Mr. Thomas K. Sorel
Division Administrator
Federal Highway Administration
U.S. Department of Transportation
Galtier Plaza, Box 75
175 East 5th Street, Suite 500
St. Paul, Minnesota 55101-2904

Dear Mr. Sorel:

This document represents the U.S. Fish and Wildlife Service's (FWS) Biological Opinion on the effects of the proposed St. Croix River Crossing on Trunk Highway (TH) 36/State TH (STH) 64 between Oak Park Heights, Washington County, Minnesota to the Town of St. Joseph, St. Croix County, Wisconsin. On March 7, 2005, we received your request for formal consultation under section 7 of the Endangered Species Act (ESA) of 1973, as amended, (16 U.S.C. 1531 et seq.). We have concluded that the proposed crossing is not likely to jeopardize the continued existence of the federally endangered Higgins eye pearlymussel (*Lampsilis higginsii*), the federally endangered winged mapleleaf (*Quadrula fragosa*) or the federally threatened bald eagle (*Haliaeetus leucocephalus*). This biological opinion is based on information provided in your biological assessment and in two previous biological opinions that were issued by this office for similar St. Croix River Crossing projects (August 30, 1996 and December 20, 1999).

1. Consultation History Update

On March 18, 2004, the Federal Highway Administration (FHWA) published a Notice of Intent in the Federal Register advising the public that a Supplemental Environmental Impact Statement (SEIS) would be prepared for a proposed highway project on Minnesota Trunk Highway 36 and Wisconsin State Trunk Highway 64 including a new crossing of the St. Croix River in Washington County, Minnesota and St. Croix County, Wisconsin.

On March 22, 2004, the U.S. Department of the Interior (DOI) notified FWS and the National Park Service (NPS) of the FHWA's intent to release the SEIS.

On April 27, 2004, the Minnesota (MN/DOT) and Wisconsin (WI/DOT) Departments of Transportation published a brochure titled, *St. Croix River Crossing Project - Request for*

Public Questions. The brochure also notified the public of two meetings (held in Hudson, Wisconsin and Stillwater, Minnesota) to receive input on the project.

On October 27, 2004, MN/DOT and WI/DOT announced that the St. Croix River Crossing Stakeholder Group had reached a preliminary agreement to build a new crossing within the 'B-1' corridor and that the bridge design should use the extradosed structure. In addition, the existing historic Stillwater lift bridge would be retained and converted to a bicycle/pedestrian facility.

On October 26 and 27, 2004, the St. Croix River Crossing Stakeholder Group met to discuss the consensus alternative, which is now being identified as Alternative B-1, the preferred alternative.

In a November 1, 2004, letter to FHWA, DOI stated its appreciation of the collaborative process in the development of the 2004 *Supplemental Draft Environmental Impact Statement and Draft Section 4(f) Evaluation* (SDEIS) for the St. Croix River Crossing Project. The letter stated that NPS and FWS would continue to serve as members of the Stakeholders Group. The NPS is preparing a section 7(a) evaluation and determination under the Wild and Scenic Rivers Act of 1972 and the FWS will be preparing a Biological Opinion under section 7 of the ESA.

On January 18, 2005, a draft of the proposed mitigation items for Alternative B-1 was presented to the mitigation subgroup of the Stakeholders Group. This list included a zebra mussel decontamination protocol to be used during project construction, removal of the Xcel Energy barge unloading facility and mooring cells, restoration of blufflands on the Wisconsin side where pavement for the old STH 64 was removed, removal of the Terra Terminal building along the Minnesota shoreline, and construction of a new public boat access and restroom facility along the Minnesota shoreline.

In a March 2, 2005, letter to the FWS, the FHWA requested formal consultation for the proposed St. Croix River Crossing Project between Oak Park Heights, Minnesota and the Town of St. Joseph, Wisconsin. Alternative B-1 had been identified as the preferred alternative. A biological assessment, written by the MN/DOT, was included with the request letter. FHWA determined that the project may affect the Higgins eye and may affect, but is not likely to adversely affect, the bald eagle. FHWA also determined that the project will have no effect on the winged mapleleaf and on two federal candidate species - the sheepnose mussel (*Plethobasus cyphyus*) and the spectaclecase mussel (*Cumberlandia monodonta*).

In an April 18, 2005, letter to FHWA, the FWS acknowledged receipt of a March 2, 2005, FHWA letter requesting FWS to initiate formal consultation on the effects of the proposed St. Croix River bridge project to the federally listed endangered Higgins eye and federally listed threatened bald eagle. The FWS expected to issue its Biological Opinion by July 20, 2005.

A complete administrative record of this consultation is on file in the U.S. Fish and Wildlife Service's Twin Cities Ecological Services Field Office, Bloomington, Minnesota.

Concurrence

The bridge and interchange construction in Minnesota may have potential adverse impacts to a nesting pair of bald eagles, which have been nesting in a large white pine tree. The eagle nest tree is located 50-feet to the southeast of TH 36. The nesting area will be fenced and signed to prevent people from approaching the tree during the nesting season from March 1 to July 31. The existing TH-36 roadway will be removed and new TH 36 roadway will be constructed to the southeast of the nest tree. A water quality pond will be constructed about 150-feet from the nest tree. Bridge construction is scheduled during the 2009 to 2014 nesting seasons, depending upon project funding. MN/DOT will monitor and report on nesting activities to the FWS during the construction process. Tree cutting within 100-feet of the nest tree will be avoided. Construction activities will be limited during the nesting season depending on the line of sight to the active eagle nest. MN/DOT will monitor and report on the nesting activities of any bald eagles near the proposed boat ramp site. Based on restrictions to construction and avoidance of tree cutting near the nesting eagles during the nesting season, we concur with your determination that the project is not likely to adversely affect the nesting bald eagles.

The only population of winged mapleleaf in Minnesota is found in the St. Croix River below the hydropower dam at St. Croix Falls south to Osceola, Wisconsin. The population of winged mapleleaf covers a distance of approximately 15.5 miles between River Miles 35 and 50.5 and is located about 12.5 miles above the project site near the City of Stillwater. We concur with your determination that the project is unlikely to adverse affect winged mapleleaf.

BIOLOGICAL OPINION

2. Description of the Proposed Project

Alternative B-1 includes the construction of a new four-lane bridge over the St. Croix River between TH 36 in Oak Park Heights, Minnesota and STH 35/64 in the Town of St. Joseph, Wisconsin, including the reconstruction of approach roadways to the bridge on both sides of the river. Total distance for Alternative B-1 would be approximately 6.7 miles. The bridge would cross the river 7,550-feet south of the existing Lift Bridge along the Minnesota shoreline to a point 6,450-feet south of the Lift Bridge causeway along the Wisconsin shoreline. The bridge would extend up into an existing ravine along the Wisconsin bluff line.

The proposed bridge would be an "Extradosed" bridge type and would be supported by seven towers extending approximately 70-feet in height above the bridge deck. Six 500-foot box girders would span the towers with arrays of cables extending from the towers down to the girder sections for support. The deck would be 113-feet above the water

along the Minnesota shoreline and slope up at a 1.7 percent grade to a height of 159-feet above the water along the Wisconsin shoreline. Four to six bridge piers would be place in the river, with all of the piers located in the central basin of the river within the fine silt accumulated portion of the St. Croix River. This central basin is considered to be unsuitable mussel habitat due to the fine flocculent nature of the river substrate. The closest bridge pier in the St. Croix River to Wisconsin will be constructed between 200 and 350-feet out from the shoreline. The bridge will include a stormwater collection system, which will drain into a new detention basin on the Minnesota side of the river.

Shoreline work areas will be constructed to include temporary docking facilities on both sides of the river. Along the Wisconsin shoreline an area of 30,000 square feet is proposed to be constructed for a barge docking facility. The facility would be rectangular in shape, 75-feet wide by 400-feet along the shoreline and lie within the proposed bridge alignment.

Description of the Proposed Mitigation Items

Several mitigation features were identified for Alternative B-1. These include the following:

1. The large coal Xcel Energy barge off-loading facility, four mooring cells that support the facility, and 18 mooring cells would be removed. Steel sheeting from each of the mooring cells would be removed. The stone fill in each cell would be left in place to create aquatic habitat. Coal slag spillage on the bottom of the river near the cells would be left in place to minimize bottom disturbance.

2. The Terra Terminal building will be removed from the Minnesota shoreline along with solid waste removal, including concrete and asphalt from the shoreline area.

3. A new public boat access from the Minnesota side may be constructed near the intersection of TH95 and TH36 near River Mile (RM) 22. The details of the boat access, which includes a boat launching ramp wide enough for two vehicles; a paved, lit parking area with enough parking capacity for 34 car/trailers and 12 single vehicles; and two docks are being developed by the Minnesota Department of Natural Resources (MNDNR). Mitigation will be provided to the MNDNR for boat access locational studies and construction cost. Any environmental documentation of a boat access will be MNDNR's responsibility.

4. Kolliner Park in Wisconsin will be cleaned up and allowed to revert to a more natural state. Existing structures not determined to be historically significant would be removed.

5. Unnecessary pavement from the Wisconsin approach of STH 64 to the lift bridge and CTH E between the existing STH64/CTE E intersection and State Street will be removed, including landscape restoration.

6. All barges, work boats, and equipment will be decontaminated by elimination of zebra mussels prior to entry into the St. Croix River from the Mississippi River to the proposed construction site.

3. Status of the Species

Higgins eye pearlymussel is the federally-listed species in or near the proposed action area that is likely to be adversely affected by the project. The Higgins eye was listed as an endangered species by the Service on June 14, 1976 (Federal Register, 41 FR 24064). According to the Higgins Eye Pearlymussel (*Lampsilis higginsii*) Recovery Plan: First Revision (U.S. Fish and Wildlife Service 2004), Higgins eye was listed as an endangered species because of (1) former and ongoing direct harvest and incidental harm during commercial harvest of other mussel species, (2) alteration of the Upper Mississippi River riverine environment by the Federal navigation dams, (3) channel dredging to create and maintain navigation channels and dredging for other projects, (4) other habitat impacts following dredging, such as sedimentation, smothering, reduction in glochidial host fish, and possibly by (5) disease and (6) competition by the Asian clam (*Corbicula fluminea*).

The historical distribution of Higgins eye is not known with certainty. Although nowhere abundant, it is believed to have been widely distributed, inhabiting the Mississippi River from just north of St. Louis, Missouri, to Minneapolis-St. Paul, Minnesota (Coker 1919). It was also found along the mainstem of the Mississippi River and several of its tributaries including the Ohio, Illinois, Sangamon, Iowa, Cedar, Wapsipinicon, Rock, Wisconsin, Black, Minnesota, and St. Croix Rivers (U.S. Fish and Wildlife Service 2004). The range of Higgins eye has been reduced approximately 53 percent from its historic distribution to a 302-mile reach of the Mississippi River (Havlik 1980, Havlik 1987) and is now found only in the Upper Mississippi River upstream of Canton, Missouri, in the St. Croix River between Wisconsin and Minnesota, the Wisconsin River, Wisconsin, and in the lower Rock River in Illinois (U.S. Fish and Wildlife Service 2004). The southern-most population is believed to be in pool 19 of the Mississippi River at RM 407 (Cawley 1984).

Higgins eye occurs most frequently in medium to large rivers with current velocities of 0.49 to 1.51 ft/sec and in depths of one to six meters (m). Higgins eye appears to prefer water with dissolved oxygen greater than 5 ppm and calcium carbonate levels greater than 50 ppm. The species' distribution is significantly correlated with substrate characterized by firm, coarse sand (Hornbach *et al.* 1995). Higgins eye are usually found in large, stable mussel beds with relatively high species and age diversity. Hornbach *et al*. (1995) concluded that Higgins eye are associated with areas of higher mussel species richness and generally higher mussel population densities.

The reproductive cycle of Higgins eye is typical of the family Unionidae (Cummings and Mayer 1992). Males discharge sperm to the surrounding water; females obtain the sperm as they siphon water for food and respiration. Egg fertilization occurs within the gills of the female; fertilized eggs are retained within the marsupial gills of the female until they mature into glochidia and are released. The mantle edge near the posterior end of

Higgins eye is modified into a flap, or conglutinate, resembling a small, swimming fish that is used to attract fish hosts. Gill tissue containing glochidia protrudes between the mantle flaps. When the gill tissue is attacked by a fish, glochidia are released, thus enhancing the probability that glochidia will come into contact with a host fish. Released Higgins eye glochidia will attach themselves to the gills of host fish. Successfully attached glochidia mature and encyst from hosts' gills as bivalve juveniles; they settle to the substrate and become sedentary in the substrate, if it is suitable. The species is bradytictic (*i.e.*, a season-long breeder) that retains developing glochidia throughout the year, except for the period following glochidia release. Baker (1928) and Holland-Bartels and Waller (1988) indicate Higgins eye glochidia are carried in the gill marsupia through winter and released the following spring or summer. Seven common fish species are listed in the Higgins eye recovery plan (U. S. Fish and Wildlife Service 2004) as being suitable hosts for the Higgins eye. These include the sauger (*Stizostedion canadense*), walleye (*Stizostedion vitreum vitreum*), yellow perch (*Perca flavescens*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), black crappie (*Pomoxis nigromaculatus*), and freshwater drum (*Aplodinotus grunniens*).

Factors believed to be threatening to the Higgins eye and contributing to its decline include impoundment, dredging, channelization, siltation, and water quality degradation. The sedentary nature of mussels predisposes them to be especially sensitive to chronic water problems. Higgins eye populations on the Upper Mississippi River have been particularly affected as the river has been altered from a free flowing to an impounded river system. Subsequently, the flow patterns, substrate characteristics, and fish habitats have been adversely altered. A deterioration in water quality associated with municipal, industrial, and agricultural effluents has also contributed to this species' decline.

The Higgins Eye Pearlymussel Recovery Team has designated seven distinct areas as being "essential habitat" for Higgins eye (U.S. Fish and Wildlife Service 2004). Essential habitat is believed to currently contain viable reproducing Higgins eye populations. The recovery of the species cannot be accomplished without the populations that exist in these essential habitats or in other sites that contain viable populations of Higgins eye (e.g., sites not yet discovered or where improving conditions may allow for the development of viable populations of Higgins eye). The seven areas identified in the recovery plan as essential habitat include (1) the St. Croix River opposite Hudson, Wisconsin (RM 16.2 - 17.6); (2) the Mississippi River at Whiskey Rock, opposite Ferryville, Wisconsin, Pool 9 (RM 655.8 - 658.4); (3) the Mississippi River at Harpers Slough, Pool 10 (RM 639.0 - 641.4); (4) the Mississippi River Main and East Channel at Prairie du Chien, Wisconsin, and Marquette, Iowa, Pool 10 (RM 634 - 636); (5) the Mississippi River at McMillan Island, Iowa, Pool 10 (RM 616.4 - 619.1); (6) the Mississippi River at Cordova, Illinois, Pool 14 (RM 503 - 505.5); and (7) the Mississippi River at Sylvan Slough, Quad Cities, Illinois, Pool 15 (RM 485.5 - 486).

The current range wide population trend of Higgins eye is unknown, but may be declining. A reported decline in Upper Mississippi River fingernail clams (*Musculium transversum*) may reflect a general decline in Upper Mississippi mussels (Wilson *et al*. 1995). The causes of the decline are unknown at present, but fingernail clams are good

leading indicators of environmental conditions. The conditions that caused this sensitive species' population decline may also threaten Higgins eye populations. In 1993, Miller (1993) reported that populations of Higgins eye were stable because, wherever it was found, it remained at approximately the same relative abundance since the early 1980's. Hornbach *et al.* 1995 stated that the recent invasion of the Mississippi River and probable subsequent invasion of the St. Croix River with zebra mussels has cast the survival of Higgins eye in doubt. Although zebra mussels have recently been detected in the lower reach of the St. Croix River (Karns 2000), the river contains the only population of Higgins eye mussels that is not currently infested with reproducing populations of zebra mussels. With the continuing expansion of the zebra mussel and the limited locations of Higgins eye populations within the Upper Mississippi River system, it is clear that the Higgins eye is under severe threat from the zebra mussel. Currently, zebra mussels are increasing in number from RM 20 and downstream on both sides of the St. Croix River, particularly south of Afton at RM 11.5 (Karns 2005). The highest density of zebra mussels (107 zebra mussels per square meter) was located south of the Kinnickinnic Narrows (RM 6) as reported by the National Park Service (2004).

In 2000, the Service issued its *Final biological opinion for the operation and maintenance of the 9-foot navigation channel on the Upper Mississippi River system* (U.S. Fish and Wildlife Service 2000). The Service concluded that the continued operation and maintenance of the 9-Foot Navigation Channel Project on the Upper Mississippi River System (UMR) would likely jeopardize the continued existence of the Higgins eye. To avoid jeopardy, the U.S. Army Corps of Engineers agreed to develop a Higgins eye Relocation Action Plan and to conduct a reconnaissance study to control zebra mussels in the UMR.

4. Environmental Baseline

Regulations implementing the Act (50 CFR §402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area which have already undergone section 7 consultation, and the impacts of state and private actions which are contemporaneous with the consultations in progress. Such actions include, but are not limited to, previous timber harvests and other land management activities.

Natural processes and features that make the St. Croix River excellent mussel habitat in general, and excellent Higgins eye habitat in particular, include moderate to high flow currents, stable substrates, the presence of aquatic vegetation and high water quality.

Zebra Mussels

In our December 19, 1999 biological opinion, we stated that upstream colonization of zebra mussels in rivers depends on an upstream vector. There is no regular commercial barge traffic on the St. Croix River. Therefore, the most likely potential vector for infesting the St. Croix River is recreational boat traffic. Based on a transportation model

risk assessment of zebra mussel spread (Schneider *et al.* 1998), the St. Croix River is at risk for infestation by zebra mussels. During the summer of 2000, the St. Croix River Zebra Mussel Task Force divers documented settled, reproducing zebra mussels in the river up to the Hudson area (near RM 22) (Karns 2000). Zebra mussels have not been discovered in the St. Croix River north of the City of Stillwater (Karns 2000) and continue to remain south of Stillwater.

Currently the NPS is operating an inspection station located upstream of the City of Stillwater at the Arcola Sandbar (RM 28.5). All boats passing the inspection station must stop and obtain the necessary permits to travel further upstream. The inspection program is designed to restrict the passage of boats that may be carrying zebra mussels further upstream into the federally regulated zone of the Lower St. Croix River.

5. Effects of the Action

Potential General Effects to Higgins Eye

The proposed project may adversely affect Higgins eye in several general ways, including:

- siltation, from bridge pier construction, including barge fleeting and docking,
- erosion of disturbed bluff land from the removal of Wisconsin STH 64 pavement and sedimentation from the removal of barge mooring piers and the barge unloading conveyor facility at the Xcel Energy King Plant,
- erosion and sedimentation associated with construction and construction staging,
- introduction of zebra mussels through barging activities, or
- introduction of aquatic invasive species, including zebra mussels attached to watercraft using the newly constructed Minnesota Department of Natural Resources (MNDNR) boat ramp.

Potential Specific Effects of the Project to Higgins Eye

- Higgins eye located in the proposed pier docking area may be crushed or dislodged during sheet pile placement and removal, and buried during pier construction,
- anchoring of barges with spuds will disrupt the substrate and may bury Higgins eye upon spud placement and removal,
- dewatering and removal of cofferdams may result in substrate disturbance and downstream siltation of mussel beds containing Higgins eye,

- bank construction activities may result in bank erosion and sedimentation of mussel beds containing Higgins eye,

- temporary barge docking requires minor amounts of fill and dredging and use of sheet piling,

- movement of work barges with towboats can disturb bottom sediment with propeller wash causing siltation of mussel beds containing Higgins eye,

- fish host activity may be altered by changes in habitat and/or current leading to changes in Higgins eye distribution,

- removal of barge mooring piers and the barge unloading conveyor facility at the Xcel Energy King Plant would destroy Higgins eye adjacent to the piers,

- zebra mussels may be further spread into and within the St. Croix River by contaminated work boats, barge, or other private watercraft,

- potential introduction of harmful exotic species, including zebra mussels, to the St. Croix River from boats and trailers using the newly constructed MNDNR boat ramp**.**

Direct Effects

Direct effects in biological opinions are the direct or immediate effects of the project on the listed species or its habitat. Direct effects result from the agency action including the effects of interrelated actions and interdependent actions. In the case at hand, direct effects are effects likely to result from the selection of Alternative B-1, including the construction of a new bridge, which requires the construction of a 30,000 square feet (maximum allowed size) barge docking facility along the Wisconsin shoreline. Any Higgins eye located in this shoreline area would be crushed or dislodged during the construction of this facility. In addition, erosion from the Wisconsin bluff land will result from construction of the bridge. This erosion may lead to increased sedimentation into the St. Croix River along the Wisconsin shoreline, thus having a direct effect on the native mussels just downstream of the project site.

Four to six bridge piers will be constructed in the central basin of the river. The closest pier in the river to the Wisconsin shoreline will be more than 200 to 350-feet offshore, placing it outside of suitable mussel habitat. Erosion control methods will be implemented by the bridge contractor to minimize these sedimentation impacts. The SDEIS stated that a detailed construction staging plan would be developed for the preferred alternative prior to the initiation of construction activities to better define the duration of the various construction activities and to minimize impacts in addition to an erosion/sediment control plan. These plans still have yet to be developed and reviewed by the Stakeholder Group making it difficult to analyze the potential impacts of the bridge construction to Higgins eye and other state listed mussels. The SDEIS stated that

20,800 cubic yards of sand and gravel would be permanently removed or cut from the Wisconsin bluff to allow for construction of the bridge and abutment. Additional haul roads and work areas would be constructed during the bridge project. No specific erosion control measures were described in the SDEIS other than referring to National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) and Wisconsin Department of Natural Resources (WIDNR) standards and guidelines.

To minimize the adverse impacts, relocation of mussels subject to disturbance will be completed prior to the beginning of the enhanced mitigation project. No mussel collection and relocation is proposed for the Minnesota side of the St. Croix River due to a low density of mussels and lack of any federal or state listed mussel species along the Minnesota shoreline.

Indirect Effects

Indirect effects in biological opinions are project impacts caused by the proposed action and are later in time, but still are reasonably certain to occur. The most serious indirect impact of this project will likely be the further infestation of the St. Croix River by zebra mussels. Following discussions with members of both the Higgins eye recovery team and the winged mapleleaf recovery team, the Service was notified of the seriousness of the threat to both the Higgins eye and winged mapleleaf by the introduction and establishment of zebra mussels in the St. Croix River (Heath 1996, Whiting 1996).

As the project is currently described, construction barges moved by towboats will access the St. Croix River from the Mississippi River. The Mississippi River, just downstream of the confluence with the St. Croix River is currently infested with the exotic zebra mussel, while the lower end of the St. Croix River, until recently was not infested with the zebra mussel. Unless decontaminated, these construction barges are likely to be carrying zebra mussels into the St. Croix River in high numbers. According to the USGS Biological Resources Division, barge traffic is suspected as one of the major vectors for dispersal of zebra mussels (Benson and Boydstun 1995). If the construction barges carry zebra mussels to the project site, zebra mussels will likely further colonize the substrate of the St. Croix River in the vicinity of the City of Stillwater. Recreational watercraft could also further spread the zebra mussel upstream and downstream of the bridge project site.

The only population of Higgins eye in the Upper Mississippi River System not yet invaded by the zebra mussel is in the St. Croix River (Hornbach *et al.* 1995). Furthermore, one of the largest and healthiest mussel beds that supports Higgins eye is located 5-miles downstream of the bridge site. It appears a reproducing population of zebra mussels has become established in the St. Croix River (Karns 2000). Because zebra mussels have decimated populations of native mussels in Lake Erie, Lake St. Clair, the Mississippi River, and the Detroit River (Masteller and Schloesser 1991, Gillis and Mackie 1991, Ohnesorg et al. 1993), it is believed that increasing rates of mortality will occur at all Higgins eye sites contaminated by zebra mussels. Thus, if every known

mussel bed that supports Higgins eye becomes contaminated, the long-term viability of these species will be seriously imperiled.

Indirect impacts to mussel species could occur through erosion and sedimentation. However, there would be positive impacts on water quality from the restoration of vegetation where there formerly was pavement.

Cumulative Effects of the Proposed Action

Cumulative effects in biological opinions are effects of future state, local, or private actions, not involving Federal action, that are reasonably certain to occur in the action area [50 CFR 402.14(g)(3) & (4)]. Cumulative effects will not be subject to future section 7 review because no Federal action is associated with them. The Service knows of no projects reasonably certain to occur in the action area, which includes the lower 24 River Miles of the St. Croix River, that will produce cumulative effects. It is reasonable to anticipate that increased development will occur in Wisconsin as a result of the construction of the bridge. However, the Service to date is unaware of any local or state government regulated activity to indicate such plans (*e.g.* permits, grants) are currently being proposed.

6. Summary

In summary, the impacts of the project will be remediated by relocating all Higgins eye and other native mussels within the proposed barge docking area. As the project is currently described, construction barges being moved by towboats, will access the St. Croix River from the Mississippi River after being decontaminated. The Mississippi River downstream of the St. Croix River and the lower 23 river miles of the St. Croix River are currently infested with zebra mussels. These barges and workboats will not likely be carrying zebra mussels into the St. Croix River because they have been decontaminated and so there will be a much lower probability of zebra mussels colonizing the substrate of the St. Croix River in the vicinity of the City of Stillwater. The importance of the St. Croix River to Higgins eye is clear (Whiting 1996, Heath 1996).

CONCLUSION

After reviewing the current status of the Higgins eye, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that FHWA's authorization of Federal funding requested by MN/DOT for any of the mitigation enhancement alternatives, as proposed, is not likely to jeopardize the continued existence of this species. This conclusion is based on the Service's assessment of the potential for construction barges and/or work boats to contaminate portions of the St. Croix River with zebra mussels.

INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of the Act prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm is further defined to include habitat modification or degradation that significantly impairs behavior patterns such as breeding, feeding, or sheltering. Harassment is defined as actions likely to significantly disrupt normal behavior patterns including, but not limited to, breeding, feeding, or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, an otherwise lawful activity conducted by the Federal agency or the applicant. Under the terms of section 7(o)(2), taking that is incidental to, not an intended part of, the agency action is not considered a prohibited taking, provided that such taking is in compliance with the terms and conditions of this incidental take statement.

To the extent that this statement concludes that take of any threatened or endangered species of migratory bird will result from the agency action for which consultation is being made, the Service will not refer the incidental take of any such migratory bird for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. Sections 703-712), or the Bald Eagle Protection Act of 1940, as amended (16, U.S.C. Sections 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

AMOUNT OR EXTENT OF INCIDENTAL TAKE

The Service has developed the following incidental take statement based on the premise that zebra mussel decontamination procedures will be implemented as described by the Service.

Based upon the most recent survey data obtained by the WIDNR (Kenyon et al. 1999), the mussel density of all species in the Wisconsin work area of the St. Croix River was calculated to be 2.85 mussels/m^2. The Service anticipates 30,000-square feet of mussel habitat will be exposed to construction impacts in the area of the barge docking facility if the requested Federal funding is granted for the project. The latest dive survey (Kenyon *et al.* 1999) indicated mussels were located in a narrow shelf extending from the shore. Using the percent community composition of Higgins eye found to be 0.014 percent of total population in the river at the project site at the end of the causeway shoreline and assuming a similar density at the proposed bridge relocation work area, the number of Higgins eye individuals is estimated to be 26. The Service anticipates that all Higgins eye mussels within the project area will be gathered and relocated. The success of past relocation projects have been variable. However, recent efforts, such as that proposed here, have documented mortality rates as low as 7.1 percent (Ecological Specialists, Inc. 1996). Thus, the Service has determined that up to two Higgins eye mussels could be lethally taken.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined the proposed action's anticipated take is not likely to result in jeopardy to the species. In addition, the Service

does not anticipate any incidental take as a result of the project, provided all reasonable and prudent measures are implemented.

REASONABLE AND PRUDENT MEASURES

The measures described below are non-discretionary, and must be implemented by the agency as binding conditions of any authorization issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The FHWA has a continuing duty to implement the activity covered by this incidental take statement. If the FHWA (1) fails to require MN/DOT's adherence to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the Higgins eye:

1. Collect and relocate all Higgins eye mussels and all other native mussels found within the proposed 30,000-square foot, barge docking area in Wisconsin to an approved mussel relocation site directly upstream.

2. Coordinate relocation watercraft movement with law enforcement agencies, such as the U.S. Coast Guard, WIDNR, MNDNR, St. Croix County Sheriff's Department, and other jurisdictions, to enhance the safety and efficiency of the relocation and quality assurance teams while working on the river.

3. Precautions will be taken in order to prevent incidental zebra or quagga mussel (*Dreissena* spp.) introduction.

4. Monitor and report on the results of the mussel relocation project.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the FHWA must comply with the following terms and conditions which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. Relocate all mussels from the work and barge docking area that will be adversely impacted by bridge construction activities following the protocol as detailed in the *Proposed mussel relocation protocol for a crossing of the St. Croix River between Oak Park Heights, Minnesota and the Town of St. Joseph, Wisconsin* (Minnesota Department of Transportation 1996) and as updated by the Twin Cities Field Office, U.S. Fish and Wildlife Service. Prior to any mussel relocations, a pre-relocation conference meeting will be set up with all responsible parties to ensure that relocation activities are coordinated. Collection of endangered mussels from the zone of impact shall be completed under the supervision of a qualified

malacologist. The MN/DOT must provide a resume of the individual(s) being considered as direct, on-site supervisors of the mussel relocation crew to the Service. The Service must verify the individual's qualifications prior to contract award. The following protocol shall be implemented for mussel collection, temporary holding and relocation:

1.A. Higgins eye specimens must be collected by hand by divers under the supervision of the direct, on-site supervisor(s) approved in condition 2 above. Collection may not be done when air temperatures are at or below 32^{o}F, nor when water temperatures are at or below 40^{o}F; collection may not be done when air temperatures are at or above 95^{o}F.

1.B. Higgins eye specimens may be temporarily held in one of three ways. 1) Specimens may be held for up to one and one-half hours at the collection site in mesh bags, either suspended in the water or held in a container containing river water. If held in bags, specimens may be held for a total of up to 3 hours, including the time necessary to transport them to a new location, provided they are held in the water within bags that allow free movement of water the mussels were taken from, or held in containers of water that is changed every hour (every half-hour when air temperatures are at or above 80^{o}F and replaced with water freshly taken from the water where the mussels were collected. 2) Specimens may be temporarily held at the collection site and transported to relocation site in a flow-through tank. If held in a flow-through tank, mussels may be temporarily held for up to 12 hours. 3) They will be returned to the substrate by the mussel relocation team in accordance with the mussel relocation protocol.

1C. During collection and relocation, any dead endangered mussel shells and any specimens accidentally killed or that are moribund or freshly-dead and contain soft tissue are to be preserved according to standard museum practices, properly identified and indexed (complete scientific and common name, latitude and longitude of collection site, site conditions, date collected, and Biological Opinion authorizing collection). These specimens shall be transferred to the U.S. Fish and Wildlife Service, Twin Cities Field Office, 4101 American Blvd. E., Bloomington, MN 55425-1665.

2. Barges will be decontaminated before entering the St. Croix River when the surface water temperature exceeds 50˚F (10˚C) at anytime during the day or night (refer to the U.S. Geological Service's website http://waterdata.usgs.gov/wi/nwis/uv/?site_no=05340500&agency_cd=USGS). The decontamination procedure shall be submitted to and approved by the U.S. Fish and Wildlife Service at least sixty (60) days before any barge traffic will be allowed to enter the St. Croix River. All construction barges and workboats must be decontaminated and remain decontaminated prior to being allowed into the St.

Croix River from the Mississippi River to the proposed bridge construction site using one of the following three options:

2A. Cold season option

Construction barges and boats may enter the St. Croix River from the Mississippi River and travel as far as the lift bridge in the City of Stillwater, Minnesota providing the surface water temperature does not exceed 50˚F (10˚C) at any time during the day or night at St. Croix Falls, WI. Barges or workboats must not be moved into the St. Croix River from the Mississippi River during warmer months (i.e., when water temperature exceeds 50˚F (10˚C) except using the following protocol.

2B. Warm season decontamination option

When the water temperature exceeds 50˚F (10˚C) at any time during the day or night, construction barges and boats must be decontaminated by completely lifting them out of the Mississippi River downstream from the St. Croix River as close to Prescott, Wisconsin, as possible, and then using one of the following procedures:

1) Power spraying the entire wetted surface of all vessels and equipment that has been used in water with zebra mussels (i.e. pumps, hoses, buckets, ropes/cables, sheet piling, etc.) with hot water at a temperature of 140˚F (122˚C) for 5 minutes; or,

2) Power spraying the entire wetted surface of all vessels and equipment that has been used in water with zebra mussels (i.e. pumps, hoses, buckets, ropes/cables, sheet piling, etc.)with steam at a temperature >212˚F (100˚C) for 5 minutes.

3) In addition, all barge and boat bilges shall be disinfected using a sodium hypochlorite (chlorine bleach) solution. The solution should be mixed at a ratio of 1 part bleach per 50 parts water (for example 1-cup bleach per 3 gallons water). Bilge surfaces, which are exposed to the river, must be sprayed with the solution. Bilge water must also be treated by pouring the solution into each bilge. After treatment, surfaces need to be adequately rinsed afterward with fresh water to ensure residual bleach solution has been flushed out. Any zebra mussel veligers and adults in the bilge water will be killed (Clarke 1996, Miller 1996). The solution must be properly disposed of according to the State's water quality control agency's regulations.

4) Following warm season decontamination, barges or boats shall be put back into the Mississippi River at the decontamination site and

be moved up into the St. Croix River and to the Project site within one day.

3. Post a no-wake zone on the St. Croix River at the Wisconsin work and barge docking areas and at mussel collection and relocation sites to minimize boat wake disturbance to the dive teams during the mussel relocation procedure.

4. Reports of the relocation and monitoring efforts shall be submitted to the Service's Twin Cities Field Office as detailed in the *Proposed mussel relocation protocol for a crossing of the St. Croix River between Oak Park Heights, Minnesota and the Town of St. Joseph, Wisconsin* (MN/DOT 1996). Relocated Higgins eye individuals moved into the relocation site shall be monitored following the MN/DOT relocation protocol.

The reasonable and prudent measures, with implementing terms and conditions, are designed to minimize incidental take that might otherwise result from the proposed action. With implementation of these reasonable and prudent measures, the Service believes that no more than two Higgins eye (Galli 1996) will be incidentally taken. If, during the course of the action, this minimized level of incidental take is exceeded, such incidental take represents new information requiring review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. Fund future studies of the direct and indirect impacts of the new bridge crossing on Higgins eye mussels.

2. Fund monitoring of Higgins eye essential habitat mussel populations located in the St. Croix River.

3. Investigate potential new procedures/protocols to limit the spread of zebra mussels into and within the St. Croix River.

Most of these conservation recommendations are currently being implemented by the U.S. Army Corps of Engineers as part of a Reasonable and Prudent Measure to avoid jeopardizing the Higgins eye under the continued operation and maintenance of the 9-Foot Navigation Channel Project on the Upper Mississippi River System (U.S. Fish and Wildlife Service 2000). In order for the Service to be kept informed of actions

minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the proposed new St. Croix River bridge between Oak Park Heights, Washington County, Minnesota, to the Town of St. Joseph, St. Croix County, Wisconsin, upon the request of the FHWA. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if (1) the amount or extent of incidental take (as minimized by the reasonable and prudent measure) is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in the manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Sincerely,

Dan P. Stinnett
Field Supervisor

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