2008 NorthMet Mine/Forest Service Additional Parcel Summer Wildlife and Wetland Assessment – Final Report

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Prepared for:

POLYMET MINING CORP.

Hoyt Lakes, MN

Prepared by:

AECOM

9521 Willows Road NE
Redmond, WA 98052

Prepared for:
PolyMet Mining Inc.

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AECOM Environment
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Executive Summary

PolyMet Mining Incorporated (PolyMet) proposes to construct an open pit, low grade, polymetallic mineral mine in northern Minnesota. This project, called the NorthMet Mine and Ore Processing Facilities Project (NorthMet Project), is located in St. Louis County on the eastern end of the Mesabi Iron Range, about 60 miles north of Duluth, and 6 miles south of Babbitt, Minnesota (Mine Site). PolyMet plans to mine and process polymetallic ore from the northwest portion of the Duluth Complex. The ore contains copper, nickel, gold, platinum, palladium, and cobalt. PolyMet plans to refurbish and operate a processing facility using the nearby former LTV Steel Mining Company taconite processing facility near Hoyt Lakes, Minnesota, that would produce copper concentrates, nickel concentrates, and base and precious metal precipitates, for off-site shipment and treatment.

The Mine Site encompasses about 2,801 acres of habitat used by wildlife, including species of concern to federal and state agencies. Habitats that would potentially be affected by the project include conifer forest (comprised primarily of black spruce, jack pine, tamarack, and balsam fir), deciduous forest (comprised primarily of trembling aspen and paper birch), mixed conifer/deciduous forest, riparian (dominated by speckled alder, red-osier dogwood, and willow), and wetland (dominated by sedges, cattail, bog Labrador-tea, leatherleaf, and sphagnum moss).

Of the approximately 2,801 acres, approximately 2,620 acres of the Mine Site are owned by the U.S. Government (Government) and administered by the U.S. Department of Agriculture Forest Service (Forest Service). In addition, about 3,898 acres adjacent to the Mine Site (Additional Parcel) are owned by the Government and administered by the Forest Service. The Forest Service is considering transferring these approximately 6,518 acres (Mine Site and Additional Parcel) to PolyMet in exchange for lands of similar value that have been offered for consideration by PolyMet. All lands potentially involved in the land exchange, including submerged lands, would be independently appraised according to the Uniform Appraisal Standards for Federal Land Acquisitions. The appraisals will determine the market value of the properties.

Wildlife and their habitats on the Mine Site were evaluated in 2000, 2004, 2006, and 2009 and this information was used to evaluate impacts to wildlife and their habitats for an Environmental Impact Statement for the mine project. However, the Forest Service has requested that an assessment of wildlife and their habitats be conducted for the Additional Parcel to provide information that would be useful in the land exchange appraisal. The sites are in a region known to be used by several species that have been identified by state and federal agencies as species of concern, including bald eagle, northern goshawk, Canada lynx, and gray wolf.

This study evaluated the wildlife and habitats on the Additional Parcel. The major components of this wildlife assessment include: 1) background research and collaboration with state and federal agencies to identify wildlife species and their habitats of interest; 2) field surveys to observe wildlife and their sign; 3) mapping of wildlife habitat using aerial photographic interpretation and field observations; and 4) echolocator surveys for bats.

Much of the Additional Parcel is comprised of wetlands of high value, including portions of One Hundred Mile Swamp. Wetlands and their functions and values on the Mine Site were assessed from 1999 to 2010. A preliminary assessment of wetland acreage and functions and values for the Additional Parcel was conducted in 2007 based on aerial photography and some field assessments. To better determine wetland acreage, functions and values, the Forest Service requested that a wetland assessment be conducted for the Additional Parcel to assist with the land exchange appraisal.

Field surveys were conducted on the Additional Parcel on August 18 to 22, and August 26 to 29, 2008. We observed or found evidence of 4 amphibian species, 40 bird species, and at least 10 mammal species on the Additional Parcel. Species of interest identified at the site during surveys included ruffed grouse, belted kingfisher, pileated woodpecker, bats, beaver, gray wolf, white-tailed deer, and moose. We mapped approximately 945 acres of upland and 2,953 acres of wetland habitat on the Additional Parcel administered by the Forest Service. Forty wetlands, or portions of wetlands, were evaluated for their functions and values; all wetlands were rated high value.

Information collected during the wildlife and wetland assessments will support land exchange and environmental review and permitting efforts.

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1.0 INTRODUCTION

1.1. Study Overview

PolyMet Mining Inc. (PolyMet) proposes to construct an open pit, low grade, polymetallic mineral mine in northern Minnesota. This project, called the NorthMet Mine and Ore Processing Facilities Project (mine project), is located in St. Louis County on the eastern end of the Mesabi Iron Range, about 60 miles north of Duluth, and 6 miles south of Babbitt, Minnesota (Figure 1; Mine Site). PolyMet plans to mine and process polymetallic ore from the northwest portion of the Duluth Complex. The ore contains copper, nickel, gold, platinum, palladium, and cobalt. PolyMet plans to operate a processing facility using the nearby and refurbished former LTV Steel Mining Company taconite processing facility near Hoyt Lakes, Minnesota, that would produce copper cathode, and separate platinum/palladium group metals sulfide and nickel/cobalt hydroxide concentrates, for off-site shipment and treatment.

The Mine Site encompasses about 2,801 acres of habitat used by wildlife, including species of concern to federal and state agencies. Habitats that would potentially be affected by the project include conifer forest (comprised primarily of black spruce, jack pine, tamarack, and balsam fir), deciduous forest (comprised primarily of trembling aspen and paper birch), mixed conifer/deciduous forest, riparian (dominated by speckled alder, red-osier dogwood, and willow), and wetland (dominated by sedges, cattail, bog Labrador-tea, leatherleaf, and sphagnum moss).

Of the approximately 2,801 acres, approximately 2,620 acres of the Mine Site are owned by the U.S. Government (Government) and administered by the U.S. Department of Agriculture Forest Service (Forest Service). In addition, about 3,898 acres adjacent to the Mine Site (Additional Parcel) are owned by the Government and administered by the Forest Service. The Forest Service is considering transferring these approximately 6,518 acres (Mine Site and Additional Parcel) to PolyMet in exchange for lands of similar value that have been offered for consideration by PolyMet. All lands potentially involved in the land exchange, including submerged lands, would be independently appraised according to the Uniform Appraisal Standards for Federal Land Acquisitions. The appraisals will determine the market value of the properties.

Wildlife and their habitats on the Mine Site were evaluated in 2000, 2004, 2006, and 2009 (ENSR 2000, 2005, 2006; AECOM 2009a) and this information was used to evaluate impacts to wildlife and their habitats for the mine project EIS. However, the Forest Service has requested that an assessment of wildlife and their habitats be conducted for the Additional Parcel to provide information that would be useful in the land exchange appraisal. The sites are in a region known to be used by several species that have been identified by state and federal agencies as species of concern, including bald eagle, northern goshawk, Canada lynx, and gray wolf.

Wildlife species of concern (and federal/state status) that could be impacted include gray wolf (federal threatened and state special concern), Canada lynx (federal threatened), bald eagle (state special concern), mountain lion (state special concern), least weasel (state special concern), northern goshawk (federal species of concern and Superior National Forest Regional Forester Sensitive Species), and boreal owl (federal species of concern and Superior National Forest Regional Forester Sensitive Species). Loss of habitat for these species was identified as an important issue by state (Berg 2000) and federal (Vora 2000) agencies during meetings regarding the proposed project.

Several wildlife studies have been conducted in the area. Terrestrial and aquatic ecosystems in the vicinity of the NorthMet Mine Site were studied as part of the Minnesota Environmental Quality Board Regional Copper-Nickel Study (Johnson and Lieberman 1979, Sather et al. 1979) in the late 1970s; this study included the NorthMet Mine Site. In July and August of 1999, Foth and Van Dyke (1999) conducted general surveys for plant and animal species of concern that may be found on the NorthMet Mine Site. The Forest Service prepared an Environmental Assessment (EA) for the Reservoir Analysis Area in 1999 (Forest Service 1999). The analysis area included portions of the proposed NorthMet Mine Site, primarily near Dunka Road. ENSR and AECOM conducted studies of wildlife and their habitats on the Mine Site during winter 2000 and 2006, and summer 2004 (ENSR 2000, 2005,

2006; AECOM 2009a). ENSR also conducted surveys of wildlife and their habitats during 2002 to 2008 on lands immediately to the east of the NorthMet Mine Site, for several proposed mine projects.

To supplement information gathered earlier, and to provide information needed for the land exchange, AECOM Environment (AECOM; formerly ENSR) conducted surveys of wildlife and their habitats during August 2008 on the Additional Parcel. The objectives of the study were to:

- Determine general wildlife use of the study area;
- Determine the presence of wildlife species of concern; and
- Identify important habitats used by wildlife.

In addition to conducting an assessment of wildlife and their habitats, the Forest Service requested that a wetland assessment be conducted for the Additional Parcel. Information from the wetland assessment would also be used during the land exchange appraisal. Much of the Additional Parcel is comprised of wetlands of high value, including One Hundred Mile Swamp.

Wetlands and their functions and values on the Mine Site were assessed in 1999 (Hollands 1999), and 2004 to 2010 (ENSR 2005; Barr Engineering, Inc. [Barr] 2006a, 2006b, 2007a, 2008a, 2008b, 2010a; 2010b, 2011). A preliminary assessment of wetland acreage and functions and values for the Additional Parcel was conducted in 2007 (Barr 2007b) based on aerial photography and limited field studies. To better determine wetland acreage, functions and values on the Additional Parcel, AECOM conducted an assessment of wetland acreage and functions and values concurrently with the wildlife habitat assessment.

Information collected during the wildlife and wetland assessments would support land exchange and environmental review and permitting efforts, and help to identify additional data collection requirements.

1.2. Acknowledgements

AECOM appreciates the assistance of Kevin Pylka (PolyMet) in setting up the project and coordinating activities with other PolyMet personnel. Susan Catton and Daniel Ryan (Forest Service) provided wildlife and habitat information for the site. Krista Larson and Lisa Joyal (Minnesota Department of Natural Resources; MnDNR) provided information on rare plant and animal species that could be found in the area. Dr. Cheryl Feigum provided assistance with wetland and floodplain assessments. Aaron Mielke (Barr Engineering) prepared maps and provided Geographic Information System (GIS) analysis.

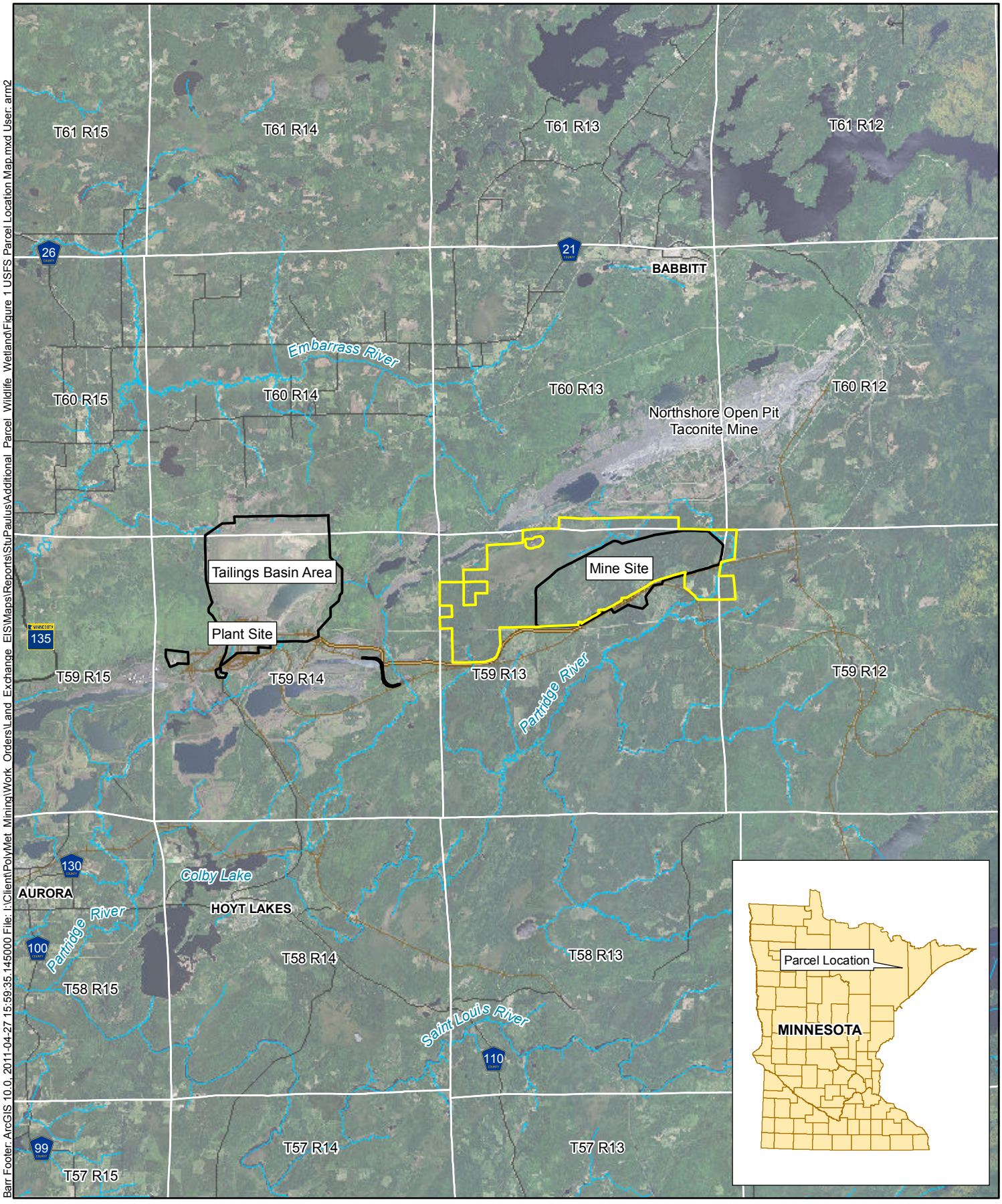


Figure 1
USFS PARCEL
LOCATION MAP
PolyMet Mining, Inc.
Hoyt Lakes, Minnesota

2.0 STUDY AREA

The Mine Site is 6 miles south of the village of Babbitt, Minnesota. It is 1.5 to 2 miles south of the active Northshore Mining Company open-pit taconite mine and 8.3 miles east of Cliffs Erie's former open-pit taconite mine and processing operations (Figure 1). The Mine Site is connected to the Plant Site by a private railroad and a segment of the private Dunka Road. PolyMet has acquired ownership or the right to use additional lands, trackage, and other railroad assets to secure the access between the Mine Site and the Plant Site. The Mine Site encompasses approximately 2,801 acres in all or portions of Township 59 North, Range 13 West, Sections 1, 2, 3, 4, 9, 10, 11, and 12 in St. Louis County, Minnesota. The property is zoned for mining, and PolyMet has a 100 percent leasehold interest in the property. The mineral rights are owned by RGGS Inc., and the majority of the surface is managed by the Forest Service with smaller portions owned by PolyMet, Allete, Cliffs Erie (Cleveland-Cliffs, Inc.) and the State of Minnesota. The Mine Site, which is in a previously logged forest area, is in the Partridge River watershed, about 3 miles south of Iron Lake and the Laurentian Divide. The Partridge River is in the watershed of the St. Louis River, which discharges into Lake Superior.

The Additional Parcel evaluated in this study is approximately 3,898 acres and is east, west, and north of the Mine Site (Figure 1). These Additional Parcel include all or portions of Township 59 North, Range 12 West, Sections 6 and 7; Township 59 North, Range 13 West, Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 17, and 18, and Township 60 North, Range 13 West, Sections 33, 34, 35, and 36. Much of the Additional Parcel consists of wetlands and includes portions of One Hundred Mile Swamp.

3.0 METHODS – WILDLIFE HABITAT ASSESSMENT

The evaluation of wildlife and their habitat use during early summer on the Additional Parcel was based on a review of the literature, personal communications with biologists and wetland scientists familiar with wildlife and their habitats in the area, natural resource database queries, and from field studies.

3.1. Literature Review and Personal Communications

AECOM reviewed the *Supplemental Site Specific Resource Information, August 1999*, report prepared by Foth and Van Dyke (1999). This report provided information on sensitive plants, cultural resources, and wetlands likely to be found in the study area, and on gray wolf and Canada lynx. AECOM reviewed the Forest Service *Biological Evaluation (BE) for the Reservoir Analysis Area, Laurentian Ranger District, Superior National Forest* and *Environmental Assessment for the Reservoir Analysis Area, Superior National Forest, Laurentian Ranger District* (Forest Service 1999). This evaluation was attached to the District Ranger's initial review of PolyMet's June 2, 1999, Plan of Operation.

AECOM reviewed wildlife assessments conducted between 2000 and 2006 for the NorthMet Mine Project (ENSR 2000, 2005, 2006). AECOM reviewed surveys of wildlife and their habitats on other lands near the NorthMet Mine Project in the Mesabi Iron Range, including the Duluth Metals Corporation Dunka Property and Maturi Extension Properties (ENSR 2008a), and Franconia Minerals Corporation Birch Lake, Maturi, and Site 1 Projects (ENSR 2007a, b; 2008b, c).

AECOM conducted telephone and in-person interviews with agency staff, (MnDNR regional biologist, U.S. Fish and Wildlife Service regional biologist, Forest Service Superior National Forest biologist, and International Wolf Center wildlife biologist; Appendix B). The information received from these contacts was used to gain information on plants and animals likely to be found in the Additional Parcel and species of interest to state and federal agencies. Survey methods were selected to maximize our ability to characterize use of the site by wildlife and to detect the presence of potential species of interest. A list of contacts, which includes telephone numbers and addresses, is provided in Appendix B.

3.2. Database Queries

A database search request was made to the Minnesota Natural Heritage Program in March 2008. The results of that search showed that four rare plant species (least moonwort, pale moonwort, prairie moonwort, floating marsh marigold) and one rare wildlife species (wood turtle) have been reported in the area. In addition, two plant species (Michigan moonwort and matricary grapefern) and one wildlife species (northern goshawk) were identified that have been or are found in the area and are tracked by the Program, but are not given special status by the State of Minnesota.

AECOM obtained a copy of the 2006 Superior National Forest Regional Forester Sensitive Species Conservation Assessments list of species of concern for the Superior National Forest (Appendix C). AECOM reviewed the Superior National Forest Land and Resource Management Plans (LRMP; Forest Service 1986, 2004) for Viability Indicator Species and Management Indicator Species. AECOM also reviewed the MnDNR species of concern list on the MnDNR website (http://www.dnr.state.mn.us/ets/index.html). AECOM reviewed the *Canada Lynx Sightings in Minnesota 2000-2007 Database* (MnDNR 2007a) for lynx sightings on or near the Additional Parcel. AECOM also reviewed the *Wolf Telemetry Database* (International Wolf Center 2008) for wolf sightings on or near the Additional Parcel, and the *Birds of Fisherman's Point and Hoyt Lakes Area* (City of Hoyt Lakes 2000) for birds that have been observed in the area.

Based on the above discussions, database queries, and document reviews, the following were identified as species of interest for the 2008 survey on the Additional Parcel (wildlife with a * are identified as Management Indicator Species in the 2004 LRMP for the Superior National Forest [Forest Service 2004]):

Federally Listed Threatened and Endangered Species

- Canada lynx (threatened)
- Gray wolf* (threatened)

State-listed Threatened and Endangered Species

- Wood turtle (threatened)
- Trumpeter swan (threatened)
- Horned grebe (threatened)
- Wilson's phalarope (threatened)
- Common tern (threatened)

Federal Species of Concern

- Black tern
- Northern goshawk*
- Boreal owl
- Great gray owl
- Olive-sided flycatcher
- Black-throated blue warbler
- Bay-breasted warbler
- Connecticut warbler

State Species of Concern

- American white pelican
- Marbled godwit
- Yellow rail
- Bald eagle*
- Northern myotis
- Eastern pipistrelle
- Short-eared owl
- Smokey shrew
- Heather vole
- Least weasel
- Mountain lion

Other Species of Concern (identified as Viability and Management Indicator Species in the 1986 Superior National Forest LRMP)

- Northern leopard frog
- Common loon
- Hooded merganser
- Osprey

- Red-tailed hawk
- Ruffed grouse
- Spruce grouse
- American woodcock
- Killdeer
- Belted kingfisher
- Pileated woodpecker
- American three-toed woodpecker
- Black-backed woodpecker
- Brown creeper
- Golden-crowned kinglet
- Swainson's thrush
- Magnolia warbler
- Pine warbler
- Savannah sparrow
- Beaver
- Porcupine
- White-tailed deer
- Moose

3.3. Field Surveys

Field surveys were conducted on the Additional Parcel on August 18 to 22, and August 26 to 29, 2008. Studies were conducted by vehicle and on foot.

3.3.1 General Survey Methodology

Wildlife surveys were conducted along transects located on primary (site access roads, drill pad access roads, logging roads) and secondary (skid trails, stream corridors, wetlands, other natural corridors) access routes to maximize the amount of area covered during the survey period. Additional surveys were conducted off the primary and secondary access routes.

Wildlife, and their sign, observed during transect surveys were recorded and related to species and number of animals making the sign, habitat associated with the sign, and general activity of the animal (where possible). Most observations were of wildlife sightings, and tracks, scat, and foraging sign. The surveys were conducted during day and night to increase the number of species encountered.

Recognizable animal tracks observed during surveys were noted. Where feasible, all tracks observed during transect surveys were identified, and this information was used to determine habitat use. Tracks of interest included those of grouse, pine marten, Canada lynx, gray wolf, white-tailed deer, and moose. The track surveys focused on locating fresh tracks in soft soil or mud, which were new enough that they were clearly identifiable. Generally, these tracks were less than 4 days old. The direction of travel, species and number of animals making the tracks, and habitat use was noted. Techniques used for identifying tracks are given in Rezendes (1992), Halfpenny et al. (1995), and Foresman and Pearson (1998). Recognizable animal calls and visual signs, and evidence of habitat use (foraging sign, bedding sites, etc.), were recorded.

Most wildlife observations were conducted near primary and secondary survey routes, but other sites of interest were also visited. Binoculars were used to locate and identify wildlife and their habitats. The locations of wildlife, their sign, and their habitats used were recorded using Global Positioning System (GPS) and aerial photographs. Time of day and weather conditions were also recorded during surveys.

3.3.2 Species of Concern Surveys

Special effort was made during surveys to locate and identify those species of concern listed in Section 3.2. In addition, we used echolocators to detect the presence of bats on and near the Additional Parcel. An echolocator picks up the inaudible, high frequency calls of bats and converts then to a frequency that is audible to humans. The echolocator transfers this signal, along with a calibration signal, to a delay switch. The delay switch transfers the bat call and calibration signal, along with information on the time of day, to a cassette recorder for tape storage. Once the information from an individual bat call is stored, the recorder turns off until a new bat call is received by the echolocator and transferred to the tape recorder. Cassette tapes used in this study had the capacity to store up to 45 minutes of bat calls per night. In one case, the tape was full of calls before dawn, thus not all bat use of the area during the entire night was determined.

Recordings were analyzed to determine the number and timing of calls given by bats during the night. This information provided a general indication of bat activity at the study site. However, since a single bat can give many calls, or many bats can give a few calls, it was not possible to determine absolute activity level.

Several factors influenced the number of calls recorded at each site. In some cases, multiple bats gave calls at nearly the same time, making it difficult to separate out and accurately count individual calls. In these situations, the number of bats making calls was estimated. The amount of bat activity recorded at a site was influenced by where the locator was placed (some portions of ponds had more bat activity than others), and weather (bat activity was usually less on cool than warm nights and less during periods of rain). In addition, other noises, in particular insect and amphibian calls and raindrops, triggered the bat recorder and caused it to record other sounds in addition to bat calls, potentially reducing the total number of bat calls recorded during a session.

3.3.3 Habitat Assessment

Aerial photographs were used to create large maps for use in the field. Infrared aerial photographs were reviewed to identify areas of similar vegetative cover (cover types; habitat types) based on the classification system discussed below. Photographs and field maps were then used in the field to verify cover types. Upon completion of field studies, cover types were mapped as habitat polygons, and polygons were digitized using GIS and overlaid onto habitat maps that were created using aerial photographs (see Maps 1 and 2 in the back pocket of this report). These maps and the associated GIS database were used to determine the approximate acreage of each habitat type.

Wildlife habitat features on the Additional Parcel, including plant species composition and structure and special features (snags, downed woody debris, rock outcrops, wetlands, and deer snow-intercept thermal [SIT] cover) were recorded during field surveys. In particular, we noted the species composition, density, and size (diameter at breast height [dbh]) of trees and shrubs near survey areas, and the use of snags and other special habitat features by wildlife. The location of special features was recorded using GPS units. This information was recorded on aerial photographs, and, in conjunction with information on shrubs and herbaceous vegetation collected during surveys, was used to prepare habitat maps of the project sites (see Maps 1 and 2 in back pocket of this report).

Wildlife habitats were primarily characterized based on whether the area was wetland or upland (based on guidance provided in Cowardin et al. 1979), plant types (forbs/grassland, shrubland, forestland), and percent aerial plant coverage. Areas with >30 percent tree cover were coded as forested. Areas with <30 percent tree cover, but >30 percent shrub cover, were coded as shrubland. Areas with <30 percent shrub cover and <30 percent tree cover were coded as emergent/bog (for wetlands), or disturbed or grassland/forb (for uplands). Forest stands were further characterized based on the percent cover of deciduous and coniferous trees within the stand. Stands with >70 percent cover of deciduous or coniferous trees were coded as forest deciduous or forest coniferous, respectively. Stands with a mixture of coniferous and deciduous trees (30 to 70 percent cover of each tree type) were classified as mixed.

In addition, stands were characterized by predominant tree size. Stands with trees <4 inches dbh were classified as sapling. Sapling trees are generally less than 10 years old (Table 1; Forest Service 2004). Stands with trees mostly 5-11 inches dbh were classified as pole/young mature forest. Pole/young mature stands are usually from 10 to 60 years in age. Stands dominated by trees 12 inches or greater dbh were classified as mature. These stands are generally 60 years or older. This wildlife habitat classification system is similar to that developed by the MnDNR (1993) Natural Heritage Program, in that it separates plant communities into upland and wetland habitat types based on vegetation characteristics, but differs in that it further divides forest communities based on tree size and evaluates grassland/forb and shrub successional stages associated with recently-logged or disturbed forests.

Table 2 summarizes the habitat classification criteria used to identify habitat cover types found on the Additional Parcel and provides corresponding habitat types based on the key to natural communities developed by the MnDNR (1993) Natural Heritage Program. The table also provides the corresponding Management Indicator Habitats that were developed for the 2004 Superior National Forest LRMP (Forest Service 2004).

As noted above, information was gathered during field surveys to determine habitat quality and presence/absence of special habitat features used by wildlife. The MnDNR Natural Heritage Program has developed *Element Occurrence Ranking Guidelines* based on several natural community habitat features (MnDNR 1994). These guidelines primarily consider the presence or absence of human-induced disturbances such as logging and development, but also consider the presence or absence of special habitat features, such as a multi-layered forest structure and presence of large downed woody debris. Table 2 includes Element Occurrence Rankings for habitat types recorded during this study.

Table 1
Ages of Forest Stand Types (Years)

Forest Type	Young (seedling)	Sapling/Pole	Mature/Old	Old/Old Growth	Old Growth Multi-ages
Jack Pine	0-9	10-39	40-59	60-79	80+
Red Pine	0-9	10-49	50-119	120-149	150+
Eastern White Pine	0-9	10-49	50-119	120-149	150+
Lowland Spruce/Tamarack	0-19	20-59	60-119	120-149	150+
Spruce/Fir	0-9	10-49	50-89	90-149	150+
Aspen-Birch/Aspen-Birch-Conifer	0-9	10-49	50-79	80+	80+
Source: Forest Service (2004).					

3.3.4 Data Recording

Observations of wildlife, their sign, and habitats were recorded on tape recorder and field maps. Photographic records were taken as necessary to record wildlife, their sign, and habitats.

Table 2
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Wetland					
P-0	Open water	14	Lake bed	Not applicable	>70 percent of area dominated by open water with no standing vegetation. Includes Mud Lake, and open water areas created where beaver dams blocked streams or culverts. Wild celery, pondweeds, coontail, and yellow lotus were seen in these areas, but comprised <30 percent of cover of the water body.
P-1	Bog/palustrine emergent	14	Black spruce bog; open sphagnum bog; mixed emergent marsh	AB, B, C	Bog wetlands were dominated by leatherleaf, young speckled alder, and in some areas, scattered cattail and sedges. Sphagnum moss often covered 80 to 90 percent of the bog. In the tree layer, there were scattered (<5 percent) black spruce (some dead) and smallish tamarack. Bog Labrador-tea, swamp birch, blueberry, small-fruited bog cranberry, and small willows covered 10 to 30 percent of the area. Other species encountered included marsh cinquefoil, cottongrass, round sundew, starflower, bunchberry, and Solomon's seal. Emergent wetlands were dominated by sedges, cattails, woolly scirpus, spikerush, burreed, and horsetail (80 to 90 percent cover) and water depths were several feet in deeper areas. Willows, tamarack, and speckled alder were often found along the border of these wetlands. Wild iris was common in some sedge wetlands. Bog/emergent wetlands provided habitat for several amphibians and birds, while sedge wetlands were used by moose.
P-2	Palustrine scrub shrub	14	Alder swamp; willow swamp	B, C	Wetlands dominated by speckled alder, pussywillow, red-osier dogwood, and other shrubs; < 30 percent tree cover. Scrub-shrub wetlands usually consisted of a dense (80 to 90 percent) cover of speckled alder, with alder often 6 feet or taller in height. These wetlands may also have scattered sapling balsam fir, black spruce, willow, and the occasional black ash. Dominant low shrubs were bog Labrador-tea, leatherleaf, lowbush blueberry, prickly rose, raspberry, and red-osier dogwood. Mountain maple saplings were also present. Herbaceous layer species included club and sphagnum mosses, horsetail, wood fern, bunchberry, bluebead lily, starflower, and creeping snowberry. Provided forage for deer and moose.

Table 2 (Cont.)
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Wetland (Cont.)					
P-3	Palustrine forest dead trees	Not applicable	Black spruce bog; black spruce swamp	C	Portions of flooded wetlands/bogs with a large number of dead black spruce (wetlands flooded by beavers or man-made structures). Some dead trees were used by cavity-nesting birds as nesting and foraging sites. Tree cover ranged from 10 to 40 percent.
P-4	Palustrine forest deciduous sapling (0-4 in dbh)	14	Mixed hardwood swamp	C	Wetlands dominated by sapling deciduous trees. Comprised of sapling birches, aspens, and maples. Specked alder dominates the dense shrub layer, while interrupted fern, sedges, and mosses are close to the ground. This habitat was not recorded on the study area.
P-5	Palustrine forest deciduous pole/young mature (5-11 in dbh)	14	Mixed hardwood swamp	B	Wetlands dominated by pole and young mature-size deciduous trees. Comprised of paper birch, quaking aspen, and red maple, with occasional scattered black spruce and balsam fir. Specked alder dominated the shrub layer, but was generally not dense when found in sapling stands. Understory included bog Labrador-tea, leatherleaf, sphagnum moss, and club moss. Provided habitat for numerous species of birds, small mammals, deer, and moose. This habitat is rare on the site.
P-6	Palustrine forest deciduous mature (12+ in dbh)	14	Mixed hardwood swamp	AB	Wetlands dominated by mature deciduous trees. Comprised of paper birch, quaking aspen, and red maple, with occasional scattered black spruce and balsam fir. Specked alder dominates the shrub layer. Understory includes bog Labrador-tea, leatherleaf, sphagnum moss, and club moss. Provides habitat for numerous species of birds, small mammals, deer, and moose. This habitat was not recorded on study area.
P-7	Palustrine forest mixed sapling (0-4 in dbh)	14	Mixed hardwood swamp; black spruce swamp	C	Wetlands dominated by mixed stand of sapling deciduous and conifer trees. In addition to species listed for palustrine deciduous forest, also includes sapling black spruce and tamarack and a dense shrub cover dominated by speckled alder. Provides important forage for moose and deer, yet limited cover, especially during winter. This habitat was not recorded on study area.

Table 2 (Cont.)
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Wetland (Cont.)					
P-8	Palustrine forest mixed pole/young mature (5-11 in dbh)	14	Mixed hardwood swamp; black spruce swamp	B	Wetlands dominated by mixed stand of pole- and young mature-size deciduous and conifer trees, including black spruce, white cedar, tamarack, aspen, and paper birch (to 30 percent cover). Bog Labrador-tea and leatherleaf were prevalent (to 80 percent cover), as was spruce regeneration. The herbaceous layer varied in vegetative cover. In some areas with dense stands of spruce, few shrubs were seen, but sphagnum and club mosses could cover nearly 100 percent of the ground. Common species included bluebead lily, Solomon's seal, horsetail, star flower, and creeping snowberry. Some areas also had cottongrass and bog laurel. Important wildlife species included ruffed grouse, numerous species of songbirds, pileated woodpecker, snowshoe hare, and red squirrel.
P-9	Palustrine forest mixed mature (12+ in dbh)	14	Mixed hardwood swamp; black spruce swamp	AB	Wetlands dominated by a mixed stand of mature deciduous and conifer trees with well-developed midstory of pole-size trees. Wetlands forests were dominated by black spruce, with scattered other conifer species (e.g., tamarack) or deciduous trees. Bog Labrador-tea and blueberry were prevalent, as was spruce regeneration. Red squirrel and woodpeckers were common in these forests. This habitat is rare on the site.
P-10	Palustrine forest conifer sapling (0-4 in dbh)	9, 14	Black spruce swamp	C	Wetlands dominated by sapling conifer trees, primarily black spruce and tamarack. Sapling spruce forest was rare on the site and provided limited wildlife habitat due to the small trees, lack of downed woody material and snags, and wet soil conditions.
P-11	Palustrine forest conifer pole/young mature (5-11 in dbh)	9, 14	Black spruce swamp	B	Wetlands dominated by pole- and young mature-size conifer trees, primarily black spruce and tamarack. Bog Labrador-tea, willow, speckled alder, and blueberry were prevalent, as was spruce regeneration. Some tamarack could also be present. The herbaceous layer varied in vegetative cover. In some areas with dense stands of pole-sized spruce, few shrubs were seen, but sphagnum and club mosses could cover nearly 100 percent of the ground. Common species include bluebead lily, Solomon's seal, horsetail, starflower, and creeping snowberry. Stands had good cover for wildlife.

Table 2 (Cont.)
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Wetland (Cont.)					
P-12	Palustrine forest conifer mature (12+ in dbh)	9, 14	Black spruce swamp	AB	Wetlands dominated by mature conifer trees, primarily black spruce, tamarack, and northern white cedar. Bog Labrador-tea was prevalent, as was spruce regeneration. Speckled alder may be present. Mature forests often contained numerous snags and downed woody debris. Pileated woodpecker, black-capped chickadee, and red squirrel were common.
Upland					
U-1	Disturbed	Not applicable	Not applicable	Not applicable	Recently-disturbed sites or cleared for roads, landings, etc. These areas had little or no vegetation. Vegetation consisted of scattered forbs and grasses, including field hawkweed, yellow sweetclover, and bladder campion. Sandy areas and rock piles provided habitat for burrowing species and nest sites for garter snakes. Deer, moose, gray wolf, and red fox sign was also seen in these areas.
U-2	Grassland/ Forbs	Not applicable	Not applicable	Not applicable	Areas dominated by grasses and forbs; <30 percent cover of trees and shrubs. Occur in areas recently logged or rights-of-ways. Scattered shrubs and sapling trees, including quaking aspen, willow, beaked hazel, and Labrador tea, comprised up to 10 percent cover. Bluejoint, daisy fleabane, raspberry, strawberry, thistles, pearly everlasting, goldenrods, and asters covered up to 70 percent of the area. Robin, goldfinch, deer, gray wolf, and red fox were seen in these areas.
U-3	Shrubland	Not applicable	Not applicable	Not applicable	Area dominated by shrubs; >30 percent cover of shrubs and <30 percent cover of trees. Occurred in areas where natural succession of logged/disturbed sites led to replacement of grassland/forb habitats with habitats dominated by shrubs. Scattered pole and sapling trees (quaking aspen, paper birch, jack pine, and black spruce) were occasionally found in these areas, but shrubs, including beaked hazel, blueberry, and raspberry could cover up to 80 percent or more of the landscape. Provided forage for deer and moose, and nesting and foraging habitats for a variety of birds, but have few special habitat features and provided little cover. This habitat is rare on the site.

Table 2 (Cont.)
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Upland (Cont.)					
U-4	Forest deciduous sapling (0-4 in dbh)	2	Aspen forest; aspen-birch forest	C	Forests dominated by sapling deciduous trees, primarily quaking aspen, with lesser amounts of paper birch to 50 percent cover. Beaked hazel, lowbush blueberry, bog Labrador-tea, lowbush honeysuckle, and prickly rose were important shrubs. The ground cover included blue bead lily, bunchberry, large-leaved aster, bracken fern, interrupted fern, goldthread, twinflower, sweet coltsfoot, wild strawberry, and pink ladyslipper. Provided foraging habitat for deer and moose. Shrub and ground cover were up to 90 percent.
U-5	Forest deciduous pole/young mature (5-11 in dbh)	2	Aspen forest; aspen-birch forest	BC	Forests dominated by pole and young mature-size deciduous trees. Deciduous forests usually dominated by quaking aspen and paper birch. Percent cover in pole forests ranged from 60 to 80 percent, and usually forests had a dense (60 to 90 percent cover) midstory of sapling balsam fir and paper birch, beaked hazel, lowbush blueberry, bog Labrador-tea, lowbush honeysuckle, and prickly rose. The ground cover included bluebead lily, bunchberry, large-leaved aster, swamp dewberry, bracken fern, interrupted fern, goldthread, twinflower, sweet coltsfoot, strawberry, pink ladyslipper, and club moss. Provided foraging and nesting habitat for a variety of birds and small mammals, and shade cover during summer for larger mammals.
U-6	Forest deciduous mature (12+ in dbh)	2	Aspen forest; aspen-birch forest	B	Forest dominated by mature deciduous trees, with well-developed midstory of pole- and young mature-size trees. Usually dominated by quaking aspen, although some forests contained an important paper birch component. Well-developed midstory of sapling to pole-size balsam fir and paper birch, beaked hazel, lowbush blueberry, bog Labrador-tea, lowbush honeysuckle, and prickly rose. The ground cover included wild sarsaparilla, bluebead lily, bunchberry, large-leaved aster, swamp dewberry, bracken fern, interrupted fern, goldthread, twinflower, sweet coltsfoot, strawberry, and pink ladyslipper. Dead trees and stumps used by cavity nesting birds and small mammals, and downed woody material provided habitat.

Table 2 (Cont.)
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Upland (Cont.)					
U-7	Forest mixed sapling (0-4 in dbh)	4	Mixed pine-hardwood forest; boreal hardwood-conifer forest	C	Forests dominated by a mixed stand of sapling conifer and deciduous trees. Mixed forests contain varying amounts of jack pine, spruce, aspen, paper birch, and balsam fir saplings. Wild sarsaparilla, bluebead lily, lowbush honeysuckle, sweet coltsfoot, rose twisted stalk, large-leaved aster, and wood fern are common herbs. Provides good foraging habitat, but limited cover for wildlife. This habitat is not found on the site.
U-8	Forest mixed pole/young mature (5-11 in dbh)	4	Mixed pine-hardwood forest; boreal hardwood-conifer forest	BC	Forests dominated by a mixed stand of pole and young mature-size conifer and deciduous trees. Mixed forests contained varying amounts of jack pine, spruce, aspen, paper birch, and balsam fir. Beaked hazel and sapling deciduous and conifer trees were common in the midstory. Common herbs were wild sarsaparilla, bluebead lily, lowbush honeysuckle, sweet coltsfoot, rose twisted stalk, and large-leaved aster. Numerous birds were seen gleaning insects in trees during surveys.
U-9	Forest mixed mature (12+ dbh)	4	Mixed pine-hardwood forest; boreal hardwood-conifer forest	B	Forests dominated by a mixed stand of mature conifer and deciduous trees, with well-developed midstory of pole and young mature-size trees. Mixed forests contained varying amounts of jack pine, spruce, aspen, paper birch, balsam fir, and red maple. Pole and young mature-size deciduous and conifer trees were found in the midstory, including black spruce and fir. Mature forests usually had a moderate shrub layer, but the ground was nearly covered with vegetation, including wild sarsaparilla, bunchberry, bluebead lily, starflower, bedstraw, large-leaved aster, and rose twisted stalk. Large deciduous trees could be used by hawks for nests. Dead trees and stumps, especially those of conifers, used by cavity nesting birds and small mammals, and down woody material provided habitat for small mammals, snakes, and amphibians.
U-10	Forest conifer sapling (0-4 in dbh)	5, 8	Jack pine forest; black spruce-feathermoss forest	C	Forests dominated by sapling conifer trees, primarily jack pine and balsam fir, and occasionally black spruce. The shrub layer is usually dense. The herb layer includes interrupted fern, shining clubmoss, bunchberry, wood ferns, and Solomon's seal. Provided limited foraging habitat and cover for wildlife. This habitat is not found on the site.

Table 2 (Cont.)
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Upland (Cont.)					
U-11	Forest conifer pole/young mature (5-11 in dbh)	5, 8	Jack pine forest; black spruce-feathermoss forest	BC	Forests dominated by pole- and young mature-size conifer trees, primarily jack pine, with scattered balsam fir and black spruce. The shrub layer was often sparse in dense forests, but well-developed in pole forests with openings in the canopy. The herb layer included interrupted fern, shining clubmoss, bunchberry, wood ferns, and Solomon's seal. Pole conifer forests provided forage for conifer-dependent species (red squirrel, spruce grouse) and hiding cover, but poor snow-intercept thermal cover for deer and moose. These forests had few snags or downed woody material.
U-12	Forest mature conifer (12+ in dbh)	5, 8	Jack pine forest; black spruce-feathermoss forest	B	Forests dominated by mature conifer trees, primarily jack pine and balsam fir, with scattered black spruce. Stands usually consisted of trees of nearly uniform age. The shrub layer is usually dense and includes beaked hazel, willow, and paper birch, quaking aspen, and balsam fir saplings. The herb layer included interrupted fern, shining clubmoss, bunchberry, wood ferns, and Solomon's seal. Jack pine forests with interspersed wet areas often had black spruce and tamarack in the overstory, and a shrub layer comprised of willow, prickly rose, blueberry, and bog Labrador-tea. Large-leaved aster, bluebead lily, and starflower are common herbs. These forests provided good foraging habitat for conifer-dependent species, and good snow-intercept thermal cover for deer and moose. Snags and downed woody material are common, but not abundant as in mixed mature forests, in these forests and provide habitat for amphibians, owls, woodpeckers, and squirrels.

[1] U.S. Forest Service (2004).
[2] Minnesota Department of Natural Resources (1993).
[3] Minnesota DNR (1994). Element occurrence rankings are based on a combination of habitat quality, condition, viability, and defensibility. A = excellent; AB = excellent/good; B = good; BC = good/marginal; and C = marginal.

4.0 METHODS - WETLAND ASSESSMENT AND FUNCTIONS AND VALUES ANALYSIS

The evaluation of wetlands and their functions and values on the Additional Parcel was based on a review of studies conducted on the Mine Site and Additional Parcel, personal communications with wetland scientists with an understanding of wetlands on the Mine Site and Additional Parcel, and field studies.

4.1. Previous Surveys

AECOM reviewed the *Wetland Delineation and Wetland Functional Assessment Report* (Barr 2006) and *Supplemental Information to the Wetland Delineation Report* (Barr 2007a) for the Mine Site, and *Wetlands in the USFS Land Exchange Area* Memo (Barr 2007b) for the Additional Parcel. These reports provided information on wetlands likely to be found on the Exchange Area.

Barr's (2007b, 2011) assessment of Additional Parcel wetlands was based on a review of U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) mapping, aerial photographic interpretation using infrared color photographs, Forest Service GIS mapping, soil surveys, topographic maps, and field assessments. The NWI maps were generated by the U.S. Fish and Wildlife Service from interpretations of black-and-white aerial photographs taken in 1977. The NWI maps generally do not accurately represent wetland resources in the forested areas of northeastern Minnesota, so Barr conducted aerial photographic interpretation and limited field studies to improve the quality of wetlands assessments on the Additional Parcel.

Wetlands along the Dunka Road and north of the Dunka were mapped by Barr (2007b) using NWI mapping and field observations. Wetlands in the western portion of the Additional Parcel were mapped using NWI mapping and aerial photographic interpretation using infrared color photographs. Additional Parcel wetlands outside of these areas were identified using NWI mapping, with no field verification or aerial photographic interpretation.

A function and values assessment of wetlands was conducted by Barr for the Mine Site (2006) and Additional Parcel (2007b) based on field observations, GIS analysis, and knowledge of the wetlands and disturbances in the area. The vegetative diversity/integrity of the wetlands were rated using the guidelines in the *Minnesota Routine Assessment Method for Evaluating Wetland Functions, Version 3.0* (MnRAM 3.0). Wetland functions that were considered during the Barr assessments included: maintenance of characteristic hydrologic regime; maintenance of wetland water quality; wildlife habitat; and to some degree, downstream water quality. Landscape and wetland characteristics considered in rating the overall wetland functional quality included: wetland outlet characteristics; watershed and adjacent upland land uses and condition; soil condition; erosion and sedimentation; wetland vegetative cover and vegetation types; wetland community diversity and interspersion; and human disturbances (both past and present).

The broader landscape factors were typically evaluated on a larger scale. For instance, soil and vegetation conditions within the watershed contributing to the wetland were similar for large groups of wetlands. The current human disturbance levels were also typically similar across broad areas. Barr noted that the majority of the site is relatively undisturbed by humans, and that logging disturbances have historically affected and continue to affect large portions of the area. Local factors were also considered for each wetland or small groups of wetlands. These disturbances included inundation (caused by beaver dams or road culverts), fill material, a blast site, roads, railroads, and logging or transmission line corridors. Based on their assessment, over 98 percent of the wetlands within the Additional Parcel were rated as having high overall quality due to minimal or no current disturbance, while disturbed wetlands accounted for less than 2 percent of all wetlands and were rated medium (Barr 2007b).

4.2. Field Surveys

Wetlands on the Additional Parcel were identified, characterized, and mapped concurrently with the wildlife habitat assessment. Initially, potential wetland locations were determined by reviewing color infrared aerial

photographs, U.S. Geological Survey topographic maps, and wetland maps prepared by Barr (2007b). Aerial photographs were used to create large maps for use in the field. Infrared aerial photographs were reviewed to identify areas of similar vegetative cover based on the classification system shown in Table 2. Aerial photographs and field maps were then used in the field to verify cover types. Upon completion of field studies, cover types were mapped as habitat polygons, and polygons were digitized using GIS and overlaid onto habitat maps that were created using aerial photographs (see Maps 1 and 2 in the back pocket of this report). These maps and the associated GIS database were used to determine the approximate acreage of each wetland and upland habitat types.

Wetland surveys were conducted along transects located on primary (site access roads, drill pad access roads, logging roads) and secondary (skid trails, stream corridors, wetlands, other natural corridors) access routes to maximize the amount of area covered during the survey period. Additional surveys were conducted off of the primary and secondary access routes in an effort to better determine wetland boundaries and types.

4.3. Wetland Delineation and Classification Methods

The primary goals of the August 2008 surveys were to determine if wetlands and their boundaries shown in the Barr (2007b) report were reasonably accurate and to assess wetland functions and values on the Additional Parcel. We did not attempt to delineate the boundary of wetlands in the field using federal and state wetland delineation protocols (e.g., *1987 Corps of Engineers Wetland Delineation Manual* routine wetland delineation procedures; Environmental Laboratory 1987). Instead, the boundaries of wetlands were determined based on aerial photograph interpretation, with some refining of wetland boundaries during field studies. Wetland boundaries were determined in the field based on hydrologic and vegetation characteristics and were more accurate where survey routes crossed or were near wetland boundaries. Wetland boundaries shown on Maps 1 and 2 and acreages given in this report are approximate. However, we did make special effort to have survey routes intercept many of the wetlands on the Additional Parcel to better determine their boundaries, characteristics, and functions and values. Surveys covered nearly all portions of the Additional Parcel, although not all wetlands were surveyed.

Wetlands were classified using the classification system given in Table 2. However, this classification system can be adapted to classify wetlands based on other classification systems, including the Circular 39 Classification System (Shaw and Fredine 1956), the Cowardin System (Cowardin et al. 1979), and the Eggers and Reed (1997) wetland classification systems, as shown in Table 3.

Table 3
Comparison of Wetland Classification Systems

Wildlife Habitat[1]	Cowardin et al.[2]	Eggers and Reed[3]	Circular 39[4]	Definition[4]
P-4, P-5, P-6, P-7, P-8, and P-9	PFO1A (Palustrine Forested Broad-Leaved Deciduous Temporarily Flooded)	Floodplain forest; Seasonally flooded basin	Type 1 - Seasonally Flooded Basin or Flat	Soils are usually somewhat well-drained/poorly drained for much of the growing season. These shallow depressions typically have standing water for a few weeks, but dry up for the remainder of the year. Vegetation varies greatly according to season and duration of flooding from bottomland hardwoods (floodplain forests) to herbaceous plants.
P-1	PEMB (Palustrine Emergent Saturated)	Wet to Wet-mesic prairie; Fresh (wet) meadow; Sedge meadow; Calcareous Fen	Type 2 - Inland Fresh Meadow	Soils are usually somewhat well-drained/poorly drained for much of the growing season. These shallow depressions typically have standing water for a few weeks, but dry up for the remainder of the year. Vegetation varies greatly according to season and duration of flooding from bottomland hardwoods (floodplain forests) to herbaceous plants.
P-1	PEMC (Palustrine Emergent Seasonally Flooded)	Shallow marsh	Type 3 - Inland Shallow Fresh Marsh	Soil is usually saturated during most of the growing season. Soil may contain peat or muck. Vegetation includes grasses, sedges, rushes, forbs, and asters. Calcareous fens are the rarest wetland plant communities and can have a disproportionate number of rare, threatened, and endangered plant species compared to other plant communities.
P-0, P-1, and P-3	PUBF (Palustrine Unconsolidated Bottom Semi Permanently Flooded)	Deep marsh	Type 4 - Inland Deep Fresh Marsh	Soil is usually covered with less than 6 inches of water and may consist of enough to saturate the soil throughout the growing season. Vegetation consists of emergent plants, such as, narrow-leaved cattail, bulrush, and sedge. Emergent aquatic plants can become established when water levels are low.
P-0 and P-3	PEM1H/L1UBH (Palustrine Emergent Persistent Permanently Flooded/Lacustrine Limnetic Unconsolidated Bottom Permanently Flooded)	Shallow open water	Type 5 - Inland Open Fresh Water	Soil is usually covered with 6 inches to 3 feet or more of water during growing season and can fluctuate throughout the year. This type is characterized by emergent, floating, and submergent vegetation including narrow-leaved cattail, bulrush, pondweed, water-lily, and wild rice.
P-2	PSS1, PSS1A/C (Palustrine Scrub-Shrub Broad-Leaved Deciduous, Temporarily Flooded / Seasonally Flooded)	Shrub-Carr Alder thicket	Type 6 - Shrub Swamp	Soil is usually saturated to seasonally flooded conditions during the growing season. Woody vegetation is typically less than 20 feet in height with a dbh of less than 6 inches. Willows and red-osier dogwood generally dominate the shrub layer with a ground layer of ferns, sedges, grasses and forbs. Speckled alder may occur as a monotype.

Table 3 (Cont.)
Comparison of Wetland Classification Systems

Wildlife Habitat[1]	Cowardin et al.[2]	Eggers and Reed[3]	Circular 39[4]	Definition[4]
P-4, P-5, P-6, P-7, P-8, P-9, P-10, P-11, and P-12	PFO1A/B/C, PFO1C (Palustrine Forested Broad-Leaved Deciduous, Temporarily Flooded/Saturated / Seasonally Flooded)	Hardwood swamp Coniferous swamp	Type 7 - Wooded Swamp	Soil is saturated or inundated by as much as a foot of water during the growing season. Soils are usually organic. Forest vegetation includes tamarack and northern white cedar. Sphagnum moss is not usually present. Deciduous trees include black ash and red maple. The ground layer may also include ferns, sedges, grasses and forbs. Tamarack and northern white cedar can be present where calcareous peat soils are found.
P-1, P-10, P-11, and P-12	PFO7B (Palustrine Forested Evergreen Saturated)	Open bog Coniferous bog	Type 8 - Bogs	Soils consist of acid peats that are low in nutrients. Open bog vegetation is typically herbs with low shrubs with scattered immature or stunted black spruce or tamarack. Coniferous bogs consist of sedges, orchids, and purple pitcher plants.

[1] From: Table 2 in this report.
[2] From: Cowardin et al. (1979).
[3] From: Eggers and Reed (1997).
[4] From: Shaw and Fredine (1971).

4.4. Wetland Functional Assessment Methods

During the field surveys, data were collected related to the functions and values of representative wetlands within the Exchange Area. Wetland functions and values were rated using the guidelines in the *Minnesota Routine Assessment Method for Evaluating Wetland Functions, Version 3.2* (MnRAM 3.2; Minnesota Board of Water and Soil Resources 2008). As discussed in Section 4.1, MnRAM considers numerous factors in determining the rating, or value, of a wetland. Sixty-three questions given in MnRAM 3.2 were addressed, and all factors were evaluated for each wetland surveyed. The primary wetland functions rated by MnRAM 3.2 are:

- Special Features (unique vegetation, fish and wildlife, cultural, and other factors that would result in a functional rating of "exceptional")
- Vegetative Diversity/Integrity
- Hydrology
- Flood Attenuation
- Effect on Water Quality Downstream
- Water Quality in the Wetland
- Shoreline Protection
- Wildlife Habitat Characteristics
- Fish Habitat Characteristics
- Amphibian Habitat Characteristics
- Aesthetics/Recreation/Education/Cultural

The primary wetland functions were evaluated based on a review of the 1) wetland soil, hydrology, and vegetation; 2) outlet characteristics; 3) watershed and adjacent upland land uses and conditions; 4) erosion and sedimentation; and 5) human disturbances. The Eggers and Reed (1997) classification system was used to classify wetland communities for the wetland function and value evaluation. Landscape factors were typically evaluated on a larger scale. For instance, soil and vegetation conditions within the watershed were usually similar for large groups of wetlands. The human disturbance levels were also typically similar across broad areas. Based on the responses to

questions posed by MnRAM 3.2 and the assessment of special features, a function value of high, medium, or low was given for each primary function.

5.0 SURVEY RESULTS – WILDLIFE ASSESSMENT

5.1. Introduction

Field surveys were conducted on the Additional Parcel during August 18 to 22, and August 26 to 29, 2008. The weather was generally favorable during the study period. Temperatures ranged from the low 60s degree Fahrenheit (°F) at in the morning to mid-80s °F during the afternoon. Light to moderate rain fell on and off during August 22, 28, and 29. The survey was conducted mostly on foot, although the Dunka Road and site exploration roads were used to access portions of the site. Generally, a circular route was taken on foot each day, with the intent of surveying a variety of habitats each day.

5.2. Wildlife Species Survey

We observed or found evidence of two amphibian, two reptile, 40 bird, and at least 10 mammal species on the Additional Parcel. Spring peepers and western chorus frogs and painted turtles were observed in several wetlands on the study area. A snake nest with eggshell fragments was observed along the edge of the Dunka Road.

Birds observed near wetlands and ponds during the study included common loon, mallard, green-wing teal, wood duck, lesser scaup, redhead, common merganser, red-breasted merganser, great blue heron, American woodcock, spotted sandpiper, belted kingfisher, eastern phoebe, red-winged blackbird, common grackle, and swamp sparrow. Northern flicker, American robin, American goldfinch, and white-throated sparrow were seen in disturbed areas and grassland/shrubland habitats. The remaining species were primarily associated with forests, including ruffed grouse, ruby-throated hummingbird, yellow-bellied flycatcher, gray and blue jays, ruby-crowned kinglet, pine grosbeak, black-and-white warbler, golden-winged warbler, Magnolia warbler, and yellow warbler. Woodpecker cavities and foraging signs were common on larger snags (>6 in dbh) and on stumps. Cavity-nesting species seen in forests included three species of woodpeckers (hairy, downy and pileated woodpeckers), black-capped chickadee, and red-breasted nuthatch. Broad-winged hawk, red–tailed hawk, turkey vulture, and common raven were seen flying overhead.

Common mammals seen or identified based on sign included bats, black bear, gray wolf, red fox, pine marten, river otter, red squirrel, beaver, white-tailed deer, and moose. Bats were seen flying over wetlands in the evening and were recorded at five sites on the Additional Parcel. Black bear sign was seen in mixed forests, Gray wolf and red fox tracks were seen along Dunka Road and other roads on the site. Pine marten and red squirrel sign was common in spruce forests. River otter mounds and skid trails were seen near Mud Lake. Beaver dams and cuttings were found at several sites and beaver dams created several ponds on the Additional Parcel. White-tailed deer and moose sign was observed over much of the Additional Parcel, but especially in forests near wetlands and in shrublands.

Most species observed during the summer 2008 survey were also observed on the Mine Site during the winter 2000 and summer 2004 Mine Site surveys. However, several species observed during winter 2000 were not observed during this study: spruce grouse, northern saw-whet owl, barred owl, black-backed and northern three-toed woodpeckers, eastern wood-pewee, common redpoll, snow bunting, least weasel, and bobcat. These bird species are either uncommon in the area during summer or were migrating north during the 2000 study. The tracks of the mammals were easily observed in the snow during winter.

5.3. Bat Echolocation Surveys

Echolocation surveys were conducted at five stations, although only four stations gave usable information due to rainfall during the survey at one station (B5; Figure 2 and Table 4). Recordings indicated the presence of bats at all sites, with the greatest number of calls occurring at open water sites associated with the Partridge River (B4) and

an unnamed creek (B1), and the fewest calls at emergent wetlands covered with water and some aquatic vegetation (Site B3).

Seven bat species could occur in the study area. The little brown myotis is the most abundant bat in Minnesota. Along with the northern myotis, big brown bat, and eastern pipistrelle, it hibernates in caves and mines. In summer, they roost in caves, mines, hollow trees, under tree bark, and in buildings, often in large groups. The silver-haired bat is a forest dweller that usually lives near water. It feeds among the trees, much like the eastern red bat. Another woodland species is the hoary bat, the largest bat found in Minnesota. The silver-haired bat, eastern red bat, and hoary bats are all solitary, roost in trees, and migrate south for the winter (MnDNR 2008a).

Table 4
Bat Echolocation Surveys

Calling Station Location[1]	Spring Responses (number of calls)
E1	113
E2	58
E3	44
E4	257[2]

[1] Station locations shown on Figure 2. Station 5 call responses were not included in the table due to rainfall during the night that interfered with call responses.
[2] Tape full of calls before daybreak.

5.4. Species of Concern

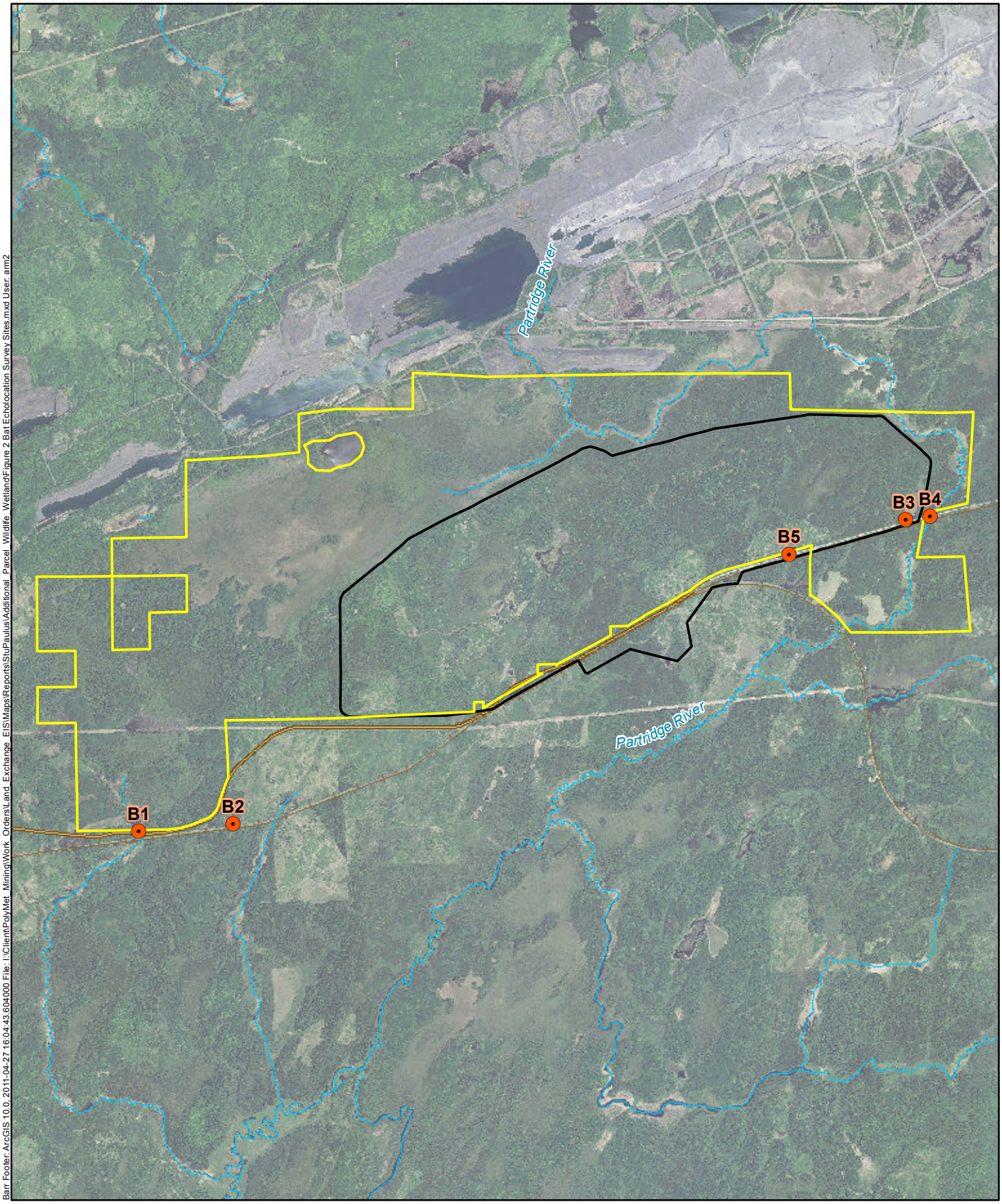
Several species of concern may be found on the Additional Parcel, although most species listed below are rare visitors to the area or migrate through the area during spring or fall. Background information on species of concern was obtained for reptiles and amphibians (Behler and King 1995, Tekiela 2003); birds (Terres 1982; Robbins et al. 1983; Benyus 1989); and mammals (Burt and Grossenheider 1965, Chapman and Feldhamer 1982).

5.5.1. Federally Listed Threatened and Endangered Species

Canada lynx (threatened). No lynx or their sign were observed during 2008 surveys or during Canada lynx surveys conducted on the Additional Parcel and Mine Site by ENSR during winter 2006 (ENSR 2006). In addition to these surveys, Canada lynx winter tracking surveys were conducted during 2008 on lands immediately east of the Additional Parcel for other proposed mine projects.

The NorthMet Mine lynx survey was conducted during January through March of 2006. Six hundred sixteen miles of transect were surveyed in seven townships that included the Mine Site and Additional Parcel. These townships were Township 58 North, Range 13 West; Township 59 North, Ranges 12, 13, and 14 West; and Township 60 North, Ranges 12, 13, and 14 West. This survey area was approximately 250 square miles (mi^2). Tracks and scat of four female lynx were identified during the survey, concentrated in areas approximately 5 miles east of the Additional Parcel. Lynx sign was most common in dense conifer forests of balsam fir and jack pine. ENSR concluded that at least three lynx reside in the survey area. No evidence of lynx was found on the Additional Parcel or Mine Site.

Tracks and scat of several lynx were found about 3 miles northeast of the Additional Parcel during surveys for a nearby mine project in 2008. In addition, lynx mothers with kittens were observed during 2008 at the Northshore Mine Site, about 3 miles northeast of the Additional Parcel.



Barr Footer: ArcGIS 10.0, 2011-04-27 16:04:43.604000 File: I:\Client\PolyMet_Mining\Work_Orders\Land_Exchange_EIS\Maps\Reports\StuPaulus\Additional_Parcel_Wildlife_Wetland\Figure 2 Bat Echolocation Survey Sites.mxd User: arm2

Figure 2
BAT ECHOLOCATION
SURVEY SITES
PolyMet Mining, Inc.
Hoyt Lakes, Minnesota

Approximately 115 lynx have been reported in St. Louis County since 2000 (MnDNR 2007a), including verified, probable, and unverified sightings. The nearest sightings were approximately 6 miles from the Mine Site. The vast majorities of sightings are incidental encounters, and as such, tend to be clustered along roads and other places frequented by observant and interested people. Thus, while these reports tell us something (however incomplete) about where lynx are, they provide no information about where lynx do not occur. Similarly, we cannot know the relationship between the number of reports and the number of lynx in Minnesota at the time of the reports.

The Canada lynx originally ranged throughout the boreal forest of North America and the mixed coniferous-deciduous forests of the northeastern and Great Lakes states (Hazard 1982). Snowshoe hare and red squirrels are the primary prey item of lynx in northern Minnesota, but they also eat carrion, grouse, and small mammals (Aubry et al. 2000). Canada lynx numbers declined sharply in the U.S. and Canada in the mid-1900s due to overtrapping and ecological changes caused by settlement, logging, and agriculture (DeVos and Matel 1952, Todd 1985). Individuals move great distances when prey is scarce, and lynx were seen in many areas of Minnesota during 1962-1963 and 1972-1973, presumably years when snowshoe hares were scarce in Canada (Phillips 1999). Canada lynx numbers in Minnesota appear to be near a cyclic low in 2009 (AECOM 2009b).

On February 25, 2009, the U.S. Fish and Wildlife Service designated approximately 8,226 mi^2 in portions of Cook, Koochiching, Lake, and St. Louis counties in Minnesota as lynx critical habitat. (Federal Register 2009). This critical habitat includes much of the Additional Parcel (Figure 3).

Gray wolf (threatened; Superior National Forest Management Indicator Species). Gray wolf was recorded on the site during the survey. Wolf tracks were seen on the Dunka Road, on a service road along the boundary between the Northshore Mine and Mesaba Mine Site, and on several Mine Site exploration roads. Radio-collared wolves have been observed traveling within a few miles of the Mine Site (International Wolf Center 2008). Territory size for wolves in northern Minnesota ranges from 20 to 150 mi^2 and wolf packs tend to avoid areas used by other wolf packs. Wolf tracks were also seen along Dunka Road during Mine Site studies in 2000 and 2004. Interestingly, wolf tracks were not observed on the study area during January 2000, when an exploration drill rig was operating at the Mine Site. No active dens are known to occur on the Additional Parcel.

An estimated 2,900 wolves resided in Minnesota in 2008, similar to numbers recorded in 2004 (MnDNR 2008b). The average size of a wolf pack in Minnesota is 5.3 individuals, and average territory size is 40 mi^2 (Erb and Benson 2004).

The number of wolves in Minnesota has increased nearly five-fold since the early 1970s (Berg and Benson 1999, Erb and Benson 2004, MnDNR 2008b). Wolves typically prey on ungulates (hoofed animals), such as deer and moose in northeastern Minnesota (MnDNR 1999). Until recently, wolves have been primarily confined to areas with little human disturbance. During the past 20 years, they have been observed using areas with higher levels of human activity (Mech 1995; Thiel et al. 1998). Wolves also appear to avoid areas with a high density of roads, especially those accessible to two-wheeled (versus four-wheeled and ATV) vehicles, although more wolves have moved into areas with higher road densities in recent years (Mech 1998, MnDNR 1999).

In 1978, critical habitat was designated for the Eastern Distinct Population Segment of gray wolf (Federal Register 1978). That rule identified critical habitat at Isle Royale National Park, Michigan, and Minnesota wolf management zones 1, 2, and 3. Wolf management zones 1, 2, and 3 comprise approximately 9,800 $miles^2$ in northeastern and north central Minnesota and include all of the Superior National Forest and portions of the Chippewa National Forest. The Additional Parcel is within Zone 2.

5.5.2. State-listed Threatened and Endangered Species

Wood turtle. No wood turtles were found on the Additional Parcel. The wood turtle is on the western edge of its range in Minnesota. It occurs north into Ontario, east to Nova Scotia and south from northern Iowa to northern

Virginia. Minnesota Natural Heritage Program records indicate the northernmost population in the state was observed in the Partridge River, downstream of the Dunka Road bridge and about 0.7 miles from the Mine Site. Because of its dependence on forested riverine systems and well-drained soils, the wood turtle was probably never uniformly distributed in the Upper Great Lakes Region, but was locally abundant in areas with optimal habitat. In Minnesota, factors contributing to its decline include the loss or fragmentation of riverine forests related to agriculture, timber harvest, road construction, and development; siltation of streams caused by excessive runoff; and flooding of nesting areas.

Trumpeter swan. No trumpeter swans were seen in the study area during the surveys. The trumpeter swan is found on lakes and ponds in the Rocky Mountains during the breeding season and on the West Coast during winter. The trumpeter swan is a casual visitor to the Superior National Forest (Green 1993) and would likely be observed on Birch Lake adjacent to the site or wetlands on the site that have aquatic vegetation and some open water.

Horned grebe. No horned grebes were seen in the study area during the surveys. The horned grebe nests on freshwater ponds and lakes throughout central and western Canada and into the Dakotas and Minnesota and winters on salt water and the Great Lakes. The horned grebe is a migrant in Superior National Forest (Green 2003) and could use pond and lake habitat in the study area during migration.

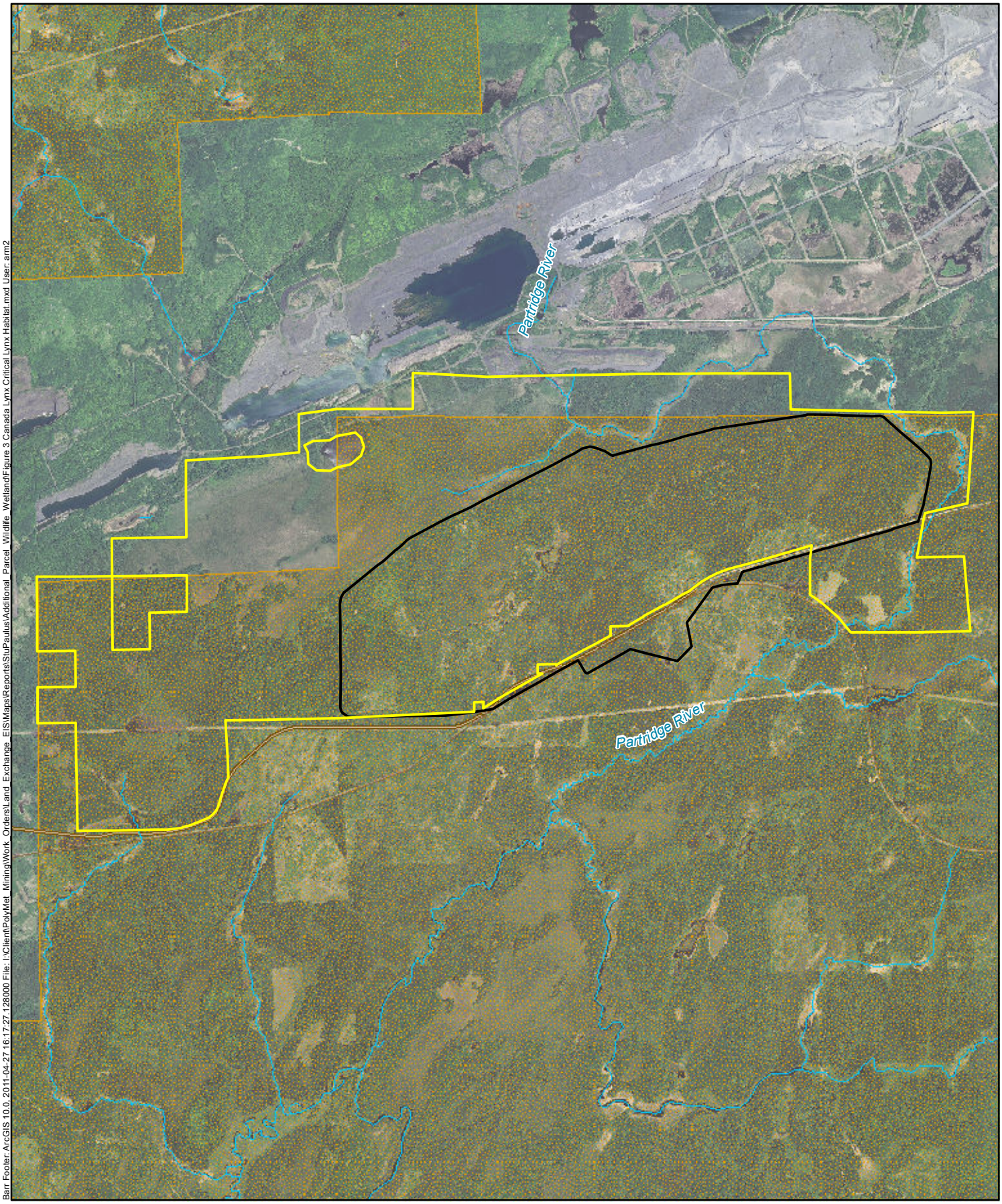
Wilson's phalarope. No Wilson's phalaropes were seen in the study area during the surveys. The Wilson's phalarope nests on prairie sloughs and ponds found in the interior grasslands of western and central Canada and northern U.S. and the Pacific Northwest (Terres 1982). The bird winters in southern South America and has been reported as a very rare migrant in Superior National Forest (Green 2003).

Common tern. No common terns were seen in the study area during the surveys. The common tern is found over large inland lakes in Canada and the northern U.S. The bird nests in large colonies on beach sandspits and islands of sand and oyster shells, and winters along the Atlantic and Gulf coasts. The common tern is an occasional visitor to Superior National Forest (Green 2003).

5.5.3. Federal Species of Concern

Black tern. No black terns were seen in the study area during the surveys. The black tern is a locally common breeder on prairie sloughs and marshes of the upper Midwest and Canadian Prairies. The black tern breeds in northern Minnesota and has been seen in Superior National Forest during summer and fall (Green 2003). Breeding habitats favored by black terns are uncommon on the Exchange Area, and it is unlikely that black terns would nest or spend much time on the site.

Northern goshawk (Superior National Forest Management Indicator Species). No northern goshawks were seen or heard during the surveys. Northern goshawks are widely distributed across the northern half of eastern North America and in many parts of western North America (Squires and Reynolds 1997), but are generally rare over most portions of their range. Population productivity and nesting densities are related to snowshoe hare and grouse populations. Goshawks in Minnesota favor forest stands with large canopy trees and a brushy understory (Phillips 1999). Territory sizes can range up to 6,000 acres, and logging and other human-related activities can discourage goshawks from using an area.



Barr Footer: ArcGIS 10.0, 2011-04-27 16:17:27.128000 File: I:\Client\PolyMet_Mining\Work_Orders\Land_Exchange_EIS\Maps\Reports\StuPaulus\Additional_Parcel_Wildlife_Wetland\Figure 3 Canada Lynx Critical Lynx Habitat.mxd User: arm2

USFS Parcel

Mine Site

Critical Habitat Designation for Canada Lynx

N

4,500 2,250 0 4,500

Feet

Figure 3
CANADA LYNX
CRITICAL HABITAT
PolyMet Mining, Inc.
Hoyt Lakes, Minnesota

Until a survey of the NorthMet Mine Site by ENSR in 2000, no goshawks were known to be nesting in Superior National Forest, and few active nests were historically reported in the Superior National Forest (Phillips 1999). Today, there are 23 known goshawk nest sites in Superior National Forest and 87 in the state of Minnesota (Catton 2007). The goshawk nest site at the Mine Site was abandoned in 2000, but a goshawk was seen on the nest in 2004 (Ryan 2005a).

Goshawk breeding habitat in Superior National Forest is typically older forest with sufficient open space between the bottom live tree branches and the understory for the birds to easily fly (Phillips 1999). Aspen are favored as nest trees. The goshawk pair observed on the NorthMet Mine site used a large, 14-inch dbh aspen tree as a nest, and the midstory canopy was mostly open in the vicinity of the nest. The surrounding forest stand was a mixture of deciduous and coniferous trees, and it was near a recent clear-cut stand and scrub-shrub wetland (ENSR 2000). Similar habitat observed on the Additional Parcel could provide suitable sites for nesting and foraging goshawks.

Boreal owl. No boreal owls were seen or heard during the surveys. Boreal owls nest in mature conifer and mixed deciduous/conifer forests in northern Canada and are irregular visitors to the northern U.S., including northern Minnesota, during winter. Boreal owls breed in the Superior National Forest, although they are very rare and few boreal owls are expected to occur in or near the study area (Forest Service 1999, Green 2003, Catton 2007).

Great gray owl. No great gray owls were seen or heard during the surveys. The great gray owl primarily nests at high elevations in the Sierra Nevada and Northern Rocky Mountains, and in pine and spruce forests of western and north central Canada. Great gray owls use stick nests built in tamarack and spruce trees. Great gray owls are very rare in the Superior National Forest (Green 2003). A great gray owl stick nest is approximately 23 miles northeast of the Additional Parcel, and an adult owl was observed brooding two young at the nest in 2007 (Catton 2008). The owls were observed near the nest site during winter 2007-2008, but the nest did not appear to be used during spring 2008.

Olive-sided flycatcher. No olive-sided flycatchers were observed during the surveys. The olive-sided flycatcher is common in coniferous woods of the western U.S. and western and central portions of northern Canada. Flycatchers nest in tamarack and other conifer trees. They are listed as rare migrants in the Superior National Forest (Green 2003).

Black-throated blue warbler. No black-throated blue warblers were seen or heard during the surveys. The black-throated blue warbler is common in conifer and mixed forests, primarily east of Minnesota. These warblers nest as far west as central Minnesota, but are listed as rare in the Superior National Forest (Green 2003).

Bay-breasted warbler. Bay-breasted warblers were not seen or heard during the surveys. The bay-breasted warbler is fairly common in the northern coniferous forests of Canada and has been reported nesting in northeastern Minnesota. It constructs nests in spruce, hemlock, and birch trees or in shrubs. The bay-breasted warbler is a very rare breeder and migrant in the Superior National Forest (Green 2003).

Connecticut warbler. The Connecticut warbler was not seen or heard during the surveys. The Connecticut warbler is an occasional migrant and breeding bird in the vicinity of the study area (Green 2003). This species prefers to nest in spruce-tamarack bogs and in poplar and aspen woods. These warblers winter in Central and South America.

5.5.4. State Species of Concern

American white pelican. No pelicans were seen in the study area during the surveys, although pelicans could use Birch Lake and other large adjacent water bodies that support fish. The American white pelican nests on isolated islands in lakes of inland North America, primarily in the Prairie Provinces of Canada. The pelican winters along the Pacific and Gulf coasts. Northeastern Minnesota is on the eastern range of the pelican's migratory route, and the bird is an occasional visitor to the Superior National Forest during migration (Green 2003).

Marbled godwit. No godwits were seen in the study area during the surveys. The marbled godwit is common in the western U.S. and Canada, nesting on prairies, meadows, and pastures. Godwits winter along the Pacific, Gulf, and Atlantic coasts. Godwits migrating between breeding areas and the Gulf and Atlantic coasts are occasionally seen in the Superior National Forest (Green 2003).

Yellow rail. No yellow rails were seen in the Additional Parcel. Yellow rails are a secretive, wetland species, breeding in the northern United States and Canada (MnDNR 2009a). Recent surveys have documented yellow rails in numerous counties in north-central and northwestern Minnesota, indicating that this species is somewhat more widespread in suitable habitat than previously believed. However, yellow rails have very narrow habitat requirements, and even slight changes in water levels in wetlands can render habitat unsuitable. Yellow rails breed in sedge- or grass-dominated wetlands, particularly wet prairie and rich fens with narrow-leaved sedges. The invasion of woody species into wetlands diminishes the habitat quality for yellow rails (Bookhout 1995). The bird is an casual visitor to the Superior National Forest during migration (Green 2003).

Bald eagle (Superior National Forest Management Indicator Species). No bald eagles were observed during the surveys. Bald eagles tend to be associated with larger lakes surrounded by mature forest, where eagles can perch while searching for fish, birds, and other prey items, and where large trees provide suitable structure for nests. Mud Lake is on the Additional Parcel, but lacks large trees that could be used by eagles as perches or for nests. No other large lakes, or large nesting trees, are on the Mine Site and it is unlikely that bald eagles would use the Additional Parcel or Mine Site. The nearest bald eagle nest is located 7.5 miles to the north on Birch Lake. Bald eagles tend to be associated with larger lakes surrounded by mature forest, where they can perch while searching for fish, birds, and other prey items, and where large trees provide suitable structure for nests. Lindquist (1990 *in* Forest Service 2005a) found that 85 percent of nest trees selected by bald eagles in the Superior National Forest were large diameter white pine. Roosting and foraging habitat for an eagle may include an area up to 1.5 miles from its nest (Forest Service 2005b).

Eastern pipistrelle. Bats were recorded at several sites on the Additional Parcel, but the species of bats echolocating at bat survey sites was not determined (Table 4). The eastern pipistrelle is the smallest of Minnesota's seven bat species (MnDNR 2009b). The eastern pipistrelle, which ranges over most of the eastern United States and southeastern Canada, was first discovered in Minnesota at St. Peter in 1934 (Swanson and Evans 1936). It has never been found in large numbers, and no maternity colony has yet been found in the state. Eastern pipistrelle hibernate in caves, mines, and tunnels. This species is often found hibernating in the same sites as large populations of other bats. Since its designation in Minnesota as a species of special concern in 1984, the eastern pipistrelle has been found to occur regularly, although in low numbers, in caves and mines in the southeastern part of the state. A single hibernating individual was found in 1990 and two were found in 2003 in northeastern Minnesota, several hundred miles north of the previously documented northernmost locality in the state (MnDNR 2009b).

Northern myotis. Bats were recorded at several sites on the Additional Parcel, but the species of bats echolocating at bat survey sites was not determined (Table 4). The northern myotis, also known as the northern long-eared myotis, is widely distributed in Canada and throughout the eastern half of the United States (MnDNR 2009c). It was designated a species of special concern in 1984. It can be found in the state in both summer and winter. A large hibernaculum was discovered in St. Louis County, and northern myotis have been found in most other caves and mines surveyed in Minnesota, although typically in low numbers. In summer, the species is often associated with forested habitats, especially around wetlands. Summer roosts are believed to include separate day and night roosts. Day roosts may be under loose tree bark, in buildings, or behind signs or shutters, and night roosts may include caves, mines, and quarry tunnels. This bat is frequently found hanging with or near groups of little brown bats.

Smokey shrew. No smokey shrews were found on the Additional Parcel. The smoky shrew is a mouse-sized animal with a pointy nose, small eyes, and a long tail (MnDNR 2009d). It is relatively large for a shrew. The presence of smoky shrews in extreme northeastern Minnesota was first documented in 1991 (Jannett and Oehlenschlager 1994) and subsequently further west in Lake County in 2003. Minnesota now represents the western edge of the species' distribution. Throughout its range, smoky shrews occur in deciduous and coniferous forests, bogs, and swamps. Moist habitats are important (McShea et al. 2003) and the preferred microhabitat includes a cool, damp forest floor with a thick litter layer, mossy covered rocks, and decaying debris (Owen 1984). In Minnesota, smoky shrews have been found in glacial boulder streams, second-growth black spruce, fir, paper birch forests (Jannett and Oehlenschlager 1994), talus slopes, and sphagnum bogs. They are active year-round.

Heather vole. No heather vole or their sign were seen in the study area during the surveys. The heather vole is extremely rare in northeastern Minnesota (MnDNR 2006a). The heather vole has limited distribution in coniferous forest habitats of northeastern Minnesota along the Canadian border. The project site is on the southern edge of its range, which lies primarily in Canada and the Rocky Mountains.

Least weasel. No weasels were seen during the survey. Least weasels are found in Alaska, throughout Canada, and into the northern U.S. They prefer meadows, fields, and brushy areas (MnDNR 2009e). The least weasel has a sporadic distribution in northern Minnesota. However, most records of this species in Minnesota come from the northwestern portion of the state. Once considered secure in the state, only one least weasel has been recorded in Minnesota since 1967 despite extensive survey work in suitable habitats.

Mountain lion. No mountain lions or their sign were seen in the study area during the surveys. The mountain lion is a habitat generalist that preys primarily on deer and prefers areas with little human disturbance. Mountain lion sightings are very rare in Minnesota, but based on probable mountain lion tracks found near the towns of Ely, Grand Marais, and Cloquet between 1997 and 2003; it is possible that mountain lions inhabit the study area, although no mountain lion have been seen in the study area (Ryan 2005b, Cougar Network 2007). There is currently no estimate of population size in Minnesota, and the mountain lion was removed from the Forest Service Region 9 Threatened, Endangered, and Sensitive Species list and the Regional Forester Sensitive Species list in 2000 because it is considered to be extirpated from Minnesota (Catton 2007).

5.5.5. Other Species of Concern

Several animal species were identified in the 1986 LRMP for the Superior National Forest as Superior National Forest Viability and Management Indicator Species (Forest Service 1986). In 2004, the plan was updated to include only three Viability/Management Indicator Species: bald eagle, gray wolf, and northern goshawk (Forest Service 2004). These three species are discussed above. In addition, this report includes information on those species listed in the 1986 LRMP.

Northern leopard frog. Northern leopard frogs were not seen or heard in the study area. The northern leopard frog is found in the Rocky Mountains, upper Midwest U.S., and southern Canada. It breeds in freshwater and brackish marshes. In the Superior National Forest, it uses grass, forb, and low wet meadows near streams, ponds, and open water. Northern leopard frogs were seen about 10 miles northeast of the Additional Parcel during surveys for the Franconia Minerals Corporation Maturi Parcel (ENSR 2007b).

Common loon. Loons are uncommon in the Superior National Forest (Green 2003), but were observed on Mud Lake. The common loon is a common breeder along lakes and rivers in northern Minnesota, west through the northern U.S, and throughout Canada. Loons winter along the Pacific, Atlantic, and Gulf coasts. Loons forage on small fish and crustaceans and tend to use deep water bodies where they can dive to escape predation.

Hooded merganser. Hooded mergansers were not seen during the survey and are uncommon in the Superior National Forest (Green 2003); hooded mergansers were seen about 6 miles northeast east of the Additional Parcel

during spring 2007. Hooded mergansers are found on wooded lakes and streams, primarily in the western U.S., and northern Minnesota and most of the eastern U.S. Hooded mergansers nest in tree cavities that are large enough to allow for entrance by the female.

Osprey. Ospreys were not seen during the survey. Ospreys were seen flying along the South Fork Kawishiwi River in late March 2007, about 10 miles northeast of the Additional Parcel. The osprey is a raptor that is found along the seacoast, lakes, and rivers. It ranges from Alaska, through western and southern Canada, into the northern U.S., and along U.S. and Canadian coastlines. Though uncommon in the Superior National Forest (Green 2003), ospreys can be found on large lakes and rivers where mature white and red pines are found within a quarter mile of fish-bearing streams and lakes.

Red-tailed hawk. A red-tailed hawk was observed during the survey, and a red-tailed hawk was seen at the Mine Site during the spring 2005 Mine Site survey. Red-tailed hawks are found throughout North America. They nest in woodlands and feed in open country on rabbits, rodents, and snakes. They are rare in the Superior National Forest (Green 2003).

Ruffed grouse. Ruffed grouse were seen during the survey, especially in mixed and deciduous forest habitats near the edges of wetlands. Drumming counts indicate that ruffed grouse populations fluctuate cyclically over 10-year intervals in Minnesota, and northeast Minnesota has greater ruffed grouse density than other portions of the state (MnDNR 2007b). Ruffed grouse favor young aspen/birch forests less than 25 years in age. Most forest stands on the project site are more than 25 years old.

Spruce grouse. Spruce grouse were not seen during the survey, but spruce grouse were seen on the Mine Site during winter 2000. Approximately half of the spruce grouse in Minnesota are found in the northeastern portion of the state. Spruce grouse primarily use mature jack pine and spruce forests, which were present but not common in the study area.

American woodcock. An American woodcock was seen during the surveys in a speckled alder shrubland. The American woodcock is a rare breeder in the Superior National Forest (Green 2003). Woodcock are mostly found in the eastern and southern U.S. American woodcock live in moist woods and thickets. Woodcock have also been seen on lands within 2 miles of the eastern boundary of the Adjacent Parcel (ENSR 2008a).

Killdeer. Killdeer were not seen during the survey, but were seen near on the Dunka Property, which is about 6 miles northeast of the Additional Parcel. Killdeer are common in meadows, pastures, fields, and dry uplands throughout North America. They are considered rare in the Superior National Forest (Green 2003) and would not likely use the study area to any great extent due to the lack of meadows, pastures, and fields they favor for nesting and foraging.

Belted kingfisher. The belted kingfisher is uncommon in the Superior National Forest (Green 2003), but was seen using open water habitat associated with streams and wetlands on the Additional Parcel. The belted kingfisher is the most common kingfisher in North America. It is commonly seen singly or in pairs along streams and ponds, often perching at the edge of the pond and then diving into the water for fish.

Pileated woodpecker. Pileated woodpecker and their sign were observed in the study area in older pole and mature mixed forests with snags and stumps. Pileated woodpeckers are found in the Pacific Northwest, throughout much of Canada, into Minnesota, and throughout much of the eastern U.S. Pileated woodpeckers favor large expanses of deciduous or mixed forests with mature trees and down woody material, snags, and large stumps.

American three-toed woodpecker. No American three-toed woodpeckers were observed during the surveys. American three-toed woodpeckers are very rare in the Superior National Forest (Green 2003) and prefer mature boreal forest habitats where snags are common.

Black-backed woodpecker. Black-backed woodpeckers were not observed during the Additional Parcel surveys, although they were seen near at the Mine Site during early spring 2000 (ENSR 2000). Black-backed woodpeckers are very rare in the Superior National Forest (Green 2003) and prefer upland and wetland spruce/fir mixed forests and conifer stands with scattered snags.

Brown creeper. The brown creeper is uncommon in the Superior National Forest (Green 2003) and was not seen on the study area during the survey. The brown creeper is a common woodland bird found throughout North American. Creepers favor both deciduous and coniferous mature forests, and have been seen near the Additional Parcel in mature red and white pine stands.

Golden-crowned kinglet. Golden-crowned kinglets were not seen during the survey. They are common in the Superior National Forest (Green 2003). Golden-crowned kinglets are found throughout North America, primarily in mature lowland coniferous forests.

Swainson's thrush. Swainson's thrushes were not observed during the surveys, although they were heard on the Mine Site during 2004 spring surveys. Swainson's thrushes summer in the spruce, cedar, and fir forests of Alaska, Canada, and the northern U.S. They are common breeders in the Superior National Forest (Green 2003).

Magnolia warbler. Magnolia warblers were observed on the study area during the surveys. Magnolia warblers breed in spruce, balsam fir, and hemlock forests of southern Canada and the northern U.S., and winter in Central America. Magnolia warblers are abundant residents of the Superior National Forest (Green 2003), selecting sparsely stocked spruce and fir sampling stands, and mature and immature pine stands.

Pine warbler. Pine warblers were not heard in the study area during the surveys. The pine warbler nests in open groves of mature pine and is found nesting primarily to the east of Minnesota in the northeastern and eastern U.S. and southern Canada. Pine warblers also select mature aspen trees near lowland conifer foraging habitat. They are uncommon migrants and breeders in the Superior National Forest (Green 2003).

Savannah sparrow. The savannah sparrow is listed as rare in the Superior National Forest (Green 2003) and was not seen during the surveys. Savannah sparrows were seen using grassland habitat about 4 miles west of the Additional Parcel during 2004 spring surveys. The savannah sparrow is common throughout North America and prefers large fields with short or sparse grass or weeds, although savannah sparrows also use sedge marshes and wet meadows.

Beaver. Beaver dams were found in several ponds and wetlands in the study area, with recent cuttings found at several locations. Several large open water bodies on the site were created by beaver dams, and beaver lodges were also seen on large water bodies. Beavers are found near aquatic habitats in the Superior National Forest, including rivers, streams, lakes, ponds, and marshes.

Porcupine. No porcupines were observed in the study area during the surveys. Porcupines are most often found in woody areas, but have adapted to a wide range of habitats, from tundra to desert chaparral and rangelands. They are found throughout Alaska, Canada, and the western U.S. In the Superior National Forest, porcupines are most closely identified with mature pine forests. They are considered scarce in the Boundary Waters Canoe Area Wilderness north and east of the study area.

White-tailed deer. White-tailed deer were common on the Additional Parcel and Mine Site. Deer tracks and droppings were commonly found in the study area in virtually all habitat types, and several deer were seen along roads within the site. Deer tracks were primarily observed in the western and southern portions of the Mine Site during 2000 and 2004 surveys, especially in recently logged areas and shrublands near mixed and conifer pole/young mature and mature forest habitats. Deer tracks appeared to be more common in the western portion of

the Additional Parcel during 2008 surveys. During winter, deer favor mature forest stands with large conifer trees or dense pole-size spruce and balsam fir stands for cover, and foraged in nearby wetlands and shrublands. Snow depth in areas with large conifer trees or dense stands of fir or spruce was usually less than in areas with deciduous or more widely spaced trees, and the snow often had a firm crust. Deer trails in forests often followed the edge of wetlands, about 20 feet from the wetland edge. An estimated 15 to 28 deer are found per square mile in the study area (MnDNR 2006a). Based on population surveys and hunter kill rates, deer population densities in Minnesota are lower in northeastern Minnesota than in central and southeastern Minnesota (MnDNR 2005, 2006b).

Moose. Moose sign (droppings, tracks, and evidence of browsing) were observed during surveys in areas with abundant shrubs and in speckled alder wetlands. Moose were more likely than deer to move through wetlands. Moose populations in the Superior National Forest have fluctuated considerably since the early 1900s and have shown their greatest increases during periods of intense timber harvest (Huempfner 1978a). A 2007 aerial survey by the MnDNR produced a population estimate of 6,460 moose in northeast Minnesota. The moose population in the region has been in decline since 2004, when the estimated population size was 13,137 (Lenarz 2007).

5.5. Wildlife Habitat Assessment

Habitat observed on the study area are similar to habitats found on the Mine Site and typical of habitats associated with much of the Iron Range. The Additional Parcel has little relief. The site consists of a mosaic of slightly elevated upland areas surrounded by wetlands, and slopes toward the east-northeast, in the direction of the Partridge River. Elevations range from 1,620 feet above mean sea level along the northwestern boundary to 1,540 feet above mean sea level near the southeastern boundary of the Additional Parcel along the Partridge River. Most (75 percent; 2,953 acres) of the parcel was wetland habitat, although upland habitat (25 percent; 944 acres) was an important component in the eastern and southwestern portions of the Additional Parcel (see maps 1 and 2). The One Hundred Mile Swamp is in the northern portion of the Additional Parcel. The Partridge River drains this swamp and flows through the eastern and southeastern portions of the Additional Parcel.

Forest vegetation dominates the study area (Table 5). Most forest stands contained trees that were 12-inch dbh or less. The site can be divided into three general areas. The eastern portion is dominated by the Partridge River. Large stands of lowland black spruce with scattered northern white cedar and tamarack are found in low areas associated with the river. Emergent and scrub-shrub speckled alder wetland is adjacent to most of the river. Stands of pole and young mature mixed deciduous and coniferous and coniferous forest dominated by jack pine, and smaller patches of pole deciduous forest, are found at higher elevations. Most trees are estimated to be 60 years or younger, although there are a few stands that are 90+ years old (Forest Service 2000).

Table 5
Habitat Classification and Acres in Additional Parcel

Code	Habitat Type	Total Number of Acres in Additional Parcel
P-0	Open water	9
P-1	Bog/palustrine emergent wetland	57
P-2	Palustrine scrub-shrub	243
P-3	Palustrine forest dead trees	75
P-4	Palustrine forest deciduous sapling (0-4 in dbh)	0
P-5	Palustrine forest deciduous pole/young mature (5-12 in dbh)	2
P-6	Palustrine forest deciduous mature (12+ in dbh)	0
P-7	Palustrine forest mixed sapling (0-4 in dbh)	0
P-8	Palustrine forest mixed pole/young mature (5-12 in dbh)	21
P-9	Palustrine forest mixed mature (12+ in dbh)	3
P-10	Palustrine forest conifer sapling (0-4 in dbh)	36
P-11	Palustrine forest conifer pole/young mature (5-12 in dbh)	2,371
P-12	Palustrine forest conifer mature (12+ in dbh)	136
U-1	Disturbed	7
U-2	Grassland/Forbs	35
U-3	Shrubland	2
U-4	Forest deciduous sapling (0-4 in dbh)	32
U-5	Forest deciduous pole/young mature (5-12 in dbh)	239
U-6	Forest deciduous mature (12+ in dbh)	25
U-7	Forest mixed sapling (0-4 in dbh)	0
U-8	Forest mixed pole/young mature (5-12 in dbh)	303
U-9	Forest mixed mature (12+ dbh)	129
U-10	Forest conifer sapling (0-4 in dbh)	0
U-11	Forest conifer pole/young mature (5-12 in dbh)	148
U-12	Forest mature (12+ in dbh)	26
Total		3,898

The northern portion of the Additional Parcel includes a portion of One Hundred Mile Swamp. The Partridge River drains the swamp. The swamp is comprised of some sapling, but mostly pole and mature black spruce, northern white cedar, and tamarack forests. Northern white cedar is prevalent in the northcentral portions of the northern area, while black spruce and tamarack are more common in the remaining areas. Scattered stands of speckled alder are associated with the swamp, as are bog and emergent wetlands, especially along the Partridge River. There are scattered "islands" of mature deciduous and mixed forest. Most of the forest stands are 90 years or older, with much of the remaining stands 70 to 90 years of age (Forest Service 2000).

The western portion of the parcel is dominated by lowland pole black spruce forest in its center, bordered by bog wetlands and wetlands dominated by speckled alder and red-osier dogwood. A large area dominated by cattail was associated with the transmission line right-of-way (ROW). Upland pole and young mature deciduous and mixed forest, with scattered stands of coniferous forest, surround the centrally-located black spruce forest. Stands of upland pole-sized deciduous forest that had been logged in the past 10 or so years were found bordering One Hundred Mile Swamp and near the transmission line ROW that bisects the area. Clearings comprised of grasses,

forbs, and shrubs were associated with the transmission line ROW, while scattered low areas, dominated by emergent and scrub-shrub wetland vegetation, were interspersed within upland forest habitats. Much of the spruce forest is over 60 years old, while young mature/mature upland forests are about 70 to 90 years of age (Forest Service 2000). Areas shown as U-5 on Map 1 were harvested in the past 15 years.

Upland areas appeared to be used more by wildlife than wetlands, especially by passerine birds and large mammals such as deer and moose, probably because uplands provided more cover and food items. However, it was common to see game trails going around wetlands, suggesting that deer and moose foraged in wetlands, but sought cover in nearby forests. Deer favor aspen and birch forests in northern Minnesota for foraging, while conifer-dominated stands are important in late winter (Mooty 1971, Wetzel 1972). Huempfner (1978b, c) suggested that mixed conifer-deciduous forest stands near recently disturbed areas containing large amounts of browse should be considered prime wintering areas for deer and moose. This appeared to be true on the Additional Parcel, as evidence of deer and moose use was greatest on or near logged areas, ROW, and wetlands/streams. Wetzel (1972) found that winter deer and moose beds were associated with conifer stands, primarily balsam fir, that provided areas with shallower snow depths and helped to decrease body heat loss.

3.3.5 Wetlands

Wetlands consisted predominantly of pole/young mature palustrine conifer forest (82.3 percent), palustrine scrub-shrub (8.2 percent), and mature palustrine conifer forest (4.6 percent). The largest wetland associated with the study area is One Hundred Mile Swamp. Yelp Creek flows east from One Hundred Mile Swamp and into the Partridge River. The Partridge River flows to the north of the Mine Site, and then through the eastern and southeastern portions of the Additional Parcel. Several impounded wetlands associated with past mine workings and detention ponds are found along the northern boundary of the Additional Parcel. Wetlands are best classified as precipitation-driven wetlands on low permeability soils (Hollands 1999). Several wetlands were enlarged due to damming of streams by beaver dams and other obstructions along the Partridge River helped to raise water levels that resulted in stands of dead and dying spruce along portions of the river. These areas show up as dark blue areas along the river on Maps 1 and 2.

Mud Lake is an open freshwater body found in One Hundred Mile Swamp. Yellow waterlily, pondweeds, wild celery, and coontail are important floating species. Common loon, mallard, lesser scaup, redhead, and mergansers were seen on the lake. River otter mounds and trails, and moose trails and scat were seen near the shoreline. Similar vegetation was seen in the Partridge River. Bat calls were greatest along the Partridge River.

Bogs were dominated by leatherleaf and bog Labrador-tea, with scattered young speckled alder, swamp birch, tamarack, and in some areas, cattail and sedges. Sphagnum moss often covered 80 to 90 percent of the bog. In the tree layer, there were scattered (<5 percent) black spruce (some dead) and smallish tamarack. Blueberry, small-fruited bog cranberry, and small willows were also common. Other species encountered include purple pitcher plant, marsh cinquefoil, cottongrass, round sundew, starflower, bunchberry, and Solomon's seal. Moose and deer scat and trails were seen in or near these wetlands.

There were several ponds/inland fresh meadow (emergent) wetlands on the property that were created by logging activities, road construction, or beaver dams, or were natural depressions or associated with the Partridge River. These wetlands were often dominated by bluejoint, sedges, and cattails (80 to 90 percent cover) and water depths were several feet in deeper areas. Spruce and other trees associated with the wetland were often killed when flooded due to the rising water level. Willows, tamarack, and speckled alder were often found along the border of these wetlands, but comprised less than 20 percent of the cover. Wild iris is common in some inland fresh meadow wetlands, as was horsetail, burreed, spikerush, and woolly sedge. Wildlife observed in these wetlands included spring peeper, painted turtle, wood duck, mallard, green-winged teal, red-breasted merganser, spotted sandpiper, great blue heron, red-winged blackbird, common grackle, blue jay, eastern phoebe, yellow-bellied flycatcher,

kingfisher, swamp sparrow, beaver, and otter. Bats were recorded using these wetlands. Deer and moose trails and scat were often seen in or near these wetlands.

Shrub swamp/scrub-shrub wetlands usually consisted of a dense (80 to 90 percent) cover of speckled alder, with alder often 6 feet or taller in height. These wetlands may also have scattered sapling balsam fir, jack pine, black spruce, willow, and the occasional American mountain-ash, but tree cover never exceeded 20 percent. Dominant low shrubs are bog Labrador-tea, leatherleaf, lowbush blueberry, prickly rose, raspberry, and red-osier dogwood. Mountain maple saplings were also present in a few wetlands. Herbaceous layer species included club and sphagnum mosses, woolly sedge, bluejoint, horsetail, wood fern, bunchberry, bluebead lily, and starflower, and creeping snowberry. American woodcock sought forage and shelter in alder stands; ruffed grouse and snowshoe hare also foraged on willow buds and twigs. Alder flycatcher, common yellowthroat, and yellow warbler were other common species that could be found in these habitats.

Wetlands forests were dominated by black spruce and northern white cedar, with scattered tamarack. The largest spruce were about 12 inches dbh, while quaking aspen up to 18 inches dbh were seen in mixed forest wetlands. Deciduous and mixed forest wetlands were uncommon; aspen was the dominant deciduous species found in these forests. Much of One Hundred Mile Swamp consisted of mature (80+years) black spruce and northern white cedar. Bog Labrador-tea, leatherleaf, and blueberry were prevalent, as was spruce regeneration. In some areas with dense stands of spruce, few shrubs were seen, but sphagnum and club mosses often covered nearly 100 percent of the ground. More open stands may have an understory comprised of shrubs and scattered sapling white cedar, tamarack, and black spruce, along with speckled alder and willow. Common species included bluebead lily, Solomon's seal, horsetail, starflower, and creeping snowberry. Some areas also had cottongrass and bog laurel. An area in the southern portion of One Hundred Mile Swamp had a large number of purple pitcher plants. Forest and shrub cover typically ranged from 40 to 70 percent, while moss and other understory vegetation covered from 60 to 90 percent of the ground. Forest dwelling wildlife included western chorus frog, downy, hairy, and pileated woodpeckers, blue jay, gray jay, black-capped chickadee, and red-breasted nuthatch. As noted above, deer and moose used these forests for cover, while red squirrel fed upon spruce cones. Pine marten scat and holes were also seen in these forests.

Snags and woody debris were rarely encountered in wetlands. Most snags were the result of dead and dying spruce in wetlands that had been flooded by beavers or man-made activities. These snags, however, were little used by cavity-nesting bird species, but did provide perches for birds. Pole and young mature wetland forests had downed woody material to 6 inches in diameter.

3.3.6 Uplands

Uplands were dominated by forests, including mixed pole/young mature forest (32.0 percent of all upland habitat), deciduous pole/young mature forest (25.3 percent), conifer pole/young mature forest (15.7 percent) and mixed mature forest (13.7 percent). Disturbed areas are associated with roads and landings on the Additional Parcel and Mine Site, waste rock storage areas immediately north of the parcel, and a rail route along the southern portion of the parcel. These areas had little vegetation, consisting of scattered forbs and grasses, including field hawkweed, yellow sweetclover, and bladder campion. Portions of the waste rock piles had sapling paper birch and jack pine, and scattered shrubs, including beaked hazel. However, the roads and the rail route provided important travel routes for several medium- to large-sized mammals, including red fox, gray wolf, deer, and moose. A depression with snake eggshell fragments was found along the Dunka Road.

Grassland/shrublands habitat was uncommon and was primarily associated with the transmission line ROW in the western portion and recent logging in the southeastern portion of the Exchange Area. These areas had scattered pole/young mature and sapling trees (quaking aspen, paper birch, jack pine, willow, and black spruce) and shrubs, including beaked hazel. Ground cover was comprised of blueberry, raspberry, bluejoint, wild strawberry, pearly everlasting, asters, prickly rose, and goldenrod, and covered up to 70 percent of the landscape. Wildlife seen in

these areas included red-tailed hawk, northern flicker, ruby-throated hummingbird, white-throated sparrow, and American goldfinch.

Deciduous forests are dominated by quaking aspen, although some forests contained a minor paper birch component. Percent cover in pole/young mature forests ranged from 50 to 80 percent, and usually had a dense (60 to 90 percent cover) midstory of sapling balsam fir and paper birch, beaked hazel, lowbush blueberry, bog Labrador-tea, lowbush honeysuckle, and prickly rose. The ground cover was usually dense (80 to 90 percent) and included bluejoint, clovers, thistles, bluebead lily, bunchberry, large-leaved aster, bracken fern, interrupted fern, twinflower, wild strawberry, and pink ladyslipper.

Mixed forests contained varying amounts of jack pine, black spruce, quaking aspen, paper birch, and balsam fir. Beaked hazel and sapling balsam fir trees were common in the midstory; some forests also had mountain maple. Wild sarsaparilla, bluebead lily, lowbush honeysuckle, large-leaved aster, bunchberry, and wood fern were common herbs. Mature forests usually had a sparse shrub layer, but the ground was nearly covered with vegetation, including wild sarsaparilla, bunchberry, raspberry, clintonia, bluebead lily, starflower, bedstraw, large-leaved aster, and rose twisted stalk. Forest cover ranged from 60 to 80 percent in pole and young/mature forests. The midstory ranged from 60 to 80 percent pole forests (although some forest patches only had a midstory cover of 20 to 30 percent), but only 40 to 60 percent in young mature/mature upland forests. The ground cover was also greater in pole (60 to 90 percent) than young mature/mature (50 to 80 percent) forests. Wildlife or their sign seen in mixed forests during the study included broad-winged hawk, ruffed grouse, blue jay, gray jay, black-capped chickadee, red-breasted nuthatch, American robin, ruby-crowned kinglet, black-and-white warbler, Magnolia warbler, golden warbler, small rodents, red squirrel, pine marten, black bear, deer, and moose.

Conifer forests were dominated by jack pine. Forest cover was 30 to 70 percent in more mature forests, but from 60 to 80 percent in pole/young mature forests. The shrub layer included beaked hazel, with scattered balsam fir, willow, paper birch, quaking aspen and mountain maple pole- and sapling-size trees. The herb layer included interrupted fern, clubmoss, bunchberry, wood ferns, and Solomon's seal. Jack pine forests with interspersed wet areas often had black spruce and tamarack in the overstory, and a shrub layer comprised of willow, prickly rose, blueberry, and bog Labrador-tea. Large-leaved aster, bluebead lily, and starflower were other common herbs. Wildlife seen in these forests included downy, hairy, and pileated woodpeckers, black-capped chickadee, red-breasted nuthatch, pine marten, red squirrel, black bear, white-tailed deer, and moose. Forests with mature trees, or a dense midstory of balsam fir, were used by deer and moose for winter cover.

Largest trees were up to approximately 18 to 20 inches dbh for both conifer and deciduous trees, although a 24 inch dbh red pine was found on the Additional Parcel. Balsam fir was common in the midstory of larger pole/young mature and mature forests.

Snags and large downed woody debris were uncommon in disturbed areas, shrublands, and sapling and pole/young mature forests. Large snags (up to 18 inches dbh), stumps, and woody debris were common in more mature forest stands. Snags and stumps were used by pileated, hairy, and downy woodpeckers, black-capped chickadees, red-breasted nuthatches, and other cavity-nesting birds. Several large holes were seen in snags, suggesting use by owls.

6.0 SURVEY RESULTS – WETLAND ASSESSMENT

6.1. Introduction

Field surveys were conducted on the Additional Parcel during August 18 to 22, and August 26 to 29, 2008. The weather was generally favorable during the study period. Temperatures ranged from the low 60s °F at in the morning to mid-80s °F during the afternoon. Light to moderate rain fell on and off during August 22, 28, and 29. The survey was conducted mostly on foot, although the Dunka Road and site exploration roads were used to access portions of the site. Generally, a circular route was taken on foot each day, with the intent of surveying a variety of habitat types each day.

6.2. Wetland Assessment

Wetlands consisted predominantly of coniferous bog forest (sapling, pole/young mature, and mature palustrine conifer forest, and palustrine dead forest trees; 88.7 percent), shrub swamp (palustrine scrub-shrub; 8.2 percent), inland fresh meadow, and inland shallow fresh marsh, and open bog (bog/palustrine emergent; 2.2 percent). The largest wetland associated with the study area is One Hundred Mile Swamp. The swamp is drained by Yelp Creek, which flows east into the Partridge River. The Partridge River flows to the north of the Mine Site, and then through the eastern and southeastern portions of the Additional Parcel. In addition, several impounded wetlands associated with past mine workings and detention ponds are found along the northern boundary of the Additional Parcel. Several wetlands were enlarged due to damming of streams by beaver dams and other obstructions along the Partridge River helped to raise water levels that resulted in stands of dead and dying spruce along portions of the river. These areas show up as dark blue areas along the river (see Maps 1 and 2).

The approximate boundaries of wetlands were determined based on aerial photographic mapping, topographic mapping, and field truthing, as discussed in Section 4.0. Approximate wetland boundaries and wetland types based on habitat mapping are shown on Maps 1 and 2.

Wetlands were classified using the classification system given in Table 2. However, this classification system can be adapted to classify wetlands based on other classification systems, including the Circular 39 Classification System (Shaw and Fredine 1956), the Cowardin System (Cowardin et al. 1979), and the Eggers and Reed (1997) wetland classification systems, as shown in Table 3.

6.3. Wetland Function and Values Assessment

During the field surveys, data were collected related to the functions and values of 40 representative wetland locations within the Additional Parcel. Some survey locations were for individual wetlands, while for larger wetland complexes several locations were surveyed. An attempt was made to survey a variety of wetland types across the entire Additional Parcel. Survey locations for the wetland functions and values assessment are shown in Figure 4.

Wetland functions and values were rated using the guidelines in the *Minnesota Routine Assessment Method for Evaluating Wetland Functions, Version 3.2* (MnRAM 3.2; Minnesota Board of Water and Soil Resources 2008). As discussed in Section 4.4, MnRAM considers numerous factors in determining the rating, or value, of a wetland. Sixty-three questions given in MnRAM 3.2 were addressed, and all factors were evaluated for each wetland surveyed. As discussed in Section 4.4, the Eggers and Reed (1997) classification system was used to classify wetland communities for the wetland function and value evaluation.

Table 6 summarizes the functional value ratings for the primary wetland functions rated by MnRAM 3.2. Wetlands were rated high for nearly all wetland functions. Vegetation diversity/integrity was high for all wetlands because they have been little altered by recent human contact and had a relatively constant supply of water. Wetland

vegetation needed no active management and provided quality habitat for fish and wildlife. The overall rating was based on the highest rated community for vegetation diversity and integrity, rather than the average or weighted value for community vegetation diversity and integrity. MnRAM 3.2 guidance states that this is the appropriate measure for assessing wetland quality for regulatory purposes (Minnesota Board of Water and Soil Resources 2008). Wetlands adjacent to Dunka Road were not rated, as Barr rated these wetlands during their 2007 (Barr 2007b) wetland assessment. In general, wetlands along Dunka Road were rated medium, primarily due to factors associated with wetland disturbance and visual characteristics.

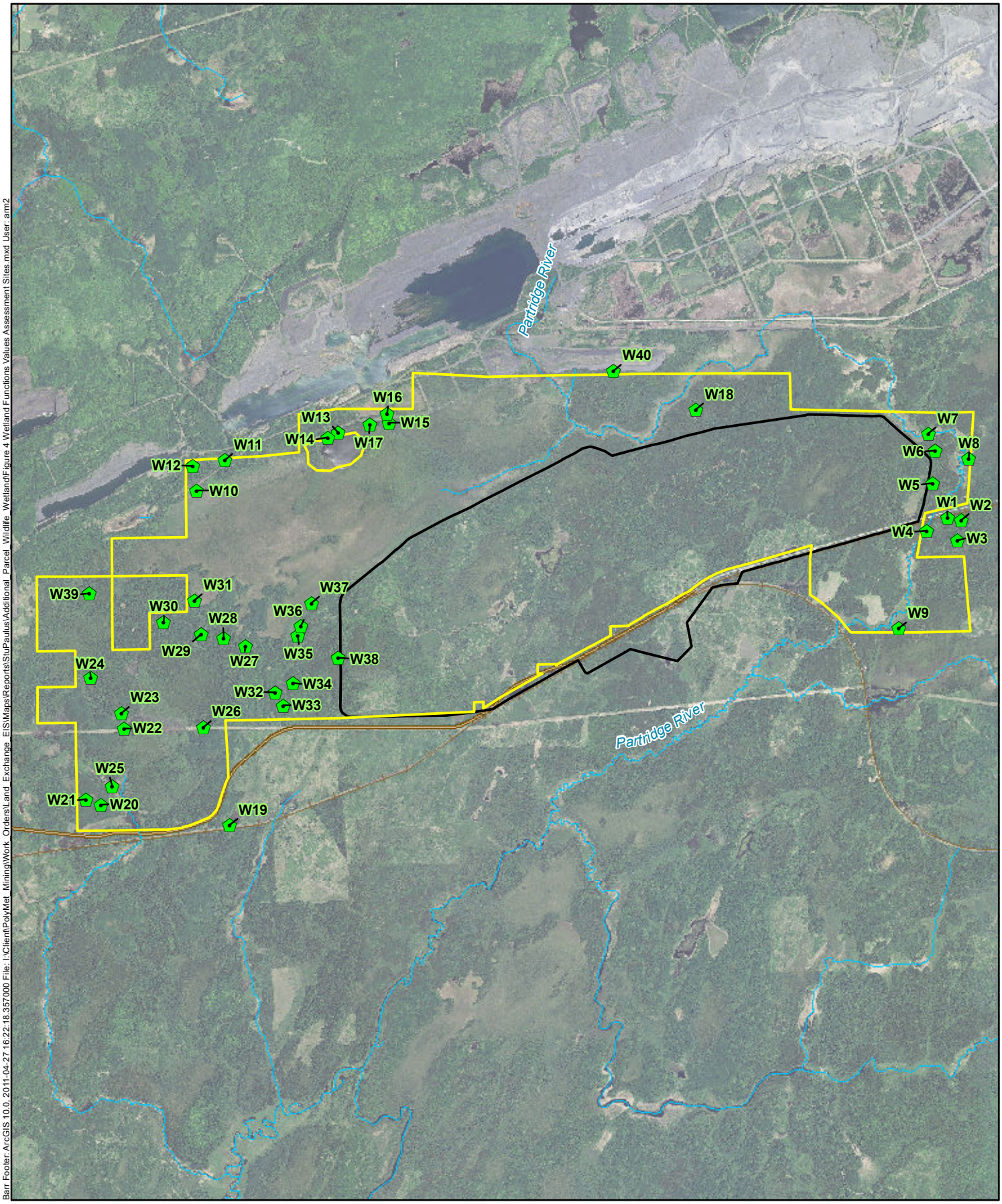
Vegetation diversity/integrity, hydrology, and water quality were rated high for most wetlands. Flood attenuation was rated medium for most wetlands. Although most wetlands hold water for extended periods of time, the contribution of each wetland to floodwater attenuation within the context of the larger subwatershed is moderate given that over half of the subwatershed is wetland and made up of many wetlands providing floodwater attenuation.

Wildlife habitat was rated high for most wetlands due to natural wildlife corridors and upland communities relatively untouched by recent human disturbances or impacts. Wildlife habitat was rated lower in areas where there were few plant communities.

Fish habitat was rated as not applicable for several wetlands. This indicates that the wetland does not have enough standing water throughout the year to support fish. Some other characteristics would include isolated wetlands that are not permanently flooded, or forested wetlands where the water table was below the surface for all or part of the year

Amphibian habitat was rated high for most wetlands. This indicated that the wetland stayed inundated long enough in most years to allow amphibians to successfully breed. Amphibian habitat was rated not applicable for some wetlands if conditions needed to support amphibian breeding did not occur at the site. Forested wetlands with little or no standing water during the breeding season would likely not support amphibians.

Aesthetics, recreation, education, and cultural was rated medium. All wetlands were aesthetically pleasing, and could be used for recreation, education, and cultural purposes. However, road access to the Additional Parcel is only available via a private mining road and is not easily accessible to the general public. Alternate access would be overland by foot from Forest Service roads to the south and east. Thus, the general public is generally not able to enjoy these wetland values.



Barr Footer: ArcGIS 10.0, 2011-04-27 16:22:18.357000 File: I:\Client\PolyMet_Mining\Work_Orders\Land_Exchange_EIS\Maps\Reports\StuPaulus\Additional_Parcel_Wildlife_Wetland\Figure 4 Wetland Functions Values Assessment Sites.mxd User: arm2

Wetland Functions and Values Assessment Site

USFS Parcel

Mine Site

N

4,500 2,250 0 4,500

Feet

Figure 4
WETLAND FUNCTIONS AND VALUES ASSESSMENT SITES
PolyMet Mining, Inc.
Hoyt Lakes, Minnesota

TABLE 6
Wetland Functional Value Assessment

Wetland Number	Primary Community Type	Functional Value Ratings								
		Vegetation Diversity / Integrity	Hydrology	Flood Attenuation	Downstream Water Quality	Wetland Water Quality	Wildlife Habitat	Fish Habitat	Amphibian Habitat	Aesthetics / Education / Cultural
1	Sedge Meadow	Medium	High	Medium	High	High	High	High	High	Medium
2	Coniferous Bog	High	High	Medium	High	High	High	N/A	N/A	Medium
3	Open Bog	High	High	Medium	High	High	High	High	High	Medium
4	Sedge Meadow	High	High	Medium	High	High	High	High	High	Medium
5	Coniferous Bog	High	High	Medium	High	High	High	N/A	N/A	Medium
6	Open Bog	High	High	Medium	High	High	High	N/A	High	Medium
7	Sedge Meadow	Medium	High	Medium	High	High	High	High	Medium	Medium
8	Alder Thicket	Medium	High	Medium	High	High	High	High	N/A	Medium
9	Coniferous Bog	High	High	Medium	High	High	High	High	N/A	Medium
10	Open Bog	High	High	Medium	High	High	High	High	High	Medium
11	Coniferous Bog	High	High	High	High	High	High	N/A	N/A	Medium
12	Alder Thicket	High	High	Medium	High	High	High	High	High	Medium
13	Alder Thicket	High	Medium	Medium	High	Medium	Medium	High	Low	Medium
14	Shallow Open Water	High	High	Medium	Medium	High	High	High	Low	Medium
15	Coniferous Bog	High	High	Medium	High	High	High	High	N/A	Medium
16	Shallow Marsh	High	High	Medium	High	Medium	High	Medium	High	Medium
17	Alder Thicket	High	High	Medium	High	High	High	N/A	High	Medium

TABLE 6 (Cont.)
Wetland Functional Value Assessment

Wetland Number	Primary Community Type	Functional Value Ratings								
		Vegetation Diversity / Integrity	Hydrology	Flood Attenuation	Downstream Water Quality	Wetland Water Quality	Wildlife Habitat	Fish Habitat	Amphibian Habitat	Aesthetics / Education / Cultural
18	Coniferous Bog	High	High	Medium	High	High	High	N/A	N/A	Medium
19	Shallow Marsh	High	High	Medium	High	Medium	High	High	High	Medium
20	Alder Thicket	High	High	Medium	High	High	High	N/A	High	Medium
21	Open Bog	High	High	Medium	High	High	High	N/A	High	Medium
22	Shallow Marsh	High	High	Medium	High	High	High	High	Medium	Medium
23	Coniferous Bog	High	High	Medium	High	High	High	N/A	N/A	Medium
24	Coniferous Bog	High	High	Medium	High	High	High	N/A	High	Medium
25	Sedge Meadow	High	High	Medium	High	High	High	High	Medium	Medium
26	Open Bog	High	High	Medium	High	High	High	N/A	N/A	Medium
27	Sedge Meadow	High	High	Medium	High	High	High	N/A	High	Medium
28	Coniferous Bog	High	High	Medium	High	High	High	N/A	N/A	Medium
29	Alder Thicket	High	High	Medium	High	High	High	N/A	High	Medium
30	Coniferous Bog	High	High	Medium	High	High	High	N/A	High	Medium
31	Sedge Meadow	High	High	Medium	High	High	High	High	High	Medium
32	Coniferous Bog	High	High	Medium	High	High	High	N/A	High	Medium

TABLE 6 (Cont.)
Wetland Functional Value Assessment

Wetland Number	Primary Community Type	Functional Value Ratings								
		Vegetation Diversity / Integrity	Hydrology	Flood Attenuation	Downstream Water Quality	Wetland Water Quality	Wildlife Habitat	Fish Habitat	Amphibian Habitat	Aesthetics / Education / Cultural
33	Coniferous Bog	High	High	Medium	High	High	High	N/A	High	Medium
34	Alder Thicket	High	High	Medium	High	High	High	N/A	High	Medium
35	Alder Thicket	High	High	Medium	High	High	High	N/A	High	Medium
36	Coniferous Bog	High	High	Medium	High	High	High	N/A	N/A	Medium
37	Coniferous Bog	High	High	Medium	High	High	High	N/A	N/A	Medium
38	Coniferous Bog	High	High	Medium	High	High	High	N/A	N/A	Medium
39	Alder Thicket	High	High	Medium	High	High	High	N/A	High	Medium
40	Coniferous Bog	High	High	Medium	Medium	High	High	N/A	High	Medium

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APPENDIX A

Common and Scientific Names of Plants and Animals Given in the Report

Common Name	Scientific Name
Plants	
Balsam Fir	*Abies balsamea*
Beaked Hazel	*Corylus cornuta*
Bedstraw	*Galium* sp.
Black Ash	*Fraxinus nigra*
Black Spruce	*Picea mariana*
Bladder Campion	*Lychnis alba*
Bluebead	*Clintonia borealis*
Bluejoint	*Calamagrostis canadensis*
Bog Laurel	*Kalmia polifolia*
Bog Labrador-tea	*Ledum groenlandicum*
Bracken Fern	*Pteridium aquilinum*
Bulrush	*Scirpus* spp.
Bunchberry	*Cornus canadensis*
Burreed	*Sparganium* spp.
Cattail	*Typha* spp.
Clintonia	*Clintonia borealis*
Club Moss	*Lycopodium* spp.
Coontail	*Ceratophyllum demersum*
Cottongrass	*Eriophorum* sp.
Creeping Snowberry	*Gaultheria hispidula*
Duckweed	*Lemma minor*
Eastern Cottonwood	*Populus deltoides*
Eastern White Pine	*Pinus strobus*
Field Hawkweed	*Hieracium pretense*
Floating Marsh Marigold	*Caltha natans*
Goldenrod	*Solidago* spp.
Goldthread	*Coptis trifolia*
Gooseberry	*Ribes* sp.
Horsetail	*Equisetum* spp.
Interrupted Fern	*Osmunda claytoniana*
Jack Pine	*Pinus banksiana*
Large-leaved Aster	*Aster macrophyllus*
Least Moonwort	*Botrychium simplex*
Leatherleaf	*Chamaedaphne calyculata*
Lowbush Blueberry	*Vaccinium angustifolium*

APPENDIX A (Cont.)

Common and Scientific Names of Plants and Animals Given in the Report

Common Name	Scientific Name
Plants (Cont.)	
Marsh Cinquefoil	*Potentilla palustris*
Matricary Grapefern	*Bortychium matricariifolium*
Michigan Moonwort	*Botrychium michiganense*
Mountain Maple	*Acer spicatum*
Northern Bush Honeysuckle	*Diervilla lonicera*
Northern White Cedar	*Thuja occidentalis*
Pale Moonwort	*Botrychium pallidum*
Paper Birch	*Betula papyrifera*
Pearly Everlasting	*Anaphalis margaritacea*
Pink Ladyslipper	*Cypripedium acaule*
Pondweed	*Potamogeton* spp.
Prairie Moonwort	*Botrychium campestre*
Prickly Rose	*Rosa acicularis*
Purple Pitcherplant	*Sarracenia purpurea*
Pussywillow	*Salix discolor*
Quaking Aspen	*Populus tremuloides*
Raspberry	*Rubus* spp.
Red Maple	*Acer rubrum*
Red-osier Dogwood	*Cornus stolinifera*
Red Pine	*Pinus resinosa*
Rose Twisted Stalk	*Streptopus roseus*
Round Sundew	*Drosera rotundifolia*
Sawtooth Sunflower	*Helianthus grosseserratus*
Sedge	*Carex* spp.
Shining Clubmoss	*Lycopodium lucidulum*
Small-fruited Bog Cranberry	*Vaccinium oxycoccus*
Sphagnum Moss	*Sphagnum* spp.
Speckled Alder	*Alnus rugosa*
Spikerush	*Eleocharis* spp.
Starflower	*Trientalis borealis*
Solomon's Seal	*Smilacina stellata*
Swamp Birch	*Betula pumila*
Swamp Dewberry	*Rubus hispidus*
Sweet Coltsfoot	*Petasites palmatus*
Tamarack	*Larix laricina*
Twinflower	*Linnaea borealis*

APPENDIX A (Cont.)

Common and Scientific Names of Plants and Animals Given in the Report

Common Name	Scientific Name
Plants (Cont.)	
White Pine	*Pinus strobus*
Wild Celery	*Valissineria americana*
Wild Iris	*Iris versicolor*
Wild Rice	*Zizania palustris*
Wild Sasparilla	*Aralia nudicaulis*
Wild Strawberry	*Fragaria virginiana*
Willow	*Salix* spp.
Woolly Sedge	*Carex pellita*
Wood Fern	*Dryopteris* spp.
Yellow Water Lily	*Nelumbo lutea*
Yellow Sweetclover	*Melilotus officinalis*
Amphibians and Reptiles	
Garter Snake	*Thamnophis* sp.
Northern Leopard Frog	*Rana pipiens*
Painted Turtle	*Chrysemys picta*
Spring Peeper	*Pseudacris crucier*
Western Chorus Frog	*Pseudacris triseriata*
Wood Turtle	*Glyptemys insculpta*
Birds	
Alder Flycatcher	*Empidonax alnorum*
American Goldfinch	*Carduelis tristis*
American Robin	*Turdus americanus*
American Three-toed Woodpecker	*Picoides dorsalis*
American White Pelican	*Pelecanus erythrorhynchos*
American Woodcock	*Scolopax minor*
Bald Eagle	*Haliaeetus leucocephalus*
Barred Owl	*Strix varia*
Bay-breasted Warbler	*Dendroica castanea*
Belted Kingfisher	*Megaceryle alcyon*
Black-and-white Warbler	*Mniotilta varia*
Black-backed Woodpecker	*Picoides arcticus*
Black-capped Chickadee	*Poecile atricapillus*
Black Tern	*Chlidonias niger*
Black-throated Blue Warbler	*Dendroica caerulescens*
Blue Jay	*Cyanocitta cristata*
Blue-winged Teal	*Anas discors*

APPENDIX A (Cont.)

Common and Scientific Names of Plants and Animals Given in the Report

Common Name	Scientific Name
Birds (Cont.)	
Boreal Owl	*Aegolius funereus*
Broad-winged Hawk	*Buteo platypterus*
Brown Creeper	*Certhia americana*
Canada Goose	*Branta canadensis*
Common Grackle	*Quiscalus quiscula*
Common Loon	*Gavia immer*
Common Merganser	*Mergus merganser*
Common Raven	*Corvus corax*
Common Redpoll	*Carduelis flammea*
Common Tern	*Sterna hirundo*
Common Yellowthroat	*Geothlypis trichas*
Connecticut Warbler	*Oporornis agilis*
Downy Woodpecker	*Picoides pubescens*
Eastern Phoebe	*Sayornis phoebe*
Eastern Wood-pewee	*Contopus virens*
Golden-crowned Kinglet	*Regulus satrapa*
Golden-winged Warbler	*Vermivora chrysoptera*
Gray Jay	*Perisoreus canadensis*
Great Blue Heron	*Ardea herodias*
Great Gray Owl	*Strix nebulosa*
Green-winged Teal	*Anas crecca*
Hairy Woodpecker	*Picoides villosus*
Hooded Merganser	*Lophodytes cucullatus*
Horned Grebe	*Podiceps auritus*
Killdeer	*Charadrius vociferus*
Lesser Scaup	*Aythya affinis*
Magnolia Warbler	*Dendroica magnolia*
Mallard	*Anas platyrhynchos*
Marbled Godwit	*Limos fedoa*
Northern Flicker	*Colaptes auratus*
Northern Goshawk	*Accipiter gentilis*
Northern Saw-whet Owl	*Aegolius acadicus*
Olive-sided Flycatcher	*Contopus cooperi*
Osprey	*Pandion haliaetus*
Pileated Woodpecker	*Dryocopus pileatus*
Pine Grosbeak	*Pinicola enucleator*

APPENDIX A (Cont.)

Common and Scientific Names of Plants and Animals Given in the Report

Common Name	Scientific Name
Birds (Cont.)	
Pine Warbler	*Dendroica pinus*
Red-breasted Merganser	*Megus serrator*
Red-breasted Nuthatch	*Sitta canadensis*
Redhead	*Aythya americana*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Sturnella agelaius*
Ruby-crowned Kinglet	*Regulus calendula*
Ruby-throated Hummingbird	*Archilochus colubris*
Ruffed Grouse	*Bonasa umbellus*
Savannah Sparrow	*Passerculus sandwichensis*
Snow Bunting	*Plectrophenax nivalis*
Spotted Sandpiper	*Actitis macularius*
Spruce Grouse	*Falcipennis canadensis*
Swainson's Thrush	*Catharus ustulatus*
Swamp Sparrow	*Melospiza georgiana*
Trumpeter Swan	*Cygnus buccinator*
Turkey Vulture	*Cathartes aura*
White-throated Sparrow	*Zonotrichia albicollis*
Wilson's Phalarope	*Phalaropus tricolor*
Winter Wren	*Troglodytes troglodytes*
Wood Duck	*Aix sponsa*
Yellow-bellied Flycatcher	*Empidonax flaviventris*
Yellow Rail	*Coturnicops noveboracensis*
Yellow-rumped Warbler	*Dendroica coronata*
Yellow Warbler	*Dendroica petechia*
Mammals	
Beaver	*Castor canadensis*
Big Brown Bat	*Eptesicus fuscus*
Black Bear	*Ursus americanus*
Bobcat	*Lynx rufus*
Canada Lynx	*Lynx canadensis*
Eastern Pipistrelle	*Pipistrellus subflavus*
Eastern Red Bat	*Lasiurus borealis*
Gray Wolf	*Canis lupus*
Heather Vole	*Phenacomys ungava*
Hoary Bat	*Lasiurus cinereus*

APPENDIX A (Cont.)

Common and Scientific Names of Plants and Animals Given in the Report

Common Name	Scientific Name
Mammals	
Least Weasel	*Mustela nivalis*
Little Brown Myotis	*Myotis lucifugus*
Moose	*Alces alces*
Mountain Lion	*Puma concolor*
Northern Myotis	*Myotis septentrionalis*
Pine Marten	*Martes americana*
Porcupine	*Erethizon dorsatum*
Red Fox	*Vulpes vulpes*
Red Squirrel	*Tamiasciurus hudsonicus*
River Otter	*Lutra canadensis*
Silver-haired Bat	*Lasionycteris noctivagans*
Smokey Shrew	*Sorex fumeus*
Snowshoe Hare	*Lepus canadensis*
White-tailed Deer	*Odocoileus virginianus*

APPENDIX B
Agency and Organization Contacts (2000-2008 Surveys)

Linda Aylsworth	Information Resources Coordinator, International Wolf Center, 1396 Highway 169, Ely 55731 (218-365-4695)
Susan Catton	Wildlife Biologist, Superior National Forest, 1393 Highway 169, Ely, MN 55731 (218) 365-7572
David Dahl	Geology/GIS Specialist, Minnesota Department of Natural Resources, 1525 Third Avenue East, Hibbing, 55746 (218-262-6767)
Jeff Hines	Wildlife Biologist, Minnesota Department of Natural Resources, 1201 East Highway 2, Grand Rapids 55744 (218-327-4432)
David Holmbeck	Fish and Wildlife Environmental Assessment Biologist, Minnesota Department of Natural Resources, 1201 East Highway 2, Grand Rapids 55744 (218-327-4432)
Lisa Joyal	Endangered Species Environmental Review Coordinator. Minnesota Department of Natural Resources Division of Ecological Resources, St. Paul 55155 (651-259-5109)
Kim Lappako	Mining Reclamation, Minnesota Department of Natural Resources, 1525 Third Avenue East, Hibbing, 55746 (218-262-6767)
Jeff Lightfoot	Regional Wildlife Biologist, Minnesota Department of Natural Resources, 1201 East Highway 2, Grand Rapids 55744 (218-327-4413)
Ron Moen	Center for Water and Environment Natural Resources Research Institute, University of Minnesota Duluth, 55811 (218-720-4372)
Yvette Monstad	Division of Ecological Services, Minnesota Department of Natural Resources, 500 Lafayette Rd., Box 25, St. Paul, MN 55155
Bill Route	Wildlife Biologist, International Wolf Center, 1396 Highway 169, Ely 55731 (218-365-4695)
Tony Pekovitch	Environmental Specialist, Minnesota Power, 30 West Superior Street, Duluth, MN 55802
Sherry Phillips	Ecologist, Forest Service Laurentian Ranger District, 318 Forestry Drive, Aurora, MN 55705 (218-229-8800)
Daniel Ryan	Wildlife Biologist, Forest Service Laurentian Ranger District, 318 Forestry Drive, Aurora, MN 55705 (218-229-8809)
David Thom	District Ranger, Forest Service Laurentian Ranger District, 318 Forestry Drive, Aurora, MN 55705 (218-229-8800)
Fred Thunhorst	Regional Wildlife Manager, Minnesota Department of Natural Resources, Ely (218-365-7280)

AECOM

APPENDIX C
Superior National Forest
Regional Forester Sensitive Species

Tuesday, October 5, 2006

Scientific Name	Common Name
MAMMALS	
Phenacomys intermedius	Heather Vole
BIRDS	
Accipiter gentilis	Northern Goshawk
Aegolius funereus	Boreal Owl
Ammodramus leconteii	Le Conte's Sparrow
Contopus cooperi	Olive-sided Flycatcher
Coturnicops noveboracensis	Yellow Rail
Dendroica caerulescens	Black-throated Blue Warbler
Dendroica castanea	Bay-breasted Warbler
Falco peregrinus anatum	American Peregrine Falcon
Oporornis agilis	Connecticut Warbler
Picoides tridactylus	Three-toed Woodpecker
Strix nebulosa	Great Gray Owl
Tympanuchus phasianellus	Sharp-tailed Grouse
REPTILES	
Clemmys insculpta (Glyptemys)	Wood Turtle
FISH	
Acipenser fulvescens	Lake Sturgeon
Coregonus zenithicus	Cisco or Lake Herring
Ichthyomyzon fossor	Northern Brook Lamprey
MOLLUSKS	
Lasmigona compressa	Creek Heelsplitter
Ligumia recta	Black Sandshell

APPENDIX D

WETLAND ASSESSMENT DATA FORMS

		Wetland ID 1 UTM Coordinates 580927 5274544	Wetland ID 2 UTM Coordinates 581071 5274515	Wetland ID 3 UTM Coordinates 581032 5274301	Wetland ID 4 UTM Coordinates 581057 5274023
	Date	**19-Aug-08**	**19-Aug-08**	**19-Aug-08**	**19- Aug-08**
	Special Features (from list, p.2--enter letter/s)	-	-	-	-
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	13A Sedge Meadow	4A Coniferous Bog	7A Open Bog	13A Sedge Meadow
	Community Proportion (% of total)	57%	57%	42%	50%
	Dominant Vegetation / Cover Class	SPRUCE/2	LARCH/3	SPRUCE/3	JOE-PYE WEED/2
		ALDER/2	SPRUCE/4	ALDER/4	SEDGE/6
		WILLOW/3	ALDER/4	LARCH/2	
		SEDGE/5	LABRADOR TEA/4	BOG BIRCH/4	
		WOOLLY SEDGE/3	MOSS/4	DOGWOOD/2	
		GOLDENROD/2	CLUBMOSS/2	LEATHERLEAF/2	
		CATTAIL/3	CLINTONIA/2	LABRADOR TEA/4	
		LABRADOR TEA/2			
	Invasive/exotic Vegetation / Cover Class	NONE	NONE	NONE	NONE
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	4A Coniferous Bog	- -	4A Coniferous Bog	8A Alder Thicket
	Community Proportion (% of total)	33%		66%	42%
	Dominant Vegetation / Cover Class	SPRUCE/4		SPRUCE/4	ALDER/6
		LARCH/5		LARCH/2	SPRUCE/2
		ALDER/5		ALDER/4	LARCH/2
		WILLOW/3		BOG BIRCH/4	BLUEBERRY/4
		MOSS/3		LABRADOR TEA/2	GOLDENROD/2
		LABRADOR TEA/2		LEATHERLEAF/4	HORSETAIL/2
		JACK PINE/1		SEDGE/2	MOSS/5
				MOSS/5	LABRADOR TEA/2
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		0.45 Medium	0.57 Medium	0.54 High	0.46 Medium
#4	Listed, rare, special plant species?	n N	N	N	N
#5	**Rare community or habitat?**	**n N**	**N**	**N**	**N**
#6	Pre-European-settlement conditions?	n N	N	N	N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

WTL1

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.45									
		TOTAL VEG Rating	0.45	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	I	Depressional/Isolated									
	8	Water depth (inches)	6										
		Water depth (% inundation)	100%										
	9	Local watershed/immedita drainage (acres)	2										
Digital worksheet, section I	10	Existing wetland size	1										
	11	SOILS: Up/Wetland (survey classification + site)											
	12	Outlet characteristics for flood retention	A	1									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	95%	H	1								
	17	Emerg. veg. flood resistance	B	0.5									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	400	H	WQ	1	H	1					
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle		0	1	**0.05**							
		adjacent area slope: % Moderate	10%	0.05									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)		Enter a percentage									
	31	Wetland in-water width (in feet, average)		Enter a percentage									
	32	Emergent vegetation erosion resistance		Enter valid choice									
	33	Shoreline erosion potential		Enter valid cho									
	34	Bank protection/upslope veg.		Enter valid choice									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	3	H	1				0				
	39	Wetland detritus	A	1									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	A	1									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	C	0.1									
	45	Wildlife species (list)											
	46	Fish habitat quality	C	0.1									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	B	0.5									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatically weighted average. To use the highest ra Community rating, please manually over value (shown to the right) into the field at

Enter data starting here. Yellow boxe are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1	
59	*GW - Subwatershed land use*	D	R or D	1	
60	*GW - Wetland size and soil group*	D	R or D	1	
61	GW - Wetland hydroperiod	D	R or D	1	
62	GW - Inlet/Outlet configuration	R	R or D	0.1	
63	GW - Surrounding upland topographic relief	D	R or D	1	
64	Restoration potential w/o flooding	Y	Y or N	5.1	
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice	
66A	*Existing wetland size (acres) [from #10]*	1	__ acres		
66B	Total wetland restoration size (acres)		__ acres	0.1	
66C	(Calculated) Potential New Wetland Area [B-A]	-1	__ acres	% effectively drained: ####	
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1	value: ####
68	Likelihood of restoration success		a b c	Enter valid choice	
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling		
70	Potential wetland type (Circ. 39)	2	1, 2, 3, 4, 5, 6, 7, 8		
71	Wetland sensitivity to stormwater		E a b c		
72	Additional stormwater treatment needs		a b c		

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.45	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.65	Med	
Water Quality--Downstream		0.79	High	
Water Quality--Wetland		0.80	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.88	0.88	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.38	0.38	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL2

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.66									
		TOTAL VEG Rating	0.66	High									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	S	FT									
	8	Water depth (inches)	6										
		Water depth (% inundation)	80%										
	9	Local watershed/immedita drainage (acres)	5										
	10	Existing wetland size	1										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1		0.1							
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	80%	H		1							
	17	Emerg. veg. flood resistance	A	1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1		1							
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	400	H		WQ	1	H		1			
	24	Adjacent Area Management: % Full	100%	1		1	**1**						
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**						
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle		0		1	**0.025**						
		adjacent area slope: % Moderate	5%	0.025									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	B	0.5									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)		Enter a percentage									
	31	Wetland in-water width (in feet, average)		Enter a percentage									
	32	Emergent vegetation erosion resistance		Enter valid choice									
	33	Shoreline erosion potential		Enter valid cho									
	34	Bank protection/upslope veg.		Enter valid choice									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	3	H		1					0		
	39	Wetland detritus	N/A	N/A									
	40	Wetland interspersion on landscape	A	1		1							
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	I	0									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	C	0.1									
	45	Wildlife species (list)											
	46	Fish habitat quality	N/A	N/A									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	B	0.5									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical weighted average. To use the highest Community rating, please manually ove value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	R	R or D	0.1
64	Restoration potential w/o flooding	Y	Y or N	5.1
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	1	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-1	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)	8	1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.66	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.71	High	
Water Quality--Wetland		0.86	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.92	0.92	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.38	0.38	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL3

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.66									
		TOTAL VEG Rating	0.66	High									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	FT										
	8	Water depth (inches)	6										
		Water depth (% inundation)											
	9	Local watershed/immedita drainage (acres)	100										
	10	Existing wetland size	20										
Digital worksheet, section I	11	SOILS: Up/Wetland (survey classification + site)											
	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1		0.1							
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	95%	H		1							
	17	Emerg. veg. flood resistance	A	1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1		1							
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H		1			
	24	Adjacent Area Management: % Full	100%	1		1	**1**						
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**						
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle		0		1	**0.025**						
		adjacent area slope: % Moderate	5%	0.025									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	B	0.5									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)		Enter a percentage									
	31	Wetland in-water width (in feet, average)		Enter a percentage									
	32	Emergent vegetation erosion resistance		Enter valid choice									
	33	Shoreline erosion potential		Enter valid cho									
	34	Bank protection/upslope veg.		Enter valid choice									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	3	H		1					0		
	39	Wetland detritus	N/A	N/A									
	40	Wetland interspersion on landscape	A	1		1							
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	A	1									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	C	0.1									
	45	Wildlife species (list)											
	46	Fish habitat quality	B	0.5									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	R	R or D	0.1
64	Restoration potential w/o flooding	Y	Y or N	5.1
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	20	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-20	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)	8	1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.66	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.71	High	
Water Quality--Wetland		0.86	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.92	0.92	High	
Maintenance of Characteristic Fish Habitat	0.83	0.83	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL4

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.50									
		TOTAL VEG Rating	0.5	Medium									
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	R										
	8	Water depth (inches)	6										
		Water depth (% inundation)	100%										
	9	Local watershed/immedita drainage (acres)	40										
	10	Existing wetland size	10										
	11	SOILS: Up/Wetland (survey classification + site)											
	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	95%	H	1								
	17	Emerg. veg. flood resistance	A	1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	C	0.1									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H		1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare	0%	0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle		0	1	**0.05**							
		adjacent area slope: % Moderate	10%	0.05									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	Y	Y									
	30	Rooted shoreline vegetation (%cover)	90%	1									
	31	Wetland in-water width (in feet, average)	10	0.5									
	32	Emergent vegetation erosion resistance	A	1									
	33	Shoreline erosion potential	C	0.1	1								
	34	Bank protection/upslope veg.	C	0.1									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	2	M	0.5					0			
	39	Wetland detritus	A	1									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	A	1									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	C	0.1									
	45	Wildlife species (list)											
	46	Fish habitat quality	A	1									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	R	R or D	0.1	
59	*GW - Subwatershed land use*	D	R or D	1	
60	*GW - Wetland size and soil group*	D	R or D	1	
61	GW - Wetland hydroperiod	D	R or D	1	
62	GW - Inlet/Outlet configuration	D	R or D	1	
63	GW - Surrounding upland topographic relief	R	R or D	0.1	
64	Restoration potential w/o flooding	Y	Y or N	4.2	
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice	
66A	*Existing wetland size (acres) [from #10]*	10	__ acres		
66B	Total wetland restoration size (acres)		__ acres	0.1	
66C	(Calculated) Potential New Wetland Area [B-A]	-10	__ acres	% effectively drained: ####	
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1	value: ####
68	Likelihood of restoration success		a b c	Enter valid choice	
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling		
70	Potential wetland type (Circ. 39)	2	1, 2, 3, 4, 5, 6, 7, 8		
71	Wetland sensitivity to stormwater		E a b c		
72	Additional stormwater treatment needs		a b c		

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.50	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.53	Med	
Water Quality--Downstream		0.80	High	
Water Quality--Wetland		0.81	High	
Shoreline Protection		0.54	Med	
Characteristic Wildlife Habitat Structure	0.83	0.83	High	
Maintenance of Characteristic Fish Habitat	0.94	0.94	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

		Wetland ID 5 UTM Coordinates 580765 5274911	Wetland ID 6 UTM Coordinates 580793 5275255	Wetland name ID 7 UTM Coordinates 580720 5275440	Wetland ID 8 UTM Coordinates 581150 5275175
	Date	**20-Aug-08**	**20-Aug-08**	**20-Aug-08**	**20-Aug-08**
	Special Features (from list, p.2--enter letter/s)	-	-	-	-
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	4A Coniferous Bog	7A Open Bog	13A Sedge Meadow	8A Alder Thicket
	Community Proportion (% of total)	38%	38%	33%	29%
	Dominant Vegetation / Cover Class	SPRUCE/4	SPRUCE/2	WILLOW/2	ALDER/4
		LARCH/2	JACK PINE/2	ALDER/2	SEDGE/3
		ASPEN/2	ALDER/2	SHRUB SPP./3	LABRADOR TEA/3
		WILLOW/2	WILLOW/4	WOOLLYSEDGE/2	WOOLY SEDGE/2
		ALDER/5	LABRADOR TEA/2	SEDGE/4	GOLDENROD/1
		LABRADOR TEA/3	WOOLLY SEDGE/2	BLUEJOINT/4	BLUEJOINT/5
		LEATHERLEAF/3	MOSS/4		BLACK SPRUCE/1
		MOSS/6	BLUEJOINT/5		
	Invasive/exotic Vegetation / Cover Class	NONE	NONE	NONE	NONE
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	4A Coniferous Bog	- -	4A Coniferous Bog
	Community Proportion (% of total)		50%		66%
	Dominant Vegetation / Cover Class		SPRUCE/4		LARCH/4
			WILLOW/2		ALDER/2
			ASPEN/1		SPRUCE/2
			ALDER/2		LABRADOR TEA/4
			WOOLLYSEDGE/2		MOSS/6
			LABRADOR TEA/4		LEATHERLEAF/4
			MOSS/6		
			BLUEJOINT/4		
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		0.38 Medium	0.44 Medium	0.33 Medium	0.48 Medium
#4	Listed, rare, special plant species?	n N	N N	N N	N N
#5	**Rare community or habitat?**	**n N**	**N N**	**N N**	**N N**
#6	Pre-European-settlement conditions?	n N	N N	N N	N N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

WTL5

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.38									
		TOTAL VEG Rating	0.38	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	FT	Depress'l/Flow-through									
	8	Water depth (inches)	3										
		Water depth (% inundation)	100%										
	9	Local watershed/immedita drainage (acres)	40										
	10	Existing wetland size	20										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	95%	H	1								
	17	Emerg. veg. flood resistance	A	1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1					
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)		Enter a percentage									
	31	Wetland in-water width (in feet, average)		Enter a percentage									
	32	Emergent vegetation erosion resistance		Enter valid choice									
	33	Shoreline erosion potential		Enter valid cho									
	34	Bank protection/upslope veg.		Enter valid choice									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	2	M	0.5				0				
	39	Wetland detritus	N/A	N/A									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	I	0									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	N/A	0									
	45	Wildlife species (list)											
	46	Fish habitat quality	N/A	N/A									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	20	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-20	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.38	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.80	High	
Water Quality--Wetland		0.78	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.78	0.78	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL6

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.44									
		TOTAL VEG Rating	0.44	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	I	Depressional/Isolated									
	8	Water depth (inches)	9										
		Water depth (% inundation)	100%										
	9	Local watershed/immedita drainage (acres)	10										
	10	Existing wetland size	4										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	90%	H	1								
	17	Emerg. veg. flood resistance	N/A	0									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1					
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)		Enter a percentage									
	31	Wetland in-water width (in feet, average)		Enter a percentage									
	32	Emergent vegetation erosion resistance		Enter valid choice									
	33	Shoreline erosion potential		Enter valid cho									
	34	Bank protection/upslope veg.		Enter valid choice									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	3	H	1						0		
	39	Wetland detritus	N/A	N/A									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	A	1									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	C	0.1									
	45	Wildlife species (list)											
	46	Fish habitat quality	N/A	N/A									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1	
59	*GW - Subwatershed land use*	D	R or D	1	
60	*GW - Wetland size and soil group*	D	R or D	1	
61	GW - Wetland hydroperiod	D	R or D	1	
62	GW - Inlet/Outlet configuration	R	R or D	0.1	
63	GW - Surrounding upland topographic relief	D	R or D	1	
64	Restoration potential w/o flooding		Y or N	5.1	
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice	
66A	*Existing wetland size (acres) [from #10]*	4	__ acres		
66B	Total wetland restoration size (acres)		__ acres	0.1	
66C	(Calculated) Potential New Wetland Area [B-A]	-4	__ acres	% effectively drained: ####	
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1	value: ####
68	Likelihood of restoration success		a b c	Enter valid choice	
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling		
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8		
71	Wetland sensitivity to stormwater		E a b c		
72	Additional stormwater treatment needs		a b c		

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.44	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.52	Med	
Water Quality--Downstream		0.71	High	
Water Quality--Wetland		0.79	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.86	0.86	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL7

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.33									
		TOTAL VEG Rating	0.33	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	Flood	Floodplain									
	8	Water depth (inches)	6										
		Water depth (% inundation)	100%										
	9	Local watershed/immedita drainage (acres)	400										
	10	Existing wetland size	2										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	100%	H	1								
	17	Emerg. veg. flood resistance	B	0.5									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	B	0.5									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H		1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle		0	0	**0**							
		adjacent area slope: % Moderate	0%	0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	Y	Y									
	30	Rooted shoreline vegetation (%cover)	100%	1									
	31	Wetland in-water width (in feet, average)	75	1									
	32	Emergent vegetation erosion resistance	A	1									
	33	Shoreline erosion potential	C	0.1	1								
	34	Bank protection/upslope veg.	C	0.1									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	1	L	0.1								
	38	Community interspersion (see diagram 2)	2	M	0.5					0			
	39	Wetland detritus	A	1									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	A	1									
	43	Amphibian breeding potential--fish presence	B	0.5									
	44	Amphibian & reptile overwintering habitat	A	1									
	45	Wildlife species (list)											
	46	Fish habitat quality	A	1									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated
This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	2	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-2	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.33	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.52	Med	
Water Quality--Downstream		0.75	High	
Water Quality--Wetland		0.76	High	
Shoreline Protection		0.64	Med	
Characteristic Wildlife Habitat Structure	0.73	0.73	High	
Maintenance of Characteristic Fish Habitat	1.00	1.00	High	
Maintenance of Characteristic Amphibian Habitat		0.50	Med	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL8

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.48									
		TOTAL VEG Rating	0.48	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	Flood	Floodplain									
	8	Water depth (inches)	6										
		Water depth (% inundation)	100%										
	9	Local watershed/immedita drainage (acres)	100										
	10	Existing wetland size	2										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	100%	H	1								
	17	Emerg. veg. flood resistance	B	0.5									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	B	0.5									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1					
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	Y	Y									
	30	Rooted shoreline vegetation (%cover)	100%	1									
	31	Wetland in-water width (in feet, average)	75	1									
	32	Emergent vegetation erosion resistance	A	1									
	33	Shoreline erosion potential	C	0.1	1								
	34	Bank protection/upslope veg.	C	0.1									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	3	H	1				0				
	39	Wetland detritus	A	1									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	I	0									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	C	0.1									
	45	Wildlife species (list)											
	46	Fish habitat quality	A	1									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	2	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-2	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.48	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.52	Med	
Water Quality--Downstream		0.76	High	
Water Quality--Wetland		0.81	High	
Shoreline Protection		0.64	Med	
Characteristic Wildlife Habitat Structure	0.88	0.88	High	
Maintenance of Characteristic Fish Habitat	1.00	1.00	High	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

		Wetland ID 9 UTM Coordinates 580405 5273362	Wetland ID 10 UTM Coordinates 572920 5274830	Wetland ID 11 UTM Coordinates 573220 5275155	Wetland ID 12 UTM Coordinates 572877 5275092
	Date	**20-Aug-08**	**21-Aug-08**	**21-Aug-08**	**21-Aug-08**
	Special Features (from list, p.2--enter letter/s)	-	-	-	-
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	4A Coniferous Bog	7A Open Bog	4A Coniferous Bog	8A Alder Thicket
	Community Proportion (% of total)	43%	25%	12%	30%
	Dominant Vegetation / Cover Class	SPRUCE/5	LARCH/3	CEDAR/3	BLUEJOINT/4
		LABRADOR TEA/4	CEDAR/3	SPRUCE/3	ALDER/4
		ALDER/2	HORSETAIL/4	BIRCH/3	WILLOW/3
		FIR/2	MOSS/4	ASPEN/3	MINT/1
		SEDGE/3	LABRADOR TEA/3	FIR/3	ASH/2
		BUNCHBERRY/1	ALDER/2	MOSS/4	YELLOW WATERLILY/2
		MOSS/6	WILLOW/2	ALDER/2	MANNA GRASS/2
			CATTAIL/2	ASH/3	
	Invasive/exotic Vegetation / Cover Class	NONE	NONE	NONE	NONE
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class		DOGWOOD/2		
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		0.43 Medium	0.25 Low	0.12 Low	0.30 Low
#4	Listed, rare, special plant species?	n N	Y	N	N
#5	**Rare community or habitat?**	**n N**	**N**	**N**	**N**
#6	Pre-European-settlement conditions?	n N	N	N	N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

MnRAM 3.2 Digital Worksheet, Side 2

WTL9

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.43									
		TOTAL VEG Rating	0.43	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	Flood	Floodplain									
	8	Water depth (inches)	6										
		Water depth (% inundation)	80%										
	9	Local watershed/immedita drainage (acres)	500										
	10	Existing wetland size	10										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	95%	H	1								
	17	Emerg. veg. flood resistance	A	1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1					
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)	Enter a percentage										
	31	Wetland in-water width (in feet, average)	Enter a percentage										
	32	Emergent vegetation erosion resistance	Enter valid choice										
	33	Shoreline erosion potential	Enter valid cho										
	34	Bank protection/upslope veg.	Enter valid choice										
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	2	M	0.5				0				
	39	Wetland detritus	N/A	N/A									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	I	0									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	N/A	0									
	45	Wildlife species (list)											
	46	Fish habitat quality	B	0.5									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	B	0.5									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	10	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-10	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.43	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.80	High	
Water Quality--Wetland		0.79	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.80	0.80	High	
Maintenance of Characteristic Fish Habitat	0.83	0.83	High	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.38	0.38	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL10

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.25								
		TOTAL VEG Rating	0.25	L								
Digital worksheet, section I	4	Listed, rare, special plant species?	Y	eg Exceptional								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	Flood	Floodplain								
	8	Water depth (inches)	12									
		Water depth (% inundation)	100%									
	9	Local watershed/immedita drainage (acres)	1000									
	10	Existing wetland size	1000									
	11	SOILS: Up/Wetland (survey classification + site)										
	12	Outlet characteristics for flood retention	N/A	N/A								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	100%	H	1							
	17	Emerg. veg. flood resistance	A	1								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	Y	Y								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	3	H	1				0			
	39	Wetland detritus	N/A	N/A								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	A	1								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	C	0.1								
	45	Wildlife species (list)										
	46	Fish habitat quality	B	0.5								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	B	0.5								
	55	Spatial buffer	A	1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1	
59	*GW - Subwatershed land use*	D	R or D	1	
60	*GW - Wetland size and soil group*	D	R or D	1	
61	GW - Wetland hydroperiod	D	R or D	1	
62	GW - Inlet/Outlet configuration	D	R or D	1	
63	GW - Surrounding upland topographic relief	D	R or D	1	
64	Restoration potential w/o flooding		Y or N	6	
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice	
66A	*Existing wetland size (acres) [from #10]*	1000	__ acres		
66B	Total wetland restoration size (acres)		__ acres	0.1	
66C	(Calculated) Potential New Wetland Area [B-A]	-1000	__ acres	% effectively drained: ####	
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1	value: ####
68	Likelihood of restoration success		a b c	Enter valid choice	
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling		
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8		
71	Wetland sensitivity to stormwater		E a b c		
72	Additional stormwater treatment needs		a b c		

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.25	L	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.80	High	
Water Quality--Wetland		0.74	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.81	0.81	High	
Maintenance of Characteristic Fish Habitat	0.83	0.83	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL11

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.12								
		TOTAL VEG Rating	0.12	L								
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	I	Depressional/Isolated								
	8	Water depth (inches)	6									
		Water depth (% inundation)	100%									
	9	Local watershed/immedita drainage (acres)	8									
	10	Existing wetland size	2									
	11	SOILS: Up/Wetland (survey classification + site)										
	12	Outlet characteristics for flood retention	A	1								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	80%	H	1							
	17	Emerg. veg. flood resistance	A	1								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	300	H	WQ	1	M	0.5				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare	0%	0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
	27	Downstream sensitivity/WQ protection	A	1								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	3	H	1					0		
	39	Wetland detritus	N/A	N/A								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	I	0								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	C	0.1								
	45	Wildlife species (list)										
	46	Fish habitat quality	N/A	N/A								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	A	1								
	55	Spatial buffer	A	1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	5.1
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	2	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-2	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.12	L	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.68	High	
Water Quality--Downstream		0.83	High	
Water Quality--Wetland		0.70	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.76	0.76	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.55	0.55	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL12

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.30								
		TOTAL VEG Rating	0.3	L								
	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	FT	Depress'l/Flow-through								
	8	Water depth (inches)	12									
		Water depth (% inundation)	80%									
	9	Local watershed/immedita drainage (acres)	10									
	10	Existing wetland size	1									
	11	SOILS: Up/Wetland (survey classification + site)										
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1		0.1						
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	100%	H		1						
	17	Emerg. veg. flood resistance	N/A	0								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1		1						
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	300	H		WQ	1	M		0.5		
	24	Adjacent Area Management: % Full	100%	1		1	**1**					
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare	0%	0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**					
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05		1	**0.05**					
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	3	H		1					0	
	39	Wetland detritus	A	1								
	40	Wetland interspersion on landscape	A	1		1						
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	A	1								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	C	0.1								
	45	Wildlife species (list)										
	46	Fish habitat quality	C	0.1								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	A	1								
	55	Spatial buffer	A	1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	5.1
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	1	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-1	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.30	L	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.52	Med	
Water Quality--Downstream		0.71	High	
Water Quality--Wetland		0.75	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.83	0.83	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.68	High	
Aesthetics/Recreation/Education/Cultural	0.55	0.55	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

		Wetland ID 13 UTM Coordinates 574430 5275450	Wetland ID 14 UTM Coordinates 574370 5275400	Wetland ID 15 UTM Coordinates 574973 5275553	Wetland ID 16 UTM Coordinates 574950 5275650
	Date	**21-Aug-08**	**21-Aug-08**	**21-Aug-08**	**21-Aug-08**
	Special Features (from list, p.2--enter letter/s)	-	-	-	-
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	8A Alder Thicket	16A Shallow, Open Water	4A Coniferous Bog	13B Shallow Marsh
	Community Proportion (% of total)	30%	0%	60%	40%
	Dominant Vegetation / Cover Class	ALDER/6 WILLOW/2 SEDGE/4 BLUEJOINT/2 MANNA GRASS/2 SPRUCE/2 MOSS/3	YELLOW LILY/2 EELGRASS/2 OTHER./3	SPRUCE/4 LABRADOR TEA/4 MOSS/6 SWAMPBIRCH/2 GRASS/2	CATTAIL/6 SWAMP BIRCH/2 LABRADOR TEA/4 WILLOW/2 ALDER/2
	Invasive/exotic Vegetation / Cover Class	NONE	NONE	NONE	NONE
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		0.30 Low	0.00 Low	0.60 Medium	0.40 Medium
#4	Listed, rare, special plant species?	n N	N	N	N
#5	**Rare community or habitat?**	**n N**	**N**	**N**	**N**
#6	Pre-European-settlement conditions?	n N	N	N	N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

WTL13

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.30								
		TOTAL VEG Rating	0.3	L								
	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	R	Riverine								
	8	Water depth (inches)	12									
		Water depth (% inundation)	60%									
	9	Local watershed/immedita drainage (acres)	25									
	10	Existing wetland size	1									
	11	SOILS: Up/Wetland (survey classification + site)										
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A								
	13	Outlet characteristics for hydrologic regime	C	0.1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	95%	H	1							
	17	Emerg. veg. flood resistance	A	1								
	18	Sediment delivery	B	0.5								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	B	0.5	0.5							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	C	0.1								
	23	Adjacent naturalized buffer average width (feet)	300	H	WQ	1	M	0.5				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed	0%	0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1								
	28	Nutrient loading	B	0.5								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	3	M	0.5							
	38	Community interspersion (see diagram 2)	1	L	0.1						0	
	39	Wetland detritus	B	0.5								
	40	Wetland interspersion on landscape	A	1	0.5							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	A	1								
	43	Amphibian breeding potential--fish presence	B	0.5								
	44	Amphibian & reptile overwintering habitat	C	0.1								
	45	Wildlife species (list)										
	46	Fish habitat quality	A	1								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	B	0.5								
	54	Human influence on viewshed	B	0.5								
	55	Spatial buffer	A	1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical weighted average. To use the highest Community rating, please manually ove value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	1	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-1	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.30	L	
Hydrology - Characteristic		0.65	Med	
Flood Attenuation		0.51	Med	
Water Quality--Downstream		0.78	High	
Water Quality--Wetland		0.54	Med	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.51	0.51	Med	
Maintenance of Characteristic Fish Habitat	0.75	0.75	High	
Maintenance of Characteristic Amphibian Habitat		0.30	Low	
Aesthetics/Recreation/Education/Cultural	0.43	0.43	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL14

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.10									
		TOTAL VEG Rating	0.1	L									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	Lac	Lacustrine									
	8	Water depth (inches)	36										
		Water depth (% inundation)	100%										
	9	Local watershed/immedita drainage (acres)	500										
	10	Existing wetland size	40										
	11	SOILS: Up/Wetland (survey classification + site)											
	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	5%	L	0.1								
	17	Emerg. veg. flood resistance	C	0.1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	400	H	WQ	1	H		1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
	27	Downstream sensitivity/WQ protection	A	1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	Y	Y									
	30	Rooted shoreline vegetation (%cover)	100%	1									
	31	Wetland in-water width (in feet, average)	100	1									
	32	Emergent vegetation erosion resistance	A	1									
	33	Shoreline erosion potential	B	0.5	0.5								
	34	Bank protection/upslope veg.	C	0.1									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	N/A	N/A	N/A						0		
	39	Wetland detritus	N/A	N/A									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	A	1									
	43	Amphibian breeding potential--fish presence	C	0.1									
	44	Amphibian & reptile overwintering habitat	A	1									
	45	Wildlife species (list)											
	46	Fish habitat quality	A	1									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	B	0.5									
	55	Spatial buffer	A	1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Digital worksheet, section I

Digital worksheet, section II

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	40	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-40	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.10	L	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.45	Med	
Water Quality--Downstream		0.65	Med	
Water Quality--Wetland		0.70	High	
Shoreline Protection		0.72	High	
Characteristic Wildlife Habitat Structure	0.74	0.74	High	
Maintenance of Characteristic Fish Habitat	0.94	0.94	High	
Maintenance of Characteristic Amphibian Habitat		0.10	Low	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL15

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.60									
		TOTAL VEG Rating	0.6	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	Flood	Floodplain									
	8	Water depth (inches)	6										
		Water depth (% inundation)	100%										
	9	Local watershed/immedita drainage (acres)	500										
	10	Existing wetland size	120										
Digital worksheet, section I	11	SOILS: Up/Wetland (survey classification + site)											
	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	95%	H	1								
	17	Emerg. veg. flood resistance	A	1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	400	H	WQ	1	H		1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)	Enter a percentage										
	31	Wetland in-water width (in feet, average)	Enter a percentage										
	32	Emergent vegetation erosion resistance	Enter valid choice										
	33	Shoreline erosion potential	Enter valid cho										
	34	Bank protection/upslope veg.	Enter valid choice										
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	2	M	0.5						0		
	39	Wetland detritus	N/A	N/A									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	I	0									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	C	0.1									
	45	Wildlife species (list)											
	46	Fish habitat quality	C	0.1									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	B	0.5									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	120	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]		__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.60	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.80	High	
Water Quality--Wetland		0.84	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.84	0.84	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.38	0.38	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL16

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.40								
		TOTAL VEG Rating	0.4	Medium								
	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	I	Depressional/Isolated								
	8	Water depth (inches)	24									
		Water depth (% inundation)	100%									
	9	Local watershed/immedita drainage (acres)	25									
	10	Existing wetland size	25									
Digital worksheet, section I	11	SOILS: Up/Wetland (survey classification + site)										
	12	Outlet characteristics for flood retention	A	1								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	100%	H	1							
	17	Emerg. veg. flood resistance	N/A	0								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	B	0.5	0.5							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	300	H	WQ	1	M	0.5				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	75%	0.75	2	**0.875**						
		adjacent area diversity: % Mixed	25%	0.125								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
	27	Downstream sensitivity/WQ protection	A	1								
	28	Nutrient loading	B	0.5								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	1	L	0.1					0		
	39	Wetland detritus	A	1								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	A	1								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	B	0.5								
	45	Wildlife species (list)										
	46	Fish habitat quality	C	0.1								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	B	0.5								
	54	Human influence on viewshed	B	0.5								
	55	Spatial buffer	A	1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Digital worksheet, section II

Highest-rated

This comes in from Side 1 automatical weighted average. To use the highest Community rating, please manually ove value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	R	R or D	0.1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	R	R or D	0.1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	3.3
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	25	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]		__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.40	Med	
Hydrology - Characteristic		0.88	High	
Flood Attenuation		0.65	Med	
Water Quality--Downstream		0.81	High	
Water Quality--Wetland		0.64	Med	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.69	0.69	High	
Maintenance of Characteristic Fish Habitat	0.53	0.53	Med	
Maintenance of Characteristic Amphibian Habitat		0.67	High	
Aesthetics/Recreation/Education/Cultural	0.43	0.43	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	indeterminate GW source	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

		Wetland ID 17 UTM Coordinates 574765 5275535	Wetland ID 18 UTM Coordinates 578242 5275695	Wetland ID 19 UTM Coordinates 573273 5271265	Wetland ID 20 UTM Coordinates 571900 5271480
	Date	**21-Aug-08**	**22-Aug-08**	**22-Aug-08**	**26-Aug-08**
	Special Features (from list, p.2--enter letter/s)	-	-	-	-
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3		~ Describe each community type individually below ~		~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	8A Alder Thicket	4A Coniferous Bog	13B Shallow Marsh	8A Alder Thicket
	Community Proportion (% of total)	43%	50%	25%	12%
	Dominant Vegetation / Cover Class	CEDAR/4	SPRUCE/4	CATTAIL/6	SPRUCE/3
		SPRUCE/2	LARCH/2	WOOLLY SEDGE/2	JACK PINE/2
		ALDER/5	LABRADOR TEA/4	BLUEJOINT/2	FIR/2
		ASH/2	ALDER/2	SPIKERUSH./1	ALDER/4
		LABRADOR TEA/3	CEDAR/2		WILLOW/3
		BLUEJOINT/2	MOSS/6		WOOLLY SEDGE/2
		MOSS/5			BLUEJOINT/2
					MOSS/3
	Invasive/exotic Vegetation / Cover Class	NONE	NONE	NONE	NONE
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		0.43 Medium	0.50 Medium	0.25 Low	0.12 Low
#4	Listed, rare, special plant species?	n N	N	N	N
#5	**Rare community or habitat?**	**n N**	**N**	**N**	**N**
#6	Pre-European-settlement conditions?	n N	N	N	N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

WTL17

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.43								
		TOTAL VEG Rating	0.43	Medium								
	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	Flood	Floodplain								
	8	Water depth (inches)	12									
		Water depth (% inundation)	100%									
	9	Local watershed/immedita drainage (acres)	500									
	10	Existing wetland size	500									
Digital worksheet, section I	11	SOILS: Up/Wetland (survey classification + site)										
	12	Outlet characteristics for flood retention	N/A	N/A								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	85%	H	1							
	17	Emerg. veg. flood resistance	A	1								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	100	H	WQ	1	M	0.5				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	3	H	1					0		
	39	Wetland detritus	A	1								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	A	1								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	C	0.1								
	45	Wildlife species (list)										
	46	Fish habitat quality	N/A	N/A								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	B	0.5								
	55	Spatial buffer	A	1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	500	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-500	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.43	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.80	High	
Water Quality--Wetland		0.79	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.85	0.85	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.68	High	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL18

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.50									
		TOTAL VEG Rating	0.5	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	Flood	Floodplain									
	8	Water depth (inches)	24										
		Water depth (% inundation)	100%										
	9	Local watershed/immedita drainage (acres)	500										
	10	Existing wetland size	500										
Digital worksheet, section I	11	SOILS: Up/Wetland (survey classification + site)											
	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	B	0.5	0.5								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	100%	H	1								
	17	Emerg. veg. flood resistance	A	1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H		1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured	0%	0									
		adjacent area mgmt: % Bare	0%	0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	3%	0.03	1	**0.03**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)	Enter a percentage										
	31	Wetland in-water width (in feet, average)	Enter a percentage										
	32	Emergent vegetation erosion resistance	Enter valid choice										
	33	Shoreline erosion potential	Enter valid cho										
	34	Bank protection/upslope veg.	Enter valid choice										
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	2	M	0.5					0			
	39	Wetland detritus	N/A	N/A									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	I	0									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	N/A	0									
	45	Wildlife species (list)											
	46	Fish habitat quality	N/A	N/A									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	500	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-500	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.50	Med	
Hydrology - Characteristic		0.88	High	
Flood Attenuation		0.65	Med	
Water Quality--Downstream		0.71	High	
Water Quality--Wetland		0.74	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.81	0.81	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0

Special Features listing: -

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL19

		Question Description	User entry	Rating				
	1	Veg. Table 2, Option 4		0.25				
		TOTAL VEG Rating	0.25	L				
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next				
	5	Rare community or habitat?	n	next				
	6	Pre-European-settlement conditions?	n	next				
	7	hydrogeo & topo	FT	Depress'l/Flow-through				
	8	Water depth (inches)	24					
		Water depth (% inundation)	100%					
	9	Local watershed/immedita drainage (acres)	25					
	10	Existing wetland size	10					
	11	SOILS: Up/Wetland (survey classification + site)						
	12	Outlet characteristics for flood retention	A	1				
	13	Outlet characteristics for hydrologic regime	A	1				
	14	Dominant upland land use (within 500 ft)	A	1	0.1			
	15	Soil condition (wetland)	A	1				
	16	Vegetation (% cover)	50%	M	0.5			
	17	Emerg. veg. flood resistance	B	0.5				
	18	Sediment delivery	A	1				
	19	Upland soils (based on soil group)	B	0.5				
	20	Stormwater runoff pretreatment & detention	C	0.1	1			
	21	Subwatershed wetland density	C	0.1				
	22	Channels/sheet flow	A	1				
	23	Adjacent naturalized buffer average width (feet)	50	M	WQ	0.5	M	0.5
	24	Adjacent Area Management: % Full	100%	1	1	**1**		
		adjacent area mgmt: % Manicured		0				
		adjacent area mgmt: % Bare		0				
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**		
		adjacent area diversity: % Mixed	0%	0				
		adjacent area diversity: % Sparse/Inv./Exotic		0				
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**		
		adjacent area slope: % Moderate		0				
		adjacent area slope: % Steep		0				
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1				
	28	Nutrient loading	B	0.5				
	29	Shoreline wetland?	N	N				
	30	Rooted shoreline vegetation (%cover)		Enter a percentage				
	31	Wetland in-water width (in feet, average)		Enter a percentage				
	32	Emergent vegetation erosion resistance		Enter valid choice				
	33	Shoreline erosion potential		Enter valid cho				
	34	Bank protection/upslope veg.		Enter valid choice				
	35	Rare Wildlife	N	N				
	36	Scarce/Rare/S1/S2 local community	N	N				
	37	Vegetation interspersion cover (see diagram 1)	4	M	0.5			
	38	Community interspersion (see diagram 2)	2	M	0.5			0
	39	Wetland detritus	A	1				
	40	Wetland interspersion on landscape	A	1	1			
	41	Wildlife barriers	A	1				
	42	Amphibian breeding potential-hydroperiod	A	1				
	43	Amphibian breeding potential--fish presence	A	1				
	44	Amphibian & reptile overwintering habitat	B	0.5				
	45	Wildlife species (list)						
	46	Fish habitat quality	B	0.5				
	47	Fish species (list)						
	48	Unique/rare educ./cultural/rec.opportunity	N	N				
	49	Wetland visibility	C	0.1				
	50	Proximity to population	N	0.1				
	51	Public ownership	A	1				
	52	Public access	C	0.1				
	53	Human influence on wetland	A	1				
	54	Human influence on viewshed	B	0.5				
	55	Spatial buffer	B	0.5				
	56	Recreational activity potential	C	0.1				
	57	Commercial crop--hydrologic impact	N/A	N/A				

Highest-rated

This comes in from Side 1 automatical weighted average. To use the highest Community rating, please manually ove value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	10	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-10	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.25	L	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.61	Med	
Water Quality--Downstream		0.73	High	
Water Quality--Wetland		0.65	Med	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.73	0.73	High	
Maintenance of Characteristic Fish Habitat	0.75	0.75	High	
Maintenance of Characteristic Amphibian Habitat		0.75	High	
Aesthetics/Recreation/Education/Cultural	0.43	0.43	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL20

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.12								
		TOTAL VEG Rating	0.12	L								
	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	I	Depressional/Isolated								
	8	Water depth (inches)	6									
		Water depth (% inundation)	50%									
	9	Local watershed/immedita drainage (acres)	10									
	10	Existing wetland size	5									
	11	SOILS: Up/Wetland (survey classification + site)										
Digital worksheet, section I	12	Outlet characteristics for flood retention	A	1								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	90%	H	1							
	17	Emerg. veg. flood resistance	N/A	0								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	2	M	0.5				0			
	39	Wetland detritus	A	1								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	A	1								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	C	0.1								
	45	Wildlife species (list)										
	46	Fish habitat quality	N/A	N/A								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	A	1								
	55	Spatial buffer	C	0.1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	5	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-5	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.12	L	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.61	Med	
Water Quality--Downstream		0.75	High	
Water Quality--Wetland		0.70	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.75	0.75	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0

Special Features listing: -

Groundwater Interaction: discharge

Groundwater Functional Index: no special indicators

Restoration Potential (draft formula): #VALUE! #####

Stormwater Sensitivity (not active)

		Wetland ID 21 UTM Coordinates 571740 5271540		Wetland ID 22 UTM Coordinates 572146 5272295		Wetland ID 23 UTM Coordinates 572120 5272461		Wetland ID 24 UTM Coordinates 571790 5272840	
	Date	**26-Aug-08**		**26-Aug-08**		**26-Aug-08**		**26-Aug-08**	
	Special Features (from list, p.2--enter letter/s)	-		-		-		-	
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B		3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B		3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B		3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	
#2 & #3	~ Describe each community type individually below ~					~ Describe each community type individually below ~			
Plant Community #1	Community Type (wet meadow, marsh)	10A	Open Bog	13B	Shallow Marsh	4A	Coniferous Bog	4A	Coniferous Bog
	Community Proportion (% of total)	29%		25%		11%		22%	
	Dominant Vegetation / Cover Class	LABRADOR TEA/6		CATTAIL/6		SPRUCE/3		SPRUCE/4	
		ALDER/2		IRIS/2		LARCH/3		CEDAR/2	
		WILLOW/2		SPIKERUSH/2		CEDAR/3		ALDER/3	
		WOOLLY SEDGE/2		SEDGE/2		ALDER/4		LABRADOR TEA/2	
		OTHER./3				LABRADOR TEA/3		BUNCHBERRY/2	
		BLUEJOINT/2				SEDGE/2		HORSETAIL/3	
		MOSS/6				FIR/3		BLUEJOINT/2	
						MOSS/3		MOSS/6	
	Invasive/exotic Vegetation / Cover Class					BLUEJOINT/2		FIR/2	
		NONE		NONE		NONE		NONE	
	Community Quality (E, H, M, L)	H	1	H	1	H	1	H	1
Plant Community #2	Community Type (wet meadow, marsh)	-	-			-	-	-	-
	Community Proportion (% of total)								
	Dominant Vegetation / Cover Class								
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)		0				0		0
Plant Community #3	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total)								
	Dominant Vegetation / Cover Class								
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)		0		0		0		0
Plant Community #4*	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total)								
	Dominant Vegetation / Cover Class								
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	-	0		0		0		0
	Circular 39 Types (primary <TAB> others)								
	Cowardin Types								
	Photo ID								
Highest rated community veg. div./integ:		1.0	High	1	High	1	High	1	High
Average vegetative diversity/integrity:		1.00	High	1.00	High	1.00	High	1.00	High
Weighted Average veg. diversity/integrity:		0.29	Low	0.25	Low	0.11	Low	0.22	Low
#4	Listed, rare, special plant species?	n	N		N		N		N
#5	**Rare community or habitat?**	**n**	**N**		**N**		**N**		**N**
#6	Pre-European-settlement conditions?	n	N		N		N		N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

WTL21

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.29								
		TOTAL VEG Rating	0.29	L								
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	FT	Depress'l/Flow-through								
	8	Water depth (inches)	12									
		Water depth (% inundation)	50%									
	9	Local watershed/immedita drainage (acres)	40									
	10	Existing wetland size	10									
	11	SOILS: Up/Wetland (survey classification + site)										
	12	Outlet characteristics for flood retention	B	0.5								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	100%	H	1							
	17	Emerg. veg. flood resistance	A	1								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	2	M	0.5				0			
	39	Wetland detritus	N/A	N/A								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	A	1								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	C	0.1								
	45	Wildlife species (list)										
	46	Fish habitat quality	N/A	N/A								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	A	1								
	55	Spatial buffer	C	0.1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	5.1
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	10	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-10	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.29	L	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.58	Med	
Water Quality--Downstream		0.75	High	
Water Quality--Wetland		0.75	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.76	0.76	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL22

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.58									
		TOTAL VEG Rating	0.58	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	FT	Depress'l/Flow-through									
	8	Water depth (inches)	12										
		Water depth (% inundation)	100%										
	9	Local watershed/immedita drainage (acres)	250										
	10	Existing wetland size	30										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	90%	H	1								
	17	Emerg. veg. flood resistance	B	0.5									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	B	0.5									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H		1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)		Enter a percentage									
	31	Wetland in-water width (in feet, average)		Enter a percentage									
	32	Emergent vegetation erosion resistance		Enter valid choice									
	33	Shoreline erosion potential		Enter valid cho									
	34	Bank protection/upslope veg.		Enter valid choice									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	2	L	0.1								
	38	Community interspersion (see diagram 2)	1	L	0.1						0		
	39	Wetland detritus	A	1									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	A	1									
	43	Amphibian breeding potential--fish presence	B	0.5									
	44	Amphibian & reptile overwintering habitat	B	0.5									
	45	Wildlife species (list)											
	46	Fish habitat quality	B	0.5									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	B	0.5									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	30	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-30	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.58	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.52	Med	
Water Quality--Downstream		0.76	High	
Water Quality--Wetland		0.83	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.74	0.74	High	
Maintenance of Characteristic Fish Habitat	0.83	0.83	High	
Maintenance of Characteristic Amphibian Habitat		0.46	Med	
Aesthetics/Recreation/Education/Cultural	0.38	0.38	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL23

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.11								
		TOTAL VEG Rating	0.11	L								
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	FT	Depress'l/Flow-through								
	8	Water depth (inches)	12									
		Water depth (% inundation)	100%									
	9	Local watershed/immedita drainage (acres)	70									
	10	Existing wetland size	10									
	11	SOILS: Up/Wetland (survey classification + site)										
	12	Outlet characteristics for flood retention	N/A	N/A								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	90%	H	1							
	17	Emerg. veg. flood resistance	A	1								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	3%	0.03	1	**0.03**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	3	H	1				0			
	39	Wetland detritus	N/A	N/A								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	I	0								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	N/A	0								
	45	Wildlife species (list)										
	46	Fish habitat quality	N/A	N/A								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	A	1								
	55	Spatial buffer	C	0.1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	R	R or D	0.1
64	Restoration potential w/o flooding		Y or N	3.3
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	10	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	WTL23	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.11	L	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.80	High	
Water Quality--Wetland		0.70	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.78	0.78	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	indeterminate GW source	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL24

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.22								
		TOTAL VEG Rating	0.22	L								
	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	FT	Depress'l/Flow-through								
	8	Water depth (inches)	12									
		Water depth (% inundation)	100%									
	9	Local watershed/immedita drainage (acres)	160									
	10	Existing wetland size	10									
	11	SOILS: Up/Wetland (survey classification + site)										
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	100%	H	1							
	17	Emerg. veg. flood resistance	A	1								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	3%	0.03	1	**0.03**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	2	M	0.5				0			
	39	Wetland detritus	N/A	N/A								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	A	1								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	N/A	0								
	45	Wildlife species (list)										
	46	Fish habitat quality	N/A	N/A								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	A	1								
	55	Spatial buffer	C	0.1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	R	R or D	0.1
64	Restoration potential w/o flooding		Y or N	3.3
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	10	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-10	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.22	L	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.80	High	
Water Quality--Wetland		0.73	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.74	0.74	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.83	High	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	indeterminate GW source	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

		Wetland ID 25 UTM Coordinates 572018 5271677	Wetland ID 26 UTM Coordinates 572990 5272310	Wetland ID 27 UTM Coordinates 573438 5273176	Wetland ID 28 UTM Coordinates 573207 5273260
	Date	**26-Aug-08**	**27-Aug-08**	**27-Aug-08**	**27-Aug-08**
	Special Features (from list, p.2--enter letter/s)	-	-	-	-
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	13A Sedge Meadow	10A Open Bog	13A Sedge Meadow	4A Coniferous Bog
	Community Proportion (% of total)	29%	43%	20%	75%
	Dominant Vegetation / Cover Class	BLUEJOINT/4	BLUEJOINT/5	BLUEJOINT/2	SPRUCE/4
		SEDGE/5	LEATHERLEAF/3	SEDGE/6	LABRADOR TEA/5
		CATTAIL/3	CATTAIL/2	LEATHERLEAF/2	WOOLLY SEDGE/1
		WATERLILY/2	LARCH/2	ALDER/2	MOSS/6
		WILLOW/3	SEDGE/4	MOSS/2	
		ALDER/2	WOOLLY SEDGE/2		
		SPRUCE/3	MOSS/4		
	Invasive/exotic Vegetation / Cover Class	NONE	NONE	NONE	NONE
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		0.29 Low	0.43 Medium	0.20 Low	0.75 High
#4	Listed, rare, special plant species?	n N	N	N	N
#5	**Rare community or habitat?**	**n N**	**N**	**N**	**N**
#6	Pre-European-settlement conditions?	n N	N	N	N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

MnRAM 3.2 Digital Worksheet, Side 2

WTL25

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.29								
		TOTAL VEG Rating	0.29	L								
	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	FT	Depress'l/Flow-through								
	8	Water depth (inches)	12									
		Water depth (% inundation)	100%									
	9	Local watershed/immedita drainage (acres)	200									
	10	Existing wetland size	20									
Digital worksheet, section I	11	SOILS: Up/Wetland (survey classification + site)										
	12	Outlet characteristics for flood retention	B	0.5								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	100%	H	1							
	17	Emerg. veg. flood resistance	B	0.5								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	B	0.5								
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H		1			
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	2	L	0.1							
	38	Community interspersion (see diagram 2)	2	M	0.5					0		
	39	Wetland detritus	A	1								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	A	1								
	43	Amphibian breeding potential--fish presence	B	0.5								
	44	Amphibian & reptile overwintering habitat	C	0.1								
	45	Wildlife species (list)										
	46	Fish habitat quality	A	1								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	A	1								
	55	Spatial buffer	C	0.1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	20	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-20	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.29	L	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.51	Med	
Water Quality--Downstream		0.72	High	
Water Quality--Wetland		0.75	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.72	0.72	High	
Maintenance of Characteristic Fish Habitat	1.00	1.00	High	
Maintenance of Characteristic Amphibian Habitat		0.43	Med	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL26

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.43									
		TOTAL VEG Rating	0.43	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	FT	Depress'l/Flow-through									
	8	Water depth (inches)	12										
		Water depth (% inundation)	40%										
	9	Local watershed/immedita drainage (acres)	200										
	10	Existing wetland size	10										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	B	0.5									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	100%	H	1								
	17	Emerg. veg. flood resistance	A	1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H		1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)		Enter a percentage									
	31	Wetland in-water width (in feet, average)		Enter a percentage									
	32	Emergent vegetation erosion resistance		Enter valid choice									
	33	Shoreline erosion potential		Enter valid cho									
	34	Bank protection/upslope veg.		Enter valid choice									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	2	M	0.5						0		
	39	Wetland detritus	N/A	N/A									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	I	0									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	N/A	0									
	45	Wildlife species (list)											
	46	Fish habitat quality	N/A	N/A									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1	
59	*GW - Subwatershed land use*	D	R or D	1	
60	*GW - Wetland size and soil group*	D	R or D	1	
61	GW - Wetland hydroperiod	D	R or D	1	
62	GW - Inlet/Outlet configuration	D	R or D	1	
63	GW - Surrounding upland topographic relief	D	R or D	1	
64	Restoration potential w/o flooding		Y or N	6	
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice	
66A	*Existing wetland size (acres) [from #10]*	10	__ acres		
66B	Total wetland restoration size (acres)		__ acres	0.1	
66C	(Calculated) Potential New Wetland Area [B-A]		__ acres	% effectively drained: ####	
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1	value: ####
68	Likelihood of restoration success		a b c	Enter valid choice	
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling		
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8		
71	Wetland sensitivity to stormwater		E a b c		
72	Additional stormwater treatment needs		a b c		

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.43	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.58	Med	
Water Quality--Downstream		0.75	High	
Water Quality--Wetland		0.79	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.80	0.80	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL27

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.20								
		TOTAL VEG Rating	0.2	L								
	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	I	Depressional/Isolated								
	8	Water depth (inches)	12									
		Water depth (% inundation)	80%									
	9	Local watershed/immedita drainage (acres)	10									
	10	Existing wetland size	1									
	11	SOILS: Up/Wetland (survey classification + site)										
Digital worksheet, section I	12	Outlet characteristics for flood retention	A	1								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	100%	H	1							
	17	Emerg. veg. flood resistance	N/A	0								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	B	0.5								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	Enter Y or N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	1	L	0.1					0		
	39	Wetland detritus	A	1								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	A	1								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	C	0.1								
	45	Wildlife species (list)										
	46	Fish habitat quality	N/A	N/A								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	A	1								
	55	Spatial buffer	C	0.1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	1	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-1	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.20	L	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.61	Med	
Water Quality--Downstream		0.68	High	
Water Quality--Wetland		0.73	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.72	0.72	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL28

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.75								
		TOTAL VEG Rating	0.75	High								
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	I	Depressional/Isolated								
	8	Water depth (inches)	12									
		Water depth (% inundation)	100%									
	9	Local watershed/immedita drainage (acres)	20									
	10	Existing wetland size	5									
	11	SOILS: Up/Wetland (survey classification + site)										
	12	Outlet characteristics for flood retention	N/A	N/A								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	100%	H	1							
	17	Emerg. veg. flood resistance	A	1								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	B	0.5								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	2	M	0.5				0			
	39	Wetland detritus	N/A	N/A								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	I	0								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	N/A	0								
	45	Wildlife species (list)										
	46	Fish habitat quality	N/A	N/A								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	A	1								
	55	Spatial buffer	C	0.1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	R	R or D	0.1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	R	R or D	0.1
64	Restoration potential w/o flooding		Y or N	2.4
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	5	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-5	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.75	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.71	High	
Water Quality--Wetland		0.88	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.88	0.88	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	indeterminate GW source	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

		Wetland ID 29 UTM Coordinates 572970 5273300	Wetland ID 30 UTM Coordinates 572566 5273430	Wetland ID 31 UTM Coordinates 572895 5273660	Wetland ID 32 UTM Coordinates 573755 5272678
	Date	27-Aug-08	27-Aug-08	27-Aug-08	27-Aug-08
	Special Features (from list, p.2--enter letter/s)	-	-	-	-
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	8A Alder Thicket	4A Coniferous Bog	13A Sedge Meadow	4A Coniferous Bog
	Community Proportion (% of total)	14%	40%	33%	57%
	Dominant Vegetation / Cover Class	ALDER/6	SPRUCE/5	BLUEJOINT/3	SPRUCE/4
		LARCH/2	FIR/4	SEDGE/5	LABRADOR TEA/4
		WILLOW/2	ALDER/4	LABRADOR TEA/4	LARCH/2
		SEDGE/2	LABRADOR TEA/2	SPRUCE/2	BIRCH/2
		MANNA GRASS/2	FORB/2	LARCH/2	ALDER/2
		CEDAR/3	SEDGE/2	ALDER/2	LEATHERLEAF/4
			BUNCHBERRY/2		MOSS/6
			MOSS/5		
	Invasive/exotic Vegetation / Cover Class	NONE	NONE	NONE	NONE
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class		BIRCH/2		
			CEDAR/2		
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		0.14 Low	0.40 Medium	0.33 Medium	0.57 Medium
#4	Listed, rare, special plant species?	n N	N	N	N
#5	**Rare community or habitat?**	**n N**	**N**	**N**	**N**
#6	Pre-European-settlement conditions?	n N	N	N	N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

WTL29

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.14									
		TOTAL VEG Rating	0.14	L									
	4	Listed, rare, special plant species?	N	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	FT	Depress'l/Flow-through									
	8	Water depth (inches)	6										
		Water depth (% inundation)	60%										
	9	Local watershed/immedita drainage (acres)	60										
	10	Existing wetland size	10										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	100%	H	1								
	17	Emerg. veg. flood resistance	A	1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H		1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	B	0.5									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)	Enter a percentage										
	31	Wetland in-water width (in feet, average)	Enter a percentage										
	32	Emergent vegetation erosion resistance	Enter valid choice										
	33	Shoreline erosion potential	Enter valid cho										
	34	Bank protection/upslope veg.	Enter valid choice										
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	2	M	0.5					0			
	39	Wetland detritus	A	1									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	A	1									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	C	0.1									
	45	Wildlife species (list)											
	46	Fish habitat quality	N/A	N/A									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated:

This comes in from Side 1 automatically usi
weighted average. To use the highest rated
Community rating, please manually overwrite
value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	5.1
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	10	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-10	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poter	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category
Vegetative Diversity/Integrity		0.14	L
Hydrology - Characteristic		1.00	High
Flood Attenuation		0.60	Med
Water Quality--Downstream		0.71	High
Water Quality--Wetland		0.71	High
Shoreline Protection		N/A	N/A
Characteristic Wildlife Habitat Structure	0.75	0.75	High
Maintenance of Characteristic Fish Habitat	######	N/A	N/A
Maintenance of Characteristic Amphibian Habitat		0.85	High
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med
Commercial use		N/A	N/A
Special Features listing:			-

Formula shown to the right.

0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL30

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.40									
		TOTAL VEG Rating	0.4	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	FT	Depress'l/Flow-through									
	8	Water depth (inches)	80										
		Water depth (% inundation)	6%										
	9	Local watershed/immedita drainage (acres)	40										
	10	Existing wetland size	10										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1		0.1							
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	95%	H		1							
	17	Emerg. veg. flood resistance	A	1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1		1							
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H		1			
	24	Adjacent Area Management: % Full	100%	1		1	**1**						
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**						
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	5%	0.05		1	**0.05**						
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	C	0.1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)		Enter a percentage									
	31	Wetland in-water width (in feet, average)		Enter a percentage									
	32	Emergent vegetation erosion resistance		Enter valid choice									
	33	Shoreline erosion potential		Enter valid cho									
	34	Bank protection/upslope veg.		Enter valid choice									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	3	H		1					0		
	39	Wetland detritus	N/A	N/A									
	40	Wetland interspersion on landscape	A	1		1							
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	A	1									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	C	0.1									
	45	Wildlife species (list)											
	46	Fish habitat quality	N/A	N/A									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	10	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-10	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category
Vegetative Diversity/Integrity		0.40	Med
Hydrology - Characteristic		1.00	High
Flood Attenuation		0.60	Med
Water Quality--Downstream		0.65	Med
Water Quality--Wetland		0.78	High
Shoreline Protection		N/A	N/A
Characteristic Wildlife Habitat Structure	0.85	0.85	High
Maintenance of Characteristic Fish Habitat	######	N/A	N/A
Maintenance of Characteristic Amphibian Habitat		0.85	High
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med
Commercial use		N/A	N/A
Special Features listing:		-	

Formula shown to the right.

0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL31

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.33									
		TOTAL VEG Rating	1	High									
	4	Listed, rare, special plant species?	N	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	Flood	Floodplain									
	8	Water depth (inches)	12										
		Water depth (% inundation)	100%										
	9	Local watershed/immedita drainage (acres)	40										
	10	Existing wetland size	30										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	100%	H	1								
	17	Emerg. veg. flood resistance	A	1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H		1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	30%	0.3	1	**0.3**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	C	0.1									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)	Enter a percentage										
	31	Wetland in-water width (in feet, average)	Enter a percentage										
	32	Emergent vegetation erosion resistance	Enter valid choice										
	33	Shoreline erosion potential	Enter valid cho										
	34	Bank protection/upslope veg.	Enter valid choice										
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	2	M	0.5						0		
	39	Wetland detritus	A	1									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	A	1									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	C	0.1									
	45	Wildlife species (list)											
	46	Fish habitat quality	B	0.5									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	30	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]		__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.66	High	
Water Quality--Wetland		0.97	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	0.83	0.83	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL32

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.57									
		TOTAL VEG Rating	0.57	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	I	Depressional/Isolated									
	8	Water depth (inches)	12										
		Water depth (% inundation)											
	9	Local watershed/immedita drainage (acres)	10										
	10	Existing wetland size	5										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	A	1									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	100%	H	1								
	17	Emerg. veg. flood resistance	N/A	0									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1					
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	10%	0.1	1	**0.1**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	B	0.5									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)		Enter a percentage									
	31	Wetland in-water width (in feet, average)		Enter a percentage									
	32	Emergent vegetation erosion resistance		Enter valid choice									
	33	Shoreline erosion potential		Enter valid cho									
	34	Bank protection/upslope veg.		Enter valid choice									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	3	H	1						0		
	39	Wetland detritus	N/A	N/A									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	A	1									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	C	0.1									
	45	Wildlife species (list)											
	46	Fish habitat quality	N/A	N/A									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	D	R or D	1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	6
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	5	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-5	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category
Vegetative Diversity/Integrity		0.57	Med
Hydrology - Characteristic		1.00	High
Flood Attenuation		0.61	Med
Water Quality--Downstream		0.69	High
Water Quality--Wetland		0.83	High
Shoreline Protection		N/A	N/A
Characteristic Wildlife Habitat Structure	0.89	0.89	High
Maintenance of Characteristic Fish Habitat	######	N/A	N/A
Maintenance of Characteristic Amphibian Habitat		0.85	High
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med
Commercial use		N/A	N/A

Formula shown to the right.

0

Special Features listing: -

Groundwater Interaction: discharge

Groundwater Functional Index: no special indicators

Restoration Potential (draft formula): #VALUE! #####

Stormwater Sensitivity (not active)

		Wetland ID 33 UTM Coordinates 573843 5272540	Wetland ID 34 UTM Coordinates 573949 5272779	Wetland ID 35 UTM Coordinates 574000 5273285	Wetland ID 36 UTM Coordinates 574031 5273387
	Date	**28-Aug-08**	**28-Aug-08**	**28-Aug-08**	**28-Aug-08**
	Special Features (from list, p.2--enter letter/s)	-	-	-	-
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	4A Coniferous Bog	8A Alder Thicket	8A Alder Thicket	4A Coniferous Bog
	Community Proportion (% of total)	50%	20%	33%	66%
	Dominant Vegetation / Cover Class	POLE SPRUCE/3 LABRADOR TEA/2 SEDGE/4 LARCH/4 LEATHERLEAF/4 ALDER/2 WOOLLY SEDGE/2 MOSS/6	ALDER/5 WOOLLY SEDGE/2 SEDGE/3 WILLOW/2 BLUEJOINT/2	ALDER/6 DOGWOOD/2 SEDGE/2 MOSS/4 BLUEJOINT/2 SPRUCE/2	SPRUCE/3 LARCH/4 BIRCH/2 FIR/4 LABRADOR TEA/5 SEDGE/4 BUNCHBERRY/2 MOSS/5
	Invasive/exotic Vegetation / Cover Class	NONE	NONE	NONE	NONE
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	13A Sedge Meadow	- -	- -
	Community Proportion (% of total)		14%		
	Dominant Vegetation / Cover Class		WOOLLY SEDGE/2 BLUEJOINT/3 SEDGE/5 WILLOW/2 MANNA GRASS/2 LEATHERLEAF/2 ALDER/2		
	Invasive/exotic Vegetation / Cover Class		NONE		
	Community Quality (E, H, M, L)	0	H 1	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		0.50 Medium	0.34 Medium	0.33 Medium	0.66 High
#4	Listed, rare, special plant species?	n N	N	N	N
#5	**Rare community or habitat?**	**n N**	**N**	**N**	**N**
#6	Pre-European-settlement conditions?	n N	N	N	N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

MnRAM 3.2 Digital Worksheet, Side 2

WTL33

		Question Description	User entry	Rating							
	1	Veg. Table 2, Option 4		0.50							
		TOTAL VEG Rating	0.5	Medium							
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next							
	5	Rare community or habitat?	n	next							
	6	Pre-European-settlement conditions?	n	next							
	7	hydrogeo & topo	I	Depressional/Isolated							
	8	Water depth (inches)	12								
		Water depth (% inundation)	80%								
	9	Local watershed/immedita drainage (acres)	10								
	10	Existing wetland size	1								
	11	SOILS: Up/Wetland (survey classification + site)									
	12	Outlet characteristics for flood retention	A	1							
	13	Outlet characteristics for hydrologic regime	A	1							
	14	Dominant upland land use (within 500 ft)	A	1	0.1						
	15	Soil condition (wetland)	A	1							
	16	Vegetation (% cover)	100%	H	1						
	17	Emerg. veg. flood resistance	N/A	0							
	18	Sediment delivery	A	1							
	19	Upland soils (based on soil group)	B	0.5							
	20	Stormwater runoff pretreatment & detention	C	0.1	1						
	21	Subwatershed wetland density	C	0.1							
	22	Channels/sheet flow	A	1							
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1			
	24	Adjacent Area Management: % Full	100%	1	1	**1**					
		adjacent area mgmt: % Manicured		0							
		adjacent area mgmt: % Bare		0							
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**					
		adjacent area diversity: % Mixed		0							
		adjacent area diversity: % Sparse/Inv./Exotic		0							
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**					
		adjacent area slope: % Moderate		0							
		adjacent area slope: % Steep		0							
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	B	0.5							
	28	Nutrient loading	A	1							
	29	Shoreline wetland?	N	Enter Y or N							
	30	Rooted shoreline vegetation (%cover)		Enter a percentage							
	31	Wetland in-water width (in feet, average)		Enter a percentage							
	32	Emergent vegetation erosion resistance		Enter valid choice							
	33	Shoreline erosion potential		Enter valid cho							
	34	Bank protection/upslope veg.		Enter valid choice							
	35	Rare Wildlife	N	N							
	36	Scarce/Rare/S1/S2 local community	N	N							
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A						
	38	Community interspersion (see diagram 2)	2	M	0.5				0		
	39	Wetland detritus	N/A	N/A							
	40	Wetland interspersion on landscape	A	1	1						
	41	Wildlife barriers	A	1							
	42	Amphibian breeding potential-hydroperiod	A	1							
	43	Amphibian breeding potential--fish presence	A	1							
	44	Amphibian & reptile overwintering habitat	C	0.1							
	45	Wildlife species (list)									
	46	Fish habitat quality	N/A	N/A							
	47	Fish species (list)									
	48	Unique/rare educ./cultural/rec.opportunity	N	N							
	49	Wetland visibility	C	0.1							
	50	Proximity to population	N	0.1							
	51	Public ownership	A	1							
	52	Public access	C	0.1							
	53	Human influence on wetland	A	1							
	54	Human influence on viewshed	A	1							
	55	Spatial buffer	C	0.1							
	56	Recreational activity potential	C	0.1							
	57	Commercial crop--hydrologic impact	N/A	N/A							

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	R	R or D	0.1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	3.3
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	1	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-1	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.50	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.61	Med	
Water Quality--Downstream		0.68	High	
Water Quality--Wetland		0.81	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.81	0.81	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	indeterminate GW source	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL34

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.34								
		TOTAL VEG Rating	0.34	Medium								
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	I	Depressional/Isolated								
	8	Water depth (inches)	12									
		Water depth (% inundation)	80%									
	9	Local watershed/immedita drainage (acres)	10									
	10	Existing wetland size	1									
	11	SOILS: Up/Wetland (survey classification + site)										
	12	Outlet characteristics for flood retention	A	1								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	100%	H	1							
	17	Emerg. veg. flood resistance	N/A	0								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	15%	0.15	1	**0.15**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	B	0.5								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	3	H	1					0		
	39	Wetland detritus	A	1								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	A	1								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	C	0.1								
	45	Wildlife species (list)										
	46	Fish habitat quality	N/A	N/A								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	A	1								
	55	Spatial buffer	C	0.1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1	
59	*GW - Subwatershed land use*	D	R or D	1	
60	*GW - Wetland size and soil group*	D	R or D	1	
61	GW - Wetland hydroperiod	D	R or D	1	
62	GW - Inlet/Outlet configuration	D	R or D	1	
63	GW - Surrounding upland topographic relief	D	R or D	1	
64	Restoration potential w/o flooding		Y or N	6	
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice	
66A	*Existing wetland size (acres) [from #10]*	1	__ acres		
66B	Total wetland restoration size (acres)		__ acres	0.1	
66C	(Calculated) Potential New Wetland Area [B-A]	-1	__ acres	% effectively drained: ####	
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1	value: ####
68	Likelihood of restoration success		a b c	Enter valid choice	
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling		
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8		
71	Wetland sensitivity to stormwater		E a b c		
72	Additional stormwater treatment needs		a b c		

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.34	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.61	Med	
Water Quality--Downstream		0.69	High	
Water Quality--Wetland		0.77	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.85	0.85	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL35

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.33								
		TOTAL VEG Rating	0.33	Medium								
	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	Flood	Floodplain								
	8	Water depth (inches)	100									
		Water depth (% inundation)	18%									
	9	Local watershed/immedita drainage (acres)	10									
	10	Existing wetland size	5									
Digital worksheet, section I	11	SOILS: Up/Wetland (survey classification + site)										
	12	Outlet characteristics for flood retention	N/A	N/A								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	100%	H	1							
	17	Emerg. veg. flood resistance	A	1								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	B	0.5								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	1	L	0.1					0		
	39	Wetland detritus	A	1								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	A	1								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	C	0.1								
	45	Wildlife species (list)										
	46	Fish habitat quality	N/A	N/A								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	A	1								
	55	Spatial buffer	C	0.1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	R	R or D	0.1
64	Restoration potential w/o flooding		Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	5	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-5	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.33	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.71	High	
Water Quality--Wetland		0.76	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.75	0.75	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL36

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.66								
		TOTAL VEG Rating	0.66	High								
	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	FT	Depress'l/Flow-through								
	8	Water depth (inches)	6									
		Water depth (% inundation)	100%									
	9	Local watershed/immedita drainage (acres)	10									
	10	Existing wetland size	15									
	11	SOILS: Up/Wetland (survey classification + site)										
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	95%	H	1							
	17	Emerg. veg. flood resistance	A	1								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	B	0.5								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)		Enter a percentage								
	31	Wetland in-water width (in feet, average)		Enter a percentage								
	32	Emergent vegetation erosion resistance		Enter valid choice								
	33	Shoreline erosion potential		Enter valid cho								
	34	Bank protection/upslope veg.		Enter valid choice								
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	3	H	1				0			
	39	Wetland detritus	N/A	N/A								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	I	0								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	N/A	0								
	45	Wildlife species (list)										
	46	Fish habitat quality	N/A	N/A								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	A	1								
	55	Spatial buffer	C	0.1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical weighted average. To use the highest Community rating, please manually ove value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	R	R or D	0.1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	R	R or D	0.1
64	Restoration potential w/o flooding		Y or N	3.3
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	15	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-15	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.66	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.71	High	
Water Quality--Wetland		0.86	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.92	0.92	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	indeterminate GW source	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

		Wetland ID 37 UTM Coordinates 574143 5273635	Wetland ID 38 UTM Coordinates 5744310 5273047	Wetland ID 39 UTM Coordinates 571776 5273734	Wetland ID 40 UTM Coordinates 577363 5276109
	Date	**28-Aug-08**	**28-Aug-08**	**28-Aug-08**	**29-Aug-08**
	Special Features (from list, p.2--enter letter/s)	-	-	-	-
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	4A Coniferous Bog	4A Coniferous Bog	8A Alder Thicket	4A Coniferous Bog
	Community Proportion (% of total)	66%	66%	33%	33%
	Dominant Vegetation / Cover Class	SPRUCE/4 LARCH/2 SWAMP BIRCH/4 HORSETAIL/4 LEATHERLEAF/4 ALDER/2 WILLOW2 MOSS/6	SPRUCE/5 LABRADOR TEA/4 ALDER/2 GRASS2 MOSS/6	SPRUCE/2 ALDER/6 GRASS/2 BLUEBEAD LILY/2 LABRADOR TEA2 MOSS/6	SPRUCE/3 LARCH/4 CEDAR3 ALDER/3 ASH/1 MOSS/6
	Invasive/exotic Vegetation / Cover Class	NONE	NONE	NONE	NONE
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	H 1	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	H 1	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		0.66 High	0.66 High	0.33 Medium	0.33 Medium
#4	Listed, rare, special plant species?	n N	N	N	N
#5	**Rare community or habitat?**	**n N**	**N**	**N**	**N**
#6	Pre-European-settlement conditions?	n N	N	N	N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

WTL37

		Question Description	User entry	Rating								
	1	Veg. Table 2, Option 4		0.66								
		TOTAL VEG Rating	0.66	High								
	4	Listed, rare, special plant species?	n	next								
	5	Rare community or habitat?	n	next								
	6	Pre-European-settlement conditions?	n	next								
	7	hydrogeo & topo	Flood	Floodplain								
	8	Water depth (inches)	12									
		Water depth (% inundation)	100%									
	9	Local watershed/immedita drainage (acres)	200									
	10	Existing wetland size	60									
Digital worksheet, section I	11	SOILS: Up/Wetland (survey classification + site)										
	12	Outlet characteristics for flood retention	N/A	N/A								
	13	Outlet characteristics for hydrologic regime	A	1								
	14	Dominant upland land use (within 500 ft)	A	1	0.1							
	15	Soil condition (wetland)	A	1								
	16	Vegetation (% cover)	100%	H	1							
	17	Emerg. veg. flood resistance	A	1								
	18	Sediment delivery	A	1								
	19	Upland soils (based on soil group)	B	0.5								
	20	Stormwater runoff pretreatment & detention	C	0.1	1							
	21	Subwatershed wetland density	C	0.1								
	22	Channels/sheet flow	A	1								
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**						
		adjacent area mgmt: % Manicured		0								
		adjacent area mgmt: % Bare		0								
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**						
		adjacent area diversity: % Mixed		0								
		adjacent area diversity: % Sparse/Inv./Exotic		0								
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**						
		adjacent area slope: % Moderate		0								
		adjacent area slope: % Steep		0								
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	B	0.5								
	28	Nutrient loading	A	1								
	29	Shoreline wetland?	N	N								
	30	Rooted shoreline vegetation (%cover)	Enter a percentage									
	31	Wetland in-water width (in feet, average)	Enter a percentage									
	32	Emergent vegetation erosion resistance	Enter valid choice									
	33	Shoreline erosion potential	Enter valid cho									
	34	Bank protection/upslope veg.	Enter valid choice									
	35	Rare Wildlife	N	N								
	36	Scarce/Rare/S1/S2 local community	N	N								
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
	38	Community interspersion (see diagram 2)	2	M	0.5					0		
	39	Wetland detritus	N/A	N/A								
	40	Wetland interspersion on landscape	A	1	1							
	41	Wildlife barriers	A	1								
	42	Amphibian breeding potential-hydroperiod	I	0								
	43	Amphibian breeding potential--fish presence	A	1								
	44	Amphibian & reptile overwintering habitat	C	0.1								
	45	Wildlife species (list)										
	46	Fish habitat quality	N/A	N/A								
	47	Fish species (list)										
	48	Unique/rare educ./cultural/rec.opportunity	N	N								
	49	Wetland visibility	C	0.1								
	50	Proximity to population	N	0.1								
	51	Public ownership	A	1								
	52	Public access	C	0.1								
	53	Human influence on wetland	A	1								
	54	Human influence on viewshed	A	1								
	55	Spatial buffer	C	0.1								
	56	Recreational activity potential	C	0.1								
	57	Commercial crop--hydrologic impact	N/A	N/A								

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	5.1
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	60	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-60	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.66	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.71	High	
Water Quality--Wetland		0.86	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.85	0.85	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL38

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.60									
		TOTAL VEG Rating	0.6	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	FT	Depress'l/Flow-through									
	8	Water depth (inches)	6										
		Water depth (% inundation)	100%										
	9	Local watershed/immedita drainage (acres)	20										
	10	Existing wetland size	10										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	100%	H	1								
	17	Emerg. veg. flood resistance	A	1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H		1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
	27	Downstream sensitivity/WQ protection	B	0.5									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)		Enter a percentage									
	31	Wetland in-water width (in feet, average)		Enter a percentage									
	32	Emergent vegetation erosion resistance		Enter valid choice									
	33	Shoreline erosion potential		Enter valid cho									
	34	Bank protection/upslope veg.		Enter valid choice									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
Digital worksheet, section II	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	2	M	0.5					0			
	39	Wetland detritus	N/A	N/A									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	I	0									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	N/A	0									
	45	Wildlife species (list)											
	46	Fish habitat quality	N/A	N/A									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	R	R or D	0.1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	3.3
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	10	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-10	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.60	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.71	High	
Water Quality--Wetland		0.84	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.84	0.84	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	indeterminate GW source	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL39

		Question Description	User entry	Rating									
	1	Veg. Table 2, Option 4		0.33									
		TOTAL VEG Rating	0.33	Medium									
	4	Listed, rare, special plant species?	n	next									
	5	Rare community or habitat?	n	next									
	6	Pre-European-settlement conditions?	n	next									
	7	hydrogeo & topo	FT	Depress'l/Flow-through									
	8	Water depth (inches)	6										
		Water depth (% inundation)	80%										
	9	Local watershed/immedita drainage (acres)	30										
	10	Existing wetland size	3										
	11	SOILS: Up/Wetland (survey classification + site)											
Digital worksheet, section I	12	Outlet characteristics for flood retention	N/A	N/A									
	13	Outlet characteristics for hydrologic regime	A	1									
	14	Dominant upland land use (within 500 ft)	A	1	0.1								
	15	Soil condition (wetland)	A	1									
	16	Vegetation (% cover)	100%	H	1								
	17	Emerg. veg. flood resistance	A	1									
	18	Sediment delivery	A	1									
	19	Upland soils (based on soil group)	B	0.5									
	20	Stormwater runoff pretreatment & detention	C	0.1	1								
	21	Subwatershed wetland density	C	0.1									
	22	Channels/sheet flow	A	1									
	23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H		1				
	24	Adjacent Area Management: % Full	100%	1	1	**1**							
		adjacent area mgmt: % Manicured		0									
		adjacent area mgmt: % Bare		0									
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**							
		adjacent area diversity: % Mixed		0									
		adjacent area diversity: % Sparse/Inv./Exotic		0									
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**							
		adjacent area slope: % Moderate		0									
		adjacent area slope: % Steep		0									
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	B	0.5									
	28	Nutrient loading	A	1									
	29	Shoreline wetland?	N	N									
	30	Rooted shoreline vegetation (%cover)		Enter a percentage									
	31	Wetland in-water width (in feet, average)		Enter a percentage									
	32	Emergent vegetation erosion resistance		Enter valid choice									
	33	Shoreline erosion potential		Enter valid cho									
	34	Bank protection/upslope veg.		Enter valid choice									
	35	Rare Wildlife	N	N									
	36	Scarce/Rare/S1/S2 local community	N	N									
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
	38	Community interspersion (see diagram 2)	2	M	0.5						0		
	39	Wetland detritus	A	1									
	40	Wetland interspersion on landscape	A	1	1								
	41	Wildlife barriers	A	1									
	42	Amphibian breeding potential-hydroperiod	A	1									
	43	Amphibian breeding potential--fish presence	A	1									
	44	Amphibian & reptile overwintering habitat	C	0.1									
	45	Wildlife species (list)											
	46	Fish habitat quality	N/A	N/A									
	47	Fish species (list)											
	48	Unique/rare educ./cultural/rec.opportunity	N	N									
	49	Wetland visibility	C	0.1									
	50	Proximity to population	N	0.1									
	51	Public ownership	A	1									
	52	Public access	C	0.1									
	53	Human influence on wetland	A	1									
	54	Human influence on viewshed	A	1									
	55	Spatial buffer	C	0.1									
	56	Recreational activity potential	C	0.1									
	57	Commercial crop--hydrologic impact	N/A	N/A									

Highest-rated

This comes in from Side 1 automatical
weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	R	R or D	0.1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	3.3
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	3	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]		__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.33	Med	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.71	High	
Water Quality--Wetland		0.76	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.80	0.80	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.44	0.44	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	indeterminate GW source	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

WTL40

		Question Description	User entry	Rating							
	1	Veg. Table 2, Option 4		0.33							
		TOTAL VEG Rating	0.33	Medium							
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next							
	5	Rare community or habitat?	n	next							
	6	Pre-European-settlement conditions?	n	next							
	7	hydrogeo & topo	FT	Depress'l/Flow-through							
	8	Water depth (inches)	12								
		Water depth (% inundation)	90%								
	9	Local watershed/immedita drainage (acres)	60								
	10	Existing wetland size	100								
	11	SOILS: Up/Wetland (survey classification + site)									
	12	Outlet characteristics for flood retention	N/A	N/A							
	13	Outlet characteristics for hydrologic regime	A	1							
	14	Dominant upland land use (within 500 ft)	B	0.5	0.5						
	15	Soil condition (wetland)	A	1							
	16	Vegetation (% cover)	100%	H	1						
	17	Emerg. veg. flood resistance	A	1							
	18	Sediment delivery	A	1							
	19	Upland soils (based on soil group)	B	0.5							
	20	Stormwater runoff pretreatment & detention	C	0.1	1						
	21	Subwatershed wetland density	C	0.1							
	22	Channels/sheet flow	A	1							
	23	Adjacent naturalized buffer average width (feet)	400	H	WQ	1	H		1		
	24	Adjacent Area Management: % Full	100%	1	1	**1**					
		adjacent area mgmt: % Manicured		0							
		adjacent area mgmt: % Bare		0							
	25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**					
		adjacent area diversity: % Mixed		0							
		adjacent area diversity: % Sparse/Inv./Exotic		0							
	26	Adjacent Area Slope: % Gentle	5%	0.05	1	**0.05**					
		adjacent area slope: % Moderate		0							
		adjacent area slope: % Steep		0							
	27	Downstream sensitivity/WQ protection	B	0.5							
Digital worksheet, section II	28	Nutrient loading	A	1							
	29	Shoreline wetland?	N	N							
	30	Rooted shoreline vegetation (%cover)		Enter a percentage							
	31	Wetland in-water width (in feet, average)		Enter a percentage							
	32	Emergent vegetation erosion resistance		Enter valid choice							
	33	Shoreline erosion potential		Enter valid cho							
	34	Bank protection/upslope veg.		Enter valid choice							
	35	Rare Wildlife	N	N							
	36	Scarce/Rare/S1/S2 local community	N	N							
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A						
	38	Community interspersion (see diagram 2)	2	M	0.5					0	
	39	Wetland detritus	N/A	N/A							
	40	Wetland interspersion on landscape	A	1	1						
	41	Wildlife barriers	A	1							
	42	Amphibian breeding potential-hydroperiod	A	1							
	43	Amphibian breeding potential--fish presence	A	1							
	44	Amphibian & reptile overwintering habitat	C	0.1							
	45	Wildlife species (list)									
	46	Fish habitat quality	N/A	N/A							
	47	Fish species (list)									
	48	Unique/rare educ./cultural/rec.opportunity	N	N							
	49	Wetland visibility	C	0.1							
	50	Proximity to population	N	0.1							
	51	Public ownership	A	1							
	52	Public access	C	0.1							
	53	Human influence on wetland	A	1							
	54	Human influence on viewshed	B	0.5							
	55	Spatial buffer	C	0.1							
	56	Recreational activity potential	C	0.1							
	57	Commercial crop--hydrologic impact	N/A	N/A							

Highest-rated

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weighted average. To use the highest
Community rating, please manually ove
value (shown to the right) into the field

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	R	R or D	0.1
64	Restoration potential w/o flooding		Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	100	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	-100	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (poten	0	__ feet	0.1 value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		0.33	Med	
Hydrology - Characteristic		0.88	High	
Flood Attenuation		0.65	Med	
Water Quality--Downstream		0.63	Med	
Water Quality--Wetland		0.69	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.77	0.77	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.77	High	
Aesthetics/Recreation/Education/Cultural	0.38	0.38	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	0

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#####
Stormwater Sensitivity (not active)		