

## **Appendix C:**

### **Voyageurs National Park Bike Trail Wetland Delineation**

This wetland delineation has been completed as requested by the park and its staff. This delineation can be used in the identification of wetland areas along two proposed bike trail routes of Voyageurs National Park. Field work for this delineation was conducted September 15, 2006 and September 20, 2006 for route 1, and October 5, 2006 for the second route option. Field work was conducted by Ryan Heinen of the Koochiching SWCD and Patty Burns of the NRCS Soil Survey.

#### **Methods**

A routine wetland delineation was conducted on site as plant community boundaries, elevation and soil types encountered were easily identified and well defined. Sample plots were conducted along the proposed trail route at points containing wetland signatures. For each wetland area sample plots were taking on the upland sides of a wetland as well as in the wetland itself. An area was determined to be wetland if all components of hydric vegetation, hydric soils and hydrology or indications of hydrology were met as defined in the 1987 Corps of Engineers Wetland Manual. Incidental wetland areas were not included in this delineation, although only a few were encountered in the road ditch.

#### **Results and Discussion**

The landscape of the delineation area is located in the Northern Superior Uplands section of Minnesota. The area contains glacially scoured bedrock and thin discontinuous deposits of coarse loamy till and numerous lakes. The section has high relief and rugged topography from the underlying bedrock. (MN DNR 2003) Vegetation consists of red and white pine, maple, balsam fir and aspen on the uplands and black spruce, white cedar, black ash, alder and willow in the wetland areas. The delineation was conducted along two proposed routes. Route 1 is proposed on the north and east side of Hwy 96 and route 2 follows Hwy 96 to the Rainy Lake Visitor Center.

Wetland boundary points were selected based on a variety of reasons including changes in vegetation, presence of hydric soils, elevation rises, and exposed bedrock. Soils and vegetation information was taken at all applicable plots, unless unnecessary, as in the case of exposed bedrock where the lack of soil automatically makes the area upland. At each end of a wetland boundary a red flag with a specific plot number was placed in the ground. These flags were then marked with the use of GPS (See Figure 1. for location of wetland boundary points or Table 1. can be consulted for GPS coordinates of specific wetland boundary flags). For areas of the proposed trail that follow the road, delineation from the bottom of the road ditch and out away from the road was conducted. Any wetlands marked in this area should be considered wetland from the bottom of the ditch and out away from the road. Any impacts to these areas will depend upon the trail width and necessary road ditch extensions.

Wetlands identified in this delineation include types 2, 4, 6 and 7 as defined in "Wetlands of the United States, USFWS Circular 39". (See Appendix B, "Descriptions of Wetland Types as found in chapter 8420 of the Minnesota Board of Water and Soil Resources Wetland Conservation Act Rules" for definitions of wetland types). Current wetland mapping from the National Wetland Inventory (NWI) was consulted and is shown in Figure 1, however

because this mapping often fails to recognize forested wetlands, it should only be used to identify areas wetlands may be present. Field identification is necessary to confirm or deny NWI mapping. No soil mapping information is available for this area, as the Koochiching Soil Survey is currently being conducted.

**Route 1 Wetlands**- See Figure 1. for location of specific wetlands. Data forms are also attached in Appendix A which can be used to identify vegetation, hydrology, and soils for specific wetland areas.

**W01- W02:** This wetland starts near the intersection of Hwy 11 and 98. This is a type 7 wetland running along Hwy 98 for approximately 122 meters. White cedar, black ash, willow, balsam fir are some of the species found in the wetland. The wetland ends as the elevation rises and hydric soils end. This wetland is located in both route 1 and route 2. *See data plot sheet W01, W01- wet, W02.*

**W03- W04:** This is a small type 2 wetland running approximately 20 meters along the proposed bike trail. Vegetation includes lake sedge, narrow leaf cattail and giant reed grass. This wetland ends at the point bedrock rises up creating a sharp boundary. *See data plot sheet W03U, W03W, W04U.*

**W05- W06:** This is a type 7 wetland running approximately 40 meters along the trail, dominated by black ash, red maple, and Canada blue joint. Wetland boundaries were chosen at a point where dominate wetland vegetation begins and where the trail connects with the Hwy 98. *See data plot sheet W05W.*

**W07- W08:** This is a type 7 wetland, approximately 41 meters in length. Dominate vegetation includes black ash, wool grass, Canada blue joint grass and balsam fir. Exposed bedrock as well as the lack of wetland vegetation was used to determine the wetland boundary. *See data plot sheet W06U, W07W, W08U.*

**W09- W11:** This is a type 7 wetland approximately 24 meters in length. Dominate vegetation found in the wetland includes black ash, quaking aspen, red osier dogwood and Canada blue joint. Wetland boundary was chosen as wetland vegetation became dominate and as hydric soil was encountered. *See data plot sheet W09- wet, W10U.*

**W12- W13:** This is a type 7 wetland approximately 20 meters in length. Dominate vegetation found in the wetland includes black ash, black spruce, lake sedge, Canada blue joint and balsam fir. Obvious boundaries of exposed bedrock, along with the presents of wetland vegetation were used to determine the edges of the wetland. *See data plot sheet W12- wet.*

**W14- W15:** This is a type 7 wetland approximately 18 meters in length. Dominate vegetation includes black spruce, balsam fir, quaking aspen, Canada blue joint and red osier dogwood. Bedrock and vegetation were used to identify the wetland boundary. *See data plot sheet W14- wet.*

**W16- W17:** This is a type 2 wetland approximately 11 meters in length located adjacent to Town Rd 461. Dominate vegetation include Canada blue joint, cattail, reed canary, and alder. The presents of wetland vegetation marked the start of this wetland and Town Rd 461 provides the end of the wetland. *See data plot sheet W16- wet.*

**016- 017:** This is a type 6 wetland approximately 32 meters in length. The wetland is located at the bottom of the road ditch. The wetland is part of both routes and may not be impacted due to it distance from the road due to the long steep road ditch. The dominate vegetation in the wetland is tag alder, and willow. Steep rises in exposed bedrock provide the wetland boundary. *See data plot sheet 016- wet.*

**018- 019:** This is a type 4 wetland located along Hwy 98 approximately 85 meters in length. The wetland is connected to Rainy Lake with dominate vegetation of cattail wool grass and lake sedge. Open water is present with depths greater than 12 inches in some areas. Vegetation, elevation rise and bedrock were used to determine the wetland boundary. *See data plot sheet 018 wet.*

**Route 2 Wetlands-** See Figure 1. for location of specific wetlands. Data forms are also attached which can be used to identify vegetation, hydrology, and soils for specific wetland areas.

**W01- W02:** This wetland starts near the intersection of Hwy 11 and 98. This is a type 7 wetland running along Hwy 98 for approximately 122 meters. White cedar, black ash, willow, balsam fir are some of the species found in the wetland. The wetland ends as the elevation rises and hydric soils end. This wetland is located in both route 1 and route 2. *See data plot sheet W01, W01- wet, W02.*

**W03- 001:** This is a type 2 wetland running approximately 78 meters along the proposed bike trail. Vegetation includes lake sedge, narrow leaf cattail and giant reed grass. This wetland ends at the point where the elevation rises up and hydric soils and vegetation *See data plot sheet W03U, W03W, 001U.*

**002- 003:** This is a type 7 wetland running approximately 95 meters in length. Vegetation includes black ash, white cedar, and Canada blue joint grass. Boundaries for this wetland were chosen at the point hydric vegetation begins, and rise in exposed bedrock. *See data plot sheet W05W.*

**004- 005:** This is a type 7 wetland running approximately 19 meters in length. This is a small depressional drainage wetland. The wetland starts at a point where sedges and wool grass start and ends as bedrock starts to rise up. Vegetation includes Canada blue joint grass, wool grass, black ash, and red osier dogwood. *See data plot sheet 004- wet.*

**006- 007:** This is a type 6 wetland running approximately 54 meters in length. The wetland starts as elevation drops down from bedrock and ends as bedrock rises up. Vegetation includes sphagnum moss, tag alder and willow. *See data plot sheet 006- wet.*

**008- 009:** This is a type 6 wetland approximately 19 meters in length. This is a very small depressional wetland, boundaries start and stop as bedrock drops and rises. Vegetation includes willow, wool grass, red osier dogwood, and white cedar. *See data plot sheet 008- wet.*

**010- 011:** This is a type 6 wetland approximately 34 meters in length. Boundaries start and stop as exposed bedrock rises. Vegetation in the wetland includes paper birch, white cedar, willow, and red osier dogwood. *See data plot sheet 010- wet.*

**012- 013:** This is a type 6 wetland approximately 14 meters in length. This is the same wetland as described in W16- W17. Dominate vegetation include Canada blue joint, cattail, reed canary, and alder. The presents of wetland vegetation marked the start of this wetland and exposed bedrock defines the end of the wetland. *See data plot sheet W16- wet.*

**014- 015:** This is a type 7 wetland approximately 45 meters in length. Soils are very organic with vegetation being black spruce, Labrador tea, and alder dominate. Rise of the bedrock defines the wetland boundaries. *See data plot sheet 014- wet.*

**016- 017:** This is a type 6 wetland approximately 32 meters in length. The wetland is located at the bottom of the road ditch. The wetland is part of both routes and may not be impacted due to it distance from the road due to the long steep road ditch. The dominate vegetation in the wetland is tag alder, and willow. Steep rises in exposed bedrock provide the wetland boundary. *See data plot sheet 016- wet.*

**018- 019:** This is a type 4 wetland located along Hwy 98 approximately 85 meters in length. The wetland is connected to Rainy Lake with dominate vegetation of cattail wool grass and lake sedge. Open water is present with depths greater than 12 inches in some areas. Vegetation, elevation rise and bedrock were used to determine the wetland boundary. *See data plot sheet 018 wet.*

**020- 021:** This is a type 4 wetland located along Hwy 98 approximately 147 meters in length. This is an open water wetland with cattail, lake sedge, willow, and alder being the dominate vegetation. This is the same wetland as described in 018- 019 but it is divided by the road. *See data plot 020- wet, 021UP.*

**022- 023:** This is a type 6 wetland approximately 21 meters in length. This is the same wetland as described in 012- 013 and W16- W17. Dominate vegetation include Canada blue joint, cattail, reed canary, and alder. The presents of wetland vegetation marked the start of this wetland and exposed bedrock defines the end of the wetland. *See data plot sheet W16- wet.*

**024- 025:** This is a type 7 wetland approximately 22 meters in length. Dominate vegetation includes balsam fir, black ash, Canada anemone, paper birch, and mountain maple.

Boundaries were chosen where black ash and drainage pattern begin, and ends as bedrock rises up. *See data plot sheet 024- wet.*

**026- 027:** This is type 7 wetland approximately 35 meters in length. Dominate vegetation include white cedar, black ash, sphagnum moss, and lake sedge. Boundaries were chosen as bedrock drops down and rises up. A flag is located by a large white cedar to mark one of the boundaries. *See data plot sheet 026- wet.*

**028- 029:** This is a type 7 wetland approximately 50 meters in length. Dominate vegetation includes black spruce, balsam fir, Canada blue joint, Labrador tea, and sphagnum moss. Boundaries were chosen based one the presence of exposed bedrock. *See data plot sheet 028- wet.*

**030- 031:** This is a type 6 wetland approximately 42 meters in length. Dominate vegetation includes reed canary, willow, red osier dogwood, and Canada blue joint. Boundaries were chosen because of exposed bedrock, and as hydric soil and vegetation ends. *See data plot sheet 030- wet, and 031- upland.*

**032- 033:** This is a type 2 wetland approximately 20 meters in length. Dominate vegetation includes wool grass, reed canary, broad leaf cattail, and lake sedge. Boundaries were chosen at the point sedge growth starts and stops. *See data plot sheet 032- wet.*

**034- 035:** This is a type 7 wetland approximately 90 meters in length. Vegetation is dominated by black ash, white cedar, broad leaf cattail, balsam fir, and willow. Boundaries were chosen at a point of incidental fill and ends at the fill area at park sign. *See data plot sheet 034- 035.*

## **Conclusion**

In conclusion, this report gives a description of wetland areas along the two proposed bike trails. Total wetland impacts will be dependent on the width of the bike trail and necessary extension of the road ditch for parts of the trail which follow the road. Route 1 wetland area in approximate linear meters is as follows: Type 2 wetland totals 31 linear meters, type 4 wetland totals 85 linear meters, type 6 wetland totals 32 linear meters, type 7 wetland totals 265 linear meters.

Route 2 wetland area in approximate linear meters is as follows: Type 2 wetland totals 98 linear meters, type 4 wetland totals 232 linear meters, type 6 wetland totals 216 linear meters, type 7 wetland totals 478 linear meters. Efforts to avoid these wetland areas should be taken were possible. Remember that all necessary permits need to be acquired before any work in wetlands is done. Final authority for any impacts rests with the appropriate state and federal agencies.

This delineation has been conducted by Ryan Heinen, District Technician with the Koochiching Soil and Water Conservation District. Contact Ryan Heinen at 218- 283- 1175 with any questions or Courthouse, 715 4<sup>th</sup> street, International Falls, MN 56649.

### Works Cited and Consulted

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