2009 Hay Lake Parcel and McFarland Parcel Summer Wildlife and Wetland Assessment Final Report

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Prepared for:



Hoyt Lakes, MN



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Prepared for: **PolyMet Mining Inc.**

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Executive Summary

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 (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, and 2006 and this information was used to evaluate impacts to wildlife and their habitats for an Environmental Impact Statement for the mine project. Wildlife and their habitats on the Additional Parcel were evaluated in 2008 and 2009 and this information, along with information collected for the Mine Site, was used by the Forest Service in the preliminary land exchange appraisal, and will be used to evaluated impacts to wildlife and their habitats for an EIS for the proposed land exchange. 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.

PolyMet proposes to purchase and transfer 4,684 acres of nonfederal lands to the Government as part of the proposed land exchange.¹ These include 4,652 acres associated with the Hay Lake Parcel, and 32 acres associated with the McFarland Parcel. This study evaluated the wildlife and habitats these lands. 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; 4) calling surveys for northern goshawk, owls, and gray wolf; and 5) echolocator surveys for bats.

Much of the Hay Lake Parcel is comprised of wetlands of high value. No wetlands are found on the McFarland Parcel. To better determine wetland acreage, functions and values, a wetland assessment was conducted for the Hay Lake Parcel and McFarland Parcel to assist with the land exchange appraisal.

¹ Acreage for the Hay Lake and McFarland parcels is based on Government Land Office (GLO) surveys.



Field surveys were conducted on the Hay Lake Parcel during June 22 to 27, and June 29 and 30, and on the McFarland Parcel on June 28, 2009. Evidence of 6 amphibian species, 3 reptile species, 49 bird species, and at least 12 mammal species was found on the Hay Lake Parcel, and evidence of 1 amphibian species, 19 bird species, and at least 8 mammal species was found on the McFarland Parcel. Species of interest identified at the sites during surveys included common loon, trumpeter swan, hooded merganser, broad-winged hawk, red-tailed hawk, ruffed grouse, American woodcock, belted kingfisher, pileated woodpecker, Swainson's thrush, bats, beaver, gray wolf, white-tailed deer, and moose. We mapped approximately 1,996 acres of upland and 2,930 acres of wetland habitat on the Hay Lake Parcel and 31 acres of upland habitat on the McFarland Parcel.² Thirty-three wetlands, or portions of wetlands, were evaluated for their functions and values on the Hay Lake Parcel; all wetlands were rated high value for most wetland functions and values.

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

² The acreage surveyed during wildlife and wetland surveys on the parcels is based on Geographic Information System (GIS) mapping conducted by Barr Engineering, Inc. These acreages are greater than those based on GLO surveys.

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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 (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, and 2006 and this information was used to evaluate impacts to wildlife and their habitats for an Environmental Impact Statement for the mine project. Wildlife and their habitats on the Additional Parcel were evaluated in 2008 and 2009 and this information, along with information collected for the Mine Site, was used by the Forest Service in the preliminary land exchange appraisal, and will be used to evaluated impacts to wildlife and their habitats for an EIS for the proposed land exchange. 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.

PolyMet proposes to purchase and transfer 4,684 acres of nonfederal lands to the Government as part of the proposed land exchange.³ These include 4,652 acres associated with the Hay Lake Parcel, and 32 acres associated with the McFarland Parcel (Figures 1 and 2). This study evaluated the wildlife and habitats on nonfederal lands that PolyMet proposes to purchase and transfer to the Government as part of the proposed land exchange. 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; 4) calling surveys for northern goshawk, owls, and gray wolf; and 5) echolocator surveys for bats. In addition, to better determine wetland acreage, functions and values, a wetland assessment was conducted for the Hay Lake Parcel to assist with the land exchange appraisal.

³ Acreage for the Hay Lake and McFarland parcels is based on Government Land Office (GLO) surveys.



Wildlife species of concern (and federal/state status) that could occur on the parcels 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).

To provide information needed for the land exchange, AECOM Environment (AECOM; formerly ENSR) conducted surveys of wildlife and their habitats during June 2009 on the Hay Lake and McFarland parcels. 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; and

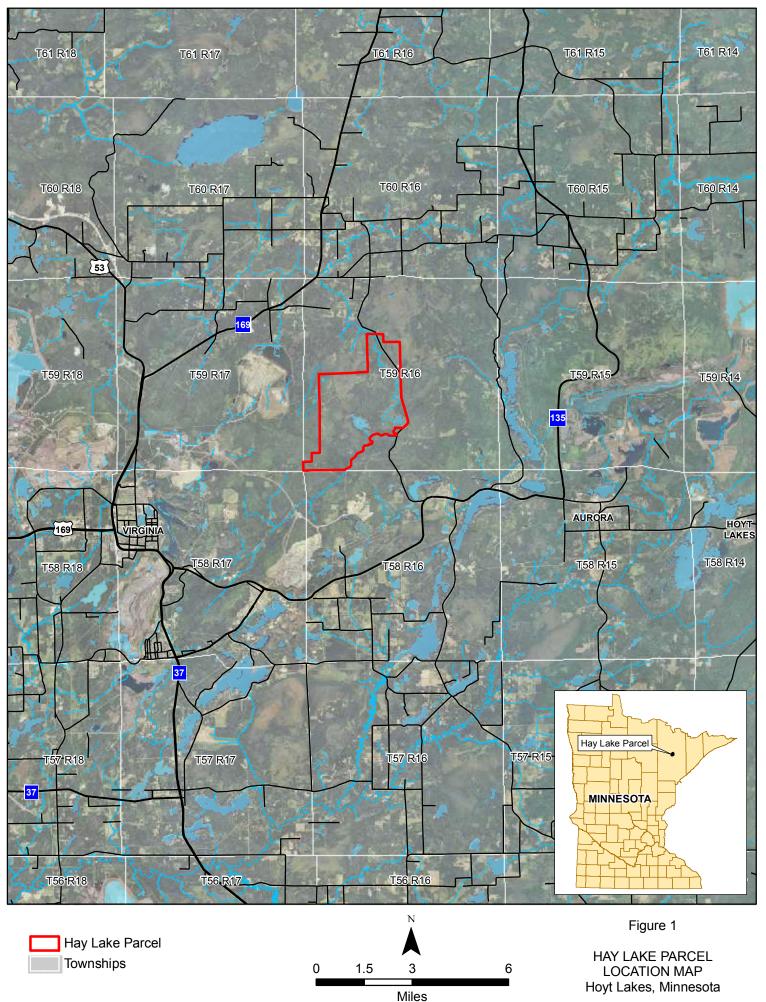
In addition to conducting an assessment of wildlife and their habitats, the Forest Service requested that a wetland assessment be conducted for the parcels. Information from the wetland assessment would also be used during the land exchange appraisal. Much of the Hay Lake Parcel is comprised of wetlands of high value. To better determine wetland acreage, functions and values on the parcels, AECOM conducted an assessment of wetland acreage and functions and values concurrently with the wildlife habitat assessment.

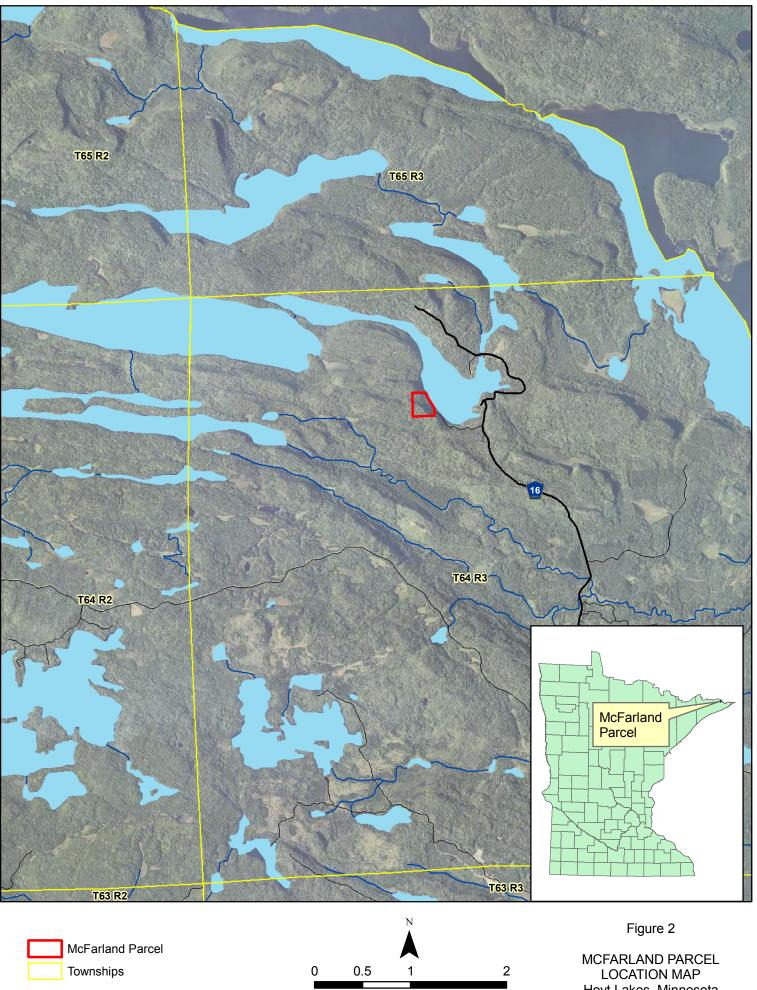
Information collected during the wildlife and wetland assessments would support land exchange and environmental review and permitting efforts, and help to identify additional data collection requirements.

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. 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 and wild rice⁴ assessments. Aaron Mielke and Amy Meulebroeck (Barr Engineering) prepared maps and provided Geographic Information System (GIS) analysis.

⁴ Common and scientific names of plants and animals given in this report are provided in Appendix A.





Miles

Hoyt Lakes, Minnesota



2.0 STUDY AREA

The Hay Lake parcel is in central St. Louis County, approximately 3 miles east of Biwabik, Minnesota. The parcel, located at the eastern end of the Mesabi Iron Range, includes approximately 4,926 acres in all or portions of Sections 9, 16, 19, 20, 21, 27, 28, 29, 30, 31, and 32 in Township 59 North, Range 16 West (Figure 1).⁵ The site is moderately hilly and consists predominantly of second- or third growth deciduous and coniferous forest uplands and emergent, scrub-shrub, and forested wetlands. The parcel is adjacent to the Superior National Forest.

The McFarland parcel consists of approximately 31 acres in Section 9, Township 64 North, Range 3 East, in Cook County, Minnesota. It is approximately 3 miles west of the U.S.-Canada border (Figure 2). The site is mostly on a hillslope and consists of second- or third growth deciduous and coniferous forest upland. The parcel is surrounded by the Superior National Forest.

⁵ The acreage surveyed during wildlife and wetland surveys on the parcels is based on GIS mapping conducted by Barr Engineering, Inc. These acreages are greater than those based on GLO surveys.



3.0 METHODS – WILDLIFE HABITAT ASSESSMENT

The evaluation of wildlife and their habitat use during early summer on the Hay Lake and McFarland parcels 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 wildlife assessments conducted between 2000 and 2009 for the NorthMet Mine Project (ENSR 2000, 2005, 2006; AECOM 2008, 2009a). AECOM reviewed surveys of wildlife and their habitats on other lands near the parcels. These included the *Virginia Forest Management Project Final Environmental Impact Statement* (Forest Service 2004), which evaluated Forest Service lands near the Hay Lake Parcel, and the *Biological Evaluation South Fowl Lake Access Trail Gunflint Ranger District, Superior National Forest* (Forest Service 2006) for information on wetland habitat near the McFarland Parcel.

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) for this project and other surveys within the region. The information received from these contacts was used to gain information on plants and animals likely to be found on the parcels 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 May 2009. The results of that search showed that there are rare species within the McFarland parcel and within one mile of the Hay Lake parcel. Rocky mountain woodsia and encrusted saxifrage, both state-listed threatened plant species, have been documented within the McFarland parcel, and small white water-lily, a state-threatened species, and small-flowered woodrush, leafless water milfoil, and elegant groundsel, state species of concern, have been documented within 1 mile of the parcel boundary. Ternategrape-fern and triangle moonwort, state threatened species, and white baneberry, Dragon's-mouth, matricary grapefern, mingan moonwort, goblin fern, pale moonwort, necklace spike sedge, and clustered bur-reed, state plant species of concern, have been documented within 1 mile of the Hay Lake parcel. In addition, two wildlife species, northern goshawk and American bittern, 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 (<u>http://www.dnr.state.mn.us/ets/index.html</u>). AECOM reviewed the *Canada Lynx Sightings in Minnesota 2000-2007 Database* (MnDNR 2007a) for lynx sightings on or near the Hay Lake and McFarland parcels. AECOM also reviewed the *Wolf Telemetry Database* (International Wolf Center 2009) for wolf sightings on or near the parcels.

Based on the above discussions, database queries, and document reviews, the following were identified as species of interest for the 2008 survey on the Hay Lake Parcel and McFarland 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 Hay Lake Parcel on June 22 to 27, and June 29 and 30, and on June 28, 2009, on the McFarland Parcel. 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, American 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. Calling surveys for northern goshawk and American three-toed woodpecker were conducted during the day, and



during the night for owls and gray wolves, at calling stations (Figures 3 and 4). A 25-watt amplifier, with a range of up to 1 mile, was used to broadcast the calls. Professionally recorded northern goshawk, three-toed woodpecker, owl, and gray wolf calls were played into the amplifier. Visual and auditory observations of all wildlife that responded to calls during these surveys were recorded. Echolocators were used to detect the presence of bats in the vicinity of the parcels.

3.3.2.1 Northern Goshawk

Adult goshawk warning calls were broadcast at calling stations during the day. A biologist faced in a predetermined direction, broadcast a series of calls for a minimum of 20 seconds, rotated 45 degrees, and played another 20-second series of calls. This call/rotate method was repeated every 45 degrees until the faced the original broadcast direction (after a total of eight series of calls). Before initiating another round of calls, the survey team waited several minutes, looking and listening for responses to the broadcasted calls. This procedure was repeated at each calling station.

If a hawk responded to the calls, the species was determined based on visual and auditory observations. Since several species of hawks in the area are likely to respond to northern goshawk warning calls if they have a nest nearby, we also tried to locate the nests of hawks that responded to broadcasted calls.

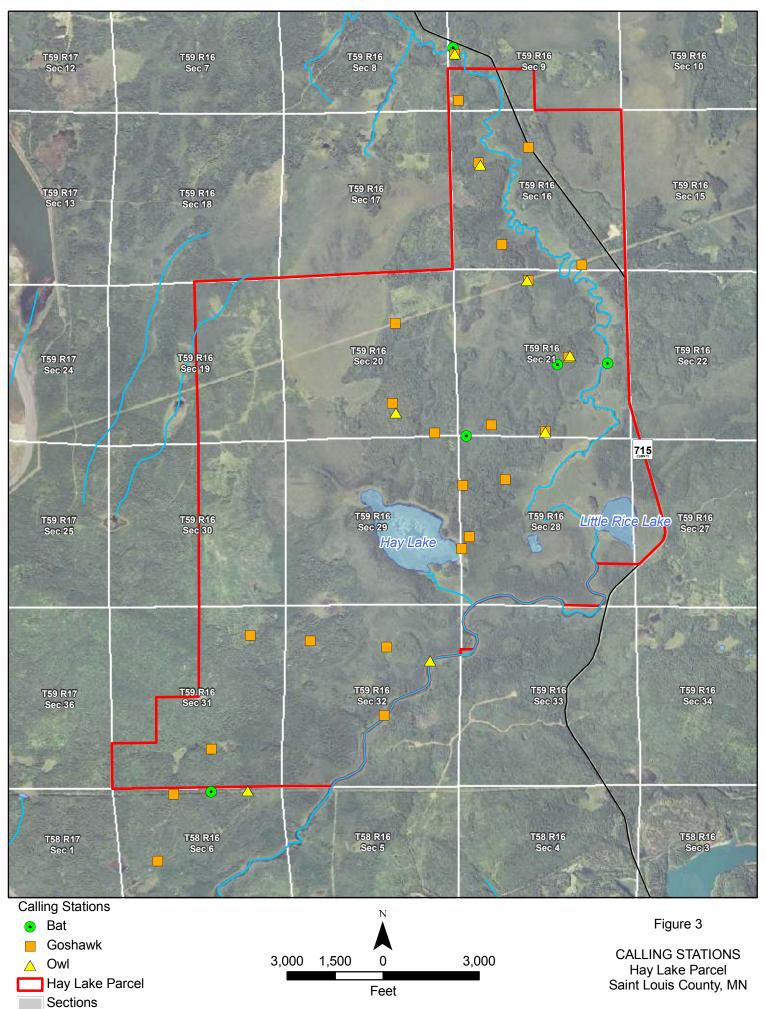
3.3.2.2 American Three-toed Woodpecker

Calls and drumming sounds of American three-toed woodpeckers were broadcast at calling stations during the day. A biologist faced in a pre-determined direction, broadcast a series of calls and drums for a minimum of 20 seconds, rotated 45 degrees, and played another 20-second series of calls. This call/rotate method was repeated every 45 degrees until the faced the original broadcast direction (after a total of eight series of calls/drums). Before initiating another round of calls/drums, the survey team waited several minutes, looking and listening for responses to the broadcasted calls/drums. This procedure was repeated at each calling/drumming station. If a woodpecker responded to the calls or drums, the species was determined based on visual and auditory observations.

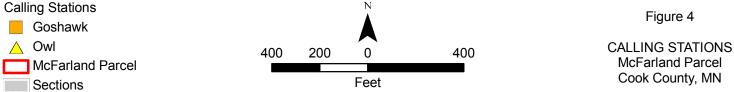
3.3.2.3 Owls

Recordings of owls that could be found in the area, including barred owl, boreal owl, eastern screech owl, great gray owl, great horned owl, long-eared owl, northern saw-whet owl, and short-eared owl, were broadcasted at night at calling stations.

Two call replications were conducted at each calling location, with each replication lasting approximately 2 minutes. The male owl territorial calls were broadcast in six directions during each replication. To start, the recording was played for a minimum of 20 seconds while facing a pre-determined direction, followed by a rotation of 60 degrees. The recording was then played for another 20 seconds in the new direction. This call/rotate method was repeated four more times, until the original broadcasting direction was reached. If an owl responded to the calls, the species was determined based on visual and auditory observations.









3.3.2.4 Gray Wolf

Calling surveys for gray wolves were conducted at night. Gray wolf calls are believed to play a role in maintaining wolf territories, and howling surveys in northern Minnesota's Voyageurs National Park have had a greater than 50 percent success rate at detecting gray wolves (Gogan et al. 2004). Human vocalizations that imitate wolf howls, and recorded wolf calls, were broadcast from calling stations. At each calling station, calls of a lone wolf and of several wolves in a pack were broadcast for approximately 3 minutes (Harrington and Mech 1979). If wolves responded, the number of animals involved was estimated.

3.3.2.5 Bats

Echolocators were used to detect the presence of bats on and near the Hay Lake Parcel. An echolocator picks up the inaudible, high frequency calls of bats and converts them 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.

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 parcels, 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 the 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 to 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 parcels 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.

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).					

Table 1Ages of Forest Stand Types (Years)

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.

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 Hay Lake, Little Rice Lake, an unnamed lake, and the Pike River on the Hay Lake Parcel, and McFarland Lake. Wild rice, pondweeds, coontail, and bulhead water-lily were seen in these areas, but comprised <30 percent of surface of the water body, but up to 70% of the subsurface of the water body. Open water habitat was used by common loon, and several species of waterfowl including trumpeter swan, ringed-neck duck, and and river otter.
P-1	Bog/palustrine emergent	14	Black spruce bog; open sphagnum bog; mixed emergent marsh	AB, B, C	Bog wetlands were rare on the site. There were scattered (<5 percent) black spruce and smallish tamarack in bog wetlands. Bog Labrador-tea, bog birch, lowbush blueberry, small-fruited bog cranberry, speckled alder, and small willows covered up to 50 percent of the area. Other species encountered included cottongrass, bunchberry, and bog rosemary. Emergent wetlands were dominated by sedges, narrow-leaved cattail, woolly sedge, spikerush, wild iris, and horsetail (up to 95 percent cover). Willows, tamarack, and speckled alder were often found along the border of these wetlands. Bog/emergent wetlands provided habitat for several amphibians, birds including great-blue heron, and sparrows, and 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. Scrub-shrub wetlands usually consisted of a dense (50 to 90 percent) cover of speckled alder, with alder often 4 feet or taller in height. These wetlands may also have scattered sapling balsam fir, black spruce, willow, and the occasional black ash (up to 10 percent cover). Dominant low shrubs were bog Labrador-tea, leatherleaf, lowbush blueberry, prickly rose, wild raspberry, and red-osier dogwood. Herbaceous layer species included club and sphagnum mosses, woolly sedge, Canada bluejoint, narrow-leaved cattail, horsetail, and bunchberry. Provided forage for deer and moose as well has habitat for numerous bird species.

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			На	Table 2 (Cont.) bitat 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	С	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	С	Wetlands dominated by sapling deciduous trees. Comprised of sapling paper birch, trembling aspen, and mountain maple. Specked alder dominates the dense shrub layer, while twining honeysuckle, interrupted fern, sedges, and mosses are close to the ground. This habitat is rare on the Hay Lake Parcel.
P-5	Palustrine forest deciduous pole/young mature (5-12 in dbh)	14	Mixed hardwood swamp	В	Wetlands dominated by pole and young mature-size deciduous trees. Comprised of paper birch, trembling aspen, and mountain 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.
P-6	Palustrine forest deciduous mature (12+ in dbh)	14	Mixed hardwood swamp	AB	Wetlands dominated by mature deciduous trees. Comprised of paper birch, trembling aspen, and black ash, with occasional scattered black spruce and balsam fir. Specked alder, mountain maple, black spruce, and balsam fir were found in the shrub layer. Understory include bog Labrador-tea, leatherleaf, sphagnum moss, and club moss. Tree coverage averaged about 40 percent, shrubs coverage was about 70 percent, and ground vegetation coverage was about 80 percent. Provides habitat for numerous species of birds, small mammals, deer, and moose. Moderate size woody debris.
P-7	Palustrine forest mixed sapling (0-4 in dbh)	14	Mixed hardwood swamp; black spruce swamp	С	Wetlands dominated by a 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.

			Ha	Table 2 (Cont.) bitat 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 (5-12 in dbh)	14	Mixed hardwood swamp; black spruce swamp	В	Wetlands dominated by mixed stand of pole- and young mature-size deciduous and coniferous trees, including black spruce, tamarack, trembling aspen, and paper birch (to 30 percent cover). Bog Labrador-tea, leatherleaf, and speckled alder are prevalent (to 80 percent cover), as is spruce regeneration. The herbaceous layer varies in vegetative cover. In some areas with dense stands of spruce, few shrubs are seen, but sphagnum and club mosses could cover nearly 100 percent of the ground. Common species include clintonia, Starry false Solomon's seal, horsetail, and creeping snowberry. Some areas also have cottongrass. Important wildlife species include ruffed grouse, numerous species of songbirds, pileated woodpecker, snowshoe hare, and red squirrel. This habitat was not found on the parcels.
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 dominated black spruce, with scattered other conifer species (e.g., tamarack) or deciduous trees. Bog Labrador-tea and lowbush blueberry are prevalent, as is spruce regeneration. Red squirrel and woodpeckers are common in these forests. This habitat is rare on the Hay Lake Parcel.
P-10	Palustrine forest conifer sapling (0-4 in dbh)	9, 14	Black spruce swamp	С	Wetlands dominated by sapling conifer trees, primarily black spruce and tamarack to 60 percent cover. Shrubs include leatherleaf and bog Labrador-tea to 70 percent cover, while cottongrass, forbs, grasses, and mosses are found in the understory and cover up to 95 percent of the ground. Sapling spruce forest was uncommon on the site and provided limited wildlife habitat due to the small trees, lack of downed woody material and snags, and wet soil conditions.

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			н	Table 2 (Cont.) abitat 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-11	Palustrine forest conifer pole/young mature (5-12 in dbh)	9, 14	Black spruce swamp	В	Wetlands dominated by pole- and young mature-size conifer trees, primarily black spruce and tamarack. Tree cover ranged from 30 to 60 percent. Bog Labrador-tea, leatherleaf, willow, speckled alder, mountain maple, prickly rose, and lowbush blueberry were prevalent, as was spruce regeneration, and coverage ranged from 50 to 80 percent. Some tamarack could also be present. The herbaceous layer varied in vegetative cover from 50 to 90 percent. In some areas with dense stands of pole-sized spruce, few shrubs were seen, but sphagnum and club mosses could cover up to 90 percent of the ground. Common species include Canada bluejoint, sedges, bunchberry, ferns, prickly rose, horsetail, star flower, and creeping snowberry. Stands had good cover for wildlife. This is the most common wetland habitat on the parcels.
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 is prevalent, as is spruce regeneration. Speckled alder may be present. Mature forests often contain numerous snags and downed woody debris. Pileated woodpecker, black-capped chickadee, and red squirrel are common. This habitat was found on the McFarland Parcel.
	1		Γ	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 white clover, cow parsnip, ox-eye daisy, and thistles. Deer, moose, gray wolf, and red fox sign was also seen the Hay Lake Parcel. This habitat was not found on the McFarland Parcel.

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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-2	Grassland/ Forbs	Not applicable	Not applicable	Not applicable	Recently-disturbed sites that had revegetated and were 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 trembling aspen, willow, beaked hazel, and bog Labrador tea, comprised up to 20 percent cover. Bluejoint, daisy fleabane, wild raspberry, wild strawberry, thistles, ox-eye daisy, cow parsnip, white clover, thistles, and asters covered up to 80 percent of the area. American robin, white-tailed deer, gray wolf, and red fox or their sign 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 (trembling aspen, paper birch, jack pine, and black spruce) were occasionally found in these areas, but shrubs, including beaked hazel, lowbush blueberry, thimbleberry, and wild raspberry could cover up to 80 percent or more of the landscape. Provided forage for white- tailed deer and moose, and nesting and foraging habitats for a variety of birds, including red-winged blackbird.
U-4	Forest deciduous sapling (0-4 in dbh)	2	Aspen forest; aspen-birch forest	С	Forests dominated by sapling deciduous trees, primarily trembling aspen, with lesser amounts of paper birch, willow, and spruce from 60 to 80 percent cover. Mountain maple, beaked hazel, willow, lowbush blueberry, bog Labrador-tea, twining honeysuckle, and prickly rose were important shrubs. The ground cover included clintonia, bunchberry, large-leaved aster, bracken fern, twinflower, wild strawberry, wild raspberry, bunchberry, woodland anemone, and horsetail. Provided foraging habitat for birds and deer and moose. Shrub cover ranged from 40 to 80 percent while ground cover ranged from 60 to 90 percent.

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			Н	Table 2 (Cont.) abitat 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-5	Forest deciduous pole/young mature (5-12 in dbh)	2	Aspen forest; aspen- birch forest	BC	Forests dominated by pole and young mature-size deciduous trees. Deciduous forests usually dominated by trembling aspen and paper birch. Percent tree cover in pole forests ranged from 60 to 90 percent. Forests usually had a moderately dense (50 to 80 percent cover) midstory of sapling balsam fir and paper birch, beaked hazel, lowbush blueberry, wild raspberry, twining honeysuckle, and prickly rose. The ground cover ranged from 60 to 90 percent and included clintonia, bunchberry, large-leaved aster, bracken fern, wild strawberry, and club moss. Provided foraging and nesting habitat for a variety of birds and small mammals, roosting habitat for American crown, and shade cover during summer for larger mammals. This was the most common upland habitat on the parcels.
U-6	Forest deciduous mature (12+ in dbh)	2	Aspen forest; aspen- birch forest	В	Forest dominated by mature deciduous trees, with well-developed midstory of pole- and young mature-size trees. Usually dominated by trembling aspen to 16 inches dbh, 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, mountain maple, twining honeysuckle, and prickly rose. The ground cover included wild sarsaparilla, bunchberry, large-leaved aster, bracken fern, wild strawberry, clintonia, and horsetail. Trees and stumps used by cavity nesting birds and small mammals, and downed woody material provided habitat. Vegetation cover in the canopy, midstory, and near the ground ranged from 50 to 60 percent.
U-7	Forest mixed sapling (0-4 in dbh)	4	Mixed pine-hardwood forest; boreal hardwood-conifer forest	С	Forests dominated by a mixed stand of sapling conifer and deciduous trees. Mixed forests contain varying amounts of jack pine, spruce, trembling aspen, paper birch, and balsam fir saplings. Wild sarsaparilla, clintonia, twining honeysuckle, rose twisted stalk, large- leaved aster, and ferns are common herbs. Provides good foraging habitat, but limited cover for wildlife.

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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-8	Forest mixed pole/young mature (5-12 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, trembling aspen, and paper birch. Northern white cedar was also common on the McFarland Parcel. Beaked hazel, mountain maple, and twining honeysuckle were common in the midstory. Common herbs were wild sarsaparilla, clintonia, twining honeysuckle, bunchberry, rose twisted stalk, and large-leaved aster. Wild columbine was found on rock cliffs. Numerous birds were seen gleaning insects in trees during surveys. Forests had scattered woody debris and few snags. Vegetation cover in the canopy, midstory, and near the ground ranged from 50 to 60 percent.
U-9	Forest mixed mature (12+ dbh)	4	Mixed pine-hardwood forest; boreal hardwood-conifer forest	В	Forests dominated by a mixed stand of mature coniferous and deciduous trees, with well-developed midstory of pole and young mature-size trees. Mixed forests contained varying amounts of black spruce, trembling aspen, and paper birch. Pole and young mature-size deciduous and coniferous trees were found in the midstory, including spruce, balsam fir, and mountain maple. Shrubs included beaked hazel and lowbush blueberry. Mature forests usually had a moderate shrub layer, but the ground was nearly covered with vegetation, including wild sarsaparilla, horsetail, bunchberry, ferns, lowbush blueberry, 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. Canopy and midstory cover ranged from 40 to 70 percent, while ground cover ranged from 30 to 90 percent.
U-10	Forest conifer sapling (0-4 in dbh)	5, 8	Jack pine forest; black spruce-feathermoss forest	С	Forests dominated by sapling conifer trees, primarily jack pine and balsam fir, and occasionally black spruce. The shrub layer is usually dense and includes beaked hazel. The herb layer includes ferns, shining clubmoss, bunchberry, and Starry false Solomon's seal. Provides limited foraging habitat and cover for wildlife. This habitat was not found on the parcels.

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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 (5-12 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 and red pine, with scattered balsam fir and black spruce. Tree cover ranged from 60 to 70 percent The shrub layer was sparse (to 30 percent), but well-developed in pole forests with openings in the canopy. The herb layer included bunchberry, wood ferns, twinin honeysuckle, wild raspberry, white clover, tall buttercup, and Starry false Solomon's seal and coverage ranged from 60 to 80 percent. 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	В	Forests dominated by mature conifer trees, primarily jack pine and balsam fir, with scattered black spruce. Stands usually consist of trees of nearly uniform age. The shrub layer is usually dense and includes beaked hazel, willow, paper birch, trembling aspen, and balsam fir. The herb layer includes interrupted fern, shining clubmoss, bunchberry, wood ferns, and Starry false Solomon's seal. Jack pine forests with interspersed wet areas often have black spruce and tamarack in the overstory, and a shrub layer is comprised of willow, prickly rose, lowbush blueberry, and bog Labrador-tea. Large-leaved aster, clintonia and star flower are common herbs. These forests provide good foraging habitat for conifer-dependent species, and good snow-intercept thermal cover for deer and moose. Snags and downed woody material are common and provide habitat for amphibians, owls, woodpeckers, and squirrels. This habitat was not found on the parcels.	

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4.0 METHODS - WETLAND ASSESSMENT AND FUNCTIONS AND VALUES ANALYSIS

The evaluation of wetlands and their functions and values on the Hay Lake Parcel and McFarland Parcel was based on a review of studies conducted in the region 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 wetland habitats likely to be found in the region and on the Hay Lake Parcel and McFarland Parcel. AECOM also reviewed the Virginia Forest Management Project Final Environmental Impact Statement (Forest Service 2004), which evaluated Forest Service lands near the Hay Lake Parcel, and the Biological Evaluation South Fowl Lake Access Trail Gunflint Ranger District, Superior National Forest (Forest Service 2006) for information on wetland habitat near the McFarland Parcel.

The initial assessment of the Hay Lake Parcel was based on a review of U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) mapping and aerial photographic interpretation using infrared color photographs. 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 aerial photographic interpretation was also conducted to identify wetlands on the Hay Lake Parcel and McFarland Parcel.

4.2. Field Surveys

Wetlands on the parcels 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 NWI maps. 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

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; U.S. Army Corps of Engineers 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 parcels to better determine their boundaries, characteristics, and functions and values. Surveys covered nearly all portions of the parcels, 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 (1998) wetland classification systems, as shown in Table 3.

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	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-1	PEMC (Palustrine Emergent Seasonally Flooded)	Shallow marsh	Type 3 - Inland Shallow 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, 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 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-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	Water depths are less than 6.6 feet and very rarely fluctuate; therefore, emergent aquatic vegetation cannot become established. This type is characterized by submergent, floating and floating leaved aquatic plants including pondweed, water-lily, watermilfoil, coontail, and duckweed. Size can vary from one-quarter acre pond to a long oxbow of a river or a shallow bay of a lake.

 Table 3

 Comparison of Wetland Classification Systems



Wildlife Habitat ¹	Cowardin et al. ²	Eggers and Reed ³	Circular 39 ⁴	Definition ⁴
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.
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).				

Table 3 (Cont.) **Comparison of Wetland Classification Systems**

From: Eggers and Reed (1997).

⁴ From: Shaw and Fredine (1956).

4.4. Wetland Functional Assessment Methods

During the field surveys, data were collected related to the functions and values of representative wetlands within the parcels. 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).

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



- 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 (1998) 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 Hay Lake Parcel during June 22 to 27, and June 29 and 30, and on the McFarland Parcel on June 28, 2009. The weather was generally favorable during the study period. Temperatures ranged from the low 50s degree Fahrenheit (°F) in the morning to mid-80s °F during the afternoon. Light to moderate rain fell on and off during June 22 and 26 to 29. The survey was conducted mostly on foot, although the Pike River Road (County Road 715) was 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 6 amphibian species, 3 reptile species, 49 bird species, and at least 11 mammal species on the Hay Lake Parcel, and evidence of 1 amphibian species, 19 bird species, and at least 8 mammal species on the McFarland Parcel. American toad, gray treefrog, green frog, spring peeper, western chorus frog, and wood frog were observed or heard on the Hay Lake Parcel, and spring peeper on the McFarland Parcel. Garter snake, painted turtle, and snapping turtle were observed on the Hay Lake Parcel; no reptiles were seen on the McFarland Parcel.

Birds observed on wetlands and lakes on the Hay Lake Parcel (birds seen on the McFarland Parcel indicated with a *) included (common loon*, trumpeter swan and cygnets, ring-necked duck, hooded merganser*, great blue heron, Virginia rail, American woodcock, eastern phoebe*, red-winged blackbird, and song sparrow. Northern flicker, Eastern kingird, American robin*, cedar waxwing, American goldfinch, dark-eyed junco*, chipping sparrow*, 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, blue* and gray* jays, American crow, winter wren*, hermit thrush*, Swainson's thrush, ruby-crowned kinglet, pine grosbeak, Philadelphia vireo, red-eyed vireo, Canada warbler, chestnut-sided warbler, golden-winged warbler, yellow-rumped warbler, and common yellowthroat*. Woodpecker cavities and foraging signs were common on larger snags (>6 in dbh) and on stumps. Cavity-nesting species seen or heard in forests included barred owl* and great-horned owl, four species of woodpeckers (downy*, hairy*, and pileated* woodpeckers, and yellow-bellied sapsuckers), black-capped chickadee*, and red-breasted nuthatch*. Broad-winged hawk*, red-tailed hawk, turkey vulture, common nighthawk, and common raven* were seen flying overhead.

Mammals seen or identified based on sign included rodents, snowshoe hare, bats*, black bear*, gray wolf, red fox*, American marten*, river otter, red squirrel*, beaver*, white-tailed deer*, and moose. Snowshoe hare and their sign were seen in shrub areas near roads and wetlands. Bats were seen flying over wetlands in the evening and were recorded at six sites on or adjacent to the Hay Lake Parcel. Black bear sign was seen in mixed forests, Gray wolf and red fox tracks were seen along roads on the parcels. American marten and red squirrel sign was common in spruce forests. River otter were seen in the Pike River. Beaver dams and cuttings were found at several sites on both parcels and beaver dams created several ponds on the Hay Lake Parcel. White-tailed deer or their sign were seen at numerous locations on both parcels, including at bedding sites along the Pike River and near several deer hunting stands. Moose sign was observed over much of the Hay Lake Parcel, but especially in forests near wetlands and in shrublands.

5.3 Northern Goshawk, American Three-Toed Woodpecker, Owl, and Gray Wolf Calling and Bat Echolocation Surveys

Calling surveys were conducted at 24 stations during the day and 8 stations at night (Figure 3) on the Hay Lake Parcel, and at 3 stations during the day and 1 station at night on the McFarland Parcel (Figure 4). Echolocation



surveys were conducted at six stations on the Hay Lake Parcel (Table 4; one station was located just south of the parcel and is not shown on Figure 3).

5.3.1 Northern Goshawk

Surveys were conducted for northern goshawk during the day. Calling surveys, using recorded calls, were conducted at 24 calling stations on the Hay Lake Parcel and 3 stations on the McFarland Parcel. No responses were obtained during the surveys.

5.3.2 American Three-toed Woodpecker

Daytime surveys were done for American three-toed woodpeckers in conjunction with northern goshawk surveys. Calling surveys, using recorded calls, were conducted at 24 calling stations on the Hay Lake Parcel and 3 stations on the McFarland Parcel. No American three-toed woodpecker responses were heard during calling surveys, but hairy and pileated woodpeckers and northern flicker were observed during the surveys.

5.3.3 Owls

Owl calling surveys were conducted at night at eight calling stations on the Hay Lake Parcel and one station on the McFarland Parcel. Two great-horned owls were seen and heard at the survey station on the northern end of the Hay Lake Parcel. Barred owls were heard in the central and southern portions of Section 21, Township 59, Range 16. A barred owl was also heard at the McFarland Lake calling station.

5.3.4 Gray Wolf

Wolf howling surveys were conducted at night at the Hay Lake Parcel and McFarland Parcel calling stations. No gray wolves were heard during howling surveys, but sign of gray wolf was seen on the Hay Lake Parcel.

5.4 Bat Echolocation Surveys

Echolocation surveys were conducted at six stations on the Hay Lake Parcel, although one station was located just south of the parcel (Figure 3 and Table 4). Recordings indicated the presence of bats at all sites, with the greatest number of calls occurring at an emergent wetland with open water (814 echolocations, mostly feeding activity). Moderate numbers of echolocations were recorded at the two sites along the Pike River (164 echolocations north Pike River site, 230 echolocations middle Pike River site; feeding activity was moderate), and at two small emergent wetland ponds with limited open water (64 and 181 echolocations). The echolocation site to the south of the parcel was located a small patch of open water associated with an old beaver pond; 72 echolocations were recorded at this site.

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).

5.5 Species of Concern

Several species of concern may be found on the Hay Lake Parcel and McFarland 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).

Bat Echolocator Stations ¹						
E1	164 echolocations					
E2	230 echolocations					
E3	181 echolocations					
E4	814 echolocations					
E5	64 echolocations					
E6 (just south of parcel boundary)	72 echolocations					
¹ Station locations shown on Figure 3.						

Table 4Bat Echolocations at Survey Stations

5.5.1. Federally Listed Threatened and Endangered Species

Canada lynx (threatened). No lynx or their sign were observed during 2009 surveys. Of 437 lynx recorded by the MnDNR between 2000 and 2006, 115 lynx were reported in St. Louis County, and 109 lynx in Cook County, (MnDNR 2007), including verified, probable, and unverified sightings. The vast majority 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. A review of the Minnesota Lynx Database (MnDNR 2007a) revealed that lynx have been sighted in the townships of each parcel since 2000. A probable lynx sighting was made by a trained biologist in Section 13 of Township 59 North, Range 16 West, east of the Hay Lake parcel, in October 2003. Another lynx sighting was made 1 mile to the west of the Hay Lake parcel the same year. Unverified lynx sightings were made in December 2002 and January 2003 in Sections 22 and 27 of Township 64 North, 3 West, south of the McFarland parcel.

The Canada lynx originally ranged throughout the boreal forest of North America and the mixed coniferousdeciduous 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 mi² in portions of Cook, Koochiching, Lake, and St. Louis counties in Minnesota as lynx critical habitat. (Federal Register 2009). Both parcels are located within the area designated as critical habitat.

Gray wolf (threatened; Superior National Forest Management Indicator Species). Gray wolf was recorded in the Hay Lake Parcel during the survey. Wolf scat was seen on several abandoned logging roads. No wolves or their sign were seen on the McFarland Parcel.



A review of the International Wolf Center (2009) Minnesota Wolf Telemetry Database revealed that radio-collared wolves have been recorded in the townships of the Hay Lake Parcel. A wolf was observed in Section 6 of Township 58 North, Range 16 West in September 1994, just south of Hay Lake. Wolves were observed in Sections 1, 19, 22, and 23 of Township 59 North, Range 16 West, in and around the Hay Lake parcel, between 1994 and 1997. There are no recorded observations of wolves in the township of the McFarland parcel (Township 64 North, Range 3 West).

Territory size for wolves in northern Minnesota ranges from 20 to 150 mi² and wolf packs tend to avoid areas used by other wolf packs. 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 mi² (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 miles² in northeastern and north central Minnesota and include all of the Superior National Forest and portions of the Chippewa National Forest. The Hay Lake Parcel is not located within the area of critical habitat, while the McFarland Parcel is in Zone 1.

5.5.2. State-listed Threatened and Endangered Species

Wood turtle. No wood turtles were found in the parcels. 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. There are no Minnesota Natural Heritage Program records of wood turtles near either site (MnDNR 2009). 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. A pair of trumpeter swans withy cygnets (young) were seen on Little Rice Lake on the Hay Lake Parcel. The trumpeter swan is primarily 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, Ryan 2009).

Horned grebe. No horned grebes were seen in the parcels 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 parcels 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 parcels 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 parcels 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 parcels, and it is unlikely that black terns would nest or spend much time on the parcels.

Northern goshawk (Superior National Forest Management Indicator Species). No northern goshawks were seen or heard during the surveys. However, a northern goshawk territory was identified in 2002 about 1 mile southwest of the Hay Lake Parcel, Two young were produced in 2003 and 2005, but the territory has not been active since 2005 (MnDNR 2009a). The pair had three nests, and two were in birch trees.

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.

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. Goshawk pairs observed on the NorthMet Mine site used large aspen trees as nest sites, 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 2009a). There is little mature deciduous and mixed forest habitat on the Hay Lake Parcel, although there are scattered deciduous trees to 16 inches dbh. The McFarland Parcel had mature forest habitat with large (> 12 inches dbh) on the northern and southern portions of the parcel (Map 2), and scattered large eastern white pine, northern white cedar, and trembling aspen to 16 inches dbh were found in the central portion of the site.

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 parcels (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). No great gray owl nests have been found within 6 miles of the parcels.

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 parcels during the surveys, although pelicans could use Hay and Little Rice lakes and other nearby 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 parcels 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 parcels. Yellow rails are a secretive, wetland species, breeding in the northern United States and Canada (MnDNR 2009b). 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 a 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. The nearest bald eagle nest to the Hay Lake Parcel is about 4 miles to the southeast on Cedar Island Lake (Ryan 2010). Eagle nests have been observed at John Lake and at North Fowl Lake (two nests), about 2 to 3 miles from the McFarland Parcel. The John Lake nest was active in 2007, and one nest at North Fowl Lake was active in 2005; the other nest was not active during surveys in 2006. No nest surveys were conducted for these nests during 2007 to 2009, and all three nests could belong to the same pair of eagles. Bald eagles forage on McFarland Lake (Russ 2010).

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. Hay and Little Rice lakes, and McFarland Lake are found in the parcels and have large trees that could be used by eagles as perches or for nests. No bald eagle nests have been recorded on the parcels. 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 eastern 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 in or near the parcels, but the species of bats echolocating at bat survey sites was not determined. The eastern pipistrelle is the smallest of Minnesota's seven bat species (MnDNR 2009c). 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 pipistrelles 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 2009c).

Northern myotis. Bats were recorded at several sites in or near the parcels, but the species of bats echolocating at bat survey sites was not determined. 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 2009d). 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 in the parcels. The smoky shrew is a mouse-sized animal with a pointy nose, small eyes, and a long tail (MnDNR 2009e). 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 parcels. 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 surveys. Least weasels are found in Alaska, throughout Canada, and into the northern U.S. They prefer meadows, fields, and brushy areas (MnDNR 2009f). 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 parcels 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; it is possible that mountain lions inhabit the study area, although no mountain lion have been seen in the study area (Cougar Network 2009). 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 parcels. 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 have been seen in the region (ENSR 2007).

Common loon. Loons are uncommon in the Superior National Forest (Green 2003), but were observed on Hay Lake and McFarland 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 seen on Hay Lake and the Pike River, and on McFarland Lake, but are uncommon in the Superior National Forest (Green 2003). 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. 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 Hay Lake Parcel 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 and heard 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 occur throughout the region in conifer forests. 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. American woodcock was seen on the Hay Lake Parcel in several areas with scrub-shrub wetlands dominated by speckled alder. 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.

Killdeer. Killdeer were not seen during the survey. 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. Belted kingfisher were not seen during the survey. The belted kingfisher is uncommon in the Superior National Forest (Green 2003), but has been seen using open water habitat associated with streams and wetlands in the region. 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 parcels in older pole and mature mixed forests with snags and stumps on both parcels. 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 surveys. 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 in the parcels 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 in mature red and eastern white pine stands near the Mine Site.

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 heard on the Hay Lake Parcel. 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 not observed during the survey. 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 parcels 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 survey. 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, and along the Pike River, in the Hay Lake Parcel, 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. Beaver cuttings were also seen on the McFarland Parcel near McFarland Lake. 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 parcels 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 in the parcels. Deer tracks and droppings were commonly found in the study areas in virtually all habitat types, and several deer were seen along roads, in shrublands, and bedding along the Pike River on the Hay Lake Parcel. Deer were especially common in recently logged areas and shrublands near mixed and conifer pole/young mature and mature forest habitats. 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. 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 in the Hay Lake Parcel 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 2009 aerial survey by the MnDNR produced a population estimate of 7,593 moose in northeastern Minnesota. The moose population in the region has mostly trended upwards since the early 1990s (Lenarz 2009).

5.6 Wildlife Habitat Assessment

Habitat observed on the parcels is similar to habitat associated with much of the Iron Range and northeastern Minnesota. The Hay Lake Parcel has moderate topographic 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 Pike River. Elevations range from 1,464 feet above mean sea level along the northeastern boundary to 1,902 feet above mean sea level near the southwestern boundary of the parcel and along the Pike River. The McFarland Parcel is on a hillslope that rises from 1,483 feet above mean sea level at McFarland Lake to 1,778 feet above mean sea level on the western boundary of the parcel. Rocky cliffs, about 150 feet in height, are found at the top of the hillslope,

During surveys, most (59 percent; 2,930 acres) of the Hay Lake Parcel was wetland habitat, although upland habitat (41 percent; 1,995 acres) was an important component in the central and western portion of the parcel (see Maps 1 and 2). The Pike River, Hay Lake, and Little Rice Lake were dominant features of the landscape. The Pike River flows along the eastern boundary of the parcel.

The McFarland Parcel consists of upland habitat, although a small (<0.5 acre) portion of the parcel is palustrine mature conifer wetland habitat. As noted above, the parcel is on a hillslope west of McFarland Lake. Large boulders were found on the hillslope and steep, rocky cliffs were at the top of the hillslope.



Forest vegetation dominates the Hay Lake Parcel (Table 5). Nearly all forest stands contained trees that were 11 inches dbh or less, and most of the upland trees were 8 inches dbh or less. The site can be divided into four general habitats. The eastern portion is dominated by the Pike River. Floodplain associated with river is dominated by wetland emergent habitat with sedges and grasses, and wetland scrub-shrub speckled alder habitat. Wetland areas to the west of the river are dominated by lowland black spruce forest, with scattered northern white cedar and tamarack, and scrub-shrub wetlands, especially in areas with evidence of past disturbance by logging activities. Higher elevations in the northern, central, and western portions of the parcel are dominated by upland deciduous and mixed deciduous and coniferous forest. Upland forest stands in the northern, central, and southwestern portions of the parcel are pole to young mature in size and age, while stands in the western portion of the parcel are sapling to young pole in size in age, having been harvested in recent years. Most trees are estimated to be 60 years or younger. Two transmission line right-of-ways (ROWs) were found on the parcel (see Maps 1 and 2). Emergent wetland and upland grassland/shrubland vegetation dominated the ROWs. Abandoned logging roads were also found on the parcel. Low areas along roads were dominated by emergent wetland vegetation consisting of sedges and grasses, while upland portions of roads were dominated by emergent wetland set.

Curing surveys, upland areas appeared to be used more by wildlife than wetlands, especially by passerine birds and large mammals such as white-tailed deer and moose, probably because uplands provided more cover and food. However, it was common to see game trails going around wetlands, suggesting that white-tailed deer and moose foraged in wetlands, but sought cover in nearby forests. White-tailed 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 white-tailed deer and moose. This appeared to be true on the Hay Lake Parcel, as evidence of white-tailed deer and moose use was greatest on or near logged areas, ROWs, 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.

Access to the site on all-terrain vehicle or snowmobile was available from the Pike River Road, near the northern boundary and at a second access point in the northcentral portion of the parcel. A boat launch to the Pike River was located in the southcentral portion of the parcel and adjacent to the Pike River Road. Several deer stands were observed on the parcel, and deer were often seen in the vicinity of deer stands.

The McFarland Parcel was dominated by deciduous and mixed deciduous and coniferous forest habitats (Table 6). Tree sizes and ages ranged from pole to young mature forest. Some logging had occurred recently on the top of the hillslope along the western boundary of the parcel. Steep rocky cliffs were found at the top of the hillslope. The site could be accessed by vehicle from private and Forest Service roads leading to McFarland Lake.

5.6.1 Wetlands

5.6.1.1 Hay Lake Parcel

Wetlands on the Hay Lake Parcel consisted predominantly of pole/young mature palustrine conifer forest (65.1 percent), palustrine scrub-shrub (19.7 percent), and open water (6.0 percent; Table 5). Hay Lake, Little Rice Lake, an unnamed lake, and the Pike River are the dominant water features on the parcel. The Pike River flows along the eastern boundary of the parcel. Floodplain habitat is associated with the river. Large bog wetlands dominated much of the east-central portion of the parcel. Several wetlands were created or enlarged due to damming of streams by beaver dams. Raised water levels resulted in stands of dead and dying spruce along portions of the river. These areas show up as dark blue areas (P-3) on Map 1.



Code	Habitat Type	Total Acreage for Hay Lake Parcel ¹
P-0	Open water	177
P-1	Bog/palustrine emergent wetland	86
P-2	Palustrine scrub-shrub	578
P-3	Palustrine forest dead trees	45
P-4	Palustrine forest deciduous sapling (0-4 in dbh)	2
P-5	Palustrine forest deciduous pole/young mature (5-12 in dbh)	0
P-6	Palustrine forest deciduous mature (12+ in dbh)	1
P-7	Palustrine forest mixed sapling (0-4 in dbh)	44
P-8	Palustrine forest mixed pole/young mature (5-12 in dbh)	0
P-9	Palustrine forest mixed mature (12+ in dbh)	6
P-10	Palustrine forest conifer sapling (0-4 in dbh)	83
P-11	Palustrine forest conifer pole/young mature (5-12 in dbh)	1,908
P-12	Palustrine forest conifer mature (12+ in dbh)	0
U-1	Disturbed	5
U-2	Grassland/Forbs	25
U-3	Shrubland	36
U-4	Forest deciduous sapling (0-4 in dbh)	423
U-5	Forest deciduous pole/young mature (5-12 in dbh)	820
U-6	Forest deciduous mature (12+ in dbh)	119
U-7	Forest mixed sapling (0-4 in dbh)	81
U-8	Forest mixed pole/young mature (5-12 in dbh)	117
U-9	Forest mixed mature (12+ dbh)	349
U-10	Forest conifer sapling (0-4 in dbh)	0
U-11	Forest conifer pole/young mature (5-12 in dbh)	21
U-12	Forest mature (12+ in dbh)	0
Total		4,926
	based on GIS analysis and is not the same as acreage reported and and surveys.	in Government Land Office records

 Table 5

 Habitat Classification and Acreage for the Hay Lake Parcel

Hay Lake was an open freshwater body found in the central portion of the parcel. During surveys, yellow waterlily, pondweeds, wild rice, horsetail, and coontail were important submerged, emergent, and floating species. Sedges, narrow-leaved cattail, speckled alder, leatherleaf, horsetail, and moss ringed the lake. No waterfowl were seen on the lake at the time of the visit.

Little Rice Lake is adjacent to the Pike River Road and the Pike River. Yellow water-lily pondweeds, wild rice, and coontail were important aquatic plants. The lake was ringed by patches of phragmites, speckled alder, and narrow-leaved cattail. Painted turtle, green frog, Virginia rail, ring-necked duck, and trumpeter swan and their young, were seen on the lake.



Code	Habitat Type	Total Acreage for McFarland Parcel ¹					
U-8	Forest mixed pole/young mature (5-12 in dbh)	19.5					
U-9	Forest mixed mature (12+ dbh)	8.9					
U-11	Forest conifer pole/young mature (5-12 in dbh)	0.9					
U-12	Forest mature (12+ in dbh)	1.5					
Total	Total 30.8						
U	¹ Acreage is based on GIS analysis and is not the same as acreage reported in Government Land Office records that are based on land surveys.						

 Table 6

 Habitat Classification and Acreage for the McFarland Parcel

Yellow water-lily, pondweeds, wild rice, bladderwort, and coontail were important aquatic plants associated with the Pike River. Floodplain wetlands associated with the river were dominated by emergent wetland habitat dominated by sedges (P-1), and scrub-shrub habitat dominated by speckled alder, red-osier dogwood, meadowsweet, slender-leaved willow, and pussywillow (P-2). Western chorus and green frogs called from the rivers edge. A variety of birds were seen along the river, included ring-necked duck, hooded merganser, common loon, song sparrow, golden-winged warbler, common yellowthroat, chipping sparrow, blue jay, red-winged blackbird, thrushes, and cedar waxwing. White-tailed deer bedded in shrubs along the river, and several river otters were seen using the riverbank and swimming in the river.

Bogs were dominated by leatherleaf and bog Labrador-tea, with scattered young speckled alder, bog birch, tamarack, and in some areas, narrow-leaved cattail and sedges. Sphagnum and club moss often covered 80 to 90 percent of the bog. Scattered (<5 percent) black spruce (some dead) and smallish tamarack were found in the tree layer. Lowbush blueberry, small-fruited bog cranberry, bog rosemary, and small willows were also common. Other species encountered included cottongrass, wild iris, wild raspberry, bunchberry, and northern bog orchid. Moose and white-tailed deer scat and trails were seen in or near these wetlands.

Emergent wetlands were primarily limited to disturbed areas on the parcel: floodplains associated with the Pike River and wetlands associated with abandoned logging roads, transmission line ROWs, and beaver ponds. These wetlands were often dominated by Canada bluejoint, sedges, and narrow-leaved cattail (70 to 80 percent cover) and water depths were a foot or more in deeper areas. Spruce, tamarack, and northern white cedar associated with the wetland were often killed when flooded due to the rising water level behind beaver dams. Willows, tamarack, red-osier dogwood, and speckled alder were often found along the border of these wetlands, but comprised less than 30 percent of the cover. Wild iris was seen in some wetlands, as was horsetail, burreed, spikerush, water arum, broad-leaved arrowhead, and woolly sedge. Wildlife observed in these wetlands included American toad, Western chorus frog, gray treefrog, wood frog, snapping turtle, garter snake, great blue heron, red-winged blackbird, blue jay, and eastern phoebe. Beaver and bats were seen using these wetlands. White-tailed deer and moose trails and scat were often seen in or near these wetlands.

Shrub swamp/scrub-shrub wetlands usually consisted of a dense (60 to 90 percent) cover of speckled alder, meadowsweet, and bog birch, with alder often 6 feet or taller in height. Some of the wetlands had scattered sapling black spruce, tamarack, and willow, but tree cover never exceeded 25 percent. Dominant low shrubs were bog Labrador-tea, leatherleaf, lowbush blueberry, prickly rose, wild 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, Canada bluejoint, horsetail, bunchberry, and clintonia. American woodcock sought forage and shelter in alder stands; ruffed grouse and snowshoe hare also foraged on willow buds and twigs. Common yellowthroat and yellow warbler were other common species that were seen in these habitats.



Wetlands forests were dominated by black spruce and tamarack, with scattered northern white cedar, red pine, and black ash. Coniferous wetland forest was the most common habitat type on the parcel; deciduous and mixed forest wetlands were uncommon. 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. Some open stands had an understory comprised of shrubs and scattered sapling northern white cedar, tamarack, and black spruce, along with speckled alder and willow. Other trees included mountain maple, primarily in deciduous and mixed forests. Common shrub species included specked alder, leatherleaf, bog Labrador-tea, lowbush blueberry, and bog birch. Species found near the ground included clintonia, bracken fern, horsetail, bunchberry, wild raspberry, cottongrass, wild sarsaparilla, wild strawberry, and false lily-of-the-valley. Forest and shrub cover typically ranged from 30 to 60 percent, while moss and other understory vegetation covered from 50 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. White-tailed deer and moose used these forests for cover, while red squirrel fed upon spruce cones. American 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.

5.6.1.2 McFarland Parcel

McFarland Lake borders the parcel and provides lake habitat. Horsetail was seen along the shoreline, but submerged and emergent aquatic vegetation were not seen in the lake near the shoreline. A small (<0.5 acres), shallow-water mature conifer forest wetland was found near the northeastern boundary of the parcel but off the property.

5.6.2 Uplands

5.6.2.1 Hay Lake Parcel

Uplands on the Hay Lake parcel were dominated by deciduous forests (68 percent of all upland habitat), including pole/young mature deciduous forest (41 percent), and sapling deciduous forest (21 percent; Table 5; Map 1). Over 27 percent of upland habitat consisted of mixed deciduous and coniferous forest habitat, while only 1 percent was coniferous forest habitat. Disturbed areas and grasslands were primarily associated with abandoned logging roads and landings and two powerline ROWs, but comprised only 2 percent of upland habitat. Shrubland was also scarce, comprising only 1 percent of upland habitat.

Disturbed areas and grasslands were dominated by forbs and grasses, including cow parsnip, white clover, ox-eye daisy, tall buttercup, common sow thistle, orange hawkweed, American vetch, wild strawberry, wild raspberry, and tansy. Ground cover was about 80 percent. Roads and trails provided important travel routes for mammals, including red fox, gray wolf, black bear, white-tailed deer, and moose.

Shrubland habitat was rare. These areas had scattered pole/young mature and sapling trees (trembling aspen, paper birch, jack pine, willow, and black spruce) and shrubs, primarily beaked hazel. Ground cover was comprised of wild raspberry, wild strawberry, asters, and prickly rose, and covered up to 80 percent of the landscape. Wildlife seen in these areas included red-tailed hawk, northern flicker, cedar waxwing, dark-eyed junco, common yellowthroat, American goldfinch, chipping sparrow, white-throated sparrow, snowshoe hare, and white-tailed deer.



Deciduous forests were dominated by trembling aspen and to a lesser extent paper birch, although some forests contained a willow, mountain maple and black spruce component. Percent cover in sapling forests ranged from 60 to 80 percent, while percent cover generally ranged from 60 to 90 percent in pole and young, young mature, and mature forests The midstory was comprised of sapling mountain maple, trembling aspen, paper birch, balsam fir, and black spruce, and ranged from 40 to 80 percent cover. Shrub species included beaked hazel, with scattered speckled alder, twining honeysuckle, and prickly rose. The ground cover ranged from 40 to 90 percent, but generally was 80 to 90 percent, and included sedges, wild strawberry, bunchberry, wild raspberry, prickly rose, horsetail, clintonia, twinflower, large-leaved aster, rose twisted stalk, skunk currant, spotted coralroot, wood anemone, tall buttercup, bracken fern, and interrupted fern. Wildlife seen in deciduous forests included broadwinged hawk, ruffed grouse, American woodcock, barred owl, blue jay, gray jay, American robin, hermit thrush, Swainson's thrush, winter wren, American crow (including a roost site), common yellowthroat, song sparrow, small rodents, black bear, and white-tailed deer.

Mixed forests contained varying amounts trembling aspen, paper birch, jack pine, and black spruce. Beaked hazel, mountain maple, and sapling balsam fir trees were common in the midstory. Wild sarsaparilla, lowbush blueberry, horsetail, bunchberry, and large-leaved aster were common herbs. Mature forests usually had a sparse shrub layer (about 30 percent cover), but the ground was nearly covered with vegetation, including wild sarsaparilla, bunchberry, wild raspberry, clintonia, tall buttercup, large-leaved aster, and rose twisted stalk. Forest cover ranged from 60 to 80 percent. The midstory ranged from 40 to 70 percent, while ground cover ranged from 40 to 90 percent. Wildlife or their sign seen in mixed forests during the study included ruffed grouse, barred owl, blue jay, gray jay, yellow-bellied sapsucker, black-capped chickadee, red-breasted nuthatch, winter wren, American robin, thrushes, small rodents, red squirrel, American marten, black bear, and white-tailed deer.

Conifer forests were rare on the Hay Lake Parcel. Forest cover was 60 to 70 percent and was comprised of red pine and jack pine. The shrub layer was dominated by beaked hazel (30 percent cover). The herbaceous layer included interrupted fern, bunchberry, wild raspberry, and tall buttercup. Wildlife seen in these forests included greathorned owl, downy, hairy, and pileated woodpeckers, black-capped chickadee, red-breasted nuthatch, American marten, red squirrel, and white-tailed deer.

The largest trees were up to approximately 16 inches dbh for deciduous trees and 10 inches dbh for coniferous trees. Snags and large downed woody debris were uncommon in disturbed areas, shrublands, and sapling and pole/young mature forests. Large snags (up to 12 inches dbh), stumps, and woody debris were seen in more mature forest stands. Snags and stumps were used by pileated, hairy, and downy woodpeckers, yellow-bellied sapsucker, black-capped chickadees, red-breasted nuthatches, and other cavity-nesting birds.

5.6.2.2 McFarland Parcel

The McFarland Parcel consisted of mixed forest (27.9 acres) and coniferous forest (2.4 acres). Mixed forest consisted of trembling aspen, paper birch, mountain maple, northern white cedar, black spruce, and balsam fir. Mountain maple and northern white cedar were especially common on the upper hillslopes, while red pine and trembling aspen dominated the top of the hillslope.

Midstory species included mountain maple and balsam fir. Shrubs included smooth sumac and beaked hazel. Forbs included bunchberry, twining honeysuckle, clintonia, large-leaved aster, twinflower, false lily-of-the-valley, oxeye daisy, thimbleberry, wild raspberry, wild strawberry, bog rosemary, bog cranberry, wild sarsaparilla, bracken fern and other ferns, and club moss. Enchanter's nightshade and wild columbine were seen on the rocky cliffs. Spring peeper, wood frog, broad-winged hawk, black-capped chickadee, pileated woodpecker, ruffed grouse, American robin, hermit thrush, eastern phoebe, gray jay, blue jay, winter wren, common yellowthroat, chipping sparrow, red squirrel, beaver, white-tailed deer, and moose were seen or heard in forests. A barred owl was heard to the northeast of the parcel. Plant cover averaged about 60 percent in all layers for pole and young mature forests, mature forest canopy was 30 percent cover, and the midstory and understory were about 60 to 80 percent



cover. Conifer forests were primarily located on the north end of the parcel, and were dominated by eastern white pine and trembling aspen to 16 inches dbh.

The largest trees on the parcel were up to approximately 24 inches dbh for paper birch and northern white cedar; 18 inches for trembling aspen, red pine, and eastern white pine; 16 inches for balsam fir; and 12 inches for paper birch. Snags and large downed woody debris, stumps, and woody debris were common in the forests and were to 16 inches in diameter. Snags and stumps were used by pileated, hairy, and downy woodpeckers, black-capped chickadees, red-breasted nuthatches, and other cavity-nesting birds.



6.0 SURVEY RESULTS – WETLAND ASSESSMENT

6.1. Introduction

Field surveys were conducted on the Hay Lake Parcel during June 22 to 27, and June 29 and 30, and on the McFarland Parcel on June 28, 2009. The weather was generally favorable during the study period. Temperatures ranged from the low 50s degree Fahrenheit (°F) at in the morning to mid-80s °F during the afternoon. Light to moderate rain fell on and off during June 22 and 26 to 29. The survey was conducted mostly on foot, although the Pike River Road was 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.

6.2. Wetland Assessment

Wetlands on the Hay Lake Parcel consisted predominantly of pole/young mature palustrine conifer forest (65.1 percent), palustrine scrub-shrub (19.7 percent), and open water (6.0 percent). Hay Lake, Little Rice Lake, and unnamed lake, and the Pike River are the dominant water features on the parcel. The Pike River flows along the eastern boundary of the parcel. Floodplain habitat is associated with the river. Large bog wetlands dominated much of the east-central portion of the parcel. Several wetlands were created or enlarged due to damming of streams by beaver dams. Raised water levels resulted in stands of dead and dying spruce along portions of the river. These areas show up as dark blue areas (P-3) on Map 1.

McFarland Lake borders the parcel and provides lake habitat. Horsetail was seen along the shoreline, but submerged and emergent aquatic vegetation were not seen in the lake near the shoreline. A small (<0.5 acres), shallow-water mature conifer forest wetland was found near the northeastern boundary of the parcel, but just off the parcel.

The approximate boundaries of wetlands were determined based on aerial photographic, topographic, and NWI 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, 2 and 3.

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 (1998) 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 33 representative wetland locations within the Hay Lake Parcel and 2 locations just off the parcel (Figure 5). 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 parcel. Survey locations for the wetland functions and values assessment are shown on Figure 5.

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 (1998) classification system was used to classify wetland communities for the wetland function and value evaluation.



Table 7 summarizes the functional value ratings for the primary wetland functions rated by MnRAM 3.2. Wetlands were rated high for nearly all wetland functional values. Vegetation diversity/integrity was rated high for all wetlands. The overall rating for vegetation diversity/integrity 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).

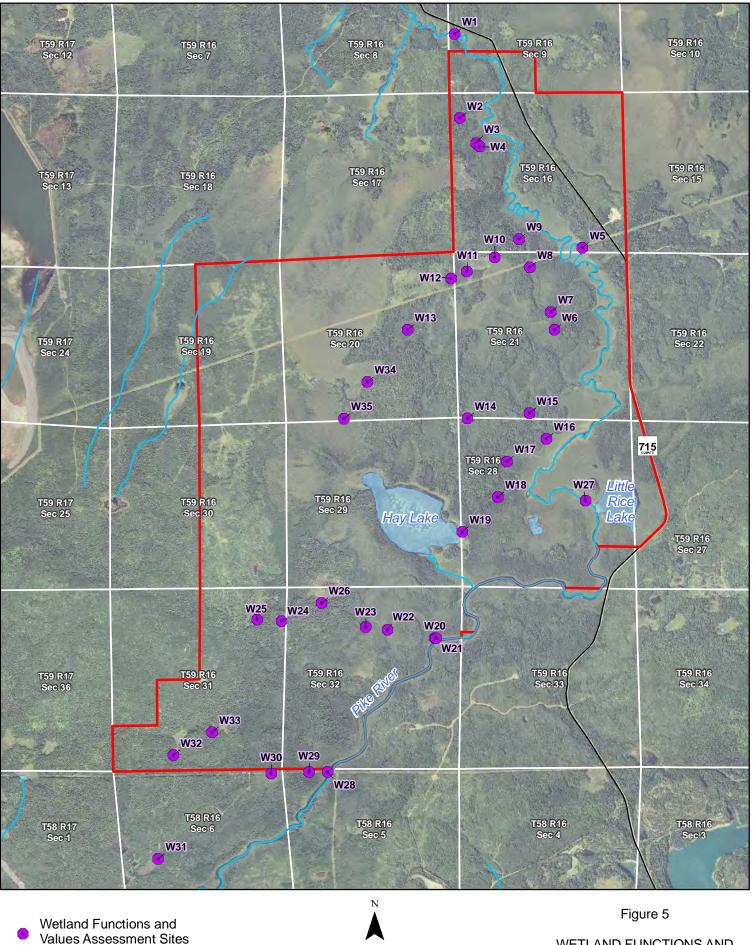
Wetland hydrology and water quality were rated high for all wetlands, and high for all wetlands but two for downstream water quality. Wetlands provided moderate to high flood attenuation value.

Wildlife habitat was rated high for all but one wetland, as natural wildlife corridors and upland communities were relatively untouched by recent human disturbances or impacts. There were also no barriers to wildlife movement. Wildlife habitat was rated moderate in an area where there were few plant communities and large amounts of water.

Fish habitat was rated high for wetlands that received a rating. Fish habitat was rated as not applicable for some wetlands. This indicates that the wetland does not have enough standing water throughout the year to support fish. Some other characteristics that might limit wetland value for fish 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 medium for some wetlands if ideal conditions needed to support amphibian breeding did not occur at the site. Forested wetlands with little or no standing water or not enough woody vegetation during the breeding season would likely not support amphibians. Wetlands with predatory fish may also not support amphibians.

Aesthetics, recreation, education, and cultural values were rated medium. All wetlands were aesthetically pleasing, and could be used for recreation, education, and cultural purposes. However, access by the general public access was limited to overland by foot or on snowmobile/all-terrain vehicle from Pike River Road. A few wetlands had human influences on the viewshed due to close proximity to Pike River Road.



Feet

0

3,000

Hay Lake Parcel

Sections

1,500

3,000

WETLAND FUNCTIONS AND VALUES ASSESSMENT SITES Hay Lake Parcel Saint Louis County, MN



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Values Assessment Sites

McFarland Parcel

Sections

0 Feet 400

200

400

WETLAND FUNCTIONS AND VALUES ASSESSMENT SITES McFarland Parcel Cook County, MN

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

Table 7
Vetland Functional Value Assessment

Wetland Fur

Wettahu Functional Value Assessment for Hay Lake Furcer and wet arter												
HAY LAKE PARCEL												
	Primary		Functional Value Ratings									
Wetland Number	Community Type	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	High	Medium		
19	Deep Marsh	High	High	Medium	High	High	High	High	Low	Medium		
20	Alder Thicket	High	High	Medium	High	High	High	High	High	Medium		
21	Shallow Open Water	High	High	Medium	Medium	High	High	High	Low	Medium		
22	Coniferous Swamp	High	High	Medium	High	High	High	N/A	High	Medium		
23	Coniferous Swamp	High	High	Medium	High	High	High	N/A	High	Medium		
24	Coniferous Swamp	High	High	Medium	High	High	High	N/A	High	Medium		
25	Hardwood Swamp	High	High	Medium	High	High	High	N/A	High	Medium		
26	Shallow Marsh	High	High	Medium	High	High	High	High	High	Medium		
27	Shallow Open Water	High	High	Medium	Medium	High	Medium	High	Low	Medium		
28	Sedge Meadow	High	High	Medium	High	High	High	High	Medium	Medium		
29	Alder Thicket	High	High	Medium	High	High	High	High	High	Medium		
30	Coniferous Bog	High	High	Medium	High	High	High	High	High	Medium		
31	Shallow Marsh	High	High	Medium	High	High	High	High	High	Medium		
32	Sedge Meadow	High	High	High	High	High	High	High	High	Medium		

AECOM

 Table 7 (Cont.)

 Wetland Functional Value Assessment for Hay Lake Parcel and McFarland Parcel

Table 7 (Cont.) Wetland Functional Value Assessment for Hay Lake Parcel and McFarland Parcel										
HAY LAKE PARCEL										
	D				Func	tional Value Ra	tings			
Wetland Number	Primary Community Type	Vegetation Diversity / Integrity	Hydrology	Flood Attenuation	Downstream Water Quality	Wetland Water Quality	Wildlife Habitat	Fish Habitat	Amphibian Habitat	Aesthetics / Education / Cultural
33	Sedge Meadow	High	High	Medium	High	High	High	High	High	Medium
34	Coniferous Swamp	High	High	Medium	High	High	High	High	High	Medium
35	Alder Thicket	High	High	Medium	High	High	High	High	High	Medium

AECOM



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APPENDIX A

Common Name	Scientific Name
	Plants
American Vetch	Vicia americana
Balsam Fir	Abies balsamea
Beaked Hazel	Corylus cornuta
Black Ash	Fraxinus nigra
Black Spruce	Picea mariana
Bladderwort	Utricularia vulgaris
Bog Birch	Betula pumila
Bog Cranberry	Vaccinium oxycoccus
Bog Labrador-tea	Ledum groenlandicum
Bog Rosemary	Andromeda glaucophylla
Bracken Fern	Pteridium aquilinum
Broad-leaved Arrowhead	Sagittaria latifolia
Bunchberry	Cornus canadensis
Burreed	Sparganium spp.
Canada Bluejoint	Calamagrostis canadensis
Cattail	<i>Typha</i> spp.
Clintonia	Clintonia borealis
Club Moss	Lycopodium spp.
Clustered Bur-reed	Sparganium glomeratum
Common Sow Thistle	Sonchus uliginosus
Coontail	Ceratophyllum demersum
Cottongrass	Eriophorum sp.
Cow Parsnip	Heracleium lanatum
Creeping Snowberry	Gaultheria hispidula
Daisy Fleabane	Erigeron philadelphicus
Dragon's Mouth	Arethusa bulbosa
Duckweed	Lemma minor
Eastern White Pine	Pinus strobus
Elegant Groundsel	Senecio indecorus
Enchanters Nightshade	Circaie quadrisulcata
Encrusted Saxifrage	Saxifraga paniculata
False Lily-of-the-valley	Maianthemum canadense
Goblin Fern	Botrychium mormo
Horsetail	Equisetum spp.
Interrupted Fern	Osmunda claytoniana
Jack Pine	Pinus banksiana



Common Name	Scientific Name
	Plants (Cont.)
Large-leaved Aster	Aster macrophyllus
Leafless Watermilfoil	Myriophyllum tenellum
Leatherleaf	Chamaedaphne calyculata
Lowbush Blueberry	Vaccinium angustifolium
Matricary Grapefern	Bortychium matricariifolium
Meadowsweet	Spiraea alba
Michigan Moonwort	Botrychium michiganense
Mountain Maple	Acer spicatum
Narrow-leaved Cattail	Typha angustifolia
Necklace Spikesedge	Carex ormostachya
Northern Bog Orchid	Platanthera hyperborea
Northern White Cedar	Thuja occidentalis
Orange Hawkweed	Hieracium aurantiacum
Ox-eye Daisy	Heliopsis helianthoides
Pale Moonwort	Botrychium pallidum
Paper Birch	Betula papyrifera
Phragmites	Phragmites sp.
Pondweed	Potamogeton spp.
Prickly Rose	Rosa acicularis
Pussywillow	Salix discolor
Red Maple	Acer rubrum
Red-osier Dogwood	Cornus stolinifera
Red Pine	Pinus resinosa
Rocky Mountain Woodsia	Woodsia scopulina
Rose Twisted Stalk	Streptopus roseus
Sedge	<i>Carex</i> spp.
Shining Clubmoss	Lycopodium lucidulum
Skunk Currant	Ribes glandulosum
Slender-leaved Willow	Salix petiolaris
Small Flowered Woodrush	Luzula parviflora
Small-fruited Bog Cranberry	Vaccinium oxycoccus
Small White Water-lily	Nymphaea leibergi
Smooth Sumac	Rhus glabra
Speckled Alder	Alnus rugosa
Spikerush	Eleocharis spp.
Spotted Coralroot	Corallorhiza maculata



Common Name	Scientific Name
Plants	(Cont.)
Star Flower	Trientalis borealis
Starry False Solomon's Seal	Maianthemum stellatum
Tall Buttercup	Ranunculus acris
Tamarack	Larix laricina
Tansy	Tanacetum vulgare
Terrategrape Fern	Botrychium rugulosum
Thimbleberry	Rubus parviflorus
Trembling Aspen	Populus tremuloides
Triangle Moonwort	Botrychium lanceolatum
Twining Honeysuckle	Lonicera dioica
Twinflower	Linnaea borealis
Water Arum	Calla palustris
White Clover	Trifolium repnes
White Pine	Pinus strobus
Wild Columbine	Aquilegia canadensis
Wild Iris	Iris versicolor
Wild Raspberry	Rubus spp.
Wild Rice	Zizania palustris
Wild Sarsaparilla	Aralia nudicaulis
Wild Strawberry	Fragaria virginiana
Willow	Salix spp.
Wood Anenome	Anenome quinquefolia
Woolly Sedge	Carex pellita
Wood Fern	Dryopteris spp.
Yellow Water-lily	Nuphar variegatum
Yellow Sweetclover	Melilotus officinalis
Amphibians	and Reptiles
American Toad	Bufo americanus
Garter Snake	Thamnophis sp.
Gray Treefrog	Hyla versicolor
Green Frog	Rana clamitans
Northern Leopard Frog	Rana pipiens
Painted Turtle	Chrysemys picta
Snapping Turtle	Chelydra serpentina
Spring Peeper	Pseudacris crucier
Western Chorus Frog	Pseudacris triseriata



Common Name	Scientific Name	
Amphibians and Reptiles (Cont.)		
Wood Frog	Rana sylvatica	
Wood Turtle	Glyptemys insculpta	
Bi	rds	
American Bittern	Botaurus lentiginosus	
American Crow	Corvus branchyrhynchos	
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-backed Woodpecker	Picoides arcticus	
Black-capped Chickadee	Poecile atricapillus	
Black Tern	Chlidonias niger	
Black-throated Blue Warbler	Dendroica caerulescens	
Blue Jay	Cyanocitta cristata	
Boreal Owl	Aegolius funereus	
Broad-winged Hawk	Buteo platypterus	
Brown Creeper	Certhia americana	
Canada Warbler	Wilsonia canadensis	
Cedar Waxwing	Bombycilla cedrorum	
Chestnut-sided Warbler	Dendroica pensylvanica	
Chipping Sparrow	Spizella passerina	
Common Nighthawk	Chordeiles minor	
Common Loon	Gavia immer	
Common Raven	Corvus corax	
Common Tern	Sterna hirundo	
Common Yellowthroat	Geothlypis trichas	
Connecticut Warbler	Oporornis agilis	
Dark-eyed Junco	Junco hyemalis	
Downy Woodpecker	Picoides pubescens	
Eastern Kingbird	Tyrannus tyrannus	
Eastern Phoebe	Sayornis phoebe	
Eastern Screech-owl	Megascops asio	



Common Name	Scientific Name	
	Birds (Cont.)	
Golden-crowned Kinglet	Regulus satrapa	
Golden-winged Warbler	Vermivora chrysoptera	
Gray Jay	Perisoreus canadensis	
Great Blue Heron	Ardea herodias	
Great Gray Owl	Strix nebulosa	
Great Horned Owl	Bubo virginianus	
Hairy Woodpecker	Picoides villosus	
Hermit Thrush	Catharus guttatus	
Hooded Merganser	Lophodytes cucullatus	
Horned Grebe	Podiceps auritus	
Killdeer	Charadrius vociferus	
Long-eared Owl	Asio otus	
Magnolia Warbler	Dendroica magnolia	
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	
Philadelphia Vireo	Vireo philadelphicus	
Pileated Woodpecker	Dryocopus pileatus	
Pine Grosbeak	Pinicola enucleator	
Pine Warbler	Dendroica pinus	
Red-breasted Merganser	Megus serrator	
Red-breasted Nuthatch	Sitta canadensis	
Red-eyed Vireo	Vireo olivaceus	
Red-tailed Hawk	Buteo jamaicensis	
Red-winged Blackbird	Sturnella agelaius	
Ring-necked Duck	Aythya collaris	
Ruby-crowned Kinglet	Regulus calendula	
Ruby-throated Hummingbird	Archilochus colubris	
Ruffed Grouse	Bonasa umbellus	
Savannah Sparrow	Passerculus sandwichensis	
Short-eared Owl	Asio flammeus	
Song Sparrow	Melospiza melodia	
Spruce Grouse	Falcipennis canadensis	_



Common Name	Scientific Name
Birds (Cont.)
Swainson's Thrush	Catharus ustulatus
Trumpeter Swan	Cygnus buccinator
Turkey Vulture	Cathartes aura
Virginia Rail	Rallus limicola
White-throated Sparrow	Zonotrichia albicollis
Wilson's Phalarope	Phalaropus tricolor
Winter Wren	Troglodytes troglodytes
Yellow-bellied Flycatcher	Empidonax flaviventris
Yellow-bellied Sapsucker	Sphyrapicus varius
Yellow Rail	Coturnicops noveboracensis
Yellow-rumped Warbler	Dendroica coronata
Yellow Warbler	Dendroica petechia
Mam	mals
American Marten	Martes americana
Beaver	Castor canadensis
Big Brown Bat	Eptesicus fuscus
Black Bear	Ursus americanus
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
Eastern Pipistrelle	Perimyotis subflavus
Least Weasel	Mustela nivalis
Little Brown Myotis	Myotis lucifugus
Moose	Alces alces
Mountain Lion	Puma concolor
Northern Myotis	Myotis septentrionalis
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)
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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)
Yvette Monstad	Division of Ecological Services, Minnesota Department of Natural Resources, 500 Lafayette Rd., Box 25, St. Paul, MN 55155
Wayne Russ	Wildlife Biologist, Superior National Forest.
Daniel Ryan	Wildlife Biologist, Forest Service Laurentian Ranger District, 318 Forestry Drive, Aurora, MN 55705 (218-229-8809)



APPENDIX C Superior National Forest Regional Forester Sensitive Species

Tuesday, October 5, 2006

Scien	tific	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 HW1 UTM Coordinates 545749 5272963		Wetland ID HW2 UTM Coordinates 545799 5272164		Wetland name ID HW3 UTM Coordinates 545954 5271925		Wetland ID HW4 UTM Coordinates 545989 5271895
	Date		22-Jun-09	_	22-Jun-09		22-Jun-09		22-Jun-09
#1	Special Features (from list, p.2enter letter/s) Community Number (circle each community which represents at least 10% of the wetland)	10A,	PHOTOS 72-73 B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	3A, 3E 10A, 1	3A, 13B, 12B, 14A, 15A,	3A, 3 10A,	76-77 B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	3A, 3 10A,	NONE 3B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B
#2 & #		type	individually below ~		~ Describe ea	ach co	ommunity type individually be	elow ~	-
	Community Type (wet meadow, marsh)	8A	Alder Thicket	8A	Alder Thicket	4B	Coniferous Swamp	13A	Sedge Meadow
	Community Proportion (% of total)		60%		50%		57%		33%
2	Dominant Vegetation / Cover Class		SY WILLOW/4			SED			GE/5
Plant Community #1			CKLED ALDER/2 ADA BLUEJOINT/4			RUS	H/2 RADOR TEA/3	RUS NAR	H/2 ROW-LEAF CATTAIL/4
nmm		RED	-OSIER DOGWOOD2	WILLO	DW/3	NAR	ROW-LEAF CATTAIL/2	SPE	CKLED ALDER/2
t Col		SLEP	NDER-LEAVED WILLOW/4	NARR	DA BLUEJOINT/2 OW-LEAF CATTAIL/2		CKLED ALDER/5 SY WILLOW/3		RADOR TEA/2 SY WILLOW/2
Plan							ARACK/4		
	Invasive/exotic Vegetation / Cover Class								
									I
	Community Quality (E, H, M, L)	Н	1	Н	1	Н	1	Н	1
	Community Type (wet meadow, marsh)	-	-			-	-		
	Community Proportion (% of total)								
8	Dominant Vegetation / Cover Class								
Plant Community #2									
Jmur									
Con									
Plant									
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)		0		0		0		0
	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total)								
	Dominant Vegetation / Cover Class								
ity #3									
unuu									
Plant Community #3									
Plant									
	Invasive/exotic Vegetation / Cover Class								
									I
	Community Quality (E, H, M, L)		0		0		0		0
	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total)								
y #4*	Dominant Vegetation / Cover Class								
munit									
Com									
Plant Community #4*									
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	-	0		0		0		0
	Circular 39 Types (primary <tab> others)</tab>		0		U		U	2	U
	Cowardin Types								
	Photo ID								
	st rated community veg. div./integ:	1.0	High	1	High	1	High	1	High
	ge vegetative diversity/integrity:	1.00	High	1.00	High	1.00	High	1.00	High
	ted Average veg. diversity/integrity:	0.60	Medium	0.50	Medium	0.57	Medium	0.33	Medium
#4	Listed, rare, special plant species?	n	Ν	Ν	Ν	Ν	Ν	N	Ν
	Rare community or habitat? Pre-European-settlement conditions?	n n	N N	N N		N N	N N	N N	N N
Flood 10A] Shall	<pre>tplain Forest [1A, 2A, 3A] * Hardwood Swamp * Calcareous Fen [7B, 11B, 14A] * Shrub Sv ow Marsh [13B] * Deep Marsh [12B] * Wet onally Flooded Basin [16B]</pre>	[3B] /amp	* Coniferous Bog [2A, 4B] * [6B] * Alder Thicket [8A] *	Conifei Shrub-	rous Swamp [4B] * Open carr [8B] * Sedge Meado	Bog [w [10	1B, 5A, 5B, 6A, 7A, 9A, B, 11A, 12A, 13A] *		ver Class Class Range 1 0 - 3% 2 3 - 10% 3 10 - 25% 4 25 - 50%
'lf ther	e are more than four plant community types, u	se the	e next column over to enter th	e rest a	and do not rely on the autor	matic	average calculations.		5 50 - 75% 6 75 - 100%

	^					F	1		 -			.			NI	
	A	В	C MpDAM 2 2 Digital Warks	D	E Cida		-	G H	 I	J	ĸ		М		Ν	Р
1			MnRAM 3.2 Digital Works	neet,	Side	Ζ				WTL	1					
2			Question Description	User	Pating											
4			Question Description	entry	Rating	_		his comes in						Hi	ghes	t-rated:
5		1	Veg. Table 2, Option 4	<u>.</u>	0.60			eighted avera							1	
6			TOTAL VEG Rating	0.6	Medium			alue (shown t								
7		4	Listed, rare, special plant species?	N	next											
8 9		5	Rare community or habitat? Pre-European-settlement conditions?	N N	next											
9 10		0 7			next											
11		8	hydrogeo & topo Water depth (inches)	24	Floodplain											
12		Ű	Water depth (% inundation)	2 .								-				
13		9	Local watershed/immedita drainage (acres)					ita starting re used in			/					
14		10	Existing wetland size	1					 							
15 16		11 12	SOILS: Up/Wetland (survey classification + site) Outlet characteristics for flood retention	N/A	N/A											
17	Digital worksheet, section I	13	Outlet characteristics for hydrologic regime	A	1											
18	ec	14	Dominant upland land use (within 500 ft)	А	1	0.1	1									
19	ť, s	15	Soil condition (wetland)	A	1											
20 21	ee	16 17	Vegetation (% cover) Emerg. veg. flood resistance	90% A	H 1	1	I									
22	(sh	18	Sediment delivery	A	1											
22 23 24	-ro	19	Upland soils (based on soil group)	В	0.5								C	Scr		
24	≥	20	Stormwater runoff pretreatment & detention	C	0.1	1	1									
25	ita	21 22	Subwatershed wetland density Channels/sheet flow	C C	0.1 0.1								d	IWC	n to)
25 26 27	Dig	23	Adjacent naturalized buffer average width (feet)	500	H	WQ)	1 H	1				а	nsv	ver	•
28	-	24	Adjacent Area Management: % Full		1] i		1						no		
29			adjacent area mgmt: % Manicured		0											
30 31		25	adjacent area mgmt: % Bare Adjacent Area Diversity & Structure: % Native	100%	0	1	1	1					qu	est	ION	S
32		25	adjacent area diversity & Structure. % Native	10070	0		1	1					ar	nd :	see	è
33			adjacent area diversity: % Sparse/Inv./Exotic		0										ula	
34		26	Adjacent Area Slope: % Gentle	5%	0.05	1	1	0.05								
35 36			adjacent area slope: % Moderate adjacent area slope: % Steep		$\begin{array}{c} 0\\ 0\end{array}$							(calc	SUIS	atio	ns
36 37 38			udjučent urcu stope. 76 steep		0	4									1	
39		27	Downstream sensitivity/WQ protection	А	1											
40		28	Nutrient loading	А	1								-	Ĺ	Ļ	
41		29	Shoreline wetland?	Y	Y									\sim		
42 43		30 31	Rooted shoreline vegetation (% cover) Wetland in-water width (in feet, average)	90% 100	1											
43		32	Emergent vegetation erosion resistance	A	1 1											
45		33	Shoreline erosion potential	С	0.1	1	1									
46		34	Bank protection/upslope veg.	С	0.1											
47 48	_	35 36	Rare Wildlife Scarce/Rare/S1/S2 local community	N N	N N											
40	U	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A										
50	ctic	38	Community interspersion (see diagram 2)	2	Μ	0.5	5			()					
51	Digital worksheet, section II	39	Wetland detritus	A	1		1									
52 53	et,	40 41	Wetland interspersion on landscape Wildlife barriers	A A	1 1	1	1									
54	he	42	Amphibian breeding potential-hydroperiod	A	1											
55	rks	43	Amphibian breeding potentialfish presence	В	0.5											
56 57	NO	44	Amphibian & reptile overwintering habitat Wildlife species (list)	C	0.1											
57 58	al	45 46	Wildlife species (list) Fish habitat quality	А	1											
59	igit	47	Fish species (list)		-											
60	ā	48	Unique/rare educ./cultural/rec.opportunity	N	N											
61 62		49 50	Wetland visibility Proximity to population	B N	0.5 0.1											
63		50	Proximity to population Public ownership	C N	0.1											
64		52	Public access	В	0.5											
65		53	Human influence on wetland	A	1											
66 67		54 55	Human influence on viewshed Spatial buffer	A C	1 0.1											
68		56	Recreational activity potential	B	0.1											
69		57	Commercial crophydrologic impact	N/A	N/A											
70																

			Mn	RAM_3.	2_Score_S	heet.xls												
	А	В	C	D	E	F	G	Н			J		K	L	Τ	М	Ν	Р
72						•	•	•										÷
73 74 75 76 77 78 79 80 81 82 83 84 85 86 87		58	GW - Wetland soils	D	R or D	1												
74		59 60	GW - Subwatershed land use	D D	R or D R or D	1												
75		60 61	GW - Wetland size and soil group GW - Wetland hydroperiod	D	R or D	1												
70	S	62	GW - Inlet/Outlet configuration	D	R or D	1												
78	questions	63	GW - Surrounding upland topographic relief	D	R or D	. 1												
79	stic	64	Restoration potential w/o flooding		Y or N	6												
80	je	65	Landowners affected by restoration		Eabc	Enter v		oice										
81	Ъ	66A	Existing wetland size (acres) [from #10]	1	acres													
82	าล		Total wetland restoration size (acres)		acres	0.1												
83	jo	66C	(Calculated) Potential New Wetland Area [B-A]	-1	acres			drained										
84	dit	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value	: ##	##								
85	Additional	68	Likelihood of restoration success		ab c	Enter v			ام ما م	ر الم	— :11:							
80			Hydrologic alteration type Potential wetland type (Circ. 39)		Outlet, Tile 1, 2, 3, 4,			ump, w	trsna	aiv.,	FIII	ng						
88		70 71	Wetland sensitivity to stormwater		Eabc	5, 6, 7, c)											
89		72	Additional stormwater treatment needs		abc													
90						1												
90 91 92																		
92 93																		
94						ry												
				W Le	Final Rating	Rating Category												
95			Function Name	Raw score	Fin Rat	Rat Cat		Formul	la she	own t	o the	e rig	ht.					
96			Vegetative Diversity/Integrity		0.60	Med			1				,					
97 98 99 100																		
98	es		Hydrology - Characteristic		1.00	High												
99	ari				0.50													
100	Summaries		Flood Attenuation		0.53	Med			i									
101	ШШ		Water QualityDownstream		0.80	High												
102	S		water QuantyDownstream		0.80	Ingn												
103 104 105 106 107	ng		Water QualityWetland		0.84	High												
105	ati					Ũ												
106	2		Shoreline Protection		0.64	Med												
107	na																	
108	ţ.		Characteristic Wildlife Habitat Structure	0.86	0.86	High												
109 110	Functional Rating		Maintenance of Characteristic Fish Habitat	1.00	1.00	High												
111	ШЦ		Maintenance of Characteristic Fish Habitat	1.00	1.00	High												
112	_		Maintenance of Characteristic Amphibian Habitat		0.43	Med		i										
113			I					l										
114			Aesthetics/Recreation/Education/Cultural	0.48	0.48	Med												
115																		
116			Commercial use		N/A	N/A		(C									
117							-											
118			Special Features listing:			-	PHOT	OS 72-	73									
120			Groundwater Interaction		discharge			1										
120			Groundwater Functional Index		uischarge	no spec	cial ind	icators										
122								ioutoro										
123			Restoration Potential (draft formula)		#VALUE!	#####												
124			Stormwater Sensitivity (not active)			-												
125																		
126																		
127																		
128																		
130																		
131																		
132																		
133																		
134																		
135																		
136																		
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115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 1301 132 133 134 135 136 137 138 139																		
140																		
141																		
L																		

				-	2_Score_S	-			-						· ·					
	A	В		D	E		-	G		H			J	K		-	М		N	Р
1			MnRAM 3.2 Digital Works	neet	, Side	2					WT	L2								
2					Detter															
3			Question Description	User entry	Rating		_	This co	omes	in fro	m Side	e 1 a	utoma	tically	using	the	٦	Hid	nhes	t-rated:
5		1	Veg. Table 2, Option 4	citity				weight	ed av	erage	. Τοι	ise th	e higl	nest rat / overv	ted ve	eg.			1	i latoa.
6		_	TOTAL VEG Rating	0.5	Medium									ield at		at				
7		4	Listed, rare, special plant species?	N	next															
8		5	Rare community or habitat?	N	next															
9		6	Pre-European-settlement conditions?	N	next															
10 11		7	hydrogeo & topo Water depth (inches)	FT 8	Depress'l/F	low-t	hrou	gh												
12		0	Water depth (% inundation)	0											1					
13		9	Local watershed/immedita drainage (acres)					lata s are u												
14		10	Existing wetland size	3					Ju				13.							
15 16	Ē	11 12	SOILS: Up/Wetland (survey classification + site) Outlet characteristics for flood retention	N/A	N/A															
17	tio	12	Outlet characteristics for hydrologic regime	A	1 IN/A															
18	ect	14	Dominant upland land use (within 500 ft)	А	1		0.1													
19	ť, s	15	Soil condition (wetland)	A	1															
20 21	ee	16 17	Vegetation (% cover) Emerg. veg. flood resistance	90% A	Н 1		1													
22	(sh	18	Sediment delivery	A	1															
23	Digital worksheet, section I	19	Upland soils (based on soil group)	В	0.5												S	cro	اار	
24 25	3	20 21	Stormwater runoff pretreatment & detention	C	0.1		1													
25 26	jita	21	Subwatershed wetland density Channels/sheet flow	C A	0.1												do	wr	n to)
26 27	Dig	23	Adjacent naturalized buffer average width (feet)	500	Н		WQ	1	н			1					an	SV	ver	*
28	_	24	Adjacent Area Management: % Full	100%	1		1	1									n	າວເ	Ω	
29 30			adjacent area mgmt: % Manicured		0															-
31		25	adjacent area mgmt: % Bare Adjacent Area Diversity & Structure: % Native	100%	0	-	1	1									que			
32			adjacent area diversity: % Mixed	10070	0		-	_									an	d s	see	è
33			adjacent area diversity: % Sparse/Inv./Exotic		0												for	m	ula	
34 35		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate		0.05		1	0.05												
36			adjacent area slope: % Noderate		0											Ce	alcu	JIG	uo	ns
38																	I			
39		27	Downstream sensitivity/WQ protection	А	1															
40		28	Nutrient loading	А	1														5	
41 42		29 30	Shoreline wetland? Rooted shoreline vegetation (% cover)	N En	N ter a percent	tage												Ť		
43		31	Wetland in-water width (in feet, average)		ter a percent															
44		32	Emergent vegetation erosion resistance	Er	ter valid cho	oice														
45		33	Shoreline erosion potential	-	ter valid cho															
46 47		34 35	Bank protection/upslope veg. Rare Wildlife	N En	ter valid cho N	oice														
48	=	36	Scarce/Rare/S1/S2 local community	N	N															
49	ion	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							_							
50 51	Digital worksheet, section II	38 39	Community interspersion (see diagram 2) Wetland detritus	2 A	M 1		0.5						0							
52	, St	40	Wetland interspersion on landscape	A	1		1													
53	eet	41	Wildlife barriers	А	1															
54	she	42	Amphibian breeding potential-hydroperiod	A	1															
55 56	ork	43 44	Amphibian breeding potentialfish presence Amphibian & reptile overwintering habitat	A C	1 0.1															
57	Š	45	Wildlife species (list)	C	0.1															
58	ital	46	Fish habitat quality	В	0.5															
59 60	Dig	47	Fish species (list)	NT	N															
60 61	-	48 49	Unique/rare educ./cultural/rec.opportunity Wetland visibility	N C	N 0.1															
62		50	Proximity to population	N	0.1															
63		51	Public ownership	C	0.1															
64 65		52 53	Public access Human influence on wetland	C A	0.1															
66		54	Human influence on viewshed	A	1															
67		55	Spatial buffer	С	0.1															
68 60		56	Recreational activity potential		0.1															
69 70		57	Commercial crophydrologic impact	N/A	N/A															
10																				

			Mn	RAM_3.	2_Score_S	heet.xis												
	Α	В	С	D	E	F	G	Н	1		J		ĸ	L		М	N	Р
72			•		•	-						-						
73		58	GW - Wetland soils	D	R or D	1												
74		59	GW - Subwatershed land use	D	R or D	1												
75		60	GW - Wetland size and soil group	D	R or D	1												
74 75 76 77 78 79 80 81 82 83 84 85 86 87		61	GW - Wetland hydroperiod	D	R or D	1												
77	JS	62	GW - Inlet/Outlet configuration	D	R or D	1												
78	Additional questions	63	GW - Surrounding upland topographic relief	D	R or D	1	=											
79	ŝti	64	Restoration potential w/o flooding		Y or N	6	-											
80	ne	65	Landowners affected by restoration		Eabc	Enter v	alid cho	oice										
81	σ	66A	Existing wetland size (acres) [from #10]	3	acres													
82	Jal		Total wetland restoration size (acres)		acres	0.1												
83	ō	66C	(Calculated) Potential New Wetland Area [B-A]	-3	acres	% effe	ctively	drained	: ###	##								
84	dit	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value	: ###	##								
85	ğ	68			abc	Enter v												
86	٩		Hydrologic alteration type		Outlet, Tile			ump, Wi	trshd	div.,	, Filli	ing						
87					1, 2, 3, 4,	5, 6, 7, 8	3											
88 89		71	Wetland sensitivity to stormwater		Eabc													
89		72	Additional stormwater treatment needs		abc	l												
90					1										_			
90 91 92																		
93																		
94						, ry												
				W re	Final Rating	Rating Category												
95			Function Name	Raw score	Final Ratin	Rai Cai		Formul	a sho	wn t	o th	e rig	ght.					
96			Vegetative Diversity/Integrity		0.50	Med			1				,					
97																		
98	S		Hydrology - Characteristic		1.00	High												
99	rie					-												
100	Summaries		Flood Attenuation		0.60	Med												
101	Ē																	
102	D C		Water QualityDownstream		0.80	High												
103	5																	
104	Ľ.		Water QualityWetland		0.81	High												
105	Rat																	
106	Functional Rating		Shoreline Protection		N/A	N/A												
107	na			0.00	0.02	*** 1												
108	tio.		Characteristic Wildlife Habitat Structure	0.83	0.83	High												
109	D			0.02	0.02	TT' 1												
110 111	Ē		Maintenance of Characteristic Fish Habitat	0.83	0.83	High												
112	-		Maintenance of Characteristic Amphibian Habitat		0.85	High		ł										
			Maintenance of Characteristic Ampinolan Habitat		0.85	nign		1										
113 114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med												
114			Aesthetics/Recreation/Education/Cultural	0.55	0.55	wieu												
116			Commercial use		N/A	N/A		(n									
117					11/71	11/11	-		,									
118			Special Features listing:			-	PHOT	OS 72-	73									
119			opeolar reactives noting.				11101	0012	10									
120			Groundwater Interaction		discharge			1										
121			Groundwater Functional Index		g-	no spec	cial indi	icators										
122																		
123			Restoration Potential (draft formula)		#VALUE!	#####												
124			Stormwater Sensitivity (not active)															
125																		
126																		
127																		
128																		
129																		
130																		
131																		
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133																		
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115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 1301 132 133 134 135 136 137 138 139 140																		
140																		
140																		
141																		

	٨		<u> </u>				F								N		
	A	В	C MaDAM 2 2 Digital Marke	D	E		F	G H		1	J	K		М	N	P	
1			MnRAM 3.2 Digital Works	neet,	Side	2			V	VTL3	3						
2					B /												
3			Question Description	User entry	Rating			This comes in	from	Side 1	autom	atically	using the		High	est-rate	od:
5		1	Veg. Table 2, Option 4	entry	0.57	-		weighted aver	age.	To use	the hig	hest ra	ted veg.		riigi	1	Ju.
6		_	TOTAL VEG Rating	0.57	Medium			Community ra value (shown								-	
7		4	Listed, rare, special plant species?	N	next												
8		5	Rare community or habitat?	N	next												
9		6	Pre-European-settlement conditions?	Ν	next												
10		7	hydrogeo & topo		Depress'l/F	flow-	throu	gh									
11 12		8	Water depth (inches) Water depth (% inundation)	8"									_				
13		9	Local watershed/immedita drainage (acres)					data startin									
14		10	Existing wetland size	9		b	oxes	are used in) calo	culati	ons.						
15	_	11	SOILS: Up/Wetland (survey classification + site)														
16 17	on	12	Outlet characteristics for flood retention	N/A	N/A												
17 18	Ċţi	13 14	Outlet characteristics for hydrologic regime Dominant upland land use (within 500 ft)	A A	1		0.1										
19	se	15	Soil condition (wetland)	A	1		0.1										
20	et,	16	Vegetation (% cover)	90%	Н		1										
21	he	17	Emerg. veg. flood resistance	А	1												
22	rks	18	Sediment delivery	A	1												
19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 57 38	Digital worksheet, section I	19 20	Upland soils (based on soil group) Stormwater runoff pretreatment & detention	B C	0.5 0.1		1							S	cro		
25	al v	20	Subwater funding pretreatment & detention Subwatershed wetland density	C	0.1		1							do	wn	to	
26	git	22	Channels/sheet flow	А	1												
27	Ē	23	Adjacent naturalized buffer average width (feet)	500	Н	-	WQ	1 H		1				an	SW	er	
28		24	Adjacent Area Management: % Full		1		1	1						n	nore	ò	
29 30			adjacent area mgmt: % Manicured adjacent area mgmt: % Bare		0 0												
31		25	Adjacent Area Diversity & Structure: % Native	100%	1	-	1	1					C	-	stic		
32			adjacent area diversity: % Mixed		0									an	d se	ee	
33			adjacent area diversity: % Sparse/Inv./Exotic		0	_		.						for	mu	la	
34		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate		0.05 0		1	0.05									
36			adjacent area slope: % Moderate		0								Ca	alci	Jiai	ons	1
38			, i i														
39		27	Downstream sensitivity/WQ protection	А	1												
40		28	Nutrient loading	А	1									~		•	
41		29	Shoreline wetland?	N	Ν										\sim		
42 43		30 31	Rooted shoreline vegetation (% cover) Wetland in-water width (in feet, average)		ter a percen ter a percen	0											
44		32	Emergent vegetation erosion resistance		ter valid ch												
45		33	Shoreline erosion potential		ter valid ch												
46		34	Bank protection/upslope veg.		ter valid ch	oice											
47 48	_	35	Rare Wildlife	N	N												
48 49	Digital worksheet, section II	36 37	Scarce/Rare/S1/S2 local community Vegetation interspersion cover (see diagram 1)	N N/A	N N/A	N/2	A										
50	ctic	38	Community interspersion (see diagram 2)	2	M	- 1/ 1	0.5				C						
50 51	sec	39	Wetland detritus	А	1												
52 53 54 55 56 57	et,	40	Wetland interspersion on landscape	A	1		1										
53 54	hee	41 42	Wildlife barriers Amphibian breeding potential-hydroperiod	A A	1 1												
55	ks	43	Amphibian breeding potentialfish presence	A	1												
56	/or	44	Amphibian & reptile overwintering habitat	С	0.1												
57	2	45	Wildlife species (list)	D	0.5												
58 59	gita	46 47	Fish habitat quality Fish species (list)	В	0.5												
60	Diç	47	Unique/rare educ./cultural/rec.opportunity	N	Ν												
61		49	Wetland visibility	С	0.1												
62		50	Proximity to population	N	0.1												
63		51	Public ownership	C C	0.1												
64 65		52 53	Public access Human influence on wetland	A	0.1 1												
66		54	Human influence on viewshed	А	1												
67		55	Spatial buffer	С	0.1												
68		56	Recreational activity potential		0.1												
69 70		57	Commercial crophydrologic impact	N/A	N/A												
10																	

A B C D E F G H J J K L M N P 723 35 GW Waterd solids GW Waterd solids GW For D 1 1 J K L M N P 723 100 GW Waterd solids GW Waterd solids D For D 1 1 J K L M N P For D 1 1 J K L M N P For D 1 1				Mn	RAM_3.	.2_Score_S	heet.xls												
30 GW - Vickalizading along and a coll group 0 R of D 1 10 GW - Vickalizading along and a coll group 0 R of D 1 10 GW - Vickalizading along and a coll group 0 R of D 1 10 GW - Vickalizading along and a coll group 0 R of D 1 10 GW - Vickalizading along and a coll group 0 R of D 1 10 GW - Vickalizading along along to prographic coll along along a concept (concept dial network along a		А	В	С	D	E	F	G	Н			J		K	L		М	N	Р
74 59 6W - Subversite land uses 0 R & D 1 76 70 70 70 70 70 70 76 70	72			•		•					-					-			
82 80 650 Total wetland restoration size (acres)	73		58	GW - Wetland soils	D	R or D	1												
82 80 650 Total wetland restoration size (acres)	74		59	GW - Subwatershed land use	D	R or D	1												
82 80 650 Total wetland restoration size (acres)	75		60		D	R or D	1												
82 80 650 Total wetland restoration size (acres)	76						1												
82 80 650 Total wetland restoration size (acres)	77	S	62	GW - Inlet/Outlet configuration			1												
82 80 650 Total wetland restoration size (acres)	78	ō	63		D		1												
82 80 650 Total wetland restoration size (acres)	79	sti	64			Y or N	6												
82 80 650 Total wetland restoration size (acres)	80	ne	65			Eabc	Enter v	alid cho	oice										
10 Potential wetland type (Circ. 39) 1 1 2 3 4 6 7.0 10 Potential wetland type (Circ. 39) 1 1 2 3.4 6 7.0 10 Potential wetland type (Circ. 39) 1 1 2.3 4 6 7.0 10 Potential wetland type (Circ. 39) 1 1 2.3 4 6 7.0 10 Potential wetland type (Circ. 39) 1 1 0.0 1 1 0.0 1 1 0 <td>81</td> <td>ō</td> <td></td> <td></td> <td>9</td> <td> acres</td> <td></td>	81	ō			9	acres													
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Image: Second constraints Image:	86								ump, Wi	trshd	div.	, ⊢ıll	ing						
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96 Vegetative Diversity/Integrity 0.57 Med 98 90 Hydrology - Characteristic 1.00 High 100 Water Quality-Downstream 0.80 High 101 Water Quality-Downstream 0.80 High 105 Water Quality-Downstream 0.80 High 105 Water Quality-Downstream 0.80 High 106 Water Quality-Downstream 0.80 High 105 Water Quality-Downstream 0.80 High 106 Water Quality-Downstream 0.83 High 107 Otaracteristic Wildlife Habitat Structure 0.85 High 111 Maintenance of Characteristic Fish Habitat 0.83 0.83 High 116 Commercial use N/A N/A 0 117 Special Features listing: - PHOTOS 72-73 120 Groundwater Functional Index no special Indicators 121 Festoration Potential (draft formula) If VALUEI ##### 122 <td< td=""><td>93</td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	93						2												
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96 Vegetative Diversity/Integrity 0.57 Med 98 98 Hydrology - Characteristic 1.00 High 100 Water QualityDownstream 0.80 High 102 Water QualityDownstream 0.80 High 103 Water QualityDownstream 0.80 High 104 Water QualityDownstream 0.80 High 105 Water QualityDownstream 0.80 High 105 Otheracteristic Wildlife Habitat Structure 0.85 High 111 Maintenance of Characteristic Fish Habitat 0.85 High 116 Commercial use N/A N/A 0 116 Special Features listing: - PHOTOS 72-73 120 Groundwater Interaction Gischarge no special Indicators 121 Festoration Potential (draft formula) #VALUEI ##### 122 Festoration Potential (draft formula) #VALUEI ##### 123 Tomodwater Sensitivity (not active) #VALUEI #####	95					Fin Ra	C_a		Formul	a sho	own t	to th	e riş	ght.					
98 98 <td< td=""><td>96</td><td></td><td></td><td>Vegetative Diversity/Integrity</td><td></td><td>0.57</td><td>Med</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	96			Vegetative Diversity/Integrity		0.57	Med												
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115 Commercial use N/A N/A 0 117 Special Features listing: - PHOTOS 72-73 118 Special Features listing: - PHOTOS 72-73 120 Groundwater Interaction discharge Image: Commercial Indicators 121 Groundwater Functional Index no special indicators 122 Restoration Potential (draft formula) #VALUE! ##### 124 Stormwater Sensitivity (not active) #VALUE! ##### 125 126 127 128 128 126 130 131 131 131 133 134 135 134 135 133 134 135 136 137 138 139 134 136 134 139 134 135 136 137 139 134 136 137 138 130 134 136 137 138 130 134 136 136 137 130 130 136 136 137	113																		
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117 The special Features listing: - PHOTOS 72-73 119 Groundwater Interaction discharge no special indicators 122 Restoration Potential (draft formula) #VALUE! ##### 124 Stormwater Sensitivity (not active) #VALUE! ###### 125 126 127 128 126 127 129 130 131 131 132 133 134 136 133 134 136 137 138 139 140 141 141 141	116			Commercial use		N/A	N/A		()									
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123 Resolution Potential (draft formula) #VRLOL: ##### 124 Stormwater Sensitivity (not active) 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140	122			Postoration Potontial (draft formula)		#\/AIIIEI	######												
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1			MnRAM 3.2 Digital Works	neet,	Side	2				١	NTL	4						
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3			Question Description	User entry	Rating			This c	omes in	from	Side 1	autom	atically	using the		ні	ahas	t-rated:
5		1	Veg. Table 2, Option 4		0.33	-		weight	ed aver	age.	To use	the high	ghest ra	ated veg.			91103 1	raicu.
6		-	TOTAL VEG Rating		Medium				(shown					write that E5.			-	
7		4	Listed, rare, special plant species?	N	next													
8		5	Rare community or habitat?	N	next													
9		6	Pre-European-settlement conditions?	N	next													
10		7	hydrogeo & topo		Depress'l/F	flow	-throu	gh										
11 12		8	Water depth (inches) Water depth (% inundation)											_				
13		9	Local watershed/immedita drainage (acres)						startin				1					
14		10	Existing wetland size	1		b	oxes	are u	sed ir	1 cal	culat	ions.						
15	_	11	SOILS: Up/Wetland (survey classification + site)															
16 17	on	12	Outlet characteristics for flood retention		N/A													
17 18	Ċţi	13 14	Outlet characteristics for hydrologic regime Dominant upland land use (within 500 ft)	A A	1		0.1											
19	Se	15	Soil condition (wetland)	A	1		0.1											
20	et,	16	Vegetation (% cover)	95%	Н		1											
19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 57 38	Digital worksheet, section I	17	Emerg. veg. flood resistance	А	1													
22	rks	18	Sediment delivery	A	1													
23	NO	19 20	Upland soils (based on soil group) Stormwater runoff pretreatment & detention		0.5 0.1		1								S	Scr	oll	
25	al v	20	Subwater fution pretreatment & detention Subwatershed wetland density	C	0.1		1								dr)\//r	n to	
26	git	22	Channels/sheet flow	А	1													
27	ā	23	Adjacent naturalized buffer average width (feet)		Н	-	WQ		Н		1				ar	nsv	ver	*
28		24	Adjacent Area Management: % Full		1		1	1							r	no	re	
30			adjacent area mgmt: % Manicured adjacent area mgmt: % Bare		0 0													0
31		25	Adjacent Area Diversity & Structure: % Native		1		1	1							que			
32			adjacent area diversity: % Mixed		0										ar	nd s	see	è
33			adjacent area diversity: % Sparse/Inv./Exotic		0										fo	rm	ula	
34		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate		0.05 0		1	0.05	•					~				
36			adjacent area slope: % Steep		0									C	alc	ulc	uo	115
38			, , , ,														1	
39		27	Downstream sensitivity/WQ protection	А	1													
40		28	Nutrient loading	Α	1										~	-	5	
41		29	Shoreline wetland?		Ν											\sim		
42 43		30 31	Rooted shoreline vegetation (% cover) Wetland in-water width (in feet, average)		ter a percen ter a percen	0												
44		32	Emergent vegetation erosion resistance		ter valid ch													
45		33	Shoreline erosion potential		ter valid ch													
46		34	Bank protection/upslope veg.		ter valid ch	oice												
47 48	_	35	Rare Wildlife	N N	N													
48 49	Digital worksheet, section II	36 37	Scarce/Rare/S1/S2 local community Vegetation interspersion cover (see diagram 1)	N/A	N N/A	N/	A											
50	ctic	38	Community interspersion (see diagram 2)	1	L	- 1/	0.1					()					
50 51	sec	39	Wetland detritus	А	1													
52 53 54 55 56 57	ŝt,	40	Wetland interspersion on landscape		1		1											
ວ <u>ປ</u> 54	hee	41 42	Wildlife barriers Amphibian breeding potential-hydroperiod		1 1													
55	ks	43	Amphibian breeding potentialfish presence		1													
56	/or	44	Amphibian & reptile overwintering habitat	С	0.1													
57	>	45	Wildlife species (list)		0.5													
58 59	gita	46 47	Fish habitat quality Fish species (list)	В	0.5													
60	Dić	47	Unique/rare educ./cultural/rec.opportunity	N	Ν													
61		49	Wetland visibility	С	0.1													
62		50	Proximity to population		0.1													
63 64		51	Public ownership	C C	0.1													
64 65		52 53	Public access Human influence on wetland		0.1 1													
66		54	Human influence on viewshed	А	1													
67		55	Spatial buffer	С	0.1													
68		56	Recreational activity potential		0.1													
69 70		57	Commercial crophydrologic impact	N/A	N/A													
10																		

			Mn	RAM_3.	2_Score_S	heet.xls													
	А	В	С	D	E	F	G	Н	1		J		K	L		М	1	١	Р
72			•		•		,,	•				-			-				
73		58	GW - Wetland soils	D	R or D	1													
74		59	GW - Subwatershed land use	D	R or D	1													
75		60	GW - Wetland size and soil group	D	R or D	1													
76		61	GW - Wetland hydroperiod	D	R or D	1													
77	JS	62	GW - Inlet/Outlet configuration	D	R or D	1													
78	ō	63	GW - Surrounding upland topographic relief	D	R or D	1													
74 75 76 77 78 79 80 81 82 83 84 85 86 87	Additional questions	64	Restoration potential w/o flooding		Y or N	6													
80	ne	65	Landowners affected by restoration		Eabc	Enter v	alid cho	oice											
81	Ð	66A	Existing wetland size (acres) [from #10]	1	acres														
82	Jal		Total wetland restoration size (acres)		acres	0.1													
83	<u>io</u>	66C	(Calculated) Potential New Wetland Area [B-A]	-1	acres		ctively	drained											
84	dit	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value	: ###	##									
85	Þ	68			abc	Enter v													
86	-		Hydrologic alteration type		Outlet, Tile			ump, Wi	rshd	dıv.,	, Filli	ing							
87					1, 2, 3, 4,	5,6,7,8 I	5												
88 89		71	Wetland sensitivity to stormwater Additional stormwater treatment needs		Eabc														
09		72	Additional stormwater treatment needs		abc	1													
90 92																			
92																			
93						5													
94					50	Rating Category													
				Raw score	Final Rating	Rating Categoi													
95			Function Name	Rasc	Fi R	C2	•	Formul	a sho	wn t	o th	e rig	,ht.						
96			Vegetative Diversity/Integrity		0.33	Med													
97																			
98	es		Hydrology - Characteristic		1.00	High													
99	ari				0.60		-												
100	Summaries		Flood Attenuation		0.60	Med			i i										
101 102	Ę		Water QualityDownstream		0.80	High													
102	ິ		water QuantyDownstream		0.80	High													
103	g		Water QualityWetland		0.76	High													
104	ţ		Water Quanty Wenand		0.70	Ingn													
106	R		Shoreline Protection		N/A	N/A													
107	Functional Rating				1011														
108	o		Characteristic Wildlife Habitat Structure	0.75	0.75	High													
109	cti					U													
110	ŭ		Maintenance of Characteristic Fish Habitat	0.83	0.83	High													
111	ц																		
112			Maintenance of Characteristic Amphibian Habitat		0.85	High													
113																			
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med													
115																			
116			Commercial use		N/A	N/A		C)										
11/							DUCT	00 70	70										
118			Special Features listing:			-	PHOT	OS 72-7	73										
120			Groundwater Interaction		discharge			1											
120			Groundwater Functional Index		uischarge	no spec	cial indi	icators											
122			Croundwater r unctional mucx			no spec		1041013											
123			Restoration Potential (draft formula)		#VALUE!	#####													
124			Stormwater Sensitivity (not active)																
125																			
126																			
127																			
128																			
129																			
130																			
131																			
132																			
133																			
134																			
135																			
130																			
137																			
115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 1301 132 133 134 135 136 137 138 139 140																			
140																			
140																			

			Wetland ID HW5 UTM Coordinates 546967 5270928		Wetland ID HW6 UTM Coordinates 546702 5270147		Wetland name ID HW7 UTM Coordinates 546665 5270315		Wetland ID HW8 UTM Coordinates 546466 5270741
	Date		22-Jun-09		23-Jun-09		23-Jun-09		23-Jun-09
#1	Community Number (circle each community which represents at least 10% of the wetland)	10A, 15B,	PHOTOS 79-82 B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	3A 10	A, 13A, 13B, 12B, 14A, 15A, B, 16A, 16B	3A, 3 10A, 15B,	89-90 B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	3A, 3 10A, 15B,	91-92 3B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B
#2 & #	,						mmunity type individually be	1	-
	Community Type (wet meadow, marsh)	8B	Shrub-Carr	4	Connorodo Dog	4A	Coniferous Bog	8A	Alder Thicket
	Community Proportion (% of total)			ы	63%		63% CK SPRUCE/4		57%
#1	Dominant Vegetation / Cover Class		NDER-LEAVED WILLOW/4 DOWSWEET/3		ACK SPRUCE/2 ARCH/3				CH/2 CKLED ALDER/6
unity			SAM WILLOW/2		ABRADOR TEA/3		CKLED ALDER/4		ROW-LEAF CATTAIL/2
humo			CKLED ALDER/1 ADA BLUEJOINT/6		ATHERLEAF/4 _INTONIA/2		RADOR TEA/4 BIRCH/2		THERLEAF/3 ADA BLUEJOINT/4
Plant Community #1				SF	PECKLED ALDER/3	CLIN	TONIA/2	FOR	BS/2
Pla		-			DG BIRCH/2 PAGNUM MOSS/6		HERLEAF/4 GNUM MOSS/6	SPA	GNUM MOSS/6
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	н	1	ŀ	1	Н	1	н	1
	Community Type (wet meadow, marsh)	н	I	ŀ	•	н	I	н	I
				–		п			
	Community Proportion (% of total) Dominant Vegetation / Cover Class								
#2	Sommant Vegetation / Gover Class								
unity									
mmc				-					
Plant Community #2									
Pla				-					
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)								
		_	0		0	-	0		0
	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total)			-					
#3	Dominant Vegetation / Cover Class			_					
tinnit									
Plant Community #3				_					
lant (
₽.	Invasive/exotic Vegetation / Cover Class			\vdash					
	Community Quality (E, H, M, L)		0		0		0		0
	Community Type (wet meadow, marsh)	-	-	-	· _	-	-	-	-
	Community Proportion (% of total)								
#4*	Dominant Vegetation / Cover Class								
unity									
ommo									
Plant Community #4*									
đ	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	-							
			0	\vdash	0		0	2	0
	Circular 39 Types (primary <tab> others)</tab>							2	
	Cowardin Types Photo ID								
Higher	st rated community veg. div./integ:	1.0	High	1	1 High	1	High	1	High
-	ge vegetative diversity/integrity:	1.00	High		00 High	ı 1.00	High	1.00	High
	ted Average veg. diversity/integrity:	0.60	Medium	0.6		0.63	Medium	0.57	Medium
#4	Listed, rare, special plant species?	0.00	Ν	0.0	Ν	0.00	Ν	5.57	Ν
	Rare community or habitat? Pre-European-settlement conditions?		N N		N N		N N		N N
Flood 10A] Shall	Iplain Forest [1A, 2A, 3A] * Hardwood Swamp * Calcareous Fen [7B, 11B, 14A] * Shrub Sv ow Marsh [13B] * Deep Marsh [12B] * Wet onally Flooded Basin [16B]	vamp	* Coniferous Bog [2A, 4B] * [6B] * Alder Thicket [8A] *	Sh	niferous Swamp [4B] * Open rub-carr [8B] * Sedge Meado	w [10	1B, 5A, 5B, 6A, 7A, 9A, 3, 11A, 12A, 13A] *		N ver Class Class Range 1 0 - 3% 2 3 - 10% 3 10 - 25% 4 25 - 50% 5 50 - 75%
lf ther	e are more than four plant community types, u	ise the	e next column over to enter th	ne r	est and do not rely on the auto	matic	average calculations.		5 50 - 75% 6 75 - 100%

	٨	В	С	D	EE		1	G H	_			K		М		N	Р
	A	+ +	-	_		<u>່</u>		G H			J	ĸ		IVI		IN	Р
1			MnRAM 3.2 Digital Works	neet,	5 10e	2			W	TL5)						
2			Question Description	User	Rating												
4			•	entry	Rating		_T	his comes in fr	om Si	de 1	autom	atically	using th	е	Hi	ghest	-rated:
5		1	Veg. Table 2, Option 4		0.60			veighted averag						t	#F	EF!	
6			TOTAL VEG Rating		Medium		V	alue (shown to	the rig	ght) ir	nto the	field at	E5.				
7		4	Listed, rare, special plant species?	N N	next												
9		5	Rare community or habitat? Pre-European-settlement conditions?	N	next next												
10		7	hydrogeo & topo			1											
11		8	Water depth (inches)		riooupium												
12			Water depth (% inundation)			Enter	da	ata starting	here	• Y		,	7				
13 14		9 10	Local watershed/immedita drainage (acres) Existing wetland size	5				re used in c									
14	_	11	SOILS: Up/Wetland (survey classification + site)	5		L							_				
16	L L	12	Outlet characteristics for flood retention	N/A	N/A												
17	Stic	13	Outlet characteristics for hydrologic regime	А	1												
18 19	sec	14 15	Dominant upland land use (within 500 ft) Soil condition (wetland)	A A	1 1	0.1											
20	et,	16	Vegetation (% cover)		H	1											
20 21	he	17	Emerg. veg. flood resistance		1												
22 23 24	Digital worksheet, section I	18	Sediment delivery	А	1												
23	VOI	19 20	Upland soils (based on soil group) Stormwater runoff pretreatment & detention		0.5 0.1	1	1							S	Scr	oll	
24	a	20	Subwater funding pretreatment & detention Subwatershed wetland density		0.1	1	L								owr		
25 26 27	gita	22	Channels/sheet flow	А	1												,
27	Ō	23	Adjacent naturalized buffer average width (feet)		H	wo		1 H		1				a	nsv	ver	
28 29		24	Adjacent Area Management: % Full adjacent area mgmt: % Manicured		1 0	1		1						1	no	re	
30			adjacent area mgmt: % Bare		0									qu	est	ion	S
31		25	Adjacent Area Diversity & Structure: % Native		1	1	l	1						-			
32			adjacent area diversity: % Mixed		0										nds		
33 34		26	adjacent area diversity: % Sparse/Inv./Exotic Adjacent Area Slope: % Gentle		0	- 1		0.05						fc	rm	ula	l
35		20	adjacent area slope: % Moderate		0	-		0.02					(calc	ula	tio	ns
36			adjacent area slope: % Steep		0										Circ		
38																	
39		27	Downstream sensitivity/WQ protection	A	1												
40 41		28 29	Nutrient loading Shoreline wetland?		l Y									-	$\overline{}$	7	
42		30	Rooted shoreline vegetation (%cover)		1												
43		31	Wetland in-water width (in feet, average)	200	1												
44 45		32 33	Emergent vegetation erosion resistance Shoreline erosion potential		1 0.1												
45		34	Bank protection/upslope veg.	C C	0.1	1											
47		35	Rare Wildlife	Ν	N												
48		36	Scarce/Rare/S1/S2 local community	Ν	N												
49 50	Digital worksheet, section II	37 38	Vegetation interspersion cover (see diagram 1) Community interspersion (see diagram 2)	N/A 2	N/A M	N/A 0.5	5				C)					
51	ec	39	Wetland detritus	А	1	0	,				C						
52	Ĵ,	40	Wetland interspersion on landscape	Α	1	1											
53 54	lee	41	Wildlife barriers Amphibian breeding potential-hydroperiod		1												
54 55	ksh	42 43	Amphibian breeding potential-hydroperiod Amphibian breeding potentialfish presence		1 0.5												
56	or	44	Amphibian & reptile overwintering habitat	C	0.1												
57	<u>×</u>	45	Wildlife species (list)		<u> </u>												
58 59	jita	46 47	Fish habitat quality Fish species (list)	В	0.5												
59 60	Diç	47	Unique/rare educ./cultural/rec.opportunity	N	Ν												
61		49	Wetland visibility	В	0.5												
62		50	Proximity to population		0.1												
63 64		51 52	Public ownership Public access	C C	0.1 0.1												
65		53	Human influence on wetland		1												
66		54	Human influence on viewshed	А	1												
67 68		55 56	Spatial buffer Recreational activity potential		0.1 0.1												
68 69		56 57	Commercial crophydrologic impact		0.1 N/A												
70			1 J														

			Mn	RAM_3.	2_Score_S	heet.xls											
	А	В	C	D	E	F	G	Н			J	Т	К	L	М	N	Р
72			· · · · · · · · · · · · · · · · · · ·						1			_					4
73		58	GW - Wetland soils	D	R or D	1											
74		59	GW - Subwatershed land use	D	R or D	1											
75		60	GW - Wetland size and soil group	D	R or D	1											
76		61 62	GW - Wetland hydroperiod	R D	R or D R or D	0.1											
78	ns	62 63	GW - Inlet/Outlet configuration GW - Surrounding upland topographic relief	D	R or D R or D	1											
75 76 77 78 79 80 81 82 83 84 83	questions	64	Restoration potential w/o flooding	D	Y or N	5.1	=										
80	es	65	Landowners affected by restoration			Enter v		oice									
81	Ъ	66A	Existing wetland size (acres) [from #10]	5	acres			0100									
82	a		Total wetland restoration size (acres)	-	acres	0.1											
83	lo		(Calculated) Potential New Wetland Area [B-A]	-5	acres	% effe	ctively	drained	: ##	##							
84	diti	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value	: ##	##							
85	Additional				abc	Enter v											
86 87	-		Hydrologic alteration type Potential wetland type (Circ. 39)		Outlet, Tile			ump, Wi	trsho	div.	, ⊢ı	ling					
88			Wetland sensitivity to stormwater		1, 2, 3, 4, 5 Eabc	5, 6, 7, 6 	5										
89		72	Additional stormwater treatment needs		abc												
90						1											
92			1														
92 93																	
93 94						ry											
				w re	Final Rating	Rating Category											
95			Function Name	Raw score	Fin	Rat Cat		Formul	la she	own	to th	1e ri	ight.				
96			Vegetative Diversity/Integrity		0.60	Med			##				8				
97 98 99									##								
98	es		Hydrology - Characteristic		1.00	High			##								
99	ari				0.50		-		##								
100 101	Summaries		Flood Attenuation		0.60	Med			##	##							
101	Ш		Water QualityDownstream		0.80	High											
102	Ñ		Water Quanty Downstream		0.00	mgn											
103 104 105	Functional Rating		Water QualityWetland		0.84	High											
105	ati																
106	2		Shoreline Protection		0.64	Med											
107	na			0.00	0.04	TT' 1											
108	tio		Characteristic Wildlife Habitat Structure	0.86	0.86	High		#REF! #REF!									
109 110	nc		Maintenance of Characteristic Fish Habitat	0.89	0.89	High		#REF!									
111	Fu				0.07	g		#REF!									
112			Maintenance of Characteristic Amphibian Habitat		0.43	Med											
113								#REF!									
114			Aesthetics/Recreation/Education/Cultural	0.38	0.38	Med		#REF!									
115					NT/A	NT/A		#REF!									
116 117			Commercial use		N/A	N/A		(J								
118			Special Features listing:			#REF!	####										
119						<i>"</i>											
120			Groundwater Interaction		discharge			#REF!									
121			Groundwater Functional Index		#REF!	#REF!											
122																	
123			Restoration Potential (draft formula)		#VALUE!	#####											
124			Stormwater Sensitivity (not active)														
120																	
127																	
128																	
129																	
130																	
131																	
132																	
134																	
135																	
118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137																	
137																	
138 139																	
139																	
140 141																	
141																	

	٨	В	С	D	2_Score_S	1	F	G		н		T 1		к		М		N	Р
	A	+ +				2	Г	G	_	Π		J		ĸ	L	IVI	_	IN	Р
1			MnRAM 3.2 Digital Works	neet	, S iae	2					WT	_6							
2			Question Description	User	Rating														
4			Question Description	entry	Rating			This c	ome	s in fro	m Side	1 auto	omati	cally u	sing the		н	iahes	st-rated:
5		1	Veg. Table 2, Option 4	•••••	0.63	-						se the e mani			ed veg. rite that			REF!	
6			TOTAL VEG Rating	0.63	Medium) into t							
7		4	Listed, rare, special plant species?	Ν	next														
8		5	Rare community or habitat?	N	next														
9		6	Pre-European-settlement conditions?	Ν	next														
10 11		8	hydrogeo & topo Water depth (inches)	FT 12	Depress'l/F	low	-throu	gh											
12		0	Water depth (% inundation)	12		_													
13		9	Local watershed/immedita drainage (acres)					data s are u											
14		10	Existing wetland size	15			Uxes	areu	ISeu	III Ca	aicuia	luons	».						
15	_	11	SOILS: Up/Wetland (survey classification + site)		1														
16 17	lo	12 13	Outlet characteristics for flood retention Outlet characteristics for hydrologic regime	N/A A	N/A 1														
18	Sct	14	Dominant upland land use (within 500 ft)	A	1		0.1												
19	Š	15	Soil condition (wetland)	А	1														
20	et	16	Vegetation (% cover)		Н		1												
21	Digital worksheet, section I	17 18	Emerg. veg. flood resistance	A	1														
22 23 24 25 26 27	rk	18 19	Sediment delivery Upland soils (based on soil group)	A B	1 0.5											_			
24	Ň	20	Stormwater runoff pretreatment & detention	C	0.1		1									5	SCI	oll	
25	tal	21	Subwatershed wetland density	С	0.1											do)W	n to	C
26	igit	22	Channels/sheet flow	A	1		WO											we	
27	Δ	23 24	Adjacent naturalized buffer average width (feet) Adjacent Area Management: % Full	500 100%	H 1	٦	WQ	1	I H			1							
29		27	adjacent area mgmt: % Manicured	10070	0		1	-	L							ľ	nc	re	
30			adjacent area mgmt: % Bare		0											que	es	tior	าร
31		25	Adjacent Area Diversity & Structure: % Native	100%	1		1	1	L									se	
32 33			adjacent area diversity: % Mixed adjacent area diversity: % Sparse/Inv./Exotic		0														
34		26	Adjacent Area Slope: % Gentle	5%	0.05		1	0.05	5							to	rm	nula	2 E
35			adjacent area slope: % Moderate		0										С	alc	ula	atic	ns
36			adjacent area slope: % Steep		0												_	_	
38																			
39		27 28	Downstream sensitivity/WQ protection	A	1														
40 41		20	Nutrient loading Shoreline wetland?	A N	1 N												$\overline{}$		
42		30	Rooted shoreline vegetation (%cover)		ter a percen	tage													
43		31	Wetland in-water width (in feet, average)	En	ter a percen	tage													
44 45		32	Emergent vegetation erosion resistance		ter valid ch														
45		33 34	Shoreline erosion potential Bank protection/upslope veg.		ter valid ch ter valid ch														
47		35	Rare Wildlife	N	N N	0100													
48	=	36	Scarce/Rare/S1/S2 local community	Ν	Ν														
49	ior	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/.							0						
50 51	Digital worksheet, section II	38 39	Community interspersion (see diagram 2) Wetland detritus	3 A	Н 1		1						0						
52	, S	40	Wetland interspersion on landscape	A	1		1												
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54	she	42	Amphibian breeding potential-hydroperiod	A	1														
55 56	, rk	43 44	Amphibian breeding potentialfish presence Amphibian & reptile overwintering habitat	A C	0.1														
57	ž	44	Wildlife species (list)	U	0.1														
58	tal	46	Fish habitat quality	С	0.1														
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60 61		48 49	Unique/rare educ./cultural/rec.opportunity Wetland visibility	N C	N 0.1														
62		50	Proximity to population	N	0.1														
63		51	Public ownership	С	0.1														
64		52	Public access	С	0.1														
65 66		53 54	Human influence on wetland Human influence on viewshed	A	1														
67		54 55	Human influence on viewshed Spatial buffer	A C	1 0.1														
68		56	Recreational activity potential	C	0.1														
69		57	Commercial crophydrologic impact	N/A	N/A														
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96 Vegetative Diversity/Integrity 0.63 Med ##### 98 99 99 99 99 100 Hydrology - Characteristic 1.00 High ##### 100 Water QualityDownstream 0.80 High ##### 100 Water QualityDownstream 0.92 0.92 High #REF! 101 Maintenance of Characteristic Fish Habitat 0.70 0.70 High #REF! 111 Maintenance of Characteristic Amphibian Habitat 0.83 Migh #REF! 111 Aesthetics/Recreation/Education/Cultural 0.33 Med #REF! 111 Groundwater Functional Index #REF! #REF! #REF! <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>Ţ.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>							Ţ.											
96 Vegetative Diversity/Integrity 0.63 Med ##### 98 99 99 99 99 100 Hydrology - Characteristic 1.00 High ##### 100 Water QualityDownstream 0.80 High ##### 100 Water QualityDownstream 0.92 0.92 High #REF! 101 Maintenance of Characteristic Fish Habitat 0.70 0.70 High #REF! 111 Maintenance of Characteristic Amphibian Habitat 0.83 Migh #REF! 111 Aesthetics/Recreation/Education/Cultural 0.33 Med #REF! 111 Groundwater Functional Index #REF! #REF! #REF! <t< td=""><td>34</td><td></td><td></td><td></td><td>e</td><td>ing.</td><td>ing egoi</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	34				e	ing.	ing egoi											
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97	96					0.63	Med		1 or mun			une i	19110					
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139 140	124			Stormwater Sensitivity (not active)														
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1			MnRAM 3.2 Digital Works	neet	, Side	2					WТ	L7							
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3			Question Description	User entry	Rating		_	This co	omes	in fro	m Side	1 au	tomat	tically u	ising the	•	н	iahes	t-rated:
5		1	Veg. Table 2, Option 4	citity	0.63			weight	ed av	erage	. Tou	se the	high	est rate				REF!	
6		_	TOTAL VEG Rating	0.63	Medium									eld at l					
7		4	Listed, rare, special plant species?	N	next														
8		5	Rare community or habitat?	N	next														
9		6	Pre-European-settlement conditions?	N	next														
10 11		7	hydrogeo & topo Water depth (inches)	FT 12	Depress'l/F	low-ti	irou	gh											
12		0	Water depth (% inundation)	12		_		• •											
13		9	Local watershed/immedita drainage (acres)	1				data s are u											
14		10	Existing wetland size	1															
15 16	Ē	11 12	SOILS: Up/Wetland (survey classification + site) Outlet characteristics for flood retention	N/A	N/A														
17	tio	13	Outlet characteristics for hydrologic regime	A	1														
18	ec.	14	Dominant upland land use (within 500 ft)	Α	1		0.1												
19	t, s	15	Soil condition (wetland)	A	1		1												
20	ee	16 17	Vegetation (% cover) Emerg. veg. flood resistance	100% A	Н 1		1												
20 21 22	Digital worksheet, section I	18	Sediment delivery	A	1														
23	orl	19	Upland soils (based on soil group)	В	0.5												Scr	oll	
24 25	3	20 21	Stormwater runoff pretreatment & detention	C	0.1		1												
25	Jita	21	Subwatershed wetland density Channels/sheet flow	C A	0.1											ac)W	n to)
26 27	Diç	23	Adjacent naturalized buffer average width (feet)	500	Н	V	NQ	1	Н			1				a	٦SI	we	ſ
28	_	24	Adjacent Area Management: % Full	100%	1		1	1								r	no	re	
29 30			adjacent area mgmt: % Manicured adjacent area mgmt: % Bare		0														
31		25	Adjacent Area Diversity & Structure: % Native	100%	1	-	1	1								que			
32			adjacent area diversity: % Mixed		0											ar	nd	see	Э
33			adjacent area diversity: % Sparse/Inv./Exotic		0	_		.								fo	rm	nula	9
34 35		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate	5%	0.05		1	0.05							0	alc			
36			adjacent area slope: % Moderate		0										C	alc	Ula	alic	ms
38																			
39		27	Downstream sensitivity/WQ protection	В	0.5														
40		28	Nutrient loading	А	1											-	╯	5	
41 42		29 30	Shoreline wetland? Rooted shoreline vegetation (%cover)	N En	N ter a percen	ane											Ť		
43		31	Wetland in-water width (in feet, average)		ter a percen														
44		32	Emergent vegetation erosion resistance	Er	ter valid ch	oice													
45		33	Shoreline erosion potential		ter valid ch														
46 47		34 35	Bank protection/upslope veg. Rare Wildlife	N En	ter valid che N	Dice													
48	=	36	Scarce/Rare/S1/S2 local community	Ν	N														
49	ion	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							-						
50 51	ect	38 39	Community interspersion (see diagram 2) Wetland detritus	3 A	Н 1		1						0						
52	Digital worksheet, section II	40	Wetland interspersion on landscape	A	1		1												
53	eet	41	Wildlife barriers	А	1														
54	she	42	Amphibian breeding potential-hydroperiod	A	1														
55 56	ork	43 44	Amphibian breeding potentialfish presence Amphibian & reptile overwintering habitat	A C	1 0.1														
57	Š	45	Wildlife species (list)	C	0.1														
58	ital	46	Fish habitat quality	N/A	N/A														
59 60	Dig	47	Fish species (list)	N	NT														
60 61	-	48 49	Unique/rare educ./cultural/rec.opportunity Wetland visibility	N C	N 0.1														
62		50	Proximity to population	N	0.1														
63		51	Public ownership	C	0.1														
64 65		52 53	Public access Human influence on wetland	C A	0.1														
66		54	Human influence on viewshed	A	1														
67		55	Spatial buffer	С	0.1														
68 60		56	Recreational activity potential	C N/A	0.1														
69 70		57	Commercial crophydrologic impact	N/A	N/A														
10																			

			Mn	RAM_3.	2_Score_S	heet.xls										
	А	В	С	D	E	F	G	Н	1	J		K	L	М	N	Р
72			•			-										-
73 74 75 76 77		58	GW - Wetland soils	D	R or D	1										
74		59	GW - Subwatershed land use	D	R or D	1										
75		60	GW - Wetland size and soil group	D	R or D	1										
76		61	GW - Wetland hydroperiod	R	R or D	0.1										
78	questions	62 63	GW - Inlet/Outlet configuration GW - Surrounding upland topographic relief	D D	R or D R or D	1										
78 79 80 81	tio	64	Restoration potential w/o flooding	D	Y or N	5.1	=									
80	es		Landowners affected by restoration		Eabc	Enter v		nice								
81	nb	66A	Existing wetland size (acres) [from #10]	1	acres			5100								
82			Total wetland restoration size (acres)	•	acres	0.1										
82 83 84	Additional		(Calculated) Potential New Wetland Area [B-A]	-1	acres	% effe	ctively	drained:	####							
84	liti	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value:								
85	p	68	Likelihood of restoration success		ab c	Enter v										
86	٩		Hydrologic alteration type		Outlet, Tile			ımp, Wti	rshd div	/., Fil	lling					
87 88			Potential wetland type (Circ. 39)		1, 2, 3, 4,	5,6,7,8 I	3									
88 89		71 72	Wetland sensitivity to stormwater Additional stormwater treatment needs		Eabc abc											
90		12	Additional stormwater treatment needs		abc	1										
90 91 92														1		
92																
93 94						Ŷ										
94				0	Final Rating	Rating Category										
95			Function Name	Raw score	7ina Rati	Zati Cate		Formula	chowr	to th	ho ri	aht				
96			Vegetative Diversity/Integrity	S H	0.63	Med		rormun	####	100		gnı.				
97			egetative Drivelsky, integrity		0.00				####							
98	S		Hydrology - Characteristic		1.00	High			####							
99	Irie						_		####							
100	Summaries		Flood Attenuation		0.60	Med			####							
101	Ξ						-									
102 103	Su		Water QualityDownstream		0.71	High										
103	g		Water QualityWetland		0.85	High										
104 105	atir		water Quantywettand		0.85	Ingn										
106	Ř		Shoreline Protection		N/A	N/A										
107 108	al															
108	ioi		Characteristic Wildlife Habitat Structure	0.92	0.92	High		#REF!								
109	Functional Rating							#REF!								
110	E		Maintenance of Characteristic Fish Habitat	######	0.70	High		#REF!								
111 112	ш.		Maintenance of Characteristic Amphibian Habitat		0.85	High		#REF!								
113			Maintenance of Characteristic Amphibian Habitat		0.85	rigi		#REF!								
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!								
				0100	0.000	intea		#REF!								
116			Commercial use		N/A	N/A		0								
117																
118			Special Features listing:			#REF!	####									
119			Over verskunden liede verstiere		alle als a sera			#DEEI								
120			Groundwater Interaction Groundwater Functional Index		discharge #REF!	#REF!		#REF!								
121			Groundwater r unctional index		TKL1	#IXLI:										
123			Restoration Potential (draft formula)		#VALUE!	#####										
124			Stormwater Sensitivity (not active)													
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1			WIIIAWI 5.2 Digital WOIKS	IICCL	, Side	2					VVI	LO								
3			Question Description	User	Rating												_			
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5 6		1	Veg. Table 2, Option 4 TOTAL VEG Rating	0.57	0.57 Medium			Comm value						v overv ield at		at		#R	EF!	
7		4	Listed, rare, special plant species?	N	next				(- 5	,			-					
8		5	Rare community or habitat?	N	next															
9		6	Pre-European-settlement conditions?	N	next															
10 11		7	hydrogeo & topo Water depth (inches)	FT 12	Depress'l/F	low-th	irou	gh												
12		0	Water depth (% inundation)			Em			4.0.04	in a k		Vall			1					
13		9	Local watershed/immedita drainage (acres)	10				lata s are u												
14 15		10 11	Existing wetland size SOILS: Up/Wetland (survey classification + site)	46																
16	n l	12	Outlet characteristics for flood retention	N/A	N/A															
17	ctic	13	Outlet characteristics for hydrologic regime	A	1															
18 19	sei	14 15	Dominant upland land use (within 500 ft) Soil condition (wetland)	A A	1		0.1													
20	et,	16	Vegetation (% cover)		Н		1													
21 22	Digital worksheet, section I	17	Emerg. veg. flood resistance	А	1															
22	rks	18 19	Sediment delivery Upland soils (based on soil group)	A B	1 0.5												~			
24	Ň	20	Stormwater runoff pretreatment & detention	С	0.1		1										S	cro	DII	
23 24 25 26 27	tal	21	Subwatershed wetland density	С	0.1											(do	wr	t to)
26	ligi	22 23	Channels/sheet flow Adjacent naturalized buffer average width (feet)	A 500	1 H	x	NQ	1	н			1					an	SM	/er	
28		24	Adjacent Area Management: % Full	100%	1] '	1	1				1								
29			adjacent area mgmt: % Manicured		0													101		
30 31		25	adjacent area mgmt: % Bare Adjacent Area Diversity & Structure: % Native	100%	0	-	1	1									lne			
32		20	adjacent area diversity: % Mixed	10070	0			-								í	and	d s	see)
33		2.4	adjacent area diversity: % Sparse/Inv./Exotic	7 07	0	_											for	m	ıla	
34 35		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate	5%	0.05		1	0.05									alcu			
36			adjacent area slope: % Steep		0											Ca		ла	ιυ	115
38																				
39		27	Downstream sensitivity/WQ protection	В	0.5															
40 41		28 29	Nutrient loading Shoreline wetland?	A N	1 N												\checkmark	\sim	7	
42		30	Rooted shoreline vegetation (% cover)		ter a percent	tage														
43		31	Wetland in-water width (in feet, average)	En	ter a percent	tage														
44 45		32 33	Emergent vegetation erosion resistance Shoreline erosion potential		ter valid cho ter valid cho															
46		34	Bank protection/upslope veg.		ter valid cho															
47	_	35	Rare Wildlife	N	N															
48 49	L L	36 37	Scarce/Rare/S1/S2 local community Vegetation interspersion cover (see diagram 1)	N N/A	N N/A	N/A														
50	ctic	38	Community interspersion (see diagram 2)	3	Н		1						0							
51 52	Digital worksheet, section II	39 40	Wetland detritus Wetland interspersion on landscape	A	1		1													
52 53	iet,	40	Wetland interspersion on landscape Wildlife barriers	A A	1		1													
54	she	42	Amphibian breeding potential-hydroperiod	А	1															
55 56	rks	43	Amphibian breeding potentialfish presence	A	1															
50	Ň	44 45	Amphibian & reptile overwintering habitat Wildlife species (list)	С	0.1															
58	ital	46	Fish habitat quality	N/A	N/A															
59 60	Dig	47 48	Fish species (list) Unique/rare educ./cultural/rec.opportunity	N	N															
60	-	48 49	Wetland visibility	N C	N 0.1															
62		50	Proximity to population	Ν	0.1															
63 64		51 52	Public ownership Public access	C C	0.1 0.1															
65		53	Human influence on wetland	A	1															
66		54	Human influence on viewshed	А	1															
67 68		55 56	Spatial buffer Recreational activity potential	C C	0.1 0.1															
69		57	Commercial crophydrologic impact		0.1 N/A															
70																				

A B C D E F G H I J K L M N P 77 51 GW - Water and adar and adar group 0 R of D 1 1 J K L M N P 78 GW - Water and adar and adar group 0 R of D 1 1 J K L M N N P 79 GW - Water and adar and adar group 0 R of D 1 1 J K K N <th></th> <th></th> <th></th> <th>Mn</th> <th>RAM_3.</th> <th>2_Score_S</th> <th>heet.xls</th> <th></th>				Mn	RAM_3.	2_Score_S	heet.xls												
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73 59 GW - Schwalerscheid Ised usen 10 0 R or D 1 1 74 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75			58	GW - Wetland soils	D	R or D	1												
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82 100 Office Under Nethering Interview (and the Under Interview) (and the Under Interv	80	es		Landowners affected by restoration					oico										
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10 Poetral weitand type (Cr.: 3) 1 2, 3, 4, 5, 6, 7, 8 11 2, 3, 4, 5, 6, 7, 8 1 2, 3, 4, 5, 6, 7, 8 12 2, 3, 4, 5, 6, 7, 8 1 1 12 2, 3, 4, 5, 6, 7, 8 1 1 12 2, 3, 4, 5, 6, 7, 8 1 1 13 2, 3, 4, 5, 6, 7, 8 1 1 14 2, 3, 4, 5, 6, 7, 8 1 1 15 2, 4dditonal stomwater treatment needs 1 1 1 16 1 1 1 1 1 1 17 Vegetative Diversity Integrity 0.57 Mod 1	82	Ē			40		0.1												
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112 Maintenance of Characteristic Amphibian Habitat 0.85 High #REF! 113 Aesthetics/Recreation/Education/Cultural 0.33 Med #REF! 115 Commercial use N/A N/A 0 117 Special Features listing: #REF! #REF! 118 Special Features listing: #REF! ##### 120 Groundwater Interaction discharge #REF! 121 Groundwater Functional Index #REF! ##### 122 Restoration Potential (draft formula) #VALUEI ##### 123 Restoration Potential (draft formula) #VALUEI ##### 124 Stormwater Sensitivity (not active) 131 132 133 134 135 134 134 133 134 135 134 135 133 133 134 134 134 134 134 134 134 134 135 134 134 134 134 134 134 134 134 134 134 <td>106</td> <td>Ř</td> <td></td> <td>Shoreline Protection</td> <td></td> <td>N/A</td> <td>N/A</td> <td></td>	106	Ř		Shoreline Protection		N/A	N/A												
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112 Maintenance of Characteristic Amphibian Habitat 0.85 High #REF! 113 Aesthetics/Recreation/Education/Cultural 0.33 Med #REF! 115 Commercial use N/A N/A 0 117 Special Features listing: #REF! #REF! 118 Special Features listing: #REF! ##### 120 Groundwater Interaction discharge #REF! 121 Groundwater Functional Index #REF! ##### 122 Restoration Potential (draft formula) #VALUEI ##### 123 Restoration Potential (draft formula) #VALUEI ##### 124 Stormwater Sensitivity (not active) 131 132 133 134 135 134 134 133 134 135 134 135 133 133 134 134 134 134 134 134 134 134 135 134 134 134 134 134 134 134 134 134 134 <td>108</td> <td>6</td> <td></td> <td>Characteristic Wildlife Habitat Structure</td> <td>0.90</td> <td>0.90</td> <td>High</td> <td></td> <td>#REF</td> <td>=!</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	108	6		Characteristic Wildlife Habitat Structure	0.90	0.90	High		#REF	=!									
112 Maintenance of Characteristic Amphibian Habitat 0.85 High #REF! 113 Aesthetics/Recreation/Education/Cultural 0.33 Med #REF! 115 Commercial use N/A N/A 0 117 Special Features listing: #REF! #REF! 118 Special Features listing: #REF! ##### 120 Groundwater Interaction discharge #REF! 121 Groundwater Functional Index #REF! ##### 122 Restoration Potential (draft formula) #VALUEI ##### 123 Restoration Potential (draft formula) #VALUEI ##### 124 Stormwater Sensitivity (not active) 131 132 133 134 135 134 134 133 134 135 134 135 133 133 134 134 134 134 134 134 134 134 135 134 134 134 134 134 134 134 134 134 134 <td>109</td> <td>cti</td> <td></td> <td></td> <td></td> <td></td> <td>Ĩ</td> <td></td> <td>#REF</td> <td>-!</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	109	cti					Ĩ		#REF	-!									
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e ecial Features (from list, p.2enter letter/s) mmunity Number (circle each community which esents at least 10% of the wetland) - Describe each community mmunity Type (wet meadow, marsh) mmunity Proportion (% of total) Dominant Vegetation / Cover Class nmunity Quality (E, H, M, L) mmunity Type (wet meadow, marsh) mmunity Proportion (% of total) Dominant Vegetation / Cover Class	3A, 3 10A, 15B, y type i 4B BLAC SPEC MOU HOR FORE BUNG BRAG	Coniferous Swamp 88% CK SPRUCE/5 CKLED ALDER/3 NTAIN MAPLE/3 SETAIL/1	3A, 3B, 10A, 13 15B, 16 4B SAPLIN SAPLIN LABRA LEATHI FORBS	~ Describe e Coniferous Swamp 50% G BLACK SPRUCE/2 G LARCH/3 DOR TEA/2 SRLEAF/5	3A, 3 10A, 15B, ach co 8B BOG CAN/ TAM/ LEAT SEDC	23-Jun-09 97-98 B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B mmunity type individually be Shrub-Carr 50% BIRCH/5 ADA BLUEJOINT/3 ARACK/2 HERLEAF/4 3E/2 XLED ALDER/2	3A, 3 10A, 15B, 4B BLAC LARC BOG LABE FOR SED	23-Jun-09 99-100 38, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B Coniferous Swamp 63% CK SPRUCE/5 CH/4 5 BIRCH/2 RADOR TEA/5 BS/2
nmunity Number (circle each community which esents at least 10% of the wetland) ~ Describe each community mmunity Type (wet meadow, marsh) nmunity Proportion (% of total) Dominant Vegetation / Cover Class nvasive/exotic Vegetation / Cover Class nmunity Quality (E, H, M, L) nmunity Type (wet meadow, marsh) mmunity Proportion (% of total)	3A, 3 10A, 15B, (type i 4B BLAC SPEC MOU HOR FORE BUNG SPAC	B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B Individually below ~ Coniferous Swamp 88% CK SPRUCE/5 CKLED ALDER/3 NTAIN MAPLE/3 SETAIL/1 BS/3 CHBERRY/3 CKEN FERN/3 GNUM MOSS/5	3A, 3B, 10A, 13 15B, 16 4B SAPLIN SAPLIN SAPLIN FORBS SPAGN	4A, 4B, 7A, 7B, 8A, 8B, A, 13B, 12B, 14A, 15A, A, 16B ~ Describe e Coniferous Swamp 50% G BLACK SPRUCE/2 G LARCH/3 DOR TEA/2 FRLEAF/5 /2 UM MOSS/6	3A, 3 10A, 15B, ach co 8B BOG CAN/ TAM/ LEAT SEDC	B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B mmunity type individually be <u>Shrub-Carr</u> 50% BIRCH/5 ADA BLUEJOINT/3 RRACK/2 HERLEAF/4 5E/2	3A, 3 10A, 15B, 4B BLAC LARC BOG LABE FOR SED	3B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B Coniferous Swamp 63% CK SPRUCE/5 CH/4 5 BIRCH/2 RADOR TEA/5
nmunity Type (wet meadow, marsh) nmunity Proportion (% of total) Dominant Vegetation / Cover Class nvasive/exotic Vegetation / Cover Class nmunity Quality (E, H, M, L) nmunity Type (wet meadow, marsh) nmunity Proportion (% of total)	4B BLAC SPEC MOU HOR FORE BUNG BRAG SPAC	Coniferous Swamp 88% CK SPRUCE/5 CKLED ALDER/3 NTAIN MAPLE/3 SETAIL/1 BS/3 CHBERRY/3 CKEN FERN/3 GNUM MOSS/5	SAPLIN SAPLIN LABRA LEATH FORBS SPAGN	Coniferous Swamp 50% G BLACK SPRUCE/2 G LARCH/3 DOR TEA/2 ERLEAF/5 /2 UM MOSS/6	8B BOG CANA TAMA LEAT SEDO	Shrub-Carr 50% BIRCH/5 ADA BLUEJOINT/3 ARACK/2 HERLEAF/4 5/2	4B BLAC LARC BOG LABF FOR SED SPE	Coniferous Swamp 63% CK SPRUCE/5 CH/4 5 BIRCH/2 RADOR TEA/5
nmunity Proportion (% of total) Dominant Vegetation / Cover Class nvasive/exotic Vegetation / Cover Class nmunity Quality (E, H, M, L) nmunity Type (wet meadow, marsh) nmunity Proportion (% of total)	BLAC SPEC MOU HOR3 FORE BUNG BRAG SPAC	88% CK SPRUCE/5 CKLED ALDER/3 NTAIN MAPLE/3 SETAIL/1 BS/3 CHBERRY/3 CKEN FERN/3 GNUM MOSS/5	SAPLIN SAPLIN LABRA LEATH FORBS SPAGN	50% G BLACK SPRUCE/2 G LARCH/3 DOR TEA/2 ERLEAF/5 /2 UM MOSS/6	BOG CAN/ TAM/ LEAT SED0	50% BIRCH/5 ADA BLUEJOINT/3 ARACK/2 HERLEAF/4 3E/2	BLAC LARC BOG LABI FOR SED SPE	63% CK SPRUCE/5 CH/4 6 BIRCH/2 RADOR TEA/5
Dominant Vegetation / Cover Class nvasive/exotic Vegetation / Cover Class nmunity Quality (E, H, M, L) nmunity Type (wet meadow, marsh) nmunity Proportion (% of total)	SPEC MOU HORS FORE BUNC BRAC SPAC	CK SPRUCE/5 CKLED ALDER/3 NTAIN MAPLE/3 SETAIL/1 SS/3 CHBERRY/3 CKEN FERN/3 GNUM MOSS/5	SAPLIN LABRA LEATHI FORBS SPAGN	G BLACK SPRUCE/2 G LARCH/3 DOR TEA/2 ERLEAF/5 /2 UM MOSS/6	CANA TAMA LEAT SED0	BIRCH/5 ADA BLUEJOINT/3 ARACK/2 HERLEAF/4 GE/2	LAR BOG LAB FOR SED SPE	CK SPRUCE/5 CH/4 BIRCH/2 RADOR TEA/5
nmunity Quality (E, H, M, L) nmunity Type (wet meadow, marsh) nmunity Proportion (% of total)	MOU HOR FORE BUNG BRAG SPAG	NTAIN MAPLE/3 SETAIL/1 BS/3 CHBERRY/3 CKEN FERN/3 GNUM MOSS/5	LABRA LEATH FORBS SPAGN	DOR TEA/2 RLEAF/5 /2 UM MOSS/6	TAMA LEAT SEDC	ARACK/2 HERLEAF/4 GE/2	BOG LABI FOR SED SPE	BIRCH/2 RADOR TEA/5
nmunity Quality (E, H, M, L) nmunity Type (wet meadow, marsh) nmunity Proportion (% of total)			H	Н				GE/2 CKLED ALDER/4 GNUM MOSS/6
nmunity Type (wet meadow, marsh) nmunity Proportion (% of total)	H -	H -	Н	Н			SPA	GINUM MOSS/6
nmunity Type (wet meadow, marsh) nmunity Proportion (% of total)	-		н	H	+ 1			
nmunity Proportion (% of total)	-	-				Н	Н	Н
, , , ,			_		-	-		
Dominant Vegetation / Cover Class								
nvasive/exotic Vegetation / Cover Class								
-								
nmunity Quality (E, H, M, L)		0		0		0		0
nmunity Type (wet meadow, marsh)	-		-	-	-	-	-	-
nmunity Proportion (% of total) Dominant Vegetation / Cover Class								
nvasive/exotic Vegetation / Cover Class								
nmunity Quality (E, H, M, L)		0		0		0		0
nmunity Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
nmunity Proportion (% of total)								
Dominant Vegetation / Cover Class								
nvasive/exotic Vegetation / Cover Class								
nmunity Quality (E, H, M, L)	-	0		0		0		0
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cular 39 Types (primary <tab> others)</tab>								
cular 39 Types (primary <tab> others) wardin Types</tab>				11:24		1 1:24	4	ا المله
vardin Types bto ID	4.0	ما ما ا						High
vardin Types oto ID ted community veg. div./integ:	1.0	High	1.00			High		Ť
vardin Types to ID ted community veg. div/integ: egetative diversity/integrity:	1.00	High	0 = 0		0		0.63	Medium
vardin Types bto ID ted community veg. div./integ: egetative diversity/integrity: Average veg. diversity/integrity:			0.50	High Medium	0.50	Medium		
vardin Types to ID ted community veg. div/integ: egetative diversity/integrity:	1.00	High	0.50		0.50			
Na	o ID				getative diversity/integrity: 1.00 High 1.00 High		getative diversity/integrity: 1.00 High 1.00 High 1.00 High	getative diversity/integrity: 1.00 High 1.00 High 1.00 High 1.00 High 1.00 High 1.00 Output Output

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1			WITRAW 5.2 Digital WOLKS	IIEEL,	Side	2					VV I	L9								
3			Question Description	User	Rating															
4		-	•	entry				This co weight											-	st-rated
5		1	Veg. Table 2, Option 4	0.99	0.88			Comm	unity	rating	, pleas	se m	anual	y over	rwrite	e that		#	REF	
6 7		4	TOTAL VEG Rating Listed, rare, special plant species?	0.88 N	High next			value ((snow	n to t	ne rign	it) int	o the	tield a	IT ED					
8		5	Rare community or habitat?	N	next															
9		6	Pre-European-settlement conditions?	N	next															
10		7	hydrogeo & topo	FT	Depress'l/F	low-th	irou	gh												
11		8	Water depth (inches)	6	-															
12 13		0	Water depth (% inundation)			En	ter o	lata s	tarti	ng k	nere.	Ye	llow							
14		9 10	Local watershed/immedita drainage (acres) Existing wetland size	1				are u												
15	_	11	SOILS: Up/Wetland (survey classification + site)		1										_					
16	n	12	Outlet characteristics for flood retention	N/A	N/A															
17 18	cti	13 14	Outlet characteristics for hydrologic regime	A A	1		0.1													
10	se	14	Dominant upland land use (within 500 ft) Soil condition (wetland)	A	1		0.1													
20	et,	16	Vegetation (% cover)	95%	Н		1													
21	Digital worksheet, section I	17	Emerg. veg. flood resistance	А	1															
21 22 23 24 25 26 27	rks	18 19	Sediment delivery Upland soils (based on soil group)	A B	1 0.5														_	
23	٥ ۵	20	Stormwater runoff pretreatment & detention	Б С	0.3		1										S	SCI	roll	
25	al	21	Subwatershed wetland density	C	0.1		-										dc)W	n t	0
26	igit	22	Channels/sheet flow	А	1															
27 28	ā	23 24	Adjacent naturalized buffer average width (feet) Adjacent Area Management: % Full	500 100%	H 1	י ר	NQ 1	1 1	Н			1					a	15	we	I
29		24	adjacent area mgmt: % Manicured	100%	0		1	1									r	nc	re	
30			adjacent area mgmt: % Bare		0												que	es	tio	าร
31		25	Adjacent Area Diversity & Structure: % Native	100%	1		1	1											se	
32 33			adjacent area diversity: % Mixed adjacent area diversity: % Sparse/Inv./Exotic		0															
34		26	Adjacent Area Slope: % Gentle	5%	0.05		1	0.05									fo	rm	nula	а
35			adjacent area slope: % Moderate		0											С	alc	:ul	atio	ons
36			adjacent area slope: % Steep		0		_											_	_	
38																				
39		27 28	Downstream sensitivity/WQ protection Nutrient loading	A	1												_			
40 41		28	Shoreline wetland?	A N	1 N													$\overline{\ }$	/	
42		30	Rooted shoreline vegetation (%cover)		ter a percen	tage														
43		31	Wetland in-water width (in feet, average)	En	ter a percen	tage														
44 45		32 33	Emergent vegetation erosion resistance Shoreline erosion potential		ter valid cho ter valid cho															
46		34	Bank protection/upslope veg.		ter valid cho															
47		35	Rare Wildlife	Ν	Ν															
48	n II	36	Scarce/Rare/S1/S2 local community	N N/A	N	37/1														
49 50	Digital worksheet, section II	37 38	Vegetation interspersion cover (see diagram 1) Community interspersion (see diagram 2)	N/A 3	N/A H	N/A	1						0							
51	ec	39	Wetland detritus	A	п 1		1						0							
52	t, s	40	Wetland interspersion on landscape	А	1		1													
53	lee	41	Wildlife barriers	A	1															
54 55	ksh	42 43	Amphibian breeding potential-hydroperiod Amphibian breeding potentialfish presence	A A	1															
56	orl	44	Amphibian & reptile overwintering habitat	C	0.1															
57	3	45	Wildlife species (list)																	
58 59	yita	46 47	Fish habitat quality Fish species (list)	N/A	N/A															
59 60	Diç	47	Unique/rare educ./cultural/rec.opportunity	N	Ν															
61		49	Wetland visibility	С	0.1															
62		50	Proximity to population	N	0.1															
63 64		51 52	Public ownership Public access	C C	0.1 0.1															
65		53	Human influence on wetland	A	1															
66		54	Human influence on viewshed	А	1															
67		55	Spatial buffer	C	0.1															
68 69		56 57	Recreational activity potential Commercial crophydrologic impact	C N/A	0.1 N/A															
70		51		11/11	11/11															
10																				

			Mn	RAM_3.	2_Score_S	heet.xls										
	А	В	C	D	E	F	G	Н		J	K		L	М	N	Р
72					_				<u> </u>	•					1	_ <u>_</u>
73		58	GW - Wetland soils	D	R or D	1										
74		59	GW - Subwatershed land use	D	R or D	1										
74 75 76 77 78		60	GW - Wetland size and soil group	D	R or D	1										
76		61	GW - Wetland hydroperiod	R	R or D	0.1										
77	S	62	GW - Inlet/Outlet configuration	D	R or D	1										
78	questions	63	GW - Surrounding upland topographic relief	D	R or D	1	_									
79 80	sti	64	Restoration potential w/o flooding		Y or N	5.1	=									
80	ë	65	Landowners affected by restoration		Eabc	Enter v	alid ch	oice								
81	5	66A	Existing wetland size (acres) [from #10]	1	acres											
82 83 84 85 86 87	Additional	66B	Total wetland restoration size (acres)		acres	0.1										
83	ō		(Calculated) Potential New Wetland Area [B-A]	-1	acres	% effe	ctively	drained:	####							
84	lit	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value:	####							
85	Þ	68	Likelihood of restoration success		ab c	Enter v										
86	4		Hydrologic alteration type		Outlet, Tile			ump, Wti	rshd div	/., Fil	ling					
			Potential wetland type (Circ. 39)		1, 2, 3, 4,	5, 6, 7, 8 I	3									
88			Wetland sensitivity to stormwater Additional stormwater treatment needs		Eabc											
89		72	Additional stormwater treatment needs		abc	l										
90 91 92																
92					-											
93						~										
94					50	a io										
				Raw score	Final Rating	Rating Category										
95			Function Name	Raw score	Fin Ra	Ca Ra	_	Formula	a shown	to th	e righ	nt.				
96			Vegetative Diversity/Integrity		0.88	High			####							
97									####							
98	es		Hydrology - Characteristic		1.00	High			####							
99	Ĩ								####							
100	Summaries		Flood Attenuation		0.60	Med			####							
101	Ē				0.00	TT' 1	-									
102 103	ຣ		Water QualityDownstream		0.80	High										
103	g		Water QualityWetland		0.92	High										
104	Ę		water Quantywenand		0.92	riigii										
105	Ra		Shoreline Protection		N/A	N/A	-									
107	Functional Rating		Shoteline i foteetion		14/21	14/21										
108	ũ		Characteristic Wildlife Habitat Structure	0.97	0.97	High		#REF!								
109	Ĕ					8		#REF!								
110	Ĕ		Maintenance of Characteristic Fish Habitat	#######	N/A	N/A		#REF!								
111	ц							#REF!								
112			Maintenance of Characteristic Amphibian Habitat		0.85	High		-								
113								#REF!								
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!								
115								#REF!								
116			Commercial use		N/A	N/A		0								
117																
118			Special Features listing:			#REF!	####									
119			One we devete a latera etian		die else sus e											
120			Groundwater Interaction Groundwater Functional Index		discharge #REF!	#REF!		#REF!								
121			Groundwater Functional Index		#KEF!	#REF!										
122			Restoration Potential (draft formula)		#VALUE!	######										
123			Stormwater Sensitivity (not active)		#VALUE:	*****										
125																
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	٨	В	С	D	2_Score_S	-	F	G	T	Н		-		К	T .		М		N	Р
	A	+ +				2	Г	G		Π	1 1		J	ĸ			IVI		IN	P
1			MnRAM 3.2 Digital Works	neet	, S iae	2					WT	L10								
2			Question Description	User	Rating															
4			Question Description	entry	Rating			This c	omes	in fro	m Side	1 au	toma	tically	using t	he	٦	Hio	ghes	t-rated:
5		1	Veg. Table 2, Option 4	•••••	0.50	-									ted veg vrite that				EF!	
6			TOTAL VEG Rating	0.5	Medium			value												
7		4	Listed, rare, special plant species?	Ν	next															
8		5	Rare community or habitat?	N	next															
9		6	Pre-European-settlement conditions?	Ν	next															
10 11		8	hydrogeo & topo Water depth (inches)	FT 12	Depress'l/F	low	-throu	gh												
12		0	Water depth (Menes) Water depth (% inundation)	12		_									1					
13		9	Local watershed/immedita drainage (acres)					data s are u												
14		10	Existing wetland size	111		Ľ	UNCS		300		arcun		<u>.</u>							
15 16	Ξ	11 12	SOILS: Up/Wetland (survey classification + site) Outlet characteristics for flood retention	N/A	NI/A															
17	<u>io</u>	12	Outlet characteristics for hydrologic regime	A A	N/A 1															
18	ect	14	Dominant upland land use (within 500 ft)	A	1		0.1													
19	Ñ.	15	Soil condition (wetland)	А	1															
20	Digital worksheet, section I	16	Vegetation (% cover)	90%	H		1													
21	sh	17 18	Emerg. veg. flood resistance Sediment delivery	A A	1															
22 23 24 25 26 27	ork	10	Upland soils (based on soil group)	B	0.5												0	<u> </u>	~!!	
24	Ň	20	Stormwater runoff pretreatment & detention	С	0.1		1											cro		
25	tal	21	Subwatershed wetland density	С	0.1											(dov	wr	n to)
26	igi	22 23	Channels/sheet flow Adjacent naturalized buffer average width (feet)	A 500	1 H		WQ	1	Н			1					an	SV	ver	
28		23	Adjacent Area Management: % Full	100%	1	٦	1	1				1								
29			adjacent area mgmt: % Manicured		0													101		
30			adjacent area mgmt: % Bare		0	_										q	ue	st	ion	S
31 32		25	Adjacent Area Diversity & Structure: % Native	100%	1 0		1	1									and			
33			adjacent area diversity: % Mixed adjacent area diversity: % Sparse/Inv./Exotic		0															
34		26	Adjacent Area Slope: % Gentle	5%	0.05		1	0.05	5								for			
35			adjacent area slope: % Moderate		0											ca	lcι	ıla	tio	ns
36			adjacent area slope: % Steep		0	1											r		1	
38																				
39 40		27 28	Downstream sensitivity/WQ protection Nutrient loading	A A	1														L	
41		20	Shoreline wetland?	N	N													\searrow		
42		30	Rooted shoreline vegetation (% cover)		ter a percen	tage														
43		31	Wetland in-water width (in feet, average)		ter a percen															
44 45		32 33	Emergent vegetation erosion resistance Shoreline erosion potential		ter valid ch ter valid ch															
46		34	Bank protection/upslope veg.		ter valid ch															
47		35	Rare Wildlife	Ν	Ν															
48	=	36	Scarce/Rare/S1/S2 local community	N	N															
49 50	tiol	37 38	Vegetation interspersion cover (see diagram 1) Community interspersion (see diagram 2)	N/A 3	N/A H	N/.	A 1						0							
51	ec	39	Wetland detritus	A	п 1		1						0							
52	t, s	40	Wetland interspersion on landscape	А	1		1													
53	ee	41	Wildlife barriers	A	1															
54 55	(sh	42 43	Amphibian breeding potential-hydroperiod Amphibian breeding potentialfish presence	A A	1															
56	- Š	44	Amphibian & reptile overwintering habitat	C	0.1															
57	_≥	45	Wildlife species (list)																	
58	Digital worksheet, section II	46	Fish habitat quality	N/A	N/A															
59 60	Dig	47 48	Fish species (list) Unique/rare educ./cultural/rec.opportunity	N	N															
61		40	Wetland visibility	C	0.1															
62		50	Proximity to population	Ν	0.1															
63		51	Public ownership	C	0.1															
64 65		52 53	Public access Human influence on wetland	C A	0.1															
66		54	Human influence on viewshed	A	1															
67		55	Spatial buffer	С	0.1															
68		56	Recreational activity potential	С	0.1															
69 70		57	Commercial crophydrologic impact	N/A	N/A															
70																				

			Mn	RAM_3.	2_Score_S	heet.xls											
	А	В	C	D	E	F	G	Н		1	J	1	К		М	N	Р
72			Ŭ				Ŭ	ļ	-	· .	0	<u> </u>		 _			4 ·
73		58	GW - Wetland soils	D	R or D	1											
74		59	GW - Subwatershed land use	D	R or D	1											
75		60	GW - Wetland size and soil group	D	R or D	1											
74 75 76 77 78		61	GW - Wetland hydroperiod	R	R or D	0.1											
77	S	62	GW - Inlet/Outlet configuration	D	R or D	1											
78	Ŝ	63	GW - Surrounding upland topographic relief	D	R or D	1											
70	questions	64	Restoration potential w/o flooding		Y or N	5.1	=										
79 80	es	65	Landowners affected by restoration		Eabc	Enter v		oice									
81	nb	66A	Existing wetland size (acres) [from #10]	111			and ch	OICE									
82	Ē		Total wetland restoration size (acres)	111	acres	0.1											
82 83 84 85 86 87	Additional		(Calculated) Potential New Wetland Area [B-A]	-111	acres		ctivoly	draine	d. 4								
94	Ę	67	Average width of naturalized upland buffer (poten		feet	0.1		value									
95	ldi	68	Likelihood of restoration success	0	ab c	Enter v			C. #								
86	Ad		Hydrologic alteration type		Outlet, Tile				/trol	nd div	, F	illin	a				
87	-				1, 2, 3, 4,			ump, w	113	iu un	/., 1		y				
88		71	Wetland sensitivity to stormwater		Eabc	J, U, 7, C I	J										
89		72	Additional stormwater treatment needs		abc												
09		12			a 0 C	T											
90 91 92																	
92																	
93						~											
94					50	Rating Category											
				W	Final Rating	Rating Categoı											
95			Function Name	Raw score	Final Ratin	Ra Ca		Formu	ıla s	hown	to t	the	right.				
96			Vegetative Diversity/Integrity		0.50	Med				####			U				
97									#	####							
98	S		Hydrology - Characteristic		1.00	High			#	####							
99	rie					-			#	####							
100	Summaries		Flood Attenuation		0.60	Med			#	####							
101	Ľ																
102	, L		Water QualityDownstream		0.80	High											
103	S					Ū											
104 105	Functional Rating		Water QualityWetland		0.81	High											
105	ati					Ũ											
106	Ř		Shoreline Protection		N/A	N/A											
107	a																
108	6		Characteristic Wildlife Habitat Structure	0.89	0.89	High		#REF	-!								
109	Ę					U		#REF	-!								
110	Ĕ		Maintenance of Characteristic Fish Habitat	######	N/A	N/A		#REF	-!								
111	ц							#REF	-!								
112			Maintenance of Characteristic Amphibian Habitat		0.85	High		1									
113						-		#REF	-i								
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF	-!								
115								#REF	-!								
116			Commercial use		N/A	N/A			0								
117																	
118			Special Features listing:			#REF!	####										
119																	
120			Groundwater Interaction		discharge			#REF	-!								
121			Groundwater Functional Index		#REF!	#REF!											
122																	
123			Restoration Potential (draft formula)		#VALUE!	#####											
124			Stormwater Sensitivity (not active)														
125																	
126																	
127																	
128																	
116 117 118 119 120 121 122 123 124 125 126 127 128 129 130																	
130																	
131 132 133																	
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137																	
134 135 136 137 138 139																	
139																	
140																	
141																	

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	A	В		D	E	F	G H		JK		Μ	Ν	Р
1			MnRAM 3.2 Digital Works	neet,	, Side	2		WTL11					
2			Question Description	User	Rating								
4			•	entry	Rating		This comes in fro				<u></u> н	lighes	t-rated:
5		1	Veg. Table 2, Option 4		0.50		weighted average Community rating					#REF!	
6			TOTAL VEG Rating		Medium		value (shown to t						
7		4	Listed, rare, special plant species?	N	next								
8 9		5	Rare community or habitat? Pre-European-settlement conditions?	N N	next next								
10		7	hydrogeo & topo		Depress'1/F	low throu	ch						
11		8	Water depth (inches)	12	Depress 1/1	iow-tillou	gii						
12			Water depth (% inundation)			Enter	data atarting l	have Vell		7			
13		9	Local watershed/immedita drainage (acres)				data starting I are used in ca						
14 15		10 11	Existing wetland size SOILS: Up/Wetland (survey classification + site)	1									
16	Digital worksheet, section I	11	Outlet characteristics for flood retention	N/A	N/A								
16 17	tio	13	Outlet characteristics for hydrologic regime	A	1								
18	Sec	14	Dominant upland land use (within 500 ft)	А	1	0.1							
19	Ĵ.	15 16	Soil condition (wetland)	A 90%	1 H	1							
20	lee	17	Vegetation (% cover) Emerg. veg. flood resistance	90% A	п 1	1							
22	ksh	18	Sediment delivery	A	1								
23	or	19	Upland soils (based on soil group)	В	0.5						Sc	roll	
24	3	20 21	Stormwater runoff pretreatment & detention Subwatershed wetland density	C C	0.1 0.1	1							
26	jita	22	Channels/sheet flow	A	1						dow	'n tC)
27	Dić	23	Adjacent naturalized buffer average width (feet)	500	Н	WQ	1 H	1			ans	wer	,
28		24	Adjacent Area Management: % Full		1	1	1				m	ore	
29			adjacent area mgmt: % Manicured adjacent area mgmt: % Bare		0								0
19 20 21 22 23 24 25 26 27 28 29 30 31 32 33		25	Adjacent Area Diversity & Structure: % Native	100%	1	1	1				ques		
32			adjacent area diversity: % Mixed		0						and	see	è
33			adjacent area diversity: % Sparse/Inv./Exotic		0						forn	nula	
34 35		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate		0.05	1	0.05				alcul		
36			adjacent area slope: % Steep		0					Co	alcui	alio	115
38						-							
39		27	Downstream sensitivity/WQ protection	В	0.5								
40		28	Nutrient loading	А	1						く	5	
41 42		29 30	Shoreline wetland? Rooted shoreline vegetation (%cover)	N	N ter a percent	0.00							
43		31	Wetland in-water width (in feet, average)		ter a percent								
44		32	Emergent vegetation erosion resistance	En	ter valid cho	oice							
45		33	Shoreline erosion potential		ter valid cho								
46 47		34 35	Bank protection/upslope veg. Rare Wildlife	En N	ter valid cho N	bice							
48	=	36	Scarce/Rare/S1/S2 local community	N	N								
49	Digital worksheet, section II	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A							
50 51	cti	38	Community interspersion (see diagram 2)	2	M	0.5			0				
51 52	Se	39 40	Wetland detritus Wetland interspersion on landscape	A	1	1							
53 54	set,	41	Wildlife barriers	A	1	1							
54	she	42	Amphibian breeding potential-hydroperiod	А	1								
55	ž	43	Amphibian breeding potentialfish presence	A C	1								
56 57	Ň	44 45	Amphibian & reptile overwintering habitat Wildlife species (list)	C	0.1								
58	tal	46	Fish habitat quality	N/A	N/A								
59	igi	47	Fish species (list)										
60 61		48 49	Unique/rare educ./cultural/rec.opportunity Wetland visibility	N C	N 0.1								
61		49 50	Wetland visibility Proximity to population	N	0.1								
63		51	Public ownership	С	0.1								
64		52	Public access	С	0.1								
65 66		53 54	Human influence on wetland Human influence on viewshed	A A	1								
67		55	Spatial buffer	C	0.1								
68		56	Recreational activity potential	С	0.1								
69 70		57	Commercial crophydrologic impact	N/A	N/A								
70													

			Mn	RAM_3.	2_Score_S	heet.xls											
	А	В	С	D	E	F	G	Н		1	Γ.	J	K		М	N	Р
72			Ŭ				Ŭ	ļ	-	•	<u> </u>	<u> </u>			 		- · ·
73		58	GW - Wetland soils	D	R or D	1											
74		59	GW - Subwatershed land use	D	R or D	1											
75		60	GW - Wetland size and soil group	D	R or D	1											
74 75 76 77 78		61	GW - Wetland hydroperiod	D	R or D	1											
77	S	62		D	R or D	1											
78	Ŝ	63	GW - Surrounding upland topographic relief	R	R or D	0.1											
70	questions	64	Restoration potential w/o flooding		Y or N	5.1	-										
79 80	es	65	Landowners affected by restoration		Eabc	Enter v		oice									
81	nb	66A	Existing wetland size (acres) [from #10]	1				loice									
01	Ē		Total wetland restoration size (acres)	1	acres	0.1											
82 83 84 85 86 87	Additional			1				draina	. d.	#####							
03	tio		(Calculated) Potential New Wetland Area [B-A] Average width of naturalized upland buffer (poten	-1 0	acres feet	% effe 0.1				#### ####							
04	qi	67	Likelihood of restoration success	0	ab c	Enter v			le.	####							
00	Ρq	68 69			Outlet, Tile				N/tro	hd di							
00								ump, v	vus	snu u	v., I		ig				
88			Wetland sensitivity to stormwater		1, 2, 3, 4,	5, 6, 7, 6	5										
89		71	Additional stormwater treatment needs		Eabc												
09		72			abc	T											
90 91 92																	
92					-												
93																	
94						Rating Category											
				W	Final Rating	Rating Categoi											
95			Function Name	Raw score	Final Ratin	Rai Cai		Form	ula	show	n to	the	right	t.			
96			Vegetative Diversity/Integrity		0.50	Med				####			8				
97										####							
98	Ś		Hydrology - Characteristic		1.00	High			i	####							
99	je.					U				####							
100	Jai		Flood Attenuation		0.60	Med				####							
101	Summaries								1								
102	In		Water QualityDownstream		0.71	High											
103	S					0											
104	bu		Water QualityWetland		0.81	High											
104 105	ati					0											
106	Ř		Shoreline Protection		N/A	N/A											
107	Functional Rating																
108	o		Characteristic Wildlife Habitat Structure	0.83	0.83	High		#REI	F!								
109	Ę					0		#REI									
110	Ĕ		Maintenance of Characteristic Fish Habitat	######	N/A	N/A		#REI									
111	Ē							#REI									
112			Maintenance of Characteristic Amphibian Habitat		0.85	High		1									
113						U		#REI	F!								
114			Aesthetics/Recreation/Education/Cultural	0.33	0.44	Med		#REI									
115								#REI									
116			Commercial use		N/A	N/A		1	0								
117																	
118			Special Features listing:			#REF!											
119																	
120			Groundwater Interaction		discharge			#REI	F!								
121			Groundwater Functional Index		#REF!	#REF!											
122																	
123			Restoration Potential (draft formula)		#VALUE!	#####											
124			Stormwater Sensitivity (not active)			-											
125																	
126																	
127																	
128																	
129																	
116 117 118 119 120 121 122 123 124 125 126 127 128 129 130																	
131																	
131 132 133																	
133																	
134																	
135																	
136																	
137																	
134 135 136 137 138 139																	
139																	
140																	
141															 		
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	A	В		D			G		H			K	L	М	Ν	P
1			MnRAM 3.2 Digital Works	neet,	Side	Z				WTL	12					
2			Question Description	User	Rating											
4			•	entry	Rating		This	comes	s in fror	n Side 1	autom	atically	using the		Highe	est-rated:
5		1	Veg. Table 2, Option 4		0.63		Com	, nmunity	rating,		manual	y overw	rite that		#REF	-1
6		- 1	TOTAL VEG Rating Listed, rare, special plant species?	0.63	Medium		value	e (shov	vn to th	e right)	into the	field at	E5.			
7		4 5	Rare community or habitat?	N N	next next											
9		6	Pre-European-settlement conditions?	N	next											
10		7	hydrogeo & topo	FT	Depress'l/F	low-throu	gh									
11		8	Water depth (inches)	6												
12 13		9	Water depth (% inundation) Local watershed/immedita drainage (acres)			Enter]			
14		10	Existing wetland size	36		boxes	are	used	in ca	Iculat	ions.					
14 15	_	11	SOILS: Up/Wetland (survey classification + site)													
16 17	ion	12 13	Outlet characteristics for flood retention Outlet characteristics for hydrologic regime	N/A A	N/A											
18	ecti	14	Dominant upland land use (within 500 ft)	A	1	0.1										
19	Š	15	Soil condition (wetland)	А	1											
20	eet	16 17	Vegetation (% cover) Emerg. veg. flood resistance	80%	Н 1	1										
22	Digital worksheet, section I	17	Sediment delivery	A	1											
23	er,	19	Upland soils (based on soil group)	В	0.5									S	crol	
24	≥	20 21	Stormwater runoff pretreatment & detention	C	0.1	1										
25	jita	21	Subwatershed wetland density Channels/sheet flow	C A	0.1 1									dov	wn t	0
27	Diç	23	Adjacent naturalized buffer average width (feet)	500	Н	WQ		1 H		1				an	SWE	er
28		24	Adjacent Area Management: % Full	100%	1	1		1						m	ore	
30			adjacent area mgmt: % Manicured adjacent area mgmt: % Bare		0 0										stio	
31		25	Adjacent Area Diversity & Structure: % Native	100%	1	1		1					,	-		
32			adjacent area diversity: % Mixed		0										d se	
33		26	adjacent area diversity: % Sparse/Inv./Exotic Adjacent Area Slope: % Gentle		0	0		0						for	mul	а
35		20	adjacent area slope: % Moderate		0	0		Ū					С	alcı	ulati	ons
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37			adjacent area slope: % Steep		0											00
38																
39 40		27 28	Downstream sensitivity/WQ protection Nutrient loading	B A	0.5 1										Ļ	
41		29	Shoreline wetland?	N	N										\checkmark	
42		30	Rooted shoreline vegetation (% cover)		ter a percen											
43 44		31 32	Wetland in-water width (in feet, average) Emergent vegetation erosion resistance		ter a percen ter valid ch											
45		33	Shoreline erosion potential		ter valid cho											
46		34	Bank protection/upslope veg.		ter valid che	oice										
47 48	=	35 36	Rare Wildlife Scarce/Rare/S1/S2 local community	N N	N N											
49	Б	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A										
50 51	Ċ	38	Community interspersion (see diagram 2)	2	М	0.5					0					
51 52	Digital worksheet, section II	39 40	Wetland detritus Wetland interspersion on landscape	A A	1 1	1										
53	set,	41	Wildlife barriers	A	1	1										
53 54	she	42	Amphibian breeding potential-hydroperiod	А	1											
55 56	, rk	43 44	Amphibian breeding potentialfish presence Amphibian & reptile overwintering habitat	A C	1 0.1											
56 57	ž	45	Wildlife species (list)	C	0.1											
58	ital	46	Fish habitat quality	N/A	N/A											
59 60	Dig	47 48	Fish species (list) Unique/rare educ./cultural/rec.opportunity	N	Ν											
61		40	Wetland visibility	N C	0.1											
62		50	Proximity to population	Ν	0.1											
63 64		51 52	Public ownership Public access	C C	0.1 0.1											
64 65		52	Human influence on wetland	A	0.1											
66		54	Human influence on viewshed	А	1											
67 68		55 56	Spatial buffer Recreational activity potential	C C	0.1 0.1											
69		57	Commercial crophydrologic impact	N/A	0.1 N/A											
70																

			Mn	RAM_3.	2_Score_S	heet.xls										
	Α	В	С	D	E	F	G	Н	1	J		ĸ	L	М	N	Р
72			•								-					
73 74 75 76 77		58	GW - Wetland soils	D	R or D	1										
74		59	GW - Subwatershed land use	D	R or D	1										
75		60	GW - Wetland size and soil group	D	R or D	1										
70	(0	61 62	GW - Wetland hydroperiod GW - Inlet/Outlet configuration	R D	R or D R or D	0.1 1										
78	questions	63	GW - Surrounding upland topographic relief	D	R or D	1										
78 79	itic	64	Restoration potential w/o flooding		Y or N	5.1										
80	les	65	Landowners affected by restoration		Eabc	Enter v		oice								
80 81	dr	66A	Existing wetland size (acres) [from #10]	36	acres											
82 83 84	al	66B	Total wetland restoration size (acres)		acres	0.1										
83	Additional	66C	(Calculated) Potential New Wetland Area [B-A]	-36	acres	% effe	ctively	drained:	####							
84	diti	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value:	####							
85	P d	68	Likelihood of restoration success		abc	Enter v										
86 87			Hydrologic alteration type		Outlet, Tile			imp, Wti	rshd div	∕., Fill	ling					
87		70 71	Potential wetland type (Circ. 39) Wetland sensitivity to stormwater		1, 2, 3, 4, 5 Eabc	ס, וס, 7, מ 	5									
89		72	Additional stormwater treatment needs		abc											
90		12			400	1										
92																
92 93																
94						ŗ										
• ·				N S	Final Rating	Rating Category										
95			Function Name	Raw score	Fin	Raf Caf		Formula	a shown	to th	ne rig	ght.				
96			Vegetative Diversity/Integrity		0.63	Med			####			,				
97									####							
98	es		Hydrology - Characteristic		1.00	High			####							
99	ari				0.60	16.1	-		####							
100 101	Summaries		Flood Attenuation		0.60	Med			####							
101	Ľn		Water QualityDownstream		0.71	High										
103	S				0.71	g										
104 105	Functional Rating		Water QualityWetland		0.85	High										
105	ati															
106	8		Shoreline Protection		N/A	N/A										
107 108	na			0.00	0.07	TT: 1		"DEEL								
108	tio		Characteristic Wildlife Habitat Structure	0.86	0.86	High		#REF! #REF!								
110	рс		Maintenance of Characteristic Fish Habitat	#######	N/A	N/A		#REF!								
111	Fu				1011			#REF!								
112			Maintenance of Characteristic Amphibian Habitat		0.85	High										
113								#REF!								
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!								
115					21/4	27/4		#REF!								
116			Commercial use		N/A	N/A	-	0								
118			Special Features listing:			#REF!	####									
119			opoliar reaction houng.			<i>"</i> I <u><u>L</u>I.</u>										
120			Groundwater Interaction		discharge			#REF!								
121			Groundwater Functional Index		#REF!	#REF!										
122																
123			Restoration Potential (draft formula) Stormwater Sensitivity (not active)		#VALUE!	#####										
124			Stormwater Sensitivity (not active)													
125																
127																
128																
129																
130																
131																
132																
134																
135																
115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138																
137																
138																
139 140																
140 141																
141																

			Wetland ID HW13 UTM Coordinates 545297 5270150		Wetland ID HW14 UTM Coordinates 545870 5269302		Wetland name ID HW15 UTM Coordinates 546463 5269353		Wetland ID HW16 UTM Coordinates 546624 5269108
	Date		23-Jun-09		24-Jun-09		24-Jun-09		24-Jun-09
#1	Special Features (from list, p.2enter letter/s) Community Number (circle each community which represents at least 10% of the wetland)	10Å, 15B,	PHOTOS 104-105 B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	10A, 1	3A, 13B, 12B, 14A, 15A, 6A, 16B	3A, 3 10A, 15B,	107-108 3B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	3A, 3 10A, 15B,	109-110 3B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B
#2 & #	,	type	individually below ~		~ Describe ea	ach co	ommunity type individually be	elow ~	-
	Community Type (wet meadow, marsh)	4B	Coniferous Swamp	13B	Shallow Marsh	8A	Alder Thicket	8A	Alder Thicket
	Community Proportion (% of total)		67%		33%		33%		40%
~	Dominant Vegetation / Cover Class		CK SPRUCE/4		OW LEAF CATTAIL/5		CKLED ALDER/4		CKLED ALDER/5
# Alic			RADOR TEA/4 THERLEAF/3	SEDG	E/3 KLED ALDER/2		GE/6 ROW LEAF WILLOW/2		SY WILLOW/2 GE/5
Plant Community #1		TAM	ARACK/2	GRAS	S/2	BLA	CK SPRUCE/2	CAN	ADA BLUEJOINT/2
tCor			TONGRASS/1 GNUM MOSS/6		Y WILLOW/2 OWSWEET/2		<u>TE PINE/1</u> PBERRY/2	RUS	H/2
Plan		0.7			011011221/2				
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	Н	1	Н	1	Н	1	Н	1
	Community Type (wet meadow, marsh)	-	-	4B	Coniferous Swamp	-	-		
	Community Proportion (% of total)				67%				
	Dominant Vegetation / Cover Class			BLAC	K SPRUCE/4				
Plant Community #2					RACK/2				
nunit					KLED ALDER/2 ADOR TEA/4				
Comr					HERLEAF/6				
ant (MOSS	5/6				
₫									
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)			н					
			0		1		0		0
	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total)								
£3	Dominant Vegetation / Cover Class								
unity									
Plant Community #3									
nt Co									
Pla									
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)						_		_
			0		0		0		0
	Community Type (wet meadow, marsh) Community Proportion (% of total)	-	-	-	-	-	-	-	-
*.	Dominant Vegetation / Cover Class								
ity #4	20million vogetation / Over Olass								
unu									
Plant Community #4*									
Plant									
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	-	0		0		0		0
	Circular 39 Types (primary <tab> others)</tab>		0		U		0		U
	Cowardin Types								
	Photo ID								
Higher	st rated community veg. div./integ:	1.0	High	1	High	1	High	1	High
-		1.00	High	1.00		ı 1.00	Č.	1.00	
	ge vegetative diversity/integrity:	0.67		0.50	High	0.33	ř	0.40	Ŭ
	ted Average veg. diversity/integrity: Listed, rare, special plant species?	0.07	High N	0.50	Medium N	0.33	N	0.40	N
#5	Rare community or habitat?		N		N		N		N
	Pre-European-settlement conditions?		Ν		N		Ν		N
10A] Shall	dplain Forest [1A, 2A, 3A] * Hardwood Swamp * Calcareous Fen [7B, 11B, 14A] * Shrub Sv ow Marsh [13B] * Deep Marsh [12B] * Wet sonally Flooded Basin [16B]	vamp	[6B] * Alder Thicket [8A] *	Shrub-	carr [8B] * Sedge Meado	w [10	B, 11A, 12A, 13A] *		ver Class Class Range 1 0 - 3% 2 3 - 10% 3 10 - 25% 4 25 - 50% 5 50 - 75%
If ther	re are more than four plant community types, u	ise the	e next column over to enter th	ie rest a	and do not rely on the auto	matic	average calculations.		6 75 - 100%

	•			RAM_3.		-						<u>т.</u> т		NI	
	A	В		D	E	F	G	Н		J	K	L	Μ	Ν	Р
1			MnRAM 3.2 Digital Works	heet,	Side	2			WTL	.13					
2															
3			Question Description	User	Rating		This	comes in fr	om Side	1 autom	natically	using the		Highor	st-rated:
5		1	Veg. Table 2, Option 4	entry	0.67	-	weigh	nted averag	je. To us	e the hi	ghest ra	ted veg.		#REF!	
6		1	TOTAL VEG Rating	0.67	High			munity ratin (shown to						<i>"</i> .、 <u></u>	
7		4	Listed, rare, special plant species?	Ν	next		L								
8		5	Rare community or habitat?	N	next										
9		6	Pre-European-settlement conditions?	Ν	next										
10		7	hydrogeo & topo		Depression	al/Isolate	d								
11 12		8	Water depth (inches) Water depth (% inundation)	6								_			
13		9	Local watershed/immedita drainage (acres)					starting			1				
14		10	Existing wetland size	5		boxes	s are i	used in d	alcula	tions.					
15	_	11	SOILS: Up/Wetland (survey classification + site)									_			
16 17	u	12	Outlet characteristics for flood retention	А	1										
1/	cti	13 14	Outlet characteristics for hydrologic regime	A	1	0.1									
18 19	se	14	Dominant upland land use (within 500 ft) Soil condition (wetland)	A	1	0.1									
20	et,	16	Vegetation (% cover)	80%	H	1									
21	he	17	Emerg. veg. flood resistance	А	1										
19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 57 38	Digital worksheet, section I	18	Sediment delivery	A	1										
23	vor	19 20	Upland soils (based on soil group) Stormwater runoff pretreatment & detention	B C	0.5 0.1	1							S	croll	
24	- E	20	Subwater runon pretreatment & detention Subwatershed wetland density	C	0.1	1								vn te	~
26	Jit é	22	Channels/sheet flow	A	1								uuv		5
27	Ξ	23	Adjacent naturalized buffer average width (feet)	500	Н	WQ		1 H	1				an	swe	r
28		24	Adjacent Area Management: % Full		1	1		1					m	ore	
29			adjacent area mgmt: % Manicured adjacent area mgmt: % Bare		0 0										
31		25	Adjacent Area Diversity & Structure: % Native	100%	1	1		1				(-	stior	
32			adjacent area diversity: % Mixed		0	_		-					and	d se	е
33			adjacent area diversity: % Sparse/Inv./Exotic		0								for	mula	a
34		26	Adjacent Area Slope: % Gentle	5%	0.05	1	0.0	5							
35			adjacent area slope: % Moderate adjacent area slope: % Steep		$\begin{array}{c} 0\\ 0\end{array}$							Ca	aicu	latio	ons
37			udjučent urcu stope. 70 steep		0	_							Г		
38 39		27	Downstream sensitivity/WQ protection	В	0.5										
40		28	Nutrient loading	A	1								L	Ļ	
41		29	Shoreline wetland?	N	Ν									\checkmark	
42		30	Rooted shoreline vegetation (%cover)		ter a percen	0									
43 44		31 32	Wetland in-water width (in feet, average) Emergent vegetation erosion resistance		ter a percen ter valid ch										
44		33	Shoreline erosion potential		ter valid ch										
46		34	Bank protection/upslope veg.		ter valid ch										
47		35	Rare Wildlife	N	Ν										
48	n L	36	Scarce/Rare/S1/S2 local community	N N/A	N N/A	NT / A									
49 50	Digital worksheet, section II	37 38	Vegetation interspersion cover (see diagram 1) Community interspersion (see diagram 2)	N/A 2	N/A M	N/A 0.5				()				
50 51	ec	39	Wetland detritus	A	1	0.5				,	-				
52	t, s	40	Wetland interspersion on landscape	А	1	1									
53	ee	41	Wildlife barriers	A	1										
54 55	(sh	42 43	Amphibian breeding potential-hydroperiod Amphibian breeding potentialfish presence	A A	1										
52 53 54 55 56 57	or	43	Amphibian & reptile overwintering habitat	C	0.1										
57	2	45	Wildlife species (list)												
58	ita	46	Fish habitat quality	N/A	N/A										
59 60	Dig	47 48	Fish species (list) Unique/rare educ./cultural/rec.opportunity	N	N										
60		48 49	Unique/rare educ./cultural/rec.opportunity Wetland visibility	N C	N 0.1										
62		50	Proximity to population	N	0.1										
63		51	Public ownership	С	0.1										
64		52	Public access	C	0.1										
65 66		53 54	Human influence on wetland Human influence on viewshed	A A	1										
67		55	Spatial buffer	C	0.1										
68		56	Recreational activity potential	С	0.1										
69		57	Commercial crophydrologic impact	N/A	N/A										
70															

			Mn	RAM_3.	2_Score_S	heet.xls												
	А	В	С	D	E	F	G	Н			J	ĸ		L	М	Π	Ν	Р
72			-			ļ ·		1			-		· .					,
73		58	GW - Wetland soils	D	R or D	1												
74		59	GW - Subwatershed land use	D	R or D	1												
74 75 76 77 78		60	GW - Wetland size and soil group	D	R or D	1												
76		61	GW - Wetland hydroperiod	R	R or D	0.1												
77	S	62	GW - Inlet/Outlet configuration	D	R or D	1												
78	questions	63	GW - Surrounding upland topographic relief	D	R or D	1	_											
79 80	sti	64	Restoration potential w/o flooding		Y or N	5.1	=											
80	Ä	65	Landowners affected by restoration		Eabc	Enter v	alid ch	oice										
81	5	66A	Existing wetland size (acres) [from #10]	5	acres													
82 83 84 85 86 87	Additional	66E	Total wetland restoration size (acres)		acres	0.1												
83	ō	66C	(Calculated) Potential New Wetland Area [B-A]	-5	acres	% effe	ctively	drained	: ###	#								
84	lit	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value	: ###	#								
85	Þ	68	Likelihood of restoration success		abc	Enter v												
86	٩		Hydrologic alteration type		Outlet, Tile			ump, Wi	trshd	div.,	Filli	ng						
					1, 2, 3, 4,	5, 6, 7, 8	8											
88		71	Wetland sensitivity to stormwater		Eabc													
89		72	Additional stormwater treatment needs		abc	1												
90					1													
90 92					-													
93																		
94					50	Rating Category												
				W	Final Rating	Rating Categoi												
95			Function Name	Raw score	Final Ratin	Ca		Formul	a shov	wn t	o the	e rigl	ht.					
96			Vegetative Diversity/Integrity		0.67	High			###			0						
97						-			###	#								
98	S		Hydrology - Characteristic		1.00	High			###	#								
99	ILIE								###									
100	Summaries		Flood Attenuation		0.68	High			###	#								
101	Ē																	
102	Su		Water QualityDownstream		0.75	High												
103	5						_											
104	tin		Water QualityWetland		0.86	High												
105	Sat				NT / 4	NT/ A												
106	Functional Rating		Shoreline Protection		N/A	N/A												
107 108	na		Characteristic Wildlife Habitat Structure	0.87	0.87	High		#REF!										
108	tio		Characteristic whome Habitat Structure	0.07	0.87	nign		#REF!										
110	ů		Maintenance of Characteristic Fish Habitat	#######	N/A	N/A		#REF!										
111	μ		Wantehaliee of characteristic Fish Habitat		14/21	14/21		#REF!										
112	_		Maintenance of Characteristic Amphibian Habitat		0.85	High	-	1										
113			r			0		#REF!										
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!										
								#REF!										
116			Commercial use		N/A	N/A												
117																		
118			Special Features listing:			#REF!	####											
119								_										
120			Groundwater Interaction		discharge			#REF!	_									
121			Groundwater Functional Index		#REF!	#REF!												
122																		
123			Restoration Potential (draft formula)		#VALUE!	#####												
124			Stormwater Sensitivity (not active)															
125																		
126																		
127																		
120																		
129																		
131																		
115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133																		
133																		
134																		
135																		
136																		
137																		
134 135 136 137 138 139																		
139																		
140																		
141																		

	Α	В	C	D	E	F	G H	I J	K L
1			MnRAM 3.2 Digital Works	heet,	Side	2		WTL14	
2			C	•					
3			Question Description	User	Rating		This serves i	- frame Cida 4 automotion	
4 5		1	Veg. Table 2, Option 4	entry	0.50		weighted ave	n from Side 1 automatica erage. To use the highes	t rated veg.
6		1	TOTAL VEG Rating	0.5	Medium			ating, please manually ov to the right) into the field	
7		4	Listed, rare, special plant species?	Ν	next				
8		5	Rare community or habitat?	Ν	next				
9		6	Pre-European-settlement conditions?	Ν	next				
10		7	hydrogeo & topo	Ι	Depressiona	al/Isolated	1		
11 12		8	Water depth (inches) Water depth (% inundation)	24					
13		9	Local watershed/immedita drainage (acres)					ng here. Yellow	
14		10	Existing wetland size	1		boxes	are used i	n calculations.	
15 16 17	_	11	SOILS: Up/Wetland (survey classification + site)						
16	uo	12	Outlet characteristics for flood retention	A	1				
17	cti	13 14	Outlet characteristics for hydrologic regime Dominant upland land use (within 500 ft)	A A	1	0.1			
19	se	15	Soil condition (wetland)	A	1	0.1			
20	et,	16	Vegetation (% cover)	85%	Н	1			
21 22	she	17	Emerg. veg. flood resistance	Α	1				
22	rks	18 19	Sediment delivery Upland soils (based on soil group)	A B	1 0.5				
23	Ň	20	Stormwater runoff pretreatment & detention	C	0.3	1			
23 24 25 26 27 28	Digital worksheet, section	21	Subwatershed wetland density	С	0.1				
26	igit	22	Channels/sheet flow	А	1				
27	ā	23 24	Adjacent naturalized buffer average width (feet) Adjacent Area Management: % Full	500 100%	H 1	WQ	1 H 1	1	
20		24	adjacent area mgmt: % Manicured	100%	0	1	1		
29 30			adjacent area mgmt: % Bare		0				
31		25	Adjacent Area Diversity & Structure: % Native	100%	1	1	1		
32			adjacent area diversity: % Mixed		0				
33 34		26	adjacent area diversity: % Sparse/Inv./Exotic Adjacent Area Slope: % Gentle	5%	0.05	1	0.05		
35		20	adjacent area slope: % Moderate	570	0		0102		C
36			adjacent area slope: % Steep		0				0
38									
39		27	Downstream sensitivity/WQ protection	В	0.5				
40 41		28 29	Nutrient loading Shoreline wetland?	A N	1 N				
42		30	Rooted shoreline vegetation (% cover)		ter a percent	age			
43		31	Wetland in-water width (in feet, average)		er a percent				
44		32	Emergent vegetation erosion resistance		ter valid cho				
45 46		33 34	Shoreline erosion potential Bank protection/upslope veg.		ter valid cho ter valid cho				
40		35	Rare Wildlife	N	N	nce			
48	=	36	Scarce/Rare/S1/S2 local community	Ν	Ν				
49	ioi	37	Vegetation interspersion cover (see diagram 1)	3	М	0.5		_	
50 51	sct	38 39	Community interspersion (see diagram 2) Wetland detritus	2 A	M 1	0.5		0	
52	Digital worksheet, section II	40	Wetland interspersion on landscape	A	1	1			
53	eet	41	Wildlife barriers	А	1	*			
54	she	42	Amphibian breeding potential-hydroperiod	A	1				
55 56	rk	43 44	Amphibian breeding potentialfish presence Amphibian & reptile overwintering habitat	A C	1 0.1				
57	Ň	44	Wildlife species (list)	C	0.1				
58	tal	46	Fish habitat quality	С	0.1				
59	igi	47	Fish species (list)						
60 61		48 49	Unique/rare educ./cultural/rec.opportunity Wetland visibility	N C	N 0.1				
62		49 50	Proximity to population	N	0.1				
63		51	Public ownership	С	0.1				
64		52	Public access	С	0.1				
65		53	Human influence on wetland	A	1				
66 67		54 55	Human influence on viewshed Spatial buffer	A C	1 0.1				
68		56	Recreational activity potential	C	0.1				
69		57	Commercial crophydrologic impact	N/A	N/A				
70									

MnRAM	_3.2_	_Score_	_Sheet.xls
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T2 S8 GW- Weitand soils D R or D 1 73 GW- Substateshed land use D R or D 1 74 GW- Weitand size and soil group D R or D 1 76 GW- Weitand size and soil group D R or D 1 77 GU GW - Weitand size and soil group D R or D 1 77 GU GW - Weitand size and soil group D R or D 1 78 GU GW - Weitand size and soil group D R or D 1 78 GU GW - Weitand size and soil group D R or D 1 79 GU GW - Intel/Outel configuration R or D 1 acres 63 GW - Intel/Outel configuration success 0 1 acres 0.1 value: #### 64 Hydrologic alteration type 1 acres 0.1 class of the conce 0.1 state acres 0.1 value: #### 0.1 value: #### 0.1 class of the conce 0.1 class of the conce 0.1 class of the conce 0.1		Α	В	С	D	E	F	G	н		J	K		
Tail Signed State D R or D 1 Tail O R or D 1 Tail Operation R or D 1 Tail Community operation Tail Community operation Tail Community operation Tail Community operation Tail Community operation Community operation Community operation Community operation Tail O Tail Tail Tail Tail Tail Tail Tail Tail Tail Tail Tail Tail Tail Tail Tail <thtailing< th=""> Tail</thtailing<>	2	Α	D	0	D			0			5			
74 50 GW - Subwatershed land use 0 R or D 1 75 GW - Wetland hydroperiod 0 R or D 1 76 GW - Wetland hydroperiod 0 R or D 1 77 80 GW - Metland hydroperiod 0 R or D 1 77 80 GW - Subwatershed land use 0 R or D 1 78 10 GW - Metland hydroperiod R or D 1 1 78 10 1 R or D 1			58	GW - Wetland soils	D	R or D] 1							
$\overline{F5}$ 60 GW - Wethand size and sol group D R or D 1 $\overline{F6}$ GW - Wethand hydropendod D R or D 1 $\overline{F6}$ GW - Vethand hydropendod D R or D 1 $\overline{F6}$ GW - Vethand hydropendod D R or D 1 $\overline{F6}$ GW - Vethand hydropendo D R or D 1 $\overline{F6}$ Castor potential wolf ofocding H or D A. A. Commercial wethand size (acres) $\overline{64}$ Restoration potential wolf wolf orestoration size (acres) $\overline{-acres}$ $\overline{-6}$ fletzvely drained: #### $\overline{66}$ Total wetland restoration success $\overline{-acres}$ $\overline{-6}$ fletzvely drained: #### $\overline{67}$ Average width of naturalized upland buffer (potenton) $\overline{-acres}$ $\overline{-6}$ fletzvely drained: #### $\overline{69}$ Hydrologic aiteration type Outlet, Tile. Ditch, GW pump, Wtrsh div., Filling $\overline{7}$ $\overline{72}$ Additional stormwater treatment needs \overline{a} a \overline{b} \overline{c} \overline{c} \overline{a} \overline{b} \overline{c} \overline{a} \overline{c} \overline{c} $\overline{80}$ Portulal wetland restoration \overline{c} \overline{a} \overline{b} \overline{c}														
Feature D Ror D 1 78 GW - HelerOultet configuration Ror D 1 78 GW - Surrounding upland topographic relief D Ror D 1 79 GW - HelerOultet configuration Ror D 1 76 GW - Surrounding upland topographic relief D Ror D 1 76 GW - Intervalid Choice B & C Enter valid choice 81 DP GGA Existing welland size (acres)														
T7 S0 For D 0.1 77 80 GW - Surrounding upland topographic relief D R or D 1 80 B0 64 Restoration potential w/o flooding For D 5.1 80 B0 65 Landowners affected by restoration E a b c Enter valid choice 81 B0 66 Landowners affected by restoration Landowners 61 Choice 82 GC (Calculated) voltation size (acres) Landowners 0.1 Sefectively drained: #### 83 GO (Calculated) Potential New Wetland Area [E-A] Landowners Landowners 0 1 etc. 84 B1 Hydrologic atteration type Outlet, Title Outlet, Title Outlet, Title Not with div., Filling 70 Potential New Iteration success a b c Inter valid choice Inter valid choice 86 GV Wetland Sate (acres) Inter valid choice Inter valid choice Inter valid choice 87 Pototial New Iteration success a b c Inter valid choice Inter valid choice Inter valid choice 88 Function Name GY														
F8 OF T T 78 1 Restoration potential w/o flooding V or N 5.1 81 06 64 Restoration potential w/o flooding V or N 5.1 81 06 65 Landowners affected by restoration 1	77	S	-											
10 10 <td< td=""><td></td><td>Ë</td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>		Ë					-							
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33adjacent area diversity: % Sparse/Inv/Exotic03426Adjacent Area Slope: % Gentle5%0.0510.0536adjacent area slope: % Moderate0010.053827Downstream sensitivity/WQ protectionA14028Nutrient loadingA14129Shoreline wetland?NN4230Rooted shoreline vegetation (%cover)Enter a percentage4331Wetland in-water width (in feet, average)Enter a percentage4432Emergent vegetation (%cover)Enter a percentage4533Shoreline vegetation (%cover)N4634Bank protection/upslope veg.Enter valid choice4735Rare WildlifeN486Scarce/Rare/SI/S2 local community NN49637Vegetation interspersion of see diagram 1)N/A40Wetland intrespersion of see diagram 1)N/AN/AN/A5038Community interspersion of and scapeA1519940Wetland interspersion of and scapeA15240Wetland interspersion of and scapeA15341Amphibian breeding potential-hydroperiodA15343Amphibian breeding potential-hydroperiodA15442Amphibian breeding potential-hydroperiodA1551Public ownershipC	1		25	Adjacent Area Diversity & Structure: % Native	100%		1	1		
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36 adjacent area slope: % Steep 0 38	5		20		370		1	0.05		C
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6149Wetland visibilityC0.16250Proximity to populationN0.16351Public ownershipC0.16452Public accessC0.16553Human influence on wetlandA16654Human influence on viewshedA16755Spatial bufferC0.16856Recreational activity potentialC0.1	9	Dig			N	N				
6250Proximity to populationN0.16351Public ownershipC0.16452Public accessC0.16553Human influence on wetlandA16654Human influence on viewshedA16755Spatial bufferC0.16856Recreational activity potentialC0.1	-	-			C					
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6553Human influence on wetlandA16654Human influence on viewshedA16755Spatial bufferC0.16856Recreational activity potentialC0.1										
6654Human influence on viewshedA16755Spatial bufferC0.16856Recreational activity potentialC0.1										
6755Spatial bufferC0.16856Recreational activity potentialC0.1										
	7		55		С	0.1				
DM = D/I Commercial cronbydrologic impact $N/A = N/A$										
70			57	Commercial crophydrologic impact	IN/A	N/A				

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	А	В	С	D	E	F	G	Н		J	К	
72			.	D	<u> </u>		<u> </u>			Ŭ		<u> </u>
73		58	GW - Wetland soils	D	R or D	1						
74		59	GW - Subwatershed land use	D	R or D	1						
75		60	GW - Wetland size and soil group	D	R or D	1						
76		61	GW - Wetland hydroperiod	R	R or D	0.1						
77	S	62	GW - Inlet/Outlet configuration	D	R or D	1						
78	n	63	GW - Surrounding upland topographic relief	D	R or D	1						
79	ži		Restoration potential w/o flooding		Y or N	5.1						
80	ĕ		Landowners affected by restoration		Eabc	Enter va	alid ch	oice				
81	d		Existing wetland size (acres) [from #10]	2	acres							
82	a		Total wetland restoration size (acres)		acres	0.1						
83	b		(Calculated) Potential New Wetland Area [B-A]	-2	acres		ctivelv	drained:	####			
84	Additional questions		Average width of naturalized upland buffer (poten	0	feet	0.1	,	value:				
85	pq		Likelihood of restoration success		ab c	Enter va	alid ch	oice				
86	Ă	69	Hydrologic alteration type		Outlet, Tile				rshd di	v., Fill	ing	
87			Potential wetland type (Circ. 39)		1, 2, 3, 4,			• *		,	0	
88			Wetland sensitivity to stormwater		Eabc							
89			Additional stormwater treatment needs		abc							
90					4	4						
92												
92												
94						ry						
54				6	Final Rating	Rating Category						
05				Raw score	ina	ati		F I .				
95 96			Function Name Vegetative Diversity/Integrity	N S	0.33	Med		Formula	1 SNOW	n to th	e right.	•
97			vegetative Diversity/integrity		0.55	wieu			####			
98	G		Hydrology - Characteristic		1.00	High			#####			
99	<u>ë</u>		Hydrology - Characteristic		1.00	Ingn			#####			
100	Functional Rating Summaries		Flood Attenuation		0.68	High			####			
101	Ě				0.00	g			i			
102	5		Water QualityDownstream		0.83	High						
103	S					0						
104	DĜ		Water QualityWetland		0.76	High						
105	ati											
106	Ř		Shoreline Protection		N/A	N/A						
107	a											
108	P		Characteristic Wildlife Habitat Structure	0.80	0.80	High		#REF!				
109	Ċ							#REF!				
110	n		Maintenance of Characteristic Fish Habitat	######	0.70	High		#REF!				
111	ш.							#REF!				
112			Maintenance of Characteristic Amphibian Habitat		0.85	High						
113								#REF!				
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!				
115								#REF!				
116			Commercial use		N/A	N/A		0				
117						"D==:						
118			Special Features listing:			#REF!	####					
119					-Parala			""				
120			Groundwater Interaction		discharge	#DEEL		#REF!				
121			Groundwater Functional Index		#REF!	#REF!						
122			Restoration Potential (dreft formula)			######						
123 124			Restoration Potential (draft formula) Stormwater Sensitivity (not active)		#VALUE!	#####						
124			Stormwater Sensitivity (not active)									

	А	В	C	D	E	F	G H	IIJI	κ L
1			MnRAM 3.2 Digital Works	heet,	Side	2		WTL16	
2			-	•					
3			Question Description	User	Rating		This serves in	for a Cide 4 subservation	
4 5		1	Veg. Table 2, Option 4	entry	0.40		weighted ave	n from Side 1 automatica rage. To use the highest	rated veg.
6		1	TOTAL VEG Rating	0.4	Medium			ating, please manually ov to the right) into the field	
7		4	Listed, rare, special plant species?	Ν	next				
8		5	Rare community or habitat?	Ν	next				
9		6	Pre-European-settlement conditions?	Ν	next				
10		7	hydrogeo & topo	FT	Depress'l/Fl	low-throu	gh		
11		8	Water depth (inches)	18					
12 13		9	Water depth (% inundation) Local watershed/immedita drainage (acres)					ng here. Yellow	
14		10	Existing wetland size	25		boxes	are used in	n calculations.	
15	_	11	SOILS: Up/Wetland (survey classification + site)						
15 16 17	uo	12	Outlet characteristics for flood retention	N/A	N/A				
17 18	cti	13 14	Outlet characteristics for hydrologic regime Dominant upland land use (within 500 ft)	A A	1 1	0.1			
19	se	14	Soil condition (wetland)	A	1	0.1			
20	et,	16	Vegetation (% cover)	95%	Н	1			
21 22	he	17	Emerg. veg. flood resistance	А	1				
22	rks	18	Sediment delivery	A	1				
23	Ō	19 20	Upland soils (based on soil group) Stormwater runoff pretreatment & detention	B C	0.5 0.1	1			
23 24 25 26 27 28	Digital worksheet, section	20	Subwatershed wetland density	C	0.1	1			
26	git	22	Channels/sheet flow	А	1				
27	ē	23	Adjacent naturalized buffer average width (feet)	500	Н	WQ	1 H	1	
28		24	Adjacent Area Management: % Full adjacent area mgmt: % Manicured	100%	1 0	1	1		
29 30			adjacent area mgmt: % Bare		0				
31		25	Adjacent Area Diversity & Structure: % Native	100%	1	1	1		
32			adjacent area diversity: % Mixed		0				
33		26	adjacent area diversity: % Sparse/Inv./Exotic	50/	0	- ₁	0.05		
34 35		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate	5%	0.05 0	1	0.05		0
36 37			adjacent area slope: % Steep		0				C
38									
39		27	Downstream sensitivity/WQ protection	А	1				
40		28	Nutrient loading	А	1				
41 42		29 30	Shoreline wetland? Rooted shoreline vegetation (% cover)	N	N ter a percent	0.00			
43		31	Wetland in-water width (in feet, average)		ter a percent				
44		32	Emergent vegetation erosion resistance		ter valid cho				
45		33	Shoreline erosion potential		ter valid cho				
46		34 35	Bank protection/upslope veg. Rare Wildlife		ter valid cho	bice			
47 48	=	35	Scarce/Rare/S1/S2 local community	N N	N N				
49	Б	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
50	ctic	38	Community interspersion (see diagram 2)	2	М	0.5		0	
51	Digital worksheet, section II	39	Wetland detritus	A	1				
52 53	et,	40 41	Wetland interspersion on landscape Wildlife barriers	A A	1 1	1			
54	he	41	Amphibian breeding potential-hydroperiod	A	1				
55	.ks	43	Amphibian breeding potentialfish presence	А	1				
56	NO N	44	Amphibian & reptile overwintering habitat	С	0.1				
57 58		45 46	Wildlife species (list) Fish habitat quality	В	0.5				
59	git	40	Fish species (list)	u	0.5				
60	Ō	48	Unique/rare educ./cultural/rec.opportunity	N	Ν				
61		49	Wetland visibility	С	0.1				
62		50	Proximity to population	N	0.1				
63 64		51 52	Public ownership Public access	C C	0.1 0.1				
65		53	Human influence on wetland	A	1				
66		54	Human influence on viewshed	А	1				
67		55	Spatial buffer	С	0.1				
68		56	Recreational activity potential	C	0.1				
69 70		57	Commercial crophydrologic impact	N/A	N/A				
10									

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A B C D E F G H 72 73 58 GW - Wetland soils D R or D 1 74 59 GW - Subwatershed land use D R or D 1 76 60 GW - Wetland size and soil group D R or D 1 76 61 GW - Wetland hydroperiod D R or D 1 62 GW - Intel/Outlet configuration D R or D 1 63 GW - Surrounding upland topographic relief D R or D 1 79 64 Restoration potential w/o flooding Y or N 6 65 Landowners affected by restoration Ea b c Enter valid choice 81 65 Landowners affected by restoration	+###
73 58 <i>GW</i> - Wetland soils D R or D 1 74 59 <i>GW</i> - Subwatershed land use D R or D 1 75 60 <i>GW</i> - Wetland size and soil group D R or D 1 76 61 GW - Wetland hydroperiod D R or D 1 77 61 GW - Wetland hydroperiod D R or D 1 78 63 GW - Surrounding upland topographic relief D R or D 1 78 64 Restoration potential w/o flooding Y or N 6 Enter valid choice 80 65 Landowners affected by restoration E a b c Enter valid choice 66A 81 B1 66A Existing wetland size (acres) [from #10] 25	+###
74 59 GW - Subwatershed land use D R or D 1 75 60 GW - Wetland size and soil group D R or D 1 76 61 GW - Wetland hydroperiod D R or D 1 77 62 GW - Inlet/Outlet configuration D R or D 1 78 63 GW - Surrounding upland topographic relief D R or D 1 79 64 Restoration potential w/o flooding Y or N 6 80 65 Landowners affected by restoration E a b c Enter valid choice 81 66A Existing wetland size (acres) [from #10] 25	+###
75 60 <i>GW</i> - Wetland size and soil group D R or D 1 76 61 GW - Wetland hydroperiod D R or D 1 77 62 GW - Inlet/Outlet configuration D R or D 1 78 63 GW - Surrounding upland topographic relief D R or D 1 79 64 Restoration potential w/o flooding Y or N 6 80 65 Landowners affected by restoration E a b c Enter valid choice 81 66A Existing wetland size (acres) [from #10] 25	+###
76 R or D 1 77 80 63 GW - Wetland hydroperiod D R or D 1 78 63 GW - Surrounding upland topographic relief D R or D 1 79 64 Restoration potential w/o flooding Y or N 6 80 65 Landowners affected by restoration E a b c Enter valid choice 81 66A Existing wetland size (acres) [from #10] 25	+###
77 80 62 GW - Inlet/Outlet configuration D R or D 1 78 63 GW - Surrounding upland topographic relief D R or D 1 79 64 Restoration potential w/o flooding Y or N 6 80 65 Landowners affected by restoration E a b c Enter valid choice 81 66A Existing wetland size (acres) [from #10] 25 acres 0.1 82 66B Total wetland restoration size (acres) acres 0.1 % effectively drained: # 83 66C (Calculated) Potential New Wetland Area [B-A] -25 acres 0.1 value: # 84 67 Average width of naturalized upland buffer (poten 0 feet 0.1 value: # 85 68 Likelihood of restoration success a b c Enter valid choice 86 9 Hydrologic alteration type Outtlet, Tile, Ditch, GW pump, Wtrsh 70 Potential wetland type (Circ. 39) 1, 2, 3, 4, 5, 6, 7, 8 88 71 Wetland sensitivity to stormwater E a b c 90 92 93 a b c	+###
78 63 GW - Surrounding upland topographic relief D R or D 1 79 64 Restoration potential W/o flooding Y or N 6 80 65 Landowners affected by restoration E a b c Enter valid choice 81 66A Existing wetland size (acres) [from #10] 25 acres 0.1 82 66B Total wetland restoration size (acres) acres 0.1 % effectively drained: # 83 66C (Calculated) Potential New Wetland Area [B-A] -25 acres 0.1 value: # 84 67 Average width of naturalized upland buffer (poten 0 feet 0.1 value: # 85 68 Likelihood of restoration success a b c Enter valid choice 86 69 Hydrologic alteration type Outtlet, Tile, Ditch, GW pump, Wtrsh 70 Potential wetland type (Circ. 39) 1, 2, 3, 4, 5, 6, 7, 8 88 71 Wetland sensitivity to stormwater E a b c 90 92 93	+###
87 70 Potential wetland type (Circ. 39) 1, 2, 3, 4, 5, 6, 7, 8 88 71 Wetland sensitivity to stormwater E a b c 89 72 Additional stormwater treatment needs a b c 90 92 93	+###
87 70 Potential wetland type (Circ. 39) 1, 2, 3, 4, 5, 6, 7, 8 88 71 Wetland sensitivity to stormwater E a b c 89 72 Additional stormwater treatment needs a b c 90 92 93	+###
87 70 Potential wetland type (Circ. 39) 1, 2, 3, 4, 5, 6, 7, 8 88 71 Wetland sensitivity to stormwater E a b c 89 72 Additional stormwater treatment needs a b c 90 92 93	+###
87 70 Potential wetland type (Circ. 39) 1, 2, 3, 4, 5, 6, 7, 8 88 71 Wetland sensitivity to stormwater E a b c 89 72 Additional stormwater treatment needs a b c 90 92 93	+###
87 70 Potential wetland type (Circ. 39) 1, 2, 3, 4, 5, 6, 7, 8 88 71 Wetland sensitivity to stormwater E a b c 89 72 Additional stormwater treatment needs a b c 90 92 93	+###
87 70 Potential wetland type (Circ. 39) 1, 2, 3, 4, 5, 6, 7, 8 88 71 Wetland sensitivity to stormwater E a b c 89 72 Additional stormwater treatment needs a b c 90 92 93	+###
87 70 Potential wetland type (Circ. 39) 1, 2, 3, 4, 5, 6, 7, 8 88 71 Wetland sensitivity to stormwater E a b c 89 72 Additional stormwater treatment needs a b c 90 92 93	hd div., Filling
87 70 Potential wetland type (Circ. 39) 1, 2, 3, 4, 5, 6, 7, 8 88 71 Wetland sensitivity to stormwater E a b c 89 72 Additional stormwater treatment needs a b c 90 93 93	hd div., Filling
87 70 Potential wetland type (Circ. 39) 1, 2, 3, 4, 5, 6, 7, 8 88 71 Wetland sensitivity to stormwater E a b c 89 72 Additional stormwater treatment needs a b c 90 90 90 92 93 93	, <u> </u>
88 71 Wetland sensitivity to stormwater E a b c 89 72 Additional stormwater treatment needs a b c 90 90 92 93	
89 72 Additional stormwater treatment needs a b c 90 90 92 93	
90 92 93	
92	
93	
93	
94	
94 94 95 Function Name Ka Score 95 Function Name Score 95 Function Name Score	
94 95 Function Name Kan 95 Fun	
95 Function Name 2 3 2 2 Formula s	shown to the right.
	####
	####
98 98 Hydrology - Characteristic 1.00 High #	*###
99 *** 100 E Flood Attenuation 0.60 ##	*###
101 E	+###
102 Water QualityDownstream 0.80 High	
103 S	
104 P Water QualityWetland 0.78 High	
Interview Shoreline Protection N/A N/A N/A	
108 Characteristic Wildlife Habitat Structure 0.81 0.81 High #REF!	
109 3 Hereit	
98 98 Hydrology - Characteristic 1.00 High # 99 100 Flood Attenuation 0.60 Med 101 Water QualityDownstream 0.80 High # 103 Object Water QualityWetland 0.78 High 104 Shoreline Protection N/A N/A 106 Characteristic Wildlife Habitat Structure 0.81 0.81 # 108 Characteristic Wildlife Habitat Structure 0.83 0.83 High #REF! 110 Maintenance of Characteristic Fish Habitat 0.83 0.83 High #REF!	
112 Maintenance of Characteristic Amphibian Habitat 0.85 High	
113 #REF!	
114 Aesthetics/Recreation/Education/Cultural 0.33 0.33 Med #REF!	
115 #REF!	
116 Commercial use N/A N/A 0	
117	
118 Special Features listing: #REF! ####	
119	
120 Groundwater Interaction discharge #REF!	
121 Groundwater Functional Index #REF! #REF!	
122	
123 Restoration Potential (draft formula) #VALUE! ######	
124 Stormwater Sensitivity (not active)	

			HW17 UTM Coordinates 526245 5268890		HW18 UTM Coordinates 546160 5268553		Wetland name ID HW19 UTM Coordinates 545822 5268222		Wetland ID HW20 UTM Coordinates 5455600 5267210			
	Date Special Features (from list, p.2enter letter/s)	-	24-Jun-09 PHOTOS 111-112	- 1	24-Jun-09 13-114	- 1	24-Jun-09	-	24-Jun-09 NONE			
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3 10A,		3A, 3E 10A, 1	8, 4A, 4B, 7A, 7B, 8A, 8B, 3A, 13B, 12B, 14A, 15A, 6A, 16B	3A, 3E 10A, 1	8, 4A, 4B, 7A, 7B, 8A, 8B, 3A, 13B, 12B, 14A, 15A, 6A, 16B	3A, 3 10A,	8B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B			
#2 & #	,		ndividually below ~			I I I I I I I I I I I I I I I I I I I	mmunity type individually be					
	Community Type (wet meadow, marsh)	13A	Sedge Meadow	4A	Coniferous Bog	12B	Deep Marsh	8A	Alder Thicket			
	Community Proportion (% of total) Dominant Vegetation / Cover Class	SED	17%		40% K SPRUCE/2	VELLO	100% DW LILY/5	SDE	80% CKLED ALDER/4			
Plant Community #1	Dominant Vegetation / Cover Class	SWA SPEO TAM RAS	MP BIRCH/2 XLED ALDER/2 ARACK/2 PBERRY/1 IDER-LEAVED WILLOW/2	LARC LABR/ BUNC FERN SPEC	H/4 ADOR TEA/4 HBERRY/2 /2 KLED ALDER/4 NUM MOSS/5		JVV LIL 173	PUS MEA SED	SY WILLOW/3 DOWSWEET/2 GE/4 ADA BLUEJOINT/3			
	Invasive/exotic Vegetation / Cover Class											
	Community Quality (E, H, M, L)	н	1	н	1	н	1	н	1			
	Community Type (wet meadow, marsh)	8A	Alder Thicket			13B	Shallow Marsh					
	Community Proportion (% of total)		50%				100%					
	Dominant Vegetation / Cover Class	SPE	CKLED ALDER/6	CANA	DA BLUEJOINT/2	HORS	ETAIL/6					
y #2			MP BIRCH/2	FORB								
nunit		PUS: SED	SY WILLOW/2	PAPE	R BIRCH/1							
Plant Community #2		LAR	CH/2									
lant		SPA	GNUM MOSS/4									
ш												
	Invasive/exotic Vegetation / Cover Class											
	Community Quality (E, H, M, L)	н	1		0	н	1		0			
	Community Type (wet meadow, marsh)	-	<u>-</u>	-	-	13A	Sedge Meadow	-	-			
	Community Proportion (% of total)						40%					
	Dominant Vegetation / Cover Class					SEDG						
ty #3						LEAT	HERLEAF/2					
unuu							WHEAD/1 OW LEAF CATTAIL/2					
Plant Community #3							NUM MOSS/4					
Plant												
	Invasive/exotic Vegetation / Cover Class											
	Community Quality (E, H, M, L)		0		0	н	1		0			
	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-			
	Community Proportion (% of total)											
iy #4	Dominant Vegetation / Cover Class											
muni												
Com												
Plant Community #4*												
	Invasive/exotic Vegetation / Cover Class											
	Community Quality (E, H, M, L)	-	0		0		0		0			
	Circular 39 Types (primary <tab> others)</tab>							2				
	Cowardin Types											
<u> </u>	Photo ID											
Highe	st rated community veg. div./integ:	1.0	High	1	High	1	High	1	High			
Avera	ge vegetative diversity/integrity:	1.00	High	1.00	High	1.00	High	1.00	High			
	ted Average veg. diversity/integrity:	0.34	Medium	0.40	Medium	0.80	High	0.80	High			
#4 #5	Listed, rare, special plant species? Rare community or habitat?		N N		N N		N N		N N			
#5 #6		N										
#6 Pre-European-settlement conditions? 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] * 2 Seasonally Flooded Basin [16B] * 4 5 *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. 6												

	Δ	П			2_Score_a		F				1 1	1			- 1			4	NI		Р
	A	В	C Map AM 2 2 Disital Waska	D	E	2	· ·	G	_	H				K	<u> </u>	L	Ν	/1	N		Р
1			MnRAM 3.2 Digital Works	neet,	, Side	2					W	۲L1	7								
2			Question Description	lleer	Dating																
3			Question Description	User entry	Rating		_	This c	ome	s in fro	m Sid	le 1	autom	atical	ly us	ing the	•		Hiah	est-ra	ated:
5		1	Veg. Table 2, Option 4	entry	0.34	-		weight Comm	ted a	verag	e. To	use	the hig	ghest	rated	d veg.			#RE		
6		-	TOTAL VEG Rating	0.34	Medium			value													
7		4	Listed, rare, special plant species?	Ν	next																
8		5	Rare community or habitat?	N	next																
9		6	Pre-European-settlement conditions?	Ν	next																
10 11		7	hydrogeo & topo Water depth (inches)	FT 12	Depress'l/F	low	-throu	gh													
12		0	Water depth (% inundation)	12		_									_						
13		9	Local watershed/immedita drainage (acres)					data s are u						1							
14		10	Existing wetland size	7		Ľ	0763	areu	iset		aicu	au	лі <u>э</u> .								
15	Ξ	11	SOILS: Up/Wetland (survey classification + site)	NT/A																	
16 17	jo	12 13	Outlet characteristics for flood retention Outlet characteristics for hydrologic regime	N/A A	N/A 1																
18	sct	14	Dominant upland land use (within 500 ft)	A	1		0.1														
19	, v	15	Soil condition (wetland)	А	1																
20	eet	16	Vegetation (% cover)	95%	H		1														
21	she	17 18	Emerg. veg. flood resistance Sediment delivery	A	1																
23) rk	18	Upland soils (based on soil group)	A B	0.5																
24	Ň	20	Stormwater runoff pretreatment & detention	С	0.1		1										4	20	ro	1	ľ
22 23 24 25 26 27	Digital worksheet, section I	21	Subwatershed wetland density	С	0.1												d	٥V	vn	to	
26	igi	22 23	Channels/sheet flow	A 500	1		wo	1	н			1					а	n	SWe	rد	
28		23	Adjacent naturalized buffer average width (feet) Adjacent Area Management: % Full	100%	H 1	٦	WQ 1	1				1									
29			adjacent area mgmt: % Manicured	10070	0													m	ore	ò	
30			adjacent area mgmt: % Bare		0												qu	es	stic	ns	j.
31		25	Adjacent Area Diversity & Structure: % Native	100%	1		1	1	l										l se		
32 33			adjacent area diversity: % Mixed adjacent area diversity: % Sparse/Inv./Exotic		0																
34		26	Adjacent Area Slope: % Gentle	10%	0.1		1	0.1	L										nu		
35			adjacent area slope: % Moderate		0											С	al	cu	lati	on	S
36			adjacent area slope: % Steep		0													_	_		
38																					
39 40		27 28	Downstream sensitivity/WQ protection Nutrient loading	A A	1																
40		20	Shoreline wetland?	A N	N I																
42		30	Rooted shoreline vegetation (%cover)		ter a percen	ntage	e														
43		31	Wetland in-water width (in feet, average)		ter a percen																
44 45		32 33	Emergent vegetation erosion resistance Shoreline erosion potential		ter valid ch ter valid ch		e														
45		34	Bank protection/upslope veg.		ter valid ch																
47		35	Rare Wildlife	N	N																
48	=	36	Scarce/Rare/S1/S2 local community	N	Ν																
49 50	ior	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N							,	`							ľ
50	ect	38 39	Community interspersion (see diagram 2) Wetland detritus	1 A	L 1		0.1						(,							ľ
52	Digital worksheet, section II	40	Wetland interspersion on landscape	A	1		1														ľ
53	eet	41	Wildlife barriers	А	1																ľ
54	sh	42	Amphibian breeding potential-hydroperiod	A	1																ľ
55 56	ork	43 44	Amphibian breeding potentialfish presence Amphibian & reptile overwintering habitat	A C	1 0.1																ľ
57	Š	45	Wildlife species (list)		0.1																ľ
58	ita	46	Fish habitat quality	N/A	N/A																ľ
59 60	Dig	47	Fish species (list)	NI	NT																ľ
60 61	-	48 49	Unique/rare educ./cultural/rec.opportunity Wetland visibility	N C	N 0.1																ľ
62		50	Proximity to population	Ν	0.1																ľ
63		51	Public ownership	С	0.1																
64 65		52 52	Public access	C	0.1																
65 66		53 54	Human influence on wetland Human influence on viewshed	A A	1																
67		55	Spatial buffer	С	0.1																ľ
68		56	Recreational activity potential	С	0.1																ľ
69 70		57	Commercial crophydrologic impact	N/A	N/A																ľ
70																					

			Mn	RAM_3.	2_Score_S	heet.xls										
	A	В	С	D	E	F	G	Н	1	J	K		L	М	N	Р
72			•		•										J	
73		58	GW - Wetland soils	D	R or D	1										
74		59		D	R or D	1										
75		60	GW - Wetland size and soil group	D	R or D	1										
76		61	GW - Wetland hydroperiod	D	R or D	1										
77 78	Additional questions	62		<u>D</u>	R or D	1										
	Ei -	63		D	R or D	1	-									
79 80	es		Restoration potential w/o flooding Landowners affected by restoration		Y or N	6 Entor v										
81	, Ď	66A		7	Eabc	Enter v	allu ch	oice								
82			Total wetland restoration size (acres)	/	acres	0.1										
83	Ë		(Calculated) Potential New Wetland Area [B-A]	-7	acres		ctively	drained	• ####							
84	Ĕ		Average width of naturalized upland buffer (poten	0	feet	0.1	cuvery		. ####							
85	pg		Likelihood of restoration success	<u> </u>	abc	Enter v	alid ch		• • • • • • • •							
86	Ă		Hydrologic alteration type		Outlet, Tile				trshd di	v., Fi	lling					
87			Potential wetland type (Circ. 39)		1, 2, 3, 4,			17			Ũ					
88		71	Wetland sensitivity to stormwater		Eabc											
89		72	Additional stormwater treatment needs		abc											
90						-										
92																
93																
94						ory										
				W	al ting	ting teg(
95			Function Name	Raw score	Final Rating	Rating Category		Formul	a show	n to tl	ne rigł	ıt.				
96			Vegetative Diversity/Integrity		0.34	Med			####		0					
97	·								####							
98	S		Hydrology - Characteristic		1.00	High			####							
99	arie						_		####							
10	Ë		Flood Attenuation		0.60	Med			####							
10					0.00	TT: 1										
10	ี่ มี		Water QualityDownstream		0.80	High										
10	² D		Water QualityWetland		0.77	High										
10	ţi.		Water Quanty Wettand		0.77	Ingn										
10	S R		Shoreline Protection		N/A	N/A										
10	a															
10	5		Characteristic Wildlife Habitat Structure	0.75	0.75	High		#REF!								
10	G i							#REF!								
11	n n		Maintenance of Characteristic Fish Habitat	#######	N/A	N/A		#REF!								
11								#REF!								
11:			Maintenance of Characteristic Amphibian Habitat		0.85	High										
11:								#REF!								
11			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med	-	#REF!								
11: 11:			Commercial use		N/A	N/A		#REF!								
11	7		Commercial use		IN/A	IN/A	-	, c)							
11	2		Special Features listing:			#REF!	####									
11	9		opoliar reaction loting.			<i>"</i> (<u>C</u>).										
12	5		Groundwater Interaction		discharge			#REF!								
12	1		Groundwater Functional Index		#REF!	#REF!										
12	2								-							
12	3		Restoration Potential (draft formula)		#VALUE!	#####										
12	4		Stormwater Sensitivity (not active)													
12	2															
12																
12	(

	•			-		-	F		<u> </u>		-								N	
	A	В		D	E	-	F	G	,	Н		<u> </u>	J	1	K	L	Μ	1	Ν	Р
1			MnRAM 3.2 Digital Works	neet	, S iae	2					V	VTL	18							
2			Question Description	User	Rating															
4			Question Description	entry	кашу			Thi	s coi	nes in f	from	Side 1	autor	natica	ally us	sing the	<u>,</u>	F	lighe	st-rated:
5		1	Veg. Table 2, Option 4		0.40	-				d avera nity rati									REF	
6			TOTAL VEG Rating		Medium					hown to										
7		4	Listed, rare, special plant species?	N	next															
8 9		5	Rare community or habitat? Pre-European-settlement conditions?	N N	next															
9 10		7	hydrogeo & topo	1	next	71	41	- 1-												
11		8	Water depth (inches)		Depress'l/F	TOW	-unrou	gn												
12		Ŭ	Water depth (% inundation)												_					
13		9	Local watershed/immedita drainage (acres)							arting ed in										
14 15		10	Existing wetland size	200		Ľ														
15	L	11 12	SOILS: Up/Wetland (survey classification + site) Outlet characteristics for flood retention	N/A	N/A															
16 17	tio	13	Outlet characteristics for hydrologic regime	A	1															
18	Sec	14	Dominant upland land use (within 500 ft)	А	1		0.1													
19	Ĵ.	15	Soil condition (wetland)	A	1		1													
20	lee	16 17	Vegetation (% cover) Emerg. veg. flood resistance		H 1		1													
18 19 20 21 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 57 38	Digital worksheet, section I	18	Sediment delivery	A	1															
23	or	19	Upland soils (based on soil group)	В	0.5												(Sc	roll	
24	3	20 21	Stormwater runoff pretreatment & detention Subwatershed wetland density	C C	0.1 0.1		1													
25	Jita	21	Channels/sheet flow	A	1												a	OW	n t	0
27	Diç	23	Adjacent naturalized buffer average width (feet)		Н		WQ		1	Н		1					а	ns	we	r
28		24	Adjacent Area Management: % Full		1		1		1								ļ	mc	ore	
29			adjacent area mgmt: % Manicured adjacent area mgmt: % Bare		0															
31		25	Adjacent Area Diversity & Structure: % Native		1		1		1								qu			
32			adjacent area diversity: % Mixed		0												ar	nd	se	е
33			adjacent area diversity: % Sparse/Inv./Exotic		0												fc	orn	nula	а
34		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate		0.1 0		1	(0.1							~				ons
36			adjacent area slope: % Steep		0											C	alc	Jui	allo	JIS
38																				
39		27	Downstream sensitivity/WQ protection	А	1															
40		28	Nutrient loading		1													\prec	٢	
41 42		29 30	Shoreline wetland? Rooted shoreline vegetation (%cover)		N ter a percen	togo												`		
43		31	Wetland in-water width (in feet, average)		ter a percen	0														
44		32	Emergent vegetation erosion resistance	En	ter valid ch	oice														
45		33	Shoreline erosion potential		ter valid ch															
46 47		34 35	Bank protection/upslope veg. Rare Wildlife		ter valid ch N	oice														
48	=	36	Scarce/Rare/S1/S2 local community	N	N															
49	Digital worksheet, section II	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/														
50 51	cti	38 39	Community interspersion (see diagram 2)	3	H		1							0						
52	Se .	39 40	Wetland detritus Wetland interspersion on landscape	A A	1		1													
52 53 54 55 56 57	set,	41	Wildlife barriers	А	1		*													
54	she	42	Amphibian breeding potential-hydroperiod	А	1															
55	ork	43	Amphibian breeding potentialfish presence Amphibian & reptile overwintering habitat	A C	1 0.1															
57	Ň	44 45	Wildlife species (list)		0.1															
58	tal	46	Fish habitat quality	N/A	N/A															
59	ligi	47	Fish species (list)																	
60 61		48 49	Unique/rare educ./cultural/rec.opportunity Wetland visibility	N C	N 0.1															
62		50	Proximity to population		0.1															
63		51	Public ownership	С	0.1															
64		52	Public access	C	0.1															
65 66		53 54	Human influence on wetland Human influence on viewshed		1															
67		55	Spatial buffer	С	0.1															
68		56	Recreational activity potential	С	0.1															
69 70		57	Commercial crophydrologic impact	N/A	N/A															
10																				

			Mn	RAM_3.	2_Score_S	heet.xls											
	А	В	С	D	E	F	G	Н		1	J		К		М	N	Р
72			Ŭ							· +	Ŭ	_		 -	101		<u></u>
73		58	GW - Wetland soils	D	R or D] 1											
74		59	GW - Subwatershed land use	D	R or D	1											
75		60	GW - Wetland size and soil group	D	R or D	1											
74 75 76 77 78		61	GW - Wetland hydroperiod	R	R or D	0.1											
77	S	62		D	R or D	1											
78	Ŝ	63	GW - Surrounding upland topographic relief	D	R or D	1											
70	questions	64	Restoration potential w/o flooding		Y or N	5.1	=										
79 80	es	65	Landowners affected by restoration		Eabc	Enter v		oice									
81	nb	66A	Existing wetland size (acres) [from #10]	200			and ch	UICE									
82	Ē		Total wetland restoration size (acres)	200	acres	0.1											
02	ü		(Calculated) Potential New Wetland Area [B-A]	-200	acres		otivolu	drained	d . 4								
82 83 84 85 86 87	Additional	67	Average width of naturalized upland buffer (poten		feet	0.1		value									
85	qi	68	Likelihood of restoration success	0	ab c	Enter v			σ. π	mm							
86	Ad				Outlet, Tile				/trok	nd div	, F	illin	a				
87	-				1, 2, 3, 4,			ump, w	1131	iu uiv	/., I	mm	y				
88		71	Wetland sensitivity to stormwater		Eabc	J, U, 7, C I	J										
89		72	Additional stormwater treatment needs		abc												
09		12	אשמתטרומו שנטרוזייימנכו נובמנווזכוונ וובכטש		a 0 C	T											
90 91 92																	
92																	
93						~											
94						Rating Category											
				W	Final Rating	Rating Categoı											
95			Function Name	Raw score	Final Ratin	Ra Ca		Formu	ıla s	hown	to t	the	right.				
96			Vegetative Diversity/Integrity		0.40	Med				###			U				
97									#	###							
98	S		Hydrology - Characteristic		1.00	High			#	###							
99	Lie.					-			#	###							
100	Ja		Flood Attenuation		0.60	Med			#	###							
101	Summaries																
102	, L		Water QualityDownstream		0.80	High											
103	S					Ū											
104 105	Functional Rating		Water QualityWetland		0.79	High											
105	ati					Ũ											
106	Ř		Shoreline Protection		N/A	N/A											
107	a																
108	6		Characteristic Wildlife Habitat Structure	0.87	0.87	High		#REF	!								
109	Ę					U		#REF	1								
110	Ĕ		Maintenance of Characteristic Fish Habitat	######	N/A	N/A		#REF	!								
111	ц							#REF	!								
112			Maintenance of Characteristic Amphibian Habitat		0.85	High		1									
113						-		#REF	1								
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF	!								
115								#REF	!								
116			Commercial use		N/A	N/A			0								
117																	
118			Special Features listing:			#REF!	####										
119																	
120			Groundwater Interaction		discharge			#REF	!								
121			Groundwater Functional Index		#REF!	#REF!											
122																	
123			Restoration Potential (draft formula)		#VALUE!	#####											
124			Stormwater Sensitivity (not active)														
125																	
126																	
127																	
128																	
129																	
116 117 118 119 120 121 122 123 124 125 126 127 128 129 130																	
131																	
131 132 133																	
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136																	
137																	
134 135 136 137 138 139																	
139																	
140																	
141																	

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	A	+ +	_	D			Ċ	2	Н			J	_	K	L	ſ	VI	N		Ρ
1			MnRAM 3.2 Digital Works	neet	, Siae	Z					WTL	.19								
2			Question Description	User	Rating															
4				entry	Rating										ising th			High	est-ra	ated:
5		1	Veg. Table 2, Option 4	-	0.80										ed veg. rite tha			#RE	F!	
6			TOTAL VEG Rating	0.8	High				hown t											
7		4	Listed, rare, special plant species?	N	next															
8 9		5	Rare community or habitat? Pre-European-settlement conditions?	N N	next next															
10		7	hydrogeo & topo		Lacustrine															
11		8	Water depth (inches)		Lucustillie															
12			Water depth (% inundation)			Enter	dat	+	artin	a ha		Vollo								
13		9	Local watershed/immedita drainage (acres)			boxes														
14 15		10 11	Existing wetland size SOILS: Up/Wetland (survey classification + site)	4	J															
16	Ľ	12	Outlet characteristics for flood retention	N/A	N/A															
17	tio	13	Outlet characteristics for hydrologic regime	А	1															
18	sec	14		Α	1	0.1														
19 20	ŗ,	15 16	Soil condition (wetland) Vegetation (% cover)	A 80%	1 H	1														
20	lee	17	Emerg. veg. flood resistance	80% A	п 1	1														
22 23	Digital worksheet, section I	18	Sediment delivery	А	1															
23	or	19	Upland soils (based on soil group)	B	0.5												Sc	cro		
24	3	20 21	Stormwater runoff pretreatment & detention Subwatershed wetland density	C C	0.1 0.1	1														
25 26 27	jita	21	Channels/sheet flow	A	1											C	OV	vn	τΟ	
27	Ğ	23	Adjacent naturalized buffer average width (feet)	500	Н	WQ		1	Н		1					З	าย	SWe	er	
28 29		24	Adjacent Area Management: % Full	100%	1	1		1									m	ore	2	
29 30			adjacent area mgmt: % Manicured adjacent area mgmt: % Bare		0 0															
31		25	Adjacent Area Diversity & Structure: % Native	100%	1	1		1										stic		
32			adjacent area diversity: % Mixed		0											а	nc	lse	ee	
33			adjacent area diversity: % Sparse/Inv./Exotic		0											f	orr	nu	la	
34 35		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate		0.05	1	0.	.05										lati		0
36			adjacent area slope: % Steep		0										C	all	Ju	al	011	2
38			· · ·			•														
39		27	Downstream sensitivity/WQ protection	А	1															
40		28	Nutrient loading	А	1												\prec	لحر		
41 42		29 30	Shoreline wetland? Rooted shoreline vegetation (% cover)	Y 100%	Y 1													~		
43		31	Wetland in-water width (in feet, average)	200	1															
44		32	Emergent vegetation erosion resistance	А	1															
45		33	Shoreline erosion potential	C	0.1	1														
46 47		34 35	Bank protection/upslope veg. Rare Wildlife	C N	0.1 N															
48	=	36	Scarce/Rare/S1/S2 local community	N	N															
49	Digital worksheet, section II	37	Vegetation interspersion cover (see diagram 1)	6	М	0.5														
50	ŝĊţİ	38	Community interspersion (see diagram 2)	2	M	0.5							0							
51 52	Se	39 40	Wetland detritus Wetland interspersion on landscape	A A	1	1														
53	set,	41	Wildlife barriers	A	1	1														
54	she	42	Amphibian breeding potential-hydroperiod	А	1															
55 56	ork	43	Amphibian breeding potentialfish presence Amphibian & reptile overwintering habitat	C A	0.1															
56 57	Ň	44 45	Wildlife species (list)	A	1															
58	tal	46	Fish habitat quality	А	1															
59	igi	47	Fish species (list)																	
60 61		48 49	Unique/rare educ./cultural/rec.opportunity Wetland visibility	N C	N 0.1															
62		50	Proximity to population	N	0.1															
63		51	Public ownership	С	0.1															
64		52	Public access	C	0.1															
65 66		53 54	Human influence on wetland Human influence on viewshed	A A	1															
67		55	Spatial buffer	С	0.1															
68		56	Recreational activity potential	С	0.1															
69		57	Commercial crophydrologic impact	N/A	N/A															
70																				

			Mn	RAM_3	.2_Score_S	heet.xls														
	А	В	C	D	E	F	G	ŀ	1			J	K		L	Т	М	N	1	Р
72			<u> </u>		+	ļ ·		<u> </u>	-		-	-	1	-				<u> </u>		
73		58	GW - Wetland soils	D	R or D	1														
74		59	GW - Subwatershed land use	D	R or D	1														
75		60	GW - Wetland size and soil group	D	R or D	1														
76		61	GW - Wetland hydroperiod	R	R or D	0.1														
77	S	62	GW - Inlet/Outlet configuration	D	R or D	1														
78	Additional questions	63	GW - Surrounding upland topographic relief	D	R or D	1	_													
79	sti	64	Restoration potential w/o flooding		Y or N	5.1	=													
80	ne ne	65	Landowners affected by restoration		Eabc	Enter v	alid ch	oice												
81	Ъ	66A	Existing wetland size (acres) [from #10]	4	acres															
82	al	66B	Total wetland restoration size (acres)		acres	0.1														
83	P	66C	(Calculated) Potential New Wetland Area [B-A]	-4	acres	% effe	ctively	drair	ned:	####	¥									
84	ij	67	Average width of naturalized upland buffer (poten	0	feet	0.1			lue:	####	¥									
85	p		Likelihood of restoration success		abc	Enter v														
86	◄		Hydrologic alteration type		Outlet, Tile			ump,	Wtr	shd c	div.,	Filli	ng							
87			Potential wetland type (Circ. 39)		1, 2, 3, 4,	5, 6, 7, 8	3													
88		71	Wetland sensitivity to stormwater		Eabc															
89		72	Additional stormwater treatment needs		abc															
90																				
92					_															
93																				
94					-	ory 5														
				v e	al	ting teg(
95			Function Name	Raw score	Final Rating	Rating Category		For	mula	show	vn to	o the	e rigl	ht.						
96			Vegetative Diversity/Integrity		0.80	High				####			0							
97						, in the second s				####	¥									
98	S		Hydrology - Characteristic		1.00	High				####	¥									
99	rie									####	¥									
100	na		Flood Attenuation		0.60	Med				####	¥									
101	Functional Rating Summaries																			
102	Su		Water QualityDownstream		0.80	High														
103	6																			
104	tin		Water QualityWetland		0.90	High														
105	Rat				0.54															
106	-		Shoreline Protection		0.64	Med														
107 108	na		Characteristic Wildlife Habitat Structure	0.96	0.86	TT: -1-		#RI												
109	tio		Characteristic whome Habitat Structure	0.86	0.80	High		#RI												
110	nc		Maintenance of Characteristic Fish Habitat	1.00	1.00	High	-	#RI												
111	, n		Maintenance of Characteristic 14sh Habitat	1.00	1.00	mgn		#RI												
112			Maintenance of Characteristic Amphibian Habitat		0.10	Low		"''												
113					0.10			#RI	FFI											
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#RI												
115				5.00	0.00			#RI												
116			Commercial use		N/A	N/A		!	0											
116 117									-											
118			Special Features listing:			#REF!	####													
118 119 120																				
120			Groundwater Interaction		discharge			#RI	EF!											
121			Groundwater Functional Index		#REF!	#REF!														
122 123																				
123			Restoration Potential (draft formula)		#VALUE!	#####														
124			Stormwater Sensitivity (not active)																	
125 126																				
126																				
127																				

—	^					F		~										NI	-
	A	В	C MpDAM 2 2 Digital Warks	D	E		1	G	Н	-		J	K		L	М	_	N	Р
1			MnRAM 3.2 Digital Works	neet,	, S iae	2					WTL	20							
2			Question Description	User	Pating														
4			Question Description	entry	Rating								naticall				Hig	hest	t-rated:
5		1	Veg. Table 2, Option 4		0.80								ghest r ally ove				•	EF!	
6			TOTAL VEG Rating	0.8	High								e field a						
7		4	Listed, rare, special plant species?	N	next														
8 9		5	Rare community or habitat? Pre-European-settlement conditions?	N N	next														
9 10		0 7			next														
11		8	hydrogeo & topo Water depth (inches)		Riverine														
12		Ũ	Water depth (% inundation)									<u> </u>		_					
13		9	Local watershed/immedita drainage (acres)			Enter boxes													
14		10	Existing wetland size	5															
15 16		11 12	SOILS: Up/Wetland (survey classification + site) Outlet characteristics for flood retention	N/A	N/A														
17	tio	13	Outlet characteristics for hydrologic regime	A	1														
18	ec	14	Dominant upland land use (within 500 ft)	А	1	0.1													
19	t, s	15	Soil condition (wetland)	A	1	1													
20 21	ee	16 17	Vegetation (% cover) Emerg. veg. flood resistance	95% A	H 1	1													
22	Digital worksheet, section I	18	Sediment delivery	A	1														
22 23 24	-ro	19	Upland soils (based on soil group)	В	0.5											S	cro		
24	<u>></u>	20	Stormwater runoff pretreatment & detention		0.1	1													
25 26 27	ita	21 22	Subwatershed wetland density Channels/sheet flow	C A	0.1											do	Wr	n tc)
27	Dig	23	Adjacent naturalized buffer average width (feet)	500	Н	WQ)	1	н		1					ar	ISV	ver	,
28	_	24	Adjacent Area Management: % Full		1	1		1								n	noi		
29			adjacent area mgmt: % Manicured		0														
30 31		25	adjacent area mgmt: % Bare Adjacent Area Diversity & Structure: % Native	100%	0	1		1							(que	esti	on	S
32		25	adjacent area diversity: % Mixed		0	1		1								an	ds	see	ò
33			adjacent area diversity: % Sparse/Inv./Exotic		0											foi	m	ula	
34 35		26	Adjacent Area Slope: % Gentle		0.05	1		0.05							-				
35 36			adjacent area slope: % Moderate adjacent area slope: % Steep		0										Cá	alci	ula	tio	ns
38						_												1	
39		27	Downstream sensitivity/WQ protection	А	1														
40		28	Nutrient loading	Α	1]	Ļ	
41		29	Shoreline wetland?		Y												\sim		
42 43		30 31	Rooted shoreline vegetation (% cover) Wetland in-water width (in feet, average)	100% 100	1														
44		32	Emergent vegetation erosion resistance		1														
45		33	Shoreline erosion potential	С	0.1	1													
46		34	Bank protection/upslope veg.	С	0.1														
47 48	=	35 36	Rare Wildlife Scarce/Rare/S1/S2 local community	N N	N N														
49	ы	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A													
50	cti	38	Community interspersion (see diagram 2)	2	М	0.5	5					(0						
51	Digital worksheet, section II	39 40	Wetland detritus Wetland interspersion on landscape	A	1	1													
52 53	et,	40 41	Wetland interspersion on landscape Wildlife barriers	A A	1	1													
54	he	42	Amphibian breeding potential-hydroperiod	А	1														
55	rks	43	Amphibian breeding potentialfish presence	А	1														
56 57	Ň	44 45	Amphibian & reptile overwintering habitat Wildlife species (list)	С	0.1														
57	a	45	Fish habitat quality	А	1														
59	igit	47	Fish species (list)		-														
60	Δ	48	Unique/rare educ./cultural/rec.opportunity	N	N														
61 62		49 50	Wetland visibility Proximity to population	C N	0.1 0.1														
63		51	Proximity to population Public ownership		0.1														
64		52	Public access	С	0.1														
65		53	Human influence on wetland	A	1														
66 67		54 55	Human influence on viewshed Spatial buffer		1 0.1														
68		56	Recreational activity potential		0.1														
69		57	Commercial crophydrologic impact		N/A														
70																			

A B C D E F G H I J K L M N P 737 100 GC GC D FC FC D FC				Mn	RAM_3.	2_Score_S	neet.xis											
73 63 GW - Weiden Jose 0 R or D 1 73 74 75 75 0 0 R or D 0 74 75 75 75 0 0 R or D 0 75 75 75 75 0 0 R or D 0 75 75 75 75 75 0 0 R or D 0 75 75 75 75 75 75 75 75 75 75 75 75 75 75 75 76 75 75 75 75 75 75 76 75 75 75 75 75 75 76 75 75 75 75 75 75 76 75 75 75 75 75 75 76 75 75 75 75 75 75 77 75 75 75 75 75 75 76 75 75 75 75 75 75 77 75 75 75 75 75 75 77 75		Α	В	C	D	E	F	G	Н	I	J		Κ	L	Ν	Λ	Ν	Ρ
73 59 6.W.* Submaterized land use 0 R. O. D. 1 73 70 <td>72</td> <td></td> <td>1.50</td> <td></td> <td>_</td> <td></td> <td>1 .</td> <td></td>	72		1.50		_		1 .											
So GW - Velicitie discretion data and and group Description R or D 1 TT To the Velicitie discretion data and and group Description R or D 1 TT To the Velicitie discretion potential wol flocking Description F. R or D 1 To the Velicitie discretion potential wol flocking Description F. R or D 1 To the Velicitie discretion potential wol flocking Description F. R or D 1 To the Velicitie discretion potential wol flocking (cores) (from 410) Description 0.1 1	73																	
10 MW - Velocitation torigunation 0 0 0 0 10 MW - Inde/Outloa configuration 0 N Ko D 1 10 MW - Mark United Status 0 N Ko D 1 10 Mark With Uniteding 0 N Ko D 1 10 Mark With Uniteding 0 N Ko D 1 10 Mark With Uniteding 0 N Ko D 1 10 Mark With Uniteding 0 N Ko D 1 10 Mark With Uniteding 0 0 0 0 10 Mark With Uniteding 0 0 0 0 0 10 Peterial Media Mark With Uniteding 0<	74																	
77 80 62 6W - Intel®Collet configuration 0 R of D 1 71 14 Restoration potential wite (locating 0 R of D 5.1 71 15 6A D 1 1 72 15 6A D 1 1 73 15 6A D 1 1 1 74 Wellshold (Potential Welland Your (Risk) (SA) 0	76																	
8 CMV - Surrounding updated topgraphic relief D Not D 1 80 DMV - Surrounding updated top restoration E B D 1 80 DMV - Surrounding updated top restoration E B D 1 80 DMV - Surrounding updated top restoration E B D 1 80 DMV - Surrounding updated top restoration E B D 1 1 80 DMV - Surrounding updated top restoration E B D 1 </td <td>77</td> <td>S</td> <td></td> <td>GW - Inlet/Outlet configuration</td> <td></td>	77	S		GW - Inlet/Outlet configuration														
10 Poetralia wetand type (Gr. 39) 1 2.3.4.5.6.7.8 11 12.3.4.5.6.7.8 1 1.2.3.4.5.6.7.8 12 Additional stormwater treatment needs 1 1.2.3.4.5.6.7.8 13 12.3.4.5.6.7.8 1.3.5.7.8 14 1.3.4.5.6.7.8 1.3.5.7.8 15 2.4dditional stormwater treatment needs 1.3.5.7.8 15 1.4.0.7.16.7.8 1.4.0.7.16.7.8 16 1.4.0.7.16.7.8 1.4.0.7.16.7.8 16 1.4.0.7.16.7.8 1.4.0.7.16.7.8 17 Processiv/inegrin 0.40.7.1.1.0.0.16.1.1.0.1.1.0.1.1.0.1.0.1.1.0.1.0	78	o																
10 Poetralia wetand type (Gr. 39) 1 2.3.4.5.6.7.8 11 12.3.4.5.6.7.8 1 1.2.3.4.5.6.7.8 12 Additional stormwater treatment needs 1 1.2.3.4.5.6.7.8 13 12.3.4.5.6.7.8 1.3.5.7.8 14 1.3.4.5.6.7.8 1.3.5.7.8 15 2.4dditional stormwater treatment needs 1.3.5.7.8 15 1.4.0.7.16.7.8 1.4.0.7.16.7.8 16 1.4.0.7.16.7.8 1.4.0.7.16.7.8 16 1.4.0.7.16.7.8 1.4.0.7.16.7.8 17 Processiv/inegrin 0.40.7.1.1.0.0.16.1.1.0.1.1.0.1.1.0.1.0.1.1.0.1.0		stic				Y or N	5.1											
10 Poetralia wetand type (Gr. 39) 1 2.3.4.5.6.7.8 11 12.3.4.5.6.7.8 1 1.2.3.4.5.6.7.8 12 Additional stormwater treatment needs 1 1.2.3.4.5.6.7.8 13 12.3.4.5.6.7.8 1.3.5.7.8 14 1.3.4.5.6.7.8 1.3.5.7.8 15 2.4dditional stormwater treatment needs 1.3.5.7.8 15 1.4.0.7.16.7.8 1.4.0.7.16.7.8 16 1.4.0.7.16.7.8 1.4.0.7.16.7.8 16 1.4.0.7.16.7.8 1.4.0.7.16.7.8 17 Processiv/inegrin 0.40.7.1.1.0.0.16.1.1.0.1.1.0.1.1.0.1.0.1.1.0.1.0	80	ne:	65			Eabc		alid ch	oice									
10 Poetralia wetand type (Gr. 39) 1 2.3.4.5.6.7.8 11 12.3.4.5.6.7.8 1 1.2.3.4.5.6.7.8 12 Additional stormwater treatment needs 1 1.2.3.4.5.6.7.8 13 12.3.4.5.6.7.8 1.3.5.7.8 14 1.3.4.5.6.7.8 1.3.5.7.8 15 2.4dditional stormwater treatment needs 1.3.5.7.8 15 1.4.0.7.16.7.8 1.4.0.7.16.7.8 16 1.4.0.7.16.7.8 1.4.0.7.16.7.8 16 1.4.0.7.16.7.8 1.4.0.7.16.7.8 17 Processiv/inegrin 0.40.7.1.1.0.0.16.1.1.0.1.1.0.1.1.0.1.0.1.1.0.1.0	81	Ð			5	acres												
10 Poetralia wetand type (Gr. 39) 1 2.3.4.5.6.7.8 11 12.3.4.5.6.7.8 1 1.2.3.4.5.6.7.8 12 Additional stormwater treatment needs 1 1.2.3.4.5.6.7.8 13 12.3.4.5.6.7.8 1.3.5.7.8 14 1.3.4.5.6.7.8 1.3.5.7.8 15 2.4dditional stormwater treatment needs 1.3.5.7.8 15 1.4.0.7.16.7.8 1.4.0.7.16.7.8 16 1.4.0.7.16.7.8 1.4.0.7.16.7.8 16 1.4.0.7.16.7.8 1.4.0.7.16.7.8 17 Processiv/inegrin 0.40.7.1.1.0.0.16.1.1.0.1.1.0.1.1.0.1.0.1.1.0.1.0		Jal				acres												
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B8 I / Wetland sensitivity to stormwater E a b c 90 </td <td>80</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>ump, vvt</td> <td>rsna ai</td> <td>v., F</td> <td>ming</td> <td>)</td> <td></td> <td></td> <td></td> <td></td> <td></td>	80								ump, vvt	rsna ai	v., F	ming)					
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14 Function Name 1																		
96 Vegetative Diversity/Integrity 0.80 High #### 98 98 Hydrology - Characteristic 1.00 High #### 100 Water Quality-Downstream 0.80 High #### 101 Water Quality-Downstream 0.80 High #### 102 Water Quality-Downstream 0.80 High #### 103 Water Quality-Downstream 0.80 High #### 103 Water Quality-Downstream 0.90 High #### 104 Water Quality-Downstream 0.90 High #### 105 Water Quality-Downstream 0.90 High #### 105 Water Quality-Downstream 0.90 High #### 106 Maintenance of Characteristic Fish Habitat 0.06 ##EFI #REFI 1111 Maintenance of Characteristic Amphibian Habitat 0.83 Maintenance #### 1116 Special Features listing: #REFI #REFI #REFI 120							ry											
96 Vegetative Diversity/Integrity 0.80 High #### 98 98 Hydrology - Characteristic 1.00 High #### 100 Water Quality-Downstream 0.80 High #### 101 Water Quality-Downstream 0.80 High #### 102 Water Quality-Downstream 0.80 High #### 103 Water Quality-Downstream 0.80 High #### 103 Water Quality-Downstream 0.90 High #### 104 Water Quality-Downstream 0.90 High #### 105 Water Quality-Downstream 0.90 High #### 105 Water Quality-Downstream 0.90 High #### 106 Maintenance of Characteristic Fish Habitat 0.06 ##EFI #REFI 1111 Maintenance of Characteristic Amphibian Habitat 0.83 Maintenance #### 1116 Special Features listing: #REFI #REFI #REFI 120					re	al ing	ing ego											
96 Vegetative Diversity/Integrity 0.80 High #### 98 98 Hydrology - Characteristic 1.00 High #### 100 Water Quality-Downstream 0.80 High #### 101 Water Quality-Downstream 0.80 High #### 102 Water Quality-Downstream 0.80 High #### 103 Water Quality-Downstream 0.80 High #### 103 Water Quality-Downstream 0.90 High #### 104 Water Quality-Downstream 0.90 High #### 105 Water Quality-Downstream 0.90 High #### 105 Water Quality-Downstream 0.90 High #### 106 Maintenance of Characteristic Fish Habitat 0.06 ##EFI #REFI 1111 Maintenance of Characteristic Amphibian Habitat 0.83 Maintenance #### 1116 Special Features listing: #REFI #REFI #REFI 120	95			Function Name	Ray	Fina	Rat Cat		Formula	a show	1 to 1	the r	ight.					
97 98 99 99 99 Hydrology - Characteristic 1.00 High 100 Water QualityDownstream	96				F 92		High		1 01 11 10				- B					
98 98 <td< td=""><td>97</td><td></td><td></td><td></td><td></td><td></td><td>U</td><td></td><td></td><td>####</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	97						U			####								
100 Flood Attenuation 0.60 Med #### 102 Water QualityDownstream 0.80 High 103 Water QualityDownstream 0.90 High 104 0.90 High #REF! 105 Characteristic Wildlife Habitat Structure 0.90 9.90 108 Otheracteristic Wildlife Habitat Structure 0.90 9.90 109 Maintenance of Characteristic Fish Habitat 0.85 High 111 Maintenance of Characteristic Amphibian Habitat 0.85 High 111 Maintenance of Characteristic Amphibian Habitat 0.83 0.33 Med 118 Aesthetics/Recreation/Education/Cultural 0.33 0.33 Med #REF! 118 Special Features Itsting: #REF! #REF! #REF! 119 Groundwater Interaction discharge #REF! #REF! 121 Froutorial Index #REF! #REF! #REF! 122 Froutorial Index #REF! #REF! #REF!	98	ŝ		Hydrology - Characteristic		1.00	High			####								
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103 105 106 107 108 109 109 109 109 109 109 109 109 109 109	100	ma		Flood Attenuation		0.60	Med			####								
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103 105 106 107 108 109 109 109 109 109 109 109 109 109 109	102	Su		Water QualityDownstream		0.80	High											
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112 Maintenance of Characteristic Amphibian Habitat 0.85 High 113 Aesthetics/Recreation/Education/Cultural 0.33 Med #REF! 114 Commercial use N/A N/A 0 117 Special Features listing: #REF! #REF! 118 Special Features listing: #REF! #### 120 Groundwater Interaction discharge #REF! 121 Groundwater Functional Index #REF! ##### 122 Restoration Potential (draft formula) #VALUE! ##### 124 Stormwater Sensitivity (not active) #VALUE! ##### 125 126 131 132 131 132 133 134 133 134 135 134 134 135 137 138 133 134 134 135 133 134 135 134 134 135 134 135 134 134 136 139 134 137 134 134 </td <td>104</td> <td>Ę</td> <td></td> <td>water Quantywenand</td> <td></td> <td>0.90</td> <td>riigii</td> <td></td>	104	Ę		water Quantywenand		0.90	riigii											
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112 Maintenance of Characteristic Amphibian Habitat 0.85 High 113 Aesthetics/Recreation/Education/Cultural 0.33 Med #REF! 114 Commercial use N/A N/A 0 117 Special Features listing: #REF! #REF! 118 Special Features listing: #REF! #### 120 Groundwater Interaction discharge #REF! 121 Groundwater Functional Index #REF! ##### 122 Restoration Potential (draft formula) #VALUE! ##### 124 Stormwater Sensitivity (not active) #VALUE! ##### 125 126 131 132 131 132 133 134 133 134 135 134 134 135 137 138 133 134 134 135 133 134 135 134 134 135 134 135 134 134 136 139 134 137 134 134 </td <td>108</td> <td>Ы</td> <td></td> <td>Characteristic Wildlife Habitat Structure</td> <td>0.90</td> <td>0.90</td> <td>High</td> <td></td> <td>#REF!</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	108	Ы		Characteristic Wildlife Habitat Structure	0.90	0.90	High		#REF!									
112 Maintenance of Characteristic Amphibian Habitat 0.85 High 113 Aesthetics/Recreation/Education/Cultural 0.33 Med #REF! 114 Commercial use N/A N/A 0 117 Special Features listing: #REF! #REF! 118 Special Features listing: #REF! #### 120 Groundwater Interaction discharge #REF! 121 Groundwater Functional Index #REF! ##### 122 Restoration Potential (draft formula) #VALUE! ##### 124 Stormwater Sensitivity (not active) #VALUE! ##### 125 126 131 132 131 132 133 134 133 134 135 134 134 135 137 138 133 134 134 135 133 134 135 134 134 135 134 135 134 134 136 139 134 137 134 134 </td <td>109</td> <td>cti</td> <td></td>	109	cti																
112 Maintenance of Characteristic Amphibian Habitat 0.85 High 113 Aesthetics/Recreation/Education/Cultural 0.33 Med #REF! 114 Commercial use N/A N/A 0 117 Special Features listing: #REF! #REF! 118 Special Features listing: #REF! #### 120 Groundwater Interaction discharge #REF! 121 Groundwater Functional Index #REF! ##### 122 Restoration Potential (draft formula) #VALUE! ##### 124 Stormwater Sensitivity (not active) #VALUE! ##### 125 126 131 132 131 132 133 134 133 134 135 134 134 135 137 138 133 134 134 135 133 134 135 134 134 135 134 135 134 134 136 139 134 137 134 134 </td <td>110</td> <td>h</td> <td></td> <td>Maintenance of Characteristic Fish Habitat</td> <td>1.00</td> <td>1.00</td> <td>High</td> <td></td>	110	h		Maintenance of Characteristic Fish Habitat	1.00	1.00	High											
113 Aesthetics/Recreation/Education/Cultural 0.33 0.43 #REF! 116 Commercial use N/A N/A 0 117 Special Features listing: #REF! #REF! 118 Special Features listing: #REF! ##### 119 Croundwater Interaction discharge #REF! 121 Groundwater Functional Index #REF! #REF! 122 Restoration Potential (draft formula) #VALUE! #REF! 123 Restoration Potential (draft formula) #VALUE! #REF! 124 Stormwater Sensitivity (not active) 131 130 131 131 132 131 133 134 135 133 134 135 134 133 134 135 134 133 133 134 135 133 134 135 134 134 135 134 135 134 134 135 134 135 134 135 134 136	111	ш				0.07	TT 1		#REF!									
114 Aesthetics/Recreation/Cultural 0.33 0.33 Med #REF! 115 Commercial use N/A N/A N/A 0 117 Special Features listing: #REF! #### 119 Groundwater Interaction discharge #REF! 121 Groundwater Functional Index #REF! #REF! 122 Restoration Potential (draft formula) #VALUE! ##### 124 Stormwater Sensitivity (not active) #VALUE! ##### 128 130 131 131 132 131 132 133 134 135 133 134 135 134 135 134 135 134 135 134 135 136 137 134 135 138 139 134 135 136 139 130 134 136 137 130 134 135 136 137 131 134 136 137 140				Maintenance of Characteristic Amphibian Habitat		0.85	High		"DEEL									
115 Commercial use N/A N/A 0 117 Special Features listing: #REF! ##### 118 Special Features listing: #REF! ##### 119 Groundwater Interaction discharge #REF! 121 Groundwater Functional Index #REF! ##### 122 Restoration Potential (draft formula) #VALUE! ##### 124 Stormwater Sensitivity (not active) 125 126 127 128 130 130 131 133 133 134 135 133 134 135 133 134 136 133 134 136 133 134 136 134 136 137 138 139 134 139 130 131 139 130 131 139 130 131 139 139 140	113			Aasthatias/Pagrantian/Education/Cultural	0.22	0.22	Mad		#REF! #DEEI									
116 Commercial use N/A N/A 0 117 Special Features listing: #REF! ##### 119 Groundwater Interaction discharge #REF! 121 Groundwater Functional Index #REF! #REF! 122 Restoration Potential (draft formula) #VALUE! ###### 124 Stormwater Sensitivity (not active) #VALUE! ####################################	114			Aesthetics/Recreation/Education/Cultural	0.55	0.55	Med											
117 Image: Special Features listing: Image: Ima	116			Commercial use		N/A	N/A											
138 139 140	117								-									
138 139 140	118			Special Features listing:			#REF!	####										
138 139 140	119																	
138 139 140	120								#REF!									
138 139 140	121			Groundwater Functional Index		#REF!	#REF!											
138 139 140	122			Postoration Detential (draft formula)		#\/ALLEI	######											
138 139 140	123					#VALUE!	<i>#####</i>											
138 139 140	124			Stornwater Sensitivity (not active)														
138 139 140	126																	
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138 139 140	128																	
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140	138																	
140	139																	
[141]	140																	
	141																	

			Wetland ID HW21 UTM Coordinates 545570 5267210		Wetland ID HW22 TM Coordinates 45113 5267281		Wetland name ID HW23 UTM Coordinates 544903 5267316		Wetland ID HW24 UTM Coordinates 544100 5267370
	Date		25-Jun-09		25-Jun-09		25-Jun-09		25-Jun-09
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3I 10A, 7 15B, 7	PHOTOS 120-121 3, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	3A, 3B,	,	3A, 3 10A, 15B,	126-127 B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	3A, 3 10A, 15B,	129-130 3B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B
#2 & #	,	- T	ndividually below ~		~ Describe e	1 1	ommunity type individually b		-
	Community Type (wet meadow, marsh)	16A	Shallow, Open Water	4B	Coniferous Swamp	4B	Coniferous Swamp	4B	Coniferous Swamp
	Community Proportion (% of total)	VELL	66%		67%		75%		56% E SPRUCE/3
#1	Dominant Vegetation / Cover Class		OW LILY/2 NTAIL/4	FORB/3	SASPARILLA/4		E SPRUCE/2 LING LARCH/4	-	CH/3
unity			RICE/5	COTTC	NGRASS/1	SAPL	ING SPRUCE/4	SAP	LING SPRUCE/2
mmo					DOR TEA/4 ERLEAF/5		RADOR TEA/4 THERLEAF/5		LING LARCH/2 RADOR TEA/4
Plant Community #1				SEDGE		BLUE	BERRY/2	LEA	THERLEAF/4
립						LAR	GNUM MOSS/6 CH/4	FOR SPA	B/2 GNUM MOSS/5
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	н	1	н	1	н	1	н	1
	Community Type (wet meadow, marsh)	-				-	· · · · · · · · · · · · · · · · · · ·		
	Community Proportion (% of total)		-				-		
	Dominant Vegetation / Cover Class							SPF	CKLED ALDER/2
#2								5. 2	
Plant Community #2									
mmo									
ant C									
Ë									
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)								
	Community Type (wet meadow, marsh)	_	0	-	0	-	0		0
	Community Proportion (% of total)	-	-	-	-	-	-	-	-
	Dominant Vegetation / Cover Class								
nunity #3									
Plant Community #3									
	Invasive/exotic Vegetation / Cover Class								
									I
	Community Quality (E, H, M, L)		0		0		0		0
	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total)								
y #4*	Dominant Vegetation / Cover Class								
munit									
Plant Community #4*									
Plant									
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	-	0		0		0		0
	Circular 39 Types (primary <tab> others)</tab>		· · · · · · · · · · · · · · · · · · ·				Ť	2	
	Cowardin Types								
	Photo ID								
Highe	st rated community veg. div./integ:	1.0	High	1	High	1	High	1	High
Avera	ge vegetative diversity/integrity:	1.00	High	1.00	High	1.00	High	1.00	High
	ted Average veg. diversity/integrity:	0.66	High	0.67	High	0.75	High	0.56	
	Listed, rare, special plant species? Rare community or habitat?		N N		N N		N N		N N
#5 #6		N							
10A] Shall	dplain Forest [1A, 2A, 3A] * Hardwood Swamp * Calcareous Fen [7B, 11B, 14A] * Shrub Sw ow Marsh [13B] * Deep Marsh [12B] * Wet ionally Flooded Basin [16B]	vamp [6B] * Alder Thicket [8A] *	Shrub-c	arr [8B] * Sedge Meado	ow [10	B, 11A, 12A, 13A] *		ver Class Class Range 1 0 - 3% 2 3 - 10% 3 10 - 25% 4 25 - 50% 5 50 - 75%
If the	e are more than four plant community types, u	se the	next column over to enter th	ne rest a	nd do not rely on the auto	matic	average calculations.		5 50 - 75% 6 75 - 100%

	^	В	С	_ D	 E	F	G H			<u>т. т</u>	М	NI	Р
	A	• •					G H		K		IVI	Ν	Р
1			MnRAM 3.2 Digital Works	neet,	Side	2		WTL21					
2			Question Description	User	Rating								
4				entry	Rating		This comes in fro				_ F	lighest	t-rated:
5		1	Veg. Table 2, Option 4		0.66		weighted average Community rating	, please mani	ually overv	vrite that	#	#REF!	
6			TOTAL VEG Rating		High		value (shown to t	he right) into t	he field at	E5.			
7		4	Listed, rare, special plant species? Rare community or habitat?	N N	next								
9		6	Pre-European-settlement conditions?	N	next next								
10		7	hydrogeo & topo		Riverine								
11		8	Water depth (inches)	60	itiveiine								
12			Water depth (% inundation)			Entor	data starting k	ara Valla		1			
13		9	Local watershed/immedita drainage (acres)	1.5			data starting h are used in ca						
14 15		10 11	Existing wetland size SOILS: Up/Wetland (survey classification + site)	15						J			
16	L	12	Outlet characteristics for flood retention	N/A	N/A								
16 17	tio	13	Outlet characteristics for hydrologic regime	А	1								
18	Sec	14	Dominant upland land use (within 500 ft)	А	1	0.1							
19	ŗ,	15 16	Soil condition (wetland) Vegetation (% cover)	A 80%	1 H	1							
20	Jee	17	Emerg. veg. flood resistance	00%	0.1	1							
19 20 21 22 23 24 25 26 27 28 29 30 31 32 33	Digital worksheet, section I	18	Sediment delivery	В	0.5								
23	or	19	Upland soils (based on soil group)	В	0.5						Sc	roll	
24	~	20 21	Stormwater runoff pretreatment & detention Subwatershed wetland density	C C	0.1 0.1	1							
26	gita	22	Channels/sheet flow	C	0.1						dow)
27	Dić	23	Adjacent naturalized buffer average width (feet)	500	Н	WQ	1 H	1			ans	wer	•
28		24	Adjacent Area Management: % Full		1	1	1				mo	ore	
29			adjacent area mgmt: % Manicured adjacent area mgmt: % Bare		0 0								~
31		25	Adjacent Area Diversity & Structure: % Native	100%	1	1	1				lnes		
32			adjacent area diversity: % Mixed		0						and	see	è
33			adjacent area diversity: % Sparse/Inv./Exotic		0						forn	านไล	
34 35		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate		0.05 0	1	0.05				alcul		
36			adjacent area slope: % Steep		0					Ce	licui	alio	115
38			· · · ·			-							
39		27	Downstream sensitivity/WQ protection	А	1								
40		28	Nutrient loading	А	1						\prec	5	
41 42		29 30	Shoreline wetland?	N	N	togo							
42		31	Rooted shoreline vegetation (% cover) Wetland in-water width (in feet, average)		ter a percent ter a percent								
44		32	Emergent vegetation erosion resistance		ter valid cho								
45		33	Shoreline erosion potential		ter valid cho								
46 47		34 35	Bank protection/upslope veg. Rare Wildlife		ter valid cho	oice							
47	=	36	Scarce/Rare/S1/S2 local community	N N	N N								
49	Digital worksheet, section II	37	Vegetation interspersion cover (see diagram 1)	8	L	0.1							
50 51	cti	38	Community interspersion (see diagram 2)	1	L	0.1			0				
51 52	Se	39 40	Wetland detritus Wetland interspersion on landscape	N/A A	N/A 1	1							
53	iet,	40	Weitand interspersion on fandscape Wildlife barriers	A	1	1							
53 54	she	42	Amphibian breeding potential-hydroperiod	А	1								
55 56 57	rks	43	Amphibian breeding potentialfish presence	C	0.1								
56	Ň	44 45	Amphibian & reptile overwintering habitat Wildlife species (list)	A	1								
58	al	43	Fish habitat quality	А	1								
59	igi	47	Fish species (list)										
60	Δ	48	Unique/rare educ./cultural/rec.opportunity	N	N								
61 62		49 50	Wetland visibility Proximity to population	C N	0.1 0.1								
63		51	Public ownership		0.1								
64		52	Public access	С	0.1								
65 66		53	Human influence on wetland	A	1								
66 67		54 55	Human influence on viewshed Spatial buffer	A C	1 0.1								
68		56	Recreational activity potential		0.1								
69 70		57	Commercial crophydrologic impact		N/A								
70													

			Mn	RAM_3.	2_Score_S	heet.xls	;										
	А	В	С	D	E	F	G	3	Н		I	J	K	L	М	Ν	Р
72		1.50				، ۱											
73 74 75 76 77 78 79 80 81 82 83 84 83 84 85 86 87		58 59	GW - Wetland soils GW - Subwatershed land use	D D	R or D R or D	1											
75		60	GW - Wetland size and soil group	D	R or D	1											
76		61	GW - Wetland hydroperiod	D	R or D	1											
77	S	62	GW - Inlet/Outlet configuration	D	R or D	1											
78	Additional questions	63	GW - Surrounding upland topographic relief	D	R or D	1	_										
79	sti	64	Restoration potential w/o flooding		Y or N	6	5										
80	ne	65	,		Eabc	Enter v	/alid	cho	ice								
81	6	66A	Existing wetland size (acres) [from #10]	15	acres												
82	nal		Total wetland restoration size (acres)		acres	0.1											
83	<u>io</u>		(Calculated) Potential New Wetland Area [B-A]	-15	acres	% effe		ely c									
84	dit		Average width of naturalized upland buffer (poten	0	feet	0.1		- h		le: ‡	####						
80	Ρq		Likelihood of restoration success Hydrologic alteration type		abc Outlet, Tile	Enter v				N/tro	hd div	, 511	na				
87			Potential wetland type (Circ. 39)		1, 2, 3, 4,			pu	mp, v	// 115		/., r m	ng				
88			Wetland sensitivity to stormwater		Eabc	, o, r, c 	0										
89		72	Additional stormwater treatment needs		abc												
90						-											
90 92]												
92 93																	
94						ry											
				W	Final Rating	Rating Category	1										
95			Function Name	Raw score	Fin Rat	Cat Cat]	Form	ula s	shown	to th	e right				
96			Vegetative Diversity/Integrity		0.66	High					####		0				
96 97 98 99 100										i	####						
98	es		Hydrology - Characteristic		1.00	High					####						
99	ari				0.00						####						
100	Summaries		Flood Attenuation		0.39	Med				1	####						
101	En		Water QualityDownstream		0.64	Med											
102	Ñ		water Quanty-Downstream		0.04	Mea											
103 104 105 106 107	Functional Rating		Water QualityWetland		0.79	High											
105	ati					U											
106	Ř		Shoreline Protection		N/A	N/A											
107	nal																
108	. <u>ō</u>		Characteristic Wildlife Habitat Structure	0.72	0.72	High			#RE								
109 110	ğ		Maintenance of Characteristic Fish Habitat	0.02	0.02	TT: _1.			#RE								
111	5		Maintenance of Characteristic Fish Habitat	0.92	0.92	High			#RE								
112	_		Maintenance of Characteristic Amphibian Habitat		0.10	Low		i									
113									#RE	F!							
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med			#RE								
115									#RE	F!							
116			Commercial use		N/A	N/A				0							
117																	
118			Special Features listing:			#REF!	##	##									
119			Groundwater Interaction		diacharga				#RE	C 1							
120			Groundwater Functional Index		discharge #REF!	#REF!			#RE								
122					millin.	mixer.											
123			Restoration Potential (draft formula)		#VALUE!	#####											
124			Stormwater Sensitivity (not active)			-											
125																	
126																	
127																	
128																	
129																	
131																	
132																	
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116 117 118 119 120 121 122 123 124 125 126 127 128 129 1301 132 133 134 135 136 137 138 139																	
140																	
140																	
<u></u>																	

	A	В	С	_ D	2_Score_S	F	:	G	1	Н			-	К		1	М		N	Р
	~	4 4	MnRAM 3.2 Digital Works			-		0			wT		<u>,</u>	K	_	L	IVI	_	IN	L '
1			WITRAW 5.2 Digital WOLKS	ווככו	, Side	2					VV I	LZ,	2							
3			Question Description	User	Rating															
4		-	-	entry	-		_							atically hest ra					-	st-rated:
5 6		1	Veg. Table 2, Option 4 TOTAL VEG Rating	0.67	0.67	•		Comm	nunity	rating	j, plea	se m	anual	ly over	write	e that		#	REF!	
7		4	Listed, rare, special plant species?	0.07 N	High next		l	value	(5110)	VII LO L	ne ngi	it) ii ii	o the	field a	I ES.					
8		5	Rare community or habitat?	N	next															
9		6	Pre-European-settlement conditions?	N	next															
10		7	hydrogeo & topo	FT	Depress'l/F	low-tl	nroug	gh												
11 12		8	Water depth (inches) Water depth (% inundation)	6											_					
13		9	Local watershed/immedita drainage (acres)					lata s are u												
14		10	Existing wetland size	5		00	VC2		seu	III C	aicui	allu	115.							
15 16		11 12	SOILS: Up/Wetland (survey classification + site) Outlet characteristics for flood retention	N/A	N/A															
17	tio	13	Outlet characteristics for hydrologic regime	A	1															
18	Sec	14	Dominant upland land use (within 500 ft)	А	1		0.1													
19 20	ŗ,	15 16	Soil condition (wetland) Vegetation (% cover)	A 95%	1 H		1													
21	nee	17	Emerg. veg. flood resistance	93% A	1		1													
21 22	ksł	18	Sediment delivery	А	1															
23 24 25 26 27	Digital worksheet, section I	19 20	Upland soils (based on soil group) Stormwater runoff pretreatment & detention	B C	0.5 0.1		1										S	Scr	oll	
24	al v	20	Subwater function pretreatment & detention Subwatershed wetland density	C	0.1		1												n to	C
26	git	22	Channels/sheet flow	А	1															
27 28	ā	23 24	Adjacent naturalized buffer average width (feet) Adjacent Area Management: % Full	500 100%	H 1	۱ ۲	NQ 1	1 1	Н			1					ar	151	we	ſ
29		24	adjacent area mgmt: % Manicured	100%	0		1	1									n	no	re	
30			adjacent area mgmt: % Bare		0											(que	est	tior	าร
31 32		25	Adjacent Area Diversity & Structure: % Native	100%	1 0		1	1											se	
33			adjacent area diversity: % Mixed adjacent area diversity: % Sparse/Inv./Exotic		0															
34		26	Adjacent Area Slope: % Gentle	20%	0.2		1	0.2											nula	
35 36			adjacent area slope: % Moderate adjacent area slope: % Steep		0											С	alc	ula	atic	ons
51			aujacent area siope. % Steep		0	1														
38 39		27	Downstream sensitivity/WQ protection	А	1															
40		28	Nutrient loading	А	1												V		Y	
41 42		29 30	Shoreline wetland?	N	N													\sim		
42		31	Rooted shoreline vegetation (% cover) Wetland in-water width (in feet, average)		ter a percen ter a percen															
44		32	Emergent vegetation erosion resistance	En	ter valid ch	oice														
45 46		33 34	Shoreline erosion potential		ter valid cho ter valid cho															
40		35	Bank protection/upslope veg. Rare Wildlife	N	N	oice														
48	=	36	Scarce/Rare/S1/S2 local community	Ν	Ν															
49 50	tior	37 38	Vegetation interspersion cover (see diagram 1) Community interspersion (see diagram 2)	N/A 2	N/A M	N/A	0.5						0							
51	Digital worksheet, section II	30 39	Wetland detritus	A	1 1		0.5						0							
52	it, s	40	Wetland interspersion on landscape	А	1		1													
53 54	Jee	41 42	Wildlife barriers Amphibian breeding potential-hydroperiod	A	1															
55	ksł	42	Amphibian breeding potentialfish presence	A	1															
56	vor	44	Amphibian & reptile overwintering habitat	С	0.1															
57 58	alv	45 46	Wildlife species (list) Fish habitat quality	N/A	N/A															
59	git	40	Fish species (list)	1 N/ PA	11/24															
60	ē	48	Unique/rare educ./cultural/rec.opportunity	N	N															
61 62		49 50	Wetland visibility Proximity to population	C N	0.1 0.1															
63		51	Proximity to population Public ownership	C	0.1															
64		52	Public access	С	0.1															
65 66		53 54	Human influence on wetland Human influence on viewshed	A	1															
67		54	Spatial buffer	C A	0.1															
68		56	Recreational activity potential	С	0.1															
69 70		57	Commercial crophydrologic impact	N/A	N/A															
10																				

			Mn	RAM_3.	2_Score_S	heet.xls										
	Α	В	С	D	E	F	G	Н	1	J		K	L	М	Ν	Р
72			•													-
73 74 75 76 77		58	GW - Wetland soils	D	R or D	1										
74		59	GW - Subwatershed land use	D	R or D	1										
75		60	GW - Wetland size and soil group	D	R or D	1										
76		61	GW - Wetland hydroperiod	R	R or D	0.1										
78	questions	62 63	GW - Inlet/Outlet configuration GW - Surrounding upland topographic relief	D D	R or D R or D	1										
78 79 80 81	tio	64	Restoration potential w/o flooding	D	Y or N	5.1	:									
80	es	65	Landowners affected by restoration		Eabc	Enter v		nice								
81	nb	66A	Existing wetland size (acres) [from #10]	5	acres	Lintor V		5100								
82 83 84			Total wetland restoration size (acres)	•	acres	0.1										
83	Additional		(Calculated) Potential New Wetland Area [B-A]	-5	acres	% effe	ctively	drained:	####							
84	liti	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value:								
85	p	68	Likelihood of restoration success		ab c	Enter v										
86	٩		Hydrologic alteration type		Outlet, Tile			ımp, Wti	rshd div	/., Fil	lling					
87 88			Potential wetland type (Circ. 39)		1, 2, 3, 4, 5 Eabc	5,6,7,8 I	3									
88 89		71 72	Wetland sensitivity to stormwater Additional stormwater treatment needs		abc											
90		12	Additional stormwater treatment needs		abc	1										
90 91 92																
92																
93 94						Ŋ										
94				0	Final Rating	Rating Category										
95			Function Name	Raw score	7ina Rati	Zati Cate		Formula	chowr	to th	ha ri	aht				
96			Vegetative Diversity/Integrity	S H	0.67	High		rormun	####	1 10 11		gnı.				
97			egetative Drivelsky, integrity		0.07				####							
98	S		Hydrology - Characteristic		1.00	High			####							
99	Irie								####							
100	Summaries		Flood Attenuation		0.60	Med			####							
101	Ξ															
102 103	Su		Water QualityDownstream		0.81	High										
103	g		Water QualityWetland		0.87	High										
104 105	atir		Water Quanty Wethand		0.07	mgn										
106	Ř		Shoreline Protection		N/A	N/A										
107 108	al															
108	ioi		Characteristic Wildlife Habitat Structure	0.87	0.87	High		#REF!								
109	Functional Rating							#REF!								
110	E		Maintenance of Characteristic Fish Habitat	######	N/A	N/A		#REF!								
111 112	ш.		Maintenance of Characteristic Amphibian Habitat		0.85	High		#REF!								
113			Maintenance of Characteristic Amphibian Habitat		0.85	riigii		#REF!								
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!								
				0100	0.000	Intea		#REF!								
116			Commercial use		N/A	N/A		0								
117																
118			Special Features listing:			#REF!	####									
119			One we develop between the		Parata ang a			"DEEL								
120			Groundwater Interaction Groundwater Functional Index		discharge #REF!	#REF!		#REF!								
121			Groundwater r unctional index		TKL1	#IXE1 :										
123			Restoration Potential (draft formula)		#VALUE!	#####										
124			Stormwater Sensitivity (not active)			•										
125																
126																
127																
128																
129																
131																
132																
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134																
135																
136																
115 116 117 118 119 120 121 122 123 124 125 126 127 128 130 131 132 133 134 135 136 137 138																
138																
140																
141																
L																

				-	2_3core_3	-	<u> </u>		<u>т.</u>					
	A	В	С	D	E	F	G H		J	K	L	Μ	Ν	Р
1			MnRAM 3.2 Digital Works	heet	, Side	2		WTL	_23					
2														
3			Question Description	User	Rating		This comes in f	rom Side	1 autom	atically	ising the		Liabo	at ratad
4		1	Veg. Table 2, Option 4	entry	0.75		weighted avera	ige. To us	se the hig	phest rat	ed veg.		#REF	st-rated:
6		1	TOTAL VEG Rating	0.75	High		Community rati value (shown to						#I \ LI	•
7		4	Listed, rare, special plant species?	N	next									
8		5	Rare community or habitat?	Ν	next									
9		6	Pre-European-settlement conditions?	N	next									
10		7	hydrogeo & topo	FT	Depress'l/F	low-throu	gh							
11		8	Water depth (inches)	6										
12 13		9	Water depth (% inundation) Local watershed/immedita drainage (acres)			Enter	data starting	j here.	Yellow					
14		10	Existing wetland size	100		boxes	are used in	calcula	tions.					
15	_	11	SOILS: Up/Wetland (survey classification + site)		_									
16 17	u	12	Outlet characteristics for flood retention	N/A	N/A									
17	ĊŤ	13	Outlet characteristics for hydrologic regime	A	1	0.1								
18 19	Se	14 15	Dominant upland land use (within 500 ft) Soil condition (wetland)	A A	1	0.1								
20	et,	16	Vegetation (% cover)	95%	H	1								
21	Digital worksheet, section I	17	Emerg. veg. flood resistance	A	1	-								
22 23 24	ks	18	Sediment delivery	А	1									
23	vor	19	Upland soils (based on soil group)	B	0.5	,						S	croll	
24		20 21	Stormwater runoff pretreatment & detention Subwatershed wetland density	C C	0.1 0.1	1							vn t	
25 26 27	gite	22	Channels/sheet flow	A	1							aov	VIIU	0
27	ă	23	Adjacent naturalized buffer average width (feet)	500	Н	WQ	1 H	1				ans	swe	r
28		24	Adjacent Area Management: % Full	100%	1	1	1					m	ore	
29 30			adjacent area mgmt: % Manicured		0									
31		25	adjacent area mgmt: % Bare Adjacent Area Diversity & Structure: % Native	100%	0	1	1						stio	
32		25	adjacent area diversity: % Mixed	10070	0	1	•					and	d se	е
33			adjacent area diversity: % Sparse/Inv./Exotic		0								mula	
34		26	Adjacent Area Slope: % Gentle	15%	0.15	1	0.15							
35 36			adjacent area slope: % Moderate adjacent area slope: % Steep		0						Ca	alcu	latio	ons
57			aujacent area slope. // Steep		0	1						Г		
38 39		27	Downstream sensitivity/WQ protection	В	0.5									
40		28	Nutrient loading	A	1							Ļ	Ļ	
41		29	Shoreline wetland?	Ν	Ν								\checkmark	
42		30	Rooted shoreline vegetation (% cover)		ter a percent									
43 44		31 32	Wetland in-water width (in feet, average) Emergent vegetation erosion resistance		ter a percent ter valid cho									
44		33	Shoreline erosion potential		ter valid cho									
46		34	Bank protection/upslope veg.		ter valid cho									
47		35	Rare Wildlife	N	Ν									
48 49	n II	36	Scarce/Rare/S1/S2 local community	N N/A	N N/A	NT/A								
49 50	tio	37 38	Vegetation interspersion cover (see diagram 1) Community interspersion (see diagram 2)	N/A 2	N/A M	N/A 0.5			C)				
51	Digital worksheet, section II	39	Wetland detritus	A	1	0.5			, c					
52	ţ, s	40	Wetland interspersion on landscape	Α	1	1								
53	ee	41	Wildlife barriers	A	1									
54 55	(sh	42 43	Amphibian breeding potential-hydroperiod Amphibian breeding potentialfish presence	A A	1									
56	ork	43	Amphibian & reptile overwintering habitat	C A	1 0.1									
57	ž	45	Wildlife species (list)]									
58	ita	46	Fish habitat quality	N/A	N/A									
59	Dig	47	Fish species (list)	NT.	. NT									
60 61	-	48 49	Unique/rare educ./cultural/rec.opportunity Wetland visibility	N C	N 0.1									
62		50	Proximity to population	N	0.1									
63		51	Public ownership	С	0.1									
64		52	Public access	С	0.1									
65 66		53 54	Human influence on wetland Human influence on viewshed	A A	1									
67		54 55	Human influence on viewshed Spatial buffer	A C	1 0.1									
68		56	Recreational activity potential	C	0.1									
69		57	Commercial crophydrologic impact	N/A	N/A									
70														

			Mn	RAM_3.2	2_Score_S	heet.xls											
	А	В	С	D	E	F	G	Н		1	J		K	N	Л	N	Р
72		1.5	Ŭ				Ŭ		-	• •				 	<u> </u>		<u> </u>
73		58	GW - Wetland soils	D	R or D	1											
74		59	GW - Subwatershed land use	D	R or D	1											
75		60	GW - Wetland size and soil group	D	R or D	1											
76		61	GW - Wetland hydroperiod	R	R or D	0.1											
77	S	62	GW - Inlet/Outlet configuration	D	R or D	1											
74 75 76 77 78	ou	63	GW - Surrounding upland topographic relief	D	R or D	1											
79 80	questions	64	Restoration potential w/o flooding		Y or N	5.1	=										
80	ĕ	65	Landowners affected by restoration		Eabc	Enter v	alid ch	oice									
81	d	66A	Existing wetland size (acres) [from #10]	100	acres												
82	Additional	66B	Total wetland restoration size (acres)		acres	0.1											
82 83 84 85 86 87	o		(Calculated) Potential New Wetland Area [B-A]	-100	acres	% effe	ctively	drained	d: #	###							
84	Ξ	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value									
85	þ	68	Likelihood of restoration success		ab c	Enter v											
86	∢		Hydrologic alteration type		Outlet, Tile	, Ditch,	GW pu	ump, W	/trsł	nd div	/., F	illing	g				
		70	Potential wetland type (Circ. 39)		1, 2, 3, 4,	5, 6, 7, 8	3										
88		71	Wetland sensitivity to stormwater		Eabc												
89		72	Additional stormwater treatment needs	-	abc												
90 91 92																	
92																	
93																	
94						ury .											
				W	Final Rating	Rating Category											
95			Function Name	Raw score	Final Ratin	Rat Cat		Formu	ıla s	hown	to t	the t	right.				
96			Vegetative Diversity/Integrity		0.75	High		1 01 1110		###			-Bure				
97						8				###							
98	S		Hydrology - Characteristic		1.00	High			i	###							
99	rie					C			#	###							
100	Summaries		Flood Attenuation		0.60	Med			#	###							
101	Ē																
102	ğ		Water QualityDownstream		0.72	High											
103	5																
104 105	ij.		Water QualityWetland		0.89	High											
105	at																
106	Functional Rating		Shoreline Protection		N/A	N/A											
107	na			0.00	0.00	*** 1											
108	ii.		Characteristic Wildlife Habitat Structure	0.89	0.89	High		#REF									
109	D				NT/A	NT/A	-	#REF									
110 111	Ë		Maintenance of Characteristic Fish Habitat	######	N/A	N/A		#REF #REF									
112			Maintenance of Characteristic Amphibian Habitat		0.85	High	-		1								
			Maintenance of Characteristic Amphibian Habitat		0.85	Ingn		#REF									
113 114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med	-	#REF									
115			Aesthetics/Recreation/Education/Cultural	0.55	0.55	Ivieu	-	#REF									
116			Commercial use		N/A	N/A			0								
116 117 118 119 120 121 122 123 124 125 126 127 128 129 130					1011	1.011			Ũ								
118			Special Features listing:			#REF!	####										
119																	
120			Groundwater Interaction		discharge			#REF	!								
121			Groundwater Functional Index		#REF!	#REF!											
122																	
123			Restoration Potential (draft formula)		#VALUE!	#####											
124			Stormwater Sensitivity (not active)														
125																	
126																	
127																	
128																	
129																	
130																	
131 132 133																	
132																	
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130																	
138																	
134 135 136 137 138 139																	
140																	
141																	
L]																	

A B C D E F G H I J K L M 2 MRRAM 3.2 Digital Worksheet, Side 2 WIL24 4 Question Description User with an analysis of the second secon		•				2_Score_S	-														
Image: state of the state		A						(J	Н	_	I	J		ĸ	L	N	/I	N	_	Р
3 Clustion Description User Rating entry 1 Veg. Table 2, Option 4 0.50 2 Veg. Table 2, Option 4 0.50 3 Water capedit for Species 7 0.50 4 Listed, race, special plant species 7 0.50 7 1 New community on the field at 25. 8 PPE-European-etterment conditions 71 N 9 1 Solar Vegetation (Note 1) 9 1 Solar Vegetation (Note 1) 10 1 Solar Vegetation (Note 1) 11 Solar Vegetation (Note 2) N 12 Outei characteristics of Pholorige regime A 1 13 1 Outei characteristics of Pholory (Note 1) 1 14 Dominant option (Note 2) N 1 15 Outei characteristics of Pholory (Note 1) 1 0.1 16 Solar Vegetation (Note 2) 0 1 0.1 16 Solar Vegetation (Note 2) 0 1 1 17 Berger (Note 2) 1 0 1 18 Obtain anticle (Note 2) 0 1 1 19 Duratation (Note 2) 0 1 1 10 Solar Vegetation (Note 2) <td></td> <td></td> <td></td> <td>MINRAM 3.2 Digital Works</td> <td>neet</td> <td>, Side</td> <td>2</td> <td></td> <td></td> <td></td> <td>V</td> <td>NTL</td> <td>.24</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>				MINRAM 3.2 Digital Works	neet	, Side	2				V	NTL	.24								
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5 1 Vege Table 2. Option 4 0.5 Performance Total A the Ingred Area in Signature 1 Performance 1				Question Description		Rating													Hiahe	est-ra	ated:
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73		58	GW - Wetland soils	D	R or D	1										
74		59	GW - Subwatershed land use	D	R or D	1										
73 74 75 76 77		60	GW - Wetland size and soil group	D	R or D	1										
76		61	GW - Wetland hydroperiod	R	R or D	0.1										
78	questions	62 63	GW - Inlet/Outlet configuration GW - Surrounding upland topographic relief	D D	R or D R or D	1										
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80	les		Landowners affected by restoration		Eabc	Enter v		oice								
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82 83 84			Total wetland restoration size (acres)	-	acres	0.1										
83	Additional	66C	(Calculated) Potential New Wetland Area [B-A]	-5	acres	% effe	ctively	drained:	####							
84	liti	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value:								
85	pb	68	Likelihood of restoration success		abc	Enter v										
86	4		Hydrologic alteration type		Outlet, Tile			ump, Wti	rshd div	/., Fil	ling					
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104 105	ati															
106	2		Shoreline Protection		N/A	N/A										
107 108	na		~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~													
108	tio		Characteristic Wildlife Habitat Structure	0.85	0.85	High		#REF!								
109 110	nci		Maintenance of Characteristic Fish Habitat	#######	N/A	N/A		#REF! #REF!								
111	Ŀ		Maintenance of Characteristic Fish Habitat		14/74	11/11		#REF!								
112			Maintenance of Characteristic Amphibian Habitat		0.85	High										
113								#REF!								
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!								
115			~					#REF!								
116			Commercial use		N/A	N/A		0								
117			Special Features listing:			#REF!	#####									
119			Special realules listing.			#NLL	#####									
120			Groundwater Interaction		discharge			#REF!								
121			Groundwater Functional Index			#REF!										
122									-							
123			Restoration Potential (draft formula)		#VALUE!	#####										
124			Stormwater Sensitivity (not active)													
120																
120																
128																
129																
130																
131																
132																
133																
134																
136																
115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138																
138																
139																
140																
141																

			Wetland ID HW25 UTM Coordinates 543868 5267384		Wetland ID HW26 M Coordinates 4486 5267542		Wetland name ID HW27 UTM Coordinates 546997 5268518		Wetland ID HW28 UTM Coordinates 544542 5265936
	Date		25-Jun-09		25-Jun-09		26-Jun-09		26-Jun-09
#1	Special Features (from list, p.2enter letter/s) Community Number (circle each community which represents at least 10% of the wetland)	3A, 3 10A, 15B,	PHOTOS 132-133 B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	3A, 3B, 4	A, 13B, 12B, 14A, 15A, A, 16B	3A, 3 10A, 15B,	141-142 B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	3A, 3 10A, 15B,	143-144 3B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B
#2 & #3	,		ndividually below ~		~ Describe ea	1 1	ommunity type individually be	1	-
	Community Type (wet meadow, marsh)	3B	Hardwood Swamp	13B	Shallow Marsh	16A	Shallow Open Water	13A	Sedge Meadow
	Community Proportion (% of total)		71%		14% N LEAF CATTAIL/6	000	25%		80% UB WILLOW/3
#	Dominant Vegetation / Cover Class		CK ASH/4 NTAIN MAPLE/4	SEDGE/			NTAIL/2 .OW LILY/2		ADA BLUEJOINT/4
unity		BLAC	CK SPRUCE/2	SPECKL	ED ALDER/2	WILD	DRICE/4	LEA	THERLEAF/3
mmo		FERI	CKLED ALDER/4 N/3	RUSH/1 WOOLL	Y SEDGE/2	PON	DWEED/1		.DOWSWEET/2 GE/3
Plant Community #1			SETAIL/2 BS/4	LILY/2 TAMARA					
₫			55/4						
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	Н	1	н	1	н	1	н	1
	Community Type (wet meadow, marsh)	-	-			-	-		
·	Community Proportion (% of total)								L
ĺ	Dominant Vegetation / Cover Class								
Plant Community #2									
muni									
Com									
Plant									
_									
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)		0		0		0		0
	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total)								
£	Dominant Vegetation / Cover Class								
nity ∌									
Dmmu									
Plant Community #3									
Pla									
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)		0		0		0		0
	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total)								L
#4*	Dominant Vegetation / Cover Class								
unity									
mmo									
Plant Community #4*									
₽.	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	-	0		0		0		0
	Circular 39 Types (primary <tab> others)</tab>		U		U		U		0
	Cowardin Types								
	Photo ID								
Highes	st rated community veg. div./integ:	1.0	High	1	High	1	High	1	High
Averag	e vegetative diversity/integrity:	1.00	High	1.00	High	1.00	High	1.00	High
	ted Average veg. diversity/integrity:	0.71	High	0.14	Low	0.25	Medium	0.80	, in the second s
	Listed, rare, special plant species? Rare community or habitat?		N N		N N		N N		N N
	Pre-European-settlement conditions?		N		N		N		N
10A] Shalle	plain Forest [1A, 2A, 3A] * Hardwood Swamp * Calcareous Fen [7B, 11B, 14A] * Shrub Sv w Marsh [13B] * Deep Marsh [12B] * Wet onally Flooded Basin [16B]	vamp	[6B] * Alder Thicket [8A] *	Shrub-ca	rr [8B] * Sedge Meado	w [10]	B. 11A. 12A. 13A1 *		ver Class Class Range 1 0 - 3% 2 3 - 10% 3 10 - 25% 4 25 - 50% 5 50 - 75%
fther	e are more than four plant community types, u	se the	e next column over to enter th	ne rest an	d do not rely on the auto	matic	average calculations.		6 75 - 100%

				-	2_3core_3	-									-				_
	A	В		D	E	F	G	ز	Н			J	K	L L		Μ	N		Р
1			MnRAM 3.2 Digital Works	neet	, Side	2				W	TL2	5							
2			Overtian Description	Llass	Deting														
3			Question Description	User entry	Rating	_	Thi	is con	nes in fr	om Sid	de 1	autom	atically	using t	the	٦	Hia	hest	-rated:
5		1	Veg. Table 2, Option 4	onay	0.71				l averag hity ratir								#RE		
6			TOTAL VEG Rating	0.71	High				nown to						u				
7		4	Listed, rare, special plant species?	N	next														
8		5	Rare community or habitat?	N	next														
9		6	Pre-European-settlement conditions?	N	next	i d	1												
10 11		8	hydrogeo & topo Water depth (inches)	FT 6	Depress'l/F	low-throu	ıgn												
12		0	Water depth (% inundation)	0										7					
13		9	Local watershed/immedita drainage (acres)	-		Enter boxes													
14		10	Existing wetland size	2		Bende													
15 16		11 12	SOILS: Up/Wetland (survey classification + site) Outlet characteristics for flood retention	N/A	N/A														
17	tio	13	Outlet characteristics for hydrologic regime	A	1														
18	ec.	14	Dominant upland land use (within 500 ft)		1	0.1													
19	t, s	15	Soil condition (wetland)	A	1	1													
20 21	ee	16 17	Vegetation (% cover) Emerg. veg. flood resistance		H 1	1													
22	Digital worksheet, section I	18	Sediment delivery	А	1														
22 23 24	or	19	Upland soils (based on soil group)		0.5											S	cro		
24	3	20 21	Stormwater runoff pretreatment & detention Subwatershed wetland density	C C	0.1 0.1	1													
25 26 27	jita	21	Channels/sheet flow	A	1										(\OL	wn	το	
27	Diç	23	Adjacent naturalized buffer average width (feet)		Н	WQ		1	ł		1					an	SW	er	
28		24	Adjacent Area Management: % Full		1	1		1								m	nor	ρ	
29 30			adjacent area mgmt: % Manicured adjacent area mgmt: % Bare		0										a				~
31		25	Adjacent Area Diversity & Structure: % Native	100%	1	1		1									sti		
32			adjacent area diversity: % Mixed		0										á	anc	d s	ee)
33		26	adjacent area diversity: % Sparse/Inv./Exotic	50/	0		0	07							1	for	mι	ıla	
34 35		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate		0.05	1	0.	.05									ulat		
36			adjacent area slope: % Steep		0										La	100	Παι	.101	12
38						3													
39		27	Downstream sensitivity/WQ protection	В	0.5														
40		28	Nutrient loading	A	1											イ	5	7	
41 42		29 30	Shoreline wetland? Rooted shoreline vegetation (% cover)		N ter a percent	age											-		
43		31	Wetland in-water width (in feet, average)		ter a percent														
44		32	Emergent vegetation erosion resistance		ter valid cho														
45 46		33 34	Shoreline erosion potential Bank protection/upslope veg.		ter valid cho ter valid cho														
40		35	Rare Wildlife	N	N	lice													
48	=	36	Scarce/Rare/S1/S2 local community	Ν	Ν														
49	ion	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A						~							
50 51	Digital worksheet, section II	38 39	Community interspersion (see diagram 2) Wetland detritus	2 A	M 1	0.5						C							
52	, S	40	Wetland interspersion on landscape		1	1													
53	eet	41	Wildlife barriers	А	1														
54	sh	42	Amphibian breeding potential-hydroperiod	A	1														
55 56	ork	43 44	Amphibian breeding potentialfish presence Amphibian & reptile overwintering habitat	A C	1 0.1														
57	Š	45	Wildlife species (list)		0.1														
58	ita	46	Fish habitat quality	N/A	N/A														
59 60	Dig	47 48	Fish species (list) Unique/rare educ./cultural/rec.opportunity	N	N														
61		40	Wetland visibility	C	0.1														
62		50	Proximity to population	N	0.1														
63		51	Public ownership	C	0.1														
64 65		52 53	Public access Human influence on wetland	C A	0.1														
66		54	Human influence on viewshed	А	1														
67		55	Spatial buffer	С	0.1														
68 69		56	Recreational activity potential		0.1 N/A														
69 70		57	Commercial crophydrologic impact	N/A	N/A														

			Mn	RAM_3.	2_Score_S	heet.xls											
	Α	В	С	D	E	F	G	Н	1	J		К	L		М	N	Р
72			•					•						-			•
73 74 75 76 77		58	GW - Wetland soils	D	R or D	1											
74		59	GW - Subwatershed land use	D	R or D	1											
75		60	GW - Wetland size and soil group	D	R or D	1											
76		61	GW - Wetland hydroperiod	R	R or D	0.1											
78	questions	62 63	GW - Inlet/Outlet configuration GW - Surrounding upland topographic relief	D D	R or D R or D	1											
70	tio	64	Restoration potential w/o flooding	D	Y or N	5.1	=										
79 80 81	es		Landowners affected by restoration		Eabc	Enter v		nice									
81	nb	66A	Existing wetland size (acres) [from #10]	2	acres	Lintor V		0100									
82			Total wetland restoration size (acres)		acres	0.1											
82 83 84	Additional		(Calculated) Potential New Wetland Area [B-A]	-2	acres	% effe	ctively	drained:	####								
84	liti		Average width of naturalized upland buffer (poten	0	feet	0.1		value:	####								
85	p		Likelihood of restoration success		ab c	Enter v											
86	٩		Hydrologic alteration type		Outlet, Tile			ump, Wti	rshd di	/., F	illing	9					
87 88			Potential wetland type (Circ. 39)		1, 2, 3, 4,	5,6,7,8 I	3										
88 89		71 72	Wetland sensitivity to stormwater Additional stormwater treatment needs		Eabc abc												
		12	Additional stormwater treatment needs		abc	1											
90																	
92																	
93 94						Ŋ											
94				0	Final Rating	Rating Category											
95			Function Name	Raw score	⁷ ina Rati	Zati Cate		Formula	chow	to	tha r	iaht					
96			Vegetative Diversity/Integrity	S H	0.71	High		rormun	####	1 10	une i	igni.					
97			, egetative Drivelshy, integrity		0171	<u>g</u>			####								
98	S		Hydrology - Characteristic		1.00	High			####								
99	Irie						_		####								
100	Summaries		Flood Attenuation		0.60	Med			####								
101	Ξ				. .		-										
102 103	Su		Water QualityDownstream		0.71	High											
103	g		Water QualityWetland		0.87	High											
104 105	atir		water Quantywettand		0.87	Ingn											
106	Ř		Shoreline Protection		N/A	N/A											
107 108	al																
108	<u>lo</u>		Characteristic Wildlife Habitat Structure	0.88	0.88	High		#REF!									
109	Functional Rating							#REF!									
110	E		Maintenance of Characteristic Fish Habitat	######	0.70	High		#REF!									
111 112	ш.		Maintenance of Characteristic Amphibian Habitat		0.85	High		#REF!									
113			Maintenance of Characteristic Amphibian Habitat		0.85	riigii		#REF!									
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!									
115				0100	0.000			#REF!									
116			Commercial use		N/A	N/A		0									
117																	
118			Special Features listing:			#REF!	####										
119			Groundwater Interaction		die else soore			#REF!									
120			Groundwater Interaction Groundwater Functional Index		discharge #REF!	#REF!		#REF!									
121					#KLI	#IXE1 :											
123			Restoration Potential (draft formula)		#VALUE!	#####											
124			Stormwater Sensitivity (not active)			•											
125																	
126																	
127																	
128																	
129																	
131																	
116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134																	
133																	
134																	
135																	
136																	
136 137 138																	
138																	
139 140																	
141																	
L																	

— 1	٨	В	C	D	E	F	GH			M N	Р
	A	• • •						I J	K L	M N	P
1			MnRAM 3.2 Digital Works	neet,	Side	2	W	TL26			
2			Question Description	User	Rating						
4			•	entry	Rating		This comes in from S	ide 1 automati	cally using the	Highe	st-rated:
5		1	Veg. Table 2, Option 4		0.14		weighted average. T Community rating, ple	ease manually	overwrite that	#REF	-!
6		L .E	TOTAL VEG Rating	0.14	L		value (shown to the ri	ight) into the fie	eld at E5.		
7 8		4 5	Listed, rare, special plant species? Rare community or habitat?	N N	next next						
9		6	Pre-European-settlement conditions?	N	next						
10		7	hydrogeo & topo		Depression	al/Isolated	1				
11		8	Water depth (inches)	36			-				
12			Water depth (% inundation)			Enter	data starting here	e. Yellow			
13		9 10	Local watershed/immedita drainage (acres) Existing wetland size	18			are used in calc				
14 15	_	11	SOILS: Up/Wetland (survey classification + site)	10							
16	Ľ	12	Outlet characteristics for flood retention	В	0.5						
16 17	tic	13	Outlet characteristics for hydrologic regime	А	1						
18	sec	14 15	Dominant upland land use (within 500 ft)	A	1	0.1					
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 57	Digital worksheet, section I	16	Soil condition (wetland) Vegetation (% cover)	A 95%	1 H	1					
21	he	17	Emerg. veg. flood resistance	A	1	-					
22	sy.	18	Sediment delivery	A	1						
23	Vor	19 20	Upland soils (based on soil group) Stormwater runoff pretreatment & detention	B C	0.5 0.1	1				Scrol	
24	al	20	Subwater shed wetland density	C	0.1	1				down t	
26	git:	22	Channels/sheet flow	А	1						
27	Ō	23	Adjacent naturalized buffer average width (feet)	500	Н	WQ	1 H	1		answe	er
28		24	Adjacent Area Management: % Full adjacent area mgmt: % Manicured	100%	1 0	1	1			more	
30			adjacent area mgmt: % Bare		0				0	uestio	ns
31		25	Adjacent Area Diversity & Structure: % Native	100%	1	1	1				
32			adjacent area diversity: % Mixed		0					and se	
33		26	adjacent area diversity: % Sparse/Inv./Exotic Adjacent Area Slope: % Gentle	20%	0	1	0.2			formul	а
35		20	adjacent area slope: % Moderate	2070	0	1			ca	Iculati	ons
36			adjacent area slope: % Steep		0				00	louidti	0110
38											
39		27	Downstream sensitivity/WQ protection	A	1						
40 41		28 29	Nutrient loading Shoreline wetland?	A N	1 N					$\overline{}$	
42		30	Rooted shoreline vegetation (%cover)		ter a percen	tage					
43		31	Wetland in-water width (in feet, average)	En	ter a percen	tage					
44 45		32 33	Emergent vegetation erosion resistance Shoreline erosion potential		ter valid che ter valid che						
45		34	Bank protection/upslope veg.		ter valid cho						
47		35	Rare Wildlife	Ν	N						
48	=	36	Scarce/Rare/S1/S2 local community	N	Ν						
49 50	Digital worksheet, section II	37 38	Vegetation interspersion cover (see diagram 1) Community interspersion (see diagram 2)	1 2	L M	0.1 0.5		0			
50 51	ec	39	Wetland detritus	A	1	0.5		0			
52	t, s	40	Wetland interspersion on landscape	А	1	1					
53 54	ee	41	Wildlife barriers	A	1						
54 55	ksh	42 43	Amphibian breeding potential-hydroperiod Amphibian breeding potentialfish presence	A A	1 1						
56	or	44	Amphibian & reptile overwintering habitat	B	0.5						
56 57	3	45	Wildlife species (list)								
58 59	gita	46 47	Fish habitat quality Fish species (list)	С	0.1						
59 60	Diç	47	Unique/rare educ./cultural/rec.opportunity	N	Ν						
61		49	Wetland visibility	С	0.1						
62		50	Proximity to population	N	0.1						
63 64		51 52	Public ownership Public access	C C	0.1 0.1						
65		53	Human influence on wetland	A	1						
66		54	Human influence on viewshed	А	1						
67		55	Spatial buffer	C	0.1						
68 69		56 57	Recreational activity potential Commercial crophydrologic impact	C N/A	0.1 N/A						
70		- /			*						

			Mn	RAM_3.	2_Score_S	heet.xls												
	А	В	С	D	E	F	G	Н		Ι	J		K	L		М	N	Р
72			•					•				-			-			J
73 74 75 76 77 78		58	GW - Wetland soils	D	R or D	1												
74		59		D	R or D	1												
75		60	GW - Wetland size and soil group	D	R or D	1												
76		61	GW - Wetland hydroperiod	R	R or D	0.1												
78	questions	62 63	GW - Inlet/Outlet configuration GW - Surrounding upland topographic relief	D D	R or D R or D	1												
79	tio	64	Restoration potential w/o flooding	D	Y or N	5.1	:											
80	es	65	Landowners affected by restoration		Eabc	Enter v	alid ch	oice										
80 81	пb	66A	Existing wetland size (acres) [from #10]	18	acres	Linton V		0100										
82 83 84			Total wetland restoration size (acres)		acres	0.1												
83	b		(Calculated) Potential New Wetland Area [B-A]	-18	acres	% effe	ctively	drained	l: #1	4##								
84	Iİİ	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value	e: #1	###								
85	Additional	68	Likelihood of restoration success		abc	Enter v												
86	4				Outlet, Tile			ump, W	trsh	d div	., Fi	lling	I					
87 88			Potential wetland type (Circ. 39)		1, 2, 3, 4, 5 Eabc	5,6,7,8 I	3											
89		71 72	Wetland sensitivity to stormwater Additional stormwater treatment needs		abc													
		12	Additional stormwater treatment needs		a b c	L												
90																		
92																		
93 94						Ŋ												
94				e	Final Rating	Rating Category												
95			Function Name	Raw score	Final Ratin	Cati		Formul	lo ch	own	to t	ha r	iaht					
96			Vegetative Diversity/Integrity	H 82	0.14	L		rormu		4##	10 1	iic i	igni.					
97			egetative Diversity, integrity		0111	-				4##								
98	S		Hydrology - Characteristic		1.00	High			#1	###								
99	Irie									###								
100	Summaries		Flood Attenuation		0.58	Med			#1	4##								
101	Ξ				0.54													
102 103	Su		Water QualityDownstream		0.76	High												
103	g		Water QualityWetland		0.72	High												
104 105	atin		Water Quality Wetland		0.72	mgn												
106	Ř		Shoreline Protection		N/A	N/A												
107 108	Functional Rating																	
108	jo		Characteristic Wildlife Habitat Structure	0.69	0.69	High		#REF!										
109	ct							#REF!										
110 111	Ë		Maintenance of Characteristic Fish Habitat	0.70	0.70	High		#REF! #REF!										
112			Maintenance of Characteristic Amphibian Habitat		0.92	High		#REF!	:									
113			maintenance of characteristic r implicital flactuat		0.72	mgn		#REF!	1									
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!										
115								#REF!										
116			Commercial use		N/A	N/A		(0									
117																		
118			Special Features listing:			#REF!	####											
119			Groundwater Interaction		discharge			#REF!										
120			Groundwater Functional Index			#REF!		#I\L1:	:									
122					"TELL													
123			Restoration Potential (draft formula)		#VALUE!	#####												
124			Stormwater Sensitivity (not active)															
125																		
126																		
127																		
120																		
130																		
131																		
132																		
133																		
134																		
135																		
136																		
116 117 118 119 120 121 122 123 124 125 126 127 128 129 1301 132 133 134 135 136 137 138																		
130																		
140																		
141																		
											-				_			-

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	A	+ +	_				G	,	Н		•			K	L	ľ	VI	N		Р
1			MnRAM 3.2 Digital Works	neet	, Siae	Z					NTL	.27								
2			Question Description	User	Rating															
4			Question Description	entry	Kaung	_									ising th	е		High	est-	rated:
5		1	Veg. Table 2, Option 4	-	0.25										ed veg. rite that	t I		#RE	F!	
6			TOTAL VEG Rating		L				nown t											
7		4	Listed, rare, special plant species?	N	next															
8 9		5	Rare community or habitat? Pre-European-settlement conditions?	N N	next next															
10		7	hydrogeo & topo		Floodplain															
11		8	Water depth (inches)		1 loodplain															
12			Water depth (% inundation)			Enter	date		artin	n he	ro	Valla								
13		9	Local watershed/immedita drainage (acres)	~		boxes														
14 15		10 11	Existing wetland size SOILS: Up/Wetland (survey classification + site)	5]															
16	L	12	Outlet characteristics for flood retention	N/A	N/A															
17	tio	13	Outlet characteristics for hydrologic regime	Α	1															
18	sec	14		A	1	0.1														
19 20	ŗ,	15 16	Soil condition (wetland) Vegetation (% cover)	A 35%	1 M	0.5														
21	Jee	17	Emerg. veg. flood resistance	C	0.1	0.5														
22 23	Digital worksheet, section I	18	Sediment delivery	В	0.5															
23	õ	19	Upland soils (based on soil group)	B	0.5												Sc	cro	11	
24	~	20 21	Stormwater runoff pretreatment & detention Subwatershed wetland density	C C	0.1 0.1	1														
25 26 27	gita	22	Channels/sheet flow	A	1											a	ÖV	vn	ιΟ	
27	Ξ	23	Adjacent naturalized buffer average width (feet)	500	Н	WQ		11	H		1					а	าย	SW	er	
28 29		24	Adjacent Area Management: % Full	100%	1	1		1									m	ore	ć	
29 30			adjacent area mgmt: % Manicured adjacent area mgmt: % Bare		0 0															-
31		25	Adjacent Area Diversity & Structure: % Native	100%	1	1		1										stic		
32			adjacent area diversity: % Mixed		0											а	nc	s	ee	
33		26	adjacent area diversity: % Sparse/Inv./Exotic	50/	0	1	•	05								f	orr	ทบ	la	
34 35		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate		0.05	1	0.	.05							-	al				
36			adjacent area slope: % Steep		0										C	an	JU	ιαι		13
38						-														
39		27	Downstream sensitivity/WQ protection	А	1															
40		28	Nutrient loading	A	1 V												く		-	
41 42		29 30	Shoreline wetland? Rooted shoreline vegetation (% cover)	Y 90%	Y 1													•		
43		31	Wetland in-water width (in feet, average)	100	1															
44		32	Emergent vegetation erosion resistance	А	1															
45 46		33	Shoreline erosion potential	C	0.1	1														
40		34 35	Bank protection/upslope veg. Rare Wildlife	C N	0.1 N															
48	=	36	Scarce/Rare/S1/S2 local community	N	N															
49	ion	37	Vegetation interspersion cover (see diagram 1)	2	L	0.1														
50 51	Digital worksheet, section II	38 39	Community interspersion (see diagram 2) Wetland detritus	1 N/A	L N/A	0.1							0							
52	, St	40	Wetland interspersion on landscape		1 IN/A	1														
53	eet	41	Wildlife barriers	Α	1	-														
54	she	42	Amphibian breeding potential-hydroperiod	A	1															
55 56	ork	43 44	Amphibian breeding potentialfish presence Amphibian & reptile overwintering habitat	C A	0.1															
57	Š	44	Wildlife species (list)	А																
58	ital	46	Fish habitat quality	А	1															
59	Dig	47	Fish species (list)	NT	27															
60 61	-	48 49	Unique/rare educ./cultural/rec.opportunity Wetland visibility	N C	N 0.1															
62		50	Proximity to population	N	0.1															
63		51	Public ownership	С	0.1															
64 65		52 53	Public access Human influence on wetland	C A	0.1															
66		55	Human influence on viewshed	A	1															
67		55	Spatial buffer	С	0.1															
68		56	Recreational activity potential		0.1															
69 70		57	Commercial crophydrologic impact	N/A	N/A															
10																				

			Mn	RAM_3.	2_Score_S	heet.xls												
	А	В	C	D	E	F	G	Н			J		K	L	Τ	М	N	Р
72			•					•	-			-			-			J
73 74 75 76 77 78		58	GW - Wetland soils	D	R or D	1												
74		59		D	R or D	1												
75		60	GW - Wetland size and soil group	D	R or D	1												
76		61	GW - Wetland hydroperiod	R	R or D	0.1												
78	ns	62 63	GW - Inlet/Outlet configuration GW - Surrounding upland topographic relief	D D	R or D R or D	1												
79	tio	64	Restoration potential w/o flooding	D	Y or N	5.1	=											
80	es	65	Landowners affected by restoration		Eabc	Enter v		oice										
80 81	questions	66A	Existing wetland size (acres) [from #10]	5	acres	Lintor V		0100										
82			Total wetland restoration size (acres)		acres	0.1												
82 83 84	Additional		(Calculated) Potential New Wetland Area [B-A]	-5	acres	% effe	ctively	drained	: ##	##								
84	Iİİ	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value	: ##	##								
85	þ	68	Likelihood of restoration success		abc	Enter v												
86	ব		Hydrologic alteration type		Outlet, Tile			ump, Wi	trshc	l div.	, Fill	ling						
87			Potential wetland type (Circ. 39)		1, 2, 3, 4, 5	5,6,7,8 I	3											
88 89		71 72	Wetland sensitivity to stormwater Additional stormwater treatment needs		Eabc abc													
		12	Additional stormwater treatment needs		abt	1												
90																		
92																		
93 94						Ŷ												
94				<u> </u>	l ng	Rating Category												
95			Function Name	Raw score	Final Rating	tati Jaté		Formul	la a h a		to th	. :	aht					
96			Vegetative Diversity/Integrity	N III	0.25	L		roimu	a sho ##		io in	le II	gnı.					
97			vegetative Diversity/integrity		0.25	L			##									
98	S		Hydrology - Characteristic		1.00	High			##	##								
99	rie					Ũ			##	##								
100	Summaries		Flood Attenuation		0.42	Med			##	##								
101	Ē																	
102	Su		Water QualityDownstream		0.60	Med												
103	g		Water QualityWetland		0.67	High												
104 105	atir		water Quantywettanu		0.07	Ingn												
106	R		Shoreline Protection		0.64	Med												
107 108	a																	
108	lo		Characteristic Wildlife Habitat Structure	0.63	0.65	Med		#REF!										
109	Functional Rating							#REF!										
110	ņ		Maintenance of Characteristic Fish Habitat	0.94	0.94	High		#REF!										
111 112	ш		Maintonance of Characteristic Amphibian Habitat		0.10	Low		#REF!										
			Maintenance of Characteristic Amphibian Habitat		0.10	LOW		#REF!										
113 114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!										
115				0.55	0.55	wica		#REF!										
116			Commercial use		N/A	N/A		(
117																		
118			Special Features listing:			#REF!	####											
119																		
120			Groundwater Interaction Groundwater Functional Index		discharge #REF!	#REF!		#REF!										
121			Groundwater Functional Index		#KEF!	#REF!												
122			Restoration Potential (draft formula)		#VALUE!	#####												
124			Stormwater Sensitivity (not active)															
125																		
126																		
127																		
128																		
129																		
130																		
132																		
133																		
134																		
135																		
116 117 118 119 120 121 122 123 124 125 126 127 128 129 131 132 133 134 135 136 137 138																		
137																		
138 139																		
139																		
140																		
لنغنا																		

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	A	В	C MpDAM 2 2 Digital Warks	D	E	· · ·	G H		J	K		Μ	N	Р
1			MnRAM 3.2 Digital Works	neet,	, Siae	2		WTL2	8					
2			Question Description	User	Pating									
4			Question Description	entry	Rating		This comes in from						Highes	st-rated:
5		1	Veg. Table 2, Option 4		0.80	-	weighted average Community rating						#REF!	
6			TOTAL VEG Rating	0.8	High		value (shown to the							
7		4	Listed, rare, special plant species?	N	next									
8 9		5	Rare community or habitat? Pre-European-settlement conditions?	N N	next next									
10		7	hydrogeo & topo		Floodplain									
11		8	Water depth (inches)		riooupiam									
12			Water depth (% inundation)			Enter	data atantina k	V.			1			
13		9	Local watershed/immedita drainage (acres)				data starting h are used in ca							
14 15		10	Existing wetland size	4										
16	L	11 12	SOILS: Up/Wetland (survey classification + site) Outlet characteristics for flood retention	N/A	N/A									
17	tio	13	Outlet characteristics for hydrologic regime	A	1									
18	ec ec	14	Dominant upland land use (within 500 ft)	А	1	0.1								
19	ţ,	15	Soil condition (wetland) Vegetation (% cover)	A	1	1								
20 21	lee	16 17	Emerg. veg. flood resistance	100% A	H 1	1								
22	Digital worksheet, section I	18	Sediment delivery	A	1									
22 23 24	orl	19	Upland soils (based on soil group)	В	0.5							S	croll	
24	2	20 21	Stormwater runoff pretreatment & detention Subwatershed wetland density	C C	0.1	1								
25 26 27	jita	21	Channels/sheet flow	A	0.1							dov	vn to	C
27	Dig	23	Adjacent naturalized buffer average width (feet)	500	Н	WQ	1 H	1				ans	swe	r
28	_	24	Adjacent Area Management: % Full	100%	1	1	1					m	ore	
29 30			adjacent area mgmt: % Manicured		0									
31		25	adjacent area mgmt: % Bare Adjacent Area Diversity & Structure: % Native	100%	0	1	1				(-	stior	
32			adjacent area diversity: % Mixed	10070	0							and	se	Э
33			adjacent area diversity: % Sparse/Inv./Exotic		0							for	mula	A
34 35		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate	5%	0.05	1	0.05				~			
36			adjacent area slope: % Steep		0						Ca	alcu	latic	ns i
38			· · · ·			-4						Г		
39		27	Downstream sensitivity/WQ protection	А	1									
40		28	Nutrient loading	А	1							ノ		
41 42		29 30	Shoreline wetland?	Y	Y								~	
42		31	Rooted shoreline vegetation (% cover) Wetland in-water width (in feet, average)	100% 100	1									
44		32	Emergent vegetation erosion resistance	Α	1									
45		33	Shoreline erosion potential	С	0.1	1								
46 47		34 35	Bank protection/upslope veg. Rare Wildlife	C N	0.1 N									
48	=	36	Scarce/Rare/S1/S2 local community	N	N									
49	uo	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A								
50	cti	38	Community interspersion (see diagram 2)	2	M	0.5			0					
51 52	Digital worksheet, section II	39 40	Wetland detritus Wetland interspersion on landscape	A A	1	1								
53	set,	40	Wettand Interspersion on fandscape Wildlife barriers	A	1	1								
54	she	42	Amphibian breeding potential-hydroperiod	Α	1									
55	rks	43	Amphibian breeding potentialfish presence	B	0.5									
56 57	Ň	44 45	Amphibian & reptile overwintering habitat Wildlife species (list)	С	0.1									
58	ta	46	Fish habitat quality	N/A	N/A									
59	igi	47	Fish species (list)											
60		48	Unique/rare educ./cultural/rec.opportunity	N	N 0.1									
61 62		49 50	Wetland visibility Proximity to population	C N	0.1 0.1									
63		51	Public ownership	С	0.1									
64		52	Public access	С	0.1									
65 66		53 54	Human influence on wetland Human influence on viewshed	A	1									
67		54	Spatial buffer	A C	0.1									
68		56	Recreational activity potential	С	0.1									
69		57	Commercial crophydrologic impact	N/A	N/A									
70														

			Mn	RAM_3.	2_Score_S	heet.xls										
	А	В	C	D	E	F	G	Н	1		J	K	L	М	N	Р
72			•		•											
73 74 75 76 77		58	GW - Wetland soils	D	R or D	1										
74		59	GW - Subwatershed land use	D	R or D	1										
75		60	GW - Wetland size and soil group	D	R or D	1										
70		61 62	GW - Wetland hydroperiod GW - Inlet/Outlet configuration	R D	R or D R or D	0.1										
78	questions	62 63	GW - Surrounding upland topographic relief	 D	R or D	1										
78 79 80 81	tic	64	Restoration potential w/o flooding	0	Y or N	5.1	:									
80	les	65	Landowners affected by restoration		Eabc	Enter v	alid cho	oice								
81	dr	66A	Existing wetland size (acres) [from #10]	4	acres											
82 83 84	al	66E	Total wetland restoration size (acres)		acres	0.1										
83	D	66C	(Calculated) Potential New Wetland Area [B-A]	-4	acres	% effe	ctively	drained:	####							
84	diti	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value:	####							
85	Additional	68	Likelihood of restoration success		abc	Enter v										
86 87			Hydrologic alteration type Potential wetland type (Circ. 39)		Outlet, Tile			imp, vvti	rshd di	v., I	-illin	g				
88		70	Wetland sensitivity to stormwater		1, 2, 3, 4, Eabc	5, 6, 7, c)									
89		72	Additional stormwater treatment needs		abc											
90						1										
90 91 92]											
92																
94						Rating Category										
_				W	Final Rating	ting										
95			Function Name	Raw score	Fin Ra	Cai Cai		Formula	a show	n to	the	right.				
96			Vegetative Diversity/Integrity		0.80	High			####							
97									####							
98	Summaries		Hydrology - Characteristic		1.00	High			####							
99 100	ari		Flood Attenuation		0.60	Med			#### ####							
100	Ē		Flood Attenuation		0.00	Med			+++++++++++++++++++++++++++++++++++++++							
102	n		Water QualityDownstream		0.80	High										
103	S															
104 105	ing.		Water QualityWetland		0.90	High										
105	tat															
106	<u> </u>		Shoreline Protection		0.64	Med										
107 108	na		Characteristic Wildlife Habitat Structure	0.90	0.90	High		#REF!								
100	tic		Characteristic whulle Habitat Structure	0.30	0.90	Ingn		#REF!								
110	Functional Rating		Maintenance of Characteristic Fish Habitat	#######	0.89	High		#REF!								
111	ц					-		#REF!								
112			Maintenance of Characteristic Amphibian Habitat		0.43	Med										
113								#REF!								
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!								
115			Commercial use		N/A	N/A		#REF! 0								
117			Commercial use		IN/A	IN/A		0								
118			Special Features listing:			#REF!	####									
119																
120			Groundwater Interaction		discharge			#REF!								
121			Groundwater Functional Index		#REF!	#REF!										
122			Destantian Detential (draft formula)		#\/ALLIEI											
123			Restoration Potential (draft formula) Stormwater Sensitivity (not active)		#VALUE!	#####										
124			Stornwater Sensitivity (not active)													
126																
127																
128																
129																
130																
137																
132																
134																
135																
136																
137																
115 116 117 118 119 120 121 122 123 124 125 126 127 128 130 131 132 133 134 135 136 137 138 139																
140																
140																
لنغنا																

#1 (#2 & #3	Community Number (circle each community which epresents at least 10% of the wetland) ~ Describe each community	3A, 3	26-Jun-09 145-146						543071 5266095
#1 (n #2 & #3	Community Number (circle each community which epresents at least 10% of the wetland) ~ Describe each community	3A, 3			26-Jun-09		26-Jun-09 149-150		26-Jun-09
(B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	3A, 3B,	A, 16B	3A, 3 10A, 15B,	B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	3A, 3 10A, 15B,	151-152 3B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B
c		<u> </u>	· · ·	4.0		1	mmunity type individually be	1	
	Community Type (wet meadow, marsh)	8A	Alder Thicket	4A	Coniferous Bog	13B	Shallow Marsh	13A	Sedge Meadow
#	Community Proportion (% of total) Dominant Vegetation / Cover Class	SDEC	25% CKLED ALDER/5		80% G LARCH/2		40% ROW LEAF CATTAIL/6	CAN	33% ADA BLUEJOINT/6
Plant Community #1		PUSS SLEN BLAC CEDA MOSS	SY WILLOW/2 IDER-LEAVED WILLOW/2 IK SPRUCE/2 AR/2 S/3 ADA BLUEJOINT/2	SAPLIN LABRAI LEATHI	G SPRUCE/3 DOR TEA/3 RLEAF/5 UM MOSS/6	SPEC SEDC RED	CKLED ALDER/2	WOO SPEO RAS SLEI	DLLY SEDGE/2 CKLED ALDER/3 PBERRY/2 NDER-LEAVED WILLOW/2 SY WILLOW/1
F	Invasive/exotic Vegetation / Cover Class	SLDC							
-				Ц					
	Community Quality (E, H, M, L)	Н	1	Н	1	Н	1	н	1
	Community Type (wet meadow, marsh)	-	-			-	-		
C	Community Proportion (% of total)	05.							
Plant Community #2	Dominant Vegetation / Cover Class	SPAG	GNUM MOSS/3						
Jmur									
t Con									
Plant									
Ļ									
	Invasive/exotic Vegetation / Cover Class								
C	Community Quality (E, H, M, L)		0		0		0		0
C	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
C	Community Proportion (% of total)								
	Dominant Vegetation / Cover Class								
Plant Community #3									
	Invasive/exotic Vegetation / Cover Class								
<u>_</u>									
	Community Quality (E, H, M, L)		0		0		0		0
-	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total) Dominant Vegetation / Cover Class								
ty #4	Dominant vegetation / Cover Class								
iunm.									
Com									
Plant Community #4*									
	Invasive/exotic Vegetation / Cover Class								
C	Community Quality (E, H, M, L)	-	0		0		0		0
C	Circular 39 Types (primary <tab> others)</tab>				0		U	2	U
	Cowardin Types								
	Photo ID								
	t rated community veg. div./integ:	1.0	High	1	High	1	High	1	High
-	e vegetative diversity/integrity:	1.00	High	1.00	High	1.00	High	1.00	High
		0.25	Medium	0.80	High	0.40	Medium	0.33	Medium
#4 L	isted, rare, special plant species?								
	Rare community or habitat? Pre-European-settlement conditions?								
-	blain Forest [1A, 2A, 3A] * Hardwood Swamp	[301 *		Conifora		Bog	1B 5A 5B 6A 7A 0A		ver Class Class Range
10A] * Shallor Seaso	 and Foles [17, 24, 34] in addwood Swaring Calcareous Fen [78, 118, 144] * Shrub Sw w Marsh [13B] * Deep Marsh [12B] * Wet t nally Flooded Basin [16B] are more than four plant community types, us 	vamp [to We	6B] * Alder Thicket [8A] * I-Mesic Prairie [14B, 15A] *	Shrub-ca Fresh (V	arr [8B] * Sedge Meado /et) Meadow [15B] * Sha	ow [10] allow, (B, 11A, 12A, 13A] * Open Water [9B, 16A] *		Liss Range 1 0 - 3% 2 3 - 10% 3 10 - 25% 4 25 - 50% 5 50 - 75% 6 75 - 100%

	٨	В	C	D	2_Score_S	F	-	G H				К	1	М		N	Р
	A	+ +	-			· ·	_	G H	1	J		n	L	IVI		IN	P
1			MnRAM 3.2 Digital Works	neet,	SIG6	2			WTI	_29							
2			Question Description	User	Rating												
4			Question Description	entry	Katiliy	_	_	This comes in						•	F	lighe	st-rated:
5		1	Veg. Table 2, Option 4		0.25			weighted aver Community ra							#	REF	!
6			TOTAL VEG Rating	0.25	L			value (shown									
7		4	Listed, rare, special plant species?	N	next												
8 9		5	Rare community or habitat? Pre-European-settlement conditions?	N N	next												
		6	•		next	1 .1		1									
10 11		7	hydrogeo & topo Water depth (inches)	FT 12	Depress'l/F	low-thi	roug	gn									
12		0	Water depth (% inundation)	12													
13		9	Local watershed/immedita drainage (acres)					lata startin are used ir									
14		10	Existing wetland size	20		DO A											
15 16	Ξ	11 12	SOILS: Up/Wetland (survey classification + site) Outlet characteristics for flood retention	N/A	N/A												
17	tio	13	Outlet characteristics for hydrologic regime	A	1												
18	ect	14	Dominant upland land use (within 500 ft)	А	1	0).1										
19	ť, s	15	Soil condition (wetland)	A	1												
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	Digital worksheet, section I	16 17	Vegetation (% cover) Emerg. veg. flood resistance	95% A	H 1		1										
22	(sh	17	Sediment delivery	A	1												
23	ork	19	Upland soils (based on soil group)	В	0.5									C	201	roll	
24	Š	20	Stormwater runoff pretreatment & detention	C	0.1		1										
25	ital	21 22	Subwatershed wetland density Channels/sheet flow	C A	0.1 1									do	ЭW	n t	0
27	Dig	22	Adjacent naturalized buffer average width (feet)	500	H	W	0	1 H		l				a	ns	we	r
28	-	24	Adjacent Area Management: % Full		1	1	1	1								bre	-
29			adjacent area mgmt: % Manicured		0												
30		25	adjacent area mgmt: % Bare Adjacent Area Diversity & Structure: % Native	100%	0	_	1	1						qu	es	tioi	าร
32		23	adjacent Area Diversity & Structure. % Native	100%	0		1	1						ar	hd	se	е
33			adjacent area diversity: % Sparse/Inv./Exotic		0											nula	
34		26	Adjacent Area Slope: % Gentle	5%	0.05		1	0.05									
35			adjacent area slope: % Moderate adjacent area slope: % Steep		0 0								C	alc	Cul	atio	ons
36			aujacent area stope. // Steep		0	1											
38 39		27	Downstream sensitivity/WQ protection	А	1												
40		28	Nutrient loading	A	1										7	Ļ	
41		29	Shoreline wetland?	Ν	Ν												
42 43		30 31	Rooted shoreline vegetation (% cover) Wetland in-water width (in feet, average)		ter a percent												
43		32	Emergent vegetation erosion resistance		ter a percent ter valid cho												
45		33	Shoreline erosion potential		ter valid cho												
46		34	Bank protection/upslope veg.		ter valid cho	oice											
47 48	_	35	Rare Wildlife	N	N												
40	Digital worksheet, section II	36 37	Scarce/Rare/S1/S2 local community Vegetation interspersion cover (see diagram 1)	N N/A	N N/A	N/A											
50	ctic	38	Community interspersion (see diagram 2)	3	Н		1				0						
51	se	39	Wetland detritus	A	1		1										
52 53	et,	40 41	Wetland interspersion on landscape Wildlife barriers	A A	1		1										
53 54	he	41	Amphibian breeding potential-hydroperiod	A	1												
55	sy.	43	Amphibian breeding potentialfish presence	А	1												
56	VOI	44	Amphibian & reptile overwintering habitat	С	0.1												
57 58	alv	45 46	Wildlife species (list) Fish habitat quality	N/A	N/A												
59	git	40	Fish species (list)	1 V/ / " 1	11/21												
60	D	48	Unique/rare educ./cultural/rec.opportunity	N	Ν												
61		49	Wetland visibility	C	0.1												
62 63		50 51	Proximity to population Public ownership	N C	0.1 0.1												
64		52	Public access	C	0.1												
65		53	Human influence on wetland	А	1												
66		54	Human influence on viewshed	A	1												
67 68		55 56	Spatial buffer Recreational activity potential	C C	0.1 0.1												
69		57	Commercial crophydrologic impact		N/A												
70																	

			Mn	RAM_3.	2_Score_S	heet.xls											
	А	В	С	D	E	F	G	Н		1	J		К	М		Ν	Р
72			Ŭ				Ŭ	ļ	-	· .	Ŭ			 	_		
73		58	GW - Wetland soils	D	R or D	1											
74		59	GW - Subwatershed land use	D	R or D	1											
75		60	GW - Wetland size and soil group	D	R or D	1											
74 75 76 77 78		61	GW - Wetland hydroperiod	R	R or D	0.1											
77	S	62		D	R or D	1											
78	Ŝ	63	GW - Surrounding upland topographic relief	D	R or D	1											
70	questions	64	Restoration potential w/o flooding		Y or N	5.1	=										
79 80	es	65	Landowners affected by restoration		Eabc	Enter v		oice									
81	nb	66A	Existing wetland size (acres) [from #10]	20			and ch	UICE									
01	Ē		Total wetland restoration size (acres)	20	acres	0.1											
82 83 84 85 86 87	Additional		(Calculated) Potential New Wetland Area [B-A]	20			otivolu	draina	d. 4								
03	tio		Average width of naturalized upland buffer (poten	-20 0	acres feet	% ene 0.1		draine value									
04	di	67	Likelihood of restoration success	0	ab c	Enter v			e. #	+###							
00	Ρq	68 69			Outlet, Tile				/trol	ad div	, E	illin	~				
00								ump, w	115	iu un	/., г	mm	y				
88			Wetland sensitivity to stormwater		1, 2, 3, 4,	5, 6, 7, 6 I	5										
89		71 72	Additional stormwater treatment needs		Eabc abc												
09		12	Additional stormwater treatment needs		abc	1											
90 91 92																	
92					-									-			
93																	
94					-	Rating Category											
				W	Final Rating	Rating Categoi											
95			Function Name	Raw score	Final Ratin	Rai Cai		Formu	ıla s	hown	to t	the	right.				
96			Vegetative Diversity/Integrity		0.25	L				####			8				
97										####							
98	Ś		Hydrology - Characteristic		1.00	High			i	####							
99	je.					U			ŧ	####							
100	Jai		Flood Attenuation		0.60	Med				####							
101	Summaries								1								
102	n		Water QualityDownstream		0.80	High											
103	S					8											
104	ng		Water QualityWetland		0.74	High											
104 105	ati					0											
106	Ř		Shoreline Protection		N/A	N/A											
107	Functional Rating																
108	o		Characteristic Wildlife Habitat Structure	0.83	0.81	High		#REF	-i								
109	Ę					0		#REF									
110	Ĕ		Maintenance of Characteristic Fish Habitat	######	0.70	High		#REF									
111	Ъ					U		#REF									
112			Maintenance of Characteristic Amphibian Habitat		0.85	High		1									
113						U		#REF	-								
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF									
115								#REF									
116			Commercial use		N/A	N/A			0								
117																	
118			Special Features listing:	•		#REF!	####										
119																	
120			Groundwater Interaction		discharge			#REF	-!								
121			Groundwater Functional Index		#REF!	#REF!											
122																	
123			Restoration Potential (draft formula)		#VALUE!	#####											
124			Stormwater Sensitivity (not active)			-											
125																	
126																	
127																	
128																	
129																	
116 117 118 119 120 121 122 123 124 125 126 127 128 129 130																	
131																	
131 132 133																	
133																	
134																	
135																	
136																	
137																	
134 135 136 137 138 139																	
139																	
140																	
141														 			

	A	В	С	D	2_Score_3		F	G		Н	<u> </u>			ľ	(1	Ν	1	N		Р
	A		MnRAM 3.2 Digital Works			2	· ·	0		11	10/-	TI 2	<u> </u>		<u> </u>	<u> </u>		//	IN	_	Г
1			WITRAW 5.2 Digital WOLKS	IICCI,	, Side	2	I				vv	TL3	50								
3			Question Description	User	Rating																
4		_	•	entry	-	-		This c								sing the	e		-		ated:
5		1	Veg. Table 2, Option 4	0.8	80.00	•		Comm	nunit	rating	g, plea	ase r	nanua	lly ov	erwri	te that			#RE	F!	
6 7		4	TOTAL VEG Rating Listed, rare, special plant species?	0.8 N	High next			value	(sno	wn to	the rig	gnt) I		e tiela	at E:	5.					
8		5	Rare community or habitat?	N	next																
9		6	Pre-European-settlement conditions?	N	next																
10		7	hydrogeo & topo	FT	Depress'1/F	Flow	v-throu	gh													
11		8	Water depth (inches)	6																	
12 13		9	Water depth (% inundation) Local watershed/immedita drainage (acres)				Enter							1							
14		10	Existing wetland size	11		I	ooxes	are u	ISec	l in c	alcu	lati	ons.								
15	_	11	SOILS: Up/Wetland (survey classification + site)		-																
16	no	12	Outlet characteristics for flood retention	N/A	N/A																
17 18	ŝĊti	13 14	Outlet characteristics for hydrologic regime Dominant upland land use (within 500 ft)	A A	1		0.1														
19	Se,	15	Soil condition (wetland)	A	1		0.1														
20	et	16	Vegetation (% cover)		Н		1														
21	Digital worksheet, section I	17 18	Emerg. veg. flood resistance Sediment delivery	A	1																
22 23	ork	10	Upland soils (based on soil group)	A B	0.5													0			
24	Ň	20	Stormwater runoff pretreatment & detention	С	0.1		1												cro		
24 25 26 27	ital	21	Subwatershed wetland density	С	0.1												d	O٧	vn	to	
20	Digi	22 23	Channels/sheet flow Adjacent naturalized buffer average width (feet)	A 500	1 H		WQ	1	ιH			1					а	ns	SW	ər	
28		24	Adjacent Area Management: % Full	100%	1		1	1				1									
29			adjacent area mgmt: % Manicured		0														ore		
30 31		25	adjacent area mgmt: % Bare Adjacent Area Diversity & Structure: % Native	100%	0	_	1	1	1								qu	les	Stic	ns	5
32		23	adjacent Area Diversity & Structure: % Native	100%	0		1	1	L								a	nc	ls	ee	
33			adjacent area diversity: % Sparse/Inv./Exotic		0														nu		
34		26	Adjacent Area Slope: % Gentle	5%	0.05		1	0.05	5												
35 36			adjacent area slope: % Moderate adjacent area slope: % Steep		0											С	alo	cu	lat	or	IS
38						-												Γ			
39		27	Downstream sensitivity/WQ protection	А	1																
40		28	Nutrient loading	А	1													旲		-	
41 42		29 30	Shoreline wetland? Rooted shoreline vegetation (%cover)	N	N	tea													\checkmark		
42		31	Wetland in-water width (in feet, average)		ter a percen ter a percen																
44		32	Emergent vegetation erosion resistance	En	ter valid ch	oic															
45		33	Shoreline erosion potential		ter valid ch																
46 47		34 35	Bank protection/upslope veg. Rare Wildlife	En N	ter valid ch N	0100	e														
48	=	36	Scarce/Rare/S1/S2 local community	N	N																
49	ion	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	Ν	/A							_							
50 51	ect	38 39	Community interspersion (see diagram 2) Wetland detritus	2 A	M 1		0.5						()							
52	Digital worksheet, section II	40	Wetland interspersion on landscape	A	1		1														
53	eet	41	Wildlife barriers	А	1																
54	sh	42	Amphibian breeding potential-hydroperiod	A	1																
55 56	ork	43 44	Amphibian breeding potentialfish presence Amphibian & reptile overwintering habitat	A C	1 0.1																
57	ž	45	Wildlife species (list)																		
58	ita	46	Fish habitat quality	N/A	N/A																
59 60	Dig	47 48	Fish species (list) Unique/rare educ./cultural/rec.opportunity	N	N																
61		40	Wetland visibility	C	0.1																
62		50	Proximity to population	Ν	0.1																
63 64		51	Public ownership	C C	0.1																
64 65		52 53	Public access Human influence on wetland	A	0.1																
66		54	Human influence on viewshed	А	1																
67		55	Spatial buffer	C	0.1																
68 69		56 57	Recreational activity potential Commercial crophydrologic impact	C N/A	0.1 N/A																
70		51	commercial cropnyurologic impact	IV/A	11/7																
النصا																					

			Mn	RAM_3.	2_Score_S	heet.xls											
	А	В	С	D	E	F	G	Н	1		J	К		L	М	N	P
72		1	·		ļ					-							
73		58	GW - Wetland soils	D	R or D	1											
74		59	GW - Subwatershed land use	D	R or D	1											
75		60	GW - Wetland size and soil group	D	R or D	1											
74 75 76 77 78		61	GW - Wetland hydroperiod	R	R or D	0.1											
77	S	62	GW - Inlet/Outlet configuration	D	R or D	1											
78	questions	63	GW - Surrounding upland topographic relief	D	R or D	1	=										
79 80	ŝti	64	Restoration potential w/o flooding		Y or N	5.1	-										
80	ne	65	Landowners affected by restoration		Eabc	Enter v	alid ch	oice									
81	σ	66A	Existing wetland size (acres) [from #10]	11	acres												
82	Jal		Total wetland restoration size (acres)		acres	0.1											
83	<u>io</u>	66C	(Calculated) Potential New Wetland Area [B-A]	-11	acres			drained									
84	dit	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value	: ####	ŧ							
82 83 84 85 86 87	Additional	68	Likelihood of restoration success		abc	Enter v											
86	4		Hydrologic alteration type		Outlet, Tile			ump, Wt	rshd c	liv.,	Fillin	g					
			Potential wetland type (Circ. 39)		1, 2, 3, 4,	5,6,7,8 I	3										
88 89			Wetland sensitivity to stormwater		Eabc												
09		72	Additional stormwater treatment needs		abc	1											
90 91 92																	
92																	
93						Þ											
94					5.0	Rating Category											
				Raw score	Final Rating	Rating Categoi											
95			Function Name	Raw score		C_a	_	Formul	a show	n to	the	right.	•				
96			Vegetative Diversity/Integrity		0.80	High			####								
97									####								
98	es		Hydrology - Characteristic		1.00	High			####								
99	ari						-		####								
100	Summaries		Flood Attenuation		0.60	Med			####	ŧ							
101	Ę				0.00	TT' 1											
102 103	ຣ		Water QualityDownstream		0.80	High											
103	g		Water QualityWetland		0.90	High											
104	Ę		water Quanty wenand		0.90	riigii											
105	Ra		Shoreline Protection		N/A	N/A	-										
107	Functional Rating		Shoteline i foteetion		14/21	14/21											
108	Ĝ		Characteristic Wildlife Habitat Structure	0.90	0.90	High		#REF!									
109	Ť					8		#REF!									
110	Ĕ		Maintenance of Characteristic Fish Habitat	#######	0.70	High		#REF!									
111	ц					-		#REF!									
112			Maintenance of Characteristic Amphibian Habitat		0.85	High		•									
113								#REF!									
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!									
115							_	#REF!									
116			Commercial use		N/A	N/A		C)								
117																	
118			Special Features listing:			#REF!	####										
119																	
120			Groundwater Interaction		discharge	#DEEL		#REF!									
121			Groundwater Functional Index		#REF!	#REF!											
122			Restoration Potential (draft formula)		#VALUE!	######											
123			Stormwater Sensitivity (not active)		#VALUL!	#######											
124			Stornwater Sensitivity (not active)														
126																	
127																	
128																	
129																	
130																	
115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133																	
132																	
133																	
134																	
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136																	
137																	
134 135 136 137 138 139																	
139 140																	
140 141																	
141																	

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	A	В		D	E		· .	G		Н		<u> </u>	J		K	L	Μ	1	Ν	Р
1			MnRAM 3.2 Digital Works	neet,	Side	2					V	VTL	31							
2																				
3			Question Description	User entry	Rating			This	s cor	nes in f	from	Side 1	autor	natica	allv us	sing the	<u>, </u>	F	liaho	st-rated:
5		1	Veg. Table 2, Option 4		0.40	-		weig	ghteo	d avera	ige. '	To use	e the h	ighest	t rate	d veg.			REF	
6			TOTAL VEG Rating		Medium					nity rati nown to										
7		4	Listed, rare, special plant species?	N	next															
8		5	Rare community or habitat?	N	next															
9		6	Pre-European-settlement conditions?	N	next															
10		7	hydrogeo & topo		Depress'1/F	Flow	-throu	gh												
11		8	Water depth (inches)																	
12 13		9	Water depth (% inundation) Local watershed/immedita drainage (acres)				Inter													
14		10	Existing wetland size	4		b	oxes	are	us	ed in	calo	culat	ions.							
15	_	11	SOILS: Up/Wetland (survey classification + site)																	
16 17	u	12	Outlet characteristics for flood retention		0.5															
1/	cti	13 14	Outlet characteristics for hydrologic regime	A	1 1		0.1													
19	se	14	Dominant upland land use (within 500 ft) Soil condition (wetland)	A A	1		0.1													
20	et,	16	Vegetation (% cover)		Н		1													
21	he	17	Emerg. veg. flood resistance	А	1															
18 19 20 21 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 57 38	Digital worksheet, section I	18	Sediment delivery	A	1															
23	No	19 20	Upland soils (based on soil group) Stormwater runoff pretreatment & detention		0.5 0.1		1										ç	Sc	roll	
25	a	20	Subwater funding pretreatment & detention Subwatershed wetland density	C	0.1		1										d	$\sim 10^{-10}$	n t	0
26	git	22	Channels/sheet flow	A	1															
27	Ē	23	Adjacent naturalized buffer average width (feet)		Н	_	WQ		11	H		1					a	ns	we	r
28		24	Adjacent Area Management: % Full		1		1		1									ma	ore	
29			adjacent area mgmt: % Manicured adjacent area mgmt: % Bare		0 0															
31		25	Adjacent Area Diversity & Structure: % Native		1		1		1								qu			
32			adjacent area diversity: % Mixed		0												ar	nd	se	е
33			adjacent area diversity: % Sparse/Inv./Exotic		0	_											fc	n	านใส	a
34		26	Adjacent Area Slope: % Gentle adjacent area slope: % Moderate		0.1 0		1	U).1							0				ons
36			adjacent area slope: % Steep		0											U	alc	Jui	an	115
38																				
39		27	Downstream sensitivity/WQ protection	А	1															
40		28	Nutrient loading		1												•	\prec	٢	
41 42		29 30	Shoreline wetland? Rooted shoreline vegetation (%cover)		N	togo														
42		31	Wetland in-water width (in feet, average)		ter a percen ter a percen	0														
44		32	Emergent vegetation erosion resistance		ter valid ch															
45		33	Shoreline erosion potential		ter valid ch															
46		34	Bank protection/upslope veg.		ter valid ch	oice	•													
47 48	=	35 36	Rare Wildlife Scarce/Rare/S1/S2 local community	N N	N N															
49	Digital worksheet, section II	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/	Ά													
50 51	ctio	38	Community interspersion (see diagram 2)	1	L		0.1							0						
51	se	39	Wetland detritus	A	1															
52	et,	40 41	Wetland interspersion on landscape Wildlife barriers		1		1													
54	he	41	Amphibian breeding potential-hydroperiod		1															
55	sy.	43	Amphibian breeding potentialfish presence	А	1															
52 53 54 55 56 57	VOL	44	Amphibian & reptile overwintering habitat	С	0.1															
57 58	al v	45 46	Wildlife species (list) Fich babitat quality		0.1															
58 59	gitä	46	Fish habitat quality Fish species (list)		0.1															
60	Di	48	Unique/rare educ./cultural/rec.opportunity	N	Ν															
61		49	Wetland visibility	С	0.1															
62		50	Proximity to population		0.1															
63 64		51 52	Public ownership Public access	C C	0.1 0.1															
65		53	Human influence on wetland		1															
66		54	Human influence on viewshed	А	1															
67		55	Spatial buffer		0.1															
68 69		56 57	Recreational activity potential Commercial crophydrologic impact		0.1 N/A															
70		51		11/11	11/71															
-							-	_	-	-	_				_	-				

			Mn	RAM_3.	2_Score_S	heet.xls										
	А	В	C	D	E	F	G	Н	1	J		К	L	М	N	Р
72			•		•											J
73 74 75 76 77		58	GW - Wetland soils	D	R or D	1										
74		59	GW - Subwatershed land use	D	R or D	1										
75		60	GW - Wetland size and soil group	D	R or D	1										
70		61 62	GW - Wetland hydroperiod GW - Inlet/Outlet configuration	R D	R or D R or D	0.1 1										
78	questions	62 63	GW - Surrounding upland topographic relief	D	R or D	1										
78 79 80 81	itic	64	Restoration potential w/o flooding	0	Y or N	5.1	-									
80	les	65	Landowners affected by restoration		Eabc	Enter v		oice								
81	dr	66A	Existing wetland size (acres) [from #10]	4	acres											
82 83 84	al	66B	Total wetland restoration size (acres)		acres	0.1										
83	Additional	66C	(Calculated) Potential New Wetland Area [B-A]	-4	acres	% effe	ctively	drained:	####							
84	diti	67	Average width of naturalized upland buffer (poten	0	feet	0.1			####							
85	P d	68	Likelihood of restoration success		abc	Enter v				_						
86 87			Hydrologic alteration type Potential wetland type (Circ. 39)		Outlet, Tile			imp, vvti	rshd di	v., ⊢	illing	9				
88		70	Wetland sensitivity to stormwater		1, 2, 3, 4, 5 Eabc	5, 6, 7, c)									
89		72	Additional stormwater treatment needs		abc											
90						1										
90 91 92					1											
92 93																
94					<i>,</i> -	Rating Category										
				W re	Final Rating	Rating Categoi										
95			Function Name	Raw score	Fin Ra	Cai Cai		Formula	a show	n to 1	the r	ight.				
96			Vegetative Diversity/Integrity		0.40	Med			####							
97					1.00		_		####							
98 99	ies		Hydrology - Characteristic		1.00	High			#### ####							
100	ari		Flood Attenuation		0.58	Med			#### #####							
100	Summaries		T 1000 Attenuation		0.50	wica										
102	n		Water QualityDownstream		0.76	High										
103	S					Ũ										
104 105	Functional Rating		Water QualityWetland		0.79	High										
105	Rat					27/4										
106	Ë		Shoreline Protection		N/A	N/A										
107 108	Suc.		Characteristic Wildlife Habitat Structure	0.77	0.77	High		#REF!								
100	Ĕ			0.11	0.77	mgn		#REF!								
110	Ĕ		Maintenance of Characteristic Fish Habitat	0.70	0.70	High		#REF!								
111	ц							#REF!								
112			Maintenance of Characteristic Amphibian Habitat		0.85	High		i.								
113								#REF!								
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!								
115			Commercial use		N/A	N/A		#REF! 0								
117					11/71	11/11		0								
118			Special Features listing:			#REF!	####									
119			, , ,													
120			Groundwater Interaction		discharge			#REF!								
121			Groundwater Functional Index		#REF!	#REF!										
122			Restoration Potential (draft formula)		#VALUE!	######										
123			Stormwater Sensitivity (not active)		#VALUE:	#####										
125																
126																
127																
128																
129																
130																
132																
133																
134																
135																
136																
137																
115 116 117 118 119 120 121 122 123 124 125 126 127 128 1290 131 132 133 134 135 136 137 138 139																
140																
141																

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	A	В	C	D	E	F	G	Н		J	K		М	N	Р
1			MnRAM 3.2 Digital Works	heet.	Side	2			WTL	32					
2				;		_									
2			Question Description	lleer	Dating										
3			Question Description	User	Rating		This cor	mes in fro	m Side		atically	ising the	_	Llight	at rated
3 4 5 6 7 8				entry				d average						-	st-rated
5		1	Veg. Table 2, Option 4		0.33		Commu	inity rating	g, please	manual	ly overw	rite that		#REF	!
6			TOTAL VEG Rating	0.33	Medium		value (s	shown to t	he right)	into the	field at I	E5.			
7		4	Listed, rare, special plant species?	Ν	next										
8		5	Rare community or habitat?	Ν	next										
9		6	Pre-European-settlement conditions?	Ν	next										
		7				71 41	-1-								
10			hydrogeo & topo	FT	Depress'l/F	'low-throu	gn								
11 12 13 14 15 16 17		8	Water depth (inches)	16											
12			Water depth (% inundation)			Enter	data st	arting I	here.	Yellow	,				
13		9	Local watershed/immedita drainage (acres)					ed in c							
14		10	Existing wetland size	4											
15	_	11	SOILS: Up/Wetland (survey classification + site)		_										
16	n	12	Outlet characteristics for flood retention	Α	1										
17	ţi	13	Outlet characteristics for hydrologic regime	Α	1										
18	e G	14	Dominant upland land use (within 500 ft)	А	1	0.1									
19	S.	15	Soil condition (wetland)	А	1										
20	et,	16	Vegetation (% cover)	95%	Н	1									
21	e	17	Emerg. veg. flood resistance	Α	1										
22	(S	18	Sediment delivery	А	1										
23	Digital worksheet, section I	19	Upland soils (based on soil group)	В	0.5								0	one l	
20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 38	Ň	20	Stormwater runoff pretreatment & detention	C	0.1	1							S	crol	
25	Ē	21	Subwatershed wetland density	C	0.1								do	wn t	0
26	liti	22	Channels/sheet flow	A	1								uu	vvii u	0
27	Dig	23	Adjacent naturalized buffer average width (feet)	500	Н	WQ	1	н	1				an	SWE	r
28		24	Adjacent Area Management: % Full		1		1	••	1						
29		2.1	adjacent area mgmt: % Manicured	10070	0	-	-						m	nore	
30			adjacent area mgmt: % Bare		0								a	otio	20
31		25		100%	1	1	1					(que	stio	ns
22		25	Adjacent Area Diversity & Structure: % Native	100%	0	1	1						an	d se	Δ
32			adjacent area diversity: % Mixed												
33		26	adjacent area diversity: % Sparse/Inv./Exotic	1.50/	0	1	0.15						for	mul	а
34		26	Adjacent Area Slope: % Gentle	15%	0.15	1	0.15								
35			adjacent area slope: % Moderate		0							C	alcı	ulati	ons
36			adjacent area slope: % Steep		0										
38															
39		27	Downstream sensitivity/WQ protection	В	0.5										
40		28	Nutrient loading	A	1									Ļ	
41		29	Shoreline wetland?	N	N									\checkmark	
41 42		30	Rooted shoreline vegetation (%cover)		ter a percen	tage									
43		31	Wetland in-water width (in feet, average)		ter a percen										
40		32	Emergent vegetation erosion resistance	En	ter valid ch	oice									
44 45 46 47 48 49 50 51 52 53 52 53 54 55 56 57 58 59		33	Shoreline erosion potential		ter valid ch										
45		34													
<u>⊿7</u>		35	Bank protection/upslope veg. Rare Wildlife		ter valid ch N	0100									
41 10	-	35	Scarce/Rare/S1/S2 local community	N N											
40	c	30	Vegetation interspersion cover (see diagram 1)	N 1	N	0.1									
73 50	<u>.</u>				L	0.1				^					
5U 51	ct	38 39	Community interspersion (see diagram 2) Wetland detritus	2	M	0.5				0	'				
51	Se			A	1	1									
52	ŗ,	40	Wetland interspersion on landscape	A	1	1									
53	ee	41	Wildlife barriers	A	1										
54	sh	42	Amphibian breeding potential-hydroperiod		1										
55	ž	43	Amphibian breeding potentialfish presence	A	1										
56	Digital worksheet, section II	44	Amphibian & reptile overwintering habitat	С	0.1										
57	<u> </u>	45	Wildlife species (list)												
58	ta	46	Fish habitat quality	С	0.1										
59	<u>i</u>	47	Fish species (list)												
60	Δ	48	Unique/rare educ./cultural/rec.opportunity	N	Ν										
61		49	Wetland visibility	С	0.1										
62		50	Proximity to population	N	0.1										
63		51	Public ownership		0.1										
64		52	Public access	C	0.1										
65		53	Human influence on wetland	Ă	1										
66		54	Human influence on viewshed	A	1										
67		55	Spatial buffer	C	0.1										
68		56	Recreational activity potential		0.1										
69		57	Commercial cronhydrologic impact		N/A										

			Mn	RAM_3.	2_Score_S	heet.xls											
	А	В	C	D	E	F	G	Н	1		J	K		L	М	N	Р
72			•														4
73		58	GW - Wetland soils	D	R or D	1											
74		59	GW - Subwatershed land use	D	R or D	1											
73 74 75 76 77		60	GW - Wetland size and soil group	D	R or D	1											
76		61	GW - Wetland hydroperiod	R	R or D	0.1											
77	S	62		D	R or D	1											
78	ō	63	GW - Surrounding upland topographic relief	D	R or D	1	-										
78 79 80 81	questions	64	Restoration potential w/o flooding		Y or N	5.1											
80	ne	65	Landowners affected by restoration		Eabc	Enter v	alid ch	oice									
81		66A	Existing wetland size (acres) [from #10]	4	acres												
82 83 84	Additional		Total wetland restoration size (acres)		acres	0.1											
83	i		(Calculated) Potential New Wetland Area [B-A]	-4	acres		ctively	drained									
84	di	67	Average width of naturalized upland buffer (poten	0	feet	0.1	مانا مار	value	: ###1	Ŧ							
85 86	Αd	68	Likelihood of restoration success			Enter v			wohd a	I., /	_ ::::	~					
87			Hydrologic alteration type Potential wetland type (Circ. 39)		Outlet, Tile 1, 2, 3, 4, 5			ump, wi	isna c	11V.,	FIIII	ig					
88		71	Wetland sensitivity to stormwater		Eabc	J, U, 7, C)										
89		72	Additional stormwater treatment needs		abc												
90		12			400	L											
90 92			1														
92																	
93						Ŷ											
94				<i>د</i> ه .	Final Rating	Rating Category											
05			E	Raw score	ina tati	lati Sate		E			41						
95 96			Function Name Vegetative Diversity/Integrity	R S	0.33	Med		Formul	a snov ####		o the	rigni	l•				
97			vegetative Diversity/integrity		0.55	Meu			####								
98	S		Hydrology - Characteristic		1.00	High			####								
99	je.		Tryatology characteristic		1100	g			####								
100	าลเ		Flood Attenuation		0.68	High			####								
101	Summaries					U			1								
102	, T		Water QualityDownstream		0.76	High											
103	5																
104 105	Functional Rating		Water QualityWetland		0.77	High											
105	at																
106	<u>~</u>		Shoreline Protection		N/A	N/A											
107 108	na			0 70	0.52	*** 1											
108	tio		Characteristic Wildlife Habitat Structure	0.73	0.73	High		#REF!									
109 110	G		Maintenance of Characteristic Fish Habitat	0.70	0.70	High		#REF! #REF!									
111	5		Maintenance of Characteristic Fish Habitat	0.70	0.70	High		#REF!									
112	-		Maintenance of Characteristic Amphibian Habitat		0.85	High											
113			Maintenance of characteristic / impirotan fuorat		0.05	mgn		#REF!									
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!									
								#REF!									
116			Commercial use		N/A	N/A		Ċ									
117																	
118			Special Features listing:			#REF!	####										
119																	
120			Groundwater Interaction		discharge	"DEEL		#REF!									
121			Groundwater Functional Index		#REF!	#REF!											
122			Restoration Potential (draft formula)		#VALUE!	######											
123			Stormwater Sensitivity (not active)		#VALUE!	#####											
124			Stornwater Sensitivity (not active)														
120																	
127																	
128																	
129																	
130																	
131																	
132																	
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137																	
115 116 117 118 119 120 121 122 123 124 125 126 127 128 130 131 132 133 134 135 136 137 138 139																	
140																	
141																	
· · · · ·																	

			Wetland ID HW33 TM Coordinates 43440 5266313		Wetland ID HW34 ITM Coordinates 544918 5269650		Wetland name ID HW35 UTM Coordinates 544694 5269296		Wetland ID UTM Coordinates
	Date		26-Jun-09		29-Jun-09		29-Jun-09		
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4 10A, 134 15B, 164		3A, 3B,	6A, 16B	3A, 3 10A, 15B,	179-180 B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	10Å, 15B,	8B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B
#2 & #	· · · · · · · · · · · · · · · · · · ·		,	40			mmunity type individually be	elow ~	-
	Community Type (wet meadow, marsh)	13A	Sedge Meadow	4B	Coniferous Swamp	8A	Alder Thicket		
Plant Community #1	Community Proportion (% of total) Dominant Vegetation / Cover Class	WILLOW RASPBE		SPECK LABRA NEEDL NARRO PUSSY	38% SPRUCE/4 LED ALDER/4 DOR TEA/2 E SPIKERUSH/2 DW-LEAF CATTAIL/3 // WILLOW/2 NG BLACK SPRUCE/2	SEDO ARRO CAN/ LABF	CKLED ALDER/5		
Δ.	Invasive/exotic Vegetation / Cover Class			FALSE	LILY OF THE				
	Invasive/exotic vegetation / Cover Class			VALLE	1/2				
	Community Quality (E, H, M, L)	н	1	н	1	Н	1		
	Community Type (wet meadow, marsh)	-	-			-	-		
	Community Proportion (% of total)								
Plant Community #2	Dominant Vegetation / Cover Class								
Ë									
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)		0		0		0		0
	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total) Dominant Vegetation / Cover Class								
Plant Community #3									
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)		0		0		0		0
	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total)								
Plant Community #4*	Dominant Vegetation / Cover Class								
Δ.	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	-	0		0		0		0
	Circular 39 Types (primary <tab> others)</tab>						, in the second s	2	, and the second s
	Cowardin Types								
	Photo ID								
-	st rated community veg. div./integ:	1.0	High	1	High	1	High	0	-
	ge vegetative diversity/integrity:	1.00	High	1.00	High	1.00	High	-	-
	ted Average veg. diversity/integrity: Listed, rare, special plant species?	0.80	High	0.38	Medium	0.57	High		
#5	Rare community or habitat?								
	Pre-European-settlement conditions?								
10A] Shall Seas	Iplain Forest [1A, 2A, 3A] * Hardwood Swamp * Calcareous Fen [7B, 11B, 14A] * Shrub Sw ow Marsh [13B] * Deep Marsh [12B] * Wet onally Flooded Basin [16B] e are more than four plant community types, u	vamp [6B to Wet-M] * Alder Thicket [8A] * esic Prairie [14B, 15A] *	Shrub-c Fresh (V	arr [8B] * Sedge Meado Vet) Meadow [15B] * Sha	w [10] allow, (3, 11A, 12A, 13A] * Open Water [9B, 16A] *		ver Class Class Range 1 0 - 3% 2 3 - 10% 3 10 - 25% 4 25 - 50% 5 50 - 75% 6 75 - 100%

	А	В	С	D	E	F	_	G	Н	-		1	ĸ	(М		N	Р
	A	4 4	MnRAM 3.2 Digital Works			1	_	G			· //TI		_ r	`	L	IVI		IN	
1			IVITIRAIVI 5.2 DIGITAT VVOLKS	neer	, side	2				v	VTL	33							
2			Question Description	User	Rating														
4		_	•	entry					mes in f ed avera							•	F	lighe	st-rated:
5		1	Veg. Table 2, Option 4	0.0	0.80	F		Comm	unity rati	ing, p	lease	manua	ally ove	erwri	te that		#	REF	
6		4	TOTAL VEG Rating Listed, rare, special plant species?	0.8	High		Ľ	alue (shown to	o the	right)	into th	e field	at E	5.				
7 8		4	Rare community or habitat?	N N	next next														
9		6	Pre-European-settlement conditions?	N	next														
10		7	hydrogeo & topo	FT	Depress'1/F	low-th	roug	h											
11		8	Water depth (inches)	18	1.		0												
12		0	Water depth (% inundation)			Ent	er d	ata s	tarting	ı he	re. `	(ello)	v						
13 14		9 10	Local watershed/immedita drainage (acres) Existing wetland size	4	-				sed in										
15	_	11	SOILS: Up/Wetland (survey classification + site)		1	L													
16	n	12	Outlet characteristics for flood retention	В	0.5														
17	ctic	13	Outlet characteristics for hydrologic regime	A	1														
18 19	se	14 15	Dominant upland land use (within 500 ft) Soil condition (wetland)	A A	1	C).1												
20	et,	16	Vegetation (% cover)	95%	H		1												
21 22	Digital worksheet, section I	17	Emerg. veg. flood resistance	А	1														
22	'ks	18	Sediment delivery	A	1														
23	١٥ ٧	19 20	Upland soils (based on soil group) Stormwater runoff pretreatment & detention	B C	0.5 0.1		1									S	Sci	roll	
25	al v	20	Subwatershed wetland density	C	0.1		1									de	עאר	n t	0
23 24 25 26 27	git	22	Channels/sheet flow	А	1														
27	ā	23	Adjacent naturalized buffer average width (feet)	500	H	W	VQ	1	Н		1					a	ns	we	r
28 29		24	Adjacent Area Management: % Full adjacent area mgmt: % Manicured	100%	1 0		1	1								ľ	nc	ore	
30			adjacent area mgmt: % Bare		0											qu	20	tio	าร
31		25	Adjacent Area Diversity & Structure: % Native	100%	1		1	1											
32			adjacent area diversity: % Mixed		0													se	
33 34		26	adjacent area diversity: % Sparse/Inv./Exotic Adjacent Area Slope: % Gentle	20%	0		1	0.2								fo	n	nula	a
35		20	adjacent area slope: % Moderate	2070	0		1	0.2							С	alc	:ul:	atio	ons
36			adjacent area slope: % Steep		0		_								0	aio			110
38																			
39		27	Downstream sensitivity/WQ protection	В	0.5														
40 41		28 29	Nutrient loading Shoreline wetland?	A N	1 N												$\overline{\langle}$	7	
42		30	Rooted shoreline vegetation (% cover)		ter a percent	tage													
43		31	Wetland in-water width (in feet, average)	En	ter a percent	tage													
44		32	Emergent vegetation erosion resistance		ter valid cho														
45 46		33 34	Shoreline erosion potential Bank protection/upslope veg.		ter valid cho ter valid cho														
47		35	Rare Wildlife	N	N	0100													
48	=	36	Scarce/Rare/S1/S2 local community	Ν	Ν														
49 50	tior	37 38	Vegetation interspersion cover (see diagram 1) Community interspersion (see diagram 2)	N/A 1	N/A	N/A).1						0						
50	Digital worksheet, section II	38 39	Wetland detritus	A	L 1	ť	1.1						U						
52	ť, S	40	Wetland interspersion on landscape	А	1		1												
53	ee	41	Wildlife barriers	A	1														
54 55	(sh	42 43	Amphibian breeding potential-hydroperiod Amphibian breeding potentialfish presence	A	1														
55 56	ork	43	Amphibian & reptile overwintering habitat	A C	0.1														
57	3	45	Wildlife species (list)																
58	lita	46	Fish habitat quality	С	0.1														
59 60	Dig	47 48	Fish species (list) Unique/rare educ./cultural/rec.opportunity	N	N														
61		48	Wetland visibility	C	0.1														
62		50	Proximity to population	Ν	0.1														
63		51	Public ownership	C	0.1														
64 65		52 53	Public access Human influence on wetland	C A	0.1														
66		54	Human influence on viewshed	А	1														
67		55	Spatial buffer	С	0.1														
68		56	Recreational activity potential	C N/A	0.1														
69 70		57	Commercial crophydrologic impact	N/A	N/A														
10																			

			Mn	RAM_3.	2_Score_S	heet.xls										
	А	В	С	D	E	F	G	Н	1		J	К		М	Ν	Р
72			·						ł							!
73		58	GW - Wetland soils	D	R or D	1										
74		59	GW - Subwatershed land use	D	R or D	1										
75		60	GW - Wetland size and soil group	D	R or D	1										
74 75 76 77 78		61	GW - Wetland hydroperiod	R	R or D	0.1										
77	S	62	GW - Inlet/Outlet configuration	D	R or D	1										
78	questions	63	GW - Surrounding upland topographic relief	D	R or D	1										
79 80	ŝti	64	Restoration potential w/o flooding		Y or N	5.1										
80	ne	65	Landowners affected by restoration		Eabc	Enter v	alid ch	oice								
81	σ	66A	Existing wetland size (acres) [from #10]	4	acres											
82	Additional		Total wetland restoration size (acres)		acres	0.1										
83	<u>io</u>	66C	(Calculated) Potential New Wetland Area [B-A]	-4	acres		ctively	drained:								
84	dit	67	Average width of naturalized upland buffer (poten	0	feet	0.1			####							
85	Þ	68	Likelihood of restoration success		abc	Enter v										
82 83 84 85 86 87	-		Hydrologic alteration type		Outlet, Tile			ump, Wt	rshd di	IV., F	Illin	g				
			Potential wetland type (Circ. 39)		1, 2, 3, 4,	5,6,7,8 I	3									
88 89		71	Wetland sensitivity to stormwater		Eabc											
09		72	Additional stormwater treatment needs		abc	l										
90 91 92																
92																
93						Þ.										
94					50	Rating Category										
				Raw score	Final Rating	Rating Categoi										
95		_	Function Name	Raw score		Ra Ca		Formula	a show	n to	the	right.				
96			Vegetative Diversity/Integrity		0.80	High			####							
97									####							
98	es		Hydrology - Characteristic		1.00	High			####							
99	ari								####							
100	Summaries		Flood Attenuation		0.58	Med			####							
101	Ę				0.00	TT' 1										
102 103	ຣ		Water QualityDownstream		0.69	High										
103	g		Water QualityWetland		0.90	High										
104	Ę		water Quanty wenand		0.90	riigii										
105	Ra		Shoreline Protection		N/A	N/A										
107	Functional Rating		Shoteline i foteetion		14/21	14/11										
108	Ĝ		Characteristic Wildlife Habitat Structure	0.86	0.86	High		#REF!								
109	ž					8		#REF!								
110	Ĕ		Maintenance of Characteristic Fish Habitat	0.70	0.70	High		#REF!								
111	ц					-		#REF!								
112			Maintenance of Characteristic Amphibian Habitat		0.85	High		•								
113								#REF!								
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!								
115								#REF!								
116			Commercial use		N/A	N/A		0								
117																
118			Special Features listing:			#REF!	####									
119								"D.E.E.								
120			Groundwater Interaction		discharge	#DEEL		#REF!								
121			Groundwater Functional Index		#REF!	#REF!										
122			Restoration Potential (draft formula)		#VALUE!	######										
123			Stormwater Sensitivity (not active)		#VALUL!	######										
124			Stornwater Sensitivity (not active)													
126																
127																
128																
129																
130																
131																
115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133																
133																
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136																
134 135 136 137 138 139																
138																
139																
140 141																
141																

	A	В	C	D	2_Score_S	F		G	F	1		-	1	К		—	М		N	Р
1	~	4 4	MnRAM 3.2 Digital Works			-		0	<u> </u>		wT	24	<u> </u>	N	<u> </u>		IVI	1	IN	1
1			WIIIAWI 5.2 Digital WOIKS	neel,	, Side	2					VVI	_34								
3			Question Description	User	Rating												_			
4		-		entry				This co weight											-	t-rated:
5 6		1	Veg. Table 2, Option 4 TOTAL VEG Rating	0.38	0.38 Medium			Comm value (unity r	ating	pleas	e man	ually	overw	rite th			#F	EF!	
7		4	Listed, rare, special plant species?	N	next			value	3110 WI	10 11	ic righ	, 1110			LU.					
8		5	Rare community or habitat?	N	next															
9		6	Pre-European-settlement conditions?	N	next															
10		7	hydrogeo & topo		Depress'l/F	low-tl	nrou	gh												
11 12		8	Water depth (inches) Water depth (% inundation)	24											_					
13		9	Local watershed/immedita drainage (acres)					lata s												
14		10	Existing wetland size	4		00	xes	are u	sear	n ca	licula	tion	5.							
15 16	Ē	11 12	SOILS: Up/Wetland (survey classification + site) Outlet characteristics for flood retention	N/A	N/A															
17	tior	12	Outlet characteristics for hydrologic regime	A A	1 IN/A															
18	ec.	14	Dominant upland land use (within 500 ft)	А	1		0.1													
19 20	ŗ, s	15 16	Soil condition (wetland) Vegetation (% cover)	A 95%	1 		1													
20	Jee	17	Emerg. veg. flood resistance	95% A	Н 1		1													
21 22	ksł	18	Sediment delivery	А	1															
23 24 25 26 27	Digital worksheet, section I	19 20	Upland soils (based on soil group) Stormwater runoff pretreatment & detention	B	0.5 0.1		1										S	cr	oll	
24	al x	20	Stormwater runoff pretreatment & detention Subwatershed wetland density	C C	0.1		1										dov			<u> </u>
26	gita	22	Channels/sheet flow	А	1															
27	ā	23	Adjacent naturalized buffer average width (feet)	500	H	۱ ۲	NQ		Н			1					an	SV	ver	-
28 29		24	Adjacent Area Management: % Full adjacent area mgmt: % Manicured	100%	1 0		1	1									m	lo	re	
30			adjacent area mgmt: % Bare		0											a	lue	st	ion	IS
31		25	Adjacent Area Diversity & Structure: % Native	100%	1		1	1									and			
32 33			adjacent area diversity: % Mixed adjacent area diversity: % Sparse/Inv./Exotic		0															
34		26	Adjacent Area Slope: % Gentle	5%	0.05		1	0.05									for			
35			adjacent area slope: % Moderate		0											са	lCι	ıla	tio	ns
36			adjacent area slope: % Steep		0	ļ											,		1	
38 39		27	Downstream sensitivity/WQ protection	В	0.5															
40		27 28	Nutrient loading	A	0.5												Ļ		Ļ	
41		29	Shoreline wetland?	Ν	Ν													\searrow		
42 43		30 31	Rooted shoreline vegetation (% cover) Wetland in-water width (in feet, average)		ter a percent															
43		32	Emergent vegetation erosion resistance		ter a percent ter valid ch															
45		33	Shoreline erosion potential	En	ter valid ch	D														
46 47		34 35	Bank protection/upslope veg. Rare Wildlife		ter valid cho N	oice														
47	=	36	Scarce/Rare/S1/S2 local community	N N	N															
49	on	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A														
50 51	Digital worksheet, section II	38 39	Community interspersion (see diagram 2) Wetland detritus	3 A	H 1		1						0							
52	, St	40	Wetland interspersion on landscape	A	1		1													
53	eet	41	Wildlife barriers	А	1															
54 55	sh	42	Amphibian breeding potential-hydroperiod Amphibian breeding potentialfish presence	A	1															
55 56	ork	43 44	Amphibian & reptile overwintering habitat	A C	1 0.1															
57	2	45	Wildlife species (list)																	
58 59	lita	46	Fish habitat quality	С	0.1															
59 60	Dig	47 48	Fish species (list) Unique/rare educ./cultural/rec.opportunity	N	N															
61		49	Wetland visibility	С	0.1															
62		50	Proximity to population	N	0.1															
63 64		51 52	Public ownership Public access	C C	0.1 0.1															
65		53	Human influence on wetland	А	1															
66		54	Human influence on viewshed	A	1															
67 68		55 56	Spatial buffer Recreational activity potential	C C	0.1 0.1															
69		57	Commercial crophydrologic impact		N/A															
70		-																		

			IVIN	RAM_3.	2_Score_S	neet.xis												
	А	В	С	D	E	F	G	Н			J		K	L	Μ		Ν	Р
72			-				-		-		-	-				-		<u> </u>
73		58	GW - Wetland soils	D	R or D	1												
74		59	GW - Subwatershed land use	D	R or D	1												
75		60	GW - Wetland size and soil group	D	R or D	1												
76		61	GW - Wetland hydroperiod	R	R or D	0.1												
74 75 76 77 78	S	62	GW - Inlet/Outlet configuration	D	R or D	1												
78	questions	63	GW - Surrounding upland topographic relief	D	R or D	1												
79 80	sti	64	Restoration potential w/o flooding		Y or N	5.1												
80	ë	65	Landowners affected by restoration		Eabc	Enter v	alid ch	oice										
81	dſ	66A	Existing wetland size (acres) [from #10]	4	acres													
82	Additional	66B	Total wetland restoration size (acres)		acres	0.1												
82 83 84 85 86 87	б		(Calculated) Potential New Wetland Area [B-A]	-4	acres	% effe	ctively	drained	: ##	##								
84	Ξ	67	Average width of naturalized upland buffer (poten	0	feet	0.1		value										
85	p	68	Likelihood of restoration success		ab c	Enter v	alid ch	oice										
86	∢		Hydrologic alteration type		Outlet, Tile	, Ditch,	GW pı	ump, Wi	trshc	l div.	, Fil	ling						
			Potential wetland type (Circ. 39)		1, 2, 3, 4,	5, 6, 7, 8												
88		71	Wetland sensitivity to stormwater		Eabc													
89		72	Additional stormwater treatment needs		abc													
90																		
90 91 92																		
93																		
94						ry												
<u> </u>				s. s	Final Rating	Rating Category												
95			Function Name	Raw score	Sina	Rat Cat		Formul	la shi	wn	to th	ne ri	oht					
96			Vegetative Diversity/Integrity	H 92	0.38	Med		rormu	##		10 th		gni.					
97			vegetative Diversity/integrity		0.50	ivica			##									
98	S		Hydrology - Characteristic		1.00	High			##									
99	rie					8			##									
100	Summaries		Flood Attenuation		0.60	Med			##									
101	ц																	
102	, n		Water QualityDownstream		0.69	High												
103	S S					_												
104	Functional Rating		Water QualityWetland		0.82	High												
105	ati																	
106	2		Shoreline Protection		N/A	N/A												
107	าล																	
108	<u>0</u>		Characteristic Wildlife Habitat Structure	0.86	0.86	High		#REF!										
109	ct							#REF!										
110	un		Maintenance of Characteristic Fish Habitat	0.70	0.70	High		#REF!										
111	ш				0.05	*** 1		#REF!										
112			Maintenance of Characteristic Amphibian Habitat		0.85	High												
113								#REF!										
114			Aesthetics/Recreation/Education/Cultural	0.33	0.33	Med		#REF!										
115					31/4	27/4		#REF!										
110			Commercial use		N/A	N/A		(J									
110			Special Eastures listing:			#REF!	#####											
110			Special Features listing:			#REF!	####											
120			Groundwater Interaction		discharge			#REF!										
120			Groundwater Functional Index			#REF!		#I\L1 :										
122					#IXL1 :													
123			Restoration Potential (draft formula)		#VALUE!	#####												
124			Stormwater Sensitivity (not active)															
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1			WITRAW 5.2 Digital WOLKS	neel,	, Siue	2					VVII	_35							
3			Question Description	User	Rating														
4		-	•	entry		-						1 auto se the h			sing the			-	st-rated:
5		1	Veg. Table 2, Option 4	0.57	0.57	•		Comm	nunity	rating	, pleas	e manu	ually c	verwr	ite that		#	REF	
6 7		4	TOTAL VEG Rating Listed, rare, special plant species?	0.57 N	Medium next			value	(snow	n to tr	ne rigni) into th	ne riei	d at E	5.				
8		5	Rare community or habitat?	N	next														
9		6	Pre-European-settlement conditions?	N	next														
10		7	hydrogeo & topo	FT	Depress'1/F	low	-throu	gh											
11		8	Water depth (inches)	24															
12 13		9	Water depth (% inundation) Local watershed/immedita drainage (acres)			E	Inter	data s	starti	ng h	ere.	Yello	w						
14		10	Existing wetland size	4		b	oxes	are u	sed	in ca	alcula	tions	-						
15	_	11	SOILS: Up/Wetland (survey classification + site)		-	_													
16	on	12	Outlet characteristics for flood retention	N/A	N/A														
17 18	cti	13 14	Outlet characteristics for hydrologic regime Dominant upland land use (within 500 ft)	A A	1		0.1												
19	Se	15	Soil condition (wetland)	A	1		0.1												
20	ěť,	16	Vegetation (% cover)	95%	Н		1												
21	Digital worksheet, section I	17 18	Emerg. veg. flood resistance		1														
22 23	ork	18 19	Sediment delivery Upland soils (based on soil group)	A B	1 0.5											~			
24	Ň	20	Stormwater runoff pretreatment & detention	С	0.1		1									5		oll	
24 25 26 27	tal	21	Subwatershed wetland density	С	0.1											dc)W	n t	0
26	igi	22 23	Channels/sheet flow Adjacent naturalized buffer average width (feet)	A 500	1 H		WQ	1	Н			1				ar	าร	we	r
28		23	Adjacent Area Management: % Full		1	٦	1	1				L							
29			adjacent area mgmt: % Manicured		0													re	
30		25	adjacent area mgmt: % Bare	1000/	0	-	1	1								que	es	tio	าร
31 32		25	Adjacent Area Diversity & Structure: % Native adjacent area diversity: % Mixed		1 0		1	1								ar	hd	se	e
33			adjacent area diversity: % Sparse/Inv./Exotic		0													nula	
34		26	Adjacent Area Slope: % Gentle		0.05		1	0.05	5										
35 36			adjacent area slope: % Moderate adjacent area slope: % Steep		0										С	aic	ula	atic	ons
38			adjacent area stope. // Steep																
39		27	Downstream sensitivity/WQ protection	В	0.5														
40		28	Nutrient loading	А	1												-	Y	
41 42		29	Shoreline wetland?	N	N												\sim		
42		30 31	Rooted shoreline vegetation (% cover) Wetland in-water width (in feet, average)		ter a percen ter a percen														
44		32	Emergent vegetation erosion resistance		ter valid ch														
45		33	Shoreline erosion potential		ter valid ch														
46 47		34 35	Bank protection/upslope veg. Rare Wildlife	En N	ter valid ch N	oice	•												
48	=	36	Scarce/Rare/S1/S2 local community	N	N														
49	on	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/													
50 51	ecti	38 39	Community interspersion (see diagram 2) Wetland detritus		M 1		0.5						0						
51	, St	39 40	Wetland interspersion on landscape	A A	1		1												
53	Digital worksheet, section II	41	Wildlife barriers	А	1		-												
54	sh	42	Amphibian breeding potential-hydroperiod	A	1														
55 56	ork	43 44	Amphibian breeding potentialfish presence Amphibian & reptile overwintering habitat	A C	1 0.1														
57	Š	45	Wildlife species (list)		0.1														
58	ita	46	Fish habitat quality	С	0.1														
59 60	Dig	47 48	Fish species (list) Unique/rare educ./cultural/rec.opportunity		N														
61		48 49	Wetland visibility	N C	N 0.1														
62		50	Proximity to population	N	0.1														
63		51	Public ownership		0.1														
64 65		52 53	Public access Human influence on wetland	C A	0.1														
66		54	Human influence on viewshed	А	1														
67		55	Spatial buffer	С	0.1														
68 69		56 57	Recreational activity potential Commercial crophydrologic impact		0.1 N/A														
70		51	commercial cropnyurologic impact	11/11	11/71														
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30 GW-Wetard solar 0 R or D 1 31 GW-Wetard solar and solar group 0 R or D 1 32 GW-Wetard solar and solar group 0 R or D 1 33 GW-Wetard solar 0 R or D 1 34 GW-Submarked large and solar group 0 R or D 1 35 GW-Submarked large and solar group 0 R or D 1 36 GW-Submarked large and solar group 0 R or D 1 36 GW-Submarked large and solar group 0 R or D 1 36 GW-Submarked large and solar group 0 R or D 1 36 GW-Submarked large and solar group 0 1 1 36 GW-Wetard solar 0 0 0 0 36 GW-Wetard solar GW-Wetard solar 0 0 0 37 GW Wetard solar GW Wetard solar GW Wetard solar 0 0 38 GW Wetard solar GW Wetard solar GW Wetard solar 0 0 39 GW Wetard solar GW Wetard solar GW Wetard solar 0 0 39 GW Wetard solar GW Wetard solar GW Wetard solar<		А	В	C	D	E	F	G	Н	1	J		К	L	1	М	N	Р
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85 9 0 Externation system 0 Finter valid choice 87 70 Potential wetland type (Circ. 39) 1, 2, 3, 4, 5, 6, 7, 8 88 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 89 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 89 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 80 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 80 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 80 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 80 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 80 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 80 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 80 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 4, 5, 6, 7, 8 80 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 80 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 80 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 80 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 80 1, 2, 3, 4, 5, 6, 7, 8 1, 2, 3, 4, 5, 6, 7, 8 80 1, 2,	82	al	66B				0.1											
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B8 T2 Additional stormwater treatment needs a b c B3 Function Name g g g g g g g g g g g g g g g g g g g	88						5, 6, 7, 6)										
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96 Vegetative Diversity/Integrity 0.57 Med #### 98 99 99 99 99 99 1001 1001 Hydrology - Characteristic 1.00 High #### 1001 Water Quality-Downstream 0.71 High #### 1005 Water Quality-Wetland 0.83 High #### 1006 Other Characteristic Wildlife Habitat Structure 0.85 0.85 High 1101 Other Characteristic Fish Habitat 0.70 Nigh #REFI 1111 Maintenance of Characteristic Fish Habitat 0.70 Nigh #REFI 1111 Maintenance of Characteristic Fish Habitat 0.70 0.70 High #REFI 1111 Aesthetics/Recreation/Education/Cultural 0.33 0.33 Mod #REFI 1111 Special Features listing: #REFI #REFI #REFI 1111 Groundwater functional (draft formula) #VALUE #H### #H### 1111 Stormwater Sensitivity (not active)							ry .											
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103 103 Water QualityWetland 0.83 High 105 Shoreline Protection N/A N/A 106 Characteristic Wildlife Habitat Structure 0.85 High #REFI 101 Maintenance of Characteristic Fish Habitat 0.70 0.70 High #REFI 111 Maintenance of Characteristic Amphibian Habitat 0.85 High #REFI 113 Aesthetics/Recreation/EducationCultural 0.33 0.33 Med 114 Aesthetics/Recreation/EducationCultural 0.33 0.33 Med 116 Commercial use N/A NA 0 117 Special Features listing: #REFI #REFI 118 Groundwater Interaction discharge #REFI 122 Restoration Potential (draft formula) #VALUEI #REFI 123 Interaction Potential (draft formula) #VALUEI ###### 124 High High High 125 Forundwater Sensitivity (not active) #VALUEI #REFI 126 High High High High	98	ies		Hydrology - Characteristic		1.00	High											
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