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Land Use and Land Use Planning	FHWA and WisDOT would compensate property owners for land acquired from residences, businesses, utilities, and institutions (see Sections 3.4.3, 3.5.3, 3.6.4, and 3.8.3).
Indirect and Cumulative Effects	Several measures to mitigate potential adverse direct effects are noted in Section 3.2.2. No measures have been identified specifically to mitigate indirect or cumulative effects.
Transportation Service	Section 3.27.4, Construction Impacts, describes measures to manage congestion during construction which would be a result of lane closures on the study-area freeway system and adjacent local streets. WisDOT and FHWA are coordinating railroad tunnel and bridge construction with Union Pacific Railroad to minimize interruptions to rail service while extending the tunnel under Highway 100/Bluemound Road and while replacing the railroad bridges over I-94, US 45, and potentially North Avenue and I-894/US 45 over the Union Pacific Railroad. WisDOT and FHWA will coordinate with Canadian Pacific Railway to minimize interruptions to rail service while replacing the US 45 bridge over the Canadian Pacific rail line.
Utilities	WisDOT will compensate utilities for relocating their facilities, if required. WisDOT and FHWA will continue coordinating with utilities, municipalities, and the county to avoid or minimize interruptions in service during construction.
Residential Development	Federal property acquisition law provides for payment of just compensation for residences displaced for a federally-funded transportation project (Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended [Uniform Act]). Acquisition price, replacement dwelling costs, moving expenses, increased rental or mortgage payments, closing costs, and other relocation costs are covered for residential displacements. Under state law, no person or business would be displaced unless a comparable replacement dwelling, business location, or other compensation (when a suitable replacement business location is not available) would be provided. Compensation is available to all displaced persons without discrimination. Prior to appraisals and property acquisition, an authorized relocation agent interviews each owner and renter to be relocated to determine their needs, desires, and unique situations associated with relocating. The agent explains the relocation benefits and services each owner may be eligible to receive. Property acquisitions not involving residential, business, or other building relocations are also compensated in accordance with state and federal laws. Before initiation of property acquisition, WisDOT provides information explaining the acquisition process and the state's Eminent Domain Law under Section 32.05, Wisconsin Statutes. A professional appraiser inspects the property to be acquired. Property owners are invited to accompany the appraiser to ensure that full information about the property is taken into consideration. Property owners may also obtain an independent appraisal. Based on the appraisal, the value of the property is determined and that amount offered to the owner. In the event agreement on fair market value cannot be reached, the owner would be advised of the appropriate appeal procedure. A search of available housing from local realtor listings in October 2008 reported more than 150 homes with similar price ($125,000 to $230,000) located within 0.5 mile of the study area. A search of replacement rental housing was also conducted, and revealed 32 rental properties similar to the units that would be needed. One-, two-, and three-bedroom units are within one mile of the study area, starting at

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	$535 per month. Replacement rental housing available includes duplexes and apartment buildings. Any septic tanks, drain fields, or wells on acquired properties would be abandoned in accordance with state regulations and local zoning standards. WisDOT will survey all buildings to be demolished to determine whether asbestos or lead paint is present. All appropriate and applicable engineering and regulatory controls will be followed during the handling and disposal of asbestos-containing material and lead-based paint. Contractors must comply with U.S. EPA regulations; National Emission Standards for Asbestos; the Occupational, Safety, and Health Administration regulations on asbestos removal; local government regulations; and all other applicable regulations. The most recent editions of all applicable standards, codes, or regulations shall be in effect. In addition, any person performing asbestos abatement must comply with all training certification requirements, rules, regulations, and laws of the State of Wisconsin regarding asbestos removal. Before a contractor demolishes a building that may contain or is known to contain asbestos, the contractor must notify DNR and Wisconsin Department of Health and Family Services at least 10 working days before starting the work, using DNR Form 4500-113: “Notification of Demolition and/or Renovation and Application for Permit Exemption.” Demographic data for the areas in which residential displacements would occur do not indicate age or income level characteristics that would require special relocation consideration or services. If unusual circumstances were to arise during real estate activities, WisDOT real estate personnel would be available to provide appropriate relocation services.
Commercial and Industrial Development	Commercial and industrial acquisitions and relocations would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. In addition to providing just compensation for property acquired, additional benefits are available to eligible displaced businesses, including relocation advisory services, reimbursement of moving expenses, and down-payment assistance. Under state law, no person would be displaced unless a comparable business location or other compensation (when a suitable business location replacement is not practical) is provided. Compensation is available to all displaced businesses without discrimination. Before initiating property acquisition activities, property owners would be contacted and given a detailed explanation of the acquisition process and Wisconsin’s Eminent Domain Law under Section 32.05, Wisconsin Statutes. Any property acquired would be inspected by one or more professional appraisers. The property owner would be invited to accompany the appraiser during the inspection to ensure that the appraiser is informed of every aspect of the property. Property owners will be given the opportunity to obtain an appraisal by a qualified appraiser that will be considered by WisDOT in establishing just compensation. Based on the appraisal, the value of the property would be determined and that amount offered to the owner. Before a contractor demolishes a building that may contain or is known to contain asbestos, the contractor must notify DNR and Wisconsin Department of Health and Family Services at least 10 working days before starting the work, using DNR Form 4500-113: “Notification of Demolition and/or Renovation and Application for Permit Exemption.” There are no known age, ethnic, handicapped, or minority characteristics that would require special relocation consideration for any business displacement. No unusual requirements are anticipated that would preclude successful relocation, except the adult variety bookstore. This bookstore requires an adult entertainment license to operate. All municipalities require this type of zoning, but the zoning location must be investigated within each individual community. The adult entertainment license is applied for by the owner/tenant at the time of application. The application process may add several months to a year to the relocation process for this particular business. There

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	is currently one such business for sale in Manitowoc that includes the license for adult entertainment. The Multiple Listing Service for April 2009 listed more than 16 warehouse/office space locations in the Milwaukee and Waukesha area that would be adequate for business relocations needed on 100th Street. There is one oil change retail store and several auto service centers available for sale in Milwaukee County that could be retrofitted for the oil change business on Highway 100. There is at least one hotel for sale in Milwaukee County and several others in Racine, Dane, and Walworth counties that approach the size of the hotel on Highway 100 that would be relocated. There are also stand-alone buildings available that could serve the music store, bookstore, coffee shop, cosmetic surgery office, law office, and photography studio. There are more than 100 available retail establishments, based on the Multiple Listing Service, in Milwaukee County. Based on Multiple Listing Service, there are enough available properties to provide appropriate relocations for the displaced businesses. However, the state of the economy in April 2009 exhibits a greater than normal number of business and commercial listings. As these businesses are relocated in the future, the number of business and commercial listings may change, but it appears likely that sufficient replacement business buildings will be available when required.
Institutional and Public Services	WisDOT and FHWA will fairly compensate schools, churches, Milwaukee County, and State Fair Park for buildings or land acquired as part of the project. WisDOT and FHWA will work with State Fair Park Board and Pettit Center Board to develop options for replacing lost parking space, including construction of parking structures. Milwaukee County may move its Focus Program out of the building that would be relocated under Modernization Alternatives N1 and N3, regardless of whether WisDOT acquires the building for US 45 reconstruction. WisDOT and FHWA will develop appropriate mitigation in conjunction with Milwaukee County. Finding a suitable off-site replacement location for the services Milwaukee County/St. Charles provide to at-risk youth in the Child and Adolescent Treatment Center would be difficult. To minimize the amount of land required from institutional properties along the freeway corridor, service interchanges were designed with ramps that are located as close to the freeway mainline as possible.
Visual Character/Aesthetics	Future community sensitive design (CSD) efforts will further identify existing viewsheds and vistas, as well as provide concepts for visual benefits and minimization of impacts resulting from a larger-scale freeway and core interchange. Previous CSD efforts on the Marquette Interchange and I-94 North-South Corridor projects provide CSD examples and best practices to draw from for this study. For these projects, CSD committees worked to identify aesthetic treatments and beautification measures that blend the highway corridor into the surrounding environment. A CSD committee will be formed for the Zoo Interchange project.
Surface Water and Fishery	WisDOT would implement stormwater management techniques for the Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component. The Modernization and Reduced Impacts Alternatives and the Adjacent Arterials Component will increase impervious area and therefore increase the amount of stormwater runoff from the study-area freeway and local roadway system. However, these alternatives will also provide the opportunity to implement best management practices (BMPs) to treat the runoff and bring the study-area freeway and local roadway system in compliance with Wisconsin's stormwater management regulations that limit the amount of pollution in runoff.

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	Stormwater treatment measures will be evaluated during the project's design phase. BMPs can be utilized for stormwater management. BMP options are listed below and shown in **Exhibit 3-30**. • Retention Basins (Wet Detention Basins)—Retention basins have a permanent pool of water year-round. The permanent pool allows pollutant particles in stormwater runoff to settle out over an extended period of time. Nutrient uptake also occurs through increased biological activity. • Dry Detention Basins—A dry detention basin is typically designed to store runoff and discharge it slowly to reduce the peak discharge downstream. As normally designed, these basins typically have little effect on the volume of stormwater released to the receiving water. The peak flow reduction is often accomplished through use of a multistage outlet structure that allows increased discharge as water levels in the basin increase. • Infiltration Devices—Infiltration can be achieved through use of trenches or grass swales. Infiltration devices are used to slow down water flow so that more water is absorbed into the ground and more pollutants are removed from runoff. • Grass Ditches—This BMP generally helps reduce suspended solids to meet the regulatory goal of TRANS 401, which outlines stormwater management and erosion control procedures for WisDOT projects. • Trapezoidal Swale through Infield—This BMP combines grass ditch treatment with peak flow reduction and is considered the same level of suspended solid control as grass ditches. • Vegetated Rock Filters—This BMP may be used at outfalls to waterways or anywhere concentrated runoff leaves the right of way. It is similar in concept to a level spreader which attempts to reintroduce sheet flow and also provides a small amount of peak flow and volume reduction. • Swale Blocks/Ditch Checks—These are small earthen berms constructed in the bottom of a ditch at regular intervals to detain runoff from frequent storms. This BMP provides peak flow reduction and may provide infiltration benefits depending on soil conditions. • In-line Storage—This method is not desirable from a water quality standpoint, but would manage water quantity. Storm sewer pipes would be designed larger than normal to provide storage in the sewer during rain events, then the water is gradually released after the rain event ends. To comply with State Statute 87.30 and NR 216[1] and to address concerns raised by MMSD and the City of West Allis, WisDOT and FHWA are also investigating retention/detention basins to manage stormwater from the proposed improvements. The retention/detention ponds would also improve water quality by allowing solid pollutants (sand, grit, etc.) to settle out of the water before it flows into storm sewers or streams. If these retention/detention ponds are built, WisDOT will provide landscaping around the pond. Potential locations for retention/detention basins include:

[1] NR 216 says that WisDOT bridge "construction may not cause any obstruction to flood flows."

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	• West Leg—Along the Underwood Creek Parkway south of I-94. Stormwater runoff from the south and west legs would be stored at this location (see also Section 4.3.1). The Oak Leaf Trail is routed along a little-used roadway that currently occupies the potential pond location. WisDOT would remove the roadway and relocate the Oak Leaf Trail to a location suitable to the Milwaukee County Parks Department if a pond were built at this location. • Relocation of the hotel and coffee shop in the northwest quadrant of the Highway 100 Interchange with I-94 may make space available to store stormwater runoff from the Highway 100 corridor south of Bluemound Road. Reconfiguration of the I-94/Highway 100 Interchange may also make space available for one or two small ponds. • East Leg—In the northwest quadrant of the I-94/84th Street interchange. A retention/detention basin in this location may require relocating the Honey Creek stream bed further east of its current location (see also Section 4.3.4). The basin would provide storage for stormwater runoff from the east leg of the study-area freeway system. Some adjacent residents oppose a pond at this location. • DNR has encouraged WisDOT to consider Honey Creek channel improvements downstream of I-94 in lieu of a retention/detention basin. The channel improvements could include removing the concrete lining and providing a wider channel. WisDOT will work with DNR, MMSD, and local governments to investigate this option. The east leg does not have enough available open space to build a properly sized retention/detention pond without acquiring and removing buildings. • South Leg—Reconfiguration of the Greenfield Avenue Interchange may make space available for one or more small ponds on the east side of US 45/ I-894. • North Leg—In the northeast quadrant of the US 45/Watertown Plank Road interchange. The basin would collect stormwater runoff from US 45, between the Zoo Interchange and Swan Boulevard. North of Underwood Creek to an area approximately 900 feet south of Burleigh Street, stormwater runoff would continue to flow through the freeway storm sewer system, into Wauwatosa storm sewers, and discharge to Underwood Creek. Reconfiguration of the north leg service interchanges may make space available for multiple small ponds at Wisconsin Avenue and Watertown Plank Road. • Core—Reconfiguration of the core of the Zoo Interchange may make space available for one or more small ponds. The core drains into Honey Creek, so ponds in the core would reduce the need for a pond at 84th Street. • After a preferred alternative for the Zoo Interchange is chosen, WisDOT will assess the different water quality and water quantity management options during the design phase. • No fishery mitigation measures have been identified.
Environmental Corridors and Natural Areas	All primary environmental corridors are also Milwaukee County parkland. Mitigation measures are discussed in Section 3.26.3.
Floodplains and	All structures would have adequate capacity for 100-year flood flow without public or emergency vehicle interruption from damage to the roadway or structures and would not increase headwater elevations by more than 0.01 foot. None of the floodplain crossings would cause a

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Hydraulics	substantial potential for interruption or termination of a transportation facility needed for emergency vehicles or the community's only evacuation route. Crossings would be consistent with local floodplain management goals and objectives. Additionally, floodplain crossings will be designed to not make the existing flood profile worse for adjacent landowners.
Groundwater and Water Supply	See Section 3.27.4, Water Quality/Erosion. WisDOT and FHWA will ensure that access to and maintenance of the county Zoo's well head is not adversely affected.
Wetlands	Presidential Executive Order 11990, Protection of Wetlands, requires federal agencies to avoid, to the extent practicable, long- and short-term adverse impacts associated with the destruction or modification of wetlands. More specifically, the order directs federal agencies to avoid new construction in wetlands unless there is no practicable alternative. The order states that where wetlands cannot be avoided, the proposed action must include all practicable measures to minimize harm to wetlands. The Clean Water Act's Section 404(b)1 Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 CFR Part 230) are administered by U.S. EPA and the Corps. The guidelines state that dredged or fill material should not be discharged into aquatic ecosystems (including wetlands), unless it can be demonstrated that there are no practicable alternatives to such discharge; that such discharge will not have unacceptable adverse impacts; and that all practicable measures to mitigate adverse effects are undertaken. Measures to Minimize Harm In accordance with state and federal agency policies and regulations for wetland preservation, including the Section 404(b)(1) Guidelines for Specifications of Disposal Sites for Dredged or Fill Material (40 CFR part 320), the following sections summarize wetland mitigation strategies for the Zoo Interchange study. Avoid and Minimize Wetland Impacts. Because wetlands are scattered along all legs of the study-area freeway system, including in the ditches that drain the freeway, it is not possible to avoid wetland impacts completely during freeway reconstruction. Of the 18 wetlands identified within the project corridor, the Modernization Alternatives would avoid impacts to ten wetlands, totaling more than 5 acres. The Reduced Impacts Alternative would also avoid impacts to nine of the wetlands totaling more than 5 acres. Two of these avoided wetlands lie within the primary environmental corridor and, as a result, are ADID wetlands. These wetlands are located in the Underwood Creek Parkway and are located along Underwood Creek. Efforts to avoid and minimize impacts to ADID wetlands are given strong consideration because of the functions they perform due to their geographic position in the landscape. For example, a wetland within the primary environmental corridor can be degraded floristically, but still be considered an ADID wetland due to the function it provides at that location, such as providing flood storage adjacent to a river. WisDOT will investigate additional measures to minimize wetland impacts such as keeping roadway side slopes as steep as practicable; disposing of excavated material on new roadway side slopes or in upland areas; minimizing sedimentation and siltation into adjacent wetlands by using strict erosion control measures; and using detention ponds, where allowed, to reduce pollutant loading and protect cold-water streams from sedimentation. Specifically, WisDOT will consider the following avoidance and minimization measures: • Wetland 2: It may be possible to fence the wetland to avoid impacts to it by the Modernization and Reduced Impacts Alternatives.

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	• Wetland 3: This small wetland fed by runoff from a park-and-ride lot may be avoided by Modernization Alternative N1 and the Reduced Impacts Alternative. • Wetland 5: Another small wetland fed by runoff from a park-and-ride lot may be avoided by Modernization Alternative N1. • Wetland 6: Steeper side slopes may minimize the impacts to it by the Reduced Impacts Alternative. Modernization Alternatives do not impact this wetland. • Wetland 7: Steeper side slopes may minimize the impact, but this 0.4-acre wetland may be completely filled under the Modernization Alternatives N1 and N3, and the Reduced Impacts Alternative. • Wetland 11: Steeper side slopes may minimize the impact, but approximately half of this 0.2-acre wetland may be filled under Modernization Alternative Modified E3 and the Reduced Impacts Alternative. • Wetland 13: Steeper side slopes to minimize the impact. • Wetland 16: Steeper side slopes to minimize the impact. • Wetland 18: Steeper side slopes and specifications in construction contract to prohibit contractor from going into the wetland. • Wetland 21: Steeper side slopes may minimize the impacts to this wetland. ***Wetland Compensation.*** Compensation for unavoidable wetland loss will be carried out in accordance with WisDOT's *Wetland Mitigation Banking Technical Guideline* developed as part of the WisDOT-DNR Cooperative Agreement on Compensatory Wetland Mitigation and the new regulations for compensatory wetland mitigation issued jointly by the Corps and USEPA in May 2008. A wetland mitigation plan will be developed during the project's design phase, in consultation with state and federal agencies. WisDOT developed the guideline in 1993 and updated it in 1997 and 2002 in cooperation with DNR, the Corps, U.S. EPA, U.S. Fish and Wildlife Service, and FHWA. Through the guideline, these agencies established a statewide policy regarding the sequence of activities required for WisDOT to compensate for wetland losses. Specifically, the guideline states "preference should be given for compensatory mitigation accomplished in the vicinity of the impacted area (onsite). Where such opportunities are not present or practical, in-watershed (near-site) opportunities should be explored." For those cases in which onsite or near-site opportunities for wetland mitigation are not available, WisDOT can debit the wetland loss at the closest established wetland mitigation bank. Since the time at which the guideline was developed, onsite has been typically interpreted as being within 0.25 mile of the wetland impact, while near-site has been interpreted as within 2.5 miles of the wetland impact area. Therefore, a mitigation site search for a linear corridor, such as the I-94, I-894, and USH 45 corridors, would encompass a 0.5-mile corridor centered on the highway and expand to a 5-mile corridor if onsite opportunities were not available. The guideline provides ratios for wetland replacement versus wetland loss depending on where the mitigation is to be provided. The replacement ratios increase with the mitigation site's distance from the impacted wetland.

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	WisDOT has an established statewide wetland mitigation bank located in Walworth County that has remaining acreage available for credit. Debiting wetland acreage credits from this bank to mitigate for the wetland losses from the Zoo Interchange project would be in accordance with the terms of the guideline. The Walworth County site is not in the same watershed as the study-area freeway system.
Threatened and Endangered Species	Bridges and culverts have been inspected to determine if any migratory birds are present. WisDOT will coordinate with DNR to develop appropriate measures to mitigate adverse effects to the Butler's garter snake. Potential measures include designing the recommended alternative to minimize impacts to the Tier 3 habitat, fencing to keep the snakes out of the construction area, and trapping or hand-collecting snakes that are inside the fenced area prior to construction. The fencing will be installed prior to March 15 each year to isolate the area that will be disturbed. If the fencing is in place prior to March 15, snakes would not need to be removed from inside the fenced area. Currently, only Tier 3 habitat requires fencing be put in place. Future DNR strategy may require snake fencing be put in place at Tier 1 and 2 Butler's garter snake habitat areas. Any area with potential habitat for the Blanding's turtle will be fenced with turtle fencing. The fencing will be in place by March 15. WisDOT will remove swallow nests from the underside of bridges prior to construction, between August 20 and May 15. The nests are unoccupied during this period. After swallow nests are removed, WisDOT will place nets under the bridge to keep swallows from re-establishing nests on bridges that are about to be removed.
Noise	Based upon the requirements of 23 CFR 772 and within the framework of TRANS 405, various methods were reviewed to mitigate the noise impact of the proposed improvements. Among those considered were restricting truck traffic to specific times of the day, prohibiting trucks, altering horizontal and vertical alignments, property acquisition for construction of noise barriers or berms, property acquisition to create buffer zones to prevent development that could be adversely impacted, and insulating public use or nonprofit institutional buildings, berms, and sound barriers. Restricting or prohibiting trucks is counter to the project's purpose and need. Design criteria and recommended termini for the proposed project preclude substantial horizontal and vertical alignment shifts that would produce noticeable changes in the projected acoustical environment. Due to right-of-way limitation the construction of noise berms is neither feasible nor reasonable. Therefore, only the construction of noise barriers was reviewed. Abatement is recommended only when it is feasible and reasonable to construct a noise barrier. TRANS 405, Siting Noise Barriers, has established criteria for determining feasibility and reasonableness and is summarized as follows: • The barrier must provide a minimum 8-dB reduction. • The total cost of the barrier may not exceed $30,000 per abutting residence. • There must be a formal resolution from the local government supporting the noise barrier.

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	• The local government must provide documentation of land use controls, which would reasonably eliminate the need for noise barriers adjacent to future developments that abut freeways or expressways. Noise barriers were analyzed at 46 locations adjacent to the study-area freeway system. The results of the barrier analysis, including barrier location, future L_{eq}(1h) noise levels without and with a barrier, barrier length and height, estimated cost, the number of residential units benefited, the noise reduction provided by the barrier and the cost per residential unit are presented in **Table 3-22**. Forty of the 46 noise barriers analyzed would meet WisDOT's feasibility criteria. However, only 16 noise barriers would meet both of TRANS 405's definitions for feasible and reasonable noise mitigation. There are numerous areas adjacent to the study-area freeway system where individual receptors or small groupings of residences exceed the noise levels in **Table 3-19**. However, it is impossible to design a noise barrier for these receptors that would provide an 8-decibel reduction and still meet the TRANS 405, $30,000 per residence criterion. The 66 dBA L_{eq}(1h) setback distance along undeveloped areas abutting the study-area freeway system would be 385 feet. The setback distance indicates that noise levels within these distances, measured perpendicular to the centerline of the nearest lane in either direction, is 66 dBA or greater. This setback distance was developed to assist local planning authorities in developing land use control over the remaining undeveloped lands along the project in order to prevent further development of incompatible land use. Noise mitigation for future developments constructed within the setback distance will be the responsibility of the local communities or the developer. Based on the study, and as shown in **Table 3-22**, WisDOT intends to replace the existing noise barriers and install the additional feasible and reasonable noise barriers. During the design phase of the project, as locations of retaining walls are more accurately defined relative to the surrounding areas, the location of feasible and reasonable noise mitigation will be reassessed. If final design results in substantial changes in roadway design from the conditions modeled for the DEIS or FEIS, noise abatement measures will be reviewed. Based on the study, and as shown in **Table 3-22**, WisDOT intends to replace the existing noise barriers and install the additional feasible and reasonable noise barriers. During the design phase of the project, as locations of retaining walls are more accurately defined relative to the surrounding areas, the location of feasible and reasonable noise mitigation will be reassessed. If final design results in substantial changes in roadway design from the conditions modeled for the DEIS or FEIS, noise abatement measures will be reviewed. During the public comment period on the Supplemental Draft EIS, local residents and officials from study area municipalities had the opportunity to comment on the project's potential noise impacts. See Section 6 for more information about public hearing comments. A final decision on installing abatement measures will be made upon completion of the design and the public involvement process.
Hazardous Materials	During the project's real estate acquisition phase, WisDOT will survey all buildings that need to be demolished to determine whether asbestos is present. An asbestos inspection of the 53 structures in the study area was conducted in 2009, 2010 and 2011. Asbestos-containing material is present on 44 of the structures. Special provision 203-005, bid item 203.0210s) will be included in the plan. The contractor will be responsible for completion of the Notification of Demolition and/or Renovation (DNR form 4500-113).
Historic Sites	WisDOT and FHWA have worked with State Historic Preservation Officer (SHPO) to assess the potential impacts to historic resources. A

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	memorandum of agreement between SHPO, FHWA, WisDOT, Union Pacific Railroad, and the Milwaukee County Historical Society was executed in September 2011.
Recreational Resources / Public Use Land	Please see Section 4 for mitigation measures for Underwood Creek Parkway/Oak Leaf Trail /Wil-O-Way Underwood Special Recreation Center, Milwaukee County Zoo, Chippewa Park, and Honey Creek Parkway. WisDOT will work with DNR to develop a suitable connection during Zoo Interchange construction. If and when the West Allis Cross Town Connector route is finalized, WisDOT will work with the City of West Allis to ensure that I-894/US 45 and the Connector are compatible. If the trail is built prior to reconstruction of the bridge carrying I-894/US 45 over the Connector, the trail will be closed during the bridge's construction, and WisDOT will work with the City of West Allis to devise a detour route.
Construction	During the design phase, WisDOT and FHWA would evaluate the diversion routes to determine if improvements to these routes are necessary. In addition to roadway improvements, signal timing modifications, temporary signals, parking restrictions, intersection improvements, incident management, and demand management options may be instituted during construction to ease potential congestion and delay. Freeway and local street lane closures would be staged to ease disruptions to the extent possible. Other mitigation measures may include the following: • Holding workshops to determine methods to reduce the effects of construction on area businesses, residents, commuters, community services, and special events. • Implementing a community involvement plan to inform the public, including radio, internet, print, and television. • Encouraging the use of transit and carpooling through advertising, temporarily reduced rates, additional routes, and expanded or new park-and-ride lots. • Encouraging businesses to modify their work schedules and/or shipping schedules to avoid peak traffic hours. • Improving detour routes and other routes due to increased traffic resulting from freeway construction. • Building the Adjacent Arterials Component first to accommodate diverted traffic from freeway construction. Water Quality/Erosion Construction in and near waterways would be performed in accordance with WisDOT's *Standard Specifications for Road and Bridge Construction*, and Wisconsin Administrative Code Chapter TRANS 401—Construction Site Erosion Control and Stormwater Management Procedures, and the WisDOT/DNR Cooperative Agreement. Appropriate techniques and best management practices, as described in the WisDOT Facilities Development Manual, would be employed to prevent erosion and to minimize siltation to environmentally sensitive resources in the project area. Erosion control devices would be installed before erosion-prone construction activities begin.

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	There is potential for erosion during construction as soils are disturbed by excavation and grading. The project would use standard erosion control devices and best management practices to reduce and control the deposit of sediment into environmentally sensitive resources before erosion-prone construction begins. The construction contractor will be required to prepare an Erosion Control Implementation Plan that includes all erosion control commitments made by WisDOT while planning and designing the project. The construction plans and contract special provisions must include the specific erosion control measures agreed on by WisDOT in consultation with DNR. DNR reviews the Erosion Control Implementation Plan.[3] The following measures may be used during construction: • Minimizing the amount of land exposed at one time • Silt fencing • Sedimentation traps • Dust abatement • Turbidity barriers • Street sweeping • Inlet protection barriers • Temporary seeding • Erosion mats • Ditch or slope sodding • Seeding and mulching exposed soils Under revisions to the WisDOT/DNR Cooperative Agreement, *Memorandum of Understanding on Erosion Control and Stormwater Management*, following construction disturbed land would be re-seeded with a mix of fast growing grasses. Drainage systems would be maintained, restored or re-established in a manner that would not impound water. Additional impact mitigation techniques during construction would include the following, as needed, at a particular location: • If dewatering is required, dirty water would be pumped into a stilling, or settling, basin before it is allowed to re-enter a stream. • Trenched-in erosion bales would be installed in areas of moderate velocity runoff; clean-aggregate ditch checks would be installed in ditches with moderate to high velocity runoff during and after construction; and ditches would be protected with erosion bales and matting in conjunction with seeding. • Storing and fueling of construction equipment would be done in upland areas, away from environmentally sensitive areas. Accidental spills during refueling at construction sites or as a result of an accident involving hazardous material haulers would be handled in accordance with local government response procedures. First response would be through local fire departments and emergency service personnel to ensure public safety and to contain immediate threats to the environment. Depending on the nature of the spill, the

[3] Erosion Control will be implemented in accordance with the WisDOT Facilities Development Manual, Chapter 10, Erosion Control and Stormwater Quality; Wisconsin Administrative Code Chapter TRANS 401, Construction Site Erosion Control and Stormwater Management Procedures for Department Actions; and the WisDOT/DNR Cooperative Agreement Amendment, Memorandum of Understanding on Erosion Control and Stormwater Management.

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Summary of Measures to Mitigate Adverse Effects

Affected Environment	Measures to Mitigate Adverse Effects
	DNR would then be notified to provide additional instructions regarding cleanup and restoration of any affected resources. The cost of cleanup operations is the responsibility of the contractor or carrier involved in the spill. Further, WisDOT's *Standard Specifications* state that public safety and environmental protection measures shall be enforced by the construction contractor. • Contractors would be required to follow DNR guidelines for ensuring that construction equipment used in or near waterways is adequately decontaminated for zebra mussels and plant exotics including purple loosestrife and Eurasian milfoil. Section 3.11 provides additional information regarding water quality mitigation and best management practices. Vibration Ground-borne vibration has the potential to affect nearby buildings. Blasting and impact pile driving are traditionally associated with high levels of vibration. Excavation and backfilling can generate vibration that is perceptible or noticeable in nearby buildings. Vibration created by the movement of construction vehicles such as graders, loaders, dozers, scrapers and trucks are generally the same order of magnitude as the vibration caused by heavy vehicles traveling on streets and highways. In general, groundborne vibration from vehicles on streets is not sufficient to impact adjacent buildings. Buildings that are in good structural condition would likely not be affected by construction-related vibration. WisDOT will coordinate with adjacent property owners prior to construction to determine if any buildings near construction areas are in poor structural condition. For construction work that occurs in the City of Milwaukee, WisDOT will meet City of Milwaukee vibration ordinances. In communities that do not have vibration ordinances, WisDOT will comply with the Wisconsin Department of Workforce Development (formerly Department of Industry, Labor and Human Relations) vibration regulations. Material Source/Disposal Sites The construction contractor is responsible for the selection of material source sites. Material would most likely be obtained from local existing quarry sites. Unusable excavated material would be disposed of by the contractor in accordance with WisDOT's *Standard Specifications for Road and Bridge Construction*, or special provisions to ensure protection of wetlands and waterways. Local zoning, reclamation plans, and other approvals may be needed for material source/disposal sites. Soil and excavated material (including vegetation) would be stockpiled or disposed of in an upland area, away from wetlands, streams, and other open water; and, where applicable, silt fence would be placed between the disposal area and wetland and open water areas. If any material sources are necessary to construct the project, appropriate erosion control measures would be applied to these sites during and following construction; and following use, such sites would be properly seeded, mulched, and protected from erosion. Any portable materials plants would be properly treated to prevent erosion, and DNR would be able to review site plans, including any gravel washing operations, high-capacity wells, and site closure/restoration.

Appendix B
Traffic Noise Impact Summary

APPENDIX B

Traffic Noise Impact Summary – 6-Lane Modernization Alternative, North Leg N1, N3

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA): Future Noise Level N1	Sound Levels Leq (dBA): Future Noise Level N3	Sound Levels Leq (dBA): Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col f) N1	Difference in Future and Existing Noise Levels (Col e minus Col f) N3	Difference in Future Noise Levels and NAC (Col d minus Col c) N1	Difference in Future Noise Levels and NAC (Col e minus Col c) N3	Impact or No Impact (**) N1	Impact or No Impact (**) N3
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)		
N1	Res (6)	67	67	65	76	-9	-11	0	-2	I	N
N2	Res (16)	67	64	65	72	-8	-7	-3	-2	N	N
N3	Res (6)	67	60	62	68	-8	-6	-7	-5	N	N
N4	School/Daycare	67	57	60	65	-8	-5	-10	-7	N	N
N5	Church	67	64	64	68	-4	-4	-3	-3	N	N
N6	Res (2)	67	61	65	67	-6	-2	-6	-2	N	N
N7	Res (4)/Church	67	63	67	70	-7	-3	-4	0	N	I
N8	Res (5)	67	67	69	73	-6	-4	0	2	I	I
N9	Res (1)	67	58	62	63	-5	-1	-9	-5	N	N
N10	Res (1)	67	56	67	68	-12	-1	-11	0	N	I
N11	Com (1)	72	62	60	61	1	-1	-10	-12	N	N
N12	Res (1)	67	63	63	66	-3	-3	-4	-4	N	N
N13	Res (1)	67	63	62	67	-4	-5	-4	-5	N	N
N14	School	67	66	66	66	0	0	-1	-1	I	I
N15	Res (1)	67	55	55	61	-6	-6	-12	-12	N	N

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – 6-Lane Modernization Alternative, North Leg N1, N3

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA) Future Noise Level N1	Future Noise Level N3	Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col f) N1	(Col e minus Col f) N3	Difference in Future Noise Levels and NAC (Col d minus Col c) N1	(Col e minus Col c) N3	Impact or No Impact (**) N1	Impact or No Impact (**) N3
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**	**(i)**	**(j)**		
N16	Res (2)	67	62	62	61	1	1	-5	-5	N	N
N17	Res (1)	67	60	60	60	0	0	-7	-7	N	N
N18	Res (1)	67	59	59	60	-1	-1	-8	-8	N	N
N19	Com (1)	72	70	70	74	-4	-4	-2	-2	N	N
N20	Res (12)	67	74	74	75	-1	-1	7	7	I	I
N21	Res (1)	67	66	66	69	-3	-3	-1	-1	I	I
N22	Res (6)	67	67	67	66	1	1	0	0	I	I
N23	Res (8)	67	67	67	68	-1	-1	0	0	I	I
N24	Res (3)	67	71	71	75	-4	-4	4	4	I	I
N25	Res (3)	67	70	70	75	-5	-5	3	3	I	I
N26	Res (5)	67	69	69	75	-6	-6	2	2	I	I
N27	Res (3)	67	64	64	74	-10	-10	-3	-3	N	N
N28	Res (3)	67	62	62	68	-6	-6	-5	-5	N	N
N29	Res (3)	67	62	62	67	-5	-5	-5	-5	N	N
N30	Res (2)	67	63	63	67	-4	-4	-4	-4	N	N
N31	School	67	64	64	68	-4	-4	-3	-3	N	N
N32	Tennis Court	67	66	66	71	-5	-5	-1	-1	I	I

APPENDIX B (CONTINUED)

Traffic Noise Impact Summary – 6-Lane Modernization Alternative, North Leg N1, N3

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA): Future Noise Level N1	Sound Levels Leq (dBA): Future Noise Level N3	Sound Levels Leq (dBA): Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col f) N1	Impact Evaluation: Difference in Future and Existing Noise Levels (Col e minus Col f) N3	Impact Evaluation: Difference in Future Noise Levels and NAC (Col d minus Col c) N1	Impact Evaluation: Difference in Future Noise Levels and NAC (Col e minus Col c) N3	Impact or No Impact (**) N1	Impact or No Impact (**) N3
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**	**(i)**	**(j)**		
N33	Com (1)	72	76	76	76	0	0	4	4	I	I
N34	Com (1)	72	72	72	70	2	2	0	0	I	I
N35	Com (1)	72	72	72	71	1	1	0	0	I	I
N36	Athletic Field	67	75	75	75	0	0	8	8	I	I
N37	School	67	78	78	77	1	1	11	11	I	I
N38	School	67	66	66	68	-2	-2	-1	-1	I	I
N39	Res (2)	67	69	69	70	-1	-1	2	2	I	I
N40	Res (5)	67	66	66	70	-4	-4	-1	-1	I	I
N41	Res (4)	67	64	64	72	-8	-8	-3	-3	N	N
N42	Res (2)	67	66	66	76	-10	-10	-1	-1	I	I
N43	Res (5)	67	63	63	72	-9	-9	-4	-4	N	N
N44	Res (6)	67	63	63	70	-7	-7	-4	-4	N	N
N45	Res (5)	67	71	71	73	-2	-2	4	4	I	I
N46	Res (6)	67	70	70	73	-3	-3	3	3	I	I
N47	Res (5)	67	66	66	68	-2	-2	-1	-1	I	I
N48	Res (8)	67	65	65	67	-2	-2	-2	-2	N	N
N49	Res (2)	67	63	63	66	-3	-3	-4	-4	N	N
N50	Res (3)	67	76	76	76	0	0	9	9	I	I

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – 6-Lane Modernization Alternative, North Leg N1, N3

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA) Future Noise Level N1	Future Noise Level N3	Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col f) N1	(Col e minus Col f) N3	Difference in Future Noise Levels and NAC (Col d minus Col c) N1	(Col e minus Col c) N3	Impact or No Impact (**) N1	Impact or No Impact (**) N3
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**	**(i)**	**(j)**		
N51	Res (2)	67	76	76	75	1	1	9	9	I	I
N52	Res (3)	67	76	76	76	0	0	9	9	I	I
N53	Com (1)	72	66	66	71	-5	-5	-6	-6	N	N
N54	Com (1)	72	62	62	70	-8	-8	-10	-10	N	N
N55	Park	67	70	70	69	1	1	3	3	I	I
N56	Com (1)	72	59	59	66	-7	-7	-13	-13	N	N
N57	Com (1)	72	64	65	66	-2	-1	-8	-7	N	N
N58	Com (1)	72	61	61	62	-1	-1	-11	-11	N	N
N59	Com (1)	72	60	68	72	-12	-4	-12	-4	N	N
N60	Com (1)	72	63	66	65	-2	1	-9	-6	N	N
N61	Res (4)	67	66	71	68	-2	3	-1	4	I	I
N62	Res (9)	67	68	70	71	-3	-1	1	3	I	I
N63	Res (3)	67	66	68	74	-8	-6	-1	1	I	I
N64	Com (1)	72	--	73	71	--	2	--	1	--	I

APPENDIX B

Traffic Noise Impact Summary – 6-Lane Modernization Alternative, East Leg –E1/E3 Hybrid Alternative and E1

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA): Future Noise Level E1/E3	Sound Levels Leq (dBA): Future Noise Level E1	Sound Levels Leq (dBA): Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col f) E1/E3	Impact Evaluation: Difference in Future and Existing Noise Levels (Col e minus Col f) E1	Impact Evaluation: Difference in Future Noise Levels and NAC (Col d minus Col c) E1/E3	Impact Evaluation: Difference in Future Noise Levels and NAC (Col e minus Col c) E1	Impact or No Impact (**) E1/E3	Impact or No Impact (**) E1
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**	**(i)**	**(j)**		
N65	Res (1)	67	65	65	66	-1	-1	-2	-2	N	N
N66	Res (2)	67	70	70	70	0	0	3	3	I	I
N67	Res (4)	67	69	71	72	-3	-1	2	4	I	I
N68	Res (2)	67	65	65	70	-5	-5	-2	-2	N	N
N69	Res (1)	67	66	66	73	-7	-7	-1	-1	I	I
N70	Res (2)	67	73	70	75	-2	-5	6	3	I	I
N71	Com (1)	72	70	68	74	-4	-6	-2	-4	N	N
N72	Com (2)	72	65	65	69	-4	-4	-7	-7	N	N
N73	Res (1)	67	67	66	73	-6	-7	0	-1	I	I
N74	Res (1)	67	62	62	68	-6	-6	-5	-5	N	N
N75	Com (1)	72	67	68	68	-1	0	0	1	I	I
N76	Res (2)	67	67	68	66	1	2	0	1	I	I
N77	Res (2)	67	66	67	65	1	2	-1	0	I	I
N78	Res (1)	67	64	68	63	1	5	-3	1	N	I
N79	Res (2)	67	64	62	63	1	-1	-3	-5	N	N
N80	Res (2)	67	60	64	64	-4	0	-7	-3	N	N
N81	Res (2)	67	62	64	62	0	2	-5	-3	N	N
N82	Res (2)	67	68	72	64	4	8	1	5	I	I

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – 6-Lane Modernization Alternative, East Leg – E1/E3 Hybrid Alternative, E1

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA): Future Noise Level E1/E3	Sound Levels Leq (dBA): Future Noise Level E1	Sound Levels Leq (dBA): Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col f) E1/E3	Impact Evaluation: Difference in Future and Existing Noise Levels (Col e minus Col f) E1	Impact Evaluation: Difference in Future Noise Levels and NAC (Col d minus Col c) E1/E3	Impact Evaluation: Difference in Future Noise Levels and NAC (Col e minus Col c) E1	Impact or No Impact (**) E1/E3	Impact or No Impact (**) E1
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**	**(i)**	**(j)**		
N83	Res (3)	67	68	68	68	0	0	1	1	I	I
N84	Res (3)	67	69	69	69	0	0	2	2	I	I
N85	Res (2)	67	73	73	73	0	0	6	6	I	I
N86	Res (2)	67	73	73	72	1	1	6	6	I	I
N87	Res (2)	67	66	66	69	-3	-3	-1	-1	I	I
N88	Res (2)	67	71	71	73	-2	-2	4	4	I	I
N89	Res (2)	67	68	68	69	-1	-1	1	1	I	I
N90	Res (2)	67	72	69	74	-2	-5	5	2	I	I
N91	Res (2)	67	68	66	68	0	-2	1	-1	I	I
N92	Res (2)	67	67	65	74	-7	-9	0	-2	I	N
N93	Res (3)	67	65	65	71	-6	-6	-2	-2	N	N
N94	Res (1)	67	65	66	73	-8	-7	-2	-1	N	I
N95	Res (2)	67	63	67	73	-10	-6	-4	0	N	I
N96	Res (2)	67	63	68	72	-9	-4	-4	1	N	I
N97	Res (4)	67	63	73	75	-12	-2	-4	6	N	I
N98	Res (4)	67	63	74	75	-12	-1	-4	7	N	I
N99	Res (4)	67	63	73	75	-12	-2	-4	6	N	I
N100	Res (2)/Church	67	64	72	74	-10	-2	-3	5	N	I
N101	Res (3)	67	66	69	74	-8	-5	-1	2	I	I

APPENDIX B (CONTINUED)

Traffic Noise Impact Summary – 6-Lane Modernization Alternative, East Leg – E1/E3 Hybrid Alternative, E1

			Sound Levels Leq (dBA)			Impact Evaluation					
						Difference in Future and Existing Noise Levels		Difference in Future Noise Levels and NAC		Impact or No Impact (**)	
			Future Noise Level			(Col d minus Col f)	(Col e minus Col f)	(Col d minus Col c)	(Col e minus Col c)		
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	E1/E3	E1	Existing Noise Level	E1/E3	E1	E1/E3	E1	E1/E3	E1
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**	**(i)**	**(j)**		
N102	Res (3)	67	65	67	73	-8	-6	-2	0	N	I
N103	Res (5)	67	64	69	69	-5	0	-3	2	N	I
N104	Res (5)	67	66	68	73	-7	-5	-1	1	I	I
N105	Res (6)	67	65	64	72	-7	-8	-2	-3	N	N
N106	Res (1)	67	66	62	70	-4	-8	-1	-5	I	N
N107	Res (3)	67	67	67	69	-2	-2	0	0	I	I
N108	Res (1)	67	68	67	74	-6	-7	1	0	I	I
N109	Res (3)	67	--	67	74	--	-7	--	0	--	I
N110	Res (2)	67	--	68	77	--	-9	--	1	--	I
N111	Res (5)	67	--	70	75	--	-5	--	3	--	I
N131	Com (1)	72	64	64	68	-4	-4	-8	-8	N	N

APPENDIX B
Traffic Noise Impact Summary – 6-Lane Alternative, South Leg – S2

			Sound Levels Leq (dBA)		Impact Evaluation		
					Difference in Future and Existing Noise Levels	Difference in Future Noise Levels and NAC	
	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level	Existing Noise Level	(Col d minus Col e)	(Col d minus Col c)	Impact or No Impact (**)
Receptor Location			**S2**		S2	S2	S2
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N112	Church	67	69	71	-2	2	I
N113	Res (5)	67	64	67	-3	-3	N
N114	Res (9)	67	67	70	-3	0	I
N115	Res (3)	67	72	74	-2	5	I
N116	Com (1)	72	66	69	-3	-6	N
N117	Res (8)	67	61	64	-3	-6	N
N118	Res (4)	67	60	63	-3	-7	N
N119	Com (1)	72	61	67	-6	-11	N
N120	Res (4)	67	66	69	-3	-1	I
N121	Res (10)	67	65	71	-6	-2	N
N122	Res (4)	67	61	70	-9	-6	N
N123	Com (1)	72	64	65	-1	-8	N
N124	Com (1)	72	71	71	0	-1	I
N125	Res (7)	67	71	71	0	4	I
N126	Res (11)	67	70	72	-2	3	I
N127	Res (9)	67	72	72	0	5	I
N128	Res (11)	67	68	68	0	1	I
N129	Res (5)	67	68	67	1	1	I
N130	Com (1)	72	68	66	2	-4	N

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – 6-Lane Alternative, South Leg – S2

		Sound Levels Leq (dBA)			Impact Evaluation		
					Difference in Future and Existing Noise Levels	Difference in Future Noise Levels and NAC	
	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level	Existing Noise Level	(Col d minus Col e)	(Col d minus Col c)	Impact or No Impact (**)
Receptor Location			**S2**		S2	S2	S2
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N132	Res (1)	67	60	59	1	-7	N
N133	Res (5)	67	57	61	-4	-10	N
N134	Res (5)	67	58	61	-3	-9	N
N135	Res (9)	67	63	62	1	-4	N
N136	Res (6)	67	72	63	9	5	I
N137	Res (2)/Church	67	72	66	6	5	I
N138	Res (2)/School	67	68	72	-4	1	I
N139	Com (1)	72	65	71	-6	-7	N
N140	Com (1)	72	72	75	-3	0	I
N141	Res (4)	67	77	77	0	10	I
N142	Res (12)	67	75	77	-2	8	I
N143	Res (6)	67	67	69	-2	0	I
N144	Com (1)	72	67	70	-3	-5	N
N145	Res (16)	67	66	62	4	-1	I
N146	Res (16)	67	70	62	8	3	I
N147	Res (16)	67	72	63	9	5	I
N148	Res (4)	67	77	64	13	10	I
N149	Res (10)	67	70	61	9	3	I

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – 6-Lane Alternative, South Leg – S2

		Sound Levels Leq (dBA)			Impact Evaluation		
					Difference in Future and Existing Noise Levels	Difference in Future Noise Levels and NAC	
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level	Existing Noise Level	(Col d minus Col e)	(Col d minus Col c)	Impact or No Impact (**)
			S2		S2	S2	S2
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N150	Res (8)	67	69	60	9	2	I
N170	Com (1)	72	62	60	2	-10	N
N171	Res (7)	67	61	62	-1	-6	N

APPENDIX B

Traffic Noise Impact Summary – 6-Lane Alternative, West Leg – W3

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA) Future Noise Level W3	Sound Levels Leq (dBA) Existing Noise Level	Impact Evaluation Difference in Future and Existing Noise Levels (Col d minus Col e) W3	Impact Evaluation Difference in Future Noise Levels and NAC (Col d minus Col c) W3	Impact or No Impact (**) W3
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N151	Com (1)	72	72	71	1	0	I
N152	Com (1)	72	72	71	1	0	I
N153	Res (1)	67	68	68	0	1	I
N154	Com (3)	72	72	72	0	0	I
N155	Com (1)	72	70	69	1	-2	N
N156	Com (1)	72	69	68	1	-3	N
N157	Com (1)	72	63	63	0	-9	N
N158	Res (2)	67	64	63	1	-3	N
N159	Res (2)	67	65	64	1	-2	N
N160	Res (2)	67	66	65	1	-1	I
N161	Res (2)	67	66	66	0	-1	I
N162	Res (2)	67	65	68	-3	-2	N
N163	Res (2)	67	65	67	-2	-2	N
N164, (FS-5)	Res (4), Park	67	67	69	-2	0	I
N165	Res (4)	67	63	68	-5	-4	N
N166	Com (1)	72	64	62	3	-8	N
N167	Zoo	67	66	68	-2	-1	I
N168	Zoo	67	68	69	-1	1	I
N169	Zoo	67	62	60	2	-5	N

APPENDIX B (CONTINUED)

Traffic Noise Impact Summary – 6-Lane Alternative, West Leg – W3

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA) Future Noise Level W3	Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col e) W3	Difference in Future Noise Levels and NAC (Col d minus Col c) W3	Impact or No Impact (**) W3
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N172	Res (6)	67	62	61	1	-5	N
N173	Res (7)	67	61	61	0	-6	N
N174	Res (10)	67	63	62	1	-4	N
N175 (FS-6)	Res (1)	67	62	61	1	-5	N
N176	Com (1)	72	63	63	0	-9	N
N177	Com (1)	72	62	65	-3	-10	N
N178	Com (1)	72	70	69	1	-2	N
N179	Com (2)	72	72	71	1	0	I
N180	Com (1)	72	72	71	1	0	I

Notes:

(*) Com – commercial site; Res (1) – residential site, 1 dwelling; Res (2) – residential site, 2 dwellings, -- acquired property, etc.

(**) Wisconsin Administrative Code – TRANS 405.54.04 (2)(b) (Site Criteria and Policies)

Source – HNTB April 2009

APPENDIX B

Traffic Noise Impact Summary – 8-Lane Alternative, North Leg N1, N3

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA): Future Noise Level N1	Future Noise Level N3	Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col f) N1	(Col e minus Col f) N3	Difference in Future Noise Levels and NAC (Col d minus Col c) N1	(Col e minus Col c) N3	Impact or No Impact (**) N1	Impact or No Impact (**) N3
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)		
N1	Res (6)	67	67	66	76	-9	-10	0	-1	I	I
N2	Res (16)	67	65	65	72	-7	-7	-2	-2	N	N
N3	Res (6)	67	60	62	68	-8	-6	-7	-5	N	N
N4	School/Daycare	67	57	61	65	-8	-4	-10	-6	N	N
N5	Church	67	64	64	68	-4	-4	-3	-3	N	N
N6	Res (2)	67	61	66	67	-6	-1	-6	-1	N	I
N7	Res (4)/Church	67	63	68	70	-7	-2	-4	1	N	I
N8	Res (5)	67	68	70	73	-5	-3	1	3	I	I
N9	Res (1)	67	59	63	63	-4	0	-8	-4	N	N
N10	Res (1)	67	56	68	68	-12	0	-11	1	N	I
N11	Com (1)	72	62	61	61	1	0	-10	-11	N	N
N12	Res (1)	67	63	63	66	-3	-3	-4	-4	N	N
N13	Res (1)	67	63	63	67	-4	-4	-4	-4	N	N
N14	School	67	67	67	66	1	1	0	0	I	I
N15	Res (1)	67	56	56	61	-5	-5	-11	-11	N	N
N16	Res (2)	67	62	62	61	1	1	-5	-5	N	N
N17	Res (1)	67	61	61	60	1	1	-6	-6	N	N

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – 8-Lane Alternative, North Leg N1, N3

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA): Future Noise Level N1	Sound Levels Leq (dBA): Future Noise Level N3	Sound Levels Leq (dBA): Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col f) N1	Impact Evaluation: Difference in Future and Existing Noise Levels (Col e minus Col f) N3	Impact Evaluation: Difference in Future Noise Levels and NAC (Col d minus Col c) N1	Impact Evaluation: Difference in Future Noise Levels and NAC (Col e minus Col c) N3	Impact or No Impact (**) N1	Impact or No Impact (**) N3
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**	**(i)**	**(j)**		
N18	Res (1)	67	60	60	60	0	0	-7	-7	N	N
N19	Com (1)	72	70	70	74	-4	-4	-2	-2	N	N
N20	Res (12)	67	74	74	75	-1	-1	7	7	I	I
N21	Res (1)	67	67	67	69	-2	-2	0	0	I	I
N22	Res (6)	67	68	68	66	2	2	1	1	I	I
N23	Res (8)	67	67	67	68	-1	-1	0	0	I	I
N24	Res (3)	67	72	72	75	-3	-3	5	5	I	I
N25	Res (3)	67	70	70	75	-5	-5	3	3	I	I
N26	Res (5)	67	69	69	75	-6	-6	2	2	I	I
N27	Res (3)	67	64	64	74	-10	-10	-3	-3	N	N
N28	Res (3)	67	63	63	68	-5	-5	-4	-4	N	N
N29	Res (3)	67	63	63	67	-4	-4	-4	-4	N	N
N30	Res (2)	67	63	63	67	-4	-4	-4	-4	N	N
N31	School	67	64	64	68	-4	-4	-3	-3	N	N
N32	Tennis Court	67	67	67	71	-4	-4	0	0	I	I
N33	Com (1)	72	77	77	76	1	1	5	5	I	I

APPENDIX B (CONTINUED)

Traffic Noise Impact Summary – 8-Lane Alternative, North Leg N1, N3

		Sound Levels Leq (dBA)				Impact Evaluation					
						Difference in Future and Existing Noise Levels		Difference in Future Noise Levels and NAC			
			Future Noise Level			(Col d minus Col f)	(Col e minus Col f)	(Col d minus Col c)	(Col e minus Col c)	Impact or No Impact (**)	
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	N1	N3	Existing Noise Level	N1	N3	N1	N3	N1	N3
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**	**(i)**	**(j)**		
N34	Com (1)	72	72	72	70	2	2	0	0	I	I
N35	Com (1)	72	73	73	71	2	2	1	1	I	I
N36	Athletic Field	67	76	76	75	1	1	9	9	I	I
N37	School	67	78	78	77	1	1	11	11	I	I
N38	School	67	66	66	68	-2	-2	-1	-1	I	I
N39	Res (2)	67	69	69	70	-1	-1	2	2	I	I
N40	Res (5)	67	67	67	70	-3	-3	0	0	I	I
N41	Res (4)	67	64	64	72	-8	-8	-3	-3	N	N
N42	Res (2)	67	66	66	76	-10	-10	-1	-1	I	I
N43	Res (5)	67	63	63	72	-9	-9	-4	-4	N	N
N44	Res (6)	67	64	64	70	-6	-6	-3	-3	N	N
N45	Res (5)	67	71	71	73	-2	-2	4	4	I	I
N46	Res (6)	67	71	71	73	-2	-2	4	4	I	I
N47	Res (5)	67	67	67	68	-1	-1	0	0	I	I
N48	Res (8)	67	65	65	67	-2	-2	-2	-2	N	N
N49	Res (2)	67	64	64	66	-2	-2	-3	-3	N	N
N50	Res (3)	67	77	77	76	1	1	10	10	I	I

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – 8-Lane Alternative, North Leg N1, N3

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA): Future Noise Level N1	Sound Levels Leq (dBA): Future Noise Level N3	Sound Levels Leq (dBA): Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels N1 (Col d minus Col f)	Impact Evaluation: Difference in Future and Existing Noise Levels N3 (Col e minus Col f)	Impact Evaluation: Difference in Future Noise Levels and NAC N1 (Col d minus Col c)	Impact Evaluation: Difference in Future Noise Levels and NAC N3 (Col e minus Col c)	Impact or No Impact (**) N1	Impact or No Impact (**) N3
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**	**(i)**	**(j)**		
N51	Res (2)	67	77	77	75	2	2	10	10	I	I
N52	Res (3)	67	77	77	76	1	1	10	10	I	I
N53	Com (1)	72	66	66	71	-5	-5	-6	-6	N	N
N54	Com (1)	72	62	62	70	-8	-8	-10	-10	N	N
N55	Park	67	70	70	69	1	1	3	3	I	I
N56	Com (1)	72	60	59	66	-6	-7	-12	-13	N	N
N57	Com (1)	72	64	65	66	-2	-1	-8	-7	N	N
N58	Com (1)	72	61	62	62	-1	0	-11	-10	N	N
N59	Com (1)	72	61	69	72	-11	-3	-11	-3	N	N
N60	Com (1)	72	64	67	65	-1	2	-8	-5	N	N
N61	Res (4)	67	67	71	68	-1	3	0	4	I	I
N62	Res (9)	67	69	71	71	-2	0	2	4	I	I
N63	Res (3)	67	67	69	74	-7	-5	0	2	I	I
N64	Com (1)	72	--	74	71	--	3	--	2	--	I

APPENDIX B

Traffic Noise Impact Summary – 8-Lane Alternative, East Leg – E1/E3 Hybrid Alternative and E1

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA) Future Noise Level E1/E3	Future Noise Level E1	Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col f) E1/E3	(Col e minus Col f) E1	Difference in Future Noise Levels and NAC (Col d minus Col c) E1/E3	(Col e minus Col c) E1	Impact or No Impact (**) E1/E3	Impact or No Impact (**) E1
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)		
N65	Res (1)	67	65	65	66	-1	-1	-2	-2	N	N
N66	Res (2)	67	70	71	70	0	1	3	4	I	I
N67	Res (4)	67	70	72	72	-2	0	3	5	I	I
N68	Res (2)	67	66	66	70	-4	-4	-1	-1	I	I
N69	Res (1)	67	67	67	73	-6	-6	0	0	I	I
N70	Res (2)	67	73	71	75	-2	-4	6	4	I	I
N71	Com (1)	72	71	69	74	-3	-5	-1	-3	I	N
N72	Com (2)	72	66	66	69	-3	-3	-6	-6	N	N
N73	Res (1)	67	68	66	73	-5	-7	1	-1	I	I
N74	Res (1)	67	63	63	68	-5	-5	-4	-4	N	N
N75	Com (1)	72	68	68	68	0	0	1	1	I	I
N76	Res (2)	67	68	69	66	2	3	1	2	I	I
N77	Res (2)	67	67	68	65	2	3	0	1	I	I
N78	Res (1)	67	64	69	63	1	6	-3	2	N	I
N79	Res (2)	67	65	63	63	2	0	-2	-4	N	N
N80	Res (2)	67	61	64	64	-3	0	-6	-3	N	N
N81	Res (2)	67	62	65	62	0	3	-5	-2	N	N

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – 8-Lane Alternative, East Leg – E1/E3 Hybrid Alternative and E1

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA): Future Noise Level E1/E3	Sound Levels Leq (dBA): Future Noise Level E1	Sound Levels Leq (dBA): Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col f) E1/E3	Difference in Future and Existing Noise Levels (Col e minus Col f) E1	Difference in Future Noise Levels and NAC (Col d minus Col c) E1/E3	Difference in Future Noise Levels and NAC (Col e minus Col c) E1	Impact or No Impact (**) E1/E3	Impact or No Impact (**) E1
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)		
N82	Res (2)	67	69	72	64	5	8	2	5	I	I
N83	Res (3)	67	69	68	68	1	0	2	1	I	I
N84	Res (3)	67	70	70	69	1	1	3	3	I	I
N85	Res (2)	67	74	74	73	1	1	7	7	I	I
N86	Res (2)	67	74	74	72	2	2	7	7	I	I
N87	Res (2)	67	67	67	69	-2	-2	0	0	I	I
N88	Res (2)	67	72	72	73	-1	-1	5	5	I	I
N89	Res (2)	67	69	68	69	0	-1	2	1	I	I
N90	Res (2)	67	72	70	74	-2	-4	5	3	I	I
N91	Res (2)	67	69	67	68	1	-1	2	0	I	I
N92	Res (2)	67	68	66	74	-6	-8	1	-1	I	I
N93	Res (3)	67	66	66	71	-5	-5	-1	-1	I	I
N94	Res (1)	67	66	67	73	-7	-6	-1	0	I	I
N95	Res (2)	67	64	68	73	-9	-5	-3	1	N	I
N96	Res (2)	67	63	69	72	-9	-3	-4	2	N	I
N97	Res (4)	67	64	74	75	-11	-1	-3	7	N	I
N98	Res (4)	67	64	75	75	-11	0	-3	8	N	I

APPENDIX B (CONTINUED)

Traffic Noise Impact Summary – 8-Lane Alternative, East Leg – E1/E3 Hybrid Alternative and E1

		Sound Levels Leq (dBA)				Impact Evaluation					
						Difference in Future and Existing Noise Levels		Difference in Future Noise Levels and NAC		Impact or No Impact (**)	
			Future Noise Level			(Col d minus Col f)	(Col e minus Col f)	(Col d minus Col c)	(Col e minus Col c)		
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	E1/E3	E1	Existing Noise Level	E1/E3	E1	E1/E3	E1	E1/E3	E1
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**	**(i)**	**(j)**		
N99	Res (4)	67	64	74	75	-11	-1	-3	7	N	I
N100	Res (2)/Church	67	65	73	74	-9	-1	-2	6	N	I
N101	Res (3)	67	67	69	74	-7	-5	0	2	I	I
N102	Res (3)	67	66	68	73	-7	-5	-1	1	I	I
N103	Res (5)	67	65	70	69	-4	1	-2	3	N	I
N104	Res (5)	67	67	69	73	-6	-4	0	2	I	I
N105	Res (6)	67	66	65	72	-6	-7	-1	-2	I	N
N106	Res (1)	67	67	63	70	-3	-7	0	-4	I	N
N107	Res (3)	67	67	67	69	-2	-2	0	0	I	I
N108	Res (1)	67	69	68	74	-5	-6	2	1	I	I
N109	Res (3)	67	--	68	74	--	-6	--	1	--	I
N110	Res (2)	67	--	69	77	--	-8	--	2	--	I
N111	Res (5)	67	--	71	75	--	-4	--	4	--	I
N131	Com (1)	72	65	65	68	-3	-3	-7	-7	N	N

APPENDIX B

Traffic Noise Impact Summary – 8-Lane Alternative, South Leg – S2

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA) Future Noise Level S2	Sound Levels Leq (dBA) Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col e) S2	Impact Evaluation: Difference in Future Noise Levels and NAC (Col d minus Col c) S2	Impact or No Impact (**) S2
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N112	Church	67	70	71	-1	3	I
N113	Res (5)	67	64	67	-3	-3	N
N114	Res (9)	67	67	70	-3	0	I
N115	Res (3)	67	73	74	-1	6	I
N116	Com (1)	72	66	69	-3	-6	N
N117	Res (8)	67	61	64	-3	-6	N
N118	Res (4)	67	61	63	-2	-6	N
N119	Com (1)	72	62	67	-5	-10	N
N120	Res (4)	67	66	69	-3	-1	I
N121	Res (10)	67	65	71	-6	-2	N
N122	Res (4)	67	61	70	-9	-6	N
N123	Com (1)	72	64	65	-1	-8	N
N124	Com (1)	72	72	71	1	0	I
N125	Res (7)	67	71	71	0	4	I
N126	Res (11)	67	70	72	-2	3	I
N127	Res (9)	67	72	72	0	5	I
N128	Res (11)	67	68	68	0	1	I
N129	Res (5)	67	69	67	2	2	I

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – 8-Lane Alternative, South Leg – S2

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA) Future Noise Level S2	Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col e) S2	Difference in Future Noise Levels and NAC (Col d minus Col c) S2	Impact or No Impact (**) S2
(a)	(b)	(c)	(d)	(e)	(f)	(g)	
N130	Com (1)	72	69	66	3	-3	N
N132	Res (1)	67	61	59	2	-6	N
N133	Res (5)	67	58	61	-3	-9	N
N134	Res (5)	67	58	61	-3	-9	N
N135	Res (9)	67	63	62	1	-4	N
N136	Res (6)	67	72	63	9	5	I
N137	Res (2)/Church	67	72	66	6	5	I
N138	Res (2)/School	67	69	72	-3	2	I
N139	Com (1)	72	66	71	-5	-6	N
N140	Com (1)	72	73	75	-2	1	I
N141	Res (4)	67	78	77	1	11	I
N142	Res (12)	67	75	77	-2	8	I
N143	Res (6)	67	67	69	-2	0	I
N144	Com (1)	72	67	70	-3	-5	N
N145	Res (16)	67	66	62	4	-1	I
N146	Res (16)	67	71	62	9	4	I
N147	Res (16)	67	73	63	10	6	I
N148	Res (4)	67	78	64	14	11	I

APPENDIX B (CONTINUED)

Traffic Noise Impact Summary – 8-Lane Alternative, South Leg – S2

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Sound Levels Leq (dBA): Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA): Future Noise Level S2	Sound Levels Leq (dBA): Existing Noise Level	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col e) S2	Impact Evaluation: Difference in Future Noise Levels and NAC (Col d minus Col c) S2	Impact Evaluation: Impact or No Impact (**) S2
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N149	Res (10)	67	71	61	10	4	I
N150	Res (8)	67	69	60	9	2	I
N170	Com (1)	72	62	60	2	-10	N
N171	Res (7)	67	61	62	-1	-6	N

APPENDIX B
Traffic Noise Impact Summary – 8-Lane Alternative, West Leg – W3

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA) Future Noise Level W3	Sound Levels Leq (dBA) Existing Noise Level	Impact Evaluation Difference in Future and Existing Noise Levels (Col d minus Col e) W3	Impact Evaluation Difference in Future Noise Levels and NAC (Col d minus Col c) W3	Impact or No Impact (**) W3
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N151	Com (1)	72	72	71	1	0	I
N152	Com (1)	72	72	71	1	0	I
N153	Res (1)	67	69	68	1	2	I
N154	Com (3)	72	72	72	0	0	I
N155	Com (1)	72	70	69	1	-2	N
N156	Com (1)	72	69	68	1	-3	N
N157	Com (1)	72	63	63	0	-9	N
N158	Res (2)	67	64	63	1	-3	N
N159	Res (2)	67	65	64	1	-2	N
N160	Res (2)	67	66	65	1	-1	I
N161	Res (2)	67	66	66	0	-1	I
N162	Res (2)	67	66	68	-2	-1	I
N163	Res (2)	67	65	67	-2	-2	N
N164	Res (4)	67	67	69	-2	0	I
N165	Res (4)	67	63	68	-5	-4	N
N166	Com (1)	72	65	62	3	-7	N
N167	Zoo	67	66	68	-2	-1	I
N168	Zoo	67	69	69	0	2	I

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – 8-Lane Alternative, West Leg – W3

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA) Future Noise Level W3	Sound Levels Leq (dBA) Existing Noise Level	Impact Evaluation Difference in Future and Existing Noise Levels (Col d minus Col e) W3	Impact Evaluation Difference in Future Noise Levels and NAC (Col d minus Col c) W3	Impact or No Impact (**) W3
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N169	Zoo	67	62	60	2	-5	N
N172	Res (6)	67	62	61	1	-5	N
N173	Res (7)	67	61	61	0	-6	N
N174	Res (10)	67	63	62	1	-4	N
N175	Res (1)	67	63	61	2	-4	N
N176	Com (1)	72	63	63	0	-9	N
N177	Com (1)	72	62	65	-3	-10	N
N178	Com (1)	72	70	69	1	-2	N
N179	Com (2)	72	72	71	1	0	I
N180	Com (1)	72	72	71	1	0	I

Notes:

(*) Com – commercial site; Res (1) – residential site, 1 dwelling; Res (2) – residential site, 2 dwellings, -- acquired property, etc.

(**) Wisconsin Administrative Code – TRANS 405.54.04 (2)(b) (Site Criteria and Policies)

APPENDIX B
Traffic Noise Impact Summary – Reduced Impact Alternative, North Leg

		Sound Levels Leq (dBA)			Impact Evaluation		
					Difference in Future and Existing Noise Levels	Difference in Future Noise Levels and NAC	
	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level	Existing Noise Level	(Col d minus Col e)	(Col d minus Col c)	Impact or No Impact (**)
Receptor Location			North Leg	North Leg	North Leg	North Leg	North Leg
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N1	Res (8)	67	68	76	-8	1	I
N2	Res (8)	67	64	72	-8	-3	N
N3	Res (4)	67	60	68	-8	-7	N
N4	School/Daycare	67	58	65	-7	-9	N
N5	Church	67	63	68	-5	-4	N
N6	Res (2)	67	61	67	-6	-6	N
N7	Res (4)/Church	67	62	70	-8	-5	N
N8	Res (5)	67	67	73	-6	0	I
N9	Milwaukee County Medical Complex	67	65	63	2	-2	N
N10	Milwaukee County Medical Complex	67	70	68	2	3	I
N11	Milwaukee County Parks Department, Office	72	63	61	2	-9	N
N12	County Grounds Vacant Buildings	72	63	66	-3	-9	N
N13	County Grounds Building	67	64	67	-3	-3	N
N14 (FS-4)	School	67	71	71	0	4	I
N15	Res (1)	67	61	61	0	-6	N

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – Reduced Impact Alternative, North Leg

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA): Future Noise Level North Leg	Sound Levels Leq (dBA): Existing Noise Level North Leg	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col e) North Leg	Impact Evaluation: Difference in Future Noise Levels and NAC (Col d minus Col c) North Leg	Impact or No Impact (**) North Leg
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N16	Res (2)	67	64	61	3	-3	N
N17	Res (1)	67	62	60	2	-5	N
N18	Res (1)	67	61	60	1	-6	N
N19	Com (1)	72	75	74	1	3	I
N20	Res (12)	67	75	75	0	8	I
N21	Res (1)	67	77	69	8	10	I
N22	Res (6)	67	68	66	2	1	I
N23	Res (8)	67	67	68	-1	0	I
N24	Res (3)	67	74	75	-1	7	I
N25	Res (3)	67	71	75	-4	4	I
N26	Res (5)	67	71	75	-4	4	I
N27	Res (3)	67	65	74	-9	-2	N
N28 (FS-1)	Res (3)	67	63	68	-5	-4	N
N29	Res (3)	67	63	67	-4	-4	N
N30	Res (2)	67	65	67	-2	-2	N
N31	School	67	62	68	-6	-5	N
N32	Tennis Court	67	65	71	-6	-2	N
N33	Com (1)	72	74	76	-2	2	I
N34	Com (1)	72	71	70	1	-1	I

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – Reduced Impact Alternative, North Leg

Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Sound Levels Leq (dBA): Future Noise Level North Leg	Sound Levels Leq (dBA): Existing Noise Level North Leg	Impact Evaluation: Difference in Future and Existing Noise Levels (Col d minus Col e) North Leg	Impact Evaluation: Difference in Future Noise Levels and NAC (Col d minus Col c) North Leg	Impact Evaluation: Impact or No Impact (**) North Leg
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N35	Com (1)	72	73	71	2	1	I
N36	Athletic Field	67	75	75	0	8	I
N37	School	67	78	77	1	11	I
N38	School	67	65	68	-3	-2	N
N39	Res (2)	67	69	70	-1	2	I
N40	Res (5)	67	68	70	-2	1	I
N41	Res (4)	67	66	72	-6	-1	I
N42	Res (2)	67	68	76	-8	1	I
N43	Res (5)	67	64	72	-8	-3	N
N44	Res (6)	67	65	70	-5	-2	N
N45 (FS-2)	Res (5)	67	73	75	-2	6	I
N46	Res (6)	67	75	73	2	8	I
N47	Res (5)	67	73	68	5	6	I
N48	Res (8)	67	66	67	-1	-1	I
N49	Res (2)	67	65	66	-1	-2	N
N50	Res (3)	67	76	76	0	9	I
N51	Res (2)	67	76	75	1	9	I
N52	Res (3)	67	76	76	0	9	I
N53	Com (1)	72	70	71	-1	-2	N

APPENDIX B (CONTINUED)

Traffic Noise Impact Summary – Reduced Impact Alternative, North Leg

		Sound Levels Leq (dBA)			Impact Evaluation		
					Difference in Future and Existing Noise Levels	Difference in Future Noise Levels and NAC	
	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level	Existing Noise Level	(Col d minus Col e)	(Col d minus Col c)	Impact or No Impact (**)
Receptor Location			North Leg	North Leg	North Leg	North Leg	North Leg
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N54	Com (1)	72	71	70	1	-1	I
N55	Park	67	68	69	-1	1	I
N56	Com (1)	72	66	66	0	-6	N
N57	Com (1)	72	63	66	-3	-9	N
N58	Com (1)	72	61	62	-1	-11	N
N59	Com (1)	72	74	72	2	2	I
N60	Com (1)	72	66	65	1	-6	N
N61	Res (4)	67	69	68	1	2	I
N62 (FS-3)	Res (9)	67	67	70	-3	0	I
N63	Res (3)	67	69	74	-5	2	I
N64	Com (1)	72	77	71	6	5	I

APPENDIX B

Traffic Noise Impact Summary – Reduced Impact Alternative, East Leg

		Sound Levels Leq (dBA)			Impact Evaluation		
					Difference in Future and Existing Noise Levels	Difference in Future Noise Levels and NAC	
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level East Leg	Existing Noise Level East Leg	(Col d minus Col e) East Leg	(Col d minus Col c) East Leg	Impact or No Impact (**) East Leg
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N65	Res (1)	67	67	66	1	0	I
N66 (FS-11)	Res (2)	67	70	70	0	3	I
N67	Res (4)	67	74	72	2	7	I
N68	Res (2)	67	73	70	3	6	I
N69	Res (1)	67	75	73	2	8	I
N70	Res (2)	67	77	75	2	10	I
N71	Com (1)	72	76	74	2	4	I
N72	Com (2)	72	66	69	-3	-6	N
N73	Res (1)	67	73	73	0	6	I
N74	Res (1)	67	68	68	0	1	I
N75	Com (1)	72	69	68	1	-3	N
N76	Res (2)	67	70	66	4	3	I
N77	Res (2)	67	73	65	8	6	I
N78	Res (1)	67	66	63	3	-1	I
N79 (FS-9)	Res (2)	67	65	62	3	-2	N
N80	Res (2)	67	65	64	1	-2	N
N81	Res (2)	67	63	62	1	-4	N
N82	Res (2)	67	65	64	1	-2	N

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – Reduced Impact Alternative, East Leg

		Sound Levels Leq (dBA)			Impact Evaluation		
					Difference in Future and Existing Noise Levels	Difference in Future Noise Levels and NAC	
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level East Leg	Existing Noise Level East Leg	(Col d minus Col e) East Leg	(Col d minus Col c) East Leg	Impact or No Impact (**) East Leg
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N83	Res (3)	67	68	68	0	1	I
N84	Res (3)	67	71	69	2	4	I
N85	Res (2)	67	74	73	1	7	I
N86	Res (2)	67	73	72	1	6	I
N87	Res (2)	67	67	69	-2	0	I
N88	Res (2)	67	72	73	-1	5	I
N89	Res (2)	67	69	69	0	2	I
N90 (FS-10)	Res (2)	67	72	73	-1	5	I
N91	Res (2)	67	68	68	0	1	I
N92	Res (2)	67	72	74	-2	5	I
N93	Res (3)	67	71	71	0	4	I
N94	Res (1)	67	72	73	-1	5	I
N95	Res (2)	67	72	73	-1	5	I
N96	Res (2)	67	70	72	-2	3	I
N97	Res (4)	67	73	75	-2	6	I
N98	Res (4)	67	73	75	-2	6	I
N99 (FS-12)	Res (4)	67	73	75	-2	6	I
N100	Res (2)/Church	67	73	74	-1	6	I
N101	Res (3)	67	73	74	-1	6	I

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – Reduced Impact Alternative, East Leg

		Sound Levels Leq (dBA)			Impact Evaluation		
					Difference in Future and Existing Noise Levels	Difference in Future Noise Levels and NAC	
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level East Leg	Existing Noise Level East Leg	(Col d minus Col e) East Leg	(Col d minus Col c) East Leg	Impact or No Impact (**) East Leg
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N102	Res (3)	67	72	73	-1	5	I
N103	Res (5)	67	71	69	2	4	I
N104	Res (5)	67	72	73	-1	5	I
N105	Res (6)	67	72	72	0	5	I
N106	Res (1)	67	73	70	3	6	I
N107	Res (3)	67	72	69	3	5	I
N108	Res (1)	67	73	74	-1	6	I
N109	Res (3)	67	71	74	-3	4	I
N110	Res (2)	67	72	77	-5	5	I
N111	Res (5)	67	74	75	-1	7	I
N131	Com (1)	72	67	68	-1	-5	N

APPENDIX B
Traffic Noise Impact Summary – Reduced Impact Alternative, South Leg

		Sound Levels Leq (dBA)			Impact Evaluation		
					Difference in Future and Existing Noise Levels	Difference in Future Noise Levels and NAC	
	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level	Existing Noise Level	(Col d minus Col e)	(Col d minus Col c)	Impact or No Impact (**)
Receptor Location			South Leg	South Leg	South Leg	South Leg	South Leg
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N112	Church	67	70	71	-1	3	I
N113	Res (5)	67	65	67	-2	-2	N
N114	Res (9)	67	68	70	-2	1	I
N115 (FS-7)	Res (3)	67	73	73	0	6	I
N116	Com (1)	72	66	69	-3	-6	N
N117	Res (8)	67	63	64	-1	-4	N
N118	Res (4)	67	64	63	1	-3	N
N119	Com (1)	72	66	67	-1	-6	N
N120	Res (4)	67	64	69	-5	-3	N
N121	Res (10)	67	63	71	-8	-4	N
N122	Res (4)	67	59	70	-11	-8	N
N123	Com (1)	72	61	65	-4	-11	N
N124	Com (1)	72	70	71	-1	-2	N
N125	Res (7)	67	68	71	-3	1	I
N126	Res (11)	67	69	72	-3	2	I
N127	Res (9)	67	73	72	1	6	I
N128	Res (11)	67	67	68	-1	0	I
N129	Res (5)	67	67	67	0	0	I
N130	Com (1)	72	67	66	1	-5	N

APPENDIX B (CONTINUED)

Traffic Noise Impact Summary – Reduced Impact Alternative, South Leg

		Sound Levels Leq (dBA)			Impact Evaluation		
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level South Leg	Existing Noise Level South Leg	Difference in Future and Existing Noise Levels (Col d minus Col e) South Leg	Difference in Future Noise Levels and NAC (Col d minus Col c) South Leg	Impact or No Impact (**) South Leg
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N132	Res (1)	67	63	59	4	-4	N
N133	Res (5)	67	63	61	2	-4	N
N134	Res (5)	67	63	61	2	-4	N
N135	Res (9)	67	67	62	5	0	I
N136 (FS-8)	Res (6)	67	72	62	10	5	I
N137	Res (2)/Church	67	70	66	4	3	I
N138	Res (2)/School	67	72	72	0	5	I
N139	Com (1)	72	68	71	-3	-4	N
N140	Com (1)	72	74	75	-1	2	I
N141	Res (4)	67	77	77	0	10	I
N142	Res (12)	67	76	77	-1	9	I
N143	Res (6)	67	67	69	-2	0	I
N144	Com (1)	72	68	70	-2	-4	N
N145	Res (16)	67	66	62	4	-1	I
N146	Res (16)	67	70	62	8	3	I
N147	Res (16)	67	72	63	9	5	I
N148	Res (4)	67	77	64	13	10	I
N149	Res (10)	67	70	61	9	3	I

APPENDIX B (CONTINUED)

Traffic Noise Impact Summary – Reduced Impact Alternative, South Leg

		Sound Levels Leq (dBA)			Impact Evaluation		
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level South Leg	Existing Noise Level South Leg	Difference in Future and Existing Noise Levels (Col d minus Col e) South Leg	Difference in Future Noise Levels and NAC (Col d minus Col c) South Leg	Impact or No Impact (**) South Leg
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N150	Res (8)	67	68	60	8	1	I
N170	Com (1)	72	65	60	5	-7	N
N171	Res (7)	67	66	62	4	-1	I

APPENDIX B
Traffic Noise Impact Summary – Reduced Impact Alternative, West Leg

		Sound Levels Leq (dBA)			Impact Evaluation		
					Difference in Future and Existing Noise Levels	Difference in Future Noise Levels and NAC	
	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level	Existing Noise Level	(Col d minus Col e)	(Col d minus Col c)	Impact or No Impact (**)
Receptor Location			West Leg	West Leg	West Leg	West Leg	West Leg
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N151	Com (1)	72	71	71	0	-1	I
N152	Com (1)	72	71	71	0	-1	I
N153	Res (1)	67	69	68	1	2	I
N154	Com (3)	72	72	72	0	0	I
N155	Com (1)	72	69	69	0	-3	N
N156	Com (1)	72	69	68	1	-3	N
N157	Com (1)	72	64	63	1	-8	N
N158	Res (2)	67	65	63	2	-2	N
N159	Res (2)	67	65	64	1	-2	N
N160	Res (2)	67	66	65	1	-1	I
N161	Res (2)	67	65	66	-1	-2	N
N162	Res (2)	67	66	68	-2	-1	I
N163	Res (2)	67	64	67	-3	-3	N
N164 (FS-5)	Res (4), Park	67	66	69	-3	-1	I
N165	Res (4)	67	65	68	-3	-2	N
N166	Com (1)	72	61	62	-1	-11	N
N167	Zoo	67	65	68	-3	-2	N
N168	Zoo	67	70	69	1	3	I
N169	Zoo	67	61	60	1	-6	N

APPENDIX B (CONTINUED)
Traffic Noise Impact Summary – Reduced Impact Alternative, West Leg

		Sound Levels Leq (dBA)			Impact Evaluation		
	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level	Existing Noise Level	Difference in Future and Existing Noise Levels (Col d minus Col e)	Difference in Future Noise Levels and NAC (Col d minus Col c)	Impact or No Impact (**)
Receptor Location			West Leg	West Leg	West Leg	West Leg	West Leg
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N172	Res (6)	67	64	61	3	-3	N
N173	Res (7)	67	64	61	3	-3	N
N174	Res (10)	67	65	62	3	-2	N
N175 (FS-6)	Res (1)	67	65	60	5	-2	N
N176	Com (1)	72	64	63	1	-8	N
N177	Com (1)	72	63	65	-2	-9	N
N178	Com (1)	72	71	69	2	-1	I
N179	Com (2)	72	72	71	1	0	I
N180	Com (1)	72	73	71	2	1	I

Notes:

(*) Com – commercial site; Res (1) – residential site, 1 dwelling; Res (2) – residential site, 2 dwellings, -- acquired property, etc.

(**) Wisconsin Administrative Code – TRANS 405.54.04 (2)(b) (Site Criteria and Policies)

Source – HNTB April 2009

APPENDIX B

Traffic Noise Impact Summary – Adjacent Arterials Component, HWY 100 & Bluemound Rd.

		Sound Levels Leq (dBA)			Impact Evaluation		
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level	Existing Noise Level	Difference in Future and Existing Noise Levels (Col d minus Col e)	Difference in Future Noise Levels and NAC (Col d minus Col c)	Impact or No Impact (**)
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N181	Hotel	67	63	64	-1	-3	N
N182	Com (1)	72	68	68	0	-3	N
N183	Hospital	67	66	66	0	0	I
N184	Res (1)	67	59	59	0	-7	N
N185	Com (4)	72	68	66	2	-3	N
N186	Res (12)	67	68	66	2	2	I
N187	Res (2)	67	61	60	1	-5	N
N188	Com (1)	72	69	69	0	-2	N
N189	Com (1)	72	58	60	-2	-13	N
N190	Com (2)	72	71	73	-2	0	I
N191	Com (4)	72	69	71	-2	-2	N
N192	Com (1)	72	66	68	-2	-5	N
N193	Res (6)	67	59	61	-2	-7	N
N194	Res (6)	67	58	60	-2	-8	N
N195	Com (1)	72	68	69	-1	-3	N
N196	Com (1)	72	64	66	-2	-7	N
N197	Com (1)	72	64	65	-1	-7	N
N198	Com (4)	72	68	69	-1	-3	N

APPENDIX B

Traffic Noise Impact Summary – Adjacent Arterials Component, HWY 100 & Watertown Plank Rd.

		Sound Levels Leq (dBA)			Impact Evaluation		
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level	Existing Noise Level	Difference in Future and Existing Noise Levels (Col d minus Col e)	Difference in Future Noise Levels and NAC (Col d minus Col c)	Impact or No Impact (**)
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N199	Com (7)	72	68	70	-2	-3	N
N200	Com (1)	72	68	70	-2	-3	N
N201	Com (1)	72	65	70	-5	-6	N
N202	Com (1)	72	61	62	-1	-10	N
N203	County Grounds Building (2)	72	60	57	3	-11	N
N204	Fire House	67	63	62	1	-3	N
N205	Hotel	67	62	62	0	-4	N

APPENDIX B

Traffic Noise Impact Summary – Adjacent Arterials Component, 92nd St. & Watertown Plank Rd.

		Sound Levels Leq (dBA)			Impact Evaluation		
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level	Existing Noise Level	Difference in Future and Existing Noise Levels (Col d minus Col e)	Difference in Future Noise Levels and NAC (Col d minus Col c)	Impact or No Impact (**)
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N206	Com (2)	72	56	54	2	-15	N
N207	Res (1)	67	63	62	1	-3	N
N208	Com (2)	72	65	64	1	-6	N
N209	Com (1)	72	63	62	1	-8	N
N210	Institutional (3)	67	63	60	3	-3	N

APPENDIX B

Traffic Noise Impact Summary – Adjacent Arterials Component, Glenview Ave. & Bluemound Rd.

		Sound Levels Leq (dBA)			Impact Evaluation		
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level	Existing Noise Level	Difference in Future and Existing Noise Levels (Col d minus Col e)	Difference in Future Noise Levels and NAC (Col d minus Col c)	Impact or No Impact (**)
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N211	Res (4)	67	63	62	1	-3	N
N212	Res (5)	67	66	66	0	0	I
N213	Res (3)	67	69	68	1	3	I
N214	Com (3)	72	68	68	0	-3	N
N215	Com (2)	72	64	64	0	-7	N
N216	Res (8)	67	62	61	1	-4	N
N217	Res (1)	67	64	62	2	-2	N
N218	Res (2)	67	62	62	0	-4	N
N219	Res (8)	67	60	60	0	-6	N
N220	Res (2)	67	61	61	0	-5	N
N221	Res (2)	67	64	63	1	-2	N
N222	Res (3)	67	63	62	1	-3	N
N223	Church	67	64	64	0	-2	N
N224	Com (1)	72	61	62	-1	-10	N
N225	Res (5)	67	65	67	-2	-1	I
N226	Com (1)	72	65	67	-2	-6	N
N227	School	67	62	62	0	-4	N

APPENDIX B

Traffic Noise Impact Summary – Adjacent Arterials Component, 84th St. & I-94

		Sound Levels Leq (dBA)			Impact Evaluation		
Receptor Location	Number of Residences, Schools, etc., Typical of this Receptor Site (*)	Noise Abatement Criteria (NAC)	Future Noise Level	Existing Noise Level	Difference in Future and Existing Noise Levels (Col d minus Col e)	Difference in Future Noise Levels and NAC (Col d minus Col c)	Impact or No Impact (**)
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	
N228	St. Charles Youth & Family Service	67	63	63	0	-3	N
N229	Res (6)	67	64	64	0	-2	N
N230	Res (1)	67	66	64	2	0	I
N231	Com (2)	72	68	67	1	-3	N

Notes:

(*) Com – commercial site; Res (1) – residential site, 1 dwelling; Res (2) – residential site, 2 dwellings, -- acquired property, etc.

(**) Wisconsin Administrative Code – TRANS 405.54.04 (2)(b) (Site Criteria and Policies)

Source – HNTB April 2009

Appendix C
Mobile Source Air Toxics

APPENDIX C

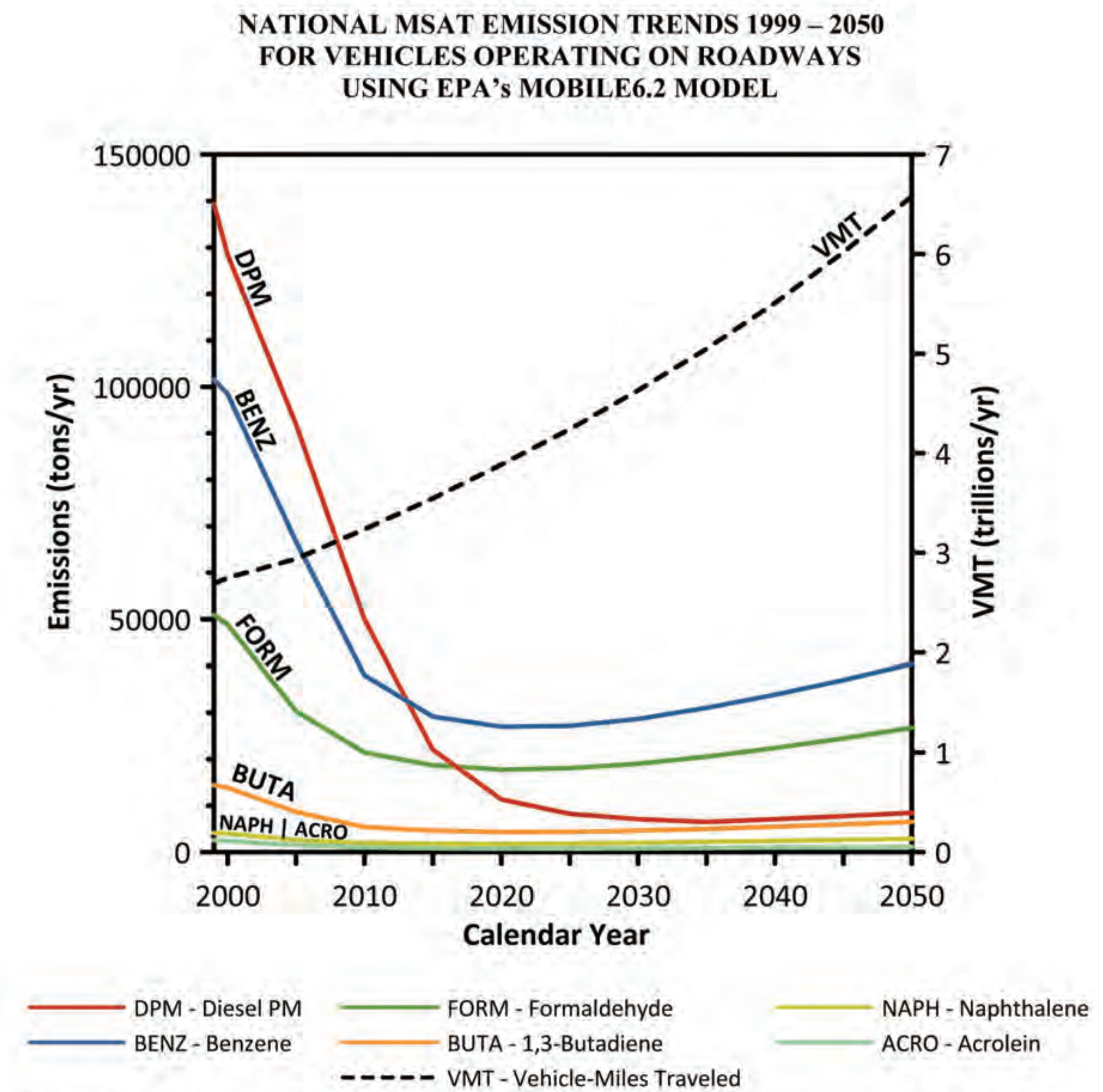
Mobile Source Air Toxics

In September, 2009, FHWA issued updated guidance for the analysis of mobile source air toxics (MSATs) in the NEPA process for highway projects (*Interim Guidance Update on Air Toxic Analysis in NEPA Documents*). The following language is based on the Interim Guidance Update.

In addition to the criteria air pollutants for which there are the NAAQS, U.S. EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries).

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (http://cfcpub.epa.gov/ncea/iris/index.cfm). In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (http://www.epa.gov/ttn/atw/nata1999/). These are *acrolein, benzene, 1,3-butidiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter*. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE6.2 model, even if vehicle activity (vehicle-miles travelled, VMT) increases by 145 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050, as shown in Figure C1.



Note: (1) Annual emissions of polycyclic organic matter are projected to be 561 tons/yr for 1999, decreasing to 373 tons/yr for 2050.
(2) Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors

Source: U.S. Environmental Protection Agency. MOBILE6.2 Model run 20 August 2009.

Figure C1 MSAT Trends

MSAT Analysis Guidance

FHWA's Interim Guidance on Air Toxics Analysis in NEPA Documents (February 2006) presents a tiered approach for analyzing MSATs. Depending on project specifics, FHWA has identified three levels of analysis:

- Tier I: No analysis for projects with no potential for meaningful MSAT effects;
- Tier II: Qualitative analysis for projects with low potential MSAT effects; or
- Tier III: Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

The proposed Zoo Interchange improvements, with design year average annual daily traffic (AADT) in excess of 150,000 vehicles per day, meet FHWA's criteria for a Tier III analysis. As such a quantitative analysis of potential MSAT emissions for the six priority MSATs for each alternative is required.

Tier III Quantitative MSAT Analysis

A quantitative analysis was completed to provide a basis for identifying and comparing the potential differences among MSAT emissions—if any—from the various alternatives. The quantitative assessment presented below is derived in part from a study conducted by the FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, found at:

www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm

Scope and Methodology

The quantitative MSAT analysis estimates the annual emissions of the six priority MSATs as a function of VMT and MSAT emission rates developed by MOBILE6.2. The simplest scope of analysis would be to only calculate emissions for those roadway segments that would be constructed as part of the project. However, this methodology would not consider the influence of the proposed project on the surrounding areas. Therefore, it is more appropriate to define an Affected Transportation Network to better capture the MSAT emissions that would be generated as a result of the project. This network would include the proposed project plus other transportation links where traffic volumes are expected to change as a result of the project.

The Affected Transportation Network (MSAT Study Area) was based on the project-level traffic forecast area developed by SEWRPC. According to FHWA, the typical accuracy threshold of travel demand forecasting is plus or minus five percent AADT. Also, changes of plus or minus five percent AADT can affect changes of plus or minus ten percent or more in emissions on congested roadways. Since the project level traffic forecast network was established for the Zoo Interchange study area, this is the network that was used in the MSAT analysis. The network, in addition to I-94, I-894 and USH 45, also included major arterials that intersected or crossed the study-area freeway system, along with parallel roads as far west as 124th Street, as far east as 68th Street, and from Oklahoma Avenue on the south to Capitol Drive on the north.

The MSAT analysis years included the base year (2004), first full opening year (2016) and design year (2035) for the No-Build and both 6-lane and 8-lane Build Alternatives. The MSAT emissions analysis was completed using the current version of U.S. EPA's regulatory mobile source emission factor model, MOBILE6.2 dated November 2003 as implemented in FHWA's Easy Mobile Inventory Tool—or EMIT. Based on MOBILE6.2 emission factors, EMIT produced emissions for the six priority air toxic pollutants in tons per year using the following locale-specific input files:

- Vehicle Age Distributions
- VMT Fraction by Vehicle Classification
- VMT Fraction by Hour of Day
- Inspection/Maintenance Program
- Anti-Tampering Program
- Seasonal Fuel Specifications, Temperatures, and Humidity
- Emissions Due to Vehicle Engine Starts
- Highway Network Travel Data

The MOBILE6.2 parameters were provided by the DNR (DNR, 2009). The Highway Network Travel Data was developed from SEWRPC's network for the Affected Transportation Network, and included the following information for each link: length, AADT, number of lanes, Highway Performance Monitoring System (HPMS) Area Type, HPMS Functional Classification, free flow speed and capacity.

MSAT Analysis Results

The amount of MSATs emitted in the region would be proportional to VMT. However, because of improvements in emissions technologies, total MSAT emissions will decline over time, even while VMT increases.

Within the Affected Transportation Network, VMT is expected to increase by 22 to 24 percent between 2004 and 2035. The estimated VMT in 2035 with the 6-lane Modernization Alternative, 8-lane Modernization Alternative, and Reduced Impacts Alternative are 7.5, 8.9 and 7.4 percent respectively greater than the No-Build Alternative (Figure C2). This additional VMT contributes to the Build Alternatives having slightly higher MSAT emissions compared to the No-Build Alternative.

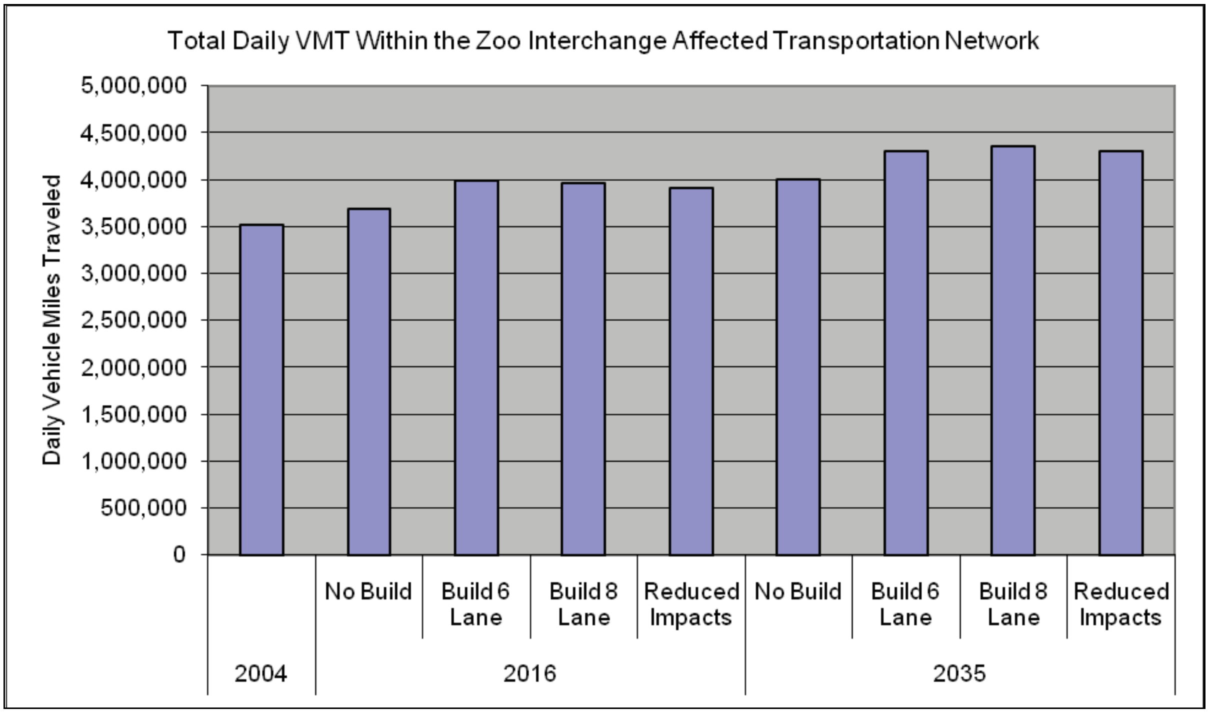


Figure C2 Daily VMT

Regardless of the alternative chosen, MSAT emissions will be lower than present levels in the design year as a result of U.S. EPA's national control programs. On a national basis, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the U.S. EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions are lower in the future. As shown in Figure C3, MSAT emissions in the Affected Transportation Network are predicted to decrease by 66 percent between 2004 and 2035 despite a 22 to 24 percent increase in VMT. Figure C3 also indicates that the differences in MSAT emissions between the No-Build Alternative and the 6-lane Modernization Alternative, 8-lane Modernization Alternative, or Reduced Impacts Alternative are relatively small, varying by just 1.8 tons per year in 2016 and only 1,040 pounds (0.52 ton) per year in 2035. The slightly greater MSAT emissions in 2035 associated with the Build Alternatives compared to the No-Build Alternative are the result of a 7.4 to 8.9 percent increase in VMT.

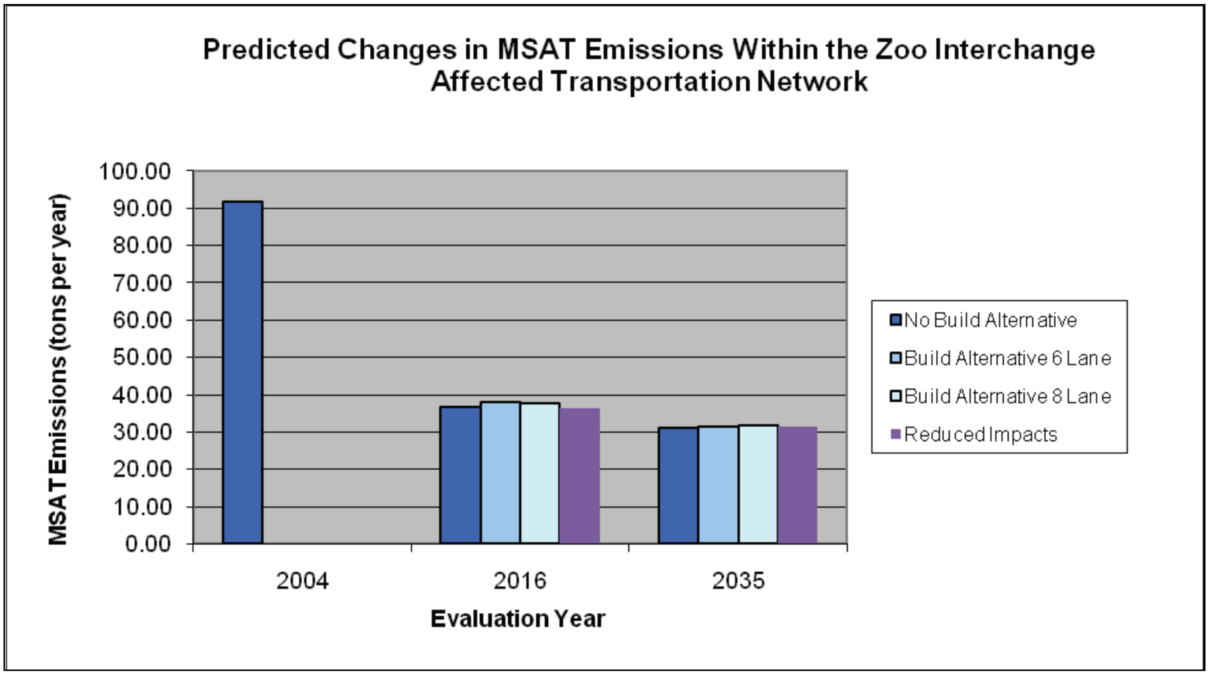


Figure C3 Predicted MSAT Emission Changes

As shown in Table C-1, the greatest reduction in MSAT emissions is expected for Diesel Particulate Matter (DPM). Smaller reductions are anticipated for the remaining pollutants. Variations between the No-Build Alternative and Build Alternative are minor.

TABLE C-1
MSAT Analysis

	Tons per Year											
		2016				2035				Percent Change 2004 to 2035		
MSAT Pollutant	2004	No-Build	Build 6 Lanes	Build 8 Lanes	Reduced Impacts	No-Build	Build 6 Lanes	Build 8 Lanes	Reduced Impacts	6 Lanes	8 Lanes	Reduced Impacts
Benzene	32.37	15.88	16.62	16.41	16.36	14.67	14.97	15.05	14.92	-54%	-54%	-54%
DPM	27.57	4.68	5.10	5.18	5.09	1.24	1.34	1.40	1.37	-95%	-95%	-95%
1,3 Butadiene	4.44	2.17	2.26	2.23	2.22	2.04	2.06	2.07	2.06	-54%	-53%	-54%
Formaldehyde	15.65	7.90	8.04	7.94	6.62	7.54	7.39	7.45	7.38	-53%	-52%	-53%
Acetaldehyde	11.02	5.63	5.82	5.75	5.73	5.30	5.31	5.35	5.31	-52%	-51%	-52%
Acrolein	0.72	0.34	0.35	0.34	0.34	0.33	0.32	0.32	0.32	-56%	-56%	-56%
Totals	91.77	36.60	38.19	37.85	36.36	31.12	31.39	31.64	31.36	-66%	-66%	-66%

Note: Totals may not add correctly due to rounding.

The additional travel lanes contemplated as part of the 8-lane Modernization Alternative and the Reduced Impacts Alternative will have the effect of moving traffic closer to some homes, schools and businesses; therefore, there may be localized areas where ambient concentrations of MSATs could be higher compared to the 6-lane Modernization Alternative (with both Build Alternatives being considerably lower than existing concentrations). Since the Build VMT is slightly greater than the No-Build VMT, there may be localized areas where ambient concentrations of MSATs could be higher under either the 6-lane or 8-lane Modernization Alternatives than the No–Build Alternative. Also, MSATs will be lower in other locations when traffic shifts away from them. However, as discussed below, the magnitude and the duration of these potential increases compared to the No-Build alternative cannot be reliably quantified due to the inherent deficiencies of current models.

In summary, MSAT emissions in 2035 are expected to be relatively similar under the Build Alternatives relative to the No-Build Alternative. In comparing the Build Alternatives to the No-Build Alternative, MSAT levels could be higher in some locations than others, but current tools and science are not adequate to reliably quantify them. However, on a regional basis, U.S. EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that will cause region-wide MSAT levels to be significantly lower than today. As this analysis shows, despite VMT increases from 2004 to 2035, MSAT emissions are still anticipated to decline considerably over the same period. The proposed project would not interfere with the substantial emissions reductions forecasted in the project area due to the implementation of U.S. EPA's regulations.

Incomplete Or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The U.S. Environmental Protection Agency (EPA) is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, https://www.epa.gov/iris/). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, http://pubs.healtheffects.org/view.php?id=282) or in the future as vehicle emissions substantially decrease (HEI, http://pubs.healtheffects.org/view.php?id=306).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable. The results produced by the EPA's MOBILE6.2 model, the California EPA's Emfac2007 model, and the EPA's DraftMOVES2009 model in forecasting MSAT emissions are highly inconsistent. Indications from the development of the MOVES model are that MOBILE6.2 significantly underestimates diesel particulate matter (PM) emissions and significantly overestimates benzene emissions.

Regarding air dispersion modeling, an extensive evaluation of EPA's guideline CAL3QHC model was conducted in an NCHRP study (http://www.epa.gov/scram001/dispersion_alt.htm#hyroad), which documents poor model performance at ten sites across the country – three where intensive monitoring was conducted plus an additional seven with less intensive monitoring. The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with National Ambient Air Quality Standards for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways, and to determine the portion of time that people are actually exposed at a specific location.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (http://pubs.healtheffects.org/view.php?id=282). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA (http://www.epa.gov/risk/basicinformation.htm#g) and the HEI (http://pubs.healtheffects.org/getfile.php?u=395) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries.

The decision framework is a two-step process. The first step requires EPA to determine a "safe" or "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

In this Appendix, the FHWA and WisDOT have provided a quantitative analysis of MSAT emissions relative to the No-Build and Build alternatives. The FHWA and WisDOT have acknowledged that the project may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be reliably estimated.