

SAFETEA-LU 6002

IMPACT ANALYSIS METHODOLOGY

West Waukesha Bypass
I-94 to STH 59
Waukesha County, WI
WisDOT Project I.D. 2788-01-00



U.S. Department of Transportation
Federal Highway Administration



Wisconsin Department of Transportation



Waukesha County Department of Public Works

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Revision History

This Impact Analysis Methodology (IAM) is intended to be a dynamic document that will be available to stakeholders and updated as appropriate throughout the duration of the project. Below is a record of substantive changes made to this document.

The Lead Agencies will make the IAM available to other agencies and the public who have expressed an interest in the project. The IAM will be revised when there have been substantive changes in the activities or actions described in the plan. Revisions and changes to the IAM will be communicated to agencies in a timely manner and shared with the public through availability at public information meetings and posting on Waukesha County's West Waukesha Bypass website.

Coordination Plan Version	Date of Change	Revision Description
Original Version May 2010	February 2012	<p>Section 12.3—Updated entry on additional wetland review/delineation conducted by SEWRPC.</p> <p>Section 14.3—Updated entry on additional groundwater investigations conducted by the project team.</p> <p>Section 16.3 —Updated entry on additional investigations conducted by Great Lakes Ecological Services LLC for potential impacts on state-listed threatened species habitat (Butler's gartersnake and Blanding's turtle).</p>

Section 1: Introduction

1.1 Purpose of Impact Analysis Methodology

Section 6002 of the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU) requires lead agencies for proposed federally funded transportation projects to determine the appropriate methodology and level of detail for analyzing impacts in collaboration with cooperating and participating agencies. Consensus on the methodology¹ is not required, but the lead agency must consider the views of the cooperating and participating agencies with relevant interests before making a decision on a particular methodology. Well-documented, widely accepted methodologies, such as those for noise impact assessment and evaluation of impacts under Section 106 of the National Historic Preservation Act would require minimal collaboration. If a cooperating or participating agency criticizes the proposed methodology for a particular environmental factor, the agency should describe its preferred methodology and why it is recommended.

The purpose of the impact analysis methodology is to communicate and document the lead agency's structured approach to analyzing impacts of the proposed transportation project and its alternatives. Collaboration on the impact analysis methodology is intended to promote an efficient and streamlined process and early resolution of concerns or issues.

The methodology discussion for each resource known or believed to be located in the project study area is broken into three parts. The first subsection identifies the laws, regulations and guidelines applicable to the particular resource. The second subsection discusses the purpose of evaluating potential resource impacts and general methodologies commonly used on proposed WisDOT transportation projects to define, identify, and determine potential impact(s) to the resource. The third subsection discusses any project-specific methodologies used to further refine the work completed as part of the second subsection.

1.2 Project Background

Waukesha County, in cooperation with the Federal Highway Administration (FHWA) and the Wisconsin Department of Transportation (WisDOT), will prepare an Environmental Impact Statement (EIS) for transportation improvements between IH-94 and WIS 59 on the west side of the City of Waukesha. The transportation improvements are being proposed to address growing local and regional traffic volumes, and to enhance traffic flow and safety. The objective is to provide a north-south link between IH-94 and WIS 59 that will complete the existing partial circumferential "beltline" around the City of Waukesha.

Several regional land use and transportation system plans prepared by the Southeastern Wisconsin Regional Planning Commission (SEWRPC) have included a West Waukesha Bypass. Most recently, the 2035 Regional Transportation System Plan for Southeastern Wisconsin (Planning Report 49, June 2006) includes a bypass corridor between I-94 and WIS 59 that would use a combination of Meadowbrook Road/Merrill Hills Road to a point north of Sunset Drive where it would then be on new alignment to the WIS 59 intersection with County X.

The regional planning process considers the potential of more efficient land use and expanded public transit, systems management, bicycle and pedestrian facilities, and demand management to first alleviate

¹ The congressional Conference Report accompanying SAFETEA-LU states: "Collaboration means a cooperative and interactive process. It is not necessary for the lead agency to reach consensus with the participating agencies on these issues; the lead agency must work cooperatively with the participating agencies and consider their views, but the lead agency remains responsible for decision making." FHWA's NEPA regulations (23 CFR 771) require that those federal agencies with jurisdiction by law (permitting or land transfer authority) be invited to be Cooperating Agencies for an EIS. SAFETEA-LU created a new Participating Agency category for the EIS process. Participating Agencies are federal and non-federal governmental agencies that may have an interest in the project because of their jurisdictional authority, special expertise and/or statewide interest.

² The methodology used by the lead agency must be consistent with any methodology established by statute or regulation under the authority of another federal agency.

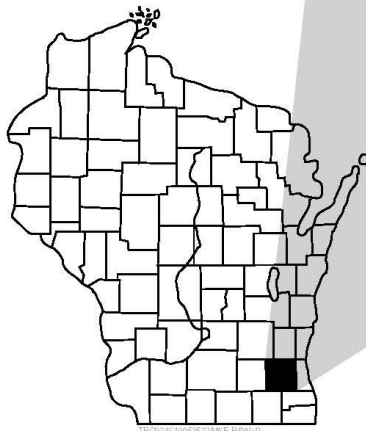
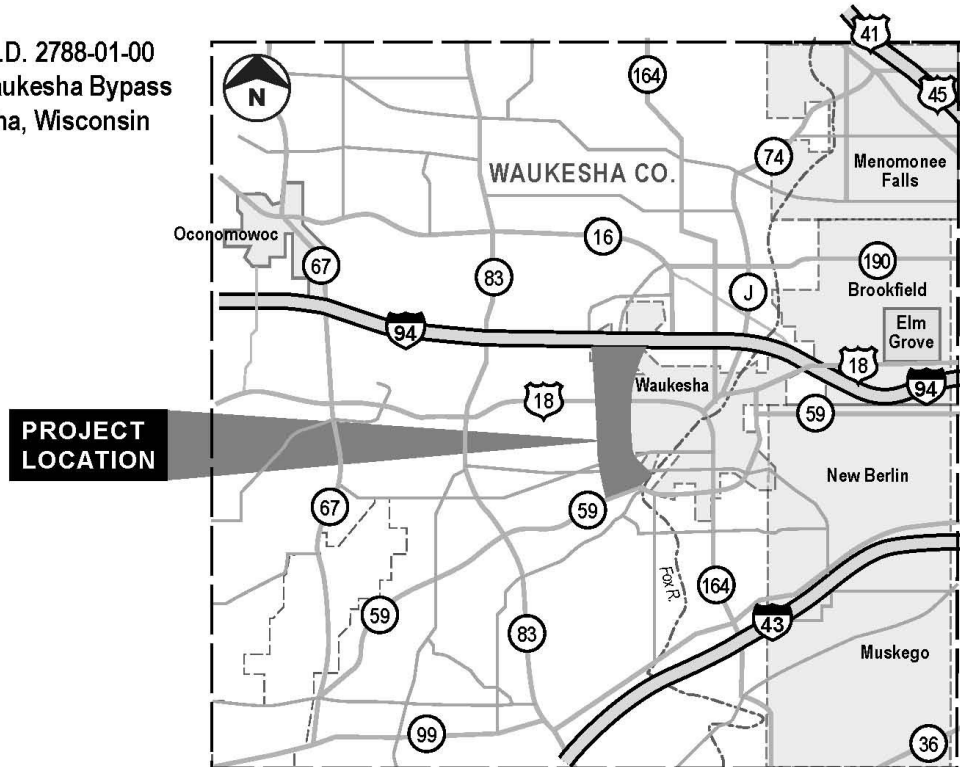
traffic congestion (a transportation system management plan). Highway improvements, such as the recommended West Waukesha Bypass, were only then considered to address any residual congestion. As a result the EIS for this study will incorporate, by reference, the modal evaluation of the regional planning process.

Waukesha County plans and the official map for the City of Waukesha also include this same bypass alignment. Waukesha County's official map shows this alignment as a result of a study in 1990-1991 that assessed the need for the West Waukesha Bypass and reviewed several different alignments before ultimately selecting the Meadowbrook Road/Merrill Hills Road alignment.

1.3 Project Vicinity Map

Project Location

Project I.D. 2788-01-00
West Waukesha Bypass
Waukesha, Wisconsin



Section 2: General Economics Impact Methodology

2.1 Laws, Regulations and Guidelines

General economic impacts for transportation projects are evaluated in accordance with the following key regulations and guidance:

- FHWA's Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- WisDOT's Facilities Development Manual Chapter 25, *Socioeconomic Factors*

2.2 General Methodology

Evaluation of economic impacts includes cost estimates of the proposed action and its alternatives; applicable effects on economic development trends and viability; effects on employment opportunities; effects on highway-dependent businesses; and effects on existing and planned business development. Economic impacts that can be quantified based on available data will be presented as such in the EIS and other impacts will be discussed qualitatively.

2.3 Project Specific Methodology

No additional project specific methodology has been identified for the West Waukesha Bypass Study. Data for the general economics impact assessment will be obtained primarily from the 2010 US Census and the Waukesha County Comprehensive Plan. Supplemental data will be obtained from the Southeast Wisconsin Regional Planning Commission (SEWRPC), local and regional land use plans, comprehensive plans, development plans, and discussion with local officials.

Section 3: Business Impact Methodology

3.1 Laws, Regulations and Guidelines

Business impacts for transportation projects are evaluated in accordance with the following key regulations and guidance:

- *The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as amended (49 CFR Part 24)*
- FHWA's Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987

3.2 General Methodology

Evaluation of business impacts includes an estimate of the number and types of businesses to be displaced, number of employees/jobs affected any special characteristics, and availability of replacement business sites. Depending on the number and types of businesses displaced, a Conceptual Stage Relocation Plan may be prepared as part of the EIS. Impacts to businesses as a result of changes in access during and after construction will also be evaluated.

3.3 Project Specific Methodology

No additional project specific methodology has been identified for the West Waukesha Bypass Study.

Section 4: Community and Residential Impact Methodology

4.1 Laws, Regulations and Guidelines

Community and residential impacts for transportation projects are evaluated in accordance with the following key regulations and guidance:

- *The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as amended (49 CFR Part 24)*
- FHWA's Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- WisDOT's Facilities Development Manual Chapter 25, *Socioeconomic Factors*

4.2 General Methodology

Evaluation of residential impacts includes an estimate of the number of homes to be displaced, including family characteristics; availability of comparable decent, safe, and sanitary housing in the area; any measures to be taken when replacement housing is insufficient; and identification of any special relocation needs. Depending on the number and types of homes displaced, a Conceptual Stage Relocation Plan may be prepared as part of the EIS. Impacts to homes as a result of changes in access during and after construction are also evaluated.

Evaluation of community impacts includes applicable changes in neighborhoods or community cohesion; changes in travel patterns and accessibility; impacts on community facilities; impacts on traffic safety/public safety; and impacts on any special groups such as elderly, handicapped, minority, and transit-dependent persons. Socioeconomic impacts that can be quantified based on available data will be presented as such in the EIS and other impacts will be discussed qualitatively.

4.3 Project Specific Methodology

No additional project specific methodology has been identified for the West Waukesha Bypass Study.

Section 5: Indirect and Cumulative Effects Methodology

5.1 Laws, Regulations and Guidelines

Indirect and cumulative effects are evaluated in accordance with these key laws, regulations or guidelines:

- Council on Environmental Quality (CEQ) publication, *Considering Cumulative Effects under the National Environmental Policy Act*, 1997
- FHWA position paper, *Secondary and Cumulative Impact Assessment in the Highway Development Process*, 1992
- National Cooperative Research Program (NCHRP) Report 466, *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects*, 2002
- WisDOT *Guidance for Conducting an Indirect Effects Analysis*, November 2007
- WisDOT *Guidance for Conducting a Cumulative Effects Analysis*, November 2007
- 40 CFR, Chapter 1, Section 230.11(g)(h); Protection of Environment, Environmental Protection Agency, *Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material*
- 33 CFR, Part 230, Section 320.4(a)(1); Navigation and Navigable Waters, General Regulatory Policies, *General Policies for Evaluating Permit Applications*.

Indirect and cumulative effects are defined as follows:

Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to 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, Council on Environmental Quality regulations for implementing the National Environmental Policy Act).

Cumulative effects are impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7, Council on Environmental Quality regulations for implementing the National Environmental Policy Act).

5.2 General Methodology

The indirect effects analysis methodology includes the following key components:

- Scoping—Select tools/activities and determine the study area
- Inventory the study area and notable features such as land use/development trends, demographics and natural resources including aquatic ecosystems
- Identify impact causing activities of the proposed project alternatives
- Identify the potentially significant indirect effects
- Analyze indirect effects, describe their significance for the project alternatives and evaluate assumptions
- Assess consequences and identify mitigation measures
- The analysis is supported by input/information from local officials, agencies, and community outreach activities.

The cumulative effects analysis methodology includes the following key components:

- Identify the significant issues associated with the proposed action and define the assessment
- Establish geographic scope for the analysis
- Establish future timeframe for analysis
- Identify other actions affecting the resources, ecosystems (including aquatic ecosystems) and human communities of concern
- Characterize resources identified in terms of their response to change and capacity to withstand stress
- Characterize the stresses affecting the resources and their relationship to regulatory thresholds
- Define a baseline condition for the resources
- Identify the important cause and effect relationships between human activities and resources
- Determine the magnitude and significance of cumulative effects
- Modify or add alternatives to mitigate significant cumulative effects
- Monitor the cumulative effects of the selected alternative and adapt management
- The analysis is supported by input/information from local officials, agencies, and community outreach activities.

5.3 Project Specific Methodology

The indirect and cumulative effects analysis will be conducted using the expert panel approach. This approach is one of the forecasting tools described in NCHRP Report 466 and has been used in many environmental impact studies in Wisconsin and nationwide.

Section 6: Environmental Justice Impact Methodology

6.1 Laws, Regulations and Guidelines

Environmental justice impacts for transportation projects are evaluated in accordance with the following key regulations and guidance:

- Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 1994
- U.S. DOT Order on Environmental Justice, DOT Order 5610.2, 1997
- FHWA Order 6640.23, *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 1998
- WisDOT FDM Chapter 21-15-1, *Format and Content of Environmental Documents* (includes Environmental Justice as one of the factors to be considered when evaluating resource impacts)

6.2 General Methodology

The proposed action and its alternatives are evaluated to determine whether there would be disproportionately high and adverse impacts on minority and low income populations with respect to human health and the environment. The analysis will be based on income and race information from the most recently available US Census. Additional information on race and income will be obtained from local agencies/organizations and through public involvement and community outreach activities. Potential impact categories include air, noise, or water pollution; increased vibration or traffic congestion; soil contamination; destruction of aesthetic value, disruption of community cohesion or economic vitality, disruption of cultural resources, changes in the availability of public and private facilities and services; adverse employment effects; and displacement of persons, businesses, farms, or nonprofit organizations.

6.3 Project Specific Methodology

No additional project specific methodology has been identified for the West Waukesha Bypass Study. The environmental justice analysis will be based on income and race information from the **2010 U.S. Census and the Waukesha County Comprehensive Plan**. Additional information on race and income will be obtained from local agencies/organizations, and through public involvement and community outreach activities.

Section 7: Historic Resources Impact Methodology

7.1 Laws, Regulations and Guidelines

Historic resource impacts for transportation projects are evaluated in accordance with the following key regulations and guidance:

- Section 106 of the *National Historic Preservation Act* as amended (16 USC 470)
- FHWA's Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- WisDOT's Facilities Development Manual, Chapter 26, *Historical Preservation*

7.2 General Methodology

Impact evaluation includes identification of historic resources in the transportation project's area of potential effect by a qualified historian, evaluation of the resources to determine potential eligibility to the National Register of Historic Places, assessment of effects to determine whether an adverse effect will occur, consultation with parties indicating an interest in the historic resources, and implementation of agreements reached to account for unavoidable adverse impacts.

7.3 Project Specific Methodology

No additional project specific methodology has been identified for the West Waukesha Bypass Study.

Section 8: Archaeological Resources Impact Methodology

8.1 Laws, Regulations and Guidelines

Archaeological impacts for transportation projects are evaluated in accordance with the following key regulations and guidance:

- Section 106 of the *National Historic Preservation Act* as amended (16 USC 470), FHWA's Technical Advisory 6640.8A
- FHWA 's Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- WisDOT's Facilities Development Manual, Chapter 26, *Historical Preservation*

8.2 General Methodology

Impact evaluation includes identification of archaeological resources in the transportation project's area of potential effect by qualified archaeologists, evaluation of the resources to determine potential eligibility to the National Register of Historic Places, assessment of effects to determine whether an adverse effect will occur, consultation with parties indicating an interest in the archaeological resources, and implementation of agreements reached to account for unavoidable adverse impacts.

8.3 Project Specific Methodology

No Additional project specific methodology has been identified for the West Waukesha Bypass Study.

Section 9: Section 4(f), 6(f) and Other Unique Lands Impact Methodology

9.1 Laws, Regulations and Guidelines

Public use land impacts (existing and planned public parks, recreation areas, wildlife and waterfowl refuges, other public-use lands and historic sites) for transportation projects are evaluated in accordance with the following key regulations and guidance:

- Section 4(f) of the U.S. DOT Act (23 USC 138; 49 USC 303)
- 23 CFR 774, FHWA's regulations for implementing Section 4(f) requirements for parks, recreation areas, wildlife and waterfowl refuges and historic sites.
- FHWA's Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- Section 6(f) of the *Land & Water Conservation Fund Act* as amended (16 USC 4601)
- *Federal Aid in Sport Fish Restoration Act* (Dingell-Johnson Act) as amended (16 USC 777)
- *Pittman-Robertson Wildlife Restoration Act* (16 USC 669)
- WisDOT's Facilities Development Manual, Chapters 20, 21, and 26
- Other public use land funding programs such as those administered by DNR

It should be noted that Section 4(f) of the U.S. DOT Act applies only to the actions of agencies within the U.S. Department of Transportation, including FHWA. While other agencies may have an interest in Section 4(f), FHWA is responsible for applicability determinations, evaluations, findings, and overall compliance.

9.2 General Methodology

The public use land impact evaluation includes an inventory of such resources in the transportation project's area of potential effect, a description of the resources including existing and planned use, funding sources, and jurisdictional agencies. The transportation improvements are located and designed to avoid or minimize impacts to public use land to the extent practicable. Where such resources cannot be avoided, impacts would be analyzed in terms of the amount of land required from the resource and any constructive use impacts such as increased traffic noise, changes in the visual setting, or other impacts that would adversely affect the intended use and enjoyment of the resource. WisDOT would coordinate with the jurisdictional agencies to obtain information on resource use, funding and management, and to obtain input on potential effects and possible mitigation measures.

9.3 Project Specific Methodology

No additional project specific methodology has been identified for the West Waukesha Bypass Study.

Section 10: Aesthetics Impact Methodology

10.1 Laws, Regulations and Guidelines

Aesthetic (visual) impacts for transportation projects are evaluated in accordance with the following key regulations and guidance:

- FHWA's Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- FHWA's publication on *Visual Impact Assessment for Highway Projects* (DOT FHWA-HI-88-054)
- WisDOT's Facilities Development Manual, Chapter 27, Section 10, *Visual Impact Assessment*

10.2 General Methodology

The visual impact assessment includes identifying the visual character of the project corridor, characterizing the visual quality of the viewshed, identifying and quantifying viewer groups to the extent practicable (those with a view of the highway and those with a view from the highway), describing the visual change that will occur because of the proposed transportation improvements, qualitatively characterizing the change, and developing measures to mitigate adverse visual effects where a sensitive visual impact has been identified. Mitigation measures could include landscaping and aesthetic treatments on roadway components such as retaining wall, bridge abutments, and sidewalks.

10.3 Project Specific Methodology

No additional project specific methodology has been identified for the West Waukesha Bypass Study.

Section 11: Agricultural Impact Methodology

11.1 Laws, Regulations and Guidelines

Agricultural impacts for transportation projects are evaluated in accordance with the following key regulations and guidance:

- *The Farmland Protection Policy Act of 1981* (7 USC 4201-4209)
- FHWA's Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- WisDOT's Facilities Development Manual, Chapter 24, Section 10, *Agricultural Lands*
- Chapter 32.035, Wisconsin Statutes (Agricultural Impact Statement)

11.2 General Methodology

To the extent practicable, the proposed transportation action and its alternatives are developed to minimize impacts on farmland and maximize compatibility with state and local farmland programs and policies. Agricultural impacts are quantified and reported to the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP). Based on the extent of the impacts, DATCP will determine whether an Agricultural Impact Statement is required. If needed, a Farmland Conversion Impact Rating form would also be prepared and coordinated with the USDA Natural Resource Conservation Service (NRCS).

11.3 Project-Specific Methodology

No additional project specific methodology has been identified for the West Waukesha Bypass Study.

Section 12: Wetlands Impact Methodology

12.1 Laws, Regulations and Guidelines

Wetland impacts are evaluated in accordance with the following key laws, regulations or guidelines:

- Section 404 of the *Clean Water Act* (33 USC 1251)
- Clean Water Act, 40 CFR Part 230, *Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material*
- Executive Order 11990, Protection of Wetlands (42 FR 26961)
- Compensatory Mitigation for Losses of Aquatic Resources (33 CFR Part 332)
- DOT Executive Order 5660.1A, Preservation of the Nation's Wetlands
- *Fish and Wildlife Coordination Act* as amended (16 USC 661-667)
- FHWA policy and procedures for evaluation and mitigation of adverse environmental impacts to wetlands and natural habitat (23 CFR 777)
- FHWA Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- WisDOT FDM Chapter 24, Section 5, *Aquatic Systems*
- WisDOT *Wetland Mitigation Banking Technical Guideline* as amended, March 2002
- WisDOT/DNR Cooperative Agreement Amendment, *Compensatory Mitigation for Unavoidable Wetland Losses Resulting from State Transportation Activities*, 2001

12.2 General Methodology

Depending on the type of transportation improvements being proposed, the construction time period, and the extent of wetland resources in the project's area of potential effect, preliminary wetland boundaries are established using existing information such as the Wisconsin Wetland Inventory maps produced by the Wisconsin DNR, farmed wetland maps produced by the USDA Natural Resources Conservation Service, statewide, regional or local GIS data, and field inspection. If more precise wetland boundaries are required, more detailed wetland boundary determinations or delineations would be conducted in accordance with the interagency *Corps of Engineers Wetland Delineation Manual (1987 Manual)* and any subsequent guidance such as the Midwest Supplement for wetland delineations.

Transportation improvement alternatives are developed to reduce wetland impacts to the extent practicable through a sequence of avoiding wetlands where possible, minimizing impacts to wetlands that cannot be avoided and mitigating unavoidable wetland loss through various compensation measures as specified in WisDOT's Wetland Mitigation Banking Technical Guideline. Wetland compensation includes evaluation of on-/near-site replacement wetlands and use of an established wetland mitigation bank when on-/near-site replacement wetlands are not feasible or practicable. All unavoidable wetland loss would be fully compensated in terms of amount affected, type, and functional values.

Methodology for evaluation of on-site or near-site compensatory mitigation may include site suitability assessments early in the planning phase. This may include identification of existing wetlands in and adjacent to the potential compensation sites and any potential effects the mitigation project may have on those wetlands. These effects may be included in the impact analysis and be part of the site suitability assessment.

12.3 Project Specific Methodology

Wetland boundaries and function will be determined through existing information and field inspection in consultation with DNR and USACE. Field determination and/or delineation of wetlands on the Preferred Alternative will identify wetlands by type, acreage, associated waterway, and function.

Approximate wetland boundaries will be located during the non-growing season within a 400-foot wide corridor west of Pebble Creek from CTH X to 500 feet north of the Merrill Hills Road Bridge over Pebble Creek. North of Pebble Creek, preliminary wetland boundaries will be located within 100 feet of the centerline of the existing road.

February 2012 Update

Given the high quality of the Pebble Creek corridor wetlands, DNR requested a more in-depth wetland review/delineation which was conducted by SEWRPC (Dr. Donald Reed, Chief Biologist) in August – October, 2011. Information from SEWRPC's report is on the project website (waukeshbypass.org) and will be included in the EIS.

Section 13: Water Resources/Floodplains/Storm Water/Erosion Control Impact Methodology

13.1 Laws, Regulations and Guidelines

Water Resource and floodplain impacts are evaluated in accordance with the following key laws, regulations or guidelines:

- Clean Water Act (33 USC 1251) including Section 303(d), impaired waters
- Executive Order 11988, Floodplain Management (42 FR 26951)
- DOT Executive Order 5650.2, Floodplain Management and Protection; Policies and Procedures (23 CFR 650)
- FHWA Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- WisDOT FDM Chapter 24, *Land and Water Resources Impacts* and FDM Chapter 10, *Erosion Control*
- Wisconsin Administrative Code Chapter NR 116, Wisconsin's Floodplain Management Program
- WisDOT/DNR Cooperative Agreement Amendment, *Memorandum of Understanding on Erosion Control and Storm Water Management*, 1994
- Wisconsin Administrative Code Chapter TRANS 401, *Construction Site Erosion Control and Storm Water Management Procedures for Department Actions*

13.2 General Methodology

Transportation improvement alternatives involving stream crossings and floodplains are developed to minimize impacts to water quality, floodplain values and stream hydraulics to the extent practicable through use of sound erosion control and storm water management practices, and by sizing new and replacement structures to minimize floodplain encroachment and increases in the height of the regional (100-year) floodplain elevation.

Impact evaluation includes assessment of existing conditions such as water quality, fishery resources, floodplain functions and values, potential adverse effects to these conditions, and proposed measures to minimize the adverse effects.

The extent to which erosion control and storm water management measures are proposed in the EIS depends on the type of transportation improvements being proposed, the construction time frame, and the extent of water and floodplain resources in the project's area of potential effect. A planning level project generally includes conceptual best management practices. Other projects may require more specific erosion control and storm water management commitments.

13.3 Project Specific Methodology

Evaluation of floodplain and water resource impacts for the West Waukesha Bypass Study will include the following:

- Evaluate historical aerial photographs for changes in hydrology and possible tile locations;
- install data logging well points at select locations;
- Evaluate soils at well points and other possible locations;
- Measure stream flows at select locations;
- Measure water quality parameters such as temperature, dissolved oxygen, conductivity, and pH at stream gauge locations;
- Evaluate topography, soils, wetlands and drainage features for mitigation opportunities.

Section 14: Groundwater, Wells, and Springs Impact Methodology

14.1 Laws, Regulations and Guidelines

Water Resource and floodplain impacts are evaluated in accordance with the following key laws, regulations or guidelines:

- Clean Water Act (33 USC 1251)
- Safe Drinking Water Act (42 USC 300(f)), Section 11424(e), sole source aquifers
- WisDOT FDM Chapter 24, Land and Water Resources Impacts
- Wisconsin Administrative Code Chapter NR 140, Groundwater Quality
- Wisconsin Administrative Code Chapter NR 809, Safe Drinking Water
- Wisconsin Statute Chapter 160, Groundwater Protection Standards
- Wisconsin Act 310, Groundwater Quantity Law
- Wisconsin Administrative Code Chapter TRANS 401, Construction Site Erosion Control and Storm Water Management Procedures for Department Actions

14.2 General Methodology

Groundwater sustains lake levels and provides the base flows of streams and comprises a major source of water supply for domestic, municipal and industrial users. Transportation improvement alternatives are developed to minimize impacts to groundwater, wells, and springs to the extent practicable.

Major aquifers in the study area will be identified and the quality of groundwater will be assessed. Water supply sources in the study area will also be identified. The location of wells in the study area will be identified.

In order to determine the impact to groundwater and surface water, a series of historical aerial photographs will be evaluated for changes in hydrology and possible tile locations, soils will be evaluated, stream flows will be measured, and stream temperature, dissolved oxygen, conductivity, and pH will be measured at the locations where the stream flow is gauged. The distribution of topography, soils, wetlands, and drainage features will be evaluated for mitigation opportunities.

14.3 Project Specific Methodology

A series of monitoring shallow wells will be used to evaluate the groundwater condition. A report for the groundwater and surface water assessment will be prepared after data is collected.

February 2012 Update

Based on input from SEWRPC and other agencies at the July 25, 2011 inter-agency meeting, groundwater movement was identified as a possible environmental impact factor, particularly for the Pebble Creek West Alternative that would traverse areas where groundwater seeps have been identified. Therefore, additional groundwater investigations were conducted by the project team in December 2011 and January, 2012. Information from these investigations will be placed on the project website and included in the EIS.

Section 15: Upland Habitat Impact Methodology

15.1 Laws, Regulations and Guidelines

Upland habitat/wildlife impacts are evaluated in accordance with the following key laws, regulations or guidelines:

- *Fish and Wildlife Coordination Act* as amended (16 USC 661-667)
- FHWA Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- WisDOT FDM Chapter 24, *Land and Water Resource Impacts*
- FHWA *Guidelines for Consideration of Highway Project Impacts on Fish and Wildlife Resources*, 1989

15.2 General Methodology

Upland habitat includes non-wetland areas in the project's area of potential effect that have vegetative cover suitable for supporting wildlife. Such areas include woodlands/shrub thickets, fallow fields, fence lines, and remnant prairies dominated by grasses and forbs. WisDOT coordinates with DNR, other agencies, and regional planning commissions as appropriate to obtain information on the quality and classification of wildlife habitat in the project's area of potential effect.

Impact evaluation includes an assessment of existing conditions (community type, connectivity to other resources, wildlife associations), amount and type of habitat affected by the proposed project, fragmentation or severance of ecosystems, and possible effects on wildlife permanently inhabiting or passing through the upland habitat areas. At this time, FHWA does not have a policy for mitigating upland habitat impacts. It is FHWA's position that normal practices such as providing appropriate management of land within the highway right-of-way, using location, design and construction techniques to minimize habitat impacts, and possible acquisition of wider rights-of-way will adequately mitigate the loss of upland wildlife habitat.

15.3 Project Specific Methodology

No additional project specific methodology has been identified for the West Waukesha Bypass Study.

Section 16: Threatened and Endangered Impact Methodology

16.1 Laws, Regulations and Guidelines

Threatened and endangered species impacts are evaluated in accordance with the following key laws, regulations or guidelines:

- *Endangered Species Act of 1973 (7 USC 136; 16 USC 1531)*
- *Migratory Bird Treaty Act (16 USC 661)*
- FHWA Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- FHWA guidance memo, *Management of the Endangered Species Act Environmental Analysis and Consultation Process*, 2002
- Wisconsin Administrative Code Chapter NR 27, *Endangered and Threatened Species*, 2005
- WisDOT/DNR Cooperative Agreement Amendment, *Memorandum of Understanding on Endangered and Threatened Species Consultation*, 1998
- WisDOT FDM Chapter 24, *Land and Water Resources*

16.2 General Methodology

The impact evaluation for threatened and endangered species includes a determination of the presence or absence of any federally listed or state listed threatened or endangered species or their critical habitat in the project's area of effect. The presence or absence determination is made in consultation with DNR and the U.S. Fish and Wildlife Service and may include field inventories by qualified resource biologists.

If federally threatened or endangered species or their critical habitat is present and cannot be avoided by location and design refinements to the proposed transportation project, WisDOT and FHWA would proceed with consultation steps under Section 7 of the Endangered Species Act.

For state listed species, WisDOT would develop a conservation plan or lay the groundwork for an incidental take permit in consultation with DNR.

WisDOT will also incorporate construction contract special provisions if needed to eliminate or reduce impacts.

16.3 Project Specific Methodology

Tier 3 habitat for the Butler's gartersnake, a state-listed threatened species, is present in the West Waukesha Bypass study area. Tier 3 habitat sites potentially support large Butler's gartersnake populations and are critical to the long term conservation of this species. The EIS will identify alternatives that could potentially affect Tier 3 habitat sites and will include a discussion of conservation strategies for avoiding and/or minimizing potential impacts to these sites.

February 2012 Update

Review and comparison of the alternatives in terms of their potential impacts on habitat for the Butler's gartersnake and Blanding's turtle (state-listed threatened species), was done in December 2011 by Great Lakes Ecological Services, LLC (Dr. Gary Casper). Information from this additional investigation will be placed on the project website and included in the EIS.

Section 17: Air Quality Impact Methodology

17.1 Laws, Regulations and Guidelines

Air Quality impacts are evaluated in accordance with the following key laws, regulations or guidelines:

- *Clean Air Act* as amended (42 USC 7401)
- *Determining Conformity of Federal Actions to State or Federal Implementation Plans* (40 CFR, Part 93), EPA
- *Transportation Conformity Guidance for Qualitative hot-spot Analyses in PM_{2.5} and PM₁₀ Non-attainment and Maintenance Areas*, March 2006, EPA and FHWA.
- FHWA Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- FHWA air quality conformance guidance (23 CFR 450)
- FHWA *Interim Guidance on Air Toxics Analysis in NEPA Documents*, 2006 and as updated in September, 2009
- Wisconsin State Implementation Plan
- Wisconsin Administrative Code Chapter NR 411, *Construction and Operation Permits for Indirect Sources*

17.2 General Methodology

The Environmental Protection Agency (EPA) has set national air quality standards for six principal air pollutants (also referred to as criteria pollutants): carbon monoxide (CO), lead, nitrogen dioxide (NO₂), ozone, particulate matter and sulfur dioxide. Transportation contributes to CO, NO₂, ozone and particulate matter. Air quality impacts for transportation projects are evaluated in view of these criteria pollutants using established air quality assessment techniques.

17.3 Project Specific Methodology

Waukesha County is designated as **being in moderate non-attainment for the 8-hour ozone standard**, and non-attainment for particulate matter (PM_{2.5}). The project is included in a conforming regional transportation plan, so no ozone analysis is required.

Projects in PM_{2.5} non-attainment areas require a qualitative hot-spot analysis if they are “projects of air quality concern” as defined in 40 CFR 93.123(b)(1). A hot-spot analysis is an estimation of future localized PM_{2.5} pollutant concentrations and a comparison of those concentrations to air quality standards. Transportation projects of air quality concern are those that would have a significant volume of diesel truck traffic or that would have intersection traffic operations at Level of Service (LOS) D or worse. Per FHWA and EPA transportation conformity guidance for qualitative hot-spot analyses, highways with greater than 125,000 annual average daily traffic (AADT) and 8% or more diesel truck traffic would be of air quality concern. The highest forecast traffic volume for the West Waukesha Bypass is 30,000 AADT (design year 2035) and it is anticipated that intersection traffic operations will be at LOS C or better. Therefore, a PM_{2.5} hot-spot analysis is not anticipated to be required at this time.

A qualitative analysis of mobile source air toxics (MSAT) will be prepared. The analysis will be based on FHWA's February 2006 and September 2008 MSAT guidance.

Section 18: Traffic Noise Impact Methodology

18.1 Laws, Regulations and Guidelines

Highway noise impacts are evaluated in accordance with the following key laws, regulations or guidelines:

- FHWA Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- FHWA Federal Aid Policy Guide, *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (23 CFR 772)
- Wisconsin Administrative Code Chapter TRANS 405, *Siting Noise Barriers*

18.2 General Methodology

Transportation projects are evaluated for traffic noise impacts and abatement measures to help protect the public health and welfare, to provide noise abatement criteria, and to provide information to local officials for land use planning near highways. The noise analysis also provides information on noise generated from typical construction equipment during the construction period.

Existing and design year traffic noise levels are modeled at residential, commercial, and other sensitive receptors along the project corridor using FHWA's Traffic Noise Prediction Model (TNM)[®] 2.5 computer program. The TNM includes traffic characteristics that yield the greatest hourly traffic noise on a regular basis for existing conditions and the future design year. Under TRANS 405, noise impacts will be evaluated further to determine the reasonableness and feasibility of potential mitigation measures such as noise walls. If noise mitigation is reasonable under TRANS 405 criteria, additional public involvement related to noise mitigation would be initiated.

18.3 Project Specific Methodology

Existing noise levels for alternatives that involve new alignments will be determined through field measurements using a sound level meter.

Section 19: Contaminated Sites Impact Methodology

19.1 Laws, Regulations and Guidelines

The impacts of potential environmental contaminants are evaluated in accordance with the following key laws, regulations or guidelines:

- *Resource Conservation and Recovery Act of 1976 as amended (42 USC 6901)*
- FHWA Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- WisDOT FDM, Chapter 21, Section 35, *Contaminated Site Assessments and Remediation*

19.3 General Methodology

The Phase 1 investigation for potentially contaminated sites uses field observations, interviews and records searches to identify sites that have a high likelihood for contamination. Phase 1 screening is performed for all alternatives carried forward in the environmental document. A Phase 2 investigation which includes subsurface testing, is performed on sites located within the area of effect for the preferred alternative. Further investigation is performed when necessary after a preferred alternative is selected. WisDOT also evaluates existing highway structures that need to be replaced or rehabilitated as part of a proposed transportation improvement to determine whether any asbestos materials or lead paint were used in the construction, renovation or rehabilitation of the structures.

19.3 Project Specific Methodology

No additional project specific methodology has been identified for the West Waukesha Bypass Study.

Section 20: Construction Impact Methodology

20.1 Laws, Regulations and Guidelines

Construction impacts are evaluated in accordance with the following key laws, regulations or guidelines:

- FHWA Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, 1987
- FHWA *Work Zone Safety and Mobility Rule* (69 FR 54562), 2004

20.2 General Methodology

Discussion of construction related impacts may include access to facilities and services, emergency response, air quality (emissions and fugitive dust), noise, water quality (erosion and sedimentation), construction solid waste/hazardous waste, and vibration as applicable.

Additional construction related information will include the following:

- General discussion on transportation management plans (TMPs) for reducing traffic and mobility impacts, improving safety, and promoting coordination within and around the work zone.
- Conceptual discussion concerning the possible availability of construction material sources (borrow sites) in the area of the proposed project.
- Conceptual discussion concerning utility relocations and possible new locations for such facilities as applicable.

20.3 Project Specific Methodology

No additional project specific methodology has been identified for the West Waukesha Bypass Study.