



RECONNAISSANCE PROCEDURES FOR DEPRESSIONAL WETLAND MONITORING SITES

I. PURPOSE

To describe and document the standard operating procedure (SOP) used by the Minnesota Pollution Control Agency's (MPCA) Biological Monitoring Program to verify if a wetland meets minimum sampling criteria for the purpose of assessing water quality and/or developing biological assessment criteria.

II. SCOPE/LIMITATIONS

The following SOP applies to all depressional wetland monitoring sites for which an integrated assessment of water quality is to be conducted. An integrated depressional wetland assessment involves the collection of biological (macroinvertebrate and plant) and chemical data to assess wetland condition. Reconnaissance procedures should be implemented at all potential depressional wetland sites prior to biological sampling to determine if the wetland meets minimum sampling criteria.

III. GENERAL INFORMATION

Depressional wetland sites may be selected for assessment for a number of reasons including: 1) sites randomly selected for ambient condition monitoring, 2) sites selected for the development and calibration of biological assessment criteria, 3) sites selected to evaluate a suspected source of pollution, and 4) wetland management/restoration/remediation effectiveness monitoring.

Depending on the assessment goal, up to five categories of information are required from site reconnaissance: 1) site access, 2) wetland type, 3) assessability in the context of study objectives and/or regulatory authority, 4) sampleability for macroinvertebrates and/or plants, and 5) human impacts that are potentially affecting the wetland. Data for categories 1-4 must be gathered at all potential depressional wetland sites, regardless of the purpose of assessment. Data for category 5 should be collected at potential sites that are being sampled for the purpose of developing and calibrating biological criteria, and/or sites that are potentially representative of regional least-impacted conditions (i.e., reference sites).

IV. PERSONNEL REQUIREMENTS

- A. Field Crew Leader: The field crew leader must be a professional aquatic biologist with a good knowledge of Minnesota wetlands. He or she must have a minimum of a Bachelors degree in aquatic biology, botany, entomology or a closely related field; and have a minimum of six months field experience with wetland sampling. Field crew leaders should also be proficient with map reading and orienteering; using both Global Positioning System (GPS) and compass.
- B. Field Assistant/Intern: The field assistant/intern must have at least one year of college education and an interest in aquatic biology. Coursework in environmental, natural resource, and/or biological science is preferred.



- C. General Qualifications: All personnel conducting this procedure must have the ability to perform rigorous physical activity in an outdoor setting; be capable of lifting up to 50 lbs. of sampling equipment; be able to travel up to four nights per week during the summer months; and maintain a positive attitude within a team setting.

V. RESPONSIBILITIES

- A. Field Crew Leader: The field crew leader is responsible for implementing the action steps of the procedure and ensuring that the data generated meets the standards and objectives of the Biological Monitoring Program and the MPCA. In addition, the field crew leader is responsible for planning sampling activities and ensuring that MPCA policies are followed during all sampling activities.
- B. Field Assistant/Intern: The field assistant/intern is responsible for implementing the action steps of the procedure; including the maintenance, stocking, and storage of sampling equipment, data collection, and data recording.

VI. TRAINING

All inexperienced personnel will receive instruction from a trainer designated by the program manager. Major revisions in this protocol require that all personnel that apply this procedure on behalf of the MPCA be re-trained in the revised protocol by experienced personnel. The field crew leader will provide additional instruction to the field assistant/intern and will be responsible for monitoring the performance of the field assistant/intern throughout the field season.

VII. ACTION STEPS

- A. Pre-reconnaissance Planning: Prior to field reconnaissance, effort should be expended to plan and gather as much of the required reconnaissance information as possible from the office. Although site reconnaissance can be implemented at any wetland site at any time, it is advantageous to identify as many potential sites as possible or needed to maximize travel efficiency.
- A.1. Professional recommendations: Depending on the project goal, it may be useful to solicit wetland site information from other natural resource professionals that are familiar with the wetlands in their region. Natural resource personnel can often give accurate information about wetland location, access, type, and human impacts.
- A.2. GIS reconnaissance: Location information for all potential depressional wetland sites should be recorded in a Geographic Information System (GIS). This will aid documenting where each potential site is located as well as link geographical information to data collected from the site reconnaissance. In addition, many potential wetland sites can be located through interpretation of digital orthophoto quads and National Wetland Inventory maps displayed in a GIS.



Prior to field reconnaissance, create an ArcMap™ project that has the locations of all potential depressional wetland sites. Site locations should be recorded as a distinct point-shapefile, not as a layer. This will facilitate continued use of the location data in other ArcMap™ projects. Make state, regional, and site maps as needed to aid reconnaissance navigation from the ArcMap™ project. These maps should be made by exporting a Layout View of the area of interest as a separate image file so the map can be saved. JPEG format resolution will be sufficient for the various types of maps. In addition, upload all wetland location coordinate data from the GIS to a hand held Global Positioning System (GPS) receiver. This is done by exporting the attribute table of the shapefile, with the x,y coordinate data, as a text file and then open that file with GPS utility software that can upload and download GPS points from a PC. Check the GPS manufacturer's information for the correct software applications. Finally, save a version of the project to a laptop computer for complete geographic data access while in the field.

- A.3. Determine ownership and contact landowners: Determine as much potential site property ownership information as possible prior to reconnaissance. Ownership should be determined for both the wetland and the access route to the wetland from public roads. This can be done by consulting recent County Plat maps, contacting local county tax assessors, courthouse records, and internet sources, as well as information from professional site recommendations. If potential sites or access routes are privately owned, obtain permission from the landowner(s) before accessing that property. Under no circumstances should field personnel knowingly trespass on private property to access a site.
- B. Equipment Check: Before heading out into the field, check that all equipment necessary to complete this SOP is present and in proper working condition (Table 1).
- C. Site Reconnaissance:
- C.1. Determine accessibility and record site information: Upon arrival at a potential depressional wetland site, begin recording data on the Wetland Reconnaissance Evaluation Sheet (attached at the end of this SOP). Record the **Preliminary Site Name**, which is a unique name that will identify the site throughout the reconnaissance and site selection phase, if the site has not already been established and named. The **Preliminary Site Name** does not need to follow a strict coding system. An official **Site Name** is established once a site is selected and consists of the following format: two digit year the site was established, four letter county code, and a three digit sequential number based on the order the site is established. For example, the third site established in Cass County in 2004 would have the name: 04CASS003. If the site has already been established, record the **Site Name**. Also record the **County** the site occurs in, **Date** of the reconnaissance evaluation, and the initials of the **Crew** performing the evaluation. If site location coordinates have already been established there is no need to record site location GPS points. If the site has not been previously been identified and its location listed, record a waypoint for that site on the GPS receiver. Assign the **GPS File Name** in the GPS receiver with the first 6 characters of the **Preliminary Site Name** and a single digit incremental number (beginning at 1) that indicates the number of different waypoints



recorded at the site. Also record the **GPS File Name(s)** on the reconnaissance evaluation sheet. Document any photographs taken at the site in the **Photo Info** box. Record the **Camera Make and Model** of the digital camera used and the **Photo Number(s)** given by the camera. This will be necessary to retrieve and archive downloaded digital photographs. Complete the **Ownership Info** checklist. If the site and/or the access route

Table 1. Equipment List-This table identifies all the equipment needed to complete the MPCA depressional wetland site reconnaissance protocol.

<u>Equipment</u>	<u>Purpose</u>	<u>Operation Check</u>
<i>Clipboard & Site Reconnaissance Sheets</i>	-Recording reconnaissance data	
<i>Global Positioning System (GPS)</i>	-Navigation and sample location recording	-Date and time -Correct coordinate system and datum -Associated cord
<i>Laptop Computer</i>	-Downloading and data storage -GIS applications	-Software function -Associated cords and devices -Power inverter
<i>Digital Camera</i>	-Photographic site documentation	-Memory card(s) -Associated cords -Date and time
<i>State, Regional, & Site Maps</i>	-Site location information	
<i>Field Notebook</i>	-Recording misc. notes -Backup for recording data	
<i>Cell Phone</i>	-Communication	-Power cord(s)
<i>4-8 Rechargeable AA Batteries & Charger</i>	-Spare batteries for GPS and digital camera	
<i>Chest Waders/Knee Boots</i>	-To keep field workers dry	
<i>Raingear</i>	-To keep field workers dry	
<i>Compass</i>	-Navigation	
<i>Pencils</i>	-For recording data	
<i>First-Aid Kit</i>	-Emergency medical care	



to the site are privately owned, gather landowner information, seek permission, and record the results in the **Property Owner Info** box. This information should have already been generated during Pre-reconnaissance planning if the site was identified prior to field reconnaissance. If site and access route land ownership has not been determined by the time of the field reconnaissance, ask local residents for ownership information and/or permission. Record the local **Directions to Site** if the site location is not immediately obvious from the vehicle parking area, or if there are additional wetlands in the area that may be confused with the evaluated wetland. Also record any **Site Access Issues**.

- C.2. Determine wetland type: The Biological Monitoring Program at the MPCA has been developing wetland condition assessment indicators for depressional wetlands in Minnesota (Gernes and Helgen 2002, Genet et al. 2006). In this context, the MPCA is defining depressional wetlands as: wetlands that occur within a shallow depression in the landscape that are not directly associated with streams (i.e., riparian wetland) or lakes (i.e., coastal wetland, lacustrine fringe, or littoral zone); have a semi-permanent to permanent water regime (i.e., not a temporarily or seasonally flooded wetland such as a vernal pool); and have shallow marsh to shallow open water (aquatic) vegetation types (Eggers and Reed 1997). This combination of water regime and vegetation communities corresponds to U.S. Fish and Wildlife Service (US FWS) Circular 39 wetland types 3, 4, and 5 (Shaw and Fredine 1956). Verification of the wetland type of potential sites is a very important component of field reconnaissance as the misclassification of a wetland site can potentially produce misleading results from biological assessments.

Determine the type of the potential wetland site by assessing 3 interrelated wetland classification factors: 1) the hydrogeomorphic or **HGM Type**, 2) the **Water Regime**, and 3) the predominant **Vegetation Type(s)**.

- 1) Wetland HGM classification is a physical description of a wetland based on the geomorphic setting of the wetland basin and surrounding upland area; the dominant source of water to the wetland; and the dominant hydrodynamics (flows or exchanges of water) through the wetland. Use the following definitions to classify the HGM type of the potential wetland site and complete the **HGM Type** checklist.
 - *Depressional*: Wetland basins that occur in shallow depressions in the landscape. Indicate the water flow path if possible:
 - *Isolated*-No perennial surface water inputs or outputs
 - *Inflow*-Perennial surface water input, no output
 - *Outflow*-Perennial surface water output, no input
 - *Throughflow*-Perennial surface water inputs and outputs
 - *Riverine/Riparian*: Wetlands that are associated with lateral stream hydrodynamics (i.e., floodplain wetlands).
 - *Slope*: Wetlands occurring on slopes from a ground water source.
 - *Lacustrine Fringe*: Wetlands that are directly fringing lakes and/or are associated with lake hydrodynamics. At some locations it may be very difficult to determine whether the water body is a large depressional type wetland or a shallow lake with expansive lacustrine fringe wetlands. If this



situation occurs, use the decision tree in Figure 1 to determine the water body type.

- *Estuarine Fringe*: Wetlands that are directly fringing estuarine or flooded river mouth areas (i.e., where streams pour into large lakes). Estuarine Fringe wetlands are influenced by both stream and lake hydrodynamics.
- *Mineral Flat*: Wetlands occurring in a near level landform, which is typically extensive, with mineral topsoils. This type is typically associated with former glacial lake beds in MN.
- *Organic Flat*: Wetlands occurring in a near level landform, which is typically extensive, with organic (peat) topsoils. This type is typically associated with former glacial lake beds in MN.
- *Impoundment*: Wetland basins that are created, greatly enhanced in area, and/or maintained from the impoundment of low-order or intermittent streams. Impoundments may be natural (e.g., beaver dams) or man-made.

2) Water regime classifications are based on the depth, presence, and persistence of surface or subsurface water during the growing season. Use the following definitions (*sensu* Cowardin et al. 1979) to classify the predominant water regime of the potential wetland site and complete the **Water Regime** checklist.

- *Permanently Flooded*: Water covers the surface of the wetland throughout the growing season in all years.
- *Semipermanently Flooded*: Surface water persists throughout the year in most years.
- *Saturated*: Soils are saturated to the surface for extended periods during the growing season, but surface water is seldom present.
- *Seasonally Flooded*: Surface water is present for extended periods early in the growing season, but is absent by the end of the season in most years. Water table is often near the surface when surface water is absent.
- *Temporarily Flooded*: Surface water is present for brief periods, but the water table is usually well below the surface for most of the season.

3) Use the following wetland vegetation classification definitions (*sensu* Eggers and Reed 1997) to determine the different vegetation types in the potential site. Record all of the different vegetation types that are present in the **Vegetation Type(s)** checklist and estimate the extent of each type in the basin as a percentage.

- *Fresh (Wet) Meadow*: Emergent plants (grasses, sedges, rushes, various herbaceous forbs) growing on saturated mineral soils.
- *Shallow Marsh*: Emergent plants (cattail, bulrushes, sedges, spikerushes, grasses, arrowhead) growing in shallow water or loose floating mats.
- *Deep Marsh*: Emergent plants (cattail, bulrushes, wild rice, arrowhead) intermixed with aquatic plants (pondweeds, watermilfoil, waterlilies) and open water areas.
- *Shallow Open Water*: Aquatic plants (pondweeds, watermilfoil, waterlilies) and open water areas.
- *Shrub Swamp*: Shrubs (alder, willow, dogwood) growing from mineral or organic soils.



- *Wooded Swamp*: Hardwood (ash, maple, aspen) and/or coniferous (white cedar, tamarack) trees growing from saturated mineral or organic (peat) soils.
- *Peatlands*: Emergent graminoids (sedges, cotton grasses, saw grass), low shrubs (leather leaf, bog rosemary, cranberry), and/or sphagnum mosses growing from organic (peat) soils (open bogs and poor fens) or with mature trees (black spruce, tamarack; coniferous bogs). May be a well formed floating vegetation mat.

C.3. Collect Assessability Information: There are several factors that the MPCA needs to consider before deciding on whether to select, and subsequently assess, a potential depressional wetland site in addition to the wetland classification and sampleability aspects. These factors revolve around the degree of human alteration to wetlands as well as human use of wetlands. Depending on the human alteration and/or use, a potential site may be not assessable because: 1) of regulatory exemptions, 2) the site has been altered but the affected acreage has been mitigated for, and/or 3) the alteration is solely responsible for the sampleable area in the site but the predominant wetland type for the basin is not type 3, 4, or 5. A decision tree has been designed to evaluate the assessability of a site and is included in Appendix A. In addition, created (wetlands created from uplands), restored (wetlands that had previously been drained or filled but are now being returned to a wet state), and enhanced (existing wetlands that are being returned to some pre-existing condition) wetlands should be excluded from indicator and criteria development projects because of the likelihood that they could give misleading results due to direct management practices. However, these types of wetlands could still be assessed to determine their current condition and document management effectiveness.

Collect assessability information at the site by answering the questions in the **Assessment Info** checklist. Make specific comments for any marked questions detailing the extent (i.e., % of the wetland area affected) and effect of wetland alteration. Use the information recorded in the **Assessment Info** section to make a final determination of site assessability following the included decision tree (Appendix A).

C.4. Determine Site Sampleability: Determine if the potential site meets the minimum biological sampling requirements. For macroinvertebrates, a site meets the minimum sampling requirements if it has 1) a minimum surface water depth of 15-20 cm during June and 2) a littoral zone that can be safely and effectively sampled without the use of a boat (e.g., deeper wetlands fringed by floating mat communities often preclude sampling macroinvertebrate due to safety considerations). For plants, a site meets the minimum sampling requirements if it predominantly has US FWS Circular 39 types 3, 4, or 5. Record this evaluation by completing the **Invertebrates** and **Plants** checklists in the **Sample/Other Info** box. This information may seem repetitive, but it is very important that the minimum sample requirement evaluations are completed during reconnaissance before sampling crews are sent to the site.

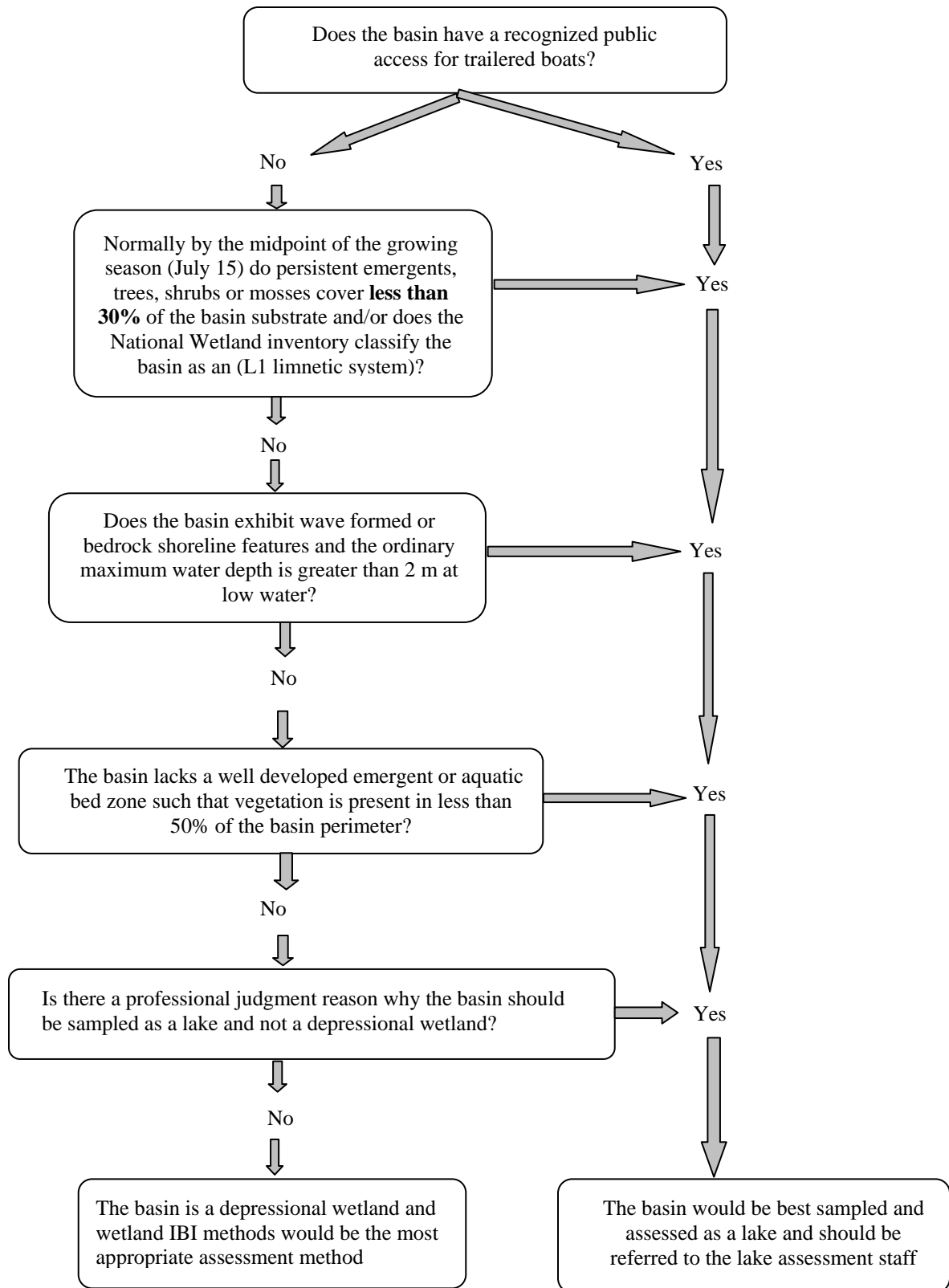


Figure 1. Shallow lake vs. wetland assessment decision flow chart.



- C.5. Complete Stressor Checklist (if necessary): Sites that are being sampled for the purposes of developing and calibrating biological assessment criteria require an additional site rating called the Human Disturbance Score (HDS; Gernes and Helgen 2002). The HDS is used to quantify anthropogenic impacts occurring at the site and requires field data of potential impacts. It is necessary to select sites that span the gradient of least to severely impacted to develop and calibrate biological assessment criteria. Thus, it is necessary to collect stressor data during site reconnaissance to facilitate site selection along the anthropogenic disturbance gradient and to assist with the derivation of the HDS.

If the site is being evaluated for biological assessment criteria development, complete the **Stressor Checklist** on the Reconnaissance Evaluation Sheet. The **Stressor Checklist** is divided into four sections: **Immediate Landuse, Habitat Alteration, Hydrologic Modification**, and **Sedimentation/Water Column** condition. The **Stressor Checklist** should be filled in by walking around the margin of the wetland and recording potential stressors.

- C.6. Sketch Wetland: Make a rough sketch of the wetland in the space provided on the back of the Reconnaissance Evaluation Sheet. Record access routes, vegetation zones, and potential stressors on the site sketch.
- D. Data Security and Equipment Maintenance: Immediately after each day of depressional wetland site reconnaissance, the following actions must be taken to secure the data collected during field sampling and maintain equipment for further use.
- D.1. File Reconnaissance Evaluation Sheets: Remove completed Reconnaissance Evaluation Sheets from the clipboard, dry them (if necessary), and securely file them.
- D.2. Download Data: Download any and all field data from the GPS, and digital camera onto the hard drive of the laptop computer. Make an additional copy of these files onto a portable memory source (e.g., 'memory stick', CD) to back up the files. Delete data as necessary on the individual units to avoid making duplicate copies of data from downloading the same data multiple times.
- D.3. Equipment Assessment and Maintenance: Assess and maintain sampling equipment as necessary. Recharge any flat batteries. Organize, update, and maintain site files and maps. Dry and repair waders as necessary.

VIII. QUALITY ASSURANCE AND QUALITY CONTROL

Compliance with this procedure will be maintained through annual internal reviews. Technical personnel will conduct periodic self-checks by comparing their results with other trained personnel. Calibration and maintenance of equipment will be conducted according to the guidelines specified in the manufacturer's manuals.



In addition to adhering to the specific requirements of this sampling protocol and any supplementary site specific procedures, the minimum QA/QC requirements for this activity are as follows:

- A. Control of deviations: Deviation shall be sufficiently documented to allow repetition of the activity as performed.
- B. QC samples: QC samples are not required for this SOP.
- C. Verification: The field crew leader will conduct periodic reviews of field personnel to ensure that the procedures detailed in this SOP are being followed.

IX. LITERATURE CITED

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service, Washington, DC. FWS/OBS 79/3. 103 pp.

Eggers, S.D. and D.M. Reed. 1997. Wetland Plants and Plant Communities of Minnesota and Wisconsin. 2nd edition. U.S. Army Corps of Engineers, St. Paul District, St. Paul, MN.

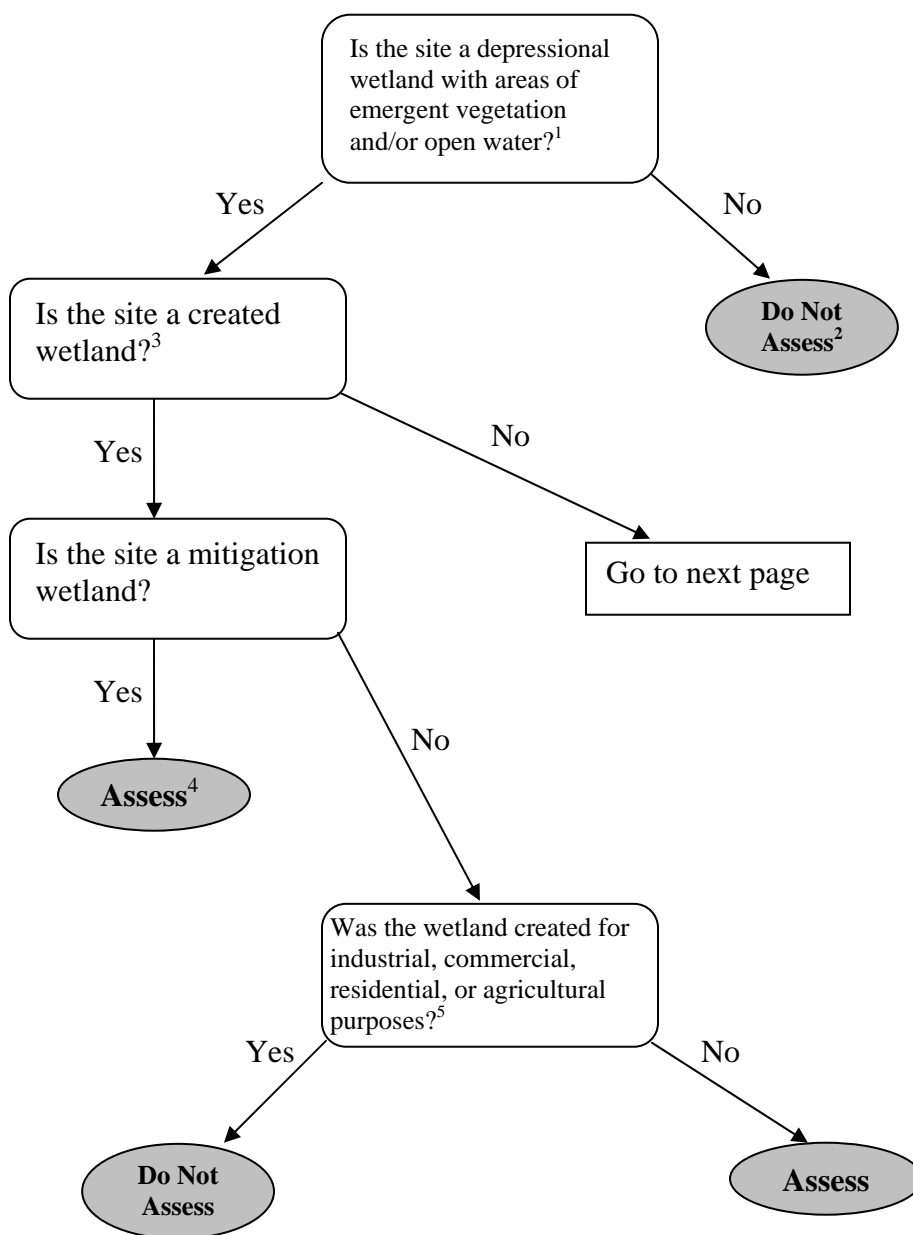
Genet, J.A., M. Bourdaghs, and M.C. Gernes. 2006. Wetland Assessment for Improved Decision Making. Minnesota Pollution Control Agency, Final Report to U.S. Environmental Protection Agency. Assistance #CD-975768-01.

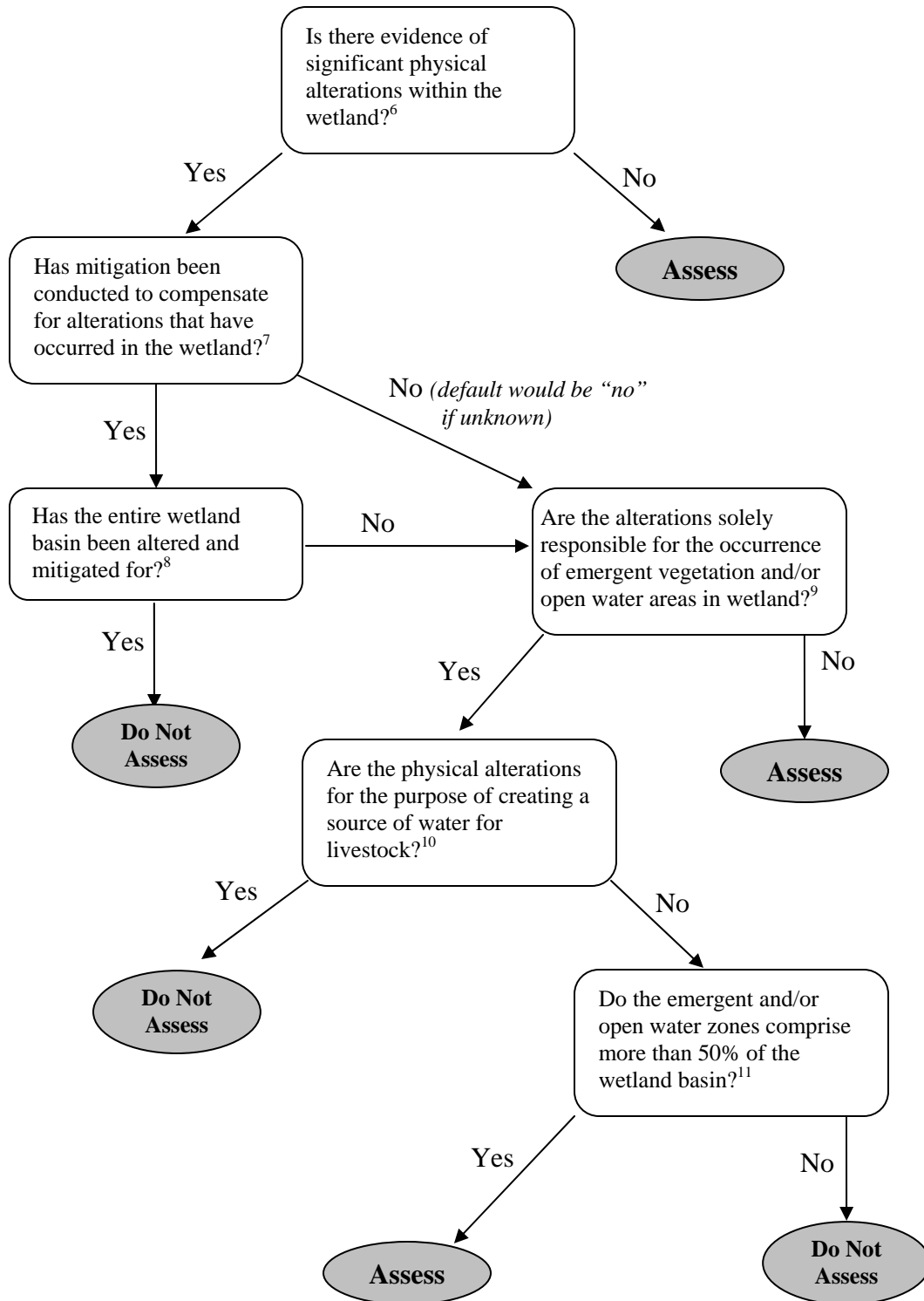
Gernes, M.C. and J.C. Helgen. 2002. Indexes of biological integrity (IBI) for large depressional wetlands in Minnesota. Minnesota Pollution Control Agency, Final Report to U.S. Environmental Protection Agency. Assistance #CD985879-01.

Shaw, S.P. and C.G. Fredine. 1956. Wetlands of the United States, Their Extent and Their Value for Waterfowl and Other Wildlife. Circular 39, U.S. Fish and Wildlife Service, Washington D.C. 67 pp.

APPENDIX A. Depressional wetland assessment flowchart.

Purpose: The following decision tree was designed to assist with determining 1) the applicability of the process outlined in the current report for assessing various wetland types and 2) the appropriateness of the process outlined in the current report for assessing wetlands in various regulatory contexts. Each branch of the tree ends with the decision of ‘Assess’ or ‘Do Not Assess’. If included, guidance for a decision is indicated with a superscript number and can be found in the section following the decision tree. In cases where it is unclear whether the site is a shallow lake or wetland, this decision tree should only be used when the criteria in Appendix C has determined that it is more appropriate to assess the site as a wetland.





Guidance:

1) Determination of wetland type could preliminarily be made in the office using existing data sources (e.g., NWI) but the final decision should be based on a field visit to the site. Usage of the hydrogeomorphic wetland class 'depressional' here includes all of its various subcategories including: isolated, flow-through, and tributary. Emergent wetlands typically corresponds to Types 3, 4, and 5 in the Circular 39 wetlands classification system.

2) Current assessment techniques (e.g., IBIs) have not been tested and validated for wetland types in Minnesota other than depressional and therefore are not able to be assessed at this time.

3) Was the wetland created as a result of human activity in an area that was previously upland? Use National Wetland Inventory (NWI) maps, USGS quadrangle maps, historic aerial photos and soil surveys (e.g. absence of hydric soils) to document whether the site was previously upland. On-site indicators include: a geometric shape to the wetland; presence of berms, spoil piles, or islands; a poorly developed organic layer, steep-sided banks and littoral zone; and evidence of plantings.

4) While this kind of wetland could be assessed with the process described in this report, the resulting ALUS determination would need to be interpreted with caution given that the MPCA has not yet developed performance standards for compensatory mitigation wetlands. For example, the condition of these sites will be highly dependent on their age and creation methods.

5) Examples here would include wetlands constructed for the sole purpose of wastewater treatment, stormwater retention, and livestock watering.

6) Significant physical alterations to a wetland include dredging or excavation, fill, increased inundation, and drainage. Evidence of excavation would include: a geometric shape to the open water area; presence of berms, spoil piles, or islands; a poorly developed organic layer in the sediments of the open water area, and often a steep transition to the open water area of the wetland. Evidence of increased inundation or past drainage may not be obvious at a site. The first step in resolving this issue would be to examine existing data sources (e.g., NWI, aerial photos) to determine the type of wetland it was historically. If the water levels appear to have changed significantly from its historic condition, the next step is attempting to determine whether this change was due to natural climatic or anthropogenic factors. Field indicators of inundation include numerous standing dead trees with trunk bases submerged, emergent vegetation litter arising from deeper water zone with sparse emergent plants occurring toward shore, submerged microtopographic features such as hummocks, a sharp transition from obligate upland plant species to ponded waters, narrow bands of poorly developed emergent plants and in some cases floating mat communities, particularly dominated by *Typha* sp. Further evidence that an inundation increase was the result of human activities includes: the presence of culverts, ditches, or drain tile outlets entering the wetland; an increase in the amount of impervious surface in the wetland's catchment basin; an unnatural connection to another waterbody; intentional conveyance of water into the wetland for treatment purposes (e.g., municipal water treatment); and the presence of impediments to subsurface and sheet flow (e.g., road and railroad beds) down-gradient of the wetland. Evidence that a drop in water level was the result of human

activities includes: the presence of ditches, subsurface tiling, or water control structures; dewatering in or near the wetland; and the presence of impediments to subsurface and sheet flow (e.g., road and railroad beds) up-gradient of the wetland. Evidence of fill activities would include the presence of berms, levees, or dams. However, this question may be more readily resolved by examining existing data sources (e.g., NWI, soil surveys, USGS quadrangle maps, etc.) to delineate the historic wetland boundary and compare this to its current delineation.

7) Has the physical alteration been compensated for through wetland mitigation, restoration, or enhancement under the regulations of the Wetlands Conservation Act, Section 404 of the Clean Water Act, Public Waters Inventory, or Minnesota Rule 7050.0186.

8) Have the alteration(s) occurred in the entire wetland or only a portion of the wetland. If mitigation was required to compensate for only a portion of the wetland (e.g., a partial fill) then the unaltered (unmitigated) areas are subject to condition monitoring. However, if the alteration of the entire wetland has been compensated for through mitigation, the wetland would not be assessed. Wetlands which have been physically altered as part of municipal or industrial treatment systems and which have been fully mitigated are not considered to be Waters of the State in accordance with MN Rules ch 7050.0130 (F) and it is not appropriate to assess these treatment waters.

9) Have human activities created an emergent or open water zone in a wetland that previously did not contain such areas (e.g., wet meadow). Examples here would include the excavation of a saturated soil wetland to create areas of open water or increased inundation of a saturated soil, etc. Determination of the type of wetland it was prior to human alteration will require the examination of data sources such as the NWI, old USGS quadrangle maps, and historic aerial photos (when available).

10) The presence of livestock, evidence of recent usage by livestock within or immediately adjacent to the wetland, and the wetland being located within a fenced pasture are all indicators that the wetland is currently being used as a source of water for livestock.

11) This question represents a determination of whether it is more appropriate to assess the wetland basin as an emergent depressional wetland or the type of wetland it was previous to the physical alterations. If the historic wetland type still comprises the majority of the wetland basin, then it should not be assessed at this time because the MPCA currently does not have indicators of condition for these types of wetlands. If the majority of the wetland has been converted to an emergent/open water wetland, then it should be assessed using the protocols and assessment procedure outlined in this document. An example here might be the excavation of small wildlife ponds within a larger high water table wetland with a saturated water regime such as a scrub-shrub carr, a fen, or a fresh wet meadow.

MPCA WETLAND RECONNAISSANCE EVALUATION SHEET

Version 1.3 6/2006

Site Info			
Preliminary Site Name:		Site Name:	County:
			Date:
Crew (initials):	GPS File Name(s):	Photo Info: Camera Make & Model:	Photo Number(s):



Access Info			
Ownership Info		Property Owner Info	
<input type="checkbox"/> Wetland public property? <input type="checkbox"/> Access route public property?		<input type="checkbox"/> Do we have permission to sample the site? Property Owner Name: _____ Address: _____ Contact Name (if different): _____ Phone #: _____	

Directions to Site/Access Issues (use map sketch on back if needed):

Wetland Type			
HGM Type		Water Regime	Vegetation Type(s) (check types present in basin and estimate cover)
<u>Checklist</u> <input type="checkbox"/> Depressional (circle one) <i>Isolated Inflow Outflow Throughflow</i> <input type="checkbox"/> Riverine/Riparian <input type="checkbox"/> Slope <input type="checkbox"/> Lacustrine Fringe <input type="checkbox"/> Estuarine Fringe <input type="checkbox"/> Mineral Flat <input type="checkbox"/> Organic Flat <input type="checkbox"/> Impoundment <i>Natural Man-made</i>		<u>Checklist</u> <input type="checkbox"/> Permanently Flooded <input type="checkbox"/> Semipermanently Flooded <input type="checkbox"/> Saturated <input type="checkbox"/> Seasonally Flooded <input type="checkbox"/> Temporarily Flooded	<u>Checklist</u> % <input type="checkbox"/> Wet Meadow <input type="checkbox"/> Shallow Marsh <input type="checkbox"/> Deep Marsh <input type="checkbox"/> Shallow Open Water <input type="checkbox"/> Shrub Swamp <input type="checkbox"/> Wooded Swamp <input type="checkbox"/> Peatland (bog/poor fen)
		Comments:	

Assessment Info	
<u>Checklist</u> <input type="checkbox"/> Is the site a created wetland? <i>List Evidence:</i> _____ <input type="checkbox"/> Was the wetland created for industrial, commercial, residential, or agricultural purposes? <input type="checkbox"/> Is there evidence of significant physical alterations within the wetland? <input type="checkbox"/> Are the alterations solely responsible for the occurrence of emergent vegetation and/or open water areas in wetland? <input type="checkbox"/> Are the physical alterations for the purpose of creating a source of water for livestock? <input type="checkbox"/> Evidence of recent restoration? (e.g., plantings, landscaping, etc.)	<u>Comments:</u>

Sample/Other Info	
Invertebrates	Other
<u>Checklist</u> <input type="checkbox"/> Insufficient water depth for invertebrate sampling? (depth ~ 15-20 cm in June) <input type="checkbox"/> Site has floating mat vegetation?	<u>Checklist</u> <input type="checkbox"/> Site has lake-like characteristics? (boat access, wave formed shoreline features, max depth > 2 m) <input type="checkbox"/> Evidence of fish present? <input type="checkbox"/> Evidence of beaver activity?
Plants	
<input type="checkbox"/> Site is not predominantly 3/4/5 vegetation type?	

Stressor Checklist (complete this section only if potential site is a development or a potential reference site)																																																	
Immediate Landuse (within 50m)		Habitat Alteration (within wetland & 50 m of surrounding upland)																																															
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* estimate to nearest 5% Mean width of natural upland buffer (m): _____ Minimum width (m): _____ Maximum width (m): _____ up to 500m		<div style="text-align: center;">  <p>HDS SCORE†</p> <p>†to be calculated after all sites have been evaluated</p> </div> <div style="text-align: right;">  <p>HDS SCORE</p> </div>																																															
_____ + _____ = _____ Subtotal Subtotal Total																																																	

Stressor Checklist (cont.)

Hydrologic Modification

Checklist

- ☐ Ditch *inlet outlet both*
- ☐ Tile drain, # ____ *if multiple*
- ☐ Dredging
- ☐ Weir/Dam Type: _____
- ☐ Grading/Filling (in or near wetland)
- ☐ Stormwater input/culvert: # ____ *if multiple*
- ☐ Dike, berm or levee: ____% *of wetland edge*
- ☐ Road or RR bed ____% *of wetland edge*
- ☐ Unnatural connection to other waterbody
- ☐ Source water change
- ☐ Drainage
- ☐ Dewatering in or near wetland
- ☐ Point source (non-stormwater)

____ Total

HDS SCORE

Sedimentation/Water Column

Checklist

- ☐ Sediment deposits/plumes
- ☐ Eroding banks/slopes
- ☐ Soil disturbance in immediate
upland (e.g., construction, cultivation)
- ☐ Turbid water column
- ☐ Excessive density of algae

____ Total

HDS SCORE

HDS Summary

HDS Score

Immediate Landuse _____

Habitat Alteration _____

Hydrologic
Modification _____

Sedimentation/Water
Column _____

TOTAL _____

Comments:

Site Elimination

Based on the field observations, is there enough evidence to warrant dropping this site? _____

Explain the rationale for this decision:

Sketch of Wetland

