

SAFETEA-LU 6002
Impact Analysis Methodology

US 18/151 County PD to US 12/18
Dane County, WI
WisDOT Project I.D. 1206-07-03



U.S. Department of Transportation
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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.

With this analysis methodology, the Wisconsin Department of Transportation (WisDOT) seeks to communicate and document a structured plan for analyzing impacts. WisDOT will evaluate impacts resulting from the US 151 (Verona Road) project from County PD to US 12. This project will have two components:

- Developing and constructing interim improvements that will address corridor transportation needs for 10 to 15 years into the future.
- Developing and mapping long-term improvements that will address transportation needs well into the future.

Collaboration on the impact analysis methodology is intended to promote an efficient streamlined process and early resolution of concerns or issues.

1.2 Project Background

The study area for this project is the US 151/Verona Road corridor from the Nakoma Road intersection south to County Highway PD. Because of the transitions necessary for the US 151 interchange, US 12/14 (the Beltline) from the Whitney Way exit to the Todd Drive exit is also included in the study.

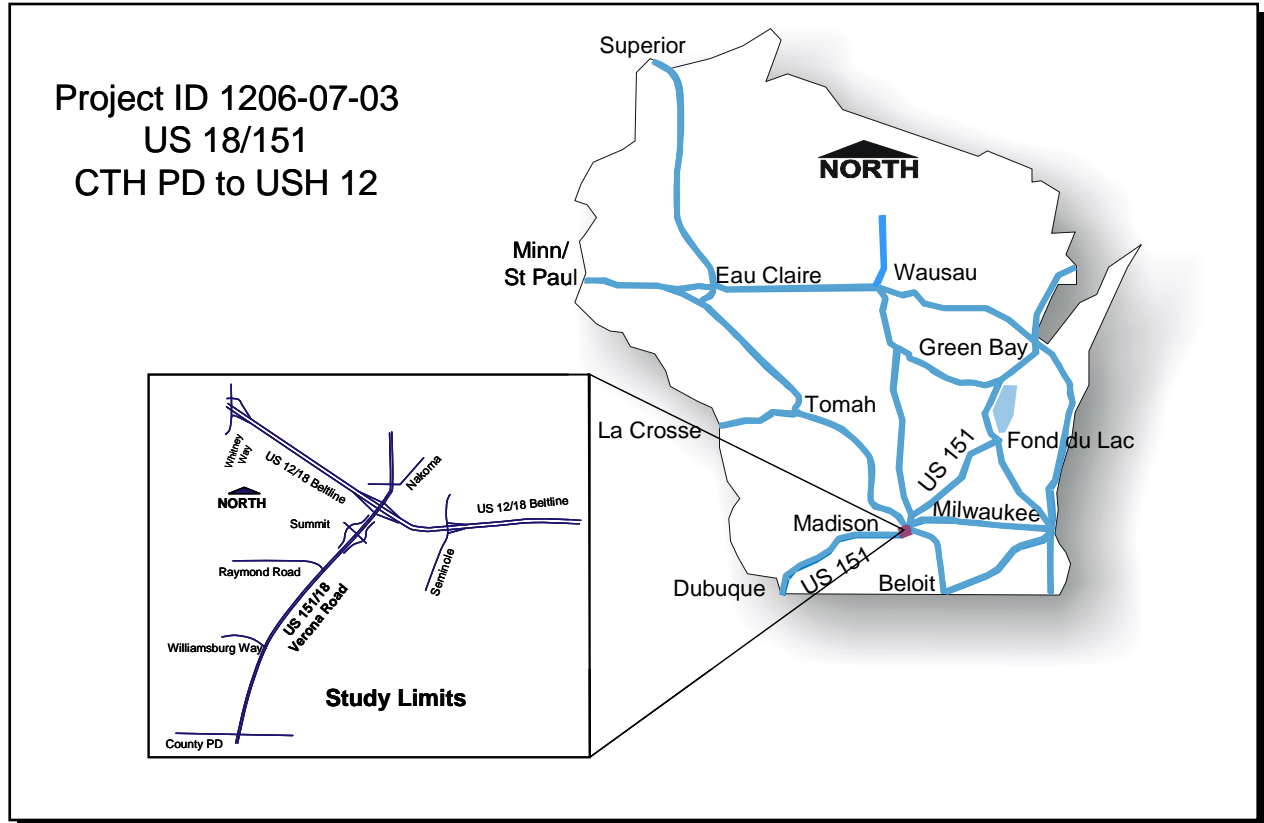
The purpose of this project is to enhance the mobility of both motorized and non-motorized travel in the US 151/Verona Road corridor. US 151/Verona Road is classified as a Backbone route in the Corridors 2020 and Connections 2030 State Highway Plan. This is the same classification as the interstate highways. While making up only 3 percent of Wisconsin highways, Backbone routes carry 37 percent of all auto travel and 54 percent of all truck travel. US 151 serves this interregional purpose within the state. By the year 2008, the backbone portion of US 151 will be a four-lane expressway/freeway facility from Fond du Lac to Dubuque except for the 2-mile section that is a focus of this study. Yet, this 2-mile section carries traffic volumes and trip types that are characteristic of freeway/expressway travel. Currently, traffic volumes on sections of US 151 are 56,000 vehicles per day (vpd), and they are projected to grow to 60,000 to 80,000 vpd (depending on section) by the year 2030.

The portion of the West Beltline that connects to the US 151 interchange regularly operates at or above capacity. It is a primary arterial that serves the growing Madison metropolitan area. The capacity of this arterial decreases from three lanes in both directions east of the interchange to two lanes in both directions west of the interchange. This capacity decrease, combined with the merging and diverging movements associated with US 151, make this portion of the Beltline a major constriction.

As traffic volumes on US 151 grow, safety has become a significant issue with congestion-related crashes increasing. Additionally, pedestrian and bicycle safety decreases on US 151 and through Beltline interchanges as traffic volumes and turning movements in these areas increase.

WisDOT will prepare a Supplemental Draft Environmental Impact Statement (SDEIS) to upgrade and improve the Dane County US 151 (Verona Road) corridor from Highway PD to US 12/14 Interchange in Madison and Fitchburg, Wisconsin.

1.3 Project Vicinity Map



1.4 NEPA Studies in the Project Corridor

A Draft Environmental Impact Statement (DEIS) of the corridor was completed in March of 2004. This DEIS document was a three-part tiered document that had three focus areas, the US 151/Verona Road corridor, the West Beltline, US 12/14 corridor from Todd Drive to US 14 in Middleton, and West Beltline crossings and interchanges. The document was structured so that each EIS section had independent utility and could be separated from the DEIS for National Environment Protection Act (NEPA) completion on its own.

Key comments from stakeholders regarding the US 151 portion of the DEIS include:

- Concern over environmental justice impacts to the Allied Drive neighborhood.
- Concern over projected noise levels.
- A request from the City of Madison to cover depressed freeway (if selected) between Summit and Williamsburg Way.
- Bike/pedestrian crossing improvements.

Since the release of this DEIS, the study has been divided into two separate studies. The US 12/14 Beltline corridor and US 12/14 crossing and connections part of the DEIS has been made into a separate study. The US 151/Verona Road corridor and the connecting portion of the West Beltline from Whitney Way is now the focus of this NEPA document. In addition to the long-term improvements that were evaluated in the DEIS, WisDOT is investigating shorter-term interim improvements. Reasons for investigating interim solutions include the following:

- No funds are available to cap freeway—defer action on request until long-range alternative is ready to be built.
- Safety and congestion concerns are growing, increasing general need for improvements.
- Broad construction costs in general have risen significantly in recent years, making funding of entire freeway or urban alternative at one time unlikely.

Because interim improvement alternatives are being investigated for the US 151/Verona Road corridor that were not part of the original DEIS, WisDOT is proposing to prepare a DEIS that covers both the interim and long-term improvements being investigated for the US 151/Verona Road corridor.

Section 2: General Economics Impact Methodology

2.1 Laws, Regulations, and Guidelines

Key regulations and guidance:

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

2.2 General Methodology

The socioeconomic methodology evaluates social and economic impacts that occur in the project area. Social impacts that will be evaluated include changes in neighborhood or community cohesion, changes in travel and traffic, accessibility, impacts to community facilities and businesses, impacts on traffic safety, public safety, and impacts on special groups such as elderly, handicapped, minority, and transit-dependent persons.

The specific economic impacts that will be evaluated will focus on primary impacts, which include employment opportunities, highway-dependent businesses, and existing and planned business development.

2.3 Project Specific Methodology

With the DEIS, considerable public involvement efforts have been made to evaluate impacts to neighborhoods and businesses and involve them in the decision making process. These efforts included meetings, workshops, surveys, special youth participation activities, videos, and other media methods. Special attention was paid to the Allied and Dunn's Marsh area to address environmental justice concerns. This neighborhood has a higher density of minority and low-income residents compared to area wide Madison and Fitchburg populations. Similar, though less extensive, public involvement activities will occur with the preparation of the SDEIS.

The SDEIS will evaluate impacts to the following neighborhoods:

- Arbor Hills (Seminole Area)
- Dunn's Marsh
- Allied Drive
- Orchard Ridge
- Meadowood
- Jamestown
- Nakoma League
- Midvale Heights

The study will evaluate the following impacts to the neighborhoods:

- Right-of-way and private property improvements.
- Travel patterns.
- Neighborhood and business accessibility.
- Community facilities.
- Public safety.
- Elderly, handicapped, minority, and transit-dependent people.
- Commercial businesses important to the Allied Drive/Dunn's community.
- The employment base for jobs currently held by minority or low income persons.

Additionally, the SDEIS will provide:

- Estimates of probable costs for the alternatives.
- A qualitative discussion on the effects of alternatives on economic development trends and viability, employment opportunities, highway-dependent business, existing planned business development, and tax revenues.
- A qualitative discussion on the effects of alternatives on highway-dependent businesses.

- A qualitative discussion on the effects of alternatives to existing and planned business development.

Section 3: Business and Residential Impact Methodology

3.1 Laws, Regulations and Guidelines

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

Business/Commercial impacts for this project will include measuring the primary impacts to businesses. This includes right-of-way required and relocations. It will also include how right-of-way requirements and access changes affect the viability of businesses.

Residential impacts are evaluated by estimating the number of residential relocations there are and the characteristics of those properties, including family characteristics, availability of comparable decent, safe, and sanitary housing in the area, measures to replace insufficient housing, and special relocation needs.

The DEIS Conceptual Stage Relocation Plan will be updated as part of the SDEIS. Impacts to homes and businesses because of changes in access during and after construction are also evaluated.

3.3 Project Specific Methodology

A conceptual stage relocation plan was completed for the US 151/Verona Road–US 12/14 West Beltline DEIS. This plan includes a summary of the area impacts, residential displacements, business displacement, and a summary of costs. The area impacts include direct impacts to the affected neighborhoods, family characteristics, divisive or disruptive effects, relocation assistance information, special relocation advisory services, and results of consultation with local officials, social agencies, and community groups. The residential and business displacements were similarly investigated. The report includes an estimate of displaced residential households, a summary of residential displacements, residential rental analysis, and residential market availability analysis. The estimated number of businesses and employees displaced is also included along with reestablished payments, outdoor advertising signs, commercial rental analysis, and commercial market availability analysis. The report concludes with a summary of the relocation costs. The Conceptual Stage Relocation plan will be revised and updated to correspond with the chosen Verona Road interim solution in the SDEIS.

Section 4: Environmental Justice Impact Methodology

4.1 Laws, Regulations and Guidelines

Key regulations and guidance:

- Executive Order 12898.
- Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (1994).
- The 1997 United States Department of Transportation Order on Environmental Justice (5680-1).

4.2 General Methodology

The environmental justice section analyzes each impact category to determine whether the alternatives under construction would have any disproportionately high and adverse effects on minority populations and low-income populations.

The potential impacts that can be evaluated include air, noise, water pollution, soil contamination, decrease in aesthetic value, increase in traffic congestion or vibration, disconnection or disruption in community cohesion, decrease in economic vitality, disruption of cultural resources, negative effects to public and private facilities, adverse employment effects, and displacement of persons, businesses, farms, or nonprofit organizations.

4.3 Project Specific Methodology

From the inception of the study in 1998, environmental justice was identified as a key issue. An environmental justice plan has been established and will be used in the preparation of the SDEIS.

Environmental Justice is based on the following three principles from the Facilities Development Manual:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects on minority populations and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Many of the activities associated with evaluating impacts to communities of which Environmental Justice applies were discussed in the Socioeconomic section of this document. Similarly, the Environmental Justice public participation activities are covered in the Environmental Justice Plan.

Specifically, the SDEIS will measure these effects to minority and low-income populations and seek to minimize the effects:

- Residential relocations and availability of replacement housing.
- Proportion of residential relocations to the community as a whole.
- Business relocations and availability of replacement facilities.
- Displacement of low income or minority workers and availability of alternate employment.
- Displacement of neighborhood functions and/or services and the impact on the low income and minority neighborhood.
- Effects to neighborhood facilities.
- Noise impacts and mitigation.

Section 5: Indirect and Cumulative Effects Methodology

5.1 Laws, Regulations, Guidelines, and Methodology

Indirect and cumulative effects for transportation projects are evaluated in accordance with the following key regulations and guidance:

- The Council on Environmental Quality (CEQ) publication.
- Considering Cumulative Effects under the National Environmental Policy Act, January 1997.
- FHWA's position paper, Secondary and Cumulative Impact Assessment in the Highway Development Process, April 1992, and the 2002 National Cooperative Highway Research Program (NCHRP) Report 466.
- Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects.

Indirect and Cumulative effects are defined as:

Indirect effects are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to 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 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 nonfederal) 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).

5.2 General Methodology

The indirect and cumulative effects methodology identifies areas potentially at risk for indirect and cumulative effects. Indirect effects are discovered through analyzing the study area's goals and important features such as land use/development trends, demographics, and natural resources. Next, impact-causing activities such as disruption to travel patterns or access are identified and qualitatively analyzed. This process is completed through community outreach in the study area.

The cumulative effects methodology qualitatively analyzes the direct and indirect effects of the proposed project. It is a resource-based evaluation. It looks at valuable resources within the project boundary and then evaluates how the transportation project, along with all the other influential factors, will affect it.

5.3 Project Specific Methodology

An indirect and cumulative effects evaluation report was completed for the DEIS project using a previous FDM methodology. The analysis sought to:

- Identify resource areas.
- Identify areas that may experience indirect and/cumulative effects.
- Communicate the possible effects.
- Identify preservation or other measures to offset the effects.

These goals were accomplished by using an Expert Panel Analysis and having the Expert Panel follow a two-step, modified Delphi process. The expert panel received information on development trends, natural, cultural, and agricultural resources, and land use controls in the project study area. Their opinions on this material were returned in both written and map form. Then, the group attended a meeting to discuss the project material.

The SDEIS will update and revise the indirect and cumulative effects analysis for the US 151 alternatives. This will include the following tasks:

- Reorganize the previous analysis into the six indirect effects steps and the ten cumulative effects steps as identified by WisDOT's current Indirect and Cumulative Effects Policy.
- Update the analysis with land use regulation changes that have occurred.
- Evaluate how land use and regulation changes will affect the conclusions of the 2002 analysis.
- Update the analysis to address potential access changes at Verona Road intersections.

Section 6: Agricultural Impact Methodology

6.1 Laws, Regulations, Guidelines, and Methodology

Key regulations and guidance:

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

6.2 General Methodology

The Agricultural impact methodology is developed to minimize adverse impacts on farmland and maximize the project's ability to be compatible and work with the state and local farmland programs and policies. The Department of Agriculture, Trade, and Consumer Protection (DATCP) is required to prepare an Agricultural Impact Statement (AIS) when the actual or potential exercise of eminent domain powers involves an acquisition of interest in more than 5 acres of land from any farm operation. DATCP may choose to prepare an AIS if an acquisition of 5 or fewer acres will have a significant impact on a farm operation. Significant impacts could include the acquisition of buildings, the acquisition of land used to grow high-value crops, or the severance of land.

6.3 Project Specific Methodology

The proposed US 151/Verona Road project is located within the City limits of Madison and Fitchburg. The project does not impact or negatively affect farmland in the area. No agricultural impact analysis will be performed. Some agricultural impacts will be discussed in the indirect and cumulative effects analysis.

Section 7: Air Quality Impact Methodology

7.1 Laws, Regulations, and Guidelines

Air quality impacts for transportation projects are evaluated in accordance with the following key regulations and guidance: The Clean Air Act as amended (42 USC 7401), FHWA's 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 guidance on analyzing Mobile Source Air Toxics (February 2006), Wisconsin's State Implementation Plan, and Wisconsin Administrative Code Chapter NR 411, Construction and Operation Permits for Indirect Sources.

7.2 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.

As part of the US 151/Verona Road project, WisDOT will assess four distinct types (ozone, carbon monoxide, mobile source air toxics, particulate matter) of traffic-related air quality issues. Each distinct air pollutant will be analyzed using the appropriate analysis tool and the results will be recorded in the project's Environmental Impact Statement (EIS).

Ozone

At the mesoscale level, the motor vehicle pollutants of concern are oxides of nitrogen (NO_x) and volatile organic compounds (VOC), which can be combined in a series of chemical reactions catalyzed by sunlight to produce ozone (O₃).

No federal agency may approve or fund a transportation project until the project has been shown to conform to the applicable State Implementation Plan (SIP) for air quality. The 1990 Clean Air Act Amendments (CAAA) provide a general definition of SIP conformity, applicable to all transportation plans, programs, and projects funded under Title 23 U.S.C. or the Federal Transit Act, which states that such activities will not:

- Cause or contribute to any new violation of any National Ambient Air Quality Standard (NAAQS) in any area.
- Increase the frequency or severity of any existing violation of an NAAQS in any area.
- Delay timely attainment of any NAAQS or any required interim emissions reductions or other milestones in any area.

Carbon Monoxide

In Wisconsin, CO is the only motor vehicle pollutant currently analyzed at the microscale level as required by NEPA. The NAAQS criteria for an adverse CO impact are an exceedence of the

one-hour standard of 35 parts per million (ppm) or the eight-hour average of 9 ppm. The Wisconsin Department of Natural Resources (DNR) requires a construction permit when any modeled receptor will be exposed to more than 75 percent but less than 100 percent of the NAAQS for CO within ten years of construction.

Mobile Source Air Toxics

FHWA developed interim guidance in 2006, titled *FHWA's Interim Guidance on Air Toxics Analysis in NEPA Documents*, on when and how to analyze Mobile Source Air Toxics (MSAT) since MSAT science continues to evolve. The FHWA's interim guidance on air toxins lists three categories of potential MSATs.

- No analysis for projects with no potential for meaningful MSAT effects.
- Qualitative analysis for projects with low potential MSAT effects.
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

According to that guidance, any project exceeding the 150,000 Annual Average Daily Traffic (AADT) traffic volume in the design year (2035) is categorized as a "project with higher potential MSAT effects" and thus would require a quantitative MSAT analysis.

7.3 Project Specific Methodology

Ozone

Dane County is within the Southern Wisconsin Intrastate Air Quality Control Region. According to the EPA, Dane County is presently in attainment for all NAAQS as established by the EPA and therefore in compliance with the State Implementation Plan for air quality. No project-specific analysis of ozone is required.

Carbon Monoxide

In the DEIS, Mobile6 and CAL3QHC were used to analyze projected carbon monoxide concentrations for the Urban Roadway Alternative and the Freeway Alternative. The air quality analysis projected CO concentrations at locations near the US 151/Verona Road interchange under the two alternatives listed above. The receptors were located throughout the project corridor. A screening analysis for this project predicted carbon monoxide levels at less than 75 percent of the NAAQS. No substantial impacts to air quality are expected.

A construction permit was not anticipated to be required. The DNR Bureau of Air Management completed a screening review of the Verona Road (US 151) Alternatives and West Beltline (US 12/14) Expansion projects. The review was completed using the CAL3QHC dispersion model with MOBILE 6.2 emission rates. Based on its review, the DNR agreed the maximum predicted carbon monoxide concentrations would not exceed 75 percent of any carbon monoxide standard. Under Section NR 411.04(2)(c) of the Wisconsin Administrative Code, no construction permit is required for this project.

It is anticipated that with the new horizon years, newly projected traffic volumes, and interim alternatives, the analysis for carbon monoxide will be performed again.

Mobile Source Air Toxics

The AADT in the study area does not exceed the 150,000 identified in the FHWA guidance document.

WisDOT will be conducting a qualitative Mobile Source Air Toxics Analysis as part of the project study. This analysis will be in accordance with FHWA interim guidance on MSAT analysis in environmental documents.

Particulate Matter 2.5 (PM 2.5)

Dane County was designated non-attainment for the PM 2.5 standard in December 2008. However, this designation is not effective until early April 2009. Quality assured, clean monitoring data for the county over the past three years has prompted DNR to request that EPA re-designate Dane County as attainment. This is being done in the form of a technical amendment that EPA is anticipated to act on by the end of April 2009.

Section 8: Noise Impact Methodology

8.1 Laws, Regulations, and Guidelines

Highway noise impacts 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 Federal Aid Policy Guide, Procedures for Abatement of Highway Traffic Noise and Construction Noise (23 CFR 772), and Wisconsin Administrative Code Chapter TRANS 405, Siting Noise Barriers.

8.2 General Methodology

Transportation projects are evaluated for traffic noise impacts and abatement measures to help protect the public health and welfare, to supply 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. Field sound level readings may also be taken at select locations. Under TRANS 405, noise impacts will be evaluated further to determine the reasonableness and feasibility of potential mitigation measures such as noise walls or berms. If noise mitigation is reasonable under TRANS 405 criteria, additional public involvement related to noise mitigation would be initiated.

8.3 Project Specific Methodology

Noise has been identified as a key issue from the inception of the project in 1998. The study used the FHWA's validated Stamina 2.0 prediction model to develop noise impacts. While the noise analysis did predict impacts, three walls were found reasonable and feasible for the freeway alternative and two walls were reasonable and feasible for the urban roadway alternative..

For the SDEIS, the study will reanalyze potential noise impacts using field measurements for existing sound levels and TNM[®] 2.5 for existing and future sound levels.

Section 9: Wetland Impact Methodology

9.1 Laws, Regulations, Guidelines, and Methodology

Key regulations and guidance:

- Section 404 of the Clean Water Act (33 USC 1251).
- Executive Order 11990, Protection of Wetlands (42 FR 26961).
- DOT Executive Order 5660.1A, Preservation of the Nation's Wetlands, Fish and Wildlife Coordination Act as amended (16 USC 661-667).
- FHWA's policy and procedures for evaluation and mitigation of adverse environmental impacts to wetland and natural habitat (23 CFR 777).
- FHWA's Technical Advisory 6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents (1987).
- WisDOT's Facilities Development Manual (FDM) Chapter 24, Section 5, Aquatic Systems.
- WisDOT Wetland Mitigation Banking Technical Guidelines as amended.
- WisDOT/DNR Cooperative Agreement Amendment on Compensatory Mitigation for Unavoidable Wetland Losses Resulting from State Transportation Activities (2001).

9.2 General Methodology

Environmental documents measure wetland impact through existing mapping sources and field delineation. Transportation alternatives then seek to reduce impacts by avoiding wetlands where possible, minimize impacts to wetlands that cannot be avoided, and mitigate all unavoidable wetland loss through various compensation measures.

9.3 Project Specific Methodology

Because of its urban nature, effects to wetlands are expected to be limited to nonexistent. Primary effects to wetlands will be measured if necessary.

Section 10: Water Resource/Floodplain Impact Methodology

10.1 Laws, Regulations, Guidelines, and Methodology

Key regulations and guidance:

- The 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's Technical Advisory 6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents (1987).
- WisDOT's Facilities Development Manual (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, the WisDOT/DNR Cooperative Agreement Amendment.
- Memorandum of Understanding on Erosion Control and Storm Water Management (1994).
- 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.

10.2 General Methodology

Transportation improvement alternatives for water resources and floodplain impacts involve finding ways to minimize negative impacts to water quality, floodplains, and stream hydraulics. This may be implemented through using sound erosion control and stormwater 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. Properly minimizing adverse effects requires assessment of existing conditions such as water quality, fishery resources, floodplain functions and values, potential undesirable outcomes to these conditions, and proposed measures to minimize the adverse effects. Discuss appropriate coordination with locals on any changes to mapped floodplains.

10.3 Project Specific Methodology

The impacts to streams and floodway are expected to be related to stormwater management. US 151 has a City of Madison culvert transverse the corridor that will need modifications. Additionally, project alternatives are likely to increase the impervious surface area increasing stormwater runoff quantity and quality. Stormwater quantity and quality will be addressed as required by Wis. Adm Code Trans 401 and the Cooperative Agreement.

The study will review stormwater impacts caused by US 151 alternatives and broadly identify the stormwater management measures necessary for the alternatives. This will include:

- Quantifying stormwater runoff, addressing both quantity and peak flow discharge.
- Identifying storage requirements necessary and possible locations for storage.
- Discussing water quality and following required state regulations.
- Broadly identifying infrastructure changes necessary to manage stormwater and determine probable cost-effective Best Management Practices (BMPs) to address stormwater issues.
- Summarizing the findings as an appendix in the SDEIS.

Section 11: Upland Habitat/Wildlife Impact Methodology

11.1 Laws, Regulations, Guidelines, and Methodology

Key regulations and guidance:

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

11.2 General Methodology

Upland habitats are made up of nonwetland areas in the transportation project's region of potential effect that has vegetative cover suitable for supporting wildlife. Upland areas include remnant prairies dominated by grasses and forbs, woodlands/shrubs thickets, fallow fields, and fence lines.

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 consequential effects on wildlife permanently inhabiting or passing through the upland habitat areas.

11.3 Project Specific Methodology

It is anticipated that upland habitat for the US 151 corridor will consist of urban landscaping. The SDEIS will quantify impacts to existing urban landscaping in the corridor for the alternatives.

Section 12: Threatened and Endangered Species Impact Methodology

12.1 Laws, Regulations, Guidelines, and Methodology

Key regulations and guidance:

- The Endangered Species Act of 1973 (7 USC 136; 16 USC 1531).
- Migratory Bird Treaty Act (16 USC 661).
- FHWA's Technical Advisory 6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents (1987).
- FHWA's 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 Facilities Development Manual (FDM) Chapter 24, Land and Water Resources.

12.2 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 transportation project's area of potential effect. The DNR along with the United States Fish and Wildlife Service determines the presence or absence of threatened or endangered species.

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 federally listed species. 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 to eliminate or reduce impacts.

12.3 Project Specific Methodology

With the DEIS, the DNR determined that threatened or endangered species were not present within the project study limits. This will be confirmed with the SDEIS.

Section 13: Public Use Lands Impact Methodology

13.1 Laws, Regulations, Guidelines, and Methodology

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).
- FHWA's Section 4(f) Policy Paper (2005).
- 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), the 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 (FDM) Chapters 20, 21, and 26 and other public use land funding programs such as those administered by DNR.

13.2 General Methodology

Public use land impacts are evaluated through an inventory of potentially affected public use land in the project area. The evaluation also includes existing and planned use for the land, funding sources, and jurisdictional agencies. Where it is impossible to avoid public use resources, impacts would be analyzed by the amount of land required from the resource or any constructive use impacts such as increased traffic noise, changes in the visual setting, or impacts that would adversely affect the public land use.

13.3 Project Specific Methodology

The DEIS evaluated impacts and prepared a 4(f) evaluation for two public use parks, Britta Parkway green space, located in the southeast quadrant of the US 151 interchange, and Doncaster Park, located in the northeast quadrant of the US 151 interchange. Additionally, interim improvements may impact the Southwest bike trail.

The SDEIS will revise these evaluations in light of the new improvements and possible changes in right-of-way requirements. The FDM guidance will be used. It is possible these two areas are no longer considered parks under Madison's park and open space plan.

The DEIS had no impacts to the Arboretum, a potential 4(f) resource for 106 reasons. If reevaluation of alternatives produces impacts to the arboretum, a 4(f) evaluation will also be prepared for this property. Appropriate 106 coordination will also occur.

Section 14: Cultural Resources Impact Methodology

14.1 Laws, Regulations, Guidelines, and Methodology

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 (FDM) Chapter 26, Historical Preservation.

14.2 General Methodology

The cultural resource impact evaluation includes the identification of cultural resources in the transportation project's area. Qualified archaeologists and historians evaluate the resources to determine the potential effect from the project. The evaluation includes identifying cultural resources, National Register of Historic Places, and an assessment of whether adverse effects will occur.

14.3 Project Specific Methodology

Archaeological investigations took place at the onset of the project. Because most of the lands in the corridor are disturbed, limited shovel testing was performed. Section 106 forms were completed for Project I.D. 1206-07-03 (Verona Road/West Beltline EIS).

An architectural inventory was also completed with determinations of eligibility prepared. Section 106 forms were also completed for Project I.D. 1206-07-03. Within the area of potential effect, the UW Arboretum was determined as eligible for the National Register of Historic Places. The DEIS alternatives did not affect this resource. Reevaluation of the Verona Road and Seminole interchange alternative could reveal impacts to the arboretum. This could prompt both the 106 and 4(f) process.

Section 15: Contaminated Sites Impact Methodology

15.1 Laws, Regulations, Guidelines, and Methodology

Key regulations and guidance:

- The Resource Conservation and Recover Act of 1976 as amended (42 USC 6901).
- FHWA's Technical Advisory 6640.8A.
- Guidance for Preparing and Processing Environmental and Section 4(f) Documents (1987).
- WisDOT's Facilities Development Manual (FDM), Chapter 21, Section 35, Contaminated Site Assessments and Remediation.

15.2 General Methodology

The phase 1 investigation uses field observations, interviews and records searches to identify sites that have a high likelihood of contamination. Phase 1 screening is performed for all alternatives carried forward in the environmental documentation process. A Phase 2 investigation, which includes subsurface testing, is performed on sites which fall within the preferred alternative. Further investigation is performed when necessary after a preferred alternative is selected.

15.3 Project Specific Methodology

A Phase 1 investigation has been completed for a 500 to 600-foot corridor around the existing centerline. WisDOT determined that further Phase 2 investigations of up to 67 sites are merited, depending on the preferred alternative chosen. Those investigations will be scheduled after a preferred alternative is selected after the FEIS. The DNR and possibly affected parties will be notified of the results. WisDOT will work with all concerned to ensure that the disposition of any petroleum contamination is resolved to the satisfaction of the Wisconsin DNR, WisDOT BEES, and FHWA before acquisition of any questionable site and before advertising the project for letting. Non-petroleum sites will be handled on a case-by-case basis with detailed documentation and coordination with FHWA as needed.

Section 16: Aesthetic Impact Methodology

16.1 Laws, Regulations, Guidelines, and Methodology

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 (FDM) Chapter 27, Section 10, Visual Impact Assessment.

16.2 General Methodology

The purpose of the visual impact assessment is to protect the visual character of the project corridor. This task is accomplished through identifying the visual character of the project corridor, characterizing the visual quality of the area, and identifying the groups viewing the project from the highway and of the highway. The impact assessment will also describe the visual change that will occur to the project corridor through the proposed transportation improvements. Mitigation will take place where adverse visual effects are identified. Mitigation measures could include landscaping and aesthetic treatments such as bridge abutments, retaining walls, and sidewalks in the project area.

It is WisDOT policy to use a "Community Sensitive Design" (CSD) approach to enhance excellence in transportation project development and resulting solutions. CSD is the art of creating public works projects that function safely and efficiently, and are pleasing to both the users and the neighboring communities.

Community Sensitive Design is a collaborative interdisciplinary approach that includes early involvement of all stakeholders to ensure that transportation projects not only provide safety and mobility, but are also in harmony with communities and the natural, social, economic, and cultural environments. This integration of projects into the community and environment requires careful planning and a variety of design, construction and safety standards must be met, along with environmental considerations. Design exceptions to standards may be used, where appropriate and necessary. These must be documented and approved, and must contain a thorough analysis of the consequences and tradeoffs involved.

16.3 Project Specific Methodology

Preliminary aesthetic treatments will be considered and incorporated into the preliminary concept design of the US 151 alternatives. Additionally, the SDEIS will include a qualitative discussion of visual and aesthetic impacts and benefits of the alternatives being considered.

Section 17: Construction Impact Methodology (Transportation Management Plans)

17.1 Laws, Regulations, Guidelines, and Methodology

Key guidelines:

- FHWA's Technical Advisory 6640.8A.
- Guidance for Preparing and Processing Environmental and Section 4(f) Documents (October, 1987).

17.2 General Methodology

Construction Impacts

During the construction of the project, additional assessment of the following impacts may be conducted:

- Access to facilities and service.
- Emergency response services.
- Air quality (emissions and fugitive dust).
- Construction solid and hazardous waste.
- Economic impacts.
- Noise.
- Vibration.
- Water quality/erosion and sedimentation.

Transportation Management Plans for Work Zones

A transportation management plan (TMP) for work zones provides management strategies of work zone impacts and safety in all project development phases. Transportation management strategies for a work zone 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.

FHWA's TMP for work zones provides for systematic consideration and management of work zone impacts and safety in all project development phases. Preliminary information is developed in the project's planning phase with input from the public, local officials and other interests, and developed further in subsequent environmental assessment and engineering design phases.

A TMP helps to reduce traffic and mobility impacts, improve safety, and promote coordination within and around the work zone. The TMP must be developed to best serve the specific community, project, road users, businesses, and highway workers.

The (23CFR450) Rule updates and broadens the former regulation to address more of the current issues affecting work zone safety and mobility by:

- Fostering systematic assessment of the work zone impacts of road projects and development and implementation of transportation management strategies that help manage these impacts.
- Expanding thinking beyond the project work zone itself to address corridor, network, and regional issues while planning and designing road projects.
- Expanding work zone impacts management beyond traffic safety and control to address mobility in addition to safety and to address the broader concepts of transportation operations and public information.
- Advocating innovative thinking in work zone planning, design, and management to consider alternative/innovative design, construction, contracting, and transportation management strategies.

17.3 Project Specific Methodology

After a preferred alternative has been selected, construction impacts and traffic management strategies will be broadly addressed in the FEIS. This discussion will include the following:

- Probable construction staging of the preferred alternative.
- Probable traffic control concepts necessary during the construction of the preferred alternative, which also consider motor vehicle and worker safety.
- Traffic management measures available to help mitigate the effects of the construction staging.
- A discussion with local officials of these probable construction staging and traffic control measures.