

Table C.6		
Forecast Volatile Organic Compound Emissions from the Transportation System in Sheboygan County Under the Update to the Year 2035 SATP/2013 - 2016 TIP and the State Implementation Plan for Air Quality: 2015, 2020, 2030 and 2035 (On a Hot Summer Weekday) Using Mobile 6.2 Emission Factors		
Sheboygan County		
Year	State Implementation Plan (tons)*	Year 2035 SATP (tons)
2015	2.010	1.071
2020	1.320	0.879
2030	1.320	0.884
2035	1.320	0.919
*The State Implementation Plan budget for volatile organic compounds was 2.010 tons for 2012, and 1.320 tons for 2020.		
Source: Wisconsin Department of Natural Resources, 2010 and 2013; and Bay-Lake Regional Planning Commission, 2013.		

Note: SATP = Sheboygan Area Transportation Plan

As for NO_x emissions, the conformity plan states the following:

Table C.7 presents the forecast nitrogen oxide emissions. The forecasts are presented for the years 2015, 2020, 2030 and 2035 for all of Sheboygan County. In addition, Table C.7 presents the 2012 and 2020 motor vehicle emissions budgets for nitrogen oxides incorporated in the "8-Hour Ozone Redesignation Request and Maintenance Plan for the Sheboygan County Subpart-2 Moderate Nonattainment Area." The transportation system nitrogen oxide emissions under the transportation system plan and transportation improvement program, when analyzed for all of Sheboygan County, are less than the motor vehicle emissions budgets for nitrogen oxides included in the "8-Hour Ozone Redesignation Request and Maintenance Plan for the Sheboygan County Subpart-2 Moderate Nonattainment Area," thus meeting this criterion for consistency. It should be noted that some NO_x cutpoints were relaxed in the state's inspection and maintenance program in April 2006, resulting in small increases in NO_x emissions. This analysis assumes the same VMT and socioeconomic growth rates over the planning period as those which were assumed in the test for volatile organic compounds.

Table C.7		
Forecast Nitrogen Oxide Emissions from the Transportation System in Sheboygan County Under the Update to the Year 2035 SATP/2013 - 2016 TIP and the State Implementation Plan for Air Quality: 2015, 2020, 2030 and 2035 (On a Hot Summer Weekday) Using Mobile 6.2 Emission Factors		
Year	Sheboygan County	
	State Implementation Plan (tons)*	Year 2035 SATP (tons)
2015	4.150	2.117
2020	1.790	1.300
2030	1.790	0.893
2035	1.790	0.882
*The State Implementation Plan budget for nitrogen oxides was 4.150 tons for 2012, and 1.790 tons for 2020.		
Source: Wisconsin Department of Natural Resources, 2010 and 2013; and Bay-Lake Regional Planning Commission, 2013.		

Therefore, while the Preferred Build Alternative is projected to produce more vehicle miles traveled, it represents a very modest increase in the overall VMT for Sheboygan County (0.13 percent in 2020). The conformity analysis indicates the Sheboygan Area Transportation Plan is consistent with the SIP for Air Quality even with the expansion of WIS 23 to 4 lanes. Therefore while the Preferred Build Alternative could have more VOC and NO_x emissions than the No-Build Alternative, the conformity analysis indicates the Sheboygan Area Transportation Plan is consistent with the SIP emission budgets set forth to bring the county back into attainment.

Woodlands and Ecological Resources

A comparison of pre-European settlement and current land cover data indicates that approximately 55 percent of historic forested lands remain in the study area—a significant portion of this is the Kettle Moraine State Forest. As described in Chapter 2, WDNR and other groups intend to continue to permanently preserve woodlands and other ecological resource areas through acquisition.

The construction of the Build Alternative will require 53 acres of woodlands and uplands. According to their respective regional planning commissions, Fond du Lac County has 58,700 acres of woodlands and Sheboygan County has 103,500 acres of woodlands, which is a subset of upland habitat. The Build Alternative upland requirements represent less than 1 percent of this total. Figure 20 illustrates recent residential building permits issued for Fond du Lac and Sheboygan counties and shows between 150 and 650 building permits were issued per year between 2006 and 2011. This provides a gauge of development pressures on upland habitat.

Also, as indicated in Chapter 3, expert panel members and the ICE study team generally agreed that there will be modest impact to woodlands, the Escarpment, and other resources areas of ecological significance under the Build Alternative. Such development, particularly residential, could occur in woodlands or alter woodland and wildlife habitat areas. There will be slightly increased cumulative impacts to woodlands and other ecological resources due to direct and indirect impacts from regional growth and other transportation projects. In addition, other impacts include increasing commodity prices that may lead some farmers to clear woodlands for farm fields. Panelists also indicated that invasive species, such as phragmites, spread rapidly along highway corridors, which is another possible impact of the Build Alternative.

Glacial Features

There are numerous glacial features throughout the study area. One panel member noted that these features are not currently protected through local regulation. As indicated in Chapter 3 there may be some indirect impacts to glacial features resulting from the Build Alternative due to lack of protection (e.g., overlay zoning) and modest amounts of new development. These impacts would be reduced if the WDNR implements its plans to acquire 7,000 of new land around the Kettle Moraine State Forest.

There will be slightly increased cumulative impacts to glacial features under the Build Alternative compared to the No Build Alternative due to direct and indirect impacts from impacts from regional rural residential growth and other transportation projects.

Threatened and Endangered Species

As described under the No Build Alternative, water pollution and diminished habitat since pre-European settlement has impacted wildlife and resulted in threatened and endangered species in the study area. Federal and state laws now protect threatened and endangered species from direct killing, taking, or other activities that may be detrimental to the species.

The Build Alternative's direct acquisition of 424 acres will reduce habitat. As noted in Chapter 3, indirect impacts associated with expansion of the WIS 23 corridor may include additional reduction and degradation of habitat from development, which could further threaten or potentially cause the displacement or loss of these threatened species. There will be slightly increased cumulative impacts to threatened and endangered species due to direct and indirect impacts from regional growth and other transportation projects. Other land use decisions in the region may have similar cumulative impacts.

It is difficult to estimate the presettlement populations of these rare species except by gauging changes in their potential habitat. The current amount of Wisconsin water acreages and stream threads is comparable to the amount that existed in presettlement conditions, but the water quality has diminished, likely resulting in decreased mussel populations. For the Butler's garter snake and the Blanding's turtle, it is also difficult to estimate the presettlement populations except by gauging changes in their potential habitat. Currently there are fewer forests in Wisconsin, potentially increasing their habitat, yet the quantity of quality aquatic habitat has been reduced and habitat fragmentation has occurred. Similarly, woody species and exotic/evasive

expansion into open canopy wetlands and grasslands has decreased the amount of suitable habitat for these two species.

Historic and Archaeological Resources

The most noteworthy historic site in the study area is the Wade House. As described in Chapter 2, an FEIS was prepared in 2011 to construct additional improvements within the site. Such improvements would correspond with potential expansion of WIS 23 to 4-lanes. As indicated in Chapter 3, the Wade House would be positively impacted by indirect effects associated with the Build Alternative, such as increased safety, improved access and visibility, and extension of the Old Plank Road Trail to Fond du Lac. Potential cumulative impacts associated with the Build Alternative could be an increase in tourism to the Wade House, via both WIS 23 and the Old Plank Road Trail, through increased mobility and multi-modal accessibility to the Old Wade House State Park. These could help increase the number of visitors per year, an indirect effect. This contributes to a possible cumulative effect of increased tourism when combined with actions being taken by the Old Wade House State Park to increase visitors.

As for direct effects of the Preferred Build Alternative, the proposal will not affect St. Mary's Springs Academy (eligible for the NRHP) nor will it adversely affect the Old Wade House State Park. Data recovery will be performed at the Sippel archaeological site, which will be affected by the Preferred Build Alternative. So the direct effects of the Preferred Build Alternative will have a modest contribution to cumulative effects to historic resources.

Other actions that could affect historic and archeological sites include the redevelopment and/or razing of existing buildings with historic significance. Also, residential and commercial development activities that alter the landscape could adversely affect unknown archeological resources. The number of historic resources within Fond du Lac and Sheboygan Counties is briefly discussed in Chapter 2 and includes 4,119 historic listings for Fond du Lac County and 2,664 historic listings for Sheboygan County on Wisconsin's Architecture and Historic Inventory. The direct effects of WIS 23 improvements, combined possible redevelopment and development impacts, could create a cumulative impact to historic resources. However, this impact is anticipated to be modest when compared to the direct effects of Build Alternative. The reasoning behind characterizing the effects as modest is that the WIS 23 Build Alternative will disturb about 430 acres of new right of way and will have an adverse effect on only one archaeological site eligible for the NRHP, and that is being mitigated. If increased mobility associated with the Build Alternative induced an additional 100 new residences in the ICE study area in the future in which each home disturbed 0.25 acres, that results in just 25 acres of ground disturbance, or 6 percent of the WIS 23 direct effect. While this analysis assumes a uniform distribution of archaeological sites, which in reality does not occur, it does provide an order of magnitude estimate.

Trails

State, county, and local governments in the study area continually plan for the acquisition and development of new trails, as described in Chapter 2. Other agencies, such as the Niagara Escarpment Network, also work towards these goals. As described in Chapter 3, the potential indirect impacts to trails include extension of the Old Plank Road Trail to Fond du Lac; safety improvements for existing trails that cross WIS 23; possible economic benefits resulting from increased trail use and park attendance; and lands not under protective ownership may be at heightened risk for future non-park or trail development. Other trail improvements in the region include the Wild Goose-Prairie Connector, the Mascoutin Valley Trail Extension, and Union Pacific Trail Conversion. Adding the cumulative effect on trails and non-motorized travel are the provisions contained in Wisconsin Administrative Code Trans 75, which requires bicycle and pedestrian facilities on highway projects unless the project qualifies for an exception.

These factors, taken with the plans to develop new trails, may result in the following cumulative impacts under the Build Alternative: improved local and regional trail network connecting to trails beyond county boundaries; increased usership of recreational trails (including Old Plank Road Trail) for transportation purposes; and public health benefits associated with trail activity.

Community Character

As mentioned under the No Build Alternative, the existing community character in the study area is defined by urban areas, agricultural lands, and unique natural features. As indicated in Chapter 3, the Build Alternative may cause indirect impacts in the study area. Cumulative impacts to community character will ultimately be dependent upon local government regulation and quality of development.

Due to the tendency of access limitations to concentrate new development at new interchanges, and between such interchanges and nearby urban centers (i.e., strip development), rather than the historic pattern of relatively dispersed development, the adverse cumulative effects of the Build Alternative on small town and rural community character is likely to be stronger than under the No Build Alternative. This loss of rural character will likely occur at County UU, County W (north), and County G. The hamlet character of Greenbush is likely to be affected, as is the County A corridor between WIS 23 and the village of Glenbeulah. In general, as small town and rural areas experience development, their community character is threatened by both the amount and ubiquitous suburban nature of new development. Area communities currently do not strongly address community character in their adopted plans or in their development regulations. Rural communities, which have these regulations in place, generally have protected small town and rural character more successfully.

CHAPTER 5: ACTIVITIES TO AVOID, MINIMIZE, OR MITIGATE EFFECTS

This chapter identifies the efforts taken during the NEPA project development process to avoid, minimize, and mitigate project impacts to the human and natural environment. The analysis Chapters 3 and 4 indicate the predominant indirect effect from the Preferred Alternative is the potential increased pace of development that could occur outside the urban centers as a result of improved safety and increased mobility on WIS 23. Since most of the sensitive resources in the ICE study area are located in nonurban areas, the consequence of the rural development indirect effects include adverse impacts on agricultural land, water quality, and upland habitat, which are not protected to the same extent as wetlands.

The WIS 23 Preferred Alternative will also contribute to the cumulative effect on resources, with other contributors being past, present, and future actions by other entities. The predominant contribution to cumulative effects from the WIS 23 Preferred Alternative includes loss of farmland, loss of uplands, degradation of water quality, and a small degradation air quality.

NEPA does not specifically require substantive mitigation for project impacts; direct, indirect, or cumulative. The CEQ regulations require that the environmental impacts statement include consideration and discussion of possible mitigation for project impacts (40 CFR §§ 1502.14(f), 1502.16(e-h), 1505.2(c), 1508.25(b)(3)).⁸

Questions 19a. and 19b. of the *CEQ 40 Questions and Answers* provide additional guidance on mitigation to be addressed and documented in a NEPA document.

“The mitigation measures discussed in an EIS must cover the range of impacts of the proposal. The measures must include such things as design alternatives that would decrease pollution emissions, construction impacts, esthetic intrusion, as well as relocation assistance, possible land use controls that could be enacted, and other possible efforts.”

“All relevant, reasonable mitigation measures that could improve the project are to be identified, even if they are outside the jurisdiction of the lead agency or the cooperating agencies, and thus would not be committed to as part of the RODs of these agencies. This will serve to alert agencies or officials who can implement these extra measures, and will encourage them to do so. To ensure that environmental effects of a proposed action are fairly assessed, the probability of the mitigation measures being implemented must also be discussed. Thus the EIS and the Record of Decision should indicate the likelihood that such measures will be adopted or enforced by the responsible agencies.”

Provisions regarding FHWA’s legal responsibility and authority for mitigating project impacts are found in FHWA’s Environmental regulations Section 771.105(d):

“Measures necessary to mitigate adverse impacts will be incorporated into the action and are eligible for Federal funding when the Administration determines that:

1. The impacts for which the mitigation is proposed actually result from the Administration action; and
2. The proposed mitigation represents a reasonable public expenditure after considering the impacts of the action and the benefits of the proposed mitigation measures. In making this determination, the Administration will consider, among other factors, the extent to which the proposed measures would assist in complying with a Federal statute, Executive Order, or Administration regulation or policy.”

⁸ <http://www.environment.fhwa.dot.gov/proidev/qaimpact.asp> June 2013

It is important that we understand how mitigation is defined in the NEPA process. Replacement or compensation is the last of a sequence of considerations that constitute the overall mitigation expectation of the CEQ regulations (40 CFR § 1508.20). Mitigation includes avoidance and minimization of project impacts first. This hierarchy is often referred to as “sequencing” and means that impact avoidance and minimization measures should be considered early and as an integral component of the alternatives development and analysis process. Replacement or compensation for impacts are intended primarily to deal with residual impacts that cannot be avoided or minimized.

The following paragraphs summarize project sequencing as it pertains to all impacts, direct, indirect, and cumulative. While this report specifically addresses indirect and cumulative effects, direct effects represent WIS 23’s contribution toward the cumulative effect on a resource and are therefore discussed.

Avoidance Measures

Corridor Selection

In the development, evaluation, and screening of alternative corridors, WisDOT considered both the direct environmental impacts of the corridor alternatives as well as the indirect and cumulative effects. The consideration of direct, indirect, and cumulative effects led to the selection of the on-alignment corridor, Alternative 1, as the Preferred Alternative. The selection of Alternative 1 had the following effects:

- It reduced the quantity of direct impacts to farmland, wetlands, and uplands. In doing so, it reduced the highway improvement’s contribution to cumulative effects. (See Table 4.5-1 of the LS SDEIS. Alternative 1 requires up to 23 percent less right of way and 42 percent fewer wetland impacts than some of the off-alignment alternatives.)
- It reduced the number of severed farm parcels and the amount of farmland required. Alternative 1 requires up to 57 percent less farmland than some of the off-alignment alternatives. Farm severances make agriculture less sustainable and can lead to a reduction in farming activities and the conversion of severed parcels to other land uses (an indirect effect). Alternative 1 had the least amount of farm severances and cropland required.
- It reduced the amount of roadway lane mileage associated with WIS 23 improvements. Selection of an off-alignment corridor would have increased lane mileage because new bypass lanes would be constructed in addition to the existing WIS 23 lanes. Alternative 1 would have about a third less pavement than some off-alignment alternatives. Additional lane mileage has direct environmental effects, such as degraded water quality, induced traffic, the corresponding air quality impacts, and severance of natural communities. Selection of Alternative 1 avoided the impacts that would have occurred with additional lane mileage of the off-alignment alternatives.
- It avoided potential residential and commercial development from occurring along an off-alignment corridor (an indirect effect). This included avoiding the corresponding environmental impacts that would have been associated with this development.

In addition to the selection of Alternative 1 as the Preferred Build Alternative, WisDOT also selected the No Corridor Preservation Option for the US 151/WIS 23 connection. By not preserving lands for a future system interchange, WisDOT avoided potential indirect effects to properties adjacent to the options. The avoided indirect effects included decreased marketability of parcels and potentially reduced investment and reinvestment in affected properties.

Alignment Refinements

With the selection of Alternative 1 as the Preferred Alternative, several alignment modifications were incorporated into the alternative to avoid direct impacts, which then decrease the cumulative impact of the

project on area resources. These alignment refinements included shifting the roadway alignment north of the Old Wade House State Park and south of the Pit Road wetland mitigation site. The Old Plank Road Extension was brought closer to the WIS 23 highway as it traveled across the Old Wade House State Park to reduce impacts to wetlands. Slopes were also steepened in wetland areas to reduce impacts. These refinements decreased wetland impacts, decreasing the cumulative effect of the project on area wetlands.

Preferred Alternative Features

WisDOT seeks to incorporate design components and features into the Preferred Alternative that minimize the adverse effects of the potential project. Many of these components address direct effects, but they also have regional influence. The WIS 23 Preferred Project incorporates a 16-mile extension of the Old Plank Road Trail. This extension enhances the ability of WIS 23 to serve nonmotorized modes of transportation and offsets potential negative project effects to nonmotorized modes.

Minimization Measures

Impact Minimization

Through the final design process, WisDOT seeks to minimize impacts to adjacent properties and resources. This minimization reduces the direct impacts of the alternatives, which contribute to the overall cumulative impacts on particular resources. Between the publishing of the 2010 FEIS, design refinements have reduced the amount of impact on some resources, such as cropland which was reduced by 20 acres and uplands/woodlands which was reduced by 24 acres. Some impact categories have risen since the publishing of the 2010 FEIS- mostly due to revised boundaries (wetlands) or property owner requests (residential relocations).

Construction Impact Minimization

WisDOT will seek to minimize construction impacts through the implementation of various measures, which are described in Section 6 of the LS SDEIS. These measures reduce direct construction impacts, which consequently reduce the project's contribution on the cumulative impact on these resources. Measures to minimize construction impacts include the following:

- A transportation management plan (TMP) will provide reasonably convenient access to residences, businesses, farm parcels, community services, and local roads during construction.
- Special provisions to reduce the short-term impacts of construction noise will require that motorized equipment be operated in compliance with all applicable local, state, and federal laws and regulations on noise levels permissible within and adjacent to the project construction site.
- The special provisions and plan set will include measures to reduce water quality and quantity impacts occurring through construction. WisDOT through Trans 401, Wisconsin Administrative Code, and the WisDOT/WDNR Cooperative Agreement will comply with the substantive requirements of Chapter 147, Wisconsin Statutes, Wisconsin Pollutant Discharge Elimination System (WPDES) to reduce water quality and hydrology impacts. Precautions will be taken at the Sheboygan River and Mullet River Creek crossings to preclude erosion and stream siltation.
- To reduce impacts to wildlife, construction work will be scheduled during non-breeding seasons. Section 4.6 C-7 of this LS SDEIS details commitments being made to reduce impacts to rare species as coordinated with the WDNR over the winter of 2013.

- During construction, impacts to wetlands from erosion and sediment transport will be minimized or prevented by implementing erosion control best management practices as specified in the construction contract
- For agriculture, reasonable access will be provided to farms. Existing drainage systems (ditches and tiles) will be kept operational during construction.

Access Management

WisDOT implements access management on roadways and access points along state highways. The implementation of access management can affect the development potential of properties served by that project (an indirect effect). In implementing access management, WisDOT seeks not to restrict or impede existing land uses but seeks to prevent traffic from potential future development from negatively impacting highway operations. By implementing access restrictions, new development, particularly commercial development, is less likely to occur near the access restriction. Similarly, by permitting access, development is able to occur in planned locations and at higher densities. The WIS 23 Preferred Alternative incorporates access management, which is detailed in Table 2.7-1 of the LS SDEIS for the project. Of the current 42 full-access intersections, the Preferred Alternative incorporates 6 cul-de-sacs, 14 right-in/right-out access restrictions, 10 J-turn access restrictions, and 3 interchanges/jug-handle. While providing sufficient local access, these access restrictions will have the effect of directing development away from rural intersections with less access toward intersections with more access.

Mitigation Measures

Direct Impact Mitigation and Corresponding Contribution to Cumulative Impacts

WisDOT is providing mitigation for several types of direct impacts. Mitigating direct impacts reduces or eliminates the WIS 23 project's contribution to cumulative impacts of specific resources. Direct impact mitigation includes:

- The mitigation of approximately 48 acres of wetlands being filled through the establishment of a wetland mitigation bank. (See Section 4.6 C-1 of the LS SDEIS.)
- The provision of a grade-separated crossing of WIS 23 for the Ice Age Trail and State Equestrian Trail. (See Section 5.3 of the LS SDEIS.)
- The replacement of 2.2 acres of land required from the Northern Unit of the Kettle Moraine State Forest with 4.275 acres of land to be transferred to State Forest ownership. (See Section 5.3 of the LS SDEIS.)
- The Phase III data recovery at the Sippel Archaeological Site to document the information from this archaeological resource. (See Section 4.6 B-6 of the LS SDEIS.)

Avoidance, Minimization, and Mitigation Measures Outside of WisDOT's and FHWA's Jurisdiction.

Although neither WisDOT nor FHWA has jurisdiction over local land use policy and, or decisions, the project team has identified several avoidance, minimization, and mitigation measures that may reduce indirect and cumulative impacts further if implemented by other entities. They are identified here for consideration by the appropriate outside entities. Policy choices by local governments regarding planning and existing and future land use regulations can play a large role in either facilitating or minimizing potential indirect effects of the WIS 23 project. WisDOT can control WIS 23's direct effects that contribute to the cumulative effect of other past, present, and future actions on resources. Local jurisdictions through land use policies and

decisions have a greater influence on other actions that contribute to cumulative effects. Land use tools available to local jurisdictions commonly used to avoid and reduce impacts to resources include the following:

- **Comprehensive Planning.** Wisconsin law requires communities that wish to regulate land adopt a comprehensive plan to guide local land use decisions. These decisions—for example, the location, type, quantity and character of development, protection of agricultural lands and natural resources, local utilities and community facilities, and economic development initiatives—are closely related to impacts analyzed in this report. Comprehensive plans may be amended from time to time and are required to undergo a complete update every ten years. In the central and eastern portions of the corridor, adopted town and village plans are generally designed to protect farmland and limit sprawl.
- **Zoning.** A zoning ordinance and map can be used to determine appropriate locations and other regulations for specific land uses. For example, zoning land for exclusive agricultural use can help ensure that it will not be developed for nonagricultural uses until zoning policies have changed or a rezoning has occurred. Overlay zoning above and beyond state and federal regulations for natural resource features, such as isolated wetlands, uplands woodlands, shorelands, steep slopes, drainageways, habitat areas, and historic sites, may also be adopted by local jurisdictions. Modern zoning ordinances also contain provisions that protect and enhance community character. Within the ICE study area, preservation of the hamlet character of Greenbush and limiting strip development along County A between WIS 23 and the village of Glenbeulah could be achieved through modern zoning. According to state law, zoning ordinances and maps are required to be consistent with the local comprehensive plan.
- **Land Division.** Land division ordinances must also be consistent with the local comprehensive plan under state law. These ordinances determine the manner in which land may be divided, design standards, types of public improvements needed to serve development, access control at time of land division, and, in conjunction with the zoning ordinance, the development density.
- **Extraterritorial Jurisdiction.** Wisconsin Statutes specifically allow cities and villages to prepare plans for and to regulate land divisions within their extraterritorial jurisdictions in unincorporated (township) areas. Such extraterritorial powers can help reduce development in agricultural areas and can help ensure that that when development does occur, it can be developed in a manner consistent with local zoning and the comprehensive plan.
- **Official Mapping.** Official mapping is a plan implementation tool authorized under Wisconsin Statutes for adoption as an ordinance by cities, villages, and towns. These maps may be used to show alignments of future roads, expanded rights-of-way for existing roads, and other planned public facilities, such as parks and trails. When land development is proposed in an area with a planned facility as depicted on the official map, the municipality may obtain or reserve land for that future facility through public dedication, public purchase, or reservation for future purchase.
- **Conservation Easements.** Purchase of agricultural or conservation easements to prohibit development are voluntary and allow the landowner to be compensated for limiting the development potential of the land. Conservation easements are permanent and are carried over to subsequent landowners when the property is sold. This tool is particularly effective for resources that have a limited area that is definitively mapped. Within the ICE study area, this tool may be well suited to preserve the Niagara Escarpment.
- **Urban Service Area.** In Wisconsin, urban service area boundaries around municipalities may be legally extended (e.g., public sewer and water). Urban service areas are useful in managing the location and timing of urban and suburban growth.
- **Tax Increment Financing (TIF).** Communities may utilize TIF to fund public improvements that would otherwise not occur without the use of TIF. Local governments may adopt TIF districts to direct development and redevelopment to specific locations in a community. Typically, these are compact areas served by public utilities.

- **Stormwater Best Management Practices.** Traditional stormwater management practices attempt to carry water away from a developed site as quickly as possible after a storm or are designed to hold water on-site in constructed ponds. Alternatively, stormwater best management practices (BMPs) aim to control runoff by managing precipitation as close to where it hits the ground as possible, thereby facilitating infiltration of precipitation into groundwater and evaporation of water back into the atmosphere. This approach decreases peak stormwater quantities and improves the overall quality of the stormwater that does enter streams and lakes. The severity of water quality impacts is dependent on the magnitude and duration of upstream hydrologic events including sediment inputs, flooding, and land use change. However, these impacts may be minimized through local and county stormwater ordinances and best management practices.

Monitoring and Evaluation of Direct, Indirect, and Cumulative Effects

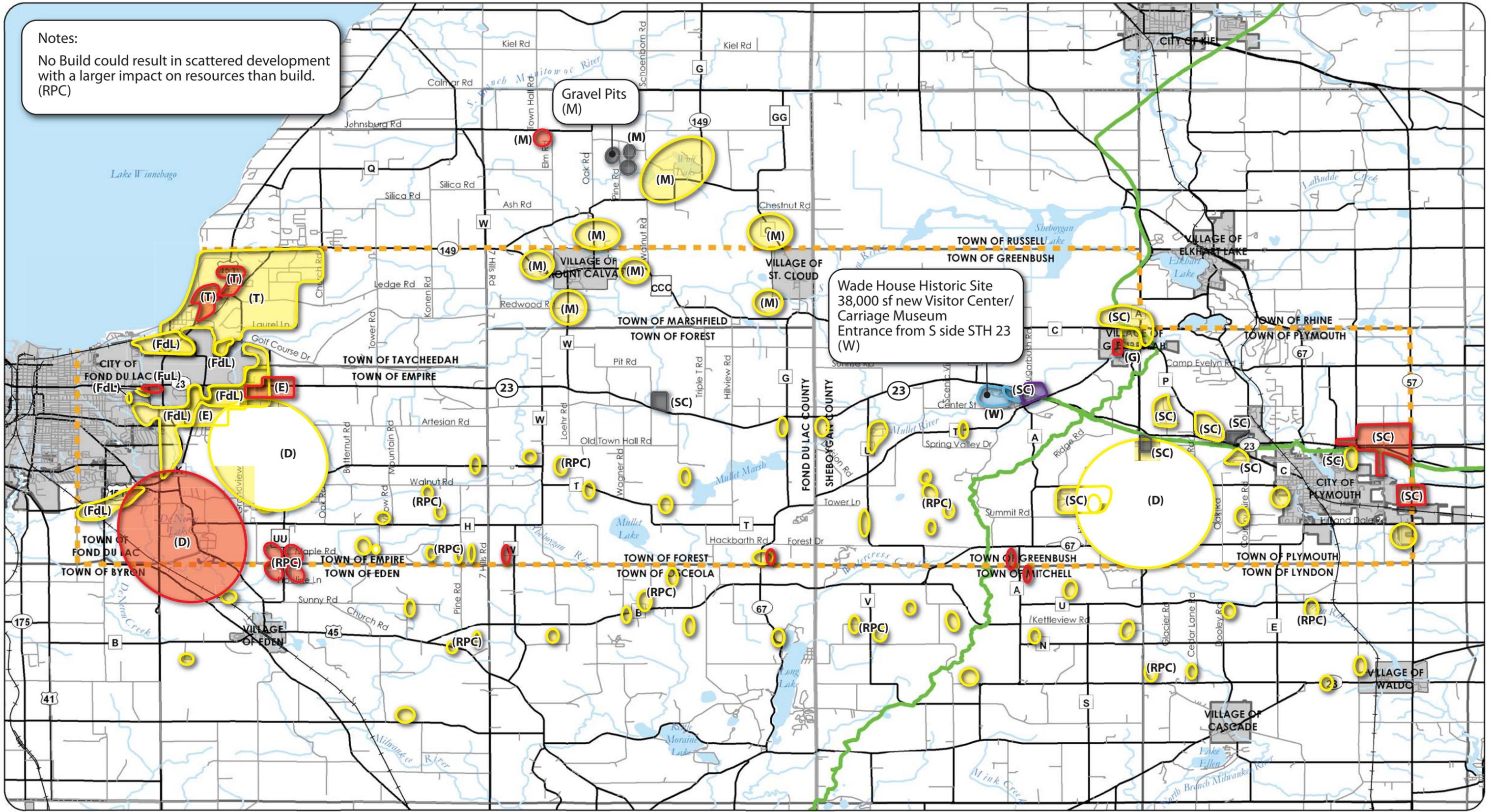
Section 6 of the LS SDEIS contains the commitments to mitigation and monitoring regarding effects of the Preferred Alternative. It includes continued coordination with WDNR regarding threatened and endangered species, commitments regarding archaeological and historic sites, wetland monitoring, as well as measures to offset impacts to Section 4(f) properties. WisDOT will work within its jurisdictional limitations to minimize adverse indirect and cumulative effects. These efforts will be primarily associated with the roadway project corridor and are primarily limited to the duration of the construction project. Local communities and state agencies with jurisdiction in the study area will have the ability to monitor and evaluate impacts on land and resources on a long-term basis. Communities have the ability to approve or not approve development decisions and can influence the pace of development for years after WIS 23 improvements are completed. Other agencies with federal authority, such as the US EPA and US Army Corps of Engineers, also have the authority to monitor impacts to natural resources such as floodplains, wetlands, and water quality.

APPENDIX A: EXPERT PANEL SUMMARY MAPS

This page intentionally left blank.

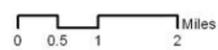
Notes:

No Build could result in scattered development with a larger impact on resources than build.
(RPC)



Map 10: Expert Panel Summary of No Build Alternative Land Use Impacts

Source: Fond du Lac County, Sheboygan County, WDNR, US Census Bureau, Strand Associates, Vandewalle & Associates



4/1/2013

Draft: June 21, 2013

- WIS 23 ICE Study Area
- Major Roads
- Minor Roads
- Railroad
- Existing Trail

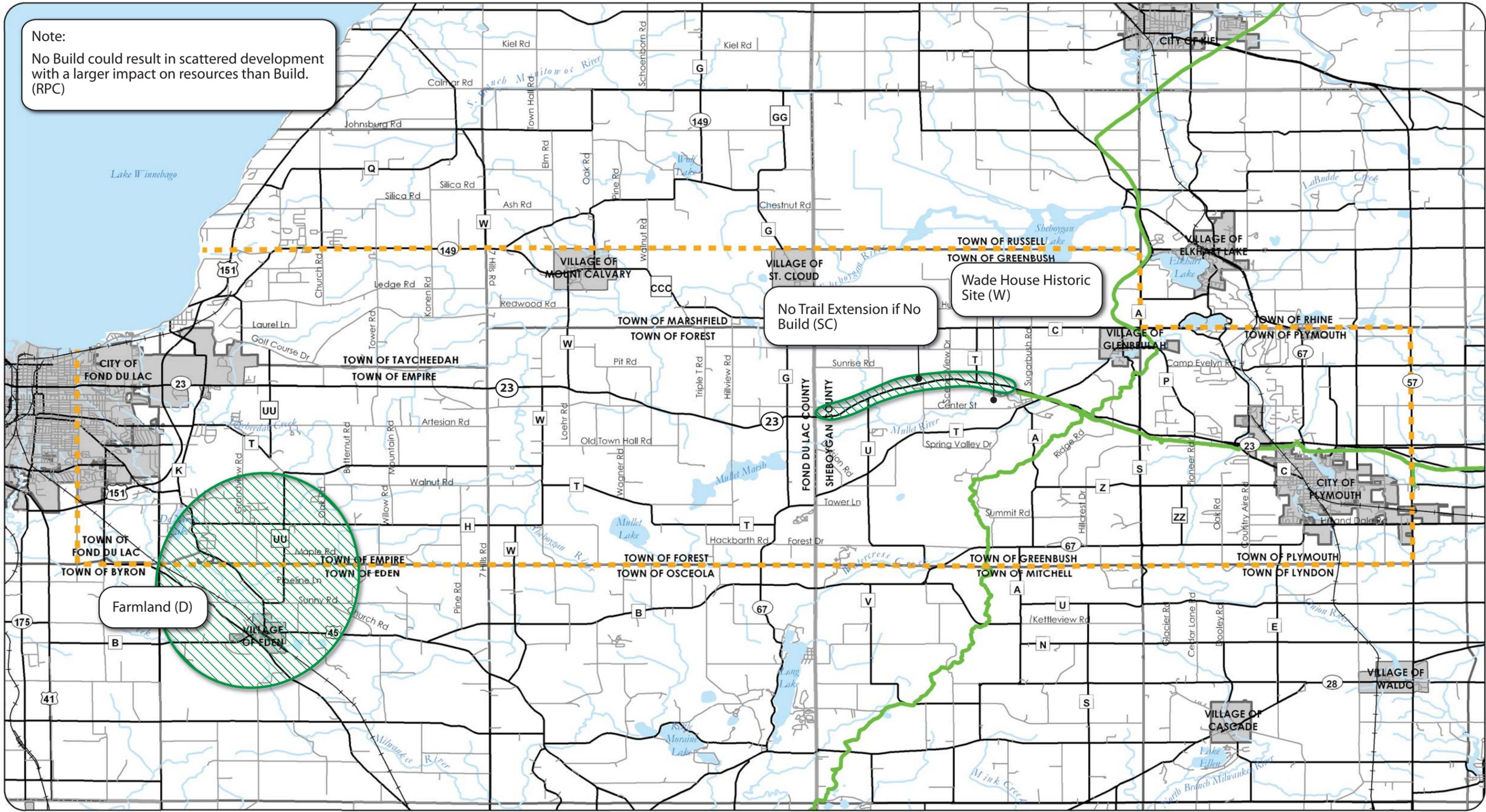
Future Development

- Residential
- Commercial
- Industrial
- Public/Institutional
- Unspecified Development
- Commercial/Residential

Expert Panel

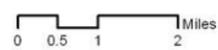
- D - DATCP
- E - Town of Empire
- FdL - City of Fond du Lac
- G - Village of Glenbeulah
- M - Town of Marshfield
- RPC - East Central WI RPC/ Fond du Lac MPO
- SC - Sheboygan County
- F - Town of Taycheedah
- W - Wade House Appendix LS-C

Note:
No Build could result in scattered development with a larger impact on resources than Build.
(RPC)



Map 11: Expert Panel Summary of No Build Alternative Resource Impacts

Source: Fond du Lac County, Sheboygan County, WDNR, US Census Bureau, Strand Associates, Vandewalle & Associates



4/1/2013



Draft: June 21, 2013

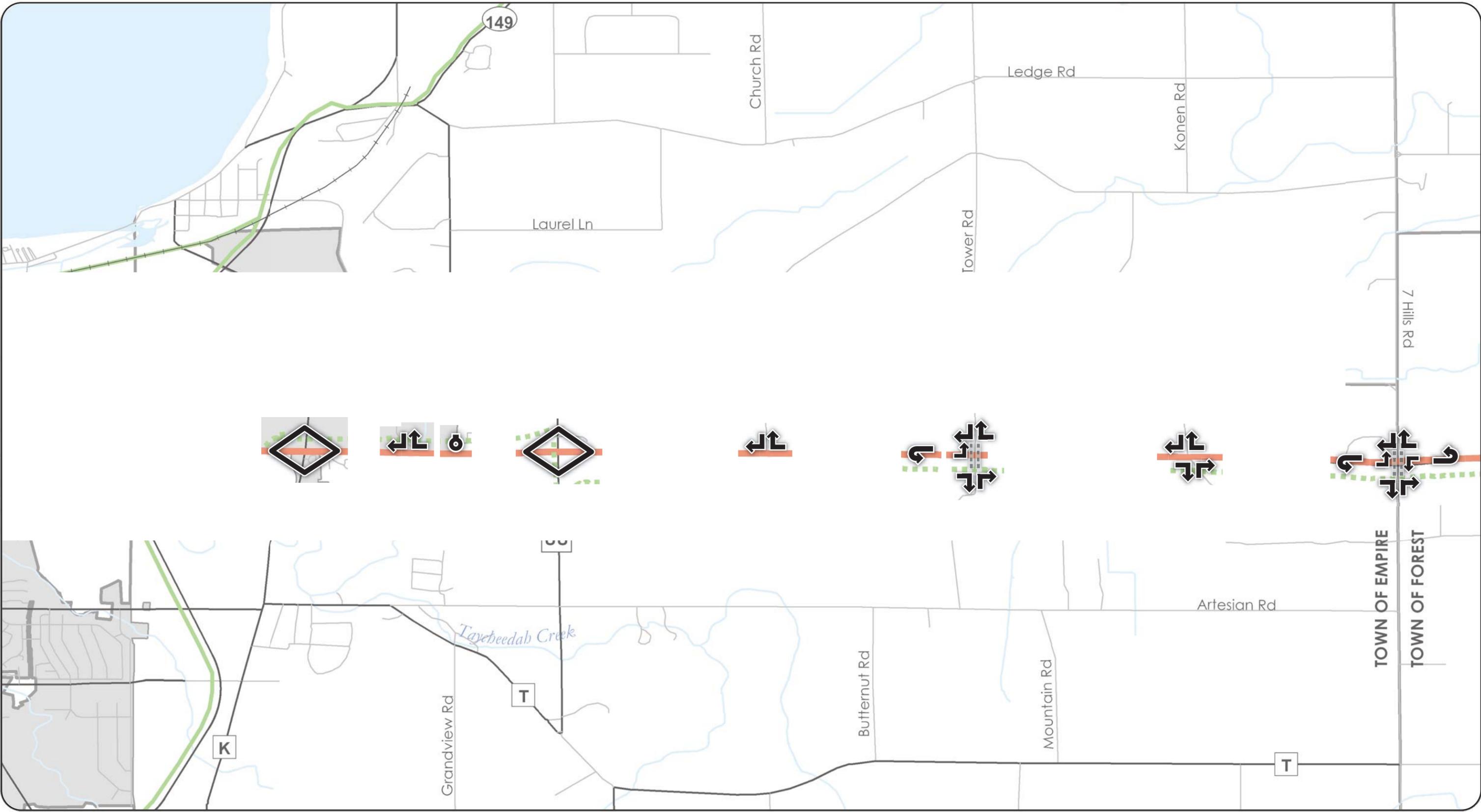
- WIS 23 ICE Study Area
- Major Roads
- Minor Roads
- Railroad
- Existing Trail

Legend

- Resources

Expert Panel

- | | |
|---------------------------|---|
| D - DATCP | RPC - East Central WI RPC/
Fond du Lac MPO |
| E - Town of Empire | SC - Sheboygan County |
| FdL - City of Fond du Lac | T - Town of Taycheedah |
| G - Village of Glenbeulah | W - Wade House |
| M - Town of Marshfield | |



Map 12: Build Alternative Improvements (West)

Sources: Fond du Lac County, Sheboygan County, WDNR, WisDOT, US Census Bureau, Strand Associates, Vandewalle & Associates



4/1/2013

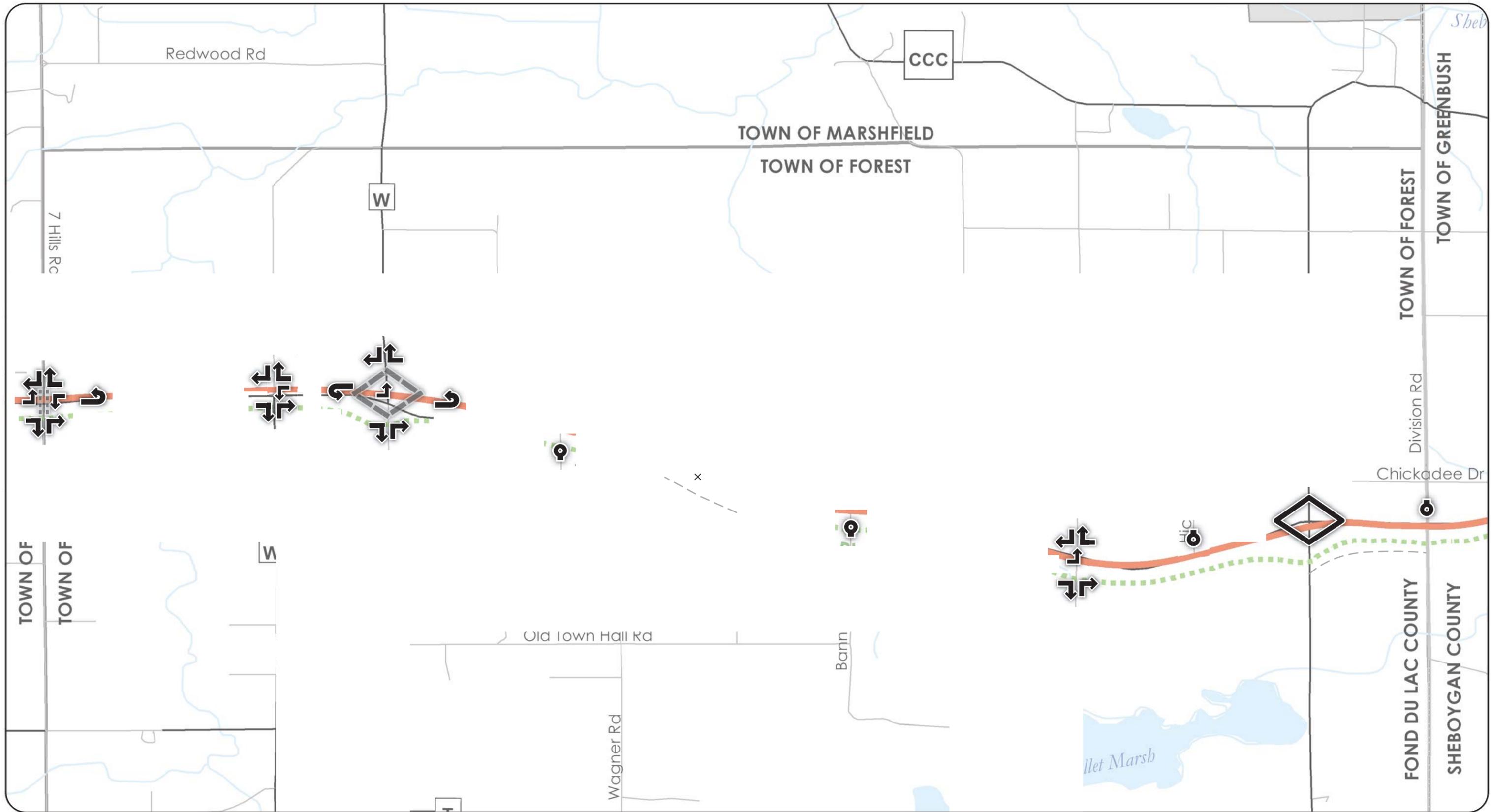


Draft: June 21, 2013

- WIS 23
- WIS 23 ICE Study Area
- Existing Trail
- Proposed Trail
- County Boundary
- City or Village Boundary
- Town Boundary
- Surface Water

- Proposed Build Alternative**
- Interchange or Jug Handle
 - Cul de Sac
 - Right-In/Right-Out
 - Left-In
 - J-Turn

- Proposed Corridor Preservation Alternative**
- Future Interchange
 - Future Grade Separation



Map 13: Build Alternative Improvements (Central)

Sources: Fond du Lac County, Sheboygan County, WIDNR, WisDOT, US Census Bureau, Strand Associates, Vandewalle & Associates



4/1/2013



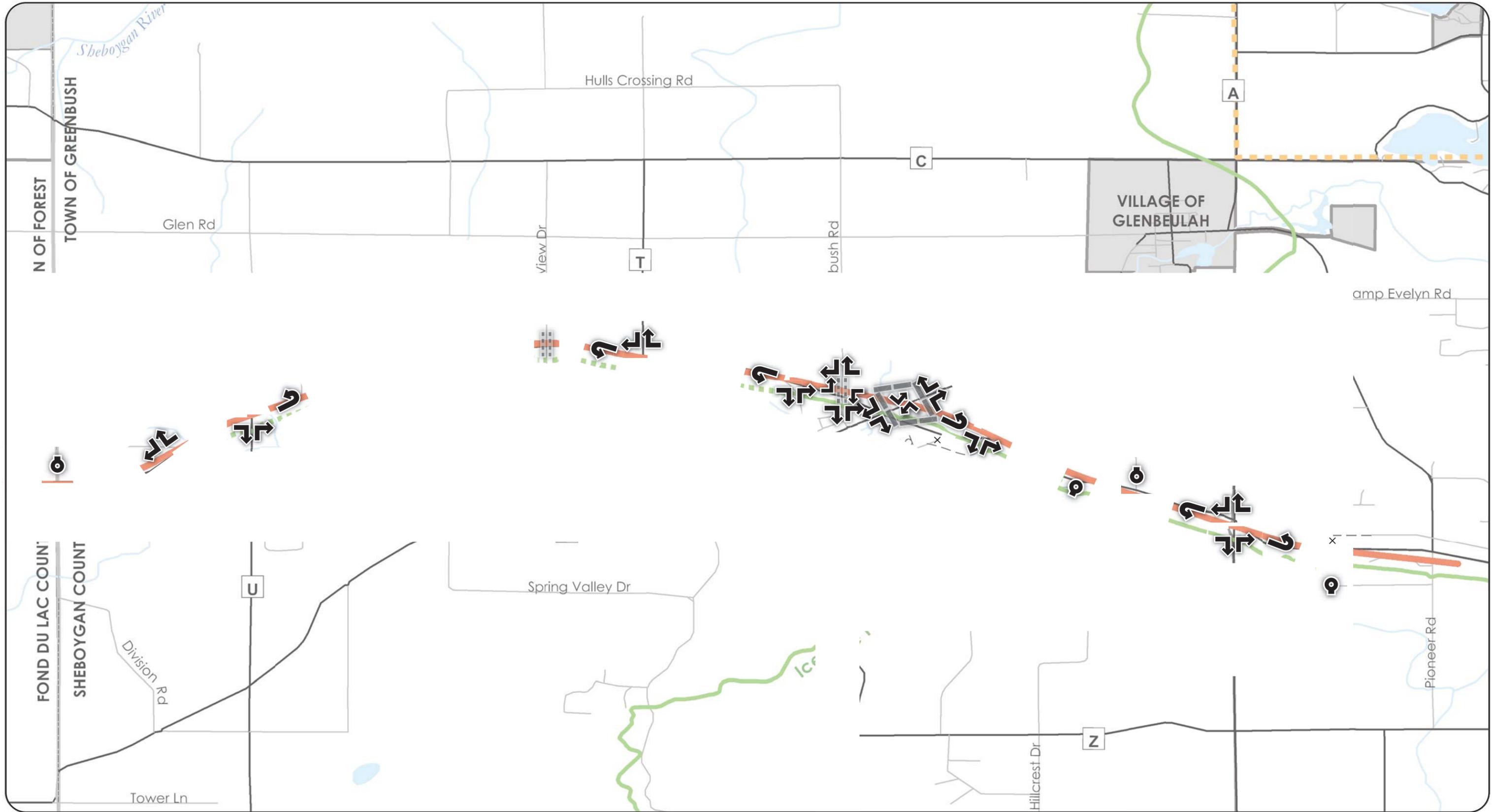
Draft: June 21, 2013

- WIS 23
- WIS 23 ICE Study Area
- Existing Trail
- Proposed Trail

- County Boundary
- City or Village Boundary
- Town Boundary
- Surface Water

- Proposed Build Alternative**
- Interchange or Jug Handle
 - Cul de Sac
 - Right-In/Right-Out
 - Left-In
 - J-Turn

- Proposed Corridor Preservation Alternative**
- Future Interchange
 - Future Grade Separation



Map 14: Build Alternative Improvements (East)

- WIS 23
- WIS 23 ICE Study Area
- Existing Trail
- Proposed Trail

- County Boundary
- City or Village Boundary
- Town Boundary
- Surface Water

- Proposed Build Alternative**
- Interchange or Jug Handle
 - Cul de Sac
 - Right-In/Right-Out
 - Left-In
 - J-Turn

- Proposed Corridor Preservation Alternative**
- Future Interchange
 - Future Grade Separation

Sources: Fond du Lac County, Sheboygan County, WIDNR, WisDOT, US Census Bureau, Strand Associates, Vandewalle & Associates



4/1/2013



Draft: June 21, 2013