

ST. CROIX RIVER CROSSING PROJECT SUPPLEMENTAL FINAL EIS
CHAPTER 14
CUMULATIVE IMPACTS

14.0 INTRODUCTION

The *2004 Supplemental Draft Environmental Impact Statement (SDEIS)* is incorporated by reference and is considered to be part of this Supplemental Final EIS (SFEIS).

This chapter describes the potential for cumulative impacts from the Preferred Alternative in combination with other past, present, and future actions.

Cumulative impacts analysis takes into account an array of potential actions and their impacts that are unrelated to the proposed action (Preferred Alternative), except to the extent that their impacts may, in combination with the impacts from the proposed action, result in adverse impacts. Cumulative impacts are defined, as follows, in the Council on Environmental Quality's (CEQ) regulations (40 CFR 1500-1508) when implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended:

The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. (40 CFR 1508.7)

Direct and indirect impacts of the Preferred Alternative have been discussed in the previous chapters of this SFEIS. Cumulative impacts are not causally linked to the Preferred Alternative, but are the total effect of actions with similar impacts in a broader geographic area. The purpose of a cumulative impacts analysis is to look for impacts that may be minimal and therefore neither significant nor adverse when examined within the context of the proposed action, but that may accumulate and become both significant and adverse over a large number of actions.

The following discussion of cumulative impacts is largely based on the information presented in Chapter 13 of the SDEIS. The existing conditions and regulatory environment remain unchanged from the SDEIS. Information that has changed for this SFEIS includes the identification of impacts specific to the Preferred Alternative and changes in impacts due to design revisions as discussed in previous chapters.

14.1 METHODS

This discussion of cumulative effects will assess the effects of the Preferred Alternative as described in the previous chapters of this SFEIS for their potential to combine with the effects of other foreseeable activities in the past, present, and future which, when combined, have the potential to create further adverse impacts. To that end, this chapter will attempt to anticipate the effects of other actions with similar impacts and to assess the cumulative effects of those actions in combination with the direct and indirect effects of the Preferred Alternative.

14.1.1 Study Area

Throughout this SFEIS, the “project area” is defined as the area of potential impact immediately adjacent to the project corridor. For the purposes of assessing cumulative impacts, however, a broader geographic area must be considered in order to assess the combined effects of reasonably foreseeable future projects on resources, taking into account both political and natural resource boundaries.

As impacts resulting from increased urbanization near the project area and impacts on the St. Croix River were of concern, boundaries associated with these issues were considered. The boundary of the Lower St. Croix River Watershed highly correlates with the boundaries of the five counties surrounding the project area. Thus, the area defined by the five counties surrounding the project corridor was chosen as the broadest geographic area for the cumulative impacts analysis: Washington and Chisago counties in Minnesota and St. Croix, Polk, and Pierce counties in Wisconsin.

14.1.2 Time Frame

Many of the potential impacts considered in this analysis are related to direct or indirect effects of changes to, and intensification of, land use and associated infrastructure. Cumulative impacts analysis suggests considering past conditions and activities, current day actions as well as reasonably foreseeable future change. Therefore, an approximate twenty-year past and future timeframe (1980 and 2025) was defined. Many historic data sources back to 1980 were accessible for purposes of this analysis. For future activity, demographic forecasts available in both Wisconsin and Minnesota and the time horizon of most local jurisdictions’ comprehensive plans were between 2020 and 2025. This represented the furthest extent of transportation and land use planning efforts reasonably available for use in the analysis.

14.1.3 Factors Considered

The following steps were taken to analyze the potential for cumulative effects:

- Summarize the existing condition of each potentially affected resource and how it has been affected by other actions (public or private) described in the previous chapters of this SFEIS.
- Summarize impacts from the Preferred Alternative on that resource.
- Identify other present actions and reasonably foreseeable future actions and their possible impacts on that resource.
- Discuss the potential for cumulative impacts on that resource, including special designations or standards that relate to the resource, ongoing regulatory authority, policies, or plans that afford some measure of protection to the affected resources, and measures that could avoid or minimize negative effects on the resource.

14.1.4 Existing Conditions and Development Trends

As described above, cumulative impacts are defined as those impacts resulting from the proposed project combined with those from other past, present, or reasonably foreseeable future actions. Ideally, all potential future development activities in the study area would be identified as part of this analysis so that their potential impacts could be taken into consideration in combination with those from the Preferred Alternative. However, given the large geographic area under consideration and a general lack of site specific information on potential future development activities (e.g., type, location, magnitude and timing), available information on general development plans and trends was used instead to estimate potential impacts from other actions. Actions that could, in combination with the proposed action, result in cumulative impacts on the environment, can be generally classified as those related to intensification of land use (urbanization). The conversion of rural, agricultural, or open space land to residential, commercial, or industrial uses is an example of this change.

The proposed project would occur in the context of a trend of urbanization taking place independently, to varying degrees, throughout the entire five-county cumulative impacts study area. Table 14-1 provides an estimate of the change in developed land area in the counties over time. Table 14-2 discusses the related estimated growth in population by county.

**TABLE 14-1
COMPARISON OF EXISTING AND PROJECTED AMOUNTS OF DEVELOPED
LAND BY COUNTY**

County	EXISTING ⁽¹⁾		PROPOSED BY COUNTY PLAN ^{(1) (2)}		CHANGE	
	Acres	% Total	Acres	% Total	Acres	% Total
Chisago	16,980	(6%)	36,790	(13%)	19,810	(7%)
Washington	36,895	(14%)	73,135	(27%)	36,155	(13%)
Polk	37,074	(6%)	43,855	(7%)	6,781	(1%)
St. Croix	50,258	(11%)	60,900	(13%)	10,642	(2%)
Pierce	11,280	(3%)	33,839	(9%)	22,559	(6%)

⁽¹⁾ Due to varying formats used to present information related to land uses within the county plans, the following techniques were used to estimate areas developed: Chisago and Pierce Counties – hand estimates from scaled maps; Washington and St. Croix Counties – GIS database and Comprehensive Plan documentation; Polk County – Comprehensive Plan documentation.

⁽²⁾ Years associated with future land use vary by timeframe of County Land Use Plan: Chisago, 2020; Washington, 2015; Polk 2020; St. Croix 2020; Pierce 2010.

**TABLE 14-2
PAST AND FUTURE POPULATION GROWTH BY COUNTY⁽¹⁾**

County	Population			Households		
	1990	2000	Projected 2030	1990	2000	Projected 2030
Chisago	30,521	41,101	69,520	10,551	14,517	27,620
Washington	145,896	201,130	344,280	49,246	71,462	138,680
Polk	34,773	41,319	52,257	11,101	16,254	22,803
St. Croix	50,251	63,155	106,026	17,638	23,410	42,799
Pierce	32,800	36,804	45,850	13,056	13,015	17,891

⁽¹⁾ Data sources differ: Metropolitan Council prepares forecasts of population for Washington County. Chisago County forecasts were obtained from the State Demographic Center of the Minnesota Planning Office. Polk, Pierce and St. Croix County population forecasts were released by the Wisconsin Department of Administration in January of 2004. Census data was used for population and household counts in 1990 and 2000.

14.1.5 Anticipated Actions

For the purposes of this analysis, the “other actions” discussed will include projected land development as currently anticipated in county and local plans, known private development actions, and planned and proposed roadway or other infrastructure projects in the five-county area. Table 14-3, on pages 14-5 through 14-7 of this SFEIS, describes these actions. As specific details regarding possible land development proposals are not comprehensively available for the geographic area and time period covered by this analysis, a general description of the type and amount of development as anticipated in county and local land use plans will be used.

14.1.6 Cumulative Impacts Subgroup

A subset of the Stakeholder Group volunteered to participate in discussion of the Cumulative Impacts analysis. This group met five times between January and June 2004. Participants included representatives of the USFWS, MnDNR, WisDNR, NPS, State Historic Preservation Offices (SHPO) in Wisconsin and Minnesota, the ACHP and citizen groups such as Minnesota Center for Environmental Advocacy (MCEA), Sierra Club, Preservation Alliance, Citizens for a New St. Croix Bridge, Friends of the St. Croix and others.

Their primary responsibilities were to a) ensure resources of concern are identified; b) to define the geographic boundaries for these resources; and c) to agree on an appropriate timeframe for study.

TABLE 14-3⁽¹⁾

**LIST OF MAJOR ACTIONS PROPOSED BY OTHER GOVERNMENTAL AGENCIES/
OTHER INTERESTS**

Action	Type of Action/Effect
Federal and State Level	
Lower St. Croix National Scenic Riverway Cooperative Management Plan	Implementation of 2002 Riverway Cooperative Management Plan by NPS, MnDNR, and WisDNR. Provides direction for management of the Lower St. Croix National Scenic Riverway over the next 15 to 20 years.
U.S. Department of Agriculture (USDA)/Natural Resource Conservation Service (NRCS) Programs (administered in cooperation with St. Croix County Land and Water Conservation Department) ⁽²⁾	EQIP: Provides technical and financial assistance to landowners for conservation practices that protect soil and water quality. WRP: Restores wetlands previously altered for agricultural use. RC&D: Provides restoration of wetlands, grasslands, and threatened and endangered species habitat. CRP: Program to reduce erosion, increase wildlife habitat, improve water quality, and increase forestland. WHIP: Program to develop or improve fish and wildlife habitat on private property.
State Level	
Wisconsin	
Reconstruction of I-94 from State Trunk Highway (STH) 35 South to E. of U.S. Hwy (USH) 12	Added one eastbound and one westbound lane between STH 35 and USH 12 in 2002. Reconstruction of County Trunk Highway U (CTH U)/USH 12/ I-94 interchange
STH 35/64 Expansion	Road Expansion From two-lane to four-lane facility with bypasses of the Somerset and New Richmond central business districts, from west of Somerset to New Richmond (15 miles). The project, which began at the eastern terminus of the St. Croix River Crossing project, will be completed in 2006.
STH 35 Expansion River Falls to I-94	WisDOT reconstructed STH 35 as a four-lane expressway (was formerly two lanes) between River Falls and I-94 in 2002, including the reconstruction and relocation to the west of the STH 35/I-94 interchange.
STH 65 Reconstruction	WisDOT reconstructed STH 65 (from two lanes to four lanes) in New Richmond in 2002, from 0.75 mile south of Paperjack Drive to 6th Street.
USH 8	WisDOT is currently studying future access and capacity needs on USH 8 between STH 35 north of St. Croix Falls (Polk County) to USH 53 near the City of Barron (Barron County). WisDOT currently has no capacity expansion projects for USH 8 in their Six Year Program, but is planning for construction of passing lanes on USH 8 from Almena to Barron in Barron County in about 10 years. WisDOT also anticipates additional passing lane construction on other sections of USH 8 between 2015 and 2025.
USH 63 between I-94 and STH 64	Expansion from two-lane to four-lane, bypass of cities/villages (currently not programmed).
Western Prairie Habitat Restoration Area	Protect and restore 20,000 acres of land to create, restore and maintain grassland cover types. Includes restoration of some wetland areas.

⁽¹⁾ Table 14-3 is current as of August 2004 when the cumulative impacts analysis was completed and the SDEIS was published. Major actions proposed by other governmental agencies/other interests since that time are not reflected in this table.

⁽²⁾ EQIP = Environmental Quality Incentives Program; WRP = Wetlands Reserve Program; RC&D = Resource Conservation and Development Program; CRP = Conservation Reserve Program; WHIP = Wildlife Habitat Incentives Program.

TABLE 14-3⁽¹⁾ continued
**LIST OF MAJOR ACTIONS PROPOSED BY OTHER GOVERNMENTAL AGENCIES/
OTHER INTERESTS**

Action	Type of Action/Effect
State Level continued	
Wisconsin	
Kinnickinnic Fishery Area and Streambank Protection Program	WisDNR program in St. Croix and Pierce counties to protect and restore Kinnickinnic River Fishery Area.
I-94 Corridor Technology Zone	Economic Development- Tax incentives (credits totaling no more than \$5 million over 3 years) for high tech companies to locate in the corridor (currently reconstructing).
I-94	WisDOT as the lead agency, with Mn/DOT, is adding an auxiliary lane on westbound I-94 bridge over the St. Croix River. (Completed in 2004)
Minnesota	
USH 8	I-35W to Trunk Highway (TH) 95; improvements and capacity study
TH 36	CSAH 24 (Osgood Avenue) reconstruction/improvements north and south of TH 36 and an adjacent trail; and CR 66 (Greeley Street) improvements and Oakgreen Avenue jurisdiction changes (from city to county).
County Level	
Wisconsin	
USH 12 and CTH U	WisDOT and St. Croix County are currently reconstructing the existing two-lane USH 12/CTH U as a four-lane expressway from north of I-94 to CTH A, including the relocation of USH 12 east of USH 12/CTH U. (Completed in 2004.)
CTH "I", STH 35/64, and Village of Somerset Improvement Project(s): Village of Somerset area.	Apple River Flume area and Flume Bridge (2004 project—bridge replacement) CTH "I" from Somerset south to 53rd Avenue (2004 project currently underway—expansion). CTH "I" from STH 35 south to Village of Somerset (in planning stage). Expansion is likely.
St. Croix County Land and Water Conservation Department Programs	Carries out St. Croix County's conservation programs and policies. Provides educational, technical, and conservation planning assistance to St. Croix County communities. Carry out goals established in <i>St. Croix County Natural Resource Management Plan</i> .
Minnesota	
CSAH 13 from CR 74 to CSAH 20	Four-lane construction on new alignment, 2004.
CSAH 18, Anoka CSAH 14 between I-35 and TH 61	Four-lane divided roadway construction (with intermodal trail), 2005.
CSAH 16 (Valley Creek Road) CSAH 25 (Century Ave.) to I-494 and new interchange	Interchange construction dependent on third lane construction on I-94, expected in 2006.
CSAH 2, Broadway Ave. I-35 to TH 61	I-35 to TH 61 and interchange reconstruction expected in 2007.
CSAH 18 from I-94 to CSAH 21	Road resurfacing, turn lane additions, access consolidation. Bridge replacement over Valley Branch Creek north of downtown Afton.
CSAH 15 from TH 35 to CSAH 12 (75th St. N)	Reconstruction to a four-lane roadway from TH 36 to 1/2 mi north of CSAH 12.
CR 66 (Greeley St.), CSAH 24 (Osgood Ave.), CSAH 14	Intersection reconstruction tied to TH 36 Reconstruction/River Crossing project.

⁽¹⁾ Table 14-3 is current as of August 2004 when the cumulative impacts analysis was completed and the SDEIS was published. Major actions proposed by other governmental agencies/other interests since that time are not reflected in this table.

TABLE 14-3⁽¹⁾ continued

**LIST OF MAJOR ACTIONS PROPOSED BY OTHER GOVERNMENTAL AGENCIES/
OTHER INTERESTS**

Action	Type of Action/Effect
Local Level	
City of Stillwater	Downtown development plan- “Plan D” floodwall, expansion to Lowell Park, new parking, pedestrian plaza.
City of Stillwater	Flood wall construction.
City of Stillwater	Provision of additional on-street parking stalls along TH 95 south of downtown Stillwater.
City of Stillwater	Teddy Bear Park construction.
City of Stillwater	Stillwater Public Library Expansion.
City of Oak Park Heights	New commercial development (TH 36 corridor); new residential development Oakgreen Village.
City of New Richmond	Annexation Request 316. 200 acres along west side of Knowles Avenue.
City of New Richmond	Potential new street construction, on an east-west alignment between Richmond Way and 158th Avenue.
City of New Richmond	Annexation of 750 acres of land between Highway 64 (north boundary) and County Highway K (south boundary), 170th Street (east edge); existing city limits (west edge).
Village of Roberts	Municipal sewage treatment plant expansion: to meet demand through 2025. The expansion will serve the Village of Hammond and Roberts and will expand the over-taxed capacity of the plant built in 1983.
Village of Somerset	Municipal sewage treatment plant expanded in 2002. Excess capacity to accommodate growth through 2012 based on demographic projections by Wisconsin Department of Administration (WisDOA).
Town of St. Joseph	Expansion to River Road (Class D, 30’ width), as well as Valley View Road off of County Road E.
Private Actions	
Wal Mart Inc.	20-acre, 98,000-square foot Wal Mart store under construction in New Richmond, WI.
Contractor Property Developers	Planned Residential Development- “Inspiration–A Conservancy Community” 245 acres, approx. 300 units. Location is County Road 14 and 21 (currently zoned industrial) in Bayport, Minnesota.
Chisago County Power Line- by Xcel Energy and Dairyland Power Cooperative	115- and 161-kilovolt (kV) power transmission line across the St. Croix River between Chisago County, MN and Polk County, WI.
Arrowhead to Weston Power Line	The American Transmission Company LLC, partnering with Wisconsin Public Service of Wisconsin and the Minnesota Power Company has received approval for a 345-kV power transmission line between the areas of Duluth, Minnesota and Wausau, Wisconsin (Arrowhead to Weston). The route approved will cross the St. Croix National and Scenic Riverway at the Namekagon River in Washburn County. A majority of the construction for the Minnesota portion of the project is complete. The NPS approved the crossing of the Namekagon River in December 2004. The project is anticipated to be completed by 2008.

⁽¹⁾ Table 14-3 is current as of August 2004 when the cumulative impacts analysis was completed and the SDEIS was published. Major actions proposed by other governmental agencies/other interests since that time are not reflected in this table.

14.2 EFFECTS ON LAND USE AND RELATED ISSUES

14.2.1 Land Development

14.2.1.1 Existing Conditions

As discussed in Chapter 6 of the SDEIS and shown in Table 14-2 in this SFEIS, the number of households in the study area has been increasing and will continue to increase through 2020. Recently, there has been increased residential development (condominiums, townhomes, mixed-use development) in downtown Stillwater overlooking the St. Croix River. Increasing numbers of households in the area may result in intensification of already developed areas as well as conversion of land previously used for agriculture or open space. In addition, existing arterial roadways are likely to be expanded, and new roadways constructed to meet local and regional transportation demands. Water and sewer as well as power infrastructure networks and cellular phone facilities (i.e., cell towers) are likely to expand as population needs increase demands on current systems.

14.2.1.2 Impacts from the Proposed Action

With respect to the Preferred Alternative, direct impacts result from acquisition of land for right-of-way, including land currently used for residential, commercial, and agricultural purposes. Surplus right-of-way in Wisconsin cleared for the 1995 FEIS Preferred Alternative alignment and land from the abandoned STH 35 Wayside Rest will be available for non-transportation uses, although 46 of 53 acres will be resold with restrictive covenants. There will be no surplus right-of-way purchased for the 1995 FEIS Preferred Alternative alignment in lower Oak Park Heights, Minnesota available for non-transportation uses under the Preferred Alternative.

As discussed in Chapter 13 of this SFEIS, any of the Proposed Alternatives would likely influence future patterns of residential and commercial growth in St. Croix, southern Polk and northern Pierce counties due to improved accessibility to job locations. However, residential and commercial growth within the area is planned for and anticipated by local, county and state governments as witnessed by their comprehensive plans and discussions with local officials held over the course of the study process.

14.2.1.3 Impacts from Other Actions

The predicted growth in the five-county study area is most likely to result in the conversion of vacant land and agricultural land for residential, commercial, institutional, industrial, and recreational use. The effects of this process of conversion are likely to be most notable in the Wisconsin portion of the study area, given current development activity and the land regulations governing development today. As residential development continues, additional roadways needed to serve new developments will require right-of-way from surrounding land uses. Roadways planned in advance of growth may encourage concentration and intensification of land uses adjacent to the roadway corridor unless access or land use restrictions are implemented by the local jurisdiction. As urbanization increases, the level of supportive infrastructure (water and sewer) can be expected to expand. Stormwater management challenges increase as more impervious surfaces are built. Similarly, water quality can be affected if treatment is not

completed before stormwater enters major water resources such as lakes, creeks, wetlands and the St. Croix River. New power utilities across the St. Croix River are planned to meet current day demand, and will also support future growth in demand from new households, public facilities (such as schools and offices) and businesses. The range of known other actions (see Table 14-3) supports this sequence of events.

14.2.1.4 Potential for Cumulative Impacts

Land development is guided by city, village, town/township and county comprehensive plans and zoning regulations. These plans document consideration of the benefits and negative impacts of land development and prescribe patterns of development that are conducive to the goals of the community. Through zoning regulations, these same entities can control the intensification of development and protection of agricultural land and open space from further development. Local transportation facilities are also guided by these comprehensive plans and are evaluated based on consistency with comprehensive plans.

The goal of comprehensive planning is to reduce the negative cumulative effects of land development through orderly growth. Lack of planning coordination and consistency among local, county, and regional agencies could result in non-compact and disorderly development known as “sprawl.” In 1999, the Wisconsin State Legislature passed a comprehensive planning law which includes provisions for the development of local comprehensive plans by year 2010.

At the scale of the five-county area, particularly in the less developed but growing areas of St. Croix, Polk and Pierce counties, the Preferred Alternative, in combination with other land development and roadway projects, could result in intensification of land use in already developed areas, and could encourage development of areas previously used for agriculture and open space. These changes could also impact habitat areas already under the protection of state and federal agencies. Planned roadway improvements will improve the perceived accessibility of these areas if existing transportation routes are substantially improved relative to total travel time and convenient use or access to the regional system. Studies of metro area growth trends indicate that this type of improvement typically translates to development attractiveness and will eventually result in residential development, followed by commercial and industrial land uses.

Rural character has been identified as a primary objective by many of the local community comprehensive plans. The cumulative impacts of rapid, low-density urbanization that diminishes this character could be minimized by local governments through land use controls, establishment of minimum lot acreages and maximum densities and roadway access restrictions. However, if these controls are not in place, cumulative impacts could occur.

14.2.2 Prime Agricultural Land

14.2.2.1 Existing Conditions

Agriculture continues to play a large role in each of the counties within the study area despite increasing development pressure from the Twin Cities region. In Washington County, about 72 percent of the total county area was agricultural or vacant as of 1990. The *Washington County Comprehensive Plan*, however, suggests a substantial decrease in the amount of land

dedicated to long-term agricultural use by 2015, focusing agricultural use in the southern third of the county. To the north, Chisago County's *2010 Land Use Plan* maintains an agricultural focus, recommending agricultural use throughout a majority of the county.

Similar to Chisago County, the Wisconsin portion of the study area plans to maintain a high percentage of land dedicated to agricultural use. Approximately 72 percent of St. Croix County's land was in agricultural use as of 1993. The county's *Development Management Plan* recommends that the majority of that land, particularly in the eastern two-thirds of the county, remain in agricultural use. Soils in the western portion of the county are of poorer quality, and is not identified as prime agricultural land. Agricultural land use in Polk County, primarily concentrated along the southern and western towns, declined from 48 percent in 1973 to 43 percent in 1997. A current draft of a revised county plan includes preservation of valuable, productive farmland as a goal. To the south, Pierce County's farm acreage has decreased from 92 percent in 1954 to 71 percent in 1990. Prime farmland is located within the northern tier of towns. The 1996 *Pierce County Land Use Plan* preserves a large portion of the county for agricultural use.

14.2.2.2 Impacts from the Proposed Action

As discussed in Section 6.3.1.3 of this SFEIS, the Preferred Alternative will require approximately 140 acres of farmland for right-of-way. All of the potentially affected farmland is located in St. Croix County. Other indirect effects could occur through rural residential development of farmland in western St. Croix County outside of the project's construction limits, based on the land use analysis completed in Chapter 13 of this SFEIS.

14.2.2.3 Impacts from Other Actions

Additional development in all five counties is already consuming some land currently under agricultural use. An example is the recent annexation of farmland on the south and west edges of the City of New Richmond (see Table 14-3 for details on these annexations). Given current land use plans and growth projections, Washington County may experience conversion of agricultural land in the central and northern portions of the county. The location and degree of land conversion will be guided by zoning regulations in each of the five counties.

Current zoning retains agricultural densities but in some situations, permits rural residential uses that could alter the sparsely populated agricultural landscape dramatically. For example, agricultural densities in Washington County's zoning are defined as 1 dwelling unit per 20-acre parcel. In the Town of St. Joseph, agricultural density is defined as 1 dwelling unit per 35 acres. The Town of St. Joseph has recently eliminated exclusive agricultural use from their long-range land use plan, based on the poorer quality agricultural soils in the area and need for older farmers to provide for their post-retirement income through sale of their land.

Rural residential densities range between 1 dwelling unit per 10 acres to 1 unit per 2.5 acres in Washington County, to 1 per 5-acre or 1 per 2-acre lots in St. Croix County and 1 per 3-acre lot in the Town of St. Joseph. According to the town's official land use map, most of the land east of the unincorporated area of Houlton and south of STH 35/64 is planned for ag-residential density, which has a minimum lot size of 3 acres per unit.

14.2.2.4 Potential for Cumulative Impacts

The current farm economy, in combination with land development pressures, will provide material incentives for farmers to sell agricultural land for other uses. The comprehensive plans of all five counties within the study area recognize the value of productive agricultural land and have taken measures to protect farmland as part of their planning efforts. Local zoning regulations adopted to protect areas of prime agricultural land can regulate cumulative impacts to agricultural land uses.

Where comprehensive plan and zoning maps have specifically designated agricultural densities, this market-driven pressure would be countered by established land use regulations. However, in places where agricultural densities are not established through zoning, substantial loss of valuable farmland could occur as willing sellers and buyers contribute to conversion of farmland or open space to residential or commercial uses.

14.2.3 Social

14.2.3.1 Existing Conditions

Neighborhoods and communities are resources of the human environment that are commonly affected by roadway construction and urbanization. Relocation of homes, introduction of noise and visual impacts, altering the intensity of development, and other changes can result from growth and urbanization.

Existing social communities within the study area include the urbanized communities of Stillwater, Oak Park Heights, Forest Lake in Washington County, and Hudson in St. Croix County, which are seen as extensions of the Twin Cities urban area. Smaller cities within the study area include Bayport and Marine on St. Croix in Washington County, Taylors Falls in Chisago County, Somerset and New Richmond in St. Croix County, River Falls in Pierce County, and St. Croix Falls in Polk County. Additional smaller rural centers are scattered throughout the five-county area.

Existing neighborhoods and communities in the area appear to be relatively stable, with areas in Minnesota experiencing higher development pressure from growth of the Twin Cities metropolitan area. One neighborhood in Oak Park Heights was acquired and its residents relocated in preparation for the 1995 Final EIS Preferred Alternative. Six additional residential acquisitions (three in Minnesota and three in Wisconsin) will occur as part of the Preferred Alternative. Due to the relatively small number of additional acquisitions, the character of adjacent communities is not anticipated to be affected. With increased access across the river, development pressure from the Twin Cities will continue to spread into Wisconsin, along with related impacts on affected communities.

14.2.3.2 Impacts from the Proposed Action

As discussed in Chapter 5 of this SFEIS, the Preferred Alternative will not result in any negative impacts on community cohesion or community facilities.

14.2.3.3 Impacts from Other Actions

The conversion of some rural, small town communities to a more urbanized character will have long-term effects that are difficult to measure. Protecting the character of and maintaining the services available to a community will be the charge of the local units of government and will depend on the values and priorities of elected officials.

14.2.3.4 Potential for Cumulative Impacts

Changes to communities that result from growth and urbanization can be seen as either positive or negative, depending on one's perspective. Increasing development pressure, especially in Wisconsin, will require careful policy- and decision-making by local units of government to minimize adverse cumulative impacts on the affected communities.

14.2.4 Regional Economy

14.2.4.1 Existing Conditions

The economy of the five-county study area reflects the overall character and strength of the Twin Cities regional economy. The economy is characterized by a mix of retail, tourist, service, industrial, and agricultural businesses in urban, small town, and rural settings.

The agricultural sector is the portion of the regional economy most under pressure. The current agricultural economy and market demand for large-lot residential development in rural settings has encouraged many farmers to consider selling their land to developers as they approach retirement age. This set of conditions has increased land values in rural areas. Refer to the AIS in Appendix A of this SFEIS for a summary of farmland prices in St. Croix County. This interest has been particularly visible in recent discussions of future land use in western St. Croix County associated with the county's land use planning process.

14.2.4.2 Impacts from the Proposed Action

Approximately 15 acres of land will need to be acquired for right-of-way to construct the Preferred Alternative in Minnesota (see Table 5-1 of this SFEIS), in addition to the 74 acres previously acquired for the 1995 FEIS Preferred Alternative alignment. Four commercial properties were displaced with the acquisition of right-of-way for the 1995 FEIS Preferred Alternative alignment. One additional commercial property in Minnesota and one in Wisconsin will be dislocated for the Preferred Alternative (see Section 5.2.3 of this SFEIS). However, no impacts to the regional economy are expected to result from the Preferred Alternative.

14.2.4.3 Impacts from Other Actions

Additional development and roadway construction in the five-county study area would likely benefit the overall economy of the area. Individual businesses may experience varying degrees of benefit or adverse impact, depending on the character and placement of such development.

The expansion of utilities and roadway infrastructure will be a benefit to economic development efforts in the urbanized area.

The agricultural sector of the economy is likely to decrease in size as development continues. However, most prime agricultural lands are protected by zoning in all five counties. County comprehensive plans recommend that agricultural lands to be converted to other uses be lands of low productivity. Additional development would also be likely to increase land values overall in the area.

14.2.4.4 Potential for Cumulative Impacts

Given the strength of the overall economy, there is little potential for major adverse cumulative impacts on the regional economy resulting from the proposed action in combination with other actions. Some conversion of land use from agricultural to other uses would be likely to occur, but without substantial impact on the area economy other than overall increases in land values resulting from development.

14.3 PHYSICAL ENVIRONMENT

14.3.1 Air Quality

As discussed in Chapter 8, project level analysis of air quality impacts from the project alternatives focused on carbon monoxide (CO) emissions as the only issue that could cause localized impacts and can be quantitatively assessed. Since the SDEIS, a quantitative analysis of air toxics, at the regional level, has been completed for the Preferred Alternative. For purposes of this cumulative impacts analysis, other pollutants of a regional nature associated with motor vehicle emissions, including ozone, and particulates, were also considered.

14.3.1.1 Existing Conditions

The EPA has classified the state of Minnesota and western Wisconsin as attainment areas for all criteria pollutants.

Concentrations of CO in the five-county area surrounding the project are currently well below state and federal standards. EPA re-classified the Twin Cities metropolitan area as an attainment area for CO in 1999. Carbon monoxide emission trends are projected to continue to drop over the next 30 years.

Transportation sources emit nitrogen oxides and hydrocarbons, which are precursors of atmospheric ozone. Ground level ozone levels in the Twin Cities metropolitan area currently meet state and federal standards. The MPCA has found no discernable trend for one-hour (1-hr) ozone concentrations. Ozone levels have decreased in specific locations throughout Minnesota over the past two decades, but the averaging of data from many sites in the Twin Cities show that

ozone levels have remained nearly constant. Monitoring of fine particulates has not been in place long enough to show trends but the past three years of monitoring show particulate concentrations at levels below standards.

Transportation sources emit a broad group of pollutants collectively known as air toxics that have adverse effects to health. At present, there are no state or federal standards for these chemicals. There remains a great deal of uncertainty associated with quantifying specific health impacts of air toxics or the effect of specific transportation projects on their concentration.

14.3.1.2 Impacts from the Proposed Action

As discussed in Chapter 8 of this SFEIS, projected CO concentrations near the most congested intersections in the project area are well below state standards.

As discussed in Chapter 8 of this SFEIS, emissions of projected priority mobile source air toxics (e.g., acetaldehyde; acrolein; benzene; 1,3-butadiene; formaldehyde; and diesel particulate matter) are expected to decline between the present and year 2030. There are no state or federal standards for air toxics concentrations or emissions. Overall metro area gaseous air toxics emissions are expected to decline slightly as a result of the project. Diesel particulates are expected to increase, but remain below current levels.

The MPCA is developing a regional ozone modeling program but it is not currently able to determine the contribution of a single roadway project to the total concentrations of ozone-forming pollutants on an area-wide basis. The effect of the project on regional ozone and fine particulate levels cannot be accurately quantified; however, the distance from the project to the core of the metropolitan area would likely minimize any effect of increased traffic in the project area on ozone and fine particulate levels that are typically highest near the urban core.

14.3.1.3 Impacts from Other Actions

Traffic increases in the project area will occur as land develops. While transportation is a major source of the air toxics, volatile organic compounds, and nitrogen oxides that contribute to ozone formation, emissions of air toxics, volatile organic compounds and nitrogen oxides from motor vehicles will continue to decrease.

13.3.1.4 Potential for Cumulative Impacts

Mn/DOT is committed to congestion management measures that also reduce energy use and improve air quality. These measures include ramp metering, high occupancy vehicle lanes, and better traffic information for drivers.

Emissions from mobile sources will dramatically decrease due to new national standards for fuels and engines that will be implemented over the next two decades. These reductions will take effect gradually over two decades as existing vehicles and engines are replaced by newer and cleaner models. Minnesota is taking steps to accelerate the introduction of cleaner fuels, vehicles and engines into the marketplace.

Partnerships including state agencies, businesses, environmental groups and other organizations through the Clean Air Minnesota effort are working to reduce air pollution levels. This partnership, launched in October 2002 by the Minnesota Environmental Initiative seeks to improve air quality in the Twin Cities through cost-effective, voluntary actions. Examples of these voluntary measures include voluntary improvements at power plants to reduce pollutant emissions in the metro area and gasoline vapor recovery at gas stations.

Given the effect of these air pollution reduction measures and despite the additional traffic in the project area, it is not anticipated that the proposed project, in combination with other future actions, would result in substantial adverse impacts on air quality.

14.3.2 Noise

14.3.2.1 Existing Conditions

For highway projects, noise generated by traffic is the primary source of stress on quietude. Certain land uses are more sensitive to noise levels, such as homes, parks, recreation areas, churches, nursing homes, etc. As addressed in Section 8.2.1 of the SDEIS, state and federal standards are in place to regulate traffic-related noise.

Where sensitive receptors are located near high-volume roadways, exceeding state and federal noise standards is common, especially during peak traffic hours. As discussed in Chapter 8 of this SFEIS, current noise levels within the Minnesota portion of the project area exceed state daytime standards (L_{10} and L_{50}) at 8 of 29 receptors and exceed state nighttime standards (L_{10} and L_{50}) at 24 of 29 receptors. Current noise levels within the Wisconsin portion of the project area are below the state noise abatement criteria (L_{eq} of 67 dBA) at all 26 modeled receptors.

The exceeding of nighttime noise standards is common in urban areas. Throughout the five-county study area, similar exceedances would be expected in developed areas near major roadways; more rural areas would be expected to be below both daytime and nighttime standards.

14.3.2.2 Impacts from the Proposed Action

The proposed project will result in higher noise levels at some modeled receptors and in reduced noise levels at other modeled receptors along the Minnesota portion of the project corridor. Under the Preferred Alternative, modeled noise levels exceed state daytime standards (L_{10} and L_{50}) at 11 of 29 receptors and exceed state nighttime standards (L_{10} and L_{50}) at 27 of 29 receptors. The Preferred Alternative compares to 2030 No-Build conditions, which modeled noise over state daytime standards (L_{10} and L_{50}) at 13 of 29 receptors and noise over state nighttime standards (L_{10} and L_{50}) at 27 of 29 receptors.

In Minnesota, the noise increase (L_{10} and L_{50}) in the TH 36 area would range from 2 to 6 dBA over existing levels. In the TH 36/95 interchange area, noise (L_{10} and L_{50}) would decrease daytime noise (L_{10}) by up to 8 dBA at one receptor. At another receptor in this area, the Preferred Alternative would result in nighttime (L_{50}) increases of up to 9 dBA. North of this

interchange (TH 36/95), noise generally decreases under the Preferred Alternative. Diversion of traffic from downtown Stillwater results in reduced noise levels at those receptors compared to existing conditions or future 2030 No-Build conditions.

In Wisconsin the construction of new roadways in relatively undeveloped areas will result in large increases in noise levels. The Preferred Alternative increases noise by 1 to 14 dBA over existing levels, with the greatest increase closest to the Preferred Alternative river crossing. The diversion of traffic from a portion of STH 35/64 northeast of Houlton to the new STH 64 corridor would decrease some noise levels in those locations from existing levels. Noise levels along STH 35/64 east of 20th Street are increased by 5 to 6 dBA for the Preferred Alternative.

14.3.2.3 Impacts from Other Actions

Anticipated land development in the five-county study area will both increase the number of sensitive receptors (e.g., homes, parks, recreation areas, churches, nursing homes) and the number of roadways that generate traffic noise, as well as other sources of noise such as manufacturing facilities and mechanical units on commercial or institutional buildings. Assuming the number of high-volume roadways increases, the number of sensitive receptors where noise standards are exceeded is also likely to increase. The most notable change in noise levels will be observed in the relatively undeveloped Wisconsin portion of the study area.

However, the effects of traffic noise involve several characteristics, such as the distance between the noise source and sensitive receptor, the amount of traffic on a particular road, whether there are natural or man-made barriers, the layout and density (large lot vs. cluster or more compact subdivision) of adjacent neighborhoods, topography and many other factors.

14.3.2.4 Potential for Cumulative Impacts

Two physical characteristics of noise lessen the potential for cumulative noise impacts. First, noise does not grow proportionally with the amount of traffic growth. As explained in Chapter 8 of the SDEIS, a doubling of traffic along a roadway results in only an additional 3 dBA in sound level, a difference that is barely audible to the human ear. Second, traffic noise levels are generally localized and tend to disburse over relatively short distances.

The number of sensitive receptors experiencing noise levels exceeding state standards is expected to increase in the five-county area as development and traffic levels increase. However, noise levels are not expected to increase to a level that would be harmful to human health.

Where feasible and reasonable, noise mitigation (noise walls or barriers) along high-volume roadways must be considered to satisfy state and federal requirements, thereby lessening these cumulative effects. For the Preferred Alternative, there were 15 locations along the Preferred Alternative corridor (12 in Minnesota and 3 in Wisconsin; see Section 8.2.4.1 of this SFEIS) where mitigation measures (i.e., installation of noise abatement barriers), were studied, in accordance with Mn/DOT policy and Wisconsin Administrative Code Chapter Trans 405. None

of the analyzed locations in Minnesota and Wisconsin met both of the reasonableness criteria. Therefore, noise mitigation is not considered reasonable at any location in the Minnesota and Wisconsin portion of the project area and would not be constructed.

In addition, local governmental units have the authority to decrease noise impacts on sensitive receptors by designating exclusive land uses in areas of highest noise impact, requiring appropriate subdivision design that would create a buffer to reduce the impacts of traffic noise on sensitive receptors, requiring noise insulation, or restricting time periods when noise can be generated. In Wisconsin, large areas of land in the project area are vacant and such planning for development of noise-sensitive uses can be done. Analysis shows that in order to avoid noise impacts, residential areas should be placed at least 200 feet from the Preferred Alternative roadway centerline, if no mitigation such as berms or barriers is incorporated into the development (see Section 8.2.4.1 of this SFEIS).

Given the above discussion, it is not anticipated that the proposed project, in combination with other future actions, would result in substantial adverse noise impacts.

14.4 WATER RESOURCES

14.4.1 Wetlands

14.4.1.1 Existing Conditions

Wetlands in Minnesota are federally regulated by Executive Order 11990, US DOT Administrative Order related to the impacts of transportation projects on wetlands and by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. In addition to federal regulation, Minnesota wetlands are also regulated by Governor's Executive Order 91-3, and the Minnesota Wetland Conservation Act as well as the MnDNR Division of Waters. In Wisconsin, state wetland policy is set forth in Wisconsin Administrative Rule NR 103. The "Isolated Wetlands Law" (Wisconsin Act 6) was passed in May 2001 to protect isolated wetlands that are not covered by federal jurisdiction. This law provides jurisdiction to the state when the federal government does not have jurisdiction. Local agencies regulate activity in shoreland-wetland zones, in accordance with sections NR 115 and 117 of the Wisconsin Administrative Code. Regulations require avoidance of wetland impacts when possible, and when avoidance is not possible, impacts must be minimized and compensated.

Wetland basins have been delineated throughout the project area. In Minnesota wetland basins were found in three general areas— south of the intersection of TH 36 and Oakgreen Avenue/ Greeley Street, near TH 95 south of TH 36 and along the St Croix River edge. Within these three sub areas, a total of 23 wetland basins were identified. In Wisconsin, wetlands are found in only one area, along STH 64 close to the project's eastern terminus. There are three wetland basins identified at these locations. The wetlands were classified according to methodology described in Section 10.5.1.2 of the SDEIS.

14.4.1.2 Impacts from the Proposed Action

Wetland functions and attributes include vegetation diversity, wildlife habitat and food, flood/stormwater discharge, sediment and nutrient retention, aesthetics/recreation, groundwater recharge/discharge and location related to commercial/industrial development. Impacts to wetlands caused by construction can diminish these functions and affect the benefits these unique ecosystems contribute to landscapes.

As described in Table 10-3 of this SFEIS, the Preferred Alternative and associated mitigation items will directly affect about 7.6 acres of wetlands in Minnesota (Washington County) and about 0.13 acres of wetlands in Wisconsin (St. Croix County). These impacts will be mitigated through the creation of new wetlands or restoration of previously-drained, filled wetlands (see Section 10.5 of this SFEIS).

Some secondary impacts (such as excavation or drainage of undelineated wetlands) could occur as a result of the Preferred Alternative, however the degree of regulation at the local, state and federal level makes significant secondary impacts unlikely.

A wetland compensation plan intended to replace lost wetland functions and values found in the project area today will be developed based on final design plans. This plan will reassess exact areas of impacts and mitigation drawing on current and applicable mitigation guidelines and regulations.

14.4.1.3 Impacts from Other Actions

The continued growth and development associated with the trend of urbanization throughout the five-county study area would bring a corresponding continued impact and possibly increased impact on wetlands. Similarly, expansion of existing or construction of new transportation facilities may impact wetlands.

Excavation of marsh or wet meadow wetlands may occur as residential development encroaches on wetlands and as a result of the preference of developers and residents for the aesthetics of open water over emergent or meadow vegetation. A resulting effect of increased open water wetlands could be a decrease in typical wetland species (biodiversity) in the area.

Potential indirect impacts on wetlands from residential development could occur from stormwater discharges into wetlands. Increased flow into wetlands could alter hydrology, causing changes in plant communities and disrupting life cycles of wetland inhabitants. Increases in stormwater flow and increased nutrients and sediment also could result in wetland degradation.

Fragmentation of wildlife habitat could also occur with increased development in Wisconsin. Many animals use both wetlands and uplands during their life cycles. Isolating or developing all the uplands surrounding wetlands would negatively affect animals commonly associated with wetlands.

Direct impacts, such as filling, would be likely to occur in smaller wetlands. While these smaller, isolated wetlands are regulated by the U.S. Army Corps of Engineers, and mitigation for major impacts is often required, some loss of these small, isolated wetlands could occur under the Corp regulations. The proposed mitigation for wetland impacts resulting from other transportation construction activity in Wisconsin is anticipated to be coordinated with the WisDNR. Generally speaking, impacts are likely to be mitigated through a combination of on-site and banked-site mitigation.

14.4.1.4 Potential for Cumulative Impacts

Given the extensive regulations protecting wetlands in Minnesota and Wisconsin, there is low potential for cumulative adverse impacts on wetlands in either state. In Minnesota, the high replacement ratio (2:1) compensates for wetland losses not covered by permitted activities. In Wisconsin, current state regulations do not define replacement ratios. However, continued coordination between WisDNR and WisDOT as well as the U.S. Army Corps of Engineers could be expanded to coordinate wetland mitigation efforts for this project and others.

14.4.2 Water Quality and Quantity

14.4.2.1 Existing Conditions

As discussed in Chapter 10 of the SDEIS, conversion of open land to impervious surface increases runoff that may carry pollution and sediments and cause erosion as it discharges into surface water bodies. Degrading water quality can adversely affect fish, waterfowl, wildlife, and plant life sustained by the affected water body. Human use of a water body for recreation or drinking can also be affected by degrading water quality.

Groundwater can also be affected as land is converted from open space to more urbanized (residential, commercial or industrial) uses. Depending on the nature of wastewater systems in place, seepage of nitrates from septic systems as well as agricultural uses can cause potential threats to groundwater quality.

In general, water quality in the St. Croix River is considered to be good to excellent. The Metropolitan Council Environmental Services (MCES) conducts regular sampling of the St. Croix River near Stillwater. The MCES uses the National Sanitation Foundation index of water quality to present a relative index of overall water quality. Between 1983 and 1997, this index consistently shows water quality to be in the upper portion of the good range. Many tributary watersheds in the project area also contain high quality water bodies. Wisconsin Administrative Code NR 102 classifies the Kinnickinnic River, Bass Lake, and Perch Lake as Outstanding Resource Waters. The lower portion of the Apple River is classified as an Exceptional Resource Water. The Kinnickinnic and Willow rivers contain regionally-important trout fisheries. In Minnesota, Brown's Creek, Valley Branch Creek, Willow Brook, and Old Mill Stream are also classified by the MnDNR as trout streams.

14.4.2.2 Impacts from the Proposed Action

As described in Chapter 10 of this SFEIS, the Preferred Alternative has incorporated design features to effectively treat roadway and bridge stormwater runoff prior to discharge into surface waters. The treatment of runoff proposed as part of the project will improve upon the drainage of the existing roadway, from which stormwater runoff is currently conveyed directly into the St. Croix River. In addition to permanent stormwater runoff treatment and permanent erosion control, temporary erosion control and temporary stormwater pollution prevention measures will be used.

There will likely be short-term impacts on water quality and aquatic life resulting from construction related activities that disturb river-bottom sediment. These impacts are expected to be transitory but will differ depending on the bridge design and the method of construction.

14.4.2.3 Impacts from Other Actions

At present, there is no precise data available regarding the type and density of development that would occur in these areas. However, it can be reasonably assumed that urbanization of existing agricultural land uses would result in increased impervious surfaces. As the percent of impervious surface is increased in a watershed, the volume of stormwater runoff increases. Increased runoff, if not properly managed, can have a variety of negative impacts on receiving water bodies. These potential impacts include increased chances of flooding, erosion of streambanks and drainage ways, warming of stream waters, and decreased groundwater base flow due to less infiltration. Stormwater management practices are routinely used to reduce the magnitude of these potential impacts.

In addition to increased impervious surface area, other infrastructure requirements of urbanization can negatively affect water quality. Water supply wells are often required in developed areas. A potential effect of removing large amounts of groundwater for water supply can be to reduce groundwater base flows in ground-water-fed water bodies. This effect can be exacerbated by the increase in impervious surfaces discussed above. Wastewater treatment facilities are also required in urban areas. While treatment of this wastewater would be required and current wastewater treatment technology can remove almost all of the nutrients in wastewater, trace levels still exist in their effluent. Discharge of this treated wastewater can affect the quality of receiving water bodies.

Some of the local jurisdictions planning for growth in Wisconsin assume that wastewater can be managed on a private septic system, addressed on a lot by lot basis. There is some potential for these systems to seep into groundwater when the soil conditions in which they are constructed are inadequate to the role they must perform. The *St. Croix County Development Management Plan* conducted a physical land inventory throughout the County, and has mapped areas with severe limitations for septic systems. Much of the land within the western part of the County falls into this category, including the Towns of St. Joseph, Somerset and Hudson.

Land regulations in the towns specify a minimum lot size/density of three acres per unit, which allows adequate land for septic systems and private wells to function effectively. These regulations and the resulting private septic systems have been in place for more than 20 years and to date the towns have not experienced problems with groundwater contamination. However, there is a concern that rapid rates of land conversion resulting from population growth could pose problems to groundwater quality. This is an issue that should be closely monitored in order to manage conditions as they change over the short- to long-term timeframe.

Finally, increased traffic on the river crossing and other roadways, including commercial trucks, increases the risk of toxic spills occurring near a water body. Such a spill could have serious impacts on water quality and aquatic habitat if a variety of stormwater treatment and runoff detention measures are not in place to prevent significant adverse impacts on water resources.

14.4.2.4 Potential for Cumulative Impacts

Local and regional governments in the Minnesota portion of the project area include the management of stormwater in their comprehensive planning efforts and have stringent requirements for stormwater management. Because of the current rural nature of the Wisconsin portion of the project area, local government agencies are still in the process of developing rigorous stormwater management policies. To prevent cumulative impacts on water quality and quantity, local and regional government agencies should develop comprehensive stormwater management and erosion control plans. To the extent that urbanization in the project area continues at its current and projected rate, groundwater conditions should be monitored to ensure that the use of septic systems and private wells does not adversely impact groundwater quality.

Given the design standards and management controls available for protecting the quality of surface waters and groundwater, it is likely that potential impacts of the project, along with other foreseeable actions, would be minimized or mitigated to a substantial degree, and adverse cumulative impacts on water quality and quantity are not anticipated.

14.5 NATURAL RESOURCES

14.5.1 Aquatic Resources

14.5.1.1 Existing Conditions

Aquatic life in the Lower St. Croix Watershed can be found in a number of habitats including lakes, wetlands, and cold-water and warm-water streams. The St. Croix and Apple rivers contain a number of fish, mussel, and aquatic invertebrate species, including several which are threatened and endangered species (see Chapter 9 of the SDEIS). Several trout streams are located within the Watershed, including Brown's Creek near Stillwater, and the Kinnickinnic and Willow rivers in Wisconsin. The primary stresses on these resources include changes in water quality or temperature, substrate quality, flow patterns and rate, and alteration of habitat. The quality of the aquatic environment in the Watershed is currently considered relatively stable and supports a variety of aquatic life.

14.5.1.2 Impacts from the Proposed Action

The project will result in direct impacts on St. Croix River aquatic species during construction of the new river crossing and implementation of mitigation items. For instance, Higgins' Eye Pearly Mussel (a listed Federal Endangered Species) could be adversely impacted by construction of the Preferred Alternative. Indirect impacts could result from the potential introduction of zebra mussels by construction barges and watercraft.

To mitigate these effects, affected mussels will be relocated and measures will be taken during design and construction to limit the extent of impacts on aquatic habitat. A protocol for decontamination of construction equipment has been developed to avoid the introduction of zebra mussels into the St. Croix River. Implementation of mitigation items will further improve aquatic habitat through shoreline restoration, stormwater treatment, and roadway spill protection. (See Chapter 9 of this SFEIS for further discussion.)

14.5.1.3 Impacts from Other Actions

Additional development and associated roadways could affect other aquatic environments through runoff, sedimentation, and intrusion upon the habitat itself. Additional impervious surface within the study area could also raise water temperatures in cold-water habitats receiving treated water, particularly trout streams. If development is not properly designed and managed, other impacts on area streams could result from increased sedimentation and other pollutants.

14.5.1.4 Potential for Cumulative Impacts

As noted in the Water Quality section of this chapter, stringent standards and regulations at the state and federal level are in place to protect water quality. Regulatory authorities, such as Watershed Districts, have considerable authority to regulate activities that affect water quality. The Lower St. Croix Management Commission also promotes protection of aquatic resources through its cooperative management efforts. Stormwater management is required for all new roadway projects, which often incorporate drainage from adjacent land, thereby increasing the area receiving runoff treatment. Over time, the increasing amount of runoff treatment is likely to reduce the concentration of pollutants reaching surface waters.

In addition, any other agency actions affecting the Lower St. Croix National Scenic Riverway, categorized as a "water resources project" (including additional river crossings), would be assessed by the NPS under Section 7(a) of the Wild and Scenic Rivers Act for impacts on water resources.

Water quality can be impaired from development related activities, raising the concern for potential cumulative impacts. However, the regulatory structures currently in place reduce the potential for significant adverse impacts to water quality resulting from the proposed action in combination with other public and private actions.

14.5.2 Vegetation

14.5.2.1 Existing Conditions

Vegetative resources in and near the project area, as addressed in Chapter 9 of the SDEIS, include floodplain forest near the river, mixed hardwoods and undergrowth along the bluffs and ravines, cultivated agricultural land, and isolated wooded areas on the Wisconsin side of the river. Much of the Minnesota side has been developed. Small populations of the dotted blazing star (*Liatris punctata* var. *nebraskiana*), a Wisconsin state endangered plant, were identified near the project area in Wisconsin. Small areas of remnant prairie likely exist in Wisconsin, but no specific locations are known.

The Western Prairie Habitat Restoration Area Feasibility Study and Environmental Impact Statement (WisDNR 1998), describes vegetative cover at the time of European settlement in western St. Croix and southern Polk counties as large expanses of prairie and oak savannah and lesser areas of oak and aspen forest. Cultural resources investigations conducted for this project describe vegetative cover in the Stillwater area at the time of the original land survey as hardwood forest and scattered prairie. The massive stands of white pine that provided the raw materials for Stillwater's early lumbering industry began slightly north of Taylors Falls in Chisago County.

During the nineteenth and early twentieth centuries, the timber industry cleared much of the original forest surrounding Stillwater. Large areas of forest were cleared and prairie stripped for agricultural use within the five-county study area. In Minnesota, urbanization has occurred in some areas previously cleared by agricultural use. Few substantial changes to the area's vegetation have occurred in recent years.

14.5.2.2 Impacts from the Proposed Action

The project will bisect a forested area along the bluff in Wisconsin and floodplain areas resulting in the loss of trees in the area, particularly farther back in the ravine. These areas will also experience some habitat fragmentation and increased exposure to the new roadway, in the area of the bridge abutments, piers, stormwater ponds and channels, and any areas shadowed by the new structure. Measures will be taken during design and construction of the project to limit the amount of tree removal and protect the remaining forested areas. Vegetative loss will be mitigated to the extent possible by landscaping and appropriate revegetation.

14.5.2.3 Impacts from Other Actions

Additional development and roadway construction in the five-county study area could result in additional loss of wooded areas, prairies, and grassland, as well as in additional fragmentation of habitat. Conversion of agricultural land to residential use could result in additional or different vegetative cover.

14.5.2.4 Potential for Cumulative Impacts

Within the St. Croix River valley, strict development controls are in place to protect the bluffs and ravines along the river, particularly those areas that are part of the Lower St. Croix National Scenic Riverway. Actions outside the river valley may result in removal of wooded areas scattered through the upland area of Wisconsin. Other actions, such as land development, would change (i.e., increase or decrease) the diversity of vegetation in areas that are now in agricultural production, as addressed in the Wildlife section of this chapter. Some restoration of previous landscapes may result if sensitive design approaches are used. Development controls, conservation easements, tree replacement requirements, and other local governmental controls could protect wooded areas, if local units of government are willing and able to undertake such actions. If not, wooded areas could be at risk for depletion as the area develops. The proposed action, in combination with other foreseeable actions in the area, may result in adverse cumulative effects on vegetative resources. Appropriate mitigation measures are proposed as part of the project to minimize vegetation impacts from construction of the Preferred Alternative. Local governmental units should take appropriate steps to protect these resources from other actions.

14.5.3 Wildlife

14.5.3.1 Resource Baseline

The health and abundance of wildlife populations in a given area is largely dependent on the quality and quantity of habitat available to support them. On the Minnesota side of the river, substantial reduction of wildlife habitat has already occurred. On the Wisconsin side, the river valley is not highly disturbed by recent development, although much of the landscape in the area was converted to agricultural use over 100 years ago. Past and present development on the Wisconsin side of the river has fragmented and reduced the quality of wildlife habitat to varying degrees.

Wildlife resources in the Lower St. Croix Watershed include a number of common species of small mammals such as mice, voles, ground squirrels, and songbirds in more developed areas and larger species, including red fox, cottontail rabbits, raccoons, ruffed grouse, and white tail deer in rural areas. The Lower St. Croix Watershed is also the home to osprey, peregrine falcon and bald eagle species, which have established nests near the Xcel King Power Plant in Minnesota. Habitats of these species include the forests of the river shore and bluffs, small woodlots, wetland areas, and agricultural fields. The osprey is listed as a threatened species in Wisconsin and is classified as a Minnesota species of special concern. The peregrine falcon, although formerly listed as a federally endangered species, has been removed from the USFWS Endangered Species List. The peregrine falcon is listed as an endangered species in Wisconsin and a threatened species in Minnesota; the bald eagle is listed as a Federally Threatened Species, although it has been proposed for delisting. It will continue to remain classified as a species of special concern and be protected along with the peregrine falcon and osprey under the Federal Migratory Bird Treaty Act and Bald Eagle Protection Act.

14.5.3.2 Impacts from the Proposed Action

On the Minnesota side of the river, the project is primarily within an existing roadway corridor and will not result in substantial loss of habitat or in additional barriers to wildlife movement. Potential disruption of bald eagle nesting activities within the project area will be reduced with design modification and mitigation measures. In Wisconsin, the Preferred Alternative will introduce a barrier to some wildlife movement and will result in some loss of habitat. However, impacts on the composition of the wildlife community are anticipated to be minimal. Most of the indigenous wildlife in the area consists of species that have adapted to a disturbed physical environment and would be tolerant of disturbance from the project. (See Chapter 9 of this SFEIS for further discussion.)

14.5.3.3 Impacts from Other Actions

Additional development and associated construction of roadways in the five-county study area could reduce or fragment wildlife habitat and place stress on wildlife species. Roadways can also create barriers to wildlife movement and can result in wildlife-vehicle collisions. Such stresses could impact specialized resource areas, such as Waterfowl Production Areas (WPAs) owned and managed by the USFWS in St. Croix and Polk counties.

Development on the Minnesota side of the river would generally fall within urbanized areas, so few impacts on wildlife populations are expected. Increased urbanization in Wisconsin would introduce a shift in diversity within the vegetative landscape as a result of the transition from agricultural uses to large-lot rural residential uses. As this transition has occurred in similar areas, the diversity of vegetation has increased the connectivity of habitats, resulting in more diverse wildlife populations. However, future development could also result in some loss of grassland, forest, and wetland habitat, particularly if large, wooded tracts, prairie remnants, and wetlands are not protected.

14.5.3.4 Potential for Cumulative Impacts

Local development controls, conservation easements, tree replacement requirements, and other measures could protect or increase available wildlife habitat (prairie remnants, wetlands, and wooded areas), if local units of government are willing and able to undertake such actions. As stated above, replacement of agricultural use with rural residential development could improve habitats, resulting in more diverse wildlife populations.

Within the study area, large amounts of habitat would continue to exist in a natural state through the protection of the Lower St. Croix River and state and county parklands throughout the area (see discussion below in Section 14.6.1 of this SFEIS). The noted threatened species, or species of special concern, are located within the St. Croix River valley within already protected environments.

Given the amount of available habitat and the overall health of wildlife populations in the study area, it is not anticipated that the proposed project, in combination with other future actions, would result in substantial adverse impacts on wildlife.

14.6 RECREATIONAL, VISUAL, AND CULTURAL RESOURCES

14.6.1 Parks and Recreational Lands

14.6.1.1 Existing Conditions

County, regional, and state parks, as well as federal recreation areas, are located throughout the five-county study area. The area's rivers, lakes, and scenic qualities have encouraged park development and attract many visitors every year.

Bisecting the study area is the 25,000-acre Lower St. Croix National Scenic Riverway. The Lower St. Croix National Scenic Riverway is managed by the Lower St. Croix Management Commission, which consists of representatives from the NPS, the MnDNR, and the WisDNR. In Minnesota, Washington County contains four county parks (909 acres) and four regional parks and reserves (3,155 acres) and has plans to acquire an additional 2,900 acres for regional park use. Afton State Park and William O'Brien State Park are also located in Washington County. Chisago County has 446 acres in five county parks, 150 acres in reserves, and the 23,000-acre Carlos Avery Wildlife Management Area, as well as Interstate Park and Wild River State Park. Chisago County shares the Chengwatana State Forest (17,000 acres of publicly-owned land) with Pine County.

In Wisconsin, St. Croix County provides 3,851 acres in three county parks, 10,273 acres of public hunting land, Willow River State Park, and the Eau Galle federal recreation area. Pierce County contains Nuggett Lake Park (752 acres), Kinnickinnic State Park (1,067 acres), the Pierce County Islands Wildlife Area (840 acres), and an additional 640 acres of habitat, wildlife protection areas, and state natural areas. Polk County provides 806 acres of parkland.

In addition, local communities provide smaller, community-oriented parks.

14.6.1.2 Impacts from the Proposed Action

The Preferred Alternative will result in the following impacts: visual and recreational impacts on the Lower St. Croix National Scenic Riverway and decrease of access to and a change in the proposed active recreational use of Kolliner Park. The Preferred Alternative will also result in temporary construction impacts to City of Stillwater-owned parks with completion of the loop trail system (see Section 15.4.1.2 of this SFEIS). These impacts will be mitigated through a number of measures, as discussed in Chapter 15 of this SFEIS and the Final Section 4(f) Evaluation in Appendix E of this SFEIS.

14.6.1.3 Impacts from Other Actions

Parklands within the five-county study area are protected from direct use for development and transportation facilities by local and county zoning laws and federal regulations. All county plans in the area include, as a goal, the adequate provision of recreational facilities, and several county plans indicate the intent to expand recreational facilities, if needed, to serve the demand. Additional development in the area could place pressures on park and recreation area operations,

as visitors to these facilities increase and nearby development begins to limit opportunities for park expansion. Potential development could also limit activities (such as hunting) or diminish the quality of the nature experience (nearby development creates visual or noise intrusions).

14.6.1.4 Potential for Cumulative Impacts

Parklands are given a high degree of protection by local, county, state, and federal laws, reducing the potential for substantial adverse impacts resulting from the proposed action in combination with other actions.

14.6.2 Aesthetics

14.6.2.1 Existing Conditions

Aesthetic conditions vary considerably in the five-county study area, including pristine natural areas, agricultural areas, and developed or urbanized areas with varying degrees of aesthetic consideration. While the aesthetic values that could be ascribed to these environments will vary among individuals, the most-universally valued environments include the St. Croix River valley, rural landscapes, and historic districts and properties.

14.6.2.2 Impacts from the Proposed Action

The Preferred Alternative will result in varying degrees of potential adverse visual impacts to viewsheds and visual corridors within the project area. Careful consideration will be given to the aesthetic treatments of the bridges and roadways to provide a pleasing facility that complements and respects the surrounding landscape. The extradosed bridge type was identified because it balances the impact of a new river crossing with the cultural, recreational and visual values that make the Riverway a National Wild and Scenic Riverway. The extradosed bridge type represents a substantial additional investment compared to a typical girder bridge, an investment reflecting the importance of the Riverway. The Visual Quality Planning Process, resulting in a Visual Quality Manual, also represents an important effort to guide aesthetic design throughout the St. Croix River Crossing project. (See Chapter 7 of this SFEIS for further discussion.)

14.6.2.3 Impacts from Other Actions

Additional development and associated roadway construction may affect the aesthetic qualities of the study area. However, the need to protect the most universally-valued environments are recognized in resource management and comprehensive plan policies in the area. The pleasing aesthetic values of the St. Croix River valley are protected by the Lower St. Croix Management Commission and the NPS. Each of the five counties in the study area includes protection of rural character as a component of their comprehensive plan. Several counties are exploring site plan and subdivision controls that would regulate the visual impacts of development in rural areas.

While some individuals may value the aesthetic qualities of natural and rural environments, other individuals equally value orderly and well-designed developed areas. Local controls may affect the visual quality of development. As more development occurs in the area, portions of the study area will change from a largely rural landscape to a more urbanized environment.

14.6.2.4 Potential for Cumulative Impacts

Individuals who value natural and rural environments will view further development in the five-county study area as a degradation of aesthetic value. Orderly and well-designed built environments may be equally valued by others. These differences in values cannot be clearly interpreted as adverse impacts. Changes to highly-valued aesthetic resources can be protected through government regulations, reducing the potential for cumulative impacts.

14.6.3 Archaeological and Historic Resources

14.6.3.1 Existing Conditions

Numerous archaeological and historic resources exist throughout the five-county study area reflecting patterns of Native American settlement, the early logging industry, and nineteenth and early twentieth century development patterns. Historic resources in the area include archaeological sites as well as built structures. Designated historic districts can be found in the communities of Stillwater, Taylors Falls, Marine on the St. Croix, Center City, and Franconia in Minnesota; and Hudson, Prescott, and River Falls in Wisconsin. Historic property types present in the area include residences, commercial buildings, institutional buildings, industrial structures, farmsteads, bridges, railroads, historic trails and roads, and cultural and designed historic landscapes. Sites with religious and cultural significance to American Indians may also be located in the five-county area.

14.6.3.2 Impacts from the Proposed Action

The effects to historic properties resulting from the Preferred Alternative are identified below in Table 14-4. A more complete discussion of each property listed on or determined eligible for the National Register of Historic Places (NRHP) and the assessment of effects on each property and mitigation measures are provided in Chapter 11 of this SFEIS. Adverse effects have been identified for seven properties. Mitigation measures are documented in the Amended Section 106 Memorandum of Agreement (MOA) (see Appendix G in this SFEIS).

**TABLE 14-4
NRHP-LISTED AND DETERMINED ELIGIBLE PROPERTIES
SUMMARY OF ELIGIBILITY AND EFFECTS**

Property Name	NRHP Criterion	SHPO Number	Eligibility Status	Effects from Preferred Alternative
Log Cabin Restaurant (Club Tara)	A	WA-OHC-019	Determined Eligible	Adverse Effect
Bergstein Shoddy Mill and Warehouse	A	WA-OHC-001	Determined Eligible	Adverse Effect
Stillwater State Prison Historic District	C	WA-BPC-007	NRHP Listed; 22 contributing properties, 8 non-contributing	No Adverse Effect
St. Croix Overlook-South	A & C	WA-OHC-005	Determined Eligible	Adverse Effect
William N. Danforth House	C	WA-SWC-1067	Determined Eligible	No Effect
Fairview Cemetery	C	WA-SWC-1486	Determined Eligible	No Effect
Stillwater South Main Street Archaeological District (Hersey and Bean Sawmill and Planing Mill Site; Slab Alley)	A & D	21WA91 21WA92 21WA100	Determined Eligible as contributing to Cultural Landscape District and to archaeological district	Adverse Effect (Hersey and Bean Site) No Effect (Slab Alley)
Stillwater & St. Paul Railroad	A	WA-SWC-1503	Determined Eligible	No Effect
St. Croix Boom Site	A	WA-SWT-004	National Historic Landmark	No Effect
Stillwater Lift Bridge	C	WA-SWC-322	NRHP Listed; contributing to Stillwater Cultural Landscape Dist.	Adverse Effect
Stillwater Commercial Historic District	A & C	Multiple numbers	NRHP-Listed; 82 properties; Lift Bridge not included	Adverse Effect
Stillwater Cultural Landscape District	A & C	Multiple numbers	Determined Eligible; 247 contributing properties and 187 non-contributing properties; 3 contributing archaeological sites; Includes Lift Bridge	Adverse Effect
Nicholas Thelen Farmstead	C		Determined Eligible	Conditional No Adverse Effect
St. Croix Hilltop Drive-In Theatre	C	AHI-129594	Determined Eligible	No Effect
Kriesel Farmstead	C	AHI-129596	Determined Eligible	Conditional No Adverse Effect

14.6.3.3 Impacts from Other Actions

As discussed above in Section 14.2.1.4 of this SFEIS, the negative impacts resulting from intensification of land use can be controlled through local comprehensive planning and zoning controls. Local communities can also enact further controls to protect historic properties. Designation of historic properties by local governments can provide some protection for their

preservation, as well as design review to guard against inappropriate changes that can destroy the historic characteristics of properties. Changes to National Register-listed or eligible properties will be reviewed under the Section 106 process if federal funds, permits or licenses are required as part of an undertaking. National Register listing, however, does not prevent demolitions or other negative effects on properties if federal funds, licenses or permits are not required. Privately funded development related to historic properties is not regulated under federal regulations and would only be reviewed if located in a local historic district, or applied to a locally designated property.

14.6.3.4 Potential for Cumulative Impacts

Cumulative effects to historic properties are identified in conjunction with the criteria of adverse effect in 36 CFR 800.5 (a) (1), noting that adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Increasing development pressures in the five-county area could encourage the demolition of vacant or under-utilized historic buildings and farmsteads if reuse of such properties is not found to be economically viable. Changes in land-use patterns associated with development would alter the setting of some historic properties. Development of parcels surrounding historic farmsteads could make it more difficult for farmers to continue active agriculture in close proximity to urban residential and commercial development. Further development of previously undeveloped lands may also disturb existing archaeological sites, both in rural areas and the historic archaeology in urbanized areas.

At the same time, increased access could result in higher property values that bring prosperity to residents in the St. Croix Crossing area. The potential for development may provide financial gain on properties that have languished or been unproductive. Increasing property values and desirability of the area could also provide economic incentives and market support for the rehabilitation and reuse of historic buildings.

Potential cumulative effects on historic properties may include the following:

- Demolition or modification of a historic property as a result of development pressure.
- Land use changes occurring as a result of enhanced transportation accessibility.
- Land use changes occurring because accessibility was lost as a result of a project.
- Impacts to the setting and views of a historic property due to changed transportation patterns that result from new infrastructure.
- Changes to the uses of a historic property (and/or district) as the result of new infrastructure, changing transportation patterns, and altered settings.
- Because of the size and encompassing nature of the Stillwater Cultural Landscape District, it may experience cumulative impacts from a variety of activities in the surrounding area, including impacts to the natural and cultural landscape and the river.

14.7 CONCLUSIONS

14.7.1 Summary of Potential Cumulative Impacts

Potential for cumulative impacts exists in issue areas related to land consumption: land development, prime agricultural land, water quality and quantity, vegetation, wildlife, aesthetics and historic resources. Table 14-5 summarizes these issue areas below. These potential impacts are typically considered through local and county comprehensive planning efforts. These impacts can be avoided or minimized through land use controls, site plan/development controls and roadway access restrictions.

**TABLE 14-5
SUMMARY OF POTENTIAL CUMULATIVE IMPACTS FINDINGS**

Resource/ Ecosystem/ Human Community	Potential for Cumulative Impact	
	✓greater potential	*less potential
Land Use/Development	✓	
Prime Agricultural Land	✓	
Social		x
Regional Economy		x
Air		x
Noise		x
Wetlands		x
Water Quality and Quantity	✓	
Aquatic Resources		x
Vegetation	✓	
Wildlife	✓	
Parks and Recreational Lands		x
Aesthetics	✓	
Historic Resources	✓	

14.7.2 Possible Measures to Minimize or Reduce Potential Cumulative Impacts

Mitigation for the direct and indirect impacts resulting from the Preferred Alternative are discussed in previous chapters and summarized in Section 15.4 of this SFEIS. FHWA policy does not allow federal project funds to be used for mitigation of impacts not attributable to the proposed project; potential cumulative impacts cannot be controlled by the actions of FHWA, Mn/DOT or WisDOT. Therefore, no mitigation for potential cumulative effects is proposed. Local governments, public agencies and private entities are encouraged to consider the above discussion when evaluating development plans and to take measures to avoid or minimize potential cumulative effects as noted above. A list of planning tools available to local governments can be found in Section 13.5 of this SFEIS.