, were under protection through adopted sewer service areas plans, public and private ownership, conservation easements, or public land use regulations.[64] To further support local regulations, state and federal regulations help manage impacts to natural resources such as wetlands (WDNR Chapter 30 permits and the USACE Section 404 permits), water quality (NR 151), and threatened and endangered species (NR 27 and Endangered Species Act).

To manage stormwater, Chapter NR 216 of the Wisconsin Administrative code requires county and local governments in urbanized areas to obtain a Wisconsin Pollutant Discharge Elimination System (WPDES) Stormwater Discharge Permit. Chapter NR 151 of the Wisconsin Administrative Code requires that municipalities with WPDES permits reduce the amount of total suspended solids in stormwater runoff by 40 percent for reconstruction projects. For new construction projects, permanent control measures must be constructed to reduce the amount of total suspended solids in stormwater runoff by 80 percent. In addition, Chapter NR 151 requires that all construction sites that have one acre or more of land disturbance must achieve an 80 percent reduction in the amount of sediment that runs off the site during the construction period.

Local comprehensive plans, zoning and farmland preservation plans can be utilized by Ozaukee County communities to preserve agricultural resources. Ozaukee County has developed a farmland preservation plan that includes recommendations for the long-term preservation

[63] *Ohm, Brian W. Guide to Community Planning in Wisconsin. University of Wisconsin-Madison/Extension. 2000.*

[64] *SEWRPC. Community Assistance Report No. 133: A Park and Open Space Plan for Ozaukee County (3rd Edition). June 2011*

of farmland. Also, farmland preservation zoning classifications can be found in the Ozaukee County secondary study area. Federal and state conservation programs have also been created to help protect agricultural resources and rural lands. Federal programs include the Conservation Reserve Program (CRP), Conservation Reserve Enhancement Program (CREP) and Wetland Reserve Program (WRP). Wisconsin's Farmland Preservation Program (FPP) allows farmers who agree to maintain farmland in agricultural use to receive annual state income tax credits. According to the Ozaukee County comprehensive plan, there were 351 Wisconsin FPP contracts encompassing 21,881 acres of farmland in Ozaukee County towns and the city of Mequon. The vast majority of the contracts are located within the secondary study area in the northern half of the county.

Consistency with the SEWRPC 2035 regional land use plan is another way for local governments to have coordinated land use polices that promotes an efficient land use pattern and preserves natural resources and farmland. The key recommendations from the regional plan are:

- New urban development should be accommodated within and around existing urban centers as infill development, through redevelopment, and through the orderly expansion of planned urban service areas on lands proximate to these centers.
- The regional plan envisions a range of commercial and industrial areas.
- The primary environmental corridors, secondary environmental corridors, and isolated natural resource areas of the Region should be preserved in essentially natural, open uses, continuing to account for about 23 percent of the area of the Region.
- The prime, or most productive, farmland in the region should be preserved.

#### *Transit Access to Employment*

The Milwaukee County Transit System (MCTS) provides relatively good coverage of the county with local bus service. According to SEWRPC, MCTS provides access to 93 percent of Milwaukee County's employers with 500 or more employees.[65] MCTS also operates buses in Ozaukee County that primarily serves commuter trips on the I-43 corridor (see **Subsection 3.2.1**). The route serves primarily Ozaukee County riders working in Milwaukee. The service provides for reverse commute trips to Milwaukee County riders working in Ozaukee County, but on a more limited basis. One of the primary concerns raised by local stakeholders about development in Ozaukee County that may be facilitated by the I-43 build alternatives is that the majority of jobs in Ozaukee County are not accessible by transit. This affects the ability of lower income, transit-dependent populations in the city of Milwaukee to obtain employment and creates isolated neighborhoods with high concentrations of poverty. This was confirmed at the July 11, 2013, focus group meeting. Stakeholders stated that more transit investment is needed in the region to improve access to jobs, especially for those who do not have access to a vehicle.

A report titled *Transportation Equity and Access to Jobs in Metropolitan Milwaukee* was completed in 2004 by researchers at the University of Wisconsin-Milwaukee. It discusses how a "spatial mismatch" has been created between the region's affordable housing supply in the city of Milwaukee and the availability of low skilled jobs in suburban areas. The report states that "because low-income persons frequently do not have access to an automobile, effective public transportation is often crucial in bridging the gap between the inner-city locations of low-income populations and the increasingly suburban locations of job opportunities." The report's research confirmed the presence of a spatial mismatch in the Milwaukee region and found 81 percent

65 *SEWRPC. Planning Report No. 54: A Regional Housing Plan for Southeastern Wisconsin: 2035. March 2013.*

of families living below the poverty line are located in the city of Milwaukee; only 30 percent of businesses with strong hiring projections for entry-level workers are located in Milwaukee; and the remaining 70 percent are in the suburbs.

The spatial mismatch between workers and housing is a complex issue and has many contributing factors, including declining MCTS transit service levels, a lack of a coordinated regional transit system, limited transit services in job-rich suburbs, restrictive suburban zoning regulations that indirectly discourage affordable housing, and relatively low rates of vehicle ownership and valid driver's licenses in some areas of the city of Milwaukee.

SEWRPC recently completed the 2035 regional housing plan, which incorporated an analysis that looked at the ratio of available jobs and housing. The primary purpose of the analysis was to determine if communities with a substantial amount of existing and/or planned employment also have existing or planned workforce housing. The SEWRPC analysis found a current and projected jobs/housing imbalance for many of Milwaukee's suburban communities.

Within Ozaukee County, Mequon, Thiensville, Cedarburg, Grafton, Fredonia and Belgium were found to have a lower-cost job/housing imbalance and a moderate-cost job/housing imbalance. The village of Saukville and city of Port Washington have a moderate-cost job/housing imbalance. This means that these communities have either a higher percentage of lower-wage jobs than lower-cost housing and/or they have a higher percentage of moderate-wage jobs than moderate-cost housing. According to SEWRPC, a moderate-cost imbalance is the most common type of current and projected job/housing imbalance in the region and also tends to occur in suburban communities.

According to the SEWRPC regional housing plan, improved transit service would help provide links between affordable housing and jobs. The plan states that 17 percent of households in the city of Milwaukee did not have access to a car in 2005-2009, and only 41 percent of employers in the region are accessible by local or rapid transit service.[66] As a result, households in the City of Milwaukee that lack of access to a car are not able to access the majority of employment centers in the region. According to SEWRPC, if the transit components of the 2035 regional transportation plan were implemented, many major employment centers that are not currently served by public transit would become accessible for people without access to a car, including those that work weekend hours and second and third shifts.

According to SEWRPC, the public shared-ride taxi system operated by Ozaukee County provides connections between stops on the rapid transit services and some major employers to facilitate reverse commute travel from Milwaukee County. The employers are primarily concentrated in the Mequon-Thiensville, Cedarburg-Grafton, and Saukville areas. These services provide access to about 12 percent of the employers in Ozaukee County that have at least 100 employees.

Funding for transit is complicated by the fact that Wisconsin legislation limits WisDOT's ability to provide capital funding for transit outside traffic mitigation projects. As stated in Section 85.062(2), Wisconsin Statutes, "No major transit capital improvement project may be constructed using any state transportation revenues unless the major transit capital improvement project is specifically enumerated under subsection (3)." Furthermore, implementation of the recommended expansion of public transit in Southeastern Wisconsin would also be dependent upon attaining dedicated local funding for public transit. The local share of funding of public transit in Southeastern Wisconsin is provided through county or

[66] *SEWRPC. Planning Report No. 54: A Regional Housing Plan for Southeastern Wisconsin: 2035. March 2013.*

municipal budgets, and represents about 15 percent of the total operating costs and 20 percent of total capital costs of public transit. Thus, the local share of funding public transit is largely provided by property taxes, and public transit must annually compete with mandated services and projects. Increasingly, due to the constraints in property tax-based funding, counties and municipalities have found it difficult to provide funding to address transit needs, and to respond to shortfalls in federal and state funding. Most public transit systems nationwide have dedicated local funding, typically a sales tax of 0.25 percent to 1.0 percent, and they are not nearly as dependent upon federal and state funding.

Consistency with the SEWRPC recommendations in the 2035 regional housing plan could help to address the existing and projected jobs/housing balance discussed above. The plan advises local governments with existing and planned employment land uses that are sewered to conduct detailed analyses of their communities to confirm if an existing or planned job/housing imbalance exits. For communities that have a higher percentage of lower-wage jobs than lower-cost housing, new affordable multifamily housing developments are recommended. For communities with a higher percentage of moderate-wage jobs than moderate-cost housing, additional modest sized single-family homes on small lots would help to improve the imbalance. Progress towards achieving the recommendations in the SEWRPC housing plan is complicated by the fact that SEWRPC is an advisory agency. Local governments would need to make substantial changes to local land use plans and zoning regulations to increase the region's supply of affordable housing.

*ENCROACHMENT-ALTERATION EFFECTS*

This subsection discusses the consequences and mitigation measures related to encroachment-alteration effects for the primary study area.

#### *Neighborhoods*

As discussed in Step 5 above, the greatest likelihood for neighborhood encroachment-alteration effects would occur on the south segment of the study corridor. Neighborhood encroachment-alteration effects could make the neighborhoods adjacent to I-43 more susceptible to urban decline if people begin to move out of the neighborhood. Urban decline is often associated with diminished property values, lower home owner rates and increases in crime.

The neighborhood encroachment effects would be moderated by the fact that these neighborhoods are stable North Shore areas that have low poverty rates, higher home ownership rates and fairly stable population figures. The attributes that make these neighborhoods desirable places to live such as close proximity to downtown and desirable school districts would not be changed by the build alternatives.

WisDOT's community sensitive solutions (CSS) efforts that would occur as part of future project phases would help to minimize impacts from a larger-scale freeway. Also, the build alternatives would present an opportunity to construct noise barriers, where feasible and reasonable. According to the noise anaylis section of this document (see **Subsection 3.15**) there are existing noise impacts as well as noise impacts with the build alternatives. The build alternatives would reduce congestion along the freeway and minimize traffic that diverts to local streets. This would improve air quality by reducing idling and stop-and-go traffic. Also, it would improve safety on local streets by minimizing conflicts between pedestrians and vehicles especially on heavily traveled arterial corridors.

#### *Businesses*

The build alternatives are not expected to have encroachment-alternation effects on business districts within the primary study area. Any negative impact that may be caused by business relocations or expanding infrastructure is expected to be offset by economic development that could be facilitated by the build alternatives in the primary study area.

#### *Natural and Cultural Resources*

The encroachment-alteration effects discussed in Step 5 above, can contribute to stream bank instability, a loss of habitat and water quality degradation. The build alternatives are largely confined to the existing highway footprint to avoid and minimize adverse indirect effects. Additional minimization measures, which include widening I-43 to the inside of the median, using retaining walls and minimizing slopes also mitigate the potential indirect effect to wetlands as well as natural habitats. To mitigate unavoidable wetland impacts, WisDOT will implement measures outlined in the July 2012 WisDOT-WDNR memorandum of understanding titled *Compensatory Mitigation for Unavoidable Wetland Losses Resulting from State Transportation Activities*. These measures will minimize and mitigate the potential indirect effect on wetlands and habitat integrity. Also, the design team is evaluating a range of stormwater best management practices, including in-line storage, retention ponds and ditches to store and treat runoff to minimize the roadway development impacts to the surrounding streams, rivers and drainage basins.

The encroachment effect on historic resources in minimized through design to avoid the resources or reduce unavoidable impacts where practicable. The SHPO has concurred that the study alternatives would have no adverse effect on historic resources.

## 3.22.2. Cumulative Effects

The cumulative effects analysis considers the resources that could be affected directly or indirectly by the I-43 North-South Freeway Corridor Study build alternatives when combined with other actions that potentially affect the same resources.

The methodology used to assess cumulative effects for the I-43 North-South Corridor Study is based on the Council of Environmental Quality's 11-step process identified in the handbook *Considering Cumulative Effects under the National Environmental Policy Act* (January 1997). The 11-step process can be subcategorized into three steps: scoping, describing the affected environment, and determining the environmental consequences. The following subsection describes the cumulative effects scoping process, and then the subsection following that describes the affected environment and environmental consequences for each resource.

### SCOPING CUMULATIVE EFFECTS

The cumulative effects analysis considers the resources that could be affected directly or indirectly by the I-43 North-South Freeway Corridor Study build alternatives when combined with other past, present or reasonably foreseeable future actions that potentially affect the same resources or human communities. Based on the anticipated direct and indirect project effects, the following resources were reviewed for potential cumulative effects:

- Agricultural lands
- Surface water quality and quantity
- Wetlands and floodplains
- Environmental corridors and stream crossings

- Air quality
- Residential properties
- Commercial properties
- Municipal tax base
- Regional land use patterns

## CUMULATIVE EFFECTS STUDY AREA AND TIMEFRAME FOR ANALYSIS

The study area for cumulative effects varies depending on the resource being discussed and is shown in **Table 3-37**. The study areas include the I-43 North-South corridor, but also consider the geographic boundaries for resources that are larger than the study corridor. The resource study areas are based on the scale of human communities, watersheds and airsheds as these boundaries consider the distance a cumulative effect could travel.

The timeframe for the analysis is 2040 – 20 years after construction – which coincides with the anticipated design year of a future project, and the availability of population, employment and land use information.

**Table 3-37: Cumulative Effects Study Area by Environmental Resource**

| Environmental Resource | Cumulative Effects Study Area |
|---|---|
| Agricultural lands | Ozaukee County |
| Surface water quality and quantity | Milwaukee River Watershed and Fish Creek Watershed in Milwaukee and Ozaukee counties |
| Wetlands and floodplains | Indirect analysis primary study area in Milwaukee and Ozaukee counties (see **Exhibit 3-23**) |
| Environmental corridors and stream crossings | Indirect analysis primary study area in Milwaukee and Ozaukee counties (see **Exhibit 3-23**) |
| Air quality | Southeastern Wisconsin Intrastate Air Quality Control Region #239 |
| Residential properties | Milwaukee and Ozaukee counties |
| Commercial properties | Milwaukee and Ozaukee counties |
| Regional land use patterns | Milwaukee and Ozaukee counties |

## PAST, PRESENT AND REASONABLY FORESEEABLE FUTURE ACTIONS

**Table 3-38** provides a list of the other past, present or reasonably foreseeable future actions, that when considered with the I-43 North-South Freeway study corridor study may have cumulative effects on the environment.

**Table 3-38: I-43 North-South Freeway Corridor Study – Past, Present and Reasonably Foreseeable Actions Influencing Cumulative Effects**

| Time | Action | Location |
|---|---|---|
| Past | Historic urban/suburban development | Milwaukee and Ozaukee counties |
| | Agricultural development | Ozaukee County |
| | Original construction of I-43 | Milwaukee and Ozaukee counties |
| | Marquette Interchange reconstruction | Milwaukee County |
| | Straightening of Ulao Creek | Ulao Creek basin |
| | Redevelopment of Bayshore Mall | City of Glendale |
| | Development of WIS 60 commercial corridor | Village of Grafton |
| | Purchase of preservation lands by Ozaukee Washington Land Trust and MMSD | Ozaukee County |
| | Oak Creek coal-fired power plant | Milwaukee County |
| Present | Ozaukee County fish passage program | Ozaukee County |
| | Ongoing commercial development in WIS 60 corridor and Port Washington Road corridor | Village of Grafton |
| | Purchase of lands for preservation by the Ozaukee Washington Land Trust | Ozaukee County |
| | Ulao Creek restoration activities | Ulao Creek Subwatershed |
| | Reuse of former industrial areas for industrial purposes (i.e. Century City) | City of Milwaukee |
| | Southeast freeways reconstruction (including I-94 North-South corridor and Zoo Interchange) | Milwaukee County |
| | WIS 60 Jackson-Grafton Study | Ozaukee and Washington counties |
| Future | City of Mequon East Growth Area plan | City of Mequon |
| | Expansion of commercial development north of WIS 60 near WIS 32 interchange | Town of Grafton |
| | Strip commercial redevelopment along Port Washington Road | City of Glendale |
| | Planned Ozaukee County residential growth | Ozaukee County |
| | Redevelopment of former Northridge Mall | City of Milwaukee |
| | Business park expansion in Ozaukee County | Ozaukee County |
| | Reconstruction of WIS 60 between US 45 and 11th Avenue in Grafton | Ozaukee and Washington counties |
| | Reconstruction of WIS 167 (Mequon Road) between US 145 (Pilgrim Road) to WIS 181 (Wauwatosa Road) | Village of Germantown and city of Mequon |
| | Extension of Cedar Creek Road between | |
| | County O and Port Washington Road | Town of Grafton |
| | Southeast Wisconsin freeways reconstruction (including I-43 between North Avenue and Silver Spring Drive, and the I-94 East-West Corridor) | Milwaukee County |
| | Reconstruction of I-43 north of WIS 60 | Ozaukee County |

## DESCRIBE THE AFFECTED ENVIRONMENT AND DETERMINE THE ENVIRONMENTAL CONSEQUENCES AND POTENTIAL MITIGATION MEASURES

This section assesses the resources that could experience cumulative effects as a result of the I-43 North-South corridor build alternatives and the other past, present and reasonably foreseeable actions listed in **Table 3-38**. For each resource, the affected environment is first described. This includes establishing a baseline condition for the resources and considering the resources' capacity to withstand stress in relation to regulatory thresholds. Then, an evaluation of the environmental consequences is conducted for each resource. This includes examining the cause and effect relationship between human activities and affected resources and determining the magnitude and significance of the cumulative effects. The evaluation also considers avoidance, minimization and mitigation measures WisDOT can undertake for the build alternatives to minimize cumulative effects to the greatest practical extent. The analysis also considers other local, state and federal policies and laws that can further manage cumulative effects resulting from the direct and potential indirect effects of the project. The findings of the analysis are summarized by resource in the following subsections.

### *AGRICULTURAL LANDS*

#### *Affected Environment*

Agriculture is a prevalent land use and important economic activity in Ozaukee County. As shown in **Table 3-39**, farmland occupied about 77,600 acres, representing about 52 percent of the county in 2007. About two-thirds of the farmland is located in the northern half of the county in the towns of Port Washington, Saukville, Belgium and Fredonia. The towns of Belgium and Fredonia combined contain about 42 percent of all farmland in the county. Farmland is also found in the southern half of the county in the city of Mequon and towns of Grafton and Cedarburg. These three communities combined contain nearly 30 percent of the county's farmland.

**Table 3-39: Farmland Acres in Ozaukee County by Community – 2007**

| Municipality | Acres | Percent of Total |
|---|---|---|
| City of Mequon | 10,399 | 13 |
| Town of Cedarburg | 7,338 | 9 |
| Town of Grafton | 4,608 | 6 |
| Town of Saukville | 10,927 | 14 |
| Town of Port Washington | 8,217 | 11 |
| Town of Belgium | 18,283 | 24 |
| Town of Fredonia | 14,556 | 19 |
| Other cities and villages | 3,273 | 4 |
| County total | 77,601 | 100 |

*Source: SEWRPC. Community Assistance Planning Report No. 87: Public Review Draft – A Farmland Preservation Plan for Ozaukee County: 2035 (Second Edition). June 2013.*

According to the Ozaukee County Farmland Preservation Plan, the county contained 513 farms in 2007. The average farm size was 138 acres, which was somewhat smaller in comparison to the statewide average of 194 acres. The 513 farms in Ozaukee County produced over $59 million of agricultural products in 2007. Dairy farming comprised more than half of this total,

with grain crops and horticulture making up the remainder. The average Ozaukee County farm produced $115,020 of agricultural products in 2007, which was a 60 percent increase from the 2002 level of $71,901, according to the farmland preservation plan, according to the plan.

Although farming is still prevalent in Ozaukee County, it is a declining land use. According to the farmland preservation plan, the number of farmland acres in the county decreased by 33 percent between 1976 and 2007. The main reason is the conversion of farmland to urban development. This has driven up the cost of farmland in the county. According to the farmland preservation plan, the average sale price of agricultural land in the county increased from $1,618 per acre in 1976 (equivalent to $5,805 in 2007 dollars) to $11,963 in 2007. However, it should be noted that the average sales price dropped significantly between 2007 and 2009 due to the economic recession.

The conversion of farmland to urban land uses is expected to continue within Ozaukee County. According to SEWRPC, the county is projected to add over 22,800 residents and 16,800 jobs by 2050. Also, none of the communities in southern Ozaukee County have agricultural preservation classifications in their land use plans. The land use plans for the city of Mequon, village and town of Grafton and city and town of Cedarburg anticipate the remaining agricultural lands will transition to mostly low density residential uses over time. The pressure to convert agricultural land uses to urban land uses is less in the northern half of Ozaukee County where the market for development is smaller. Plus, local government policies seek to protect farmland in this portion of the county. The townships of Saukville, Port Washington, Belgium and Fredonia have agricultural preservation classifications in their land use plans and the towns have agricultural preservation zoning classifications.

Ozaukee County has developed a farmland preservation plan[67] that is focused on attaining orderly development in Ozaukee County and minimizing the loss of productive farmland. The county also has a land and water resource management plan[68] that includes recommendations for the long-term preservation of farmland including implementing farmland preservation programs such as the Wisconsin Working Lands Initiative and promoting the Farm and Ranch Land Protection Program as well as other farmland incentive programs. According to the farmland preservation plan, the county contained 351 active contracts with the Wisconsin Farmland Preservation Program (FPP), encompassing 21,881 acres of farmland. The Wisconsin FPP is a key farmland preservation program that provides annual state income tax credits to farmers that maintain farmland in agricultural use.

#### *Environmental Consequence/Potential Mitigation*

The build alternatives could require the acquisition of up to 10 acres of agricultural land for highway right of way. Impacts are characterized as strip acquisitions and all farmed parcels would remain viable and accessible. These direct agricultural impacts from the I-43 North-South Freeway Corridor Study in combination with the ongoing conversion of farmland to urban land uses, may cumulatively contribute to a decline in farming in Ozaukee County.

The decision to allow development is ultimately determined by local governments through land use plans and zoning ordinances. Development on farmland zoned for agriculture would require a change in zoning and a permit from local governments. Furthermore, development will depend, in part, on the availability of sewer and water services, which is not widely available in some portions of the southern half of the county and a large portion of the northern half of the county.

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[67] *SEWRPC. Community Assistance Planning Report No. 87: Public Review Draft – A Farmland Preservation Plan for Ozaukee County: 2035 (Second Edition). June 2013.*

[68] *Ozaukee County. Land and Water Resource Management Plan 2011-2015. Plan Version 5. Feb.10, 2011.*

Overall, the cumulative effect to agricultural lands is not expected to be substantial. WisDOT is minimizing the impact of build alternatives by widening I-43 to the inside median between the northbound and southbound travel lanes and using steeper side slopes where practicable. Also, no farms would be split and existing access to farms would not be changed. In addition, the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) has determined that an agricultural impact statement would not be required, which is an indication that the agricultural impacts from the build alternatives are considered minimal by the government agency.

## *SURFACE WATER QUALITY AND QUANTITY*

### *Affected Environment*

The I-43 North-South corridor is located in the Milwaukee River Subwatershed and the Fish Creek Watershed, both of which discharge into Lake Michigan. The Milwaukee River Watershed contains a mix of rural and urban uses; about 33 percent urban, 25 percent agriculture, 21 percent grasslands, 12 percent forests and 6 percent wetlands.[69] Water quality in the Milwaukee River Watershed has been affected by human activities that cause point and nonpoint sources of pollution. Point sources are pollutants that are discharged to surface waters at discrete locations.[70] Common sources of point source pollution include discharges from sewage treatment plants and industrial discharges. Nonpoint sources of pollution are discharges of pollutants to the surface waters that cannot be readily identified as point sources of pollution.[71] Nonpoint sources enter surface waters via stormwater runoff from rural and urban land uses.

Point sources of pollution have been highly regulated for decades through the federal Clean Water Act and the National Pollutant Discharge Elimination System (NPDES). The WDNR regulates runoff from nonpoint sources of pollution from urban and rural land uses through NR 151 of the Wisconsin Administrative Code. Given the dispersed nature of nonpoint sources of pollution, it has been difficult to control.

Throughout the Milwaukee River Watershed, point and nonpoint source pollution have degraded surface water quality. **Table 3-40** summarizes estimated pollution loads for point and nonpoint sources to the watershed. Nonpoint sources of pollution are the largest contributor of pollutants within the Milwaukee River Watershed. Stormwater runoff from farm fields carry suspended solids from soil erosion, nutrients and pesticides to streams. Runoff from urban environments contains suspended solids from sources such as eroding stream banks and impervious surfaces like parking lots, buildings and streets and highways. Urban development is also the source of water pollutants such as fecal coliform bacteria, salts and nutrients. The Milwaukee River is listed on the WDNR's "Impaired Waters" list as a result of pollutant loads in the watershed. Also, the river has a Section 303(d) designation, which means that the water body does not meet Federal Clean Water Act standards. The Milwaukee River is considered impaired because of bacterial contamination and it has fish consumption advisories due to high concentrations of contaminants in fish tissues.[72] Fish Creek is not considered impaired.[73]

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[69] *http://dnr.wi.gov/water/watershedDetail.aspx?key=924696. Accessed Nov. 20, 2013. Similar data for the Fish Creek watershed is not available.*

[70] *SEWRPC. Technical Report No. 39: Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds. November 2007.*

[71] *SEWRPC, 2007.*

[72] *SEWRPC. A Land and Water Resource Management Plan for Milwaukee County: 2012-2021. Community Assistance Planning Report No. 312. August, 2011.*

[73] *http://dnr.wi.gov/water/waterDetail.aspx?key=3924909. Accessed Nov. 20, 2013.*

**Table 3-40: Annual Average Pollutant – Milwaukee River Watershed**

| Pollution Type | Point[1] | Nonpoint[2] | Estimated Total |
|---|---|---|---|
| Biochemical oxygen demand | 13.7 percent | 86.3 percent | 5,233,160 lbs/year |
| Total suspended solids | 1.6 percent | 98.4 percent | 58,383,650 lbs/year |
| Fecal coliform bacteria | 5.8 percent | 94.2 percent | 40, 826.66 trillion cells/ year |
| Total Phosphorus | 54.0 percent | 46.0 percent | 274,500 lbs/year |

*Source: Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds. Southeastern Wisconsin Regional Planning Commission. Technical Report No. 39*

*Notes:*

1. *Where applicable, includes discharges from sewage treatment plants, combined sewer overflows, separate sanitary sewer overflows and industrial discharges.*
2. *Includes urban and rural runoff.*

A noteworthy water resource in the study area is the Ulao Creek Subwatershed, which is part of the greater Milwaukee River Watershed. The Ulao Creek Partnership in Ozaukee County is active in watershed management through a variety of restoration and stewardship projects.[74] The 16-square-mile watershed contains a 95-acre federally designated waterfowl habitat, and a 490-acre swamp that is a locally designated Significant Natural Area and contains critical species habitat. The watershed is targeted for management because of its location in an area that is seeing continuing conversion of agriculture and open space uses to residential and commercial development. Research in the subwatershed indicates that historic disturbance from agricultural and suburban development makes the creek more vulnerable to pollutant runoff and reduced species diversity.[75]

The quantity of stormwater runoff is also a concern for the study area. According to MMSD, 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, 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, highways and parking lots. According to MMSD, low flow conditions in highly urbanized areas can be equally as stressful for waterbodies creating 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.

The amount of stormwater runoff from highways increases proportionately to the amount of impervious surface. Runoff from roadways can increase the amount of water in area streams above normally carried capacities. Stormwater that runs off of I-43 throughout the study corridor is collected by inlets and conveyed in storm sewer pipes directly to streams and rivers in the more urbanized areas, or by overland flow through ditches in less densely developed areas.

The MMSD and its partners have been working to reduce flooding in its service area as a result of extensive flooding that occurred in Milwaukee County in 1997, 1998 and 2000 that caused $96 million of damage to homes, businesses and neighborhoods.[76] After a severe flood event in 2010, Nicolet High School constructed stormwater management facilities on its

[74] *http://www.ulaocreek.org/*

[75] *Ulao Creek Partnership. Ulao Creek Watershed Restoration and Stewardship Plan. 2003.*

[76] *http://v3.mmsd.com/milwaukeecogrounds.aspx. Accessed Sept. 13, 2013.*

campus. MMSD also purchased an 84-acre tract of land as part of its Greenseams program in the northeast quadrant of the Mequon Road interchange. The purpose of the program is to preserve land in developing urban areas to store and drain water into the ground naturally. The preserved Greenseams properties help prevent future flooding and protect flood management infrastructure. Currently, the program has protected more than 2,000 acres of land in the region.

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#### *Environmental Consequences/Potential Mitigation*

Increases in impervious surface area from the I-43 North-South Freeway Corridor Study build alternatives, in combination with ongoing urban development identified in **Table 3-38** may cumulatively affect surface water quality and quantity within the Milwaukee River and Fish Creek watersheds.

As shown in **Table 3-23** in **Subsection 3.10.2**, the build alternatives would increase the freeway's impervious area, which would increase the amount of stormwater runoff that could enter nearby streams and rivers. The freeways impervious surface would increase from 122 acres to 187 acres in the Milwaukee River watershed, which is a 53 percent increase in comparison to existing conditions. In the Fish Creek watershed, the freeway's impervious surface would increase from 23.1 acres to 34.9 acres, which is a 51 percent increase in comparison to existing conditions. The change in the freeway's impervious surface would have very little effect (0.2 percent increase) for the total Milwaukee River watershed under the build alternatives. Impervious surfaces for the Ulao Creek and Indian Creek subwatersheds would experience a 3.1 percent increase and 2.3 percent increase, respectively. The total impervious area in the Fish Creek watershed would increase by 1.9 percent as a result of the freeway project's build alternatives.

While runoff volumes would increase under the build alternatives, the water quality analysis indicates that the use of best management practices would reduce the level of pollutants in stormwater runoff compared to the existing conditions and provide the opportunity to bring the I-43 study corridor into compliance with Wisconsin's stormwater management regulations.

Current and future land development within the study area watersheds could cumulatively impact water quality despite any improvements implemented during the reconstruction of the I-43 North-South corridor project. There are both redevelopment and development activities occurring in the watersheds as documented in discussed in **Subsection 3.21.1** above. Increased impervious area from these developments could increase the likelihood of stormwater carrying sediment and other pollutants in streams that are already heavily degraded from historic urbanization.

As discussed in the water resources analysis in **Subsection 3.10**, 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 in-line storage, retention/detention basins and ditches to manage stormwater from the build alternatives are being evaluated along the study corridor as the most practical and efficient stormwater management measures.

To mitigate the impact of nonpoint source runoff from private development, NR 151 sets performance standards for stormwater quality control measures. For example, 80 percent of the total suspended solids (TSS) 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. For highway construction projects, WisDOT is required to implement stormwater management measures to remove 40 percent of the TSSs discharged from their storm sewers after construction. Best management practices required under stormwater and nonpoint 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* (2009b) and complying with Wisconsin's *Trans 401* regulations that regulate construction site erosion control and stormwater management for transportation facilities. The WDNR and local governments are responsible for monitoring the performance of stormwater management measures and making corrective actions for non WisDOT projects. WisDOT would monitor performance of its control measures through the WisDOT-WDNR cooperative agreement, *Memorandum of Understanding on Erosion Control and Stormwater Management*. This agreement 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 Wisconsin Statutes, and Chapter NR 216 Wisconsin Administrative Code.

As noted above, *Trans 401*, which follow performance standards of NR 151, outlines stormwater management and erosion control procedures for WisDOT projects. As applied to this study, this rule requires removal of 40 percent of total suspended solids for the study area after construction. Also, to comply with Section 88.87(2)(a) of the Wisconsin State Statutes, WisDOT's Southeast Region seeks to maintain the peak discharge rate at the design year storm event, which is generally the 25-year or 50-year storm event. Another mitigation measure is construction of buffer areas upstream of waterways. Additional coordination with WDNR will determine stormwater management measures if the build alternative is selected as the preferred alternative. WisDOT would implement best management practices for stormwater and monitoring performance and, therefore, would not cumulatively contribute to water quality impacts.

The increased impervious area from the I-43 build alternatives and urban activities throughout the watershed in the project area would contribute to increased stormwater volume. The MMSD has stated a concern about increased stormwater volumes, which can affect flooding and stream bank stability. The MMSD regulates flood management in local communities through its Chapter 13 rules. While WisDOT is not subject to MMSD Chapter 13 rules, the cumulative effects of increased stormwater volumes can be minimized through implementing best management practices for stormwater control developed through the WisDOT-WDNR liaison process. These measures, which would include stormwater retention, focus on stormwater quality, but have a secondary benefit of managing stormwater volume as well.

### *WETLANDS AND FLOODPLAINS*

#### *Affected Environment*

Wetlands in southeastern Wisconsin have historically been drained and filled by farming practices and urban development. **Table 3-41** shows the loss of wetlands between 1836 (before European settlement) and 1990 when modern land use patterns were established. The net loss of wetland acres for Ozaukee and Milwaukee counties during this time period was 0.2 percent and 70.2 percent, respectively.

Construction in floodplains reduces their flood storage capacity. These activities have impacted the area's hydrology and diminished the ability of existing wetlands to absorb and release water slowly back into the environment. Flood elevations crest even higher in future storms because floodwater cannot be stored, causing damage to surrounding structures.

**Table 3-41: Historic Loss of Wetland Acres**

| | Percent of County Land Area | | Net Loss | |
|---|---|---|---|---|
| **Place** | **1836** | **1990** | **Acres** | **Percent** |
| Ozaukee County | 10.9 | 10.9 | 29 | 0.2 |
| Milwaukee County | 10.2 | 3.0 | 11,081 | 70.2 |
| Southeastern Wisconsin | 16.8 | 10.2 | 110,655 | 39.2 |

*Source: SEWRPC* Planning Report No. 42: A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin

The loss of wetlands and floodplains in the region has led to the removal of native plants and animals, degradation of water quality, increased flooding and a reduction in ground water recharge. As noted above, flooding has resulted in millions of dollars in property damage in Milwaukee County. Remaining wetlands and undeveloped floodplains in both counties are important to the region's hydrology and to the flora and fauna dependent on the habitat provided by the wetlands.

The WDNR and USACE protect and regulate wetlands through Section 404 of the Clean Water Act and through state regulations. Furthermore, WDNR has identified wetlands within primary environmental corridors as unsuitable for disposal of dredge or fill materials. SEWRPC identifies primary environmental corridors as corridors of regional environmental significance.

Local communities are required by Section 87.30 of the Wisconsin Statues to implement floodplain zoning. Minimum standards for floodplain regulations are provided in NR 116 of the Wisconsin Administrative Code. Floodplain regulations govern filling and development activities within the 100-year floodplain and prohibit nearly all forms of development in the floodway and restrict filling and development within the flood fringe. Also, local communities are required by Section 62.231 and 61.351 of the Wisconsin State Statues to implement shoreland-wetland zoning. NR 117 of the Wisconsin Administrative Code establishes minimum standards for shoreland zoning ordinances that must include the protection of wetlands five acres in size lying in shoreland areas.

#### *Environmental Consequences/Potential Mitigation*

The build alternatives would impact about 27 acres of wetlands. The build alternatives also would fill about 4.56 acres of floodplain. These impacts combined with existing and future development activities as outlined in **Table 3-38** could have a cumulative impact on wetland and floodplain resources in the study area. Commercial development is expected to expand near the WIS 60 interchange in Grafton, and the city of Mequon is considering expanding residential, commercial and industrial development as part of the East Growth Area Plan. Also, the town of Grafton recently changed its lands zoned for a minimum of 3-acre lots to a minimum of 1-acre lots, which encompasses most of the town's remaining land designated for residential uses. Future highway projects, as outlined in **Table 3-38,** could also impact wetlands and floodplains. These include future reconstruction segments of I-43 and future upgrades to the WIS 167 and WIS 60 corridors in Ozaukee County.

Filling activity in floodplains and wetlands would negatively affect water quality and stormwater

volumes as discussed above. Filling would also reduce the quality of habitat and the diversity of species by allowing faster growing invasive species to become established before slower growing native species. These effects would be minimal in Milwaukee County because it is highly urbanized, but the effects could be more pronounced in Ozaukee County where agricultural and open lands are transitioning into urban or low-density suburban uses.

The cumulative effect to wetlands and floodplains would be minimized and avoided with existing regulations that restrict development activity in wetlands and floodplains. Section 404 of the Clean Water Act regulates wetland filling. Concurrently, the WDNR regulates wetland filling through NR 103 and Section 401 water quality certification for federal 404 permits.

As discussed in the previous subsection, local communities manage floodplain development through implementation of Wisconsin Administrative Code NR 116, which requires local communities to establish zoning ordinances that maximize flood protection by limiting development in floodplains. NR 117 has a similar requirement for local communities to establish zoning for shoreland and wetland protection.

WisDOT and WDNR have an established a coperative agreement that outlines the procedures to implement measures to avoid and minimize impacts to all natural resources, including wetlands and floodplains.

WisDOT and FHWA will implement avoidance and minimization measures to reduce impacts to wetlands and floodplains. Avoidance and minimization measures would include widening the freeway to the inside median between the northbound and southbound travel lanes in the north segment of the corridor and using steeper sideslopes where appropriate. To further avoid and minimize a cumulative effect on wetlands, impacts of the build alternatives would be managed according to WisDOT's *Wetland Mitigation Banking Technical Guideline*. In addition, WisDOT would minimize the cumulative effect on floodplains by designing structures with adequate capacity for the 100-year flood flow. Also, WisDOT would not increase the base flood elevations by more than 0.01 foot.

*ENVIRONMENTAL CORRIDORS AND STREAM CROSSINGS*

### *Affected Environment*

SEWRPC is responsible for designating environmental corridors. Environmental corridors support southeastern Wisconsin's most important elements of the natural resource base, including wetlands, woodlands, prairies, wildlife habitat, and streams, as well as historic, recreational and scenic sites. According to SEWRPC, primary environmental corridors are at least 400 acres in size, two miles long and 200 feet wide. Milwaukee County has more than 9,000 acres of primary environmental corridors, and Ozaukee County has more than 20,000 acres.[77] Environmental corridors typically follow stream valleys, surround major lakes and flood lands. In light of historical and planned development in Milwaukee and Ozaukee counties, the preservation of this resource base is especially important. SEWPRC reports that preserving environmental corridors can reduce flooding and noise pollution, improve water quality and maintain air quality.

Local municipalities within the study area seek to protect these resources from further encroachment through zoning and permitting regulations. In Milwaukee County, the majority of the remaining environmental corridors are publicly owned to ensure their preservation. In Ozaukee County, local communities minimize impacts to environmental corridors through land use planning

*77 SEWRPC. Planning Report No. 48: A Regional Land Use Plan for Southeast Wisconsin: 2035. June, 2006.*

and zoning regulations. Other activities preserving natural areas in Ozaukee County include MMSD's Greenseams program and preservation projects and programs implemented through the Ulao Creek Partnership and the Ozaukee Washington Land Trust. Through the Greenseams program, MMSD purchases and manages open tracts of land for flood and water quality management. The Ozaukee Washington Land Trust partners with public and private landowners to preserve natural areas, typically through conservation easements. The Ulao Creek Partnership partners with private landowners and public agencies to educate the public and implement projects that improve water quality and natural habitats in the Ulao Creek watershed. According to the Ozaukee County comprehensive plan, as of 2009, over 20,000 acres of environmental corridors and natural areas, or 72 percent, were under protection through adopted sewer service area plans, public ownership, conservation easements, or local zoning ordinances.[78]

The Ozaukee County Fish Passage Program is working to complete a large-scale habitat improvement and restoration project along the Milwaukee River, and its tributaries. This program is concerned with improving waterway connectivity to allow for access to high quality habitat for native fish and wildlife. Past agricultural and urban development activities that constructed dams and culverts, along with debris build up act as barriers to fish and animal passage. Ozaukee County's Fish Passage Program includes Ulao Creek and its crossing under I-43. The creek has seen historic channelization from farming activities and previous freeway construction.

#### *Environmental Consequence/Potential Mitigation*

While most environmental corridors in the study area are in protective ownership or have protective measures in place, environmental corridors and other natural areas in areas without these protections could be cumulatively affected by the I-43 North-South Corridor build alternatives and past, present and future actions outlined in **Table 3-38**. The build alternatives would affect 4 acres of environmental corridors and isolated natural areas and cross Indian Creek, Ulao Creek and Fish Creek or their tributaries. All crossings would occur at existing crossings and no new crossings would be created.

Environmental corridors provide multiple benefits including flood management, water pollution control and refuge for wildlife. The cumulative removal of environmental corridors from the build alternatives and other developments would impair the natural functions of the corridors and the benefits they provide.

Improperly designed culverts at stream crossings create barriers for aquatic organisms. Culverts and pipes have a greater effect on stream hydrology than bridges because the normal stream bottom transitions to a human-made bottom. In low-flow conditions, flat culvert bottoms tend to spread the stream flow very thinly, sometimes making it difficult for fish to swim through the culvert. Erosion at the downstream exit of the culvert or pipe can result in a "perched" outfall, making stream passage difficult.

To minimize potential cumulative impacts to environmental corridors, WisDOT would widen the freeway mainline to the inside in the existing median, along with steepening side slopes where practicable. Potential temporary effects from construction would be avoided and minimized by using WisDOT's *Standard Specifications for Road and Bridge Construction* and complying with Wisconsin's *Trans 401, NR 216 and NR 151* regulations that oversee construction site erosion control and stormwater management. WisDOT will also continue coordination with the Ozaukee County Fish Passage program to incorporate design criteria developed for the program. Local

78 *SEWRPC. Community Assistance Planning Report No. 133: A Park and Open Space Plan for Ozaukee County. (3rd Edition). June, 2011.*

communities in the study area have land use policies, zoning and permitting regulations in place to limit development in environmental corridors and natural areas.

## *AIR QUALITY*

### *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 ($SO_2$), particulate matter ($PM_{10}$, 10 micron and smaller along with $PM_{2.5}$, 2.5 micron), carbon monoxide (CO), nitrogen dioxide ($NO_2$), ozone ($O_3$) and lead (Pb).

The study-area freeway system is located within the Southeastern Wisconsin Intrastate Air Quality Control Region #239. Ozaukee County is currently in attainment status for five of the six criteria pollutants, and has been redesignated to a maintenance area for the eight-hour ozone standard. Milwaukee County is currently in attainment status for four of the six criteria pollutants, has been redesignated to a maintenance area for the eight-hour ozone standard and is in non-attainment for $PM_{2.5}$. See the air quality analysis in **Subsection 3.16** for more information.

### *Environmental Consequence/Potential Mitigation*

The build 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 expanded Oak Creek coal-fired power plant and continued regional traffic growth are sources of air pollutants. By the year 2040, average weekday traffic in the I-43 North-South Freeway study corridor is expected to increase by 32 percent. Early coordination with WDNR and EPA indicates that the build alternatives would not have significant air quality impacts.

The WDNR manages, monitors and enforces air quality programs in Wisconsin. To help manage the air quality program, the WDNR 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 nonattainment areas that will reduce transportation related air emissions.

Ultimately, 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, 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 I-43 North-South Freeway study corridor would have to be included in transportation plans that conform to the SIP. At the regional level, SEWRPC prepares a transportation improvement program to assure conformance with the SIP. Conformity with the SIP means projects included in the transportation improvement program will not worsen air quality or delay attainment of air quality standards. The I-43 North-South Freeway study corridor is included in SEWRPC's conforming transportation improvement program; therefore, it would not contribute to a substantial negative cumulative impact to air quality, as measured by current pollutant standards.

In addition to meeting air quality standards, there is growing concern about the direct and

cumulative effects of MSATs. WisDOT and FHWA evaluated the potential change in MSATs from the build alternatives and the No-Build Alternative. According to the MSAT analysis, MSATs will decrease in the future because of EPA's national pollution control programs. In 2007, a new 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.

Greenhouse gas emissions are also a concern in the I-43 North-South Freeway study corridor air quality study area. While there are no accepted quantitative tools to estimate greenhouse gases at the study level, vehicles using the I-43 North-South Freeway Corridor can be expected to contribute to greenhouse gas emissions within the region. Currently, the major way to reduce emissions of greenhouse gases from transportation is to reduce the amount of fuel consumed. This can be accomplished by reducing congestion (more efficient driving conditions), reducing driving, and more fuel efficient vehicles.

Local governments can help manage and reduce greenhouse gases by utilizing appropriate land use and zoning policies that reduce travel demand within individual communities and southeast Wisconsin. A study published by the Urban Land Institute points to the importance of reducing vehicle miles of travel by managing growth and land use patterns.[79] Specifically, studies find that compact development (characterized by features such as diverse land use, concentrations of populations and/or employment, access to multimodal transportation and interconnected streets) can reduce driving, which translates into reduced greenhouse gas emissions. Local government plans that are consistent with the SEWRPC 2035 regional land use and transportation plans would help ensure the most efficient land use and zoning policies within the region.

Increased amounts of greenhouse gas in the atmosphere can have impacts on the environment and human health across 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).[80]

*RESIDENTIAL NEIGHBORHOODS*

### *Affected Environment*

Well established residential neighborhoods can be found throughout the primary study area particularly in Milwaukee County communities, and in the cities of Mequon and Cedarburg and the village of Grafton in Ozaukee County. Rural density residential land uses are common in the town of Grafton and Cedarburg as well as the non-urbanized area of the city of Mequon. **Subsection 3.3** provides a detailed discussion about residential areas adjacent to the I-43 North-South study corridor.

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[79] *Urban Land Institute. Land Use and Driving: The Role Compact Development Can Play in Reducing Greenhouse Gas Emissions. Evidence from Three Recent Studies. 2010.*

[80] *Public Service Commission of Wisconsin and WDNR. Governor's Task Force on Global Warming: Wisconsin's Strategy for Reducing Global Warming. July 2008. U.S. Census Bureau, County Business Patterns, 2010.*

*Environmental Consequence/Potential Mitigation*

Maintaining infrastructure is important to the quality of life for a community. Highways and other transportation infrastructure provide reliable access to employment and cultural centers, improve mobility of people and goods, and reduce congestion, all 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, displacements, and increased air, noise and visual impacts. The combination of these impacts can negatively impact quality of life. Neighborhoods close to large infrastructure become more vulnerable to these impacts as the infrastructure expands.

The build alternatives would not split neighborhoods, but would acquire up to 11 residences and an apartment tenant above a business in Milwaukee County. The anticipated impact is not substantial compared to an overall population in Milwaukee County and many residents could be relocated within close proximity to their existing residences. But, the direct impact to residential properties when combined with other past, present and future freeway reconstruction projects could cumulatively affect neighborhoods within Milwaukee County. As shown in **Table 3-42**, between 39 and 54 residences would be impacted by southeastern Wisconsin freeway reconstruction projects in Milwaukee County that have been completed, are under construction or are in the planning phase. Additional residences are likely to be displaced in Milwaukee County as the remaining segments of the freeway network are reconstructed along I-894, US 45, I-43 and I-94 in the future. This is particularly true for the city of Milwaukee that has multiple freeway corridors within its boundaries and had substantial loss of residences from the original construction of the freeway system.

**Table 3-42: Cumulative Residential Impacts of Southeastern Wisconsin Freeway Projects in Milwaukee County**

| Project | Residential Displacements | Location | Status |
|---|---|---|---|
| Marquette Interchange | 10 | Milwaukee County | Completed |
| I-94 North-South | 4 | Milwaukee County | Milwaukee County portion completed |
| Zoo Interchange | 8 | Milwaukee County | Under construction |
| I-94 East-West | 4-19 | Milwaukee County | Planning phase |
| I-43 North-South | 12 | Milwaukee County | Planning phase |

*Source: Marquette Interchange Environmental Assessment; I-94 North-South Corridor Study Final Environmental Impact Statement; Zoo Interchange Final Environmental Impact Statement; I-94 East-West Freeway Corridor Draft Environmental Impact Statement; I-43 North-South Corridor Study Draft Environmental Impact Statement*

WisDOT has developed design modifications that avoid and minimize relocations to the extent possible. Other project features can also minimize the potential cumulative effect of the build alternatives. Noise barriers are feasible and reasonable in up to four locations along the project corridor. Traffic currently using local streets to avoid freeway congestion would also divert back to I-43, potentially reducing congestion on local streets. Improved traffic operations reduce emissions, which benefits air quality. During preliminary engineering, WisDOT will initiate a CSS process to enhance infrastructure elements, and improve the visual quality of the I-43 corridor.

*BUSINESS DISTRICTS*

### *Affected Environment*

I-43 is a major regional and local north-south route providing a vital link between communities in Milwaukee and Ozaukee counties with downtown Milwaukee. Businesses in the primary study area are clustered close to I-43 and near arterial streets with Interstate access, including Port Washington Road and the Good Hope Road, Brown Deer Road, Mequon Road and WIS 60 interchanges.

Milwaukee County contains the largest number of jobs in comparison to the other counties in the region. As of 2010, the county contained 575,400 jobs, which accounted for nearly half of the employment in the region. Milwaukee County has historically been the economic hub in Wisconsin, providing the region with a source of high paying management and professional jobs in downtown as well as a supply of service and manufacturing jobs throughout the county. With the exception of the 2000s, Milwaukee County has experienced a net gain of employment each decade going back to at least the 1950s. Declines in employment during the 2000s were associated with the national economic recession of the late 2000s. During this time, the region lost 2.7 percent of its employment. The majority of the net job losses occurred in Milwaukee County, where employment declined by 42,900. Ozaukee County's employment was 52,500 in 2010. Within the region, Ozaukee County contains the fewest number of jobs and accounts for 4.5 percent of the region's employment. During the 2000s employment in Ozaukee County remained stable with a net gain of 2,100 jobs.

### *Environmental Consequence/Potential Mitigation*

The build alternatives would relocate up to three commercial businesses, one in Milwaukee County (city of Glendale) and two in Ozaukee County (city of Mequon). This direct project impact when combined with other past, present and future freeway reconstruction projects could cumulatively affect businesses within Milwaukee County. As shown in **Table 3-43**, between 25 and 26 businesses would be impacted by southeastern Wisconsin freeway reconstruction projects that have been completed, are under construction or are in the planning phase. Additional businesses are likely to be relocated in Milwaukee County as the remaining segments of the freeway network are reconstructed along I-894, US 45, I-43 and I-94 in the future. Maintaining jobs in Milwaukee County where existing local transit is available is especially important for low income and minority populations who are more likely to be dependent on transit to access employment. Potential cumulative business impacts in Ozaukee County would be less because I-43 is the only freeway corridor within the county. Other transportation projects identified in **Table 3-38** such as the reconstruction of I-43 north of WIS 60 and future construction along the WIS 167 and WIS 60 corridors could cumulatively contribute to business relocations in Ozaukee County, although construction for these other transportation projects is currently not scheduled.

**Table 3-43: Cumulative Business Impacts**

| Project | Business Displacements | Location | Status |
|---|---|---|---|
| Marquette Interchange | 5 | Milwaukee County | Completed |
| I-94 North-South | 0 | Milwaukee County | Milwaukee County portion completed |
| Zoo Interchange | 4 | Milwaukee County | Under construction |
| I-94 East-West | 14-15 | Milwaukee County | Planning phase |
| I-43 North-South | 3 | Milwaukee and Ozaukee Counties | Planning phase |

*Source: Marquette Interchange Environmental Assessment; I-94 North-South Corridor Study Final Environmental Impact Statement; Zoo Interchange Final Environmental Impact Statement; I-94 East-West Freeway Corridor Draft Environmental Impact Statement; I-43 North-South Corridor Study Draft Environmental Impact Statement*

The business impacts are not expected to have a substantial cumulative effect on the Milwaukee County or Ozaukee County economies. The business impacts make up a very small portion of the 20,015 business establishments that are located in Milwaukee County and 2,701 businesses in Ozaukee County as of 2010.[81] Also, the business losses are expected to be offset by business development in other nearby areas. As discussed in the Indirect Effects subsection, the build alternatives are expected to have the indirect effect of facilitating planned redevelopment within the primary study area. This conclusion is supported by a recent TRB report that reviewed 100 transportation case studies.[82] The research found that highway projects can cause localized negative job impacts if property takings are required, but these impacts were offset by new economic activity that occurred elsewhere in nearly all the case studies. In addition, as discussed in **Subsection 3.4**, available space is available within Milwaukee County and Ozaukee County to relocate businesses within the counties. Relocation assistance would be facilitated by WisDOT's acquisition and relocation program.

*MUNICIPAL TAX BASE*

#### *Affected Environment*

Local taxes are used for many basic services by local governments including garbage collection, police and fire protection, local road construction and maintenance, public facilities and other services. Local government tax revenues in Wisconsin have become more challenging in recent years as new development slowed due to the economic recession of the late 2000s, state aid for local governments has declined and strict levy limits have been created that cap the amount of money local governments can raise through property taxes.

**Table 3-44** shows the tax revenues that were collected for municipalities in Milwaukee and Ozaukee counties in 2012 that are adjacent to a freeway. Because these communities are adjacent to a freeway they are most likely to be impacted by freeway property acquisitions.

[81] *U.S. Census Bureau, County Business Patterns, 2010.*

[82] *Interactions Between Transportation Capacity, Economic Systems, and Land Use. SHRP2 Capacity Research. Report S2-C03-RR-1. Transportation Research Board. 2012.*

**Table 3-44: Local Government Tax Revenues for Municipalities Adjacent to a Freeway in Milwaukee and Ozaukee Counties**

| County | Municipality | Full Value of Taxable Property (2012) | Total Local Tax Collected* (2012) |
|---|---|---|---|
| Milwaukee County | Village of Bayside | $561,263,900 | $4,192,063 |
| | Village of Fox Point | $1,030,559,100 | $6,986,229 |
| | Village of River Hills | $470,716,900 | $2,936,479 |
| | City of Glendale | $1,909,411,000 | $12,160,977 |
| | City of Greenfield | $2,753,622,700 | $21,995,429 |
| | City of Milwaukee | $26,407,923,000 | $239,551,718 |
| | City of Oak Creek | $2,932,766,600 | $19,087,098 |
| | City of Wauwatosa | $4,963,918,700 | $37,030,383 |
| | City of West Allis | $3,738,930,800 | $38,940,771 |
| | County Total | $57,782,302,300 | $413,227,056 |
| Ozaukee County | Town of Belgium | $267,664,500 | $397,920 |
| | Town of Grafton | $532,014,900 | $1,473,336 |
| | Town of Port Washington | $188,482,900 | $447,854 |
| | Village of Belgium | $173,073,000 | $704,786 |
| | Village of Grafton | $1,118,423,500 | $7,378,777 |
| | Village of Saukville | $402,608,400 | $2,699,402 |
| | City of Mequon | $3,972,167,500 | $19,548,033 |
| | County Total | $10,345,569,700 | $51,287,595 |

*Source: Town, Village, and City Taxes – 2012. Wisconsin Department of Revenue.*

*Note: * = This amount is for village and city tax collections only. It does not include county or school district taxes.*

### *Environmental Consequence/Potential Mitigation*

The build alternatives for the I-43 North-South study corridor could cumulatively affect local government tax bases, particularly in Milwaukee County, when combined with past, present and future freeway reconstruction projects. **Table 3-45** shows the known municipal tax base impacts for southeastern Wisconsin freeway reconstruction projects that have been completed, are under construction or are in the planning phase. The tax revenue losses are small in comparison to the total annual property taxes collected that are shown in **Table 3-44**. However, a loss of tax base can affect a community's ability to provide municipal services. Additional municipal property tax base in Milwaukee County is likely to be impacted as the remaining segments of the freeway network are reconstructed along I-894, US 45, I-43 and I-94 in the future. Ozaukee County may experience this effect to a lesser extent with future reconstruction of I-43 north of WIS 60 and other transportation projects identified in **Table 3-38**.

This cumulative effect to municipal tax base is likely to be offset by the potential indirect land use effects that would facilitate planned development within the primary study area and other areas within Milwaukee and Ozaukee counties as discussed in the Indirect Effects subsection above.

**Table 3-45: Cumulative Local Government Tax Base Impacts in Milwaukee County***

| Project Status | Southeastern Wisconsin Freeway Project | Assessed Value Loss | Annual Local Tax Revenue Loss* | Tax Year | Municipalities Impacted |
|---|---|---|---|---|---|
| Completed | Marquette Interchange | Unknown | Unknown | Unknown | Milwaukee |
| Milwaukee County portion completed | I-94 North-South | $1,366,623 | $70,314 | 2005 | Milwaukee, Greenfield, Oak Creek |
| Under construction | Zoo Interchange | $11,455,600 | $76,990 | 2008 | Milwaukee, Wauwatosa, West Allis |
| Planning phase | I-94 East-West | $6,544,953 -$7,644,193 | $60,540 -$70,709 | 2011 | Milwaukee |
| Planning phase – Milwaukee County | I-43 North-South | $8,254,322 | $237,700 | 2012 | Glendale, Bayside, Fox Point, River Hills |

*Source: Marquette Interchange Environmental Assessment; I-94 North-South Corridor Study Final Environmental Impact Statement; Zoo Interchange Final Environmental Impact Statement; I-94 East-West Freeway Corridor Draft Environmental Impact Statement; I-43 North-South Corridor Study Draft Environmental Impact Statement.*

*Note: * = No substantial freeway reconstruction projects have occurred in Ozaukee County. The I-43 North-South Freeway build alternatives affect up to $23,689 in tax revenue loss in Ozaukee County.*

## *REGIONAL LAND USE PATTERNS*

### *Affected Environment*

To understand regional land use patterns, it is first important to understand the historic growth patterns of metropolitan areas in the United States and the Milwaukee metropolitan area. During the first half of the 20th century the physical layout of U.S. cities was compact and focused around a central business district that contained a mixture of uses. Neighborhoods tended to be built on a street grid and small shops and businesses were often located along a main street district within walking distance to homes. Lands that were closest to the central business district were often the most valuable because they had the greatest accessibility to employment, transportation, and goods and services.

During the second half of the 20th century, after World War II, land development patterns changed dramatically as development spread to more outlying areas and people and businesses moved farther from the central business district. Residential, commercial and industrial land uses were separated and the street grid was replaced with an arterial roadway system. Driving became essential for most trips. This change is attributable to multiple factors including the expansion of the U.S. auto industry, the implementation of the federal Interstate highway program, federal housing policies that encouraged homeownership, and local zoning ordinances. These land use pattern changes also occurred during a time period when the United States was undergoing great economic growth and large population increases due to the post World War II baby boom phenomena. The result has been metropolitan areas characterized by multiple clusters of

development dispersed throughout a region instead of one central business district.[83]

The story has been similar for the Southeast Wisconsin region. According to SEWRPC, "over the 100-year period from 1850 to 1950, urban development in the region occurred in a pattern resembling concentric rings around existing urban centers, resulting in a relatively compact regional settlement pattern. After 1950, there was a significant change in the pattern and rate of urban development in the Region. While substantial amounts of development continued to occur adjacent to established urban centers, considerable development also occurred in isolated enclaves in outlying areas of the Region."[84] The population density of the urban portion of the southeastern Wisconsin region decreased significantly, from 10,700 persons per square mile in 1940 to about 5,100 in 1970; 3,900 in 1980; 3,500 in 1990; and 3,300 in 2000.[85]

As the original construction of the Interstate system greatly improved accessibility to outlying areas and local governments permitted development, the value of central downtown locations diminished and disinvestment pursued.[86] Low-income residents become concentrated in central city locations as people with economic means moved to suburban locations. Also, as jobs decentralized, it became increasingly difficult for transit-dependent, low-skilled workers to obtain employment in areas of the region not served by public transportation.

#### *Environmental Consequence/Potential Mitigation*

The recommendations for the regional freeway system and the status of its implementation were considered to fully assess the potential cumulative effect to regional land uses and its consequences. The SEWRPC 2035 regional transportation plan for Southeastern Wisconsin recommends widening 127 miles of the 270-mile regional freeway system in southeastern Wisconsin.[87] This includes adding travel lanes to:

- I-94 throughout Milwaukee County and through WIS 67 in Waukesha County and to the I-94 north-south segment between downtown Milwaukee and the state border with Illinois.
- I-894 in Milwaukee County.
- US 45 in Milwaukee, Waukesha and Washington counties to the split between US 45 and US 41, north of WIS 167.
- I-43 in Milwaukee and Ozaukee counties between downtown Milwaukee and WIS 57.

To date, WisDOT has completed the reconstruction of the Marquette Interchange in downtown Milwaukee and has completed the Mitchell Interchange segment of the I-94 North-South corridor. Segments in Racine and Kenosha County are under construction. WisDOT recently initiated the construction of the Zoo Interchange project in Milwaukee County which allows for the addition of new travel lanes if needed in the future.

The I-43 North-South project in combination with past and future I-43 projects in Milwaukee and Ozaukee counties could induce development within Ozaukee County by improving the commute to downtown Milwaukee where a large portion of Ozaukee County's workforce is employed.

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[83] *EPA. "Our Built and Natural Environments: A Technical Review of the Interactions Among Land Use, Transportation, and Environmental Quality." Second Edition. June 2013. 78-80.*

[84] *SEWRPC. Planning Report No. 48: A Regional Land Use Plan for Southeastern Wisconsin: 2035. 2006.*

[85] *SEWRPC. Planning Report No. 48: A Regional Land Use Plan for Southeastern Wisconsin: 2035. 2006.*

[86] *The Brookings Institution Center on Urban and Metropolitan Policy. 2000. Do Highways Matter? Evidence and Policy Implications of Highways' Influence on Metropolitan Development. Boarnet, Marlon G. and Haughwout, Andrew F.*

[87] *SEWRPC. Planning Report No. 49: A Regional Transportation System Plan for Southeastern Wisconsin: 2035. 2006.*

While the original construction of I-43 in Milwaukee and Ozaukee counties in combination with post 1950s historic development patterns played a large cumulative role in the decentralization of development and jobs in the past, subsequent improvements and widening to I-43 (downtown to WIS 57) and other freeway corridors in the region are expected to have a continued, though much smaller cumulative effect on regional land use patterns and the redistribution of population and employment for the following reasons:

- The land use patterns in Milwaukee and Ozaukee counties have developed around a mature transportation system that already has a great deal of transportation accessibility from existing freeway interchanges, state and county highways and the local arterial network
- Travel time savings are not expected to be great enough to substantially change the regional distribution of development over and beyond existing conditions because I-43 is already a limited-access freeway.
- Local development regulations place limitations on Ozaukee County's development potential. The growth and intensity of development outside the urbanized areas of the county is limited by a lack of sewer and water services, large lot zoning requirements, conservation easements and environmental corridors that are protected by local zoning. Also, the towns in the northern half of the county have agricultural preservation zoning in place that requires a minimum of 35-acre lots.
- Local market conditions limit the economic development potential of Ozaukee County. According to the 2011 Ozaukee County Workforce Profile, the high cost of housing in Mequon and the southern portion of the county have hindered its population growth.[88] In addition, local stakeholder input confirmed that the high land values in the southern half of the county can also make business development more challenging especially for industrial users. Stakeholder input also confirmed that the market for business development in the northern half of Ozaukee County (north of WIS 60) where large amounts of undeveloped land is available is limited because employers often perceive it as being too far from the existing workforce pool and are concerned they would not be able to attract employees.

Although this effect is expected to be smaller in comparison to the original construction of the freeway, stakeholders are concerned that induced development in Ozaukee County would create more jobs that are not accessible by transit. This has social and economic implications for residents who do not have access to a reliable vehicle or carpool network.

For example, according to the SEWRPC 2035 regional housing plan, 17 percent of households in the city of Milwaukee did not have access to a car in 2005-2009 and only 41 percent of employers in the region are accessible by local or rapid transit service.[89] As a result, households in the city of Milwaukee that lack access to a car are not able to access the majority of employment centers in the region. This affects the ability of lower income, transit-dependent populations in the city of Milwaukee to obtain employment and creates isolated neighborhoods with high concentrations of poverty. This was validated during stakeholder outreach[90] and at the July 11, 2013, focus group meeting. Stakeholders stated that more transit investment is needed in the region to improve access to jobs, especially for those that do not have access to a vehicle.

The spatial mismatch between low-income workers and available low skilled jobs is present in the Milwaukee metropolitan area as documented by researchers at the University of Wisconsin-

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[88] *2012 Market Profile: Downtown Milwaukee. Prepared by Progressive Urban Management Associates, Inc. on behalf of Downtown Milwaukee Business Improvement District 21.*

[89] *Employers with at least 500 employees in Milwaukee County and employers with at least 100 employees in the other six counties were included in the 41 percent figure.*

[90] *Interview with City of Milwaukee Alderman Michael Murphy. Feb. 7, 2013.*

Milwaukee.[91] The university's 2004 report found 81 percent of families living below the poverty line are located in the city of Milwaukee; only 30 percent of businesses with strong hiring projections for entry-level workers are located in Milwaukee; and the remaining 70 percent are in the suburbs. The spatial mismatch is further complicated by other factors such as declining MCTS transit service levels, a lack of a coordinated regional transit system, limited transit services in job-rich suburbs, restrictive suburban zoning regulations that indirectly discourage affordable housing and relatively low rates of vehicle ownership and valid driver's licenses in some areas of Milwaukee.

The SEWRPC 2035 regional housing plan analyzed the ratio of available jobs and housing throughout the region to determine if communities with a substantial amount of existing and/or planned employment also have existing or planned workforce housing.[92] The SEWRPC analysis found a current and projected jobs/housing imbalance for many of Milwaukee's suburban communities. Within Ozaukee County, Mequon, Thiensville, Cedarburg, Grafton, Fredonia and Belgium were found to have a lower-cost job/housing imbalance and a moderate-cost job/housing imbalance. The village of Saukville and city of Port Washington have a moderate-cost job/housing imbalance. This means that these communities have either a higher percentage of lower-wage jobs than lower-cost housing and/or they have a higher percentage of moderate-wage jobs than moderate-cost housing. According to SEWRPC, a moderate-cost imbalance is the most common type of current and projected job/housing imbalance in the region and also tends to occur in suburban communities.

Consistency with SEWRPC's 2035 regional land use and transportation plans is the best way for governments to promote coordinated transportation and land use polices that will promote the most efficient land use patterns. According to SEWRPC, "the regional transportation plan is designed to serve the regional land use plan and is not a projection of current land use development trends toward further decentralization of population, employment, and urban land uses. Thus, implementation of the transportation system plan should promote implementation of the land use plan, which recommends a desirable pattern of future land use with respect to travel requirements." Local units of government are responsible for land use policies and the local street network. Counties have some jurisdiction over land use in unincorporated areas and are responsible for the county road network. WisDOT does not have jurisdiction over land use, but is responsible for the state highway system and the Interstate system in coordination with FHWA.

Consistency with the recommendations in SEWRPC's 2035 regional housing plan could help to address the existing and projected jobs/housing imbalance discussed above. The plan advises local governments with existing and planned employment land uses that are sewered to conduct detailed analyses of their communities to confirm if an existing or planned job/housing imbalance exists. For communities that have a higher percentage of lower-wage jobs than lower-cost housing, new affordable multifamily housing developments are recommended. For communities with a higher percentage of moderate-wage jobs than moderate-cost housing, additional modest-sized single-family homes on small lots would help to improve the imbalance. Adherence with the recommendations would require changes to local land use plans and zoning regulations. This may be challenging because SEWRPC is an advisory organization and is not able to mandate changes to local zoning policies.

[91] *University of Wisconsin-Milwaukee, Center for Economic Development. Transportation Equity and Access to Jobs in Metropolitan Milwaukee. September 2004.*

[92] *SEWRPC. Planning Report No. 54: Regional Housing Plan: 2035. March 2013.*

According to SEWRPC's 2035 regional housing plan, if the transit components of the 2035 regional transportation plan were implemented, many major employment centers that are not currently served by public transit would become accessible for people without access to a car, including those that work weekend hours and second and third shifts. However, funding for transit is complicated by the fact that Wisconsin legislation limits WisDOT's ability to provide capital funding for transit outside traffic mitigation projects. As stated in Section 85.062(2), Wisconsin Statutes, "No major transit capital improvement project may be constructed using any state transportation revenues unless the major transit capital improvement project is specifically enumerated under subsection (3)." Furthermore, implementation of the recommended expansion of public transit in Southeastern Wisconsin would also be dependent upon attaining dedicated local funding for public transit. The local share of funding of public transit in Southeastern Wisconsin is provided through county or municipal budgets, and represents about 15 percent of the total operating costs and 20 percent of total capital costs of public transit. Thus, the local share of funding public transit is largely provided by property taxes, and public transit must annually compete with mandated services and projects. Increasingly, due to the constraints in property tax-based funding, counties and municipalities have found it difficult to provide funding to address transit needs, and to respond to shortfalls in federal and state funding. Most public transit systems nationwide have dedicated local funding, typically a sales tax of 0.25 to 1.0 percent, and are not nearly as dependent upon federal and state funding.

## 3.23. 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 a project, while long-term productivity relates to direct and indirect effects on future generations.

### NO-BUILD ALTERNATIVE

The No-Build Alternative would involve minimal short-term and localized construction impacts associated with pavement and structure maintenance, spot safety improvements and replacement of the highway in its current configuration over time. 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. This effect would occur both within the study corridor as well as outside it, reflecting the importance that this corridor holds on the region and state.

### BUILD ALTERNATIVES

The short-term consequences of the build alternatives include the following:

- Committing public funds to construct 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 and businesses. Although displacement costs would be reimbursed through state and federal relocation assistance programs, displaced residents and business owners may relocate outside the study area, thus further reducing or shifting the local tax base.

- Acquiring right of way from some residential and business properties, which may result in non-conforming lot sizes and residences that are closer to the study corridor.
- Increasing travel time and inconvenience during the construction period for through and local traffic, area residents and businesses.
- Generating construction noise and dust that may affect residences, schools and businesses near construction areas.

Long-term benefits of the build alternatives include the following:

- Reduced congestion
- Increased safety
- Increased operational energy efficiency
- Added roadway capacity to address future traffic demand
- Improved travel reliability

The local short-term impacts and use of resources by the build alternatives are consistent with maintenance and enhancement of long-term productivity.

## 3.24. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

### NO-BUILD ALTERNATIVE

The No-Build Alternative would involve substantial commitments of resources to maintain the existing deteriorating pavement and structures and to make spot safety improvements.

### BUILD ALTERNATIVES

Under the build alternatives, 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 build alternatives 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, WisDOT would consider using clean construction demolition materials and recycled cement or asphaltic materials. Depending on current technology at the time a project would be constructed, alternative types and sources of materials may be available. The proposed commitment of resources under the build alternatives 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, would include improved safety, preservation of an important transportation corridor, and improved travel reliability.

# 4. DRAFT SECTION 4(F) EVALUATION

## 4.1. INTRODUCTION

The U.S. Department of Transportation's (USDOT) Section 4(f) law 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 avoidance 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) of the Department of Transportation Act of 1966 was set forth in U.S. Code (USC) 49 USC § 1653(f). A similar provision was added to 23 USC § 138, which applies only to the Federal Highway Administration's (FHWA) Federal-Aid Highway Program and states that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. These laws are still commonly referred to as "Section 4(f)" and are implemented by FHWA regulations in the Code of Federal Regulations (CFR) 23 CFR § 774 – Parks, Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites (Section 4(f)).[1]

In accordance with 23 CFR § 774, a *de minimis* impact to a Section 4(f) property is one that, after taking into account any measures to minimize harm such as avoidance, minimization, mitigation or enhancement measures, results in either:

- A determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f).
- A finding of no adverse effect or no historic properties affected under Section 106 of the National Historic Preservation Act (NHPA).

A *de minimis* impact determination requires agency coordination and public involvement. For parks, recreation areas, or wildlife and waterfowl refuges, the official(s) with jurisdiction over the property must be informed of the intent to make a *de minimis* impact determination after which an opportunity for public review and comment must be provided. For historic sites, the consulting parties in the Section 106 process must be consulted and official(s) with jurisdiction must be notified of the intent to make a *de minimis* impact determination. Following public review and comment, officials with jurisdiction over the Section 4(f) resource must concur in writing with a *de minimis* finding.

At this time, FHWA is considering a *de minimis* impact determination for some properties affected by the build alternatives as discussed in **Subsection 4.3**.

Section 4(f) applies only to the actions of agencies within the USDOT, 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.

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*1 A "use" of Section 4(f) property is defined in 23 CFR § 774.17. Additional information is provided in FHWA's* Section 4(f) Policy Paper, *July 20, 2012.*

### 4.1.1. Conditions for Use of Section 4(f) Property

The following are conditions for use of Section 4(f) property:

- Land is "permanently incorporated" into a transportation facility. Land is considered permanently incorporated when it has been purchased as right of way or sufficient property interests have otherwise been acquired for the purpose of project implementation. For example, a permanent easement for future construction or maintenance access would be considered a permanent incorporation.
- There is a "temporary occupancy" of land that is adverse in terms of the Section 4(f) statute's preservationist purposes. Examples of temporary occupancy include right of entry, temporary easement or other short-term arrangement involving a Section 4(f) property. A temporary occupancy will not constitute a Section 4(f) use when all of the following five conditions are satisfied:
  - Duration is temporary and there is no change in ownership of the land.
  - Scope of work is minor and nature/magnitude of changes to Section 4(f) property is minimal.
  - There will be no anticipated permanent adverse physical impacts or interference with the protected activities, features or attributes of the property on either a temporary or permanent basis.
  - The land being used will be fully restored and returned to a condition which is at least as good as that which existed prior to the project.
  - There is documented agreement on the above conditions with officials having jurisdiction over the Section 4(f) resource.
- There is a "constructive use" of Section 4(f) property. Constructive use is only possible in the absence of permanent or temporary occupancy. Constructive use occurs when the proximity impacts on adjacent or nearby Section 4(f) property (after mitigation) are so severe that the activities, features, or attributes that qualify the property for Section 4(f) protection are substantially impaired (diminished). The degree of impact/impairment must be determined in consultation with officials having jurisdiction over the property. In cases where a potential constructive use can be reduced below a substantial impairment through mitigation, there will be no constructive use and Section 4(f) will not apply.

### 4.1.2. Section 4(f) Applicability to Historic Sites

Historic sites are defined in 23 CFR § 774.17 as any prehistoric or historic district, site, building, structure or object that is already listed in, or eligible for listing in the National Register of Historic Places (NRHP).

Section 4(f) applicability to historic sites is based on the following three conditions:

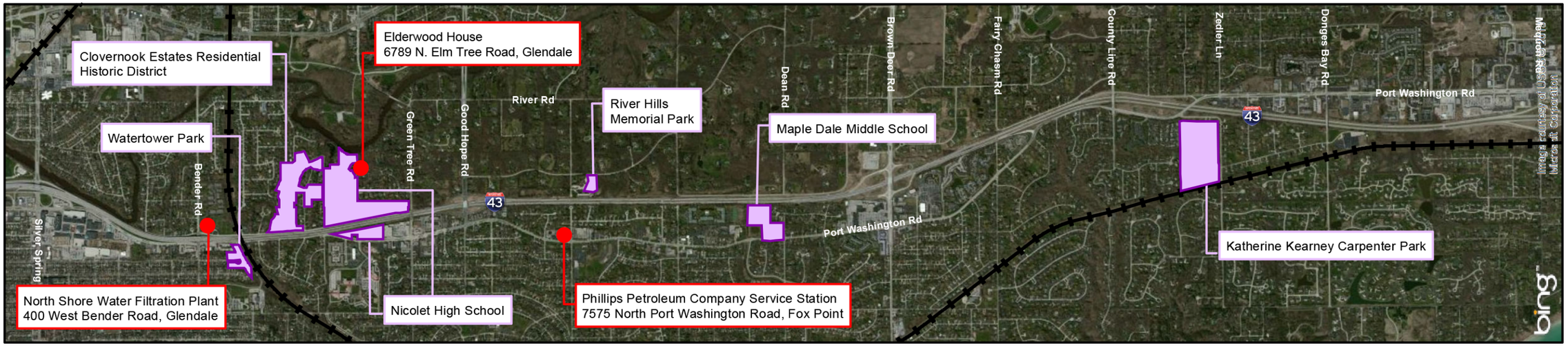
- A project permanently incorporates land from a historic site regardless of whether a "no adverse effect" or "adverse effect" determination has been made under the National Historic Preservation Act (NHPA) Section 106 process.
- If the project does not permanently incorporate land, but there has been an "adverse effect" finding under Section 106, FHWA will need to further assess the proximity impacts in terms of possible constructive use that would substantially impair the features or attributes that contribute to the property's eligibility to the NRHP.
- If there is no substantial impairment, regardless of having an adverse effect, there is no constructive use and Section 4(f) does not apply.

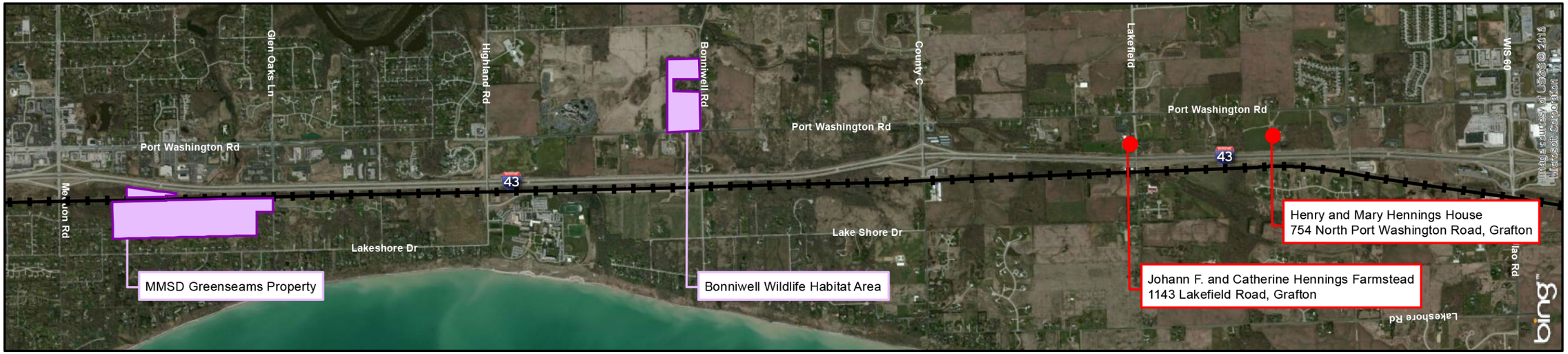
## 4.2. DESCRIPTIONS OF SECTION 4(F) RESOURCES

This section summarizes the resources in the I-43 study area evaluated for Section 4(f) applicability. The resources are described from south to north and the general locations are shown on **Exhibit 4-1**.

No federal funds such as those provided through the Land and Water Conservation Fund (LWCF) Act as amended (16 USC § 4601), or state funds such as those provided through the Stewardship Program administered by the Wisconsin Department of Natural Resources (WDNR) (*Wisconsin Administrative Code Chapter NR 51*), were used in acquisition or development of any of the resources described in this section. Therefore, the requirements of Section 6(f) of the LWCF Act or similar state or federal laws do not apply.

## Exhibit 4-1: Section 4(f) Overview Map




**LEGEND**

Potential Historic Properties

Potential Section 4f Properties

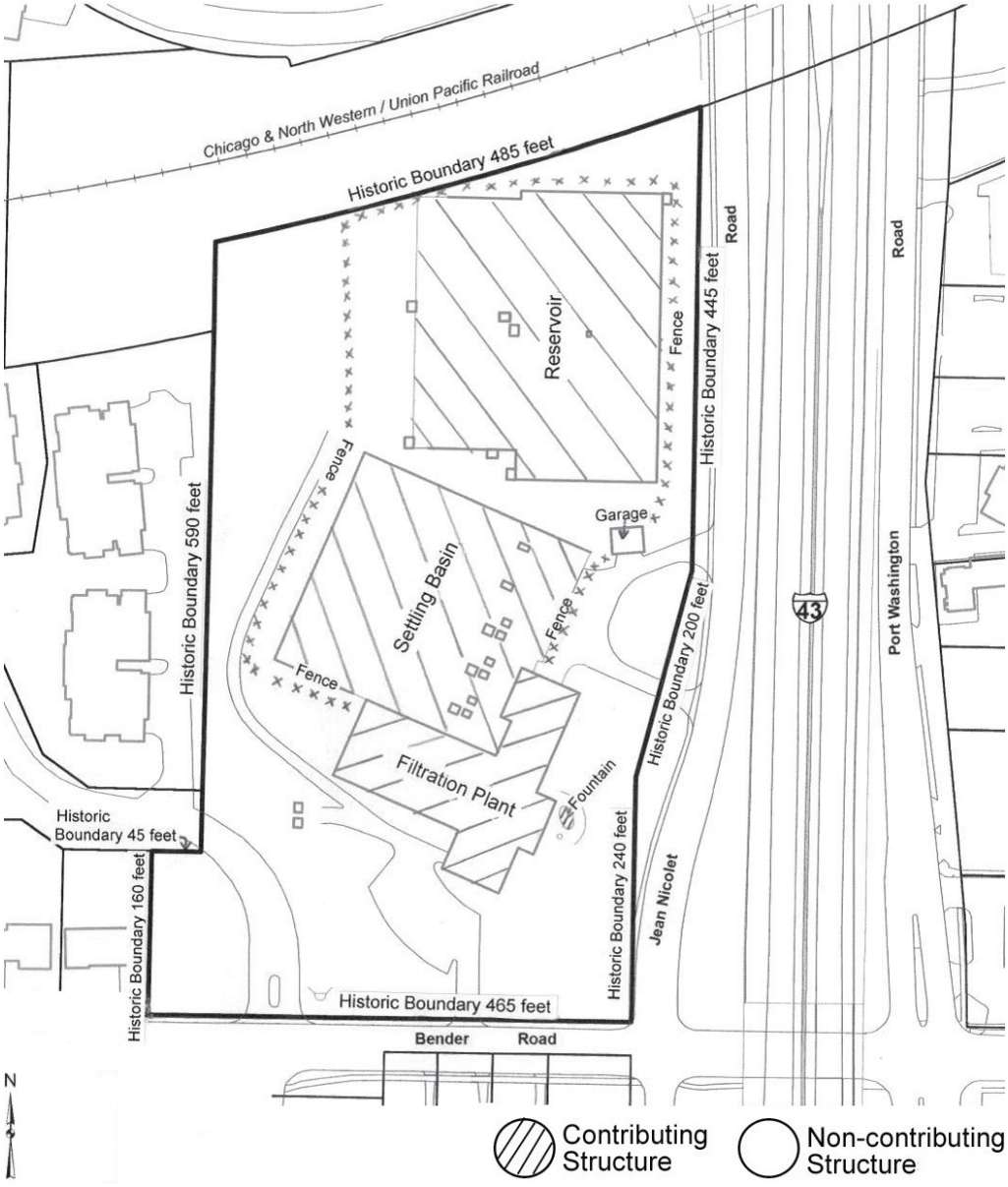
N

0 0.25 0.5 1
Miles

### 4.2.1. North Shore Water Treatment Plant

The North Shore Water Treatment Plant is located in the northwest quadrant of I-43 and Bender Road (**Exhibit 4-1** and **Exhibit 4-2**). This facility is co-owned and operated by the city of Glendale and villages of Whitefish Bay and Fox Point. The I-43 study historic structures survey recommended this property as eligible for the NRHP under Criterion C (Architecture/ Engineering). The State Historic Preservation Officer (SHPO) concurred in this recommendation on Sept. 5, 2013. The plant is subject to Section 4(f) requirements because it is eligible for listing in the NRHP as a highly intact and notable example of Contemporary architectural style. This Section 4(f) resource is within the area of potential effect for the build alternatives. See **Subsection 4.3.1** for more evaluation information.

**Exhibit 4-2: North Shore Water Treatment Plant**

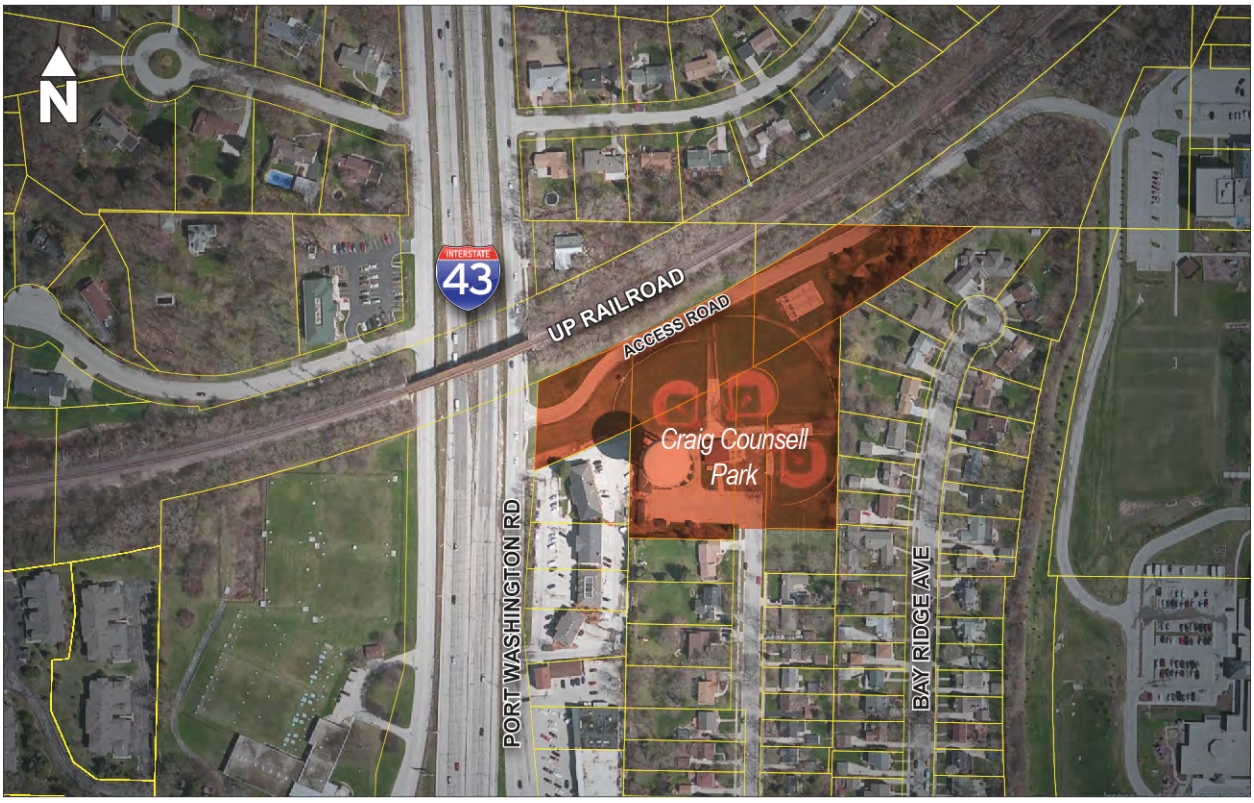



*Source: Determination of Eligibility Form*

### 4.2.2. Craig Counsell Park

Craig Counsell Park is located east of Port Washington Road and south of the Union Pacific (UP) Railroad (**Exhibit 4-1** and **Exhibit 4-3**). The westerly parcel next to Port Washington Road is located in the city of Glendale but is owned by the village of Whitefish Bay. Although this parcel is zoned as B-1, business and commercial uses, the village of Whitefish Bay Public Works Department which administers the park system, indicated this parcel is part of the park. One of the parcel's functions is to provide access to the Jewish Community Center located east of the park. Before 2007, the Wisconsin Department of Transportation (WisDOT) granted a permit to connect the Jewish Community Center access road to Port Washington Road, and this was a prerequisite for planned expansion of the community center. The village indicated that this parcel also provides parking access for the baseball fields and that its primary use is for recreational purposes. The parcel abutting Craig Counsell Park is subject to Section 4(f) requirements because it is considered by the village of Whitefish Bay to be parkland and a public use recreational area. See **Subsection 4.3.2** for more evaluation information.

**Exhibit 4-3: Craig Counsell Park – Abutting Parcel**



### 4.2.3. Clovernook Estates Residential Historic District

The Clovernook Estates residential subdivision is located on the west side of I-43, south of Nicolet High School (**Exhibit 4-1** and **Exhibit 4-4**). The I-43 study historic structures survey recommended properties in the subdivision as eligible for the NRHP as a historic district under Criterion A (History) and Criterion C (Architecture/Engineering). The SHPO concurred in this recommendation on Sept. 5, 2013. This historic district consists of 61 residential structures (54 contributing and seven noncontributing) with construction dates from 1903 to 1945. For Criterion A, the Clovernook Estates subdivision was designed, platted and developed in association with the Kelvinator Appliance Co., which later merged with the Nash Motor Co. to become the Nash-Kelvinator Corp., with Charles Nash serving as chairman. For Criterion C, the Clovernook Estates subdivision has a significant concentration of Period Revival-style homes that retain a high degree of integrity. This Section 4(f) resource is within the area of potential effect for the build alternatives. See **Subsection 4.3.3** for more evaluation information.

**Exhibit 4-4: Clovernook Estates Historic District**

### 4.2.4. Nicolet High School

The approximately 46-acre Nicolet High School campus is located on both sides of I-43, south of Green Tree Road (**Exhibit 4-1** and **Exhibit 4-5**). The high school facility is owned and administered by the Nicolet High School District. Parcels 1 and 2 are located in the city of Glendale and are zoned S-1 Special (Institution); Parcels 3 and 4 are located within the village of River Hills and are zoned Residential. Parcels 1 and 2 are subject to Section 4(f) requirements because the facilities provided on these parcels constitute public use recreational areas; Parcels 3 and 4 are not subject to Section 4(f) requirements. This Section 4(f) resource is within the study area for the build alternatives. See **Subsection 4.3.4** for more evaluation information.

**Exhibit 4-5: Nicolet High School Campus**


The main campus and upper fields are separated by I-43 and Jean Nicolet Road and connected by a pedestrian tunnel under I-43. The school district indicates that the main campus and upper field are consistently used by the community and are open for public use throughout the year. Nicolet is considering reconfiguring their tennis courts and football field (west side) to make it an official collegiate field that the school could rent. The upper fields (Parcel 1) are heavily used for public recreation such as soccer games and practice, and for tennis. Users include Cardinal Stritch University and the Glendale Recreation Department. The community and the Glendale Recreation Department also use the main campus (Parcel 2), including the school building, athletic fields, tennis and softball fields. The main campus, including the parking lots, also sees heavy use outside of school hours, seven days per week. The school recently constructed an

outdoor classroom in the wooded area on the west side of campus, along the Milwaukee River. The wooded area is fenced and gated, but community environmental clubs and other groups occasionally use it, with school approval.

The two residential parcels along Green Tree Road (Parcels 3 and 4) currently are used as residential properties, and the school district is paying taxes to the village of River Hills on these parcels. Potential future development of these parcels, and their uses for recreation, will depend on the school district's need for additional athletic fields in the future.

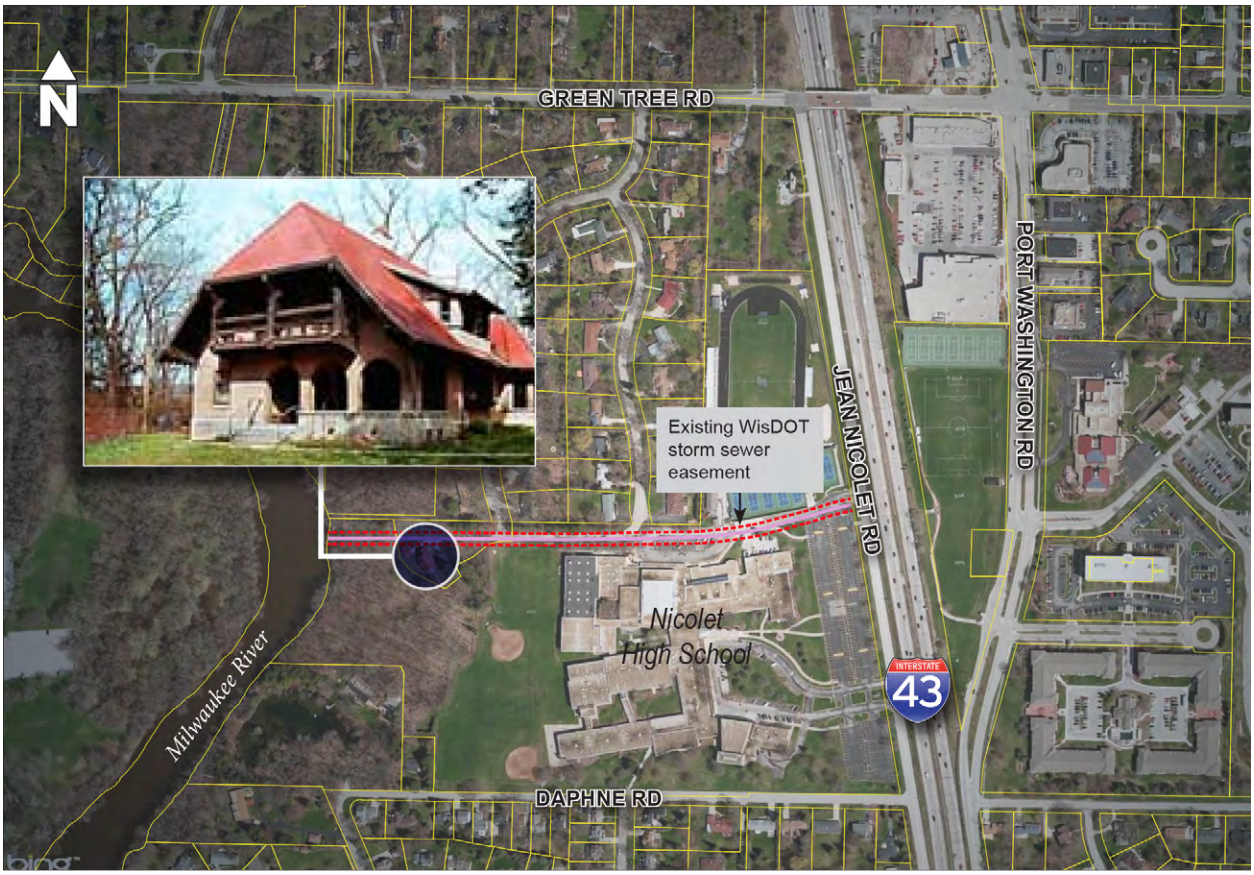
No parking is available at the upper fields, and a lack of sidewalks in the area makes it is relatively difficult for pedestrians to access the fields. The school district indicates that most users are required to park on the main campus, then cross Jean Nicolet Road and travel through the tunnel to access the upper fields. Because the tunnel is not compliant with standards set forth in the Americans with Disabilities Act (ADA), very few access options for disabled users are available. Users traveling on foot from Cardinal Stritch University must walk across Port Washington Road to access the fields. The school district indicates that the pedestrian tunnel requires a substantial amount of maintenance. There are concerns with safety of the tunnel due to insufficient sight lines and flooding during heavy rains. The school notes that stormwater from Port Washington Road flows onto the upper fields, onto the I-43 right of way and into the pedestrian tunnel. The school district recently constructed new facilities on the main campus to manage stormwater.

Users access the main campus by vehicle and most of the parking lots are located along Jean Nicolet Road, on the east side of the campus. The main campus is also readily accessible by bicycle and pedestrian modes from adjacent neighborhoods. Narrow sidewalks are located along Jean Nicolet Road, south of the school, but there are no sidewalks along Jean Nicolet Road, north of the school. The school's wooded area is accessible by foot from the adjacent athletic fields.

### 4.2.5. Elderwood House

The Elderwood House, known locally as “The House in the Woods,” is located on North Elm Tree Road, which passes through the Nicolet High School campus (**Exhibit 4-1** and **Exhibit 4-6**). This privately owned structure was listed in the NRHP in December 1980. It is a large, two-story, stucco-covered concrete cottage with a red clay tile roof. It is significant under Criterion C (Architecture/Engineering) due to its picturesque German cottage architectural style and other decorative features. The Elderwood House is also listed as a local landmark under Milwaukee County’s Landmark Program, which lists buildings or sites of historic, architectural or cultural significance. The Landmark Program does not provide any special protection on a structure, or any financial or legal advantage, or limit the owner’s rights to modify the property. An existing WisDOT storm sewer drains stormwater from I-43 in an easement that runs through the property to the Milwaukee River. The Elderwood House is subject to Section 4(f) requirements because it is listed in the NRHP. This Section 4(f) resource is within the area of potential effect for the build alternatives. See **Subsection 4.3.5** for more evaluation information.

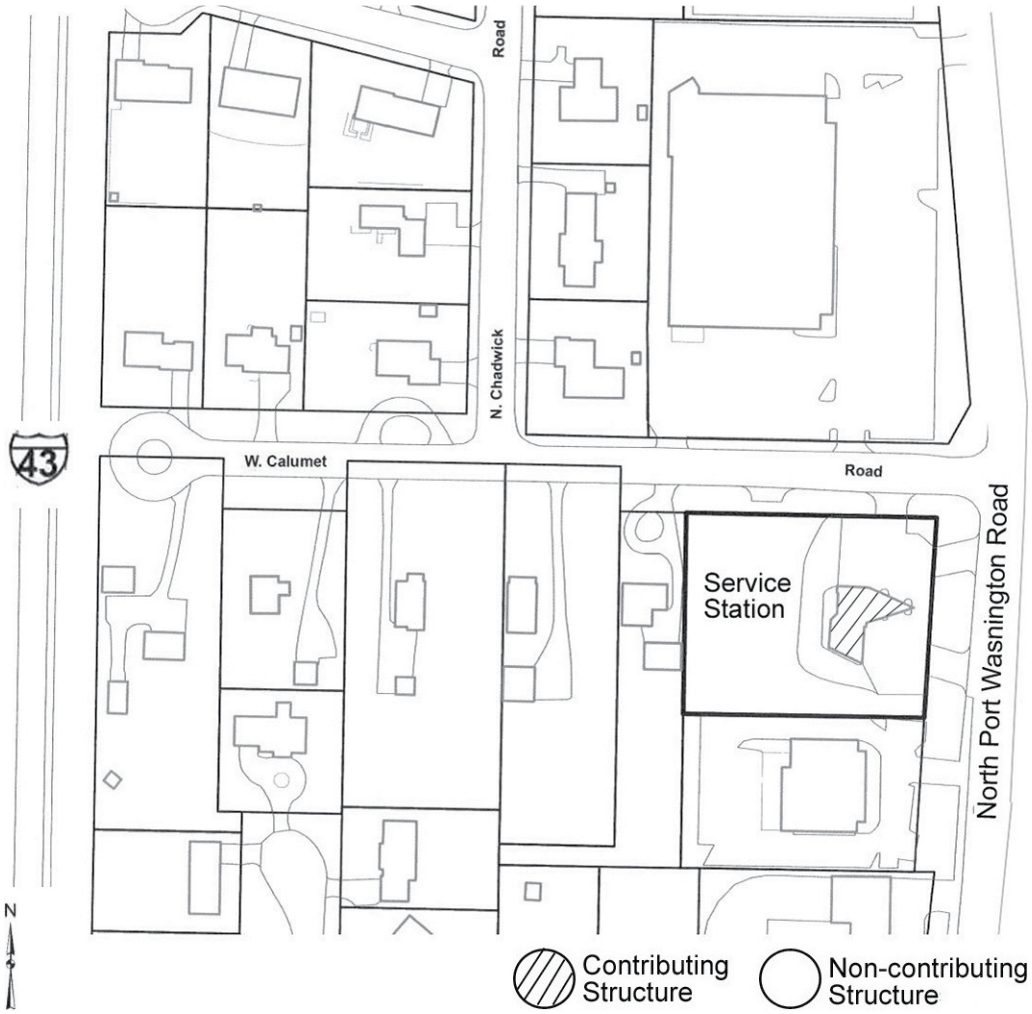
**Exhibit 4-6: Elderwood House**



## 4.2.6. Former Phillips Petroleum Co. Service Station

This service station is located about 600 feet east of I-43, in the southwest quadrant of the North Port Washington Road/West Calumet Road intersection (**Exhibit 4-1** and **Exhibit 4-7**). It is a privately owned U.S. Oil gas station that also rents U-Haul vehicles. The I-43 study historic structures survey recommended this property as eligible for the NRHP under Criterion C (Architecture/Engineering). The SHPO concurred in this recommendation on Aug. 29, 2013. It is an intact example of a mid-20th century gas station using the standardized "soaring canopy" design produced by the Phillips Petroleum Co. Although this property is subject to Section 4(f) requirements because it is eligible for the NRHP, no further Section 4(f) evaluation is required because it is outside the area of potential effect for the build alternatives.

**Exhibit 4-7: Former Phillips Petroleum Company Service Station**

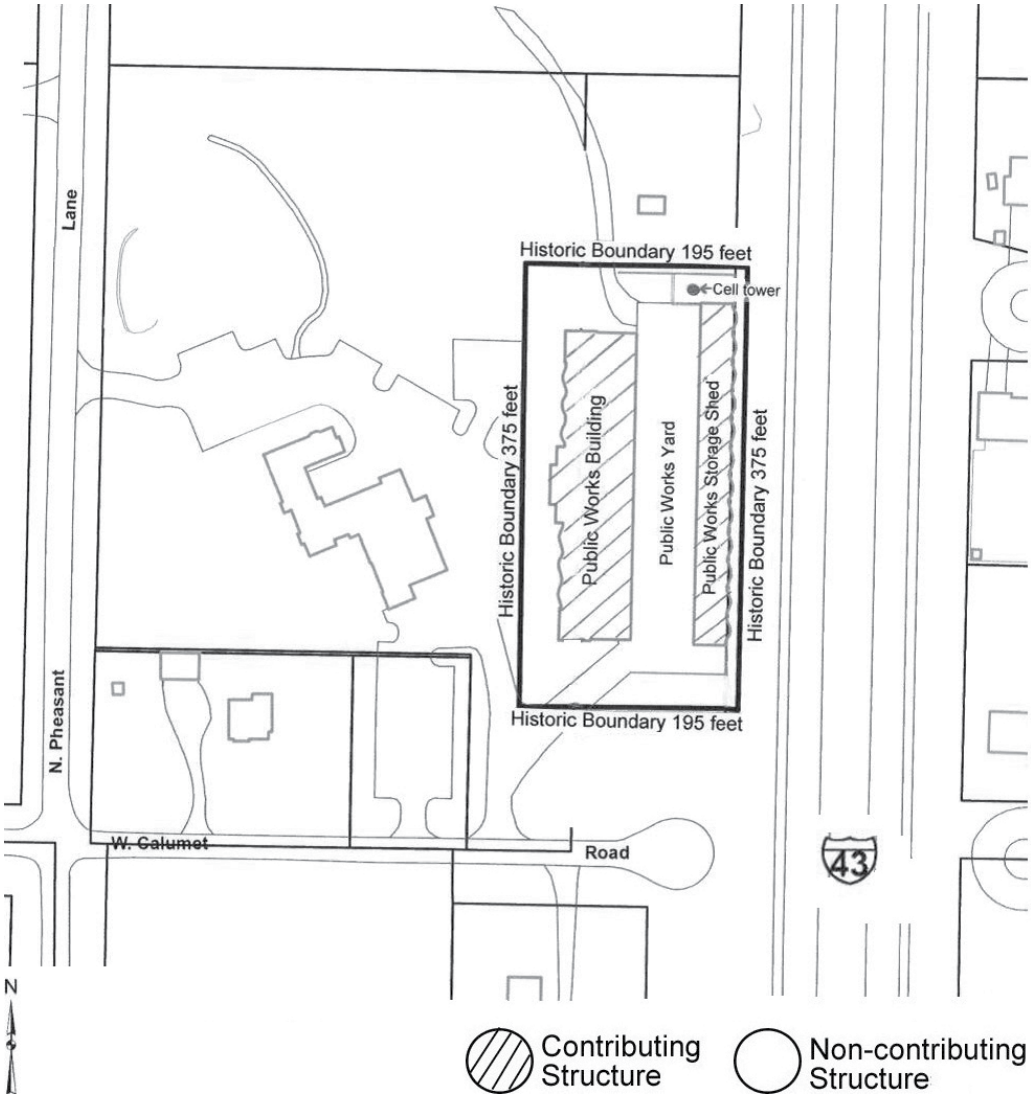



*Source: Determination of Eligibility Form*

## 4.2.7. River Hills Department of Public Works Building

The River Hills Department of Public Works facility is located in the northwest quadrant of I-43 and West Calumet Road (**Exhibit 4-1** and **Exhibit 4-8**). This facility is owned and administered by the village of River Hills. The I-43 study historic structures survey recommended this property as eligible for the NRHP under Criterion A (History) and Criterion C (Architecture/Engineering). On Aug. 29, 2013, the SHPO determined that this structure is not eligible for the NRHP. FHWA and WisDOT concur with SHPO's determination. Therefore, no further Section 4(f) evaluation is required.

**Exhibit 4-8: River Hills Department of Public Works Building**




*Source: Determination of Eligibility Form*

## 4.2.8. River Hills Memorial Park

River Hills Memorial Park is located in the northwest quadrant of I-43 and West Calumet Road (**Exhibit 4-1** and **Exhibit 4-9**). The approximately 2-acre park is part of the Village Hall grounds that consists of four parcels totaling about 11.06 acres and includes the historic River Hills Department of Public Works building. The River Hills Memorial Park parcel includes walking paths, trees and benches. The park is subject to Section 4(f) requirements because it is a designated public use park. This Section 4(f) resource is within the study area for the build alternatives. See **Subsection 4.3.6** for more evaluation information.

**Exhibit 4-9: River Hills Memorial Park**

## 4.2.9. Maple Dale Middle School

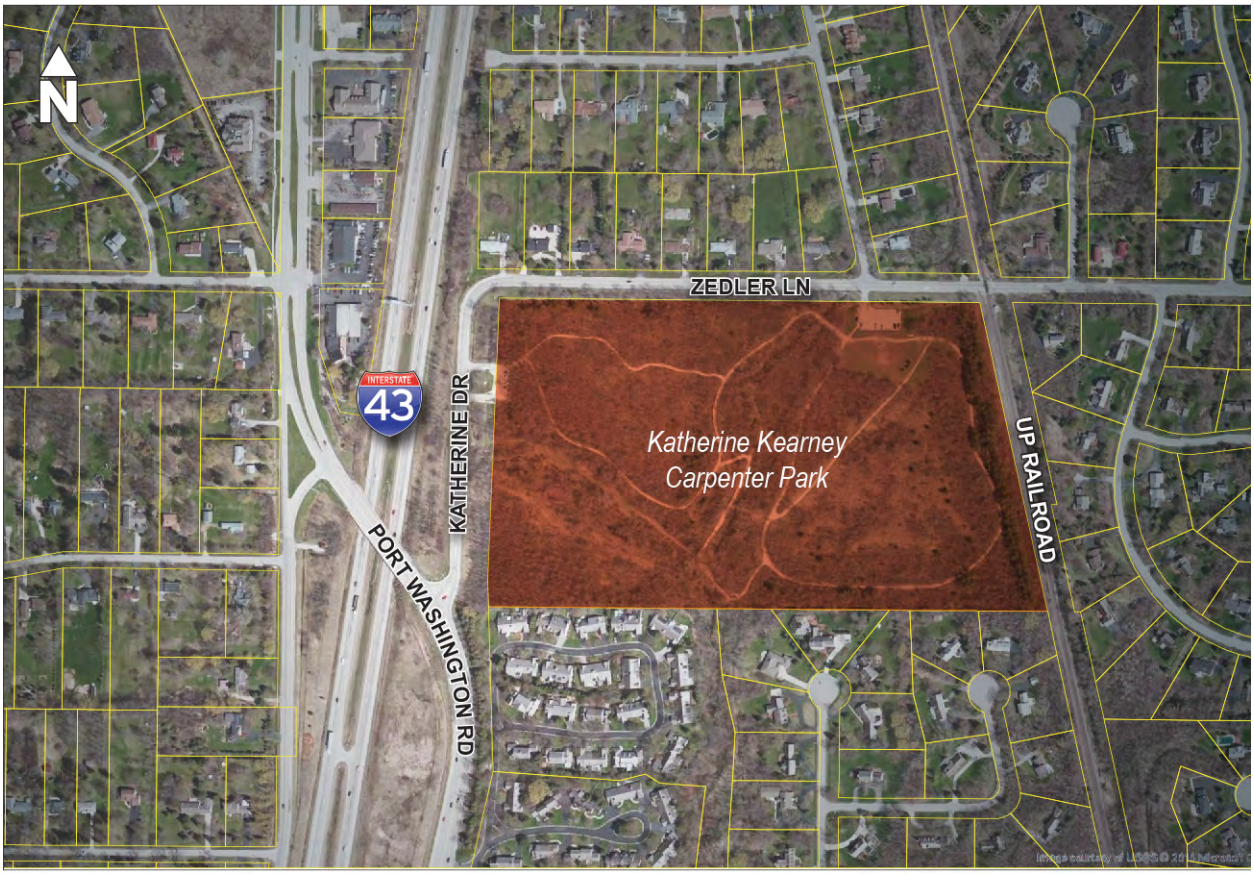
The Maple Dale Middle School is located between I-43 and Port Washington Road at Dean Road (**Exhibit 4-1** and **Exhibit 4-10**). This facility is located in the village of Fox Point and is owned and administered by the Maple Dale Indian Hill School District. The approximately 12-acre school property is used by the school and by the public throughout the year for softball, soccer, basketball and general recreation. The property is also used for a districtwide spring carnival. A soccer field, softball diamond and a playground are located immediately east of I-43. It is estimated that an average of 300 people use the soccer field on a weekly basis during peak soccer months. The school district indicates that the property is an important community resource for users that include Cardinal Stritch University, Nicolet Kickers Soccer Club, and local recreation departments who rent the athletic fields. The Maple Dale Middle School property is subject to Section 4(f) requirements because it is a public use recreational facility. This Section 4(f) resource is within the study area for the build alternatives. See **Subsection 4.3.7** for more evaluation information.

**Exhibit 4-10: Maple Dale Middle School**

## 4.2.10. Katherine Kearney Carpenter Park

Katherine Kearney Carpenter Park is located between I-43 and the UP Railroad at Zedler Lane (**Exhibit 4-1** and **Exhibit 4-11**). The approximately 35-acre park is owned and administered by the city of Mequon. The site was donated to the city in 1967 subject to the conditions that it is used for public park purposes and that children and pets are given unrestricted access. It is the only off-leash dog park in the area, and it also includes a network of walking trails, picnic tables and two parking lots. The park is linked to Ozaukee County's Virmond Park about 1 mile northeast of the I-43 corridor, and surrounding communities via the city's bikeway system. The city indicates this is one of the most heavily used parks in the city. The Katherine Kearney Carpenter Park is subject to Section 4(f) requirements because it is a designated public use park. This Section 4(f) resource is within the study area for the build alternatives. See **Subsection 4.3.8** for more evaluation information.

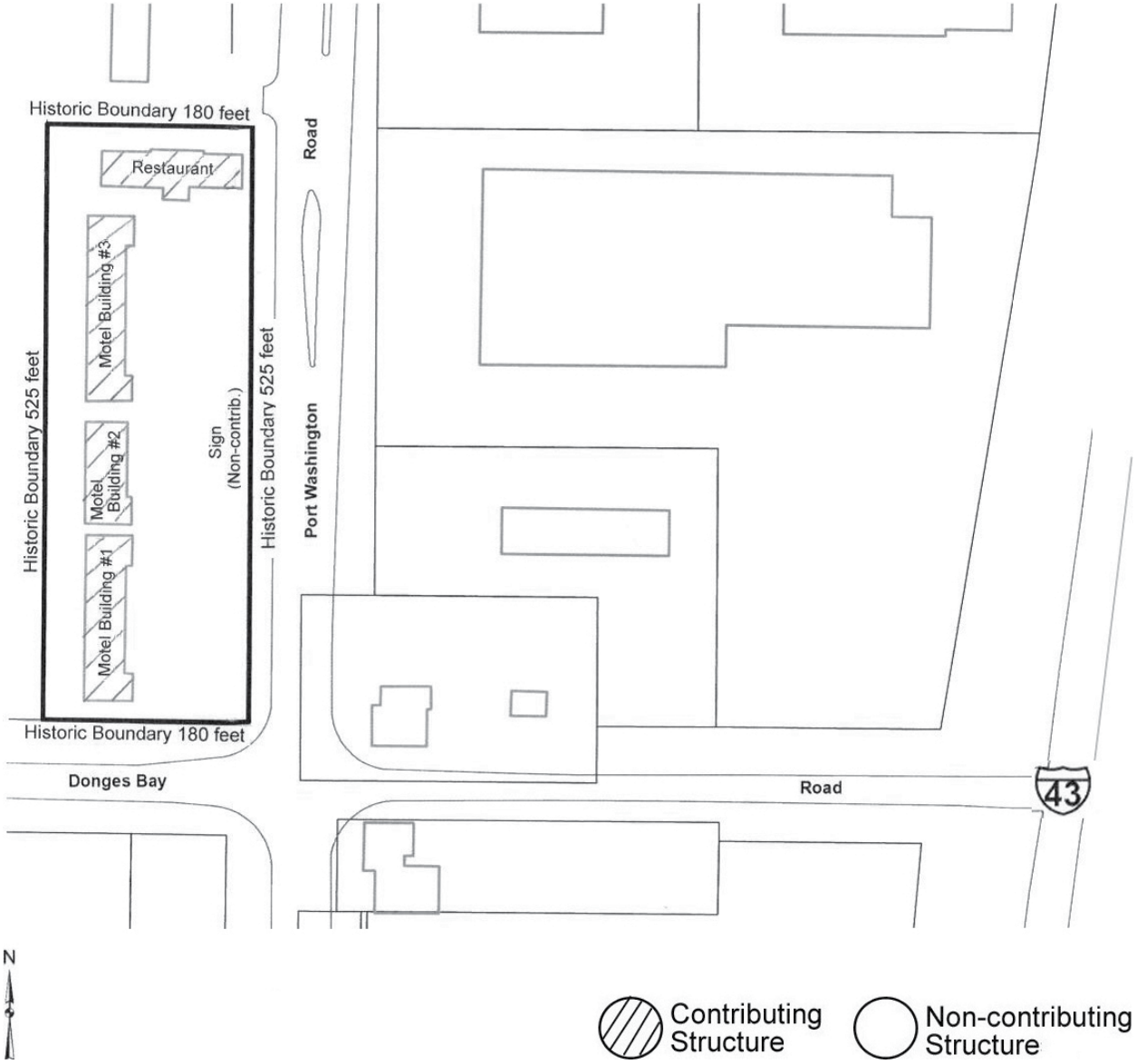
**Exhibit 4-11: Katherine Kearney Carpenter Park**



## 4.2.11. Chalet Motel

The Chalet Motel is located in the northwest quadrant of Port Washington Road and Donges Bay Road (**Exhibit 4-1** and **Exhibit 4-12**). This facility is privately owned. The I-43 study historic structures survey recommended this property as eligible for the NRHP under Criterion C (Architecture/Engineering). On Aug. 29, 2013, the SHPO determined that this structure is not eligible for the NRHP. FHWA and WisDOT concur with SHPO's determination. Therefore, no further Section 4(f) evaluation is required.

**Exhibit 4-12: Chalet Motel**




*Source: Determination of Eligibility Form*

## 4.2.12. Milwaukee Metropolitan Sewerage District Greenseams Property

The Milwaukee Metropolitan Sewerage District (MMSD) owns property located along the east side of the UP Railroad north of Mequon Road, with a small, triangular parcel located between the railroad and I-43 (**Exhibit 4-1** and **Exhibit 4-13**). This approximately 84-acre property in the city of Mequon is the site of an innovative flood management program called Greenseams, which permanently protects key lands containing water-absorbing soils and aims to preserve land along stream corridors. The property is relatively isolated within a residential area and consists primarily of wetlands and open water. The Conservation Fund (TCF), a national nonprofit conservation organization, manages the Greenseams program for MMSD.

The Greenseams property is a conservation property for which stormwater management and water-quality protection are the designated primary uses. The property naturally treats and filters stormwater before it reaches the Milwaukee River, about 1 mile west of the property, via a tributary. Use is restricted to activities that support the property's natural, scenic and open space values. If the property is transferred to another entity, a conservation easement would accompany the deed that states that the property shall be used only for conservation and recreation. TCF indicates that recreational use of the property is considered a secondary purpose. The Greenseams property is not subject to the requirements of Section 4(f) because it is not a publicly owned park, recreation area, wildlife refuge, or waterfowl refuge. No further Section 4(f) evaluation is required.

**Exhibit 4-13: MMSD Greenseams Property**

## 4.2.13. Bonniwell Wildlife Area

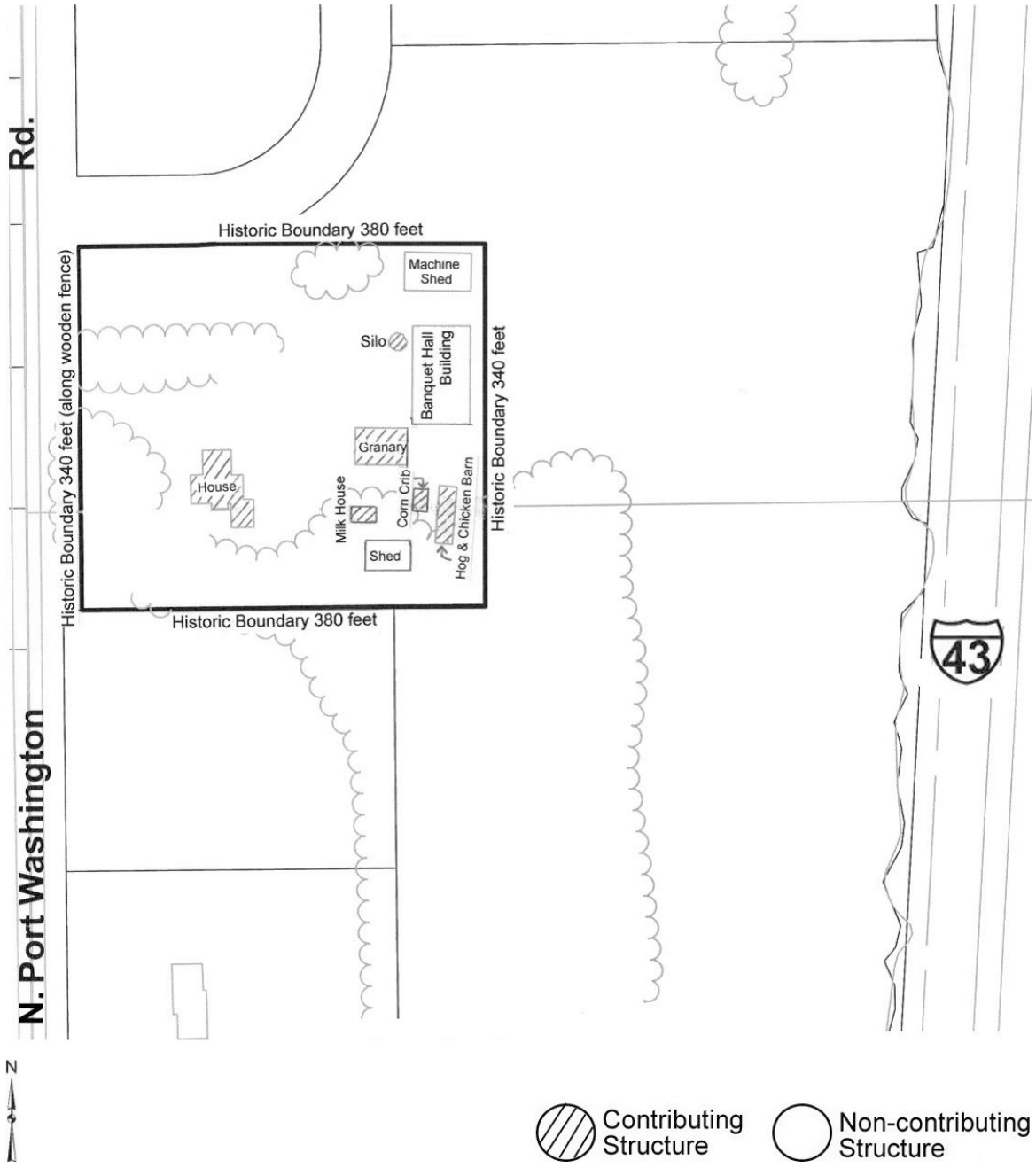
The approximately 30-acre Bonniwell Wildlife Area is located in the southeast corner of Port Washington and Bonniwell roads (west of I-43 about midway between Highland Road and Pioneer Road) (**Exhibit 4-1** and **Exhibit 4-14**). This property is owned and administered by the Wisconsin WDNR. According to the WDNR, the property is passively managed as a natural area for habitat preservation and outdoor recreation activities including bow hunting, hiking, fishing, trapping, cross-country skiing, birding and nature appreciation. The Bonniwell Wildlife Area is subject to Section 4(f) requirements because it is a wildlife area with passive recreation; however, no further evaluation is required because it is outside the study area for the build alternatives. The nearest disturbance (on I-43) would be about 1,100 feet from the property boundary.

**Exhibit 4-14: Bonniwell Wildlife Habitat Area**

## 4.2.14. Louis and Sophia Hovener House

The Hovener House is on a former farmstead located on the west side of I-43 about midway between Pioneer Road and Lakefield Road (**Exhibit 4-1** and **Exhibit 4-15**). This property is privately owned. The I-43 study historic structures survey recommended this property as eligible for the NRHP under Criterion C (Architecture/Engineering). On Sept. 12, 2013, the SHPO determined that this structure is not eligible for the NRHP. FHWA and WisDOT concur with SHPO's determination. Therefore, no further Section 4(f) evaluation is required.

**Exhibit 4-15: Louis and Sophia Hovener House**

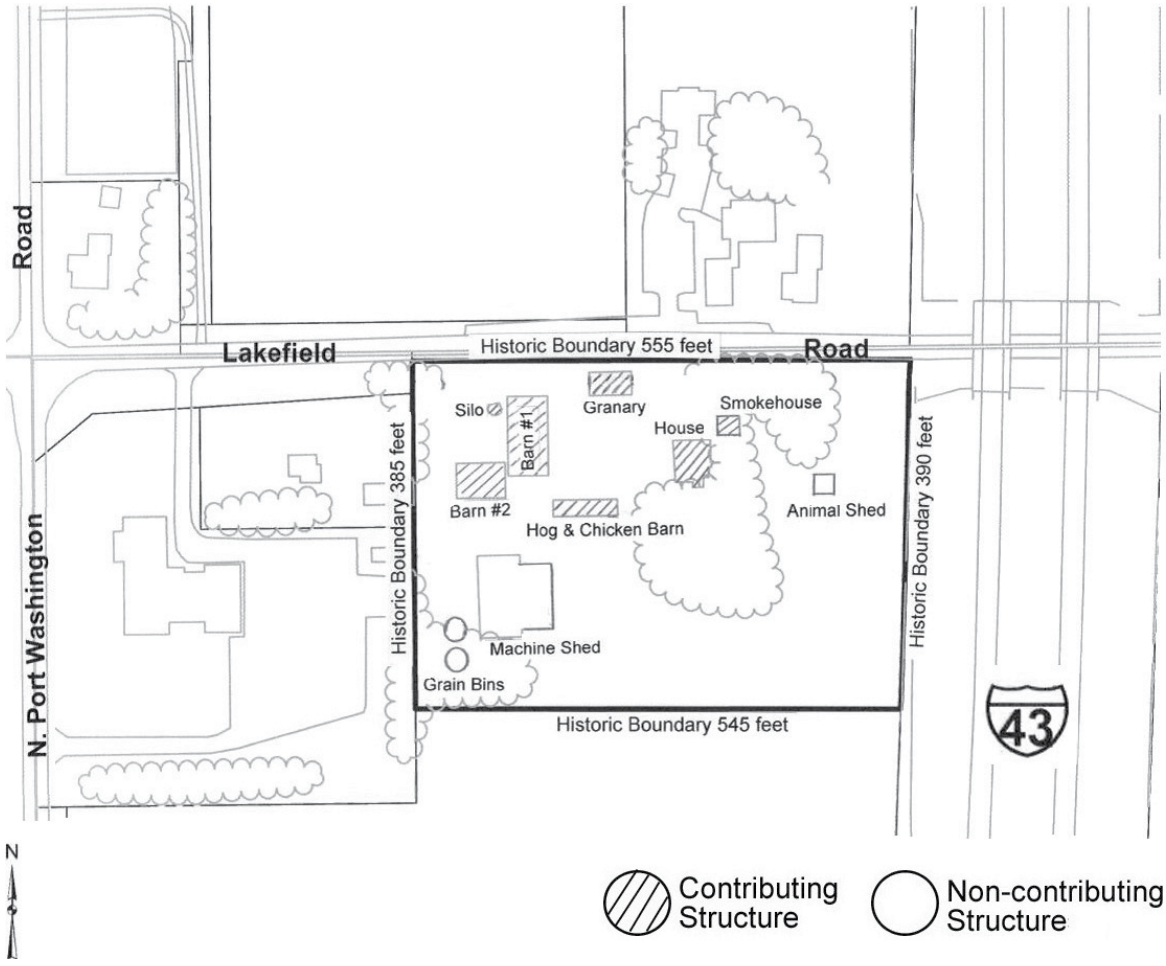



*Source: Determination of Eligibility Form*

## 4.2.15. Johann Friederich and Catherine Hennings Farmstead

The Hennings Farmstead is located in the southwest quadrant of I-43 and Lakefield Road (**Exhibit 4-1** and **Exhibit 4-16**). This property is privately owned. The I-43 study historic structures survey recommended this property as eligible for the NRHP under Criterion C (Architecture/Engineering) as a good and intact example of the farmstead property type, per the Wisconsin Historical Society's Guidelines for Evaluating the Eligibility of Farmsteads. The farmstead house is also a distinctive example of quarried fieldstone construction. The SHPO concurred in this recommendation on Aug. 29, 2013. This property is subject to Section 4(f) requirements because it is eligible for the NRHP. This Section 4(f) resource is within the area of potential effect for the build alternatives. See **Subsection 4.3.9** for more evaluation information.

**Exhibit 4-16: Johann Friederich and Catherine Hennings Farmstead**

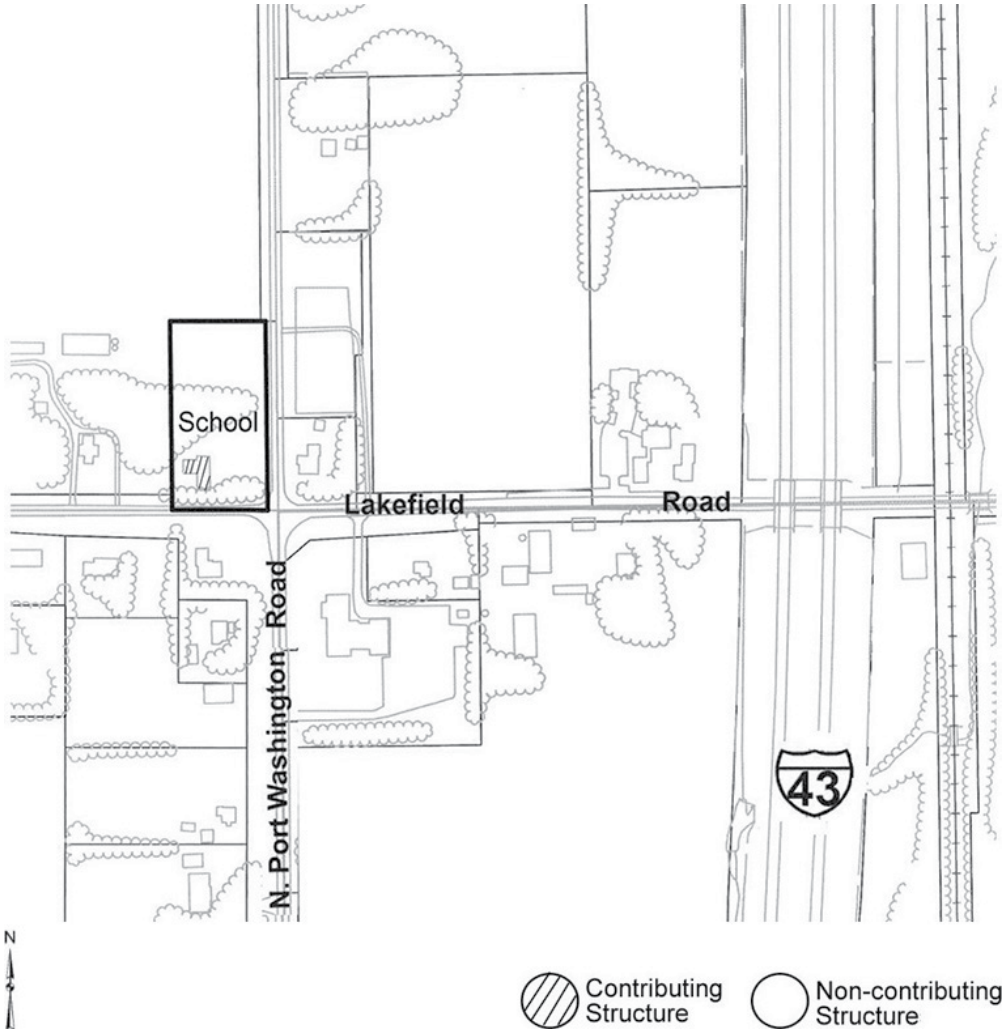



*Source: Determination of Eligibility Form*

## 4.2.16. District #6/Lakefield School

The Lakefield School building is located on the north side of Lakefield Road, west of I-43 (**Exhibit 4-1** and **Exhibit 4-17**). This property is privately owned and is leased to a local winery for use as a wine shop. The I-43 study historic structures survey recommended this property as eligible for the NRHP under Criterion C (Architecture/Engineering). On Aug. 29, 2013, the SHPO determined that this structure is not eligible for the NRHP. FHWA and WisDOT concur with SHPO's determination. Therefore, no further Section 4(f) evaluation is required.

**Exhibit 4-17: District#6/Lakefield School**

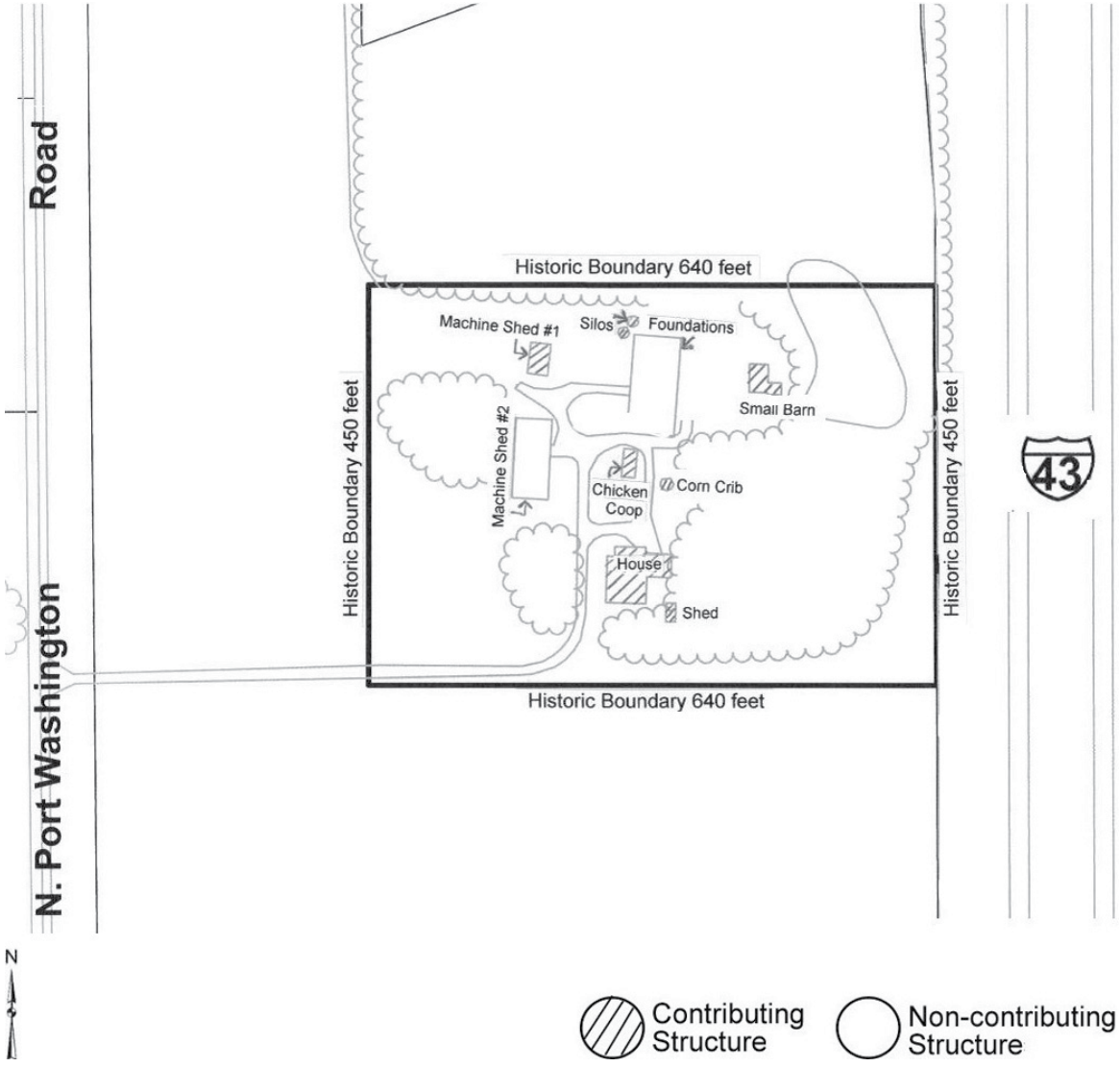



*Source: Determination of Eligibility Form*

## 4.2.17. Henry and Mary Hennings House

The Hennings House is on a former farmstead located on North Port Washington Road west of I-43, between Lakefield Road and WIS 60 (**Exhibit 4-1** and **Exhibit 4-18**). This property is privately owned. The I-43 study historic structures survey recommended this property as eligible for the NRHP under Criterion C (Architecture/Engineering) as a distinctive example of quarried fieldstone construction. The SHPO concurred in this recommendation on Aug. 29, 2013. This property is subject to Section 4(f) requirements because it is eligible for the NRHP. This Section 4(f) resource is within the area of potential effect for the build alternatives. See **Subsection 4.3.10** for more evaluation information.

**Exhibit 4-18: Henry and Mary Hennings House**




*Source: Determination of Eligibility Form*

## 4.3. PROPOSED ACTION RELATIVE TO SECTION 4(f) RESOURCES

Based on the descriptions provided in **Subsection 4.2**, the following Section 4(f) resources are within the study area for the build alternatives and require further evaluation:

- North Shore Water Treatment Plant (historic property)
- Craig Counsell Park
- Clovernook Estates Historic District (historic property)
- Nicolet High School (public use recreational area)
- Elderwood House (historic property)
- River Hills Memorial Park Parcel (public park)
- Maple Dale Middle School (public use recreational area)
- Katherine Kearney Carpenter Park (public park)
- Johann Friederich and Catherine Hennings Farmstead (historic property)
- Henry and Mary Hennings House (historic property)

The No-Build Alternative would have no impacts on Section 4(f) resources. The build alternatives listed below would avoid right of way acquisition from the Section 4(f) resources but were eliminated from consideration because they would not meet the study purpose and need (**Section 2**).

- **Spot Improvements:** This alternative would provide limited improvements to address safety concerns at spot locations, but would not meet the study purpose and need to address design deficiencies or future traffic demand.
- **Modernization without Capacity Expansion:** This alternative would retain the existing four-lane highway and reconstruct it to modern design standards on its present alignment. It was eliminated from further consideration because it would not meet the study purpose and need to address future traffic demand.
- **Modernization – 6 Lanes, Elevated:** WisDOT previously considered this alternative to avoid property acquisitions in the South Segment of the I-43 mainline. The alternative avoids historic and recreation properties by reconstructing I-43 on a raised structure, so that Jean Nicolet Road and Port Washington Road would run underneath portions of the freeway. However, local residents and officials felt the alternative was too visually intrusive. It is also anticipated that the alternative would have an adverse effect on historic resources under Section 106 of the NHPA due to visual and other impacts of raising the I-43 mainline.

Proposed improvements for the build alternatives in the vicinity of Section 4(f) resources, along with corresponding Section 4(f) evaluation, is discussed in the following subsections.

### 4.3.1. North Shore Water Treatment Plant

#### PROPOSED ACTION

The Modernization – 6 Lanes alternative retained for detailed study in the South Segment of the I-43 corridor (Silver Spring Drive to Green Tree Road) would expand I-43 from four lanes to six lanes. Jean Nicolet Road would be reconstructed by adding a 5-foot sidewalk on the west side, and a 4-foot bike lane on both sides of the road. Port Washington Road is reconstructed as a four-lane facility generally on the existing alignment with a sidewalk on the east side and bike lanes on both sides of the road. Sidewalk and bike accommodations are required under *Wisconsin Administrative Code Chapter Trans 75: Bikeways and Sidewalks in Highway Projects* (Trans 75). The build alternative would require about 0.16 acres of strip right of way acquisition along the east edge of the property (**Exhibit 4-19**).

**Exhibit 4-19: Historic Property Impacts to North Shore Water Treatment Plant**


## SECTION 4(F) EVALUATION

Because the water treatment plant is a historic resource, FHWA is responsible for carrying out the assessment of effects in consultation with SHPO, WisDOT and other consulting parties under Section 106 of the NHPA. Documentation for Determination of No Adverse Effect was submitted to the SHPO in October 2013. This documentation concluded that the proposed I-43 improvements will not affect the architectural features of the structures that qualify them for listing in the NRHP. The SHPO concurred in a no adverse effect finding on Dec. 13, 2013 (**Exhibit 4-32**).

While the SHPO has concurred in a no adverse effect determination under Section 106 of the NHPA, the right of way acquisition constitutes a permanent incorporation of land from a historic site and is therefore subject to further Section 4(f) evaluation.

At this time, FHWA has made a preliminary determination of *de minimis* impacts for the North Shore Water Treatment Plant. As part of the Determination for No Adverse Effect submittal,

the SHPO was notified of FHWA's intent to make a *de minimis* impact finding. The North Shore Water Commission, which owns the plant, is a consulting party under Section 106 of the NHPA. The water commission sent a letter to WisDOT on Sept. 12, 2013, indicating the proposed I-43 improvements would not adversely affect the operation or maintenance of this facility and that right of way acquisition would not impair the property's historic significance (**Exhibit 4-33**).

The final *de minimis* impact determination will be based on selection of a preferred alternative and will be provided in the FEIS.

## 4.3.2. Craig Counsell Park

### PROPOSED ACTION

The Modernization – 6 Lanes alternative retained for detailed study in the South Segment of the I-43 corridor (Silver Spring Drive to Green Tree Road) would expand I-43 from four lanes to six lanes. Jean Nicolet Road would be reconstructed by adding a 5-foot sidewalk on the west side, and a 4-foot bike lane on both sides of the road. Port Washington Road would be reconstructed as a four-lane facility on generally the existing alignment, with a sidewalk on the east side of the road, and a bike lane on both sides of the road. Reconstructing Port Washington Road would require about 0.05 acre of strip right of way acquisition along the west edge of the Craig Counsell Park parcel adjacent to Port Washington Road (**Exhibit 4-20**). The westerly park parcel is undeveloped except for the access road that serves the Jewish Community Center on the east side of the park, and parking access for the baseball fields.

The proposed improvements on Port Washington Road have been designed to minimize encroachment on the property to the extent possible, and it would enhance public access to the park including access for bicycle and pedestrian traffic. If a build alternative is selected at the conclusion of the corridor study, additional efforts will be made in the engineering design phase to further minimize encroachment on this property.

### SECTION 4(F) EVALUATION

The proposed improvements would not adversely affect the activities, features, or attributes qualifying the park for protection under Section 4(f). At this time, FHWA has made a preliminary determination of *de minimis* impacts for the park. Coordination with the village of Whitefish Bay indicates village officials concur with the *de minimis* finding for Craig Counsell Park (**Exhibit 4-34**). The final *de minimis* impact determination will be based on selection of a preferred alternative and will be provided in the FEIS.

## Exhibit 4-20: Property Impacts to Craig Counsell Park

## 4.3.3. Clovernook Estates Historic District

### PROPOSED ACTION

The Modernization – 6 Lanes alternative retained for detailed study in the South Segment of the I-43 corridor (Silver Spring Drive to Green Tree Road) would expand I-43 from four lanes to six lanes by shifting construction to the east, which maintains the existing west right of way line of Jean Nicolet Road. The build alternative would also reconstruct Jean Nicolet Road by adding a 5-foot sidewalk on the west side, and a 4-foot bike lane on each side of the road (**Exhibit 4-21**).

### SECTION 4(F) EVALUATION

Because the Clovernook Estates Historic District is a historic resource, FHWA is responsible for carrying out the assessment of effects in consultation with SHPO, WisDOT and other consulting parties under Section 106 of the NHPA. Documentation for Determination of No Adverse Effect was submitted to the SHPO in October 2013. This documentation concluded that the proposed I-43 improvements will not affect the features of the historic property that qualify it for listing in the NRHP. The SHPO concurred in a no adverse effect finding on Dec. 13, 2013 (**Exhibit 4-32)**.

The build alternative would avoid right of way acquisition from the historic property because it would maintain the westerly right of way line on Jean Nicolet Road. This constitutes an avoidance alternative. Therefore, no further Section 4(f) evaluation is required.

## Exhibit 4-21: Proposed Build Alternative at Clovernook Estates

## 4.3.4. Nicolet High School

The proposed action in the vicinity of Nicolet High School meets FHWA's criteria for a *de minimis* Section 4(f) impact finding. However, because concurrence in such a finding has not been received from the Nicolet High School District School Board at this time, a standard Section 4(f) evaluation has been prepared for purposes of this draft environmental impact statement (DEIS).

### SECTION 4(F) PROPERTY

The Nicolet High School Section 4(f) property is described in **Subsection 4.2.4**. The facility is owned and administered the Nicolet High School District. Decisions and actions concerning the facility are made by the Nicolet High School District School Board. The athletic fields adjacent to the east and west sides of I-43 are subject to Section 4(f) requirements because they are public use recreational areas.

### PROPOSED ACTION

The proposed action in the vicinity of Nicolet High School is the Modernization – 6 Lanes alternative that would expand I-43 from four lanes to six lanes (**Exhibit 4-22**). Under this alternative, Jean Nicolet Road would be reconstructed as a two-lane facility on the existing alignment. The reconstructed roadway would have 11-foot driving lanes, a 4-foot bike lane on the east side (adjacent to the backslope on the southbound I-43 roadway), and a 6-foot sidewalk, a 5-foot bike lane and an 8-foot outside parking lane adjacent to the athletic field. It should be noted that the west side of Jean Nicolet Drive, between Daphne Road and Green Tree Road, is also used for additional parking for special events at the high school. In meetings with WisDOT, Nicolet High School representatives indicated support for a sidewalk and retaining a parking lane on Jean Nicolet Drive. A 6-foot sidewalk is required because it is adjacent to a roadway curb.

Nicolet High School maintains a tunnel that provides pedestrian access between the high school campus west of I-43 and the athletic fields east of I-43. The tunnel does not meet ADA standards and there are safety concerns with the lack of lighting and visibility. The tunnel would need to be replaced as part of the build alternative. Replacement options for the tunnel include an upgraded tunnel or an overpass bridge. Final decisions regarding the tunnel would be made in consultation with Nicolet High School in a future design phase if a build alternative is selected at the conclusion of the current study phase.

### IMPACTS ON SECTION 4(F) PROPERTY

The proposed Modernization – 6 Lanes alternative would require about 0.28 acres of strip right of way acquisition from the athletic fields east of I-43. This acquisition is due to reconstructing the I-43 mainline from four to six lanes and replacing the existing pedestrian tunnel with either a pedestrian bridge over I-43 or a new tunnel meeting ADA requirements. Although a retaining wall would be constructed along the east side of I-43 to minimize encroachment on the Nicolet High School property, a minor strip of right of way is still required to construct and anchor the retaining wall. No physical facilities, features or structures on this athletic field would be affected and there would be no change in use of the property.

The Modernization – 6 Lanes alternative, which would reconstruct Jean Nicolet Road to include a sidewalk and bike lanes, would avoid the athletic field on the west side of I-43.

An existing 30-foot WisDOT storm sewer easement also traverses the high school property between the main campus buildings and the west athletic fields, through the Elderwood House property and wooded area abutting the Milwaukee River (**Subsection 4.3.5**). WisDOT may

replace the existing storm sewer within the existing easement, thus avoiding any additional incorporation of land from the high school property. Temporary ground disturbance within the WisDOT easement would result during excavation, removal and replacement of the existing storm sewer. Replacing the existing storm sewer would not constitute a Section 4(f) action because there would be no use (permanent or temporary occupancy) of the high school property.

**Exhibit 4-22: Proposed Build Alternative at Nicolet High School**


## AVOIDANCE/MINIMIZATION ALTERNATIVES

The No-Build Alternative and other build alternatives that would potentially avoid or minimize encroachment on the Nicolet High School athletic fields are discussed in detail in **Section 2**, along with reasons these alternatives were eliminated from further consideration. Key points are summarized as follows:

- The ***Spot Improvements Alternative*** would provide limited improvements to address safety concerns at spot locations, but would not address design deficiencies and future traffic demand. Further, this alternative would not provide an ADA-compliant pedestrian facility to replace the existing tunnel across I-43 at the high school.
- The ***Modernization without Capacity Expansion Alternative*** would retain the existing four-lane highway and reconstruct it to modern design standards on its present alignment. This alternative was eliminated from further consideration because it would not address design deficiencies and future traffic demand. Jean Nicolet Road would still need to be reconstructed under this alternative with a sidewalk, bike lanes and parking lane; and the existing pedestrian tunnel would still need to be reconstructed or replaced. Therefore, while impacts to the athletic fields would be minimized to some extent, they would not be completely avoided.
- The ***Modernization – 6 Lanes Elevated Alternative*** would minimize property acquisition through the Nicolet High School area by reconstructing I-43 on a raised structure so that Jean Nicolet Drive would run underneath portions the freeway. A retaining wall in the vicinity of the upper athletic field could still impact up to 0.08 acre. This alternative was eliminated from further consideration because it would be visually intrusive to adjacent residential development and would likely have an adverse [visual] effect on historic properties. The existing pedestrian tunnel would still need to be reconstructed or replaced under this alternative. Therefore, this alternative would not completely avoid Section 4(f) impacts.

WisDOT also considered reconstructing I-43 without replacing the existing pedestrian tunnel to minimize Section 4(f) impacts to the athletic fields east of I-43. While feasible, this would not be prudent. As discussed previously, the existing tunnel does not meet ADA standards and there are safety concerns due to lack of lighting and visibility. Furthermore, as noted in meetings with school staff, removing access under I-43 is not desirable as alternate access on local streets causes greater indirection, which impacts students' class schedules.

## MEASURES TO MINIMIZE HARM

The proposed Modernization – 6 Lanes Alternative has been designed to minimize encroachment on the Nicolet High School property to the extent possible. If a build alternative is selected at the conclusion of the corridor study, the engineering design phase will include efforts to further minimize encroachment on this resource. Specific design features for the proposed Modernization – 6 Lanes Alternatives that minimize Section 4(f) impacts include the following:

- Retaining wall along east side of I-43.
- Reducing the I-43 median width to 32 feet (Reducing the median width further creates an undesirable median width and would remove ability for freeway lighting in the median. Further reducing median shoulder widths would not meet freeway design standards).
- Using 11-foot lanes on Jean Nicolet Road.
- Removing the grass terrace between the sidewalk and the back of curb, next to the football field, on west side of Jean Nicolet Drive.
- Constructing a retaining wall along the north portion of the football field on the west side of Jean Nicolet Drive.
- Reducing the terrace width between Jean Nicolet and I-43 (back of freeway barrier to back of Jean Nicolet curb) to 7 feet.

### COORDINATION

As summarized in **Subsection 4.4**, several meetings were held with representatives of the Nicolet High School District about the I-43 corridor study, alternatives being considered, and potential effects on the athletic fields.

### PRELIMINARY SECTION 4(F) FINDING

Based on the above information, it is FHWA's preliminary finding that there are no feasible and prudent alternatives to use of the Section 4(f) land from the Nicolet High School athletic fields. The final Section 4(f) finding will be based on selection of a preferred alternative and will be provided in the final environmental impact statement (FEIS).

## 4.3.5. Elderwood House

### PROPOSED ACTION

The Elderwood House property is located about 1,200 feet west of I-43. None of the build alternatives require any right of way acquisition from this property; however, WisDOT has a 30-foot-wide easement across this property for a storm sewer that conveys stormwater from I-43 to the Milwaukee River (**Exhibit 4-23**). WisDOT may propose to replace the existing storm sewer within the existing easement, thus avoiding any additional incorporation of land from the historic property.

### SECTION 4(F) EVALUATION

Temporary ground disturbance within the WisDOT easement would result during excavation, removal and replacement of the existing storm sewer, but this does not constitute a Section 4(f) action because there would be no use (permanent or temporary occupancy) of the historic property. Documentation for Determination of No Adverse Effect was submitted to the SHPO in October 2013. This documentation concluded that the proposed I-43 improvements will not affect the features of the historic property that qualify it for listing in the NRHP. The SHPO concurred in a no adverse effect finding on Dec.13, 2013 (**Exhibit 4-32**). Therefore, no further Section 4(f) evaluation is required.

## Exhibit 4-23: Location of Existing Storm Sewer Easement at Elderwood House

## 4.3.6. River Hills Memorial Park

### PROPOSED ACTION

The River Hills Memorial Park parcel is separated from I-43 by the River Hills Department of Public Works facility discussed in **Subsection 4.2.7**. The Modernization – 6 Lanes alternative at this location would widen I-43 along the existing highway centerline (**Exhibit 4-24**).

### SECTION 4(F) EVALUATION

Reconstruction would occur within existing highway right of way and there would be no use of land from the River Hills Memorial Park parcel. There would be no Section 4(f) impact to the park. Therefore, no further Section 4(f) evaluation is required.

**Exhibit 4-24: Proposed Build Alternative at River Hills Memorial Park**

## 4.3.7. Maple Dale Middle School

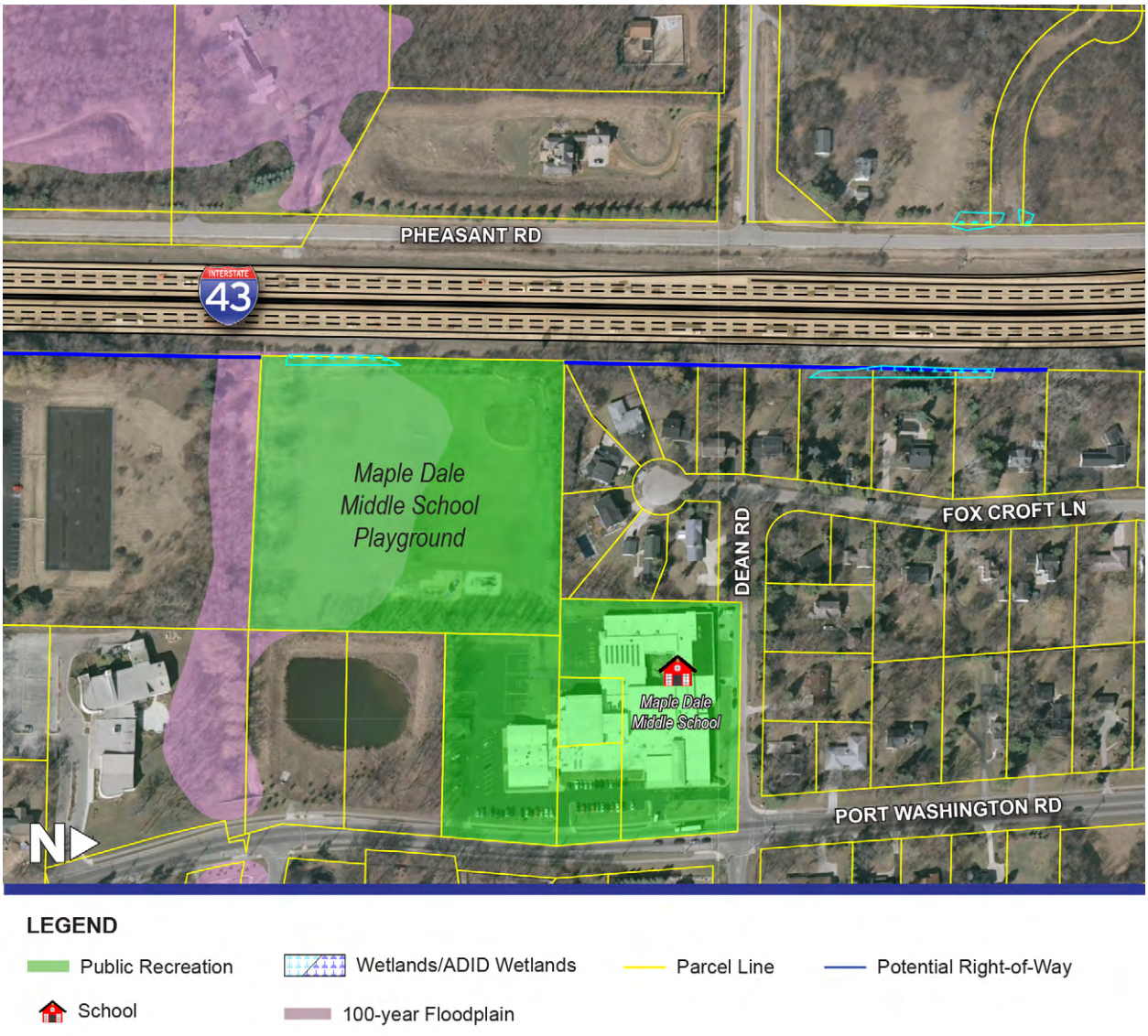
### PROPOSED ACTION

The Modernization – 6 Lanes alternative in the vicinity of the Maple Dale Middle School would widen I-43 along the existing highway centerline (**Exhibit 4-25**).

### SECTION 4(F) EVALUATION

Reconstruction would occur within existing highway right of way and there would be no use of land from the school parcel. Therefore, no further Section 4(f) evaluation is required.

**Exhibit 4-25: Proposed Build Alternative at Maple Dale Middle School**



## 4.3.8. Katherine Kearney Carpenter Park

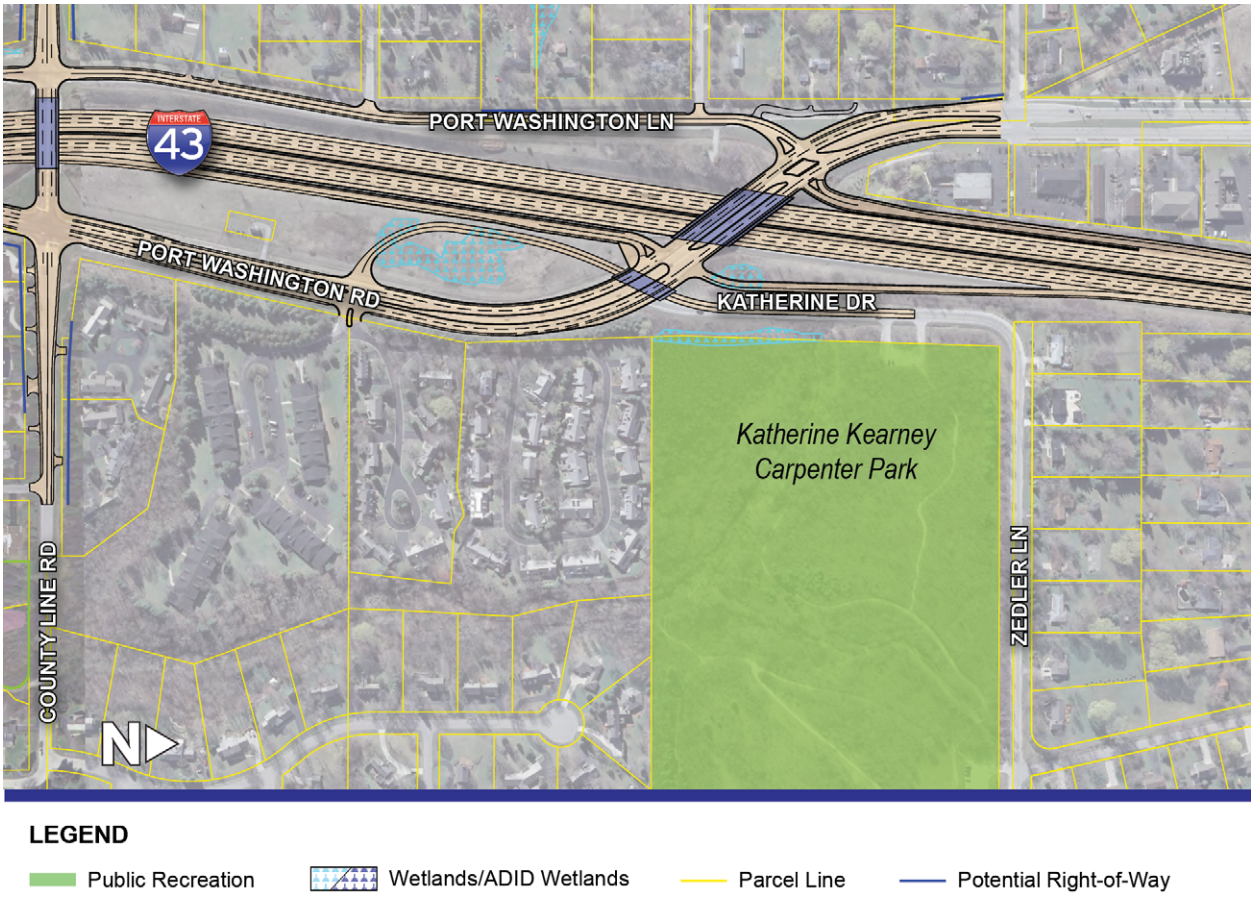
### PROPOSED ACTION

The Modernization – 6 Lanes alternative in the vicinity of the Katherine Kearney Carpenter Park would widen I-43 along the existing highway centerline, and the Split Diamond Hybrid subalternatives would replace the existing partial interchange at County Line Road (**Exhibit 4-26** and **Exhibit 4-27**). The Partial Diamond alternative would replace the existing interchange in nearly the same configuration, but extending the northbound exit ramp further north to remove weaving conflicts with the northbound entrance ramp from the Brown Deer Road interchange (**Exhibit 4-28**). The No Access alternative would remove the existing interchange (**Exhibit 4-29)**.

### SECTION 4(F) EVALUATION

I-43 mainline reconstruction and construction of either the Split Diamond Hybrid subalternatives, Partial Diamond alternative or No Access alternative would occur within existing highway right of way, and there would be no use of land from the park. Therefore, no further Section 4(f) evaluation is required.

**Exhibit 4-26: Split Diamond Hybrid (Grade Separation) at Katherine Kearney Carpenter Park**

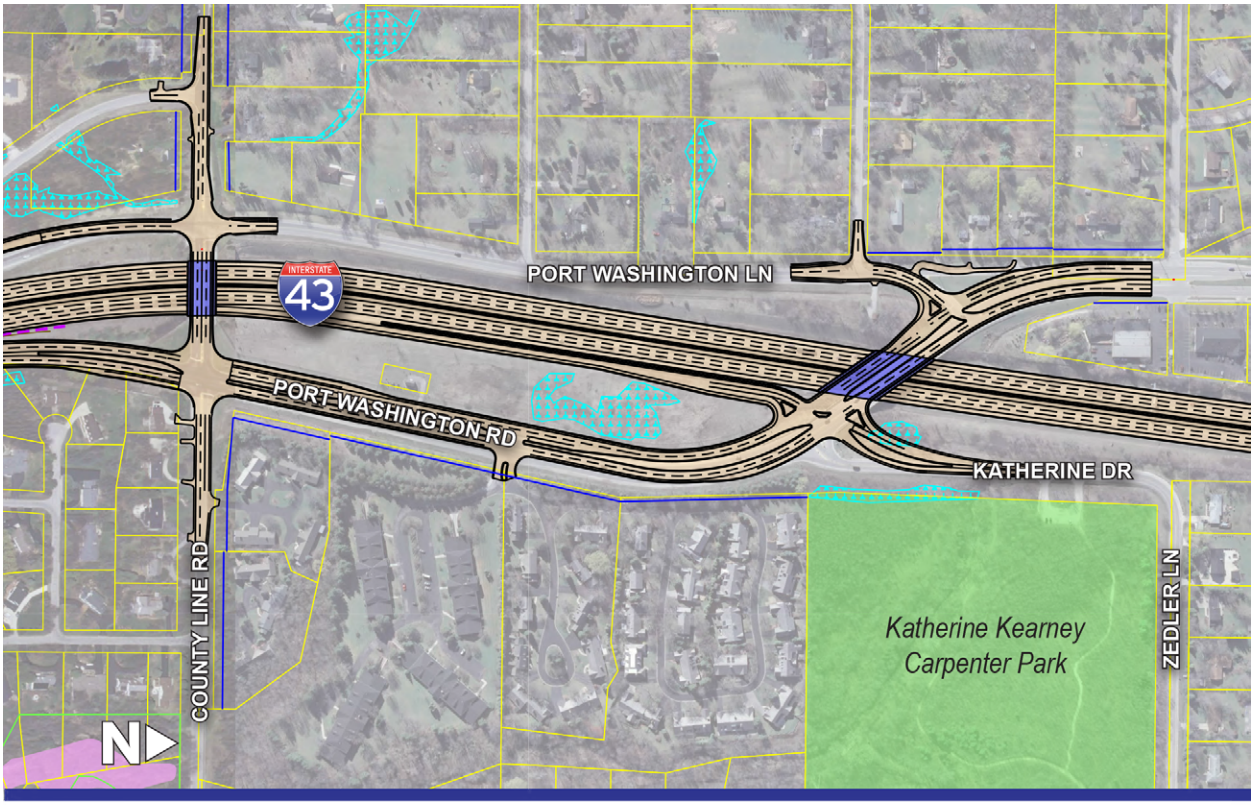


## Exhibit 4-27: Split Diamond Hybrid (without Grade Separation) at Katherine Kearney Carpenter Park


**LEGEND**

Public Recreation | Wetlands/ADID Wetlands | Parcel Line | Potential Right-of-Way

## Exhibit 4-28: Partial Diamond at Katherine Kearney Carpenter Park




**LEGEND**

Public Recreation | Wetlands/ADID Wetlands | Parcel Line | Potential Right-of-Way

## Exhibit 4-29: No Access Alternative at Katherine Kearney Carpenter Park


**LEGEND**

Public Recreation | Wetlands/ADID Wetlands | Parcel Line | Potential Right-of-Way

## 4.3.9. Johann Friederich and Catherine Hennings Farmstead

### PROPOSED ACTION

The Modernization – 6 Lanes alternative in the vicinity of the Hennings Farmstead would reconstruct I-43 to a six-lane facility with the additional lanes constructed primarily in the existing highway median (**Exhibit 4-30**).

The substandard shoulders would be reconstructed to meet current design standards. Treatment options for the median barrier include a concrete barrier or beam guard. Lakefield Road that passes under I-43 would be left in its current configuration.

### SECTION 4(F) EVALUATION

Reconstruction of I-43 would not require any use of land from the historic property. Documentation for Determination of No Adverse Effect was submitted to the SHPO in October 2013. This documentation concluded that the proposed I-43 improvements will not affect the features of the historic property that qualify it for listing in the NRHP. The SHPO concurred in a no adverse effect finding on Dec. 13, 2013 (**Exhibit 4-32**). Therefore, no further Section 4(f) evaluation is required.

## Exhibit 4-30: Proposed Build Alternative at Johann Friederich and Catherine Hennings Farmstead

## 4.3.10. Henry and Mary Hennings House

### PROPOSED ACTION

The Modernization – 6 Lanes alternative in the vicinity of the Hennings House would reconstruct I-43 to a six-lane facility with the additional lanes constructed primarily in the existing highway median (**Exhibit 4-31**). The substandard shoulders would be reconstructed to meet current design standards. Treatment options for the median barrier include a concrete barrier, cable guard or beam guard.

### SECTION 4(F) EVALUATION

Reconstruction of I-43 would not require any use of land from the historic property. Documentation for Determination of No Adverse Effect was submitted to the SHPO in October 2013. This documentation concluded that the proposed I-43 improvements will not affect the features of the historic property that qualify it for listing in the NRHP. The SHPO concurred in a no adverse effect finding on Dec. 13, 2013 (**Exhibit 4-32**). Therefore, no further Section 4(f) evaluation is required.

## Exhibit 4-31: Proposed Build Alternative at Henry and Mary Hennings House


**LEGEND**

Historic Boundary
Wetlands/ADID Wetlands
Parcel Line
Potential Right-of-Way
Historic Property

## 4.4. COORDINATION

As part of the data gathering effort for the I-43 North-South Freeway Corridor Study, the study team contacted several local officials from fall of 2012 through spring of 2013 regarding potential Section 4(f) resources including the North Shore Water Treatment Plant, Craig Counsell Park, Nicolet High School, River Hills Memorial Park, Maple Dale Middle School, Katherine Kearney Carpenter Park, MMSD Greenseams property, and Bonniwell Wildlife Area. The purpose of these contacts was to obtain information about property ownership/administration, funding, existing and planned uses, covenants or restrictions, and other aspects relevant to the Section 4(f) evaluation. Contact with local officials included the following efforts:

- In February and March 2013, Heritage Research Ltd. (consultant historian for I-43 study) sent letters to owners/administrators of potentially historically significant properties in the I-43 study area including the North Shore Water Treatment Plant, former Phillips Petroleum Service Station, River Hills, Department of Public Works, Chalet Motel, Louis and Sophia Hovener House, Johann Friederich and Catherine Hennings Farmstead, District #6/Lakefield School, and Henry and Mary Hennings House. The purpose of the letter was to let the owners know about the study, that their properties were being evaluated for historic significance, and to provide any historical documentation that could assist the evaluation effort.
- In April 2013, Heritage Research Ltd. sent follow-up letters requesting an opportunity to review and photograph building interiors as part of the evaluation process. Owners were also informed that the historic property evaluations (determinations of eligibility for the NRHP) would proceed with or without having reviewed building interiors.
- In July 2013, Heritage Research Ltd. sent letters notifying property owners of the outcome of the historic property evaluations. Heritage Research Ltd. similarly notified the president of the Clovernook Neighborhood Association.
- On May 22, 2013, study representatives met with the owners of Elderwood House (already listed in the NRHP) to discuss proposed I-43 improvements that could include replacing the storm sewer located within an easement that crosses the property. The owners indicated they would not object to such improvements provided they would be within the easement area and would not disturb apple trees and lilac bushes at the entrance to their property.
- On May 21, 2013, WisDOT met with high school staff to present alternatives that may impact the Nicolet High School property. Staff suggested that WisDOT also meet with the school board to present the information. WisDOT met with Nicolet High School District School Board members on July 11, 2013, to discuss the build alternatives and the potential for a de minimis finding for impacts to the athletic fields. The school had just begun design efforts to reconfigure some of its facilities at the athletic fields. WisDOT subsequently met with high school staff in the field to mark potential right of way impacts of the build alternative. WisDOT attended a second follow-up meeting with the school superintendent on Oct. 7, 2013, to clarify additional questions about the build alternative. On Jan. 16, 2014, WisDOT staff met with staff from Nicolet High School and the city of Glendale to discuss avoidance and minimization measures at the high school athletic fields. WisDOT will continue to coordinate with the school when additional plans for its athletic fields are further developed. Nicolet High School provided a letter supporting ongoing coordination through the design process to minimize impacts to the school property and maintain access across I-43 (**Exhibit 4-35**).
- On July 23, 2013, study representatives met with the manager of the North Shore Water Treatment Plant to discuss the plant's potential eligibility to the NRHP and to discuss the proposed I-43 improvements in this area. The study team stated that a formal evaluation would be prepared to determine whether adverse effects would occur, and a copy of that

evaluation would be shared with the plant manager for use in further coordination with the North Shore Water Commission. The North Shore Water Commission has communicated that the I-43 North-South Freeway Corridor study would not affect the water filtration plant operations and maintenance, or the historic significance of the property (**Exhibit 4-33**).

Opportunities for public input on impacts to Section 4(f) resources and proposed *de minimis* impact findings were also provided as part of the study's public involvement process. Public information meetings included the following events:

- The first public information meeting in August 2012 encouraged the public to help identify any significant socioeconomic, environmental, archaeological and historical areas that should be considered in development of the alternatives.
- The second public information meeting in January 2013 requested information about any historic properties in the study area. It also provided general information about the environmental impact statement process including consideration of historic properties.
- The third public information meeting in August 2013 provided more specific information about the historic and public recreation resources in the study corridor and solicited public input on potential impacts to applicable resources.

On Sept. 6, 2013, study representatives met with the village of Whitefish Bay to discuss impacts at Craig Counsell Park and whether the impacts would adversely affect any of the park's resources, use, or intended use. Village officials indicated that the build alternative would not affect park functions (**Exhibit 4-34**).

While neither the Milwaukee County nor Ozaukee County historical societies indicated interest as a consulting party, WisDOT emailed the results of the historic structures survey on Aug. 5, 2013, and also notified them of the August public information meetings.

# Exhibit 4-32: State Historic Preservation Officer Concurrence in No Adverse Effect for Historic Properties

**Determination of No Adverse Effect**
**WisDOT Project I.D. 1229-04-01**
**WHS No. 12-0649/MI/OZ**
I-43 North-South Freeway Corridor Study
Silver Spring Drive – WIS 60
Milwaukee and Ozaukee Counties

RECEIVED
OCT 29 2013
DIV HIST PRES

The proposed undertaking is the reconstruction of 14 miles of Interstate Highway 43 (I-43) between Silver Spring Drive in the city of Glendale and Wisconsin Highway (WIS) 60 in the village of Grafton. The project includes providing additional travel capacity on I-43; reconstructing or replacing existing structures over/under I-43; reconstructing and modernizing numerous interchanges; constructing a new interchange at Highland Road; reconstructing adjacent local streets; and enhancing freeway aesthetics. The Area of Potential Effects (APE) was defined to include all properties abutting I-43, adjacent to interchange areas, and along local roads where construction could occur. The following historic properties were identified in the APE:

- North Shore Water Treatment Plant, National Register-eligible
- Clovernook Estates Residential Historic District, National Register-eligible
- Elderwood/The House in the Woods, National Register-listed
- Phillips Petroleum Company Service Station, National Register-eligible
- Johann Friederich and Catherine Hennings Farmstead, National Register-eligible
- Henry and Mary Hennings House, National Register-eligible

As supported in the enclosed Documentation for Determination of No Adverse Effect (DNAE), WisDOT recommends that there will be no adverse effect to historic properties as a result of the project. In accordance with 23 USC 138(b), WisDOT, on behalf of FHWA, hereby informs SHPO that the DNAE may be used in considering whether a de minimis Section 4(f) finding is appropriate and SHPO concurrence with the DNAE serves as acknowledgement of this official notification.

Jason Kennedy, WisDOT — Date 10/28/13
Environmental Analysis & Review Specialist

We concur with your current finding of "no adverse effect" for this project.

Kimberly Zunker Cook, SHPO — Date Dec 13 2013

## Exhibit 4-33: De Minimis Section 4(f) Concurrence from North Shore Water Commission

Village of Whitefish Bay
5300 N. Marlborough Drive
Whitefish Bay, Wisconsin 53217

Phone: 414-962-6690
Fax: 414-962-5651

Steve Hoff, PE
WisDOT Project Manager
Wisconsin Department of Transportation
141 N W Barstow Street
Waukesha, WI 53187-0798

September 12, 2013

Subject: **Potential Effects of I-43 Reconstruction on North Shore Water Treatment Plant 400 West Bender Road, Glendale**

WisDOT Project I.D. 1229-04-01
I-43 North South Corridor Study
(Silver Spring Drive to WIS 60)
Milwaukee and Ozaukee Counties

Dear Mr. Hoff:

It is our understanding that Wisconsin Department of Transportation (WisDOT) is considering alternatives for widening I-43. Both remaining options would result in the reconstruction of Jean Nicolet Road which would require about 0.2 acres of right-of-way acquisition from the northeast edge of the water treatment plant. After reviewing WisDOT drawings at the September 11, 2013 Commission Meeting and conferring with the Plant Manager, the North Shore Water Commission representing Glendale, Fox Point, and Whitefish Bay, does not believe the contemplated alternatives would adversely affect the operation and maintenance of our facilities. It is also our opinion that the contemplated right-of-way acquisition will not impair the property's historic significance.

Please contact me if you have any questions.

Best Regards,

Daniel J. Naze, P.E.
Chairman
North Shore Water Commission

## Exhibit 4-34: De Minimis Section 4(f) Concurrence from Village of Whitefish Bay

Village of Whitefish Bay
5300 N. Marlborough Drive • Whitefish Bay, Wisconsin 53217 • (414) 962-6690

Steve Hoff, PE
WisDOT Project Manager
Wisconsin Department of Transportation
141 NW Barstow Street
Waukesha, WI 53187-0798

September 13, 2013

Subject: **Potential Effects of I-43 Reconstruction on Craig Counsell Park and Port Washington Road, Glendale**

WisDOT Project I.D. 1229-04-01
I-43 North South Corridor Study
(Silver Spring Drive to WIS 60)
Milwaukee and Ozaukee Counties

Dear Mr. Hoff:

Thank you for keeping us informed about the above I-43 reconstruction project. This responds to your request for input regarding the proposed I-43 reconstruction and potential impacts to Craig Counsell Park, located on the east side of Port Washington Road, immediately south of the Union Pacific Railroad, in Glendale. Most recently, I have discussed this request with you and Monica Wauck from WisDOT. As we discussed, Craig Counsell Park is a public park owned by the Village of Whitefish Bay and located within the City of Glendale.

Monica explained that the park was evaluated as a 4f property during the environmental review process for the I-43 study. Previous conversations with Whitefish Bay Engineering staff indicated that this parcel may be used by the public for recreational purposes. Monica went on to explain that the impacts were eligible for a *de minimis* finding by the Federal Highway Administration (FHWA) because the impacts would not affect the use of the property. Monica also explained that the alternative to doing a *de minimis* was a more involved 4f process that would look at a broad range of avoidance and mitigation measures.

Further, it is our understanding that I-43 may be expanded from four lanes to six lanes at this location, with design options for widening to the east or west of the existing freeway. Under both options, Port Washington Road may be reconstructed from two to four lanes from Devon Street to Daphne Road. Because this section of Port Washington Road is a City of Glendale street, the City will make this decision due to its close proximity to the I-43 corridor, though, WisDOT is coordinating with the City of Glendale to evaluate impacts of Port Washington Road expansion as part of the I-43 Corridor Study's Environmental Impact Statement. This expansion would require about 0.05 acres of right-of-way acquisition where Karl Campus Drive intersects Port Washington Road in order for the new driveway to better match into Karl Campus Drive, which primarily provides access to the Jewish Community Center.

At this time, the Village of Whitefish Bay has no objections to the proposed reconstruction of I-43 and Port Washington Road, including the acquisition of right-of-way at the vicinity of the intersection with Karl Campus Drive. Further, it is our opinion that the right-of-way acquisition will not adversely affect the park's function. We understand that the public had an opportunity to comment on the potential impacts to the park at the most recent public informational meetings, held August 20th and 22nd of this year. Based on all of these considerations, the Village of Whitefish Bay concurs with the *de minimis* finding.

Please contact me if you have any questions.

Best Regards,

Patrick DeGrave
Village Manager
Village of Whitefish Bay

## Exhibit 4-35: Coordination with Nicolet High School

NICOLET
HIGH SCHOOL

February 24, 2014

Steve Hoff, PE
WisDOT Project Manager
Wisconsin Department of Transportation
141 N W Barstow Street
Waukesha, WI 53187-0798

Subject: **Potential Effects of I-43 Reconstruction on Nicolet High School**
WisDOT Project I.D. 1229-04-01
I-43 North South Corridor Study
(Silver Spring Drive to WIS 60)
Milwaukee and Ozaukee Counties

Dear Mr. Hoff:

Thank you for keeping us informed about the above I-43 reconstruction project. As we discussed with WisDOT staff at the January 16, 2014 meeting, we understand that widening I-43 and reconstructing Jean Nicolet Road would affect Nicolet High School property. Below is a summary of what was discussed and our understanding of what is proposed. This is a summary of our discussions only, and is not intended to be a binding or comprehensive term sheet, memorandum of understanding, contract or similar document.

Playing Fields East of I-43

- Approximately 0.28 acres of strip right-of way would be required. There would be no impact to the current recreational facilities.

Playing Fields West of I-43

- No additional right-of-way would be required from the area where athletic facilities are located. In order to stay within the existing public right-of-way, a small retaining wall with a fence would be built along the northern end of the existing football field.

Jean Nicolet Road

- Jean Nicolet Road would be reconstructed from Bender Road to Green Tree Road. As part of the reconstruction, WisDOT would include sidewalk and bike lanes. As requested by the City of Glendale, there would be no dedicated parking lane.

Storm Sewer

- The existing storm sewer easement across the school property would remain in place.

Other Impacts

- In addition to the current recreation facilities, Nicolet owns two residential properties to the north of the playing fields, west of Jean Nicolet Road. The property located at 535 W. Green Tree Road would likely be taken (with full compensation to Nicolet) in connection with this project.

Pedestrian Access between the East and West Playing fields

- Per Nicolet's request, WisDOT is planning to maintain the existing pedestrian connection that is currently served by the tunnel under I-43. If the connection is replaced with either an underpass

6701 N. Jean Nicolet Road Glendale, WI 53217-3799 ● Phone 414.351.1700 Fax 414.351.7526 ● www.nicolet.k12.wi.us

## Exhibit 4-35: Coordination with Nicolet High School (continued)

or an overpass, the structure would occupy school property, possibly on easement, on both sides of I-43.

We understand that these are the anticipated potential impacts, which will continue to be refined through project planning. No existing recreational facilities are anticipated to be impacted by the proposed right-of-way acquisition or the replacement of pedestrian access. We support replacing the existing pedestrian tunnel with an improved structure and recognize that replacing pedestrian access across I-43 would also benefit Nicolet High School. At this point it is Nicolet's expectation that a replacement tunnel would be preferable to a freeway overpass, but Nicolet is open to discussions on this point. We look forward to continued coordination with WisDOT to develop a replacement for the existing tunnel.

At this time, Nicolet High School is in the early stages of its planning process to update athletic facilities in the vicinity of the I-43 Corridor. The School Board supports continued coordination with WisDOT regarding the use of the high school property in connection with the reconstruction of I-43 and Jean Nicolet Road, as the school continues its planning process.

Please contact me with any questions.

Sincerely,

Dr. Robert Kobylski
Superintendent
Nicolet High School District

# 5. COMMUNITY INVOLVEMENT AND AGENCY COORDINATION

This section discusses public involvement, agency coordination, and coordination with Native American tribes that occurred during the development of the purpose and need statement and the alternatives for the I-43 North-South Freeway Corridor Study. From the beginning, the goal of the public involvement program was to involve the public early and often and to share information as it became available.

The study team offered numerous opportunities for citizens, state and federal agencies, and local officials to be involved in the process. In addition, study team members attended 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.

## 5.1. COMMUNITY INVOLVEMENT

The Wisconsin Department of Transportation's (WisDOT) public involvement plan for the I-43 North-South corridor study seeks to incorporate public input from all stakeholders in order to ensure that the study process is transparent and that the preferred alternative is responsive to the needs of the public. To ensure that the alternatives development and environmental impact analysis process involved all stakeholders, including potentially affected individuals, businesses and communities, the study team outlined the following objectives for the public involvement plan:

- Establish a dialogue with stakeholders.
- Ensure that study communication is understandable to the public.
- Listen to and understand information that is communicated by the public.
- Identify potential issues early and proactively generate solutions.

The Federal Highway Administration's (FHWA) environmental review process[1] also ensures that environmental information is available to local officials and citizens before decisions are made and before actions are taken. WisDOT prepared a Coordination Plan for Agency and Public Involvement for the I-43 North-South Freeway Corridor Study in August 2012. The coordination plan identifies steps in the environmental review process, concurrence points and project milestones, and establishes opportunities and a schedule for input and review by the public and agencies.

A companion document in the environmental review process is the Impact Analysis Methodology that documents FHWA's structured approach to analyzing impacts of the proposed transportation study and its alternatives. Public and agency input on the impact analysis methodologies is intended to promote an efficient and streamlined process and early resolution of concerns or issues. The coordination plan and impact analysis methodology was made available to the public through posting on the study website. Key community involvement activities for the I-43 North-South Freeway Corridor Study are summarized in the following subsections.

[1] *U.S. Code (USC) 23 USC § 139.*

## 5.1.1. Summary of Community Outreach Activities

To accommodate the various stakeholders, the study team implemented several methods for receiving public feedback, including the following:

- A study email address
- A study website
- Fact sheets, project briefs and newsletters
- Pre-addressed comment forms at all public information meetings
- Neighborhood meetings to work with potentially affected communities
- Focus group for indirect and cumulative effects analysis
- Meetings with individual stakeholders
- Meetings with local governments
- Two study advisory committees
- Three public information meetings and a public hearing

### PUBLIC INFORMATION MEETINGS

To keep the public updated, WisDOT held three sets of public information meetings. Each set included two meetings held at different locations to allow greater flexibility for individuals to attend. At the public information meetings, attendees were encouraged to review materials and provide feedback. WisDOT also developed a database of residents, businesses and organizations interested in the study. Individuals and organizations in the database received post card invites to these public information meetings and regular newsletters. The study team also maintained a study website with meeting materials and produced video renderings to aid the layperson in understanding the alternatives. See **Subsection 5.1.6** for more information of the results of the meetings.

### COMMITTEE MEETINGS

To gain greater insight and promote discussions regarding certain aspects of the study, WisDOT created two advisory committees:

- The Technical Advisory Committee (TAC) engages local officials and agencies on key technical aspects of the study in order to help refine concepts (**Subsection 5.1.8**).
- The Community Advisory Committee (CAC) acts as a sounding board of stakeholder interests along the study corridor and provides feedback on alternatives, issues and concepts. CAC members included representatives from neighborhood associations, businesses, municipalities, educational institutions and residents (**Subsection 5.1.8**).

### LOCAL GOVERNMENT MEETINGS

WisDOT met with local officials throughout the course of the study to discuss specific community-related issues. WisDOT also invited local officials from the communities along the corridor to preview alternatives being shown before second and third public information meetings. See **Subsection 5.1.5** for more information about outreach with local governments.

### OTHER STAKEHOLDER MEETINGS

WisDOT met with groups and individuals to provide accurate information regarding study activities and information. WisDOT organized neighborhood meetings for groups of potentially

affected property owners. WisDOT also met with businesses owners, neighborhood groups, schools and anyone else that requested a meeting. In addition, the study team was interviewed by local newspapers, radio stations and television stations. See **Subsection 5.1.5** for more information about other stakeholder meetings.

Study staff also attempted to contact homeowners or business owners who would be potentially relocated by an alternative to discuss the potential impacts. Also, WisDOT real estate specialists were available at public information meetings to answer questions and discuss concerns.

### 5.1.2. Study Database

To maintain regular communication with stakeholders, WisDOT developed a database of property owners within 1 mile of the study corridor. Other stakeholders, including local leaders, community-based organizations, local and state elected officials and other interested parties, were also added to the database.

WisDOT uses the database to notify stakeholders of upcoming public information meetings and send updates through newsletters, fliers and postcards. The database includes email addresses whenever available and allows interested parties to select their preferred channel of communication: email, 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 email or phone.

Currently, the database contains more than 21,300 property addresses, residents, businesses, organizations, local leaders, elected officials and other interested parties.

### 5.1.3. Fact Sheets, Newsletters and Project Briefs

To keep the public informed about new developments in the study, WisDOT published fact sheets, newsletters and meeting fliers. Each kind of informational material was designed to meet a specific study purpose.

WisDOT staff distributed and mailed a fact sheet to property owners, residents and business owners along the corridor as the invitation to the first public information meeting. This fact sheet contained information on the study and discussed where to obtain more information.

The study newsletters provide regular communication between WisDOT and the public. Newsletters were sent out after each of the three public information meetings, with the third newsletter sent out before the public hearing for this draft environmental impact statement (DEIS). Copies of the first and second newsletter were made available in Spanish. The newsletters are also posted on the study website.[2] The newsletters provide a concise summary of what was presented at the public information meetings and include information about the public hearing. A final newsletter will be published that presents the preferred alternative and the next steps in the process.

### 5.1.4. Dedicated Study Email Address and Comment Forms

The study team implemented several means for the public to contact WisDOT with questions and concerns. To help disseminate the study contact information, all printed material distributed to the public included the phone numbers for lead WisDOT staff, the study email address and

[2] *http://www.dot.wisconsin.gov/projects/seregion/43/public.htm. Accessed Sept. 24, 2013.*

website. This served two purposes: to identify staff working on the study, and to provide contact information to individuals who have questions or concerns. WisDOT distributes pre-addressed comment forms at all events and public information meetings. The comment forms allow individuals to raise concerns and provide feedback with ease.

WisDOT gathers, reviews and catalogs all comment forms, letters and emails from the public. Telephone calls are also logged, summarized and cataloged.

### 5.1.5. Stakeholder Outreach

In an effort to solicit early input on the study process, WisDOT organized initial interviews with government representatives, community and special interest groups, and other key stakeholders. The purpose of these meetings helped determine concerns related to the I-43 North-South Freeway Corridor Study, lay the groundwork for a good working relationship, and establish a sound and comprehensive process for alternatives development and environmental analysis. Stakeholders with whom WisDOT met in late July 2012 and early August 2012 include the following:

- Town of Grafton
- Town of Cedarburg
- City of Cedarburg
- City of Mequon
- Ozaukee County
- Columbia St. Mary's Hospital
- Village of Grafton
- Aurora Hospital
- Milwaukee County
- Village of Fox Point
- City of Glendale
- Nicolet High School
- Bayshore Town Center

In addition to the initial study meetings and the public involvement meetings, the study team participated in neighborhood meetings and other meetings to inform interested persons about the I-43 North-South Freeway Corridor Study, including study purpose and need; development, refinement, and evaluation of alternatives; and impact evaluation. Key outreach activities included the following:

- North Shore Library staff: Feb. 26, 2013. Discussed library's plans to relocate library facility in the study corridor and potential effect of I-43 alternatives.
- Glendale Neighborhood Meeting with the Clovernook Neighborhood Association: March 7, 2013. Presented and discussed South Segment alternatives.
- Nicolet Parc Condo Board Meeting: March 25, 2013. Presented and discussed the I-43 improvements within the area of the condo property.
- Newcastle Place Condominiums: April 1, 2013. Presented and discussed the Highland Road interchange and No ccess alternatives.
- Glendale Neighborhood Meeting with both east and west side neighborhoods along south end of the Study Corridor: April 10, 2013. Presented and discussed South Segment.

- Concordia University senior administration staff: May 14, 2013. Discussed potential Highland Road interchange issues and effects of potential historic status of the campus.
- Indirect and Cumulative Effects Focus Group: July 11, 2013. Presented initial findings on indirect effects analysis and verified study areas to expert stakeholders. See **Subsection 3.22** for more information.
- Nicolet High School: May 21, 2013; July 11, 2013 and Oct. 7, 2013. Discussed pedestrian access options across I-43 and potential 4(f) impacts at playing fields.
- County Line Interchange Neighborhood Meeting: Nov. 12, 2013. Presented and discussed alternatives at the County Line Road interchange.

## LOCAL GOVERNMENT OUTREACH

Elected officials and staff 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, email updates, and periodic meetings. Two local officials meetings were held – one on Jan. 28, 2013, before the second public information meeting, and another on Aug. 15, 2013, before the third public information meeting. The purpose of these meetings was to allow local officials to preview the alternatives and information that would be presented to at the public information meetings. Additional meetings with elected officials are listed in **Table 5-1**.

**Table 5-1: Elected Officials Meetings**

| Date | Meeting | Purpose |
|---|---|---|
| Sept. 13, 2012 | Village of River Hills: Special Meeting with village Board | Study team met with village officials and state Sen. Alberta Darling to discuss noise abatement policies |
| Jan. 23, 2013 | City of Glendale: city administrator and administrative staff | Met before to discuss alternatives to be presented at public information meeting |
| Feb. 20, 2013 | Village of Bayside | Discussed alternatives at Brown Deer Road interchange and County Line interchange |
| Feb. 26, 2013 | City of Glendale: city administrator, public works, planning, and police staff | Discuss alternatives within city limits and options for reconstructing Port Washington Road |
| March 7, 2013 | Nicolet High School board meeting | Question-and-answer session on alternatives, issues and stormwater management |
| March 11, 2013 | City of Glendale Council Meeting | Provided overview of study and discussed alternatives along south end of study corridor. |
| March 13, 2013 | Town of Grafton board meeting | Provided overview of study and Ozaukee County mainline and interchange alternatives |
| March 23, 2013 | Metropolitan Milwaukee Sewerage District (MMSD) | Discussed stormwater management requirements and best practices |
| April 23, 2013 | City of Glendale Alderman John Gelhard | Discussed alternatives within city limits, including depressing freeway and using shoulder running option during peak travel times |
| April 29, 2013 | Ozaukee County, Highway and Planning/Parks staff | Discussed mainline and interchange alternatives and issues, and fish passage at creek crossings |

| Date | Meeting | Purpose |
|---|---|---|
| May 17, 2013 | City of Mequon mayor and administrative staff | Updated new mayor on study status, including Highland Road interchange, traffic impacts, and interchange funding policy |
| June 12, 2013 | Milwaukee County director of transportation | Presented information and received feedback on mainline and interchange alternatives in Milwaukee County |
| June 19, 2013 | Ozaukee County board meeting | Presented information on mainline and interchange alternatives and potential impacts |
| July 11, 2013 | Nicolet High School board Meeting | Discussed Section 4(f) issues, including potential *de minimis* option |
| July 17, 2013 | Village of River Hill village board meeting | Discussed preliminary results of noise study and potential abatement options |
| July 23, 2013 | North Shore Water Treatment Plant, plant manager | Discussed potential impacts to property and historic designation of property |
| July 25, 2013 | Ozaukee County, Planning/ Parks director | Discussed potential wetland impacts and mitigation |
| Aug. 28, 2013 | Milwaukee County Transit Service (MCTS) staff | Discussed transit-related issues related to alternatives development and future construction |
| Sept. 6, 2013 | Village of Whitefish Bay, Department of Public Works staff and village administrator | Discussed potential impacts to Craig Counsell Park |
| Jan. 15, 2014 | City of Mequon staff | Discussed neighborhood concerns regarding full interchange options at County Line Road. |
| Jan. 16, 2014 | City of Glendale staff and Nicolet High School Staff | Discussed pedestrian access option across I-43, potential 4(f) impacts at playing fields, and reconstruction options for Jean Nicolet Road. |
| March 3, 2014 | Ozaukee County highway commissioner | Discussed County C intersection and interchange design and park-and-ride lot access. |
| March 12, 2014 | Ozaukee and Milwaukee county staff and staff from villages of Bayside, Fox Point and River Hills | Discussed Diverging Diamond alternative at Brown Deer Road interchange |

## 5.1.6. Public Information Meetings

WisDOT and FHWA held three public information meetings to provide the public an opportunity to review and comment on the need for the study, the range of alternatives and anticipated impacts. WisDOT used an open house format for all the meetings. The format included different stations set up by topic with information boards and exhibits. Members of the public were encouraged to walk around to individual stations and speak with staff one-on-one.

General information and brochures about state and federal relocation assistance and benefits were available at the meetings, and WisDOT real estate staff was present to answer questions. A brochure explaining the FHWA/WisDOT process for assessing noise impacts and considering noise abatement was also available. Details of each meeting are summarized below.

## PUBLIC INFORMATION MEETING NO. 1

WisDOT held the first set of public information meetings on:

- Aug. 7, 2012: Mequon City Hall, 11333 N. Cedarburg Road in Mequon
- Aug. 8, 2012: Nicolet High School, 6701 Jean Nicolet Road in Glendale

At the first set of public information meetings, WisDOT and FHWA introduced the study purpose and goals, provided background information on the study area, including existing transportation deficiencies and environmental resources. The study team also obtained public views on the need for, and possible locations of I-43 improvements.

The meeting was announced through fact sheet invites sent to more than 21,300 individuals, including property owners, residents and business owners in a one mile radius of the corridor limits; local officials; state and federal agencies; Tribes; and other interested parties and stakeholders.

About 251 people (94 at Mequon, 157 at Nicolet) attended the meeting. Displays and other information related to the purpose and need of the study were available, as well as handouts that attendees could keep. Participants' names and addresses were collected and added to the study database.

Comments from the public information meeting identified the following key viewpoints, issues and concerns regarding possible capacity expansion and safety improvements along the I-43 corridor and/or a new interchange at Highland Road:

- **Congestion:** Most individuals commenting on the congestion were in favor of expanding I-43 to six lanes (30 written comments favoring the expansion). Most of those were in favor of expanding the entire study corridor from Silver Spring Drive to WIS 60, while some favored just expanding from Silver Spring Drive to Brown Deer Road. Some commented that the expansion should have already been done. A few (six written comments) were against widening and favored high-speed rail or transit (four written comments) or noted that the expansion would draw more traffic to an already busy area or would too greatly impact neighborhoods.
- **Highland Road interchange:** Those who favored an interchange (nine written comments) thought it would reduce traffic on Port Washington Road and Lake Shore Drive. They also viewed a new interchange as beneficial because it would give direct access to Concordia University, Milwaukee Area Technical College (MATC) Mequon campus and Columbia/St. Mary's Hospital. Those opposing an interchange (five written comments) feared increased traffic on local roads or would not favor paying increased taxes because of a local cost-share with no direct benefit.
- **Safety concerns:** Many comments (20 written comments) cited concerns about safety issues associated with the Brown Deer Road interchange ramps; the short Good Hope ramp merges; back-ups at the Mequon Road interchange northbound and southbound exits; and the area where the freeway reduces from three lanes to two lanes north of Silver Spring Drive. Other miscellaneous safety issues included poor pavement marking quality, poor pavement conditions, merging at on- and off-ramps at Mequon Road, and median barrier safety.
- **Noise:** Several comments were received about providing noise barriers if I-43 is expanded (38 written comments favoring noise barriers, three written comments opposed them). Those favoring barriers noted high levels of traffic noise currently and a concern about higher volumes of traffic generating more noise. A majority of comments supporting barriers are located in more urban areas in Milwaukee County (River Hills, Glendale – Clovernook neighborhood south of Nicolet High School, and Bayside) as well as the city of Mequon. A few people said in written comments that they do not like the look of the walls. Other verbal comments were made about

the walls blocking lake breezes and trapping heat. One question asked several times related to noise barriers was whether the roadway could be lowered to help reduce noise levels. Other noise-related comments focused on choosing the quietest type of pavement.

- **Drainage:** Drainage concerns were brought up at a few locations – Nicolet High School, Indian Creek and Ulao Creek crossings. Commenters noted that these areas experience flooding, especially during severe rainstorms.
- **Other comments:**
  - Lighting at Brown Deer Road and along the corridor – do not over-light.
  - Add reversible lanes in the center of the freeway to address a.m. and p.m. peak travel times, similar to lanes in Chicago.
  - Raise the freeway system in the area from Bender Road to Green Tree Road and connect the local street system again. This would not put so much strain on both Jean Nicolet Drive and North Port Washington Road.
  - Add attractive landscaping.
  - Be cautious of the impacts to neighborhoods; maintain Port Washington Road and Jean Nicolet Drive between Silver Spring Drive and Green Tree Road.
  - Improve bicycle and pedestrian accommodations at all interchanges, underpasses, overpasses, especially where there are park-and-ride lots.

*HOW WISDOT ADDRESSED PUBLIC COMMENTS*

Alternatives were developed and evaluated in terms of their ability to meet key project purpose and need factors, relative cost, and magnitude of environmental impacts. Alternatives were also adjusted based on comments from the public and agencies. Following the first public information meeting, WisDOT developed an initial range of alternatives that was responsive to the public comments received. For example, as noted above, a clear majority of public comments cited congestion as a serious issue. Several of the mainline alternatives featured additional capacity. Many people also commented on safety concerns at certain locations, most notably at the Good Hope Road and Brown Deer Road interchanges. The resulting alternatives were designed to reduce crashes. The study team also heard concerns about potential impacts, including noise and stormwater, as well as impacts to neighborhoods. As a result, the study team continued to meet and initiated meetings with local communities to identify those potential impacts and to develop potential minimization and mitigation measures.

## PUBLIC INFORMATION MEETING NO. 2

WisDOT and FHWA held a second set of public information meetings where alternatives were presented to the public. Based on community feedback from the first set of public information meetings, WisDOT generated a range of preliminary alternatives that responded to the needs and issues identified by the public. WisDOT also created a display that summarized comments received at the first public information meeting.

About 280 people (147 at Nicolet, 133 at Christ Church) attended the meetings. Their names and addresses were entered into the study database. The meetings were held on the following dates at these locations:

- Jan. 30, 2013: Nicolet High School, 6701 Jean Nicolet Drive in Glendale
- Jan. 31, 2013: Christ Church, 13460 N. Port Washington Road in Mequon

The comments received are summarized below.

*I-43 MAINLINE ALTERNATIVES*

The preliminary range of alternatives for the I-43 mainline included No-Build, Spot Improvements, transportation systems management (TSM) and transportation demand management (TDM), Mainline Improvement without Additional Capacity (Modernization – 4 Lanes), and Mainline Improvement with Additional Capacity (Modernization – 6 Lanes).

In general, most comments favored reconstruction with additional lanes. Below are the main issues and concerns associated with each mainline alternative.

- No comments were received for the No-Build Alternative.
- One person wrote in favor of the Spot Improvement alternative between Bender Road and Green Tree Road, advocating for a better median barrier than the existing beam guard.
- One person wrote in favor of the TSM/TDM only alternative, saying that the public funds should support public transit instead of highway expansion.
- Three comments supported the Mainline Improvement without Additional Capacity alternative based on cost and because they felt that congestion would not worsen.
- Eighteen comments favored the Mainline Improvement with Additional Capacity. Many of the comments supporting this alternative said that the corridor was already congested and that the study was overdue. At the same time, several people said that they wanted to avoid impacts to Port Washington Road, Jean Nicolet Road, and Nicolet High School. One person favored expansion from Bender Road to Mequon Road, while several people favored three lanes along the entire study limits.
- Because of the constrained, urban nature of the southern end of the corridor, additional alternatives were presented for the I-43 mainline between Bender and Green Tree roads. In general, most comments favored reconstruction with additional lanes, and more people favored shifting the freeway west or east, rather than expanding along the centerline. Numerous people commented against raising the freeway over the railroad bridge. More people were in favor of the depressed alternative than against. Those in favor thought that a depressed freeway would be less noisy; those against were concerned about drainage and potential changes to access to adjacent neighborhoods. Written comments are summarized below:
  - Spot Improvement (one in favor)
  - Mainline Improvement without Additional Lanes and I-43 Centered (two in favor)
  - Mainline Improvement with Additional Lanes
    - I-43 Centered along Existing Centerline (one in favor)
    - I-43 Shifted East (six in favor)
    - I-43 Shifted West (seven in favor)
    - I-43 Raised Over Railroad (seven against)
    - I-43 Raised (one in favor, 10 against)
    - I-43 Depressed (nine in favor, four against)

*INTERCHANGE ALTERNATIVES*

While comments favored the traditional diamond interchange alternative, they were also open to nontraditional interchanges, such as the diverging diamond and single-point. In many locations, there was no clear preference. Twenty-six people favored building a new interchange at Highland Road versus nine people who preferred maintaining no access. Those opposed to an interchange at Highland Road cited increased taxes and increased traffic.

*OTHER COMMENTS*

- More transit options should be available.
- Consider high-occupancy vehicle (HOV) lanes because congestion occurs only during peak travel hours.
- Add landscaping along the freeway to improve aesthetics.
- Address drainage.
- Do not include roundabouts at ramp termini.
- Build a roadbed that will last for 50 years.
- Add a third lane in the existing median with wider emergency lanes on the outside.

*HOW WISDOT ADDRESSED PUBLIC COMMENTS*

Following the second information meeting, WisDOT continued to make adjustments to the range of alternatives based on public comment. For example, some alternatives, including the I-43 Mainline Improvement without Additional Lanes, I-43 Centered, I-43 Raised, and I-43 Depressed, were eliminated because, although they did meet purpose and need, they had more impacts than other alternatives that also met purpose and need and because public sentiment was generally not supportive. Additional meetings were held to address local concerns.

## PUBLIC INFORMATION MEETING NO. 3

WisDOT and FHWA held a third set of public information meetings to present alternatives screened and refined from the second public information meeting. WisDOT also presented information from the noise analysis, drainage studies, historic structures surveys and potential impacts to public parks. About 322 (197 at St. Eugene Parish; 125 at Christ Church), people attended the meetings. Their names and addresses were entered into the study database. The meetings were held on the following dates:

- Aug. 20, 2013: St. Eugene Parish, 7600 N. Port Washington Road in Fox Point
- Aug. 22, 2013: Christ Church, 13460 N. Port Washington Road in Mequon

*I-43 MAINLINE ALTERNATIVES*

The third public information meeting presented two mainline alternatives for the South Segment: Modernization – 6 Lanes (Shifted East) and Modernization – 6 Lanes (Shifted West). TSM and TDM options were also presented as elements that would be incorporated into the Modernization – 6 Lanes alternatives. The public generally preferred the Modernization – 6 Lanes (Shifted East) alternative to the Modernization – 6 Lanes (Shifted West) alternative, largely because it avoided impacts to the Clovernook subdivision.

Regarding the reconstruction of Port Washington Road from two to four lanes and the use of cul de sacs, people who commented were slightly more likely to prefer the four lane alternative with cul de sacs to the alternative that would not alter Port Washington Road.

*INTERCHANGE ALTERNATIVES*

- **Good Hope Road interchange:** Slightly more people favored a tight diamond interchange over the tight diamond with mainline shifted west alternative. Several people cited the ability to preserve the existing structures as reason for favoring the ight diamond.
- **Brown Deer Road interchange:** Written and verbal comments were split regarding the diamond and diverging diamond alternative options. In general, those favoring the diamond

interchange felt that it would be easier to navigate. Staff noted that there were many people support a diverging diamond interchange once they saw the driving simulation.

- **County Line Road interchange:** Six different alternatives were presented for this interchange: no access, partial diamond, split diamond, split diamond with Katherine Drive grade separation, full diamond at Port Washington Road, and full diamond at Port Washington Road with Katherine Drive grade separation. Access and traffic circulation were the primary concerns voiced. For instance, a number of people stated that keeping access from Katherine Drive and Zedler Lane to Port Washington Road is very important. The full diamond at Port Washington Road with Katherine Drive grade separated received the most positive comments, followed by the split diamond.
- **Mequon Road interchange:** More people commented in favor of the tight diamond versus the partial offset diamond.
- **Highland Road interchange:** People who commented overwhelmingly supported an interchange at Highland Road; however, there were many questions about local cost share. Several people also noted that having an interchange at Highland Road would relieve pressure at the Mequon Road Interchange.
- **Pioneer Road (County C):** Only one alternative was shown – a diamond interchange. There were several comments against roundabouts at the ramp termini.

*OTHER ISSUES*

- **Noise:** Numerous comments were received asking that noise barriers be installed in certain locations along the freeway, including River Hills, near County Line Road, and on the west side of I-43 between Brown Deer Road and County Line Road. A few people commented that they thought noise barriers were ugly and should be limited.
- **Cost:** Several people commented that they thought that the build alternatives were too costly and that the congestion on I-43 did not warrant the cost of expansion.

*HOW WISDOT ADDRESSED PUBLIC COMMENTS*

The third set of public information meetings was vital to the study team in refining the alternatives for the County Line Road Interchange, particularly in regards to local access. The meetings also assisted the study team in working toward a preferred alternative.

## 5.1.7. Notice of Community Outreach Activities

To ensure that all stakeholders were aware of the public information meetings and events, WisDOT provided meeting notices using the following outlets:

- Posted dates of all workshops and public information meetings on the study website.
- Printed invitations in the study fact sheet and postcards, which were sent to the study database.
- Placed advertisements in local and community newspapers.
- Sent media advisories to local media outlets.

### ADVERTISING

For the public information meetings, WisDOT placed meeting notices in newspapers and with local television and radio stations. Advertisements were placed one to two weeks before each public information meeting.

*NEWSPAPERS*

- CNI's village of Bayside
- CNI's village of Fox Point
- CNI's city of Glendale
- CNI's village of Whitefish Bay
- CNI's city of Cedarburg
- CNI's city of Mequon
- *Ozaukee Press*
- *The Daily Reporter*
- *Small Business Times*
- *The Business Journal*

*TELEVISION MEDIA*

- WTMJ Channel 4
- WITI Fox 6
- WDJT Channel 58
- WISN Channel 12
- WCGV Channel 24

*RADIO MEDIA*

- WISN AM 1130
- WTMJ AM 620
- WUWM FM 88.7
- WJMR FM 98.3

### STUDY WEBSITE

The WisDOT website includes the I-43 North-South Freeway Corridor Study as part of the "Plans and Projects" page. The website provides users with information on major freeway studies and projects in the region. Study information available on the website includes the following:

- General information regarding the study, including a study overview, map of the study limits, and proposed study schedule
- Electronic versions of the study newsletters
- Public information meeting announcements
- Exhibits and handouts from the public information meetings
- Sections of the DEIS, the coordination plan, and the impact analysis methodology
- Contact information

## 5.1.8. Committees

WisDOT met with the public through outreach meetings and public information meetings. However, to garner more in-depth input on issues affecting the public and to assist the study team in sharing information with their study communities, WisDOT created two committees: the TAC and the CAC.

### TECHNICAL ADVISORY COMMITTEE

The TAC is made up of public agency staff representing their communities within the study area. **Table 5-2** lists TAC participants, including their names, titles and affiliations.

**Table 5-2: Corridor Study Technical Advisory Committee Members**

| Name | Title | Representing |
|---|---|---|
| Adam Monticelli | Director of public works | Town of Cedarburg |
| Alex Henderson | Deputy village manager; director of community and utility services | Village of Bayside |
| Amanda Schaefer | Community services manager/clerk | Town of Grafton |
| Andrew Struck | Director of planning and parks | Ozaukee County |
| Aziz Aleiow | Managing engineer | Milwaukee County |
| Bob Dreblow | Highway commissioner | Ozaukee County |
| Brian Dranzik | Department of Transportation | Milwaukee County |
| Brian Klippel | Facilities director | Bayshore Town Center |
| Brian Reiels | Director of facility services | Nicolet High School |
| Dan Naze | Director of public works, village engineer | Village of Whitefish Bay |
| Dave Eastman | Director of city services | City of Glendale |
| David Moss | General manager | Bayshore Town Center |
| David Murphy | Department of public works | Village of Grafton |
| Debra Jensen | Planning services supervisor | MMSD |
| Eric Kiefer | Plant manager | North Shore Water Commission |
| Jason Wittek | Transit superintendent | Ozaukee County |
| Jeff Sponcia | Transit planner | MCTS |
| Kristina Betzold | Environmental analysis and review specialist | Wisconsin Department of Natural Resources (WDNR) |
| Mark McComb | Transit planner | MCTS |
| Matt Clementi | Town engineer | Town of Grafton |
| Mustafa Emir | Village engineer | Village of River Hills |
| Nathan Check | Director of public works/city engineer | City of Mequon |
| RJ Rieves | Project engineer | Bayshore Town Center |
| Christopher Hiebert | Chief transportation engineer | SEWRPC |
| Scott Brandmeier | Director of public works, village engineer | Fox Point |
| Sherry Garrett | Director of emergency services | Columbia St. Mary's |
| Tom Winter | Director of schedule and planning | MCTS |

The TAC contributes to the study in the following ways:

- Provide input on alternatives development, refinement, and selection
- Act as liaisons to their respective communities

The following is a summary of the major items discussed and comments received at each meeting.

*TECHNICAL ADVISORY COMMITTEE MEETING NO. 1*
*Dec. 13, 2012, 1:30-3:30 p.m. at Mequon City Hall*

WisDOT invited TAC members to evaluate the preliminary range of alternatives for the corridor. WisDOT used the ideas, comments and mark-ups gathered during this meeting to refine the alternatives. Committee members were asked to share the information presented during meetings with the communities and organizations they represent, as well as to pass along any comments they gather back to WisDOT. Representatives from the study staff offered to provide materials, answer questions, and meet with any additional individual groups that committee members believed would benefit from such outreach efforts. Some of the key comments and concerns received included:

- How and whether transit options would be considered
- Stormwater impacts
- Barrier treatment along the freeway median
- How the traffic forecasts were developed
- Concerns about how alternatives would impact the North Shore Water Treatment plant

*TECHNICAL ADVISORY COMMITTEE MEETING NO. 2*
*March 28, 2013, 1:30-3:30 p.m. at Mequon City Hall*

The purpose of the second TAC meeting was to gather input from committee members as the study staff narrowed the range of alternatives. Committee members were invited to evaluate and provide feedback on the screening of alternatives presented at the second public information meeting, as well as to share any input they've gathered from the communities and organizations they represent. Attendees were reminded that the alternatives are still conceptual and would continue to evolve.

The study team also gave a summary of the progress made to date, including the approval of the study purpose and need statement and the results of the second set of public information meetings. Some of the primary concerns and comments expressed by committee members included the following:

- Committee members were interested in depressing the freeway south of the railroad, as long as it did not cause drainage issues.
- One committee member was concerned whether a diamond interchange at Good Hope Road could accommodate traffic volumes.
- One committee member expressed interest in being able to salvage the recently reconstructed overpass bridge at the Brown Deer interchange.
- A few committee members preferred the partial interchange at County Line Road to a full interchange.
- Several committee members noted current traffic operation problems at the Mequon Road interchange and the issues associated with Port Washington Road being located so close to the freeway. There was also a question about the possibility of a single point interchange at this location.
- The committee asked questions about the cost-share requirements associated with a new interchange at Highland Road.
- One committee member noted that the park-and-ride lot at County C is often at capacity. There was also interest in what type of stop control would be used at the end of ramp intersections at the County C interchange.

- One committee member preferred high tension cable guards in the median in Ozaukee County. Also noted was the potential visual impact of a concrete barrier median.

*TECHNICAL ADVISORY COMMITTEE MEETING NO. 3*
*July 31, 2013, 1:30 to 3:30 p.m. at Mequon City Hall*

The purpose of the third TAC was to present a refined range of alternatives to the committee members ahead of the third public information meeting and to receive input. The study team provided study updates, including the status on the Interchange Justification Report for Highland Road, results of the traffic analysis, the results of the noise analysis, and the ongoing alternative screening process. The study team also noted that roundabouts were being evaluated at each interchange and that conceptual costs had been developed for each mainline and interchange alternative. Some of the primary concerns and comments received include the following:

- Several committee members were interested in where noise walls were considered feasible and reasonable.
- There were a couple of questions regarding how access to Nicolet High School's fields would be replaced and the associated costs.
- There were multiple questions regarding the diverging diamond interchange alternative at Brown Deer Road. In general, the committee members were not for or against this alternative, but rather, were seeking additional information about the potential advantages and disadvantages.
- There were a couple of questions regarding the cost associated with building an interchange at Highland Road and what the local cost-share policy was.

## COMMUNITY ADVISORY COMMITTEE

WisDOT established a CAC to assist the study team in identifying and understanding study purpose and need issues, developing and evaluating alternatives, evaluating impacts, and sharing study information with other community interests. The committee also assisted the study team by sharing study information with their respective communities. CAC members are listed in **Table 5-3**.

**Table 5-3: Corridor Study Community Advisory Committee Members**

| Name | Title | Representing |
|---|---|---|
| Al Hospel | Property owner | Self |
| Al Maro | Property management | Barrett Office Park |
| Andrew Petzold | President and CEO | Concord Development Co. |
| Andy Pederson | Village administrator | Village of Bayside |
| Ari Friedman | Manager of community properties | Milwaukee Jewish Federation |
| Bob Wolf | Town of Grafton plan commissioner | Town of Grafton |
| Brian Loomans | Director of plant operations | Newcastle Place |
| Daniel Hughes | Captain | Milwaukee County Sheriff Dept. |
| Robert C. Whitaker | Fire chief | North Shore Fire/Rescue |
| Chris Lear | Administrator | Village of River Hills |
| Darrell Hofland | Village administrator | Village of Grafton |

| | | |
|---|---|---|
| Dennis Buettner | Planning commission member | City of Glendale |
| Jack Heisler | Plan commissioner | Town of Grafton |
| Jeff Taylor | Captain | Ozaukee County Sheriff Dept |
| Jim Culotta | Town administrator | Town of Cedarburg |
| Joe Lak | Mequon | River Oaks Estate |
| Julie Bissonnette | Executive director | Newcastle Place |
| Karl Stave | Facilities planning | Milwaukee County |
| Kathleen Hohl | Communications director | Milwaukee Area Technical College – Mequon campus |
| Kerry Williams | Operations manager | Milwaukee Area Technical College – Mequon campus |
| Lee Szymborski | City administrator | City of Mequon |
| Lucia Francis | Vice president | Milwaukee Area Technical College – Mequon campus |
| Lynne Broydrick | President | Lynne Broydrick Group |
| Mark Maletzke | CEO | Carlin Sales |
| Pat Marchese | Board supervisor | Ozaukee County |
| Paul Gordan | Resident | Village of River Hills |
| Randy LeRoy | Director of operations | St. Mary's Hospital |
| Rick Bauzenberger | Board supervisor | Ozaukee County |
| Robert Boucher | Committee on the environment | Village of River Hills |
| Mike McCabe | Resident | Clovernook Advancement Association |
| Scott Rudie | Senior director of communications | Cardinal Stritch University |
| Jim Sadjdowitz | Sergeant | Milwaukee County Sheriff's Office |
| Susan Muggli | Building board | Village of River Hills |
| Melissa Bohse | Village manager | Village of Fox Point |
| Ed Erickson | Operations director | Milwaukee Area Technical College |
| Al Prochnow | COO | Concordia University |

The following is a summary of the major items discussed and comments received at each CAC meeting.

*COMMUNITY ADVISORY COMMITTEE MEETING NO. 1*
*Dec.13, 2012, 5:30 to 7:30 p.m. at Mequon City Hall*

WisDOT invited CAC members to evaluate the preliminary range of alternatives for the study corridor. Committee members were asked to share the information presented with the communities and organizations they represent, as well as to pass along any comments they gathered back to WisDOT. WisDOT offered to provide materials or meet with any additional individuals or groups that committee members thought would benefit from such outreach. Below are some of the primary concerns and comments that were expressed:

- Noise is a concern along the entire freeway in Milwaukee County.
- There were many questions about how WisDOT and FHWA would decide whether an interchange is warranted at Highland Road and, if warranted, how it would be funded.
- WisDOT needs to look closely at stormwater management.
- Minimize all impacts to adjacent neighborhoods.
- The partial interchange at County Line works for the community and the people who use it.
- There was interest in what the median would look like in Ozaukee County, i.e., would it stay a wide, grass median or would there be some type of barrier treatment.

*COMMUNITY ADVISORY COMMITTEE MEETING NO. 2*
*March 28, 2013, 4 to 6 p.m. at Mequon City Hall*

The purpose of the second CAC meeting was to gather input from committee members as the study staff narrowed the range of alternatives initially presented at the second public information meeting. Committee members were invited to evaluate and provide feedback on the screening of alternatives, as well as to share any input they've gathered from the communities and organizations they represent. Attendees were reminded that the alternatives were still conceptual and would continue to evolve. Study staff reviewed the recently approved purpose and need statement and the results from the second round of public information meetings in January. Primary concerns and comments received included the following:

- Regarding some of the South Segment I-43 mainline alternatives, a committee member noted that the Clovernook Neighborhood would prefer to maintain current levels of access. Residents in the neighborhood use Jean Nicolet Road to get to Bay Shore Town Center. The elimination of Jean Nicolet would change their route significantly, which residents oppose.
- There were concerns that whatever alternative is chosen at the Good Hope Road interchange accommodate traffic volumes, including trucks, and that it would be preferable to reuse the recently reconstructed overpass bridge.
- Regarding Brown Deer Road: Feedback included concerns about potential confusion in navigating a diverging diamond interchange. A committee member noted that the single point interchange could be more challenging to navigate than the diverging diamond. Drivers within a single point interchange have to rely on lines on the roadway and our climate could make it challenging as lines could easily become hidden by snow.
- At County Line Road, public feedback has indicated that the partial diamond would work well for the location and that a full diamond is not needed due to the proximity of Brown Deer Road.
- A committee member commented that having an interchange at Highland Road would take some pressure off of Mequon Road and inquired how much traffic might be diverted to a new Highland Road interchange.
- A committee member expressed concern about the fact the neither the Tight Diamond nor the Single Point interchange alternative at Mequon Road would relieve the current back-ups: The Single Point interchange creates challenges as it interacts with Port Washington Road; the Diamond presents issues in terms of storage and maneuvering. Study staff indicated that other options are being explored, such as moving the southbound exit ramp under I-43.
- Committee members were interested in hearing what people said at the most recent public information meeting about a potential interchange at Highland Road.
- Regarding County C, a committee member commented on the slow growth in the area, noting that the location is seen as having business potential but wetlands are an issue for development.

*COMMUNITY ADVISORY COMMITTEE MEETING NO. 3*
*July 31, 2013, 4 to 6 p.m. at Mequon City Hall*

The purpose of the third CAC meeting was to gather input from committee members as the study staff narrowed the range of alternatives ahead of the third public information meeting. Committee members were invited to evaluate and provide feedback on the screening of alternatives, as well as to share any input they've gathered from the communities and organizations they represent. The study team reviewed the status of a interchange justification report being prepared for Highland Road, the traffic analysis, the ongoing alternative screening process, and the results of the noise analysis. Below is a summary of the primary concerns and comments received at this meeting:

- There were questions about who would pay for the pedestrian access between Nicolet's playing fields.
- There was support for the slightly depressed mainline alternative in the southern segment.
- There were multiple concerns about the proposed alternatives at County Line Road. Committee members mentioned that access to southbound I-43 is very important to the North Shore Fire Department. There were also questions of whether roundabouts would be included as part of the alternatives.
- There were a couple of comments about how much a new interchange at Highland Road would cost and what the local cost share would be.

## 5.2. AGENCY COORDINATION

WisDOT sent an environmental review project initiation letter to FHWA on Jan. 17, 2012. FHWA published a notice of intent to prepare an environmental impact statement in the Federal Register on April 6, 2012.

Coordination with state and federal review agencies and Native American tribes began in July 2012 and is continuing through development and refinement of alternatives and the preparation of the DEIS. **Table 5-4** summarizes key agency coordination activities. **Appendix C** contains all agency correspondence cited in this section.

Coordination with agencies and others who may be interested in the I-43 North-South Freeway Corridor Study is being done according to FHWA's environmental coordination procedures as codified in 23 U.S.C. 139. FHWA's coordination procedures provide an opportunity for agencies and local officials to participate in the environmental review process by providing input on information being prepared for the environmental document and by sharing views or concerns on the need for proposed improvements, alternatives being considered, potential impacts, mitigation, and other environmental aspects. The coordination process includes the following key activities:

- Lead agencies (FHWA and WisDOT) invited other agencies, local officials and other interests to become cooperating or participating agencies in the environmental review process. Cooperating agencies have jurisdiction by law or special expertise with respect to the study's environmental impacts; participating agencies have an interest in the study.
- WisDOT prepared a coordination plan to communicate how and when the lead agencies would obtain agency participation in the environmental review process. The coordination plan has three concurrence points that cooperating and participating agencies were invited to participate in: Study purpose and need, range of alternatives being considered, and selection of the preferred alternative.

- WisDOT prepared an impact analysis methodology to communicate how the impacts of the proposed transportation study and its alternatives will be evaluated.

## 5.2.1. Cooperating and Participating Agencies

In summer 2012, WisDOT and FHWA invited agencies to become cooperating or participating agencies. Agency responses are included in **Appendix C**. The study cooperating agencies are the U.S. Army Corps of Engineers (USACE) and the Wisconsin Department of Natural Resources (WDNR). A number of agencies and local municipalities agreed to be participating agencies. **Table 5-4** summarizes agencies, tribes and local governments contacted and status of responses.

**Table 5-4: Summary of Cooperating and Participating Agency Coordination**

| Agency | Study Role/Comments |
|---|---|
| **Federal agencies** | |
| USACE | • Invited as cooperating agency (July 2, 2012)<br>• **Accepted (July 25, 202)** |
| U.S. Environmental Protection Agency (EPA) | • Invited as participating agency (July 2, 2012)<br>• **Accepted (July 19, 2012)** |
| U.S. Fish & Wildlife Service | • Invited as participating agency (July 2, 2012)<br>• **Declined (July 26, 2012)** |
| **State agencies** | |
| WDNR | • Invited as cooperating agency (June 28, 2012)<br>• **Accepted (July 23, 2012)** |
| Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) | • Invited as participating agency (June 28, 2012)<br>• **Accepted (July 23, 2012)** |
| State Historic Preservation Officer (SHPO) | • Invited as participating agency (June 28, 2012)<br>• **Accepted (Aug. 7, 2013)** |
| **Native American tribes** | |
| U.S. Department of Interior, Bureau of Indian Affairs | • Invited as participating agency (July 2, 2012)<br>• Address/phone/email updated (July 10, 2012) |
| Bad River Band of Lake Superior Chippewa Indians of Wisconsin | Invited as participating agency (July 2, 2012) |
| Forest County Potawatomi Community of Wisconsin | Invited as participating agency (July 2, 2012) |
| Ho-Chunk Nation | Invited as participating agency (July 2, 2012) |
| Lac Courte Oreilles Band of Lake Superior Chippewa | • Invited as participating agency (July 2, 2012)<br>• **Deferred to Menomonee Nation Aug. 27, 2012 (est).** |
| Lac du Flambeau Band of Lake Superior Chippewa | Invited as participating agency (July 2, 2012) |
| Menominee Nation | Invited as participating agency (July 2, 2012) |

| Agency | Study Role/Comments |
|---|---|
| Stockbridge-Munsee Band of Mohican Indians | Invited as participating agency (July 2, 2012) |
| Oneida Nation of Wisconsin | Invited as participating agency (July 2, 2012) |
| Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin | Invited as participating agency (July 2, 2012) |
| St. Croix Chippewa Community | Invited as participating agency (July 2, 2012) |
| Sokaogon Chippewa Community (Mole Lake Band of Lake Superior Chippewa Indians) | Invited as participating agency (July 2, 2012) |
| **Local officials** | |
| Milwaukee County | Invited as participating agency (June 28, 2012) |
| Ozaukee County | • Invited as participating agency (June 28, 2012)<br>• **Accepted (July 24, 2012)** |
| Southeastern Wisconsin Regional Planning Commission (SEWRPC) | • Invited as participating agency (June 28, 2012)<br>• **Accepted (July 3, 2012)** |
| City of Glendale | • Invited as participating agency (June 28, 2012)<br>• **Accepted (July 2, 2012)** |
| Village of Whitefish Bay | Invited as participating agency (June 28, 2012) |
| Village of Fox Point | • Invited as participating agency (June 28, 2012)<br>• **Accepted (July 25, 2012)** |
| Village of River Hills | Invited as participating agency (June 28, 2012) |
| Village of Bayside | • Invited as participating agency (June 28, 2012)<br>• **Accepted (July 3, 2012)** |
| City of Mequon | • Invited as participating agency (June 28, 2012)<br>• **Accepted (Aug. 13, 2012)** |
| Village of Grafton | • Invited as participating agency (June 28, 2012)<br>• **Accepted (July 2, 2012)** |
| Town of Grafton | Invited as participating agency (June 28, 2012) |

WisDOT and FHWA developed a coordination plan and impact analysis methodology to share with cooperating and participating agencies for review and comment. The coordination plan outlines the study process and review milestone schedule. The impact analysis methodology identifies the process to determine resource impact for issues, including socioeconomics, natural resources, air quality, noise, cultural resources and hazardous materials. Both the coordination plan and the impact analysis methodology are updated to reflect changes in the study and redistributed to the agencies. WisDOT and FHWA engaged several local, state and federal agencies in this study, which are discussed in detail in the following sections.

## AGENCY MEETINGS SUMMARY

23 U.S.C. 139 requires early coordination with a broad range of local, state, tribal and federal agencies. Coordination with these review agencies began in summer 2012 with an agency

scoping meeting, and continued through alternatives development and preparation of the DEIS. **Table 5-5** summarizes key coordination activities.

**Table 5-5: Corridor Study Agency Meetings Summary**

| Date | Agency | Discussion Items |
|---|---|---|
| Aug. 8, 2012 | Cooperating and participating Agency Scoping Meeting | Initial meeting with participating and cooperating agencies to introduce the study, discuss purpose and need elements, potential alternatives, environmental issues, agency coordination plan and impact assessment methodology |
| Oct. 29, 2012 | WDNR | Initial meeting with WDNR liaison to present study overview and likely issues to consider for alternatives development and in the environmental impact statement. |
| Jan. 30, 2013 | Cooperating and participating Agency Meeting No. 2 | Presented and discussed preliminary range of alternatives |
| Jan.30, 2013 | WDNR | Discussed threatened and endangered species in the study area and mitigation measures to avoid and minimize effects |
| March 4, 2013 | WDNR | Discussed indirect and cumulative effects analysis and potential effect on natural resources |
| July 31, 2013 | WDNR | Provided update on anticipated wetland impacts and anticipated mitigation. |
| Aug.19, 2013 | USACE/WDNR | Provided update on anticipated wetland impacts and anticipated mitigation. |
| Aug. 19, 2013 | WDNR | Discussed status of water quality updates on development of Total Daily Maximum Loads (TMDLs) for Milwaukee River Watershed |
| Dec. 18, 2013 | Cooperating and participating Agency Meeting No. 3 | Presented and discussed update on alternatives screened for full evaluation in the environmental impact statement. |
| Jan. 30, 2014 | Cooperating and participating Agency meeting No. 4 | Discussed intent to combine the environmental impact statement (FEIS) and Record of Decision (ROD); process to request concurrence on preferred alternative in the DEIS. |
| Feb. 27, 2014 | WDNR | Presented study overview and summary of alternatives, issues, impacts and schedule |

WisDOT completed the Section 106 consultation process with the State Historic Preservation Officer (SHPO) to address potential effects on historic or potentially historic properties in the study corridor and received a Determination of No Adverse Effect on Dec. 13, 2013.

## AGENCY INPUT ON PURPOSE AND NEED STATEMENT

On Nov. 20, 2012, WisDOT contacted cooperating and participating agencies to obtain input and concurrence on study purpose and need, per the coordination plan. The following comments were received:

- The USACE concurred regarding purpose and need on Dec. 20, 2012 (**Appendix C**). The USACE suggested that the main headings in the need section be reorganized to directly correlate to each of the seven purpose bullet points.

- EPA did not provide any comments and concurred with the purpose and need statement.
- SEWRPC suggested edits to the text to clarify the section on the regional planning process.
- The Wisconsin Historical Society (SHPO) declined to comment until the Section 106 materials were submitted.

## AGENCY INPUT ON RANGE OF ALTERNATIVES CONSIDERED

On July 15, 2013, WisDOT contacted cooperating and participating agencies to obtain input and concurrence on the range of alternatives considered, per the coordination plan. The discussion of the range of alternatives considered became **Section 2** of this DEIS. The following comments were received:

- The USACE asked the study team to consider and annotate whether alternatives would require stormwater features. The USACE also asked that the study team clarify the wetland impacts associated with the potential Highland Road interchange.
- SEWRPC recommended edits to clarify the section on the recommendations from the 2035 regional transportation plan, to expand and clarify text on transit funding, and to correct exhibits.
- The city of Mequon suggested changes to the discussion on local cost-share requirements for a potential new interchange at Highland Road.
- EPA replied that it had no comments on this section.
- The WDNR had no additional comments.

## AGENCY INPUT ON PREFERRED ALTERNATIVE

On Feb. 3, 2014, WisDOT contacted cooperating and participating agencies to obtain input and request concurrence on the preferred alternatives. WisDOT updated the Agency Coordination Plan to reflect FHWA's and WisDOT's intent to combine the final environmental impact statement (FEIS) and Record of Decision (ROD), pending comments received during the public comment period. In order to give the agencies the opportunity to review the environmental evaluation of all reasonable alternatives retained for full evaluation, including the preferred alternative, WisDOT sent the agencies an administrative DEIS for review, prior to the DEIS being made available to the public. The following comments were received:

- The city of Glendale continues to support the I-43 mainline Modernization – 6 Lanes (Shifted East) alternative for the South Segment of the freeway mainline.
- EPA concurred with the following alternatives: north and south mainline segments and the Good Hope Road, Brown Deer Road, County Line Road, Mequon Road, and County C IInterchange alternatives. For the Highland Road interchange, EPA strongly recommends that FHWA and WisDOT pursue the No Access alternative instead of the Tight Diamond if there are no adverse traffic impacts associated with the No Access alternative and also depending upon local cost-share participation.
- DATCP concurred with the preferred alternatives based on the minimal impacts to agricultural lands.
- WDNR gave preliminary concurrence contingent upon ongoing coordination efforts to minimize wetland impacts.
- USACE concurred with the following alternatives: north and south mainline segments and the Good Hope Road, Brown Deer Road, County Line Road, Mequon Road, and County C Interchange alternatives. For the Highland Road interchange, USACE did not concur with the preferred alternative because the Tight Diamond interchange is not the least environmentally damaging alternative when compared to the No Access alternative.

## 5.2.2. Coordination with Native American Tribes

In addition to inviting Native American tribal chairs to be participating agencies in the I-43 North-South Freeway Corridor Study environmental review process, the study team contacted the Tribal Historic Preservation Officers (THPOs) on July 16, 2012, to inform them about the corridor study and to provide an opportunity for input on any cultural resources that may be located in the study area. No responses were received. WisDOT also invited tribes to become consulting parties under Section 106 of the National Historic Preservation Act (NHPA) and asked whether the tribes wanted to receive additional information about the corridor study. The Forest County Potawatomi THPO responded on July 31, 2012, and the Ho Chunk Nation responded on April 23, 2013, requesting participation in the Section 106 consultation process. **Table 5-6** summarizes outreach to tribes.

**Table 5-6: Corridor Study Tribal Outreach Activities**

| Date | Activity | Discussion Items |
|---|---|---|
| Oct. 10, 2012 | THPOs/WisDOT Meeting | Meeting with THPOs to introduce the study, discuss purpose and need, range of alternatives, environmental issues, archaeological and historical properties (Section 106), schedule and agency coordination |
| April 12, 2013 | THPOs/WisDOT Meeting | Reviewed study status and area of potential effect; discussed additional notification procedures |
| April 23, 2013 | Email correspondence to THPOs | WisDOT contacted the tribes via email. Copies of past correspondence were provided along with notes from the April 12, 2013, meeting. Ho Chunk Nation and Forest County Potawatomi indicated that indicated it would like a copy of the archaeological report. |
| Oct. 2, 2013 | Email correspondence to Ho Chunk Nation and Forest County Potawatomi THPOs | WisDOT emailed copies of the archeological report to the Ho Chunk Nation and Forest County Potawatomi as requested. |

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# 7. LIST OF ENVIRONMENTAL IMPACT STATEMENT RECIPIENTS

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| **Federal agencies** | U.S. Department of Transportation |
| | U.S. Environmental Protection Agency |
| | U.S. Army Corps of Engineers |
| | U.S. Department of Interior – Bureau of Indian Affairs |
| | U.S. Department of Interior – Fish and Wildlife Service |
| | U.S. Department of Interior - Office of Environmental Policy and Compliance |
| | U.S. Department of Commerce |
| | U.S. Department. of Agriculture |
| | National Center for Environmental Health & Injury Control |
| | U.S. Housing and Urban Development |
| **State agencies** | Wisconsin Department of Transportation |
| | Department of Administration |
| | Department Natural Resources |
| | Department of Agriculture, Trade, and Consumer Protection |
| | State Historical Society |
| | Legislative Fiscal Bureau |
| | State Reference and Loan Library |
| **Federal and state elected officials** | Gov. Scott Walker |
| | Lt. Gov. Rebecca Kleefisch |
| | U.S. Sen. Ron Johnson |
| | U.S. Sen. Tammy Baldwin |
| | Rep. Mandela Barnes, State Assemblyperson |
| | Wisconsin State Sen. Alberta Darling |
| | Wisconsin State Sen. Glenn Grothman |
| | Rep. Daniel Knodl, Wisconsin State Assembly District 24 |
| | U.S. Rep. Gwen Moore, Wisconsin, District 4 |
| | Rep. Jim Ott, Wisconsin State Assembly District 23 |
| | U.S. Rep. Tom Petri, Wisconsin, District 6 |
| | Rep. Duey Stroebel, Wisconsin State Assembly District 60 |
| | Wisconsin State Sen. Lena Taylor |

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|---|---|
| **Local units of government** | Southeastern Wisconsin Regional Planning Commission |
| | Milwaukee County<br>(County Executive, County Board Chair and Director of Transportation) |
| | Ozaukee County<br>(County Administrator, County Board Chair and Highway Commissioner) |
| | City of Glendale (Mayor, Administrator, Assistant to the Administrator) |
| | City of Mequon (Mayor, Administrator, Department of Public Works) |
| | Town of Grafton (Town Chair, Clerk/Planner) |
| | Village of Bayside (Village President, Village Manager, Administrator) |
| | Village of Fox Point<br>(Village President, Village Manager, Director of Public Works) |
| | Village of Grafton<br>(Village President, Administrator, Director of Public Works) |
| | Village of River Hills<br>(Village President, Village Manager, Superintendent of Public Works) |
| | Village of Whitefish Bay<br>(Village President, Village Manager, Director of Public Works/Engineering) |
| | North Shore Water Commission (Plant Manager) |
| | Technical Advisory Committee Members |
| | Community Advisory Committee Members |
| **Local libraries** | Whitefish Bay Public Library |
| | North Shore Public Library |
| | Frank L. Weyenberg Library of Mequon-Thiensville |
| | U.S.S. Liberty Memorial Public Library |

# 8. LIST OF PREPARERS

| Organization/Name | Primary Responsibility | Qualifications |
|---|---|---|
| **FHWA** | | |
| Bethaney Bacher-Gresock | Environmental impact statement review for environmental aspects | B.S., Environmental Studies and Biology; 12 years of experience highway project development and environmental review. |
| Wes Shemwell, P.E. | Environmental impact statement review for environmental and design aspects | B.S, Civil Engineering; experience since 1973 in highway project development and environmental review |
| Tracey Blankenship, P.E. | Environmental impact statement review for environmental and design aspects | B.S., Civil Engineering; 24 years of experience in highway project development and environmental review |
| **WisDOT – Bureau of Transportation Services – Environmental Documents** | | |
| Jay Waldschmidt, P.E. | Environmental impact statement review for environmental aspects and legal sufficiency | B.S., Civil Engineering, B.S., Mining Engineering; experience since 1989 in highway project development and environmental review |
| Jason Kennedy | Cultural resource review | B.S., Archaeology; M.A., Anthropology; experience since 2004 in cultural resource management. |
| Janet Nodorft | Indirect and cumulative effects analysis | M.S., Adult Education; B.A., Business Administration; 3 years of experience in policy development and environmental documents review |
| Carolyn Amegashie | Environmental justice review | B.A., Management; M.A., Public Policy and Administration; experience with WisDOT since 1992 as a program/planning/ policy analyst |
| James Becker | Cultural resource review | B.A., Organizational Management; experience since 2005 in archaeological and burial site resource issues, and environmental coordination and review. |

| Organization/Name | Primary Responsibility | Qualifications |
|---|---|---|
| **WisDOT – Southeast Region** | | |
| Manojoy Nag, P.E. | WisDOT Project Supervisor, review of engineering studies, environmental impact statement and public involvement | B.S., Civil & Environmental Engineering; B.S., Economics. Working for DOT since 1992 in highway design and planning areas. Since 2000 working in Mega/Major projects. Being involved in all mega environmental impact statement studies in SE region, starting from Marquette Interchange followed by Mitchell Interchange and Zoo Interchange |
| Steve Hoff, P.E. | WisDOT Project Manager | B.S., Civil Engineering; experience since 1994 in highway project development and environmental review |
| Michael Treazise, P.E. | WisDOT Deputy Project Manager | B.S., Civil Engineering. experience since 2002 in highway and rail project development, environmental studies and remediation projects |
| Monica Wauck | WisDOT Environmental Lead | B.A., History, M.U.P. Urban Planning; 5 years of experience in community development, transportation corridor studies, and environmental documentation |
| Jim Morrisey | WisDOT Engineering Lead | B.S., Ag Science, M.S., Civil Engineering; experience since 2000 in roadway design |
| Scott Lee | WisDOT SE Region environmental coordinator | B.S., Forestry, M.S., Plant/Soil Science; 10 years WisDOT Environmental Coordinator; 25 years of experience in natural resources/environmental management and regulations compliance |
| Hans Hallanger | WisDOT SE Region stormwater and noise engineer | B.S., Civil Engineering; experience since 1990 in land development, underground, grading, drainage, stormwater & erosion control |
| Karla Leithoff | Wetland review and coordination | M.S., Biological Science/ Ecology-Wetland Science emphasis; experience since 1993 in wetland ecology, restoration design/management, transportation |

| Organization/Name | Primary Responsibility | Qualifications |
|---|---|---|
| Lindsay Schmidt | Public Involvement | B.A., Communications, 7 years marketing/communications experience, 3 years public involvement experience |
| Michael Pyritz | Public Involvement | B.A., Broadcast and Electronic Communications from Marquette University. 25 years experience includes communication work in both public and private industries. |
| Elizabeth Anderson | Project Engineer | B.S., Civil Engineering; 1 year experience in stormwater and erosion control for highway projects; 3 months experience in project engineering |
| Jake Varnes, P.E. | Project Engineer | B.S., Civil Engineering; experience since 2008 in highway project development |
| Shaylyn Connelly | Project Engineer | B.S., Environmental Engineering; 6 months experience project engineering |
| Andrew Malsom | Hazardous materials and Tribal liaison | B.S., Geological Engineering University of Arizona; experience in Transportation Project Planning and Environmental (HAZMAT) Coordination since 2007 |
| **Consultant staff** | | |
| Mark Becherer, P.E.<br>HNTB Corporation | Project Manager, engineering studies; alternatives development; environmental impact statement review; public involvement | B.S., Civil Engineering University of Akron, 1983; 30 years of experience designing and managing transportation projects including studies and preliminary and final design. |
| Paul Stankevich, P.E.<br>Kapur and Associates | Deputy Project Manager; engineering studies; alternatives development | B.S., Civil Engineering; experience since 1988 in the design and management of WisDOT transportation projects and planning studies. |
| Pat Allen, P.E.<br>CH2M Hill | Engineering studies and alternatives development | B.S., Civil Engineering; experience since 1992 in environmental and transportation project development and design |
| Caron Kloser, AICP<br>HNTB Corporation | Environmental Impact analysis; environmental impact statement preparation; agency coordination; public involvement | B.S., Agronomy; M.S. Horticulture; experience since 1987 in transportation environmental studies and environmental impact statement preparation |

| Organization/Name | Primary Responsibility | Qualifications |
|---|---|---|
| Mary O'Brien<br>TEM | Environmental impact analysis; environmental impact statement preparation; agency coordination | B.S. and M.S., Environmental Sciences; Ph.D. course work in Land and Water Resources; experience since 1976 in transportation environmental studies and environmental impact statement preparation |
| Rob Beuthling, P.E.<br>HNTB Corporation | Traffic analysis | B.S., Civil Engineering, 1999; experience since in traffic operations analysis, microsimulation, and forecasting |
| Carolyn Seboe, AICP<br>HNTB Corporation | Indirect and cumulative effects analysis | B.S., Geography; M.S., Urban Planning; more than 10 years of experience working on transportation and land use studies and preparation of indirect and cumulative effects analyses for environmental impact statements |
| Brian Foley<br>HNTB Corporation | Socioeconomic and Section 4(f) analysis | B.S., Bacteriology and Soil Science; M.S., Soil Science; experience since 2001 in transportation studies; environmental impact analysis; environmental impact statement preparation; socioeconomic and Section 4(f) analysis |
| Michael Zabel<br>HNTB Corporation | Socioeconomic and GIS analysis; noise and air quality analysis | B.A., Political Science; M.A. Urban Planning and Policy; experience since 2006 in transportation planning; experience since 2011 in air and noise environmental analysis |
| John Jaeckel, P.E.<br>HNTB Corporation | Noise and air quality analysis | B.S., Applied Science and Engineering; experience since 1972 in air quality and noise studies for transportation environmental studies |

| Organization/Name | Primary Responsibility | Qualifications |
|---|---|---|
| Tom Foht, P.E.<br>Kapur and Associates | Public involvement | B.S., Civil Engineering; experience in transportation environmental studies and public involvement coordination since 1989 |
| Cynthia DeVor<br>Dixon and Associates | Public involvement | Six years of experience in providing transportation related public involvement services for all phases of highway construction projects. |
| Karen Baker<br>Bay Ridge Consulting | Public involvement-TAC/CAC | M.S., Transportation Planning; B.A. Economics and Urban Studies; Certificate in Public Participation from the International Association for Public Participation; 25 years of experience in transportation planning, environmental documentation and public involvement |
| Rochelle O'Brien<br>Bay Ridge Consulting | Public involvement-TAC/CAC | M.S., Urban Planning, B.A. Architecture; 5 years of experience in research, analysis and writing |

# 9. INDEX



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