INSTRUCTIONS FOR USING THE DEPRESSIONAL FUNCTIONAL ASSESSMENT METHOD

This functional assessment process in Iowa is to be used for all closed, upland depressional wetlands. This includes the Wisconsin glaciation, MLRA 103 prairie potholes, the Iowan outwash, MLRA 104, and any other part of the state with these closed upland depressions.
It is not intended for use on depressional areas in floodplain sites.

Completion of the Functional Assessment worksheet will require that the analysis team determine values for each of the 12 Variables shown in A below. The variable values will be used to compute Functional Index (FI) values for each of the six functions that were modeled. These Functions and their respective formulas are shown in B below. Function F7 depends upon acres of wetlands not the variables in A. Function F7 and the other six FI values will be used to determine if the applicant will receive a minimal effect determination. The FI values will also be used to compute functional losses and to compute gains on areas offered for mitigation to determine mitigation requirements.

A. The 12 Variables used in the models are:

1. Vup	=	Upland Landuse
2. Vsource	=	Wetland Source Area Flow Interception
3. Vwet	=	Wetland Landuse
4. Vbuff	=	Buffer Zone Adjacent to Wetland
5. Vtile	=	Tile Outlet for Wetland
6. Vsurout	=	Wetland Surface Outlet
7. Vsed	=	Sediment Delivery to Wetland
8. Vsoil	=	Soil Conditions in Wetland
9. Vdetritus	=	Organic Residue (Detritus) within Wetland
10. Vpabun	=	Plant Abundance within the Wetland
11. Vpratio	=	Ratio of Native to Nonnative Plant Species
12. Vwl	=	Maintenance of Wildlife Populations

B. The six functions and formulas to compute their respective Functional Index Values (FI 's) are:

1. Maintenance of Characteristic Hydrological Regime (Fhydro)

Fhydro = [Vup + Vsource + Vwet + Vtile + Vsurout + Vsed + Vsoil] / 7

2. Maintenance of Faunal Habitat (Fhabitat)

Fhabitat = [(Vup+Vbuff)/2 +Vwet+Vsed+Vpabun+Vpratio] / 5

3. Retention of Particulates & Removal of Dissolved Elements and Compounds (Fremove)

Fremove = [(Vwet+Vbuff)/2 +Vtile+Vsurout+Vsed+ (Vsoil+Vdetritus)/2] / 5

4. Maintenance of Characteristic Plant Communities (Fplant)

Fplant = [(Vtile+Vsurout)/2 +Vwet+Vsed+Vdetritus+Vpratio] / 5

5. Maintenance of Food Webs (Fweb)

Fweb = [(Vpabun+Vdetritus)/2 +Vwet+Vbuff+Vsed+Vpratio] / 5

6. Maintenance Of Characteristic Vertebrate and Invertebrate Populations (Fwl)

Fwl = [(Vup+Vbuff)/2 +Vwet+Vwl+Vpratio] / 4

7. Maintenance of Wetland Interspersion and Characteristic Density -- Fdensity:

Present Acres of sites that meet USDA definitions for FW, FWP or W within a 1/2 mile radius of center of subject site. Include acreage of subject wetland(s) in the total acres within a 1/2 mile. =

After Project Acres of such wetlands within 1/2 mile
Exclude acres of site that would no longer meet wetland definition =

Net Change: Present acres-after acres/ present acres

For each of the 12 variables below, V1-V12, chose the described condition that most nearly matches the site under consideration. Use the point value shown for each variable in the Functional Assessment formulas.

V1
Predominant Conditions of the Wetland Drainage Area. Examine entire drainage area, if drainage area is indistinct, then conditions of field or adjacent areas.

A. Native prairie or multiple species planting (≥ 3 sps.) of native warm season grasses Practices such as moderate grazing, burn program, occasional haying, etc., can be used to maintain vegetation/successional stage. Infrequent vegetative disturbance.	1
B. Perennial cover dominated by mixed stands of native grasses (< 3 dom sps) **OR** non-native grasses and forbs (> 3 sps). Light grazing may be used for the non-natives or light to moderate grazing on the native species.	0.75
C. Conservation tillage, good residue management, no fall tillage, **OR** in CRP with crop as the secondary land use **OR** moderately grazed grassland mixture with obvious areas of bare ground **OR** monotypic native grasses (1 dom sps) **OR** < 3 dominant species of non-native grasses and forbs.	0.5
D. Conservation tillage with fall tillage **OR** spring tillage with little residue cover **OR** heavily grazed pasture with high amount of bare ground.	0.25
E. Fall tillage with little residue, conventional tillage, Feedlots or other low cover, buried residue situations	0.1
F. Urban, roads, or other semi-pervious or impervious surfaces	0

V2 Vsource - Wetland Source Area Flow Interception
Examine entire drainage area of the wetland if evident, or if the drainage area is indistinct, the area in the field adjacent to the wetland.

A. Watershed source areas for wetland have no ditch, diversion, tile outlet terrace (TOT) or road intake that intercept flows or that direct surface flows away from the wetland.	1
B. I road ditch, road intake, TOT, or other diversion intercepts surface flow, <25% of DA	0.75
C. 2 ditches or other diversions **OR** diversion affects ≥25% of DA	0.5
D. 3 ditches or other diversions OR >50% of DA affected.	0.25
E. Watershed source area is essentially eliminated resulting in a significant reduction in water delivery to the wetland **OR** enough additional water is delivered to the wetland that it significantly extends the hydrolgical duration from the original wetland conditions, rule of thumb >125% of original as estimated by team.	0.1
F. Watershed source area is eliminated or so altered that either almost all surface flows are diverted away from the area **OR** so much flow is diverted into the wetland that it functions as a pond rather than a wetland due to increased hydroperiod.	0

V3 **Vwet - Wetland Landuse:**

Select conditions that best describes the dominant condition of the wetland

A. Wetland not tilled in last 5 years. No tillage or haying of wetland except as needed to maintain vegetation. Temporary wetland zone is intact. No evidence of rutting from machinery or trampling of vegetation by livestock use.	1
B. Wetland has been cropped no more than 2 of last 10 years. Minimal impacts from haying (infrequent, less than annually) or only light grazing, not full season access. Vegetation is a mixture of dominant species (>2 dom sps). **NOTE: Use B value for AFTER CONDITIONS for PC site restored for Mitigation.**	0.75
C. No tillage in zones wetter than temporary zone. <50% of temporary zone impacted by moderate grazing, 1-2 hay cuttings, or consv. tillage with good residue **OR** wetland dominated by 1 species, such as cattails, reed canarygrass, etc.	0.5
D. Wetland receives minimal tillage in seasonal and wetter zones; temporary zone tilled or heavily grazed most years. Zones wetter than temporary zone are intact.	0.25
E. Wetland tilled in all zones most years with little residue; if recently tilled evidence of noncrop vegetation clods in furrows, etc.	0.1
F. Wetland more severely disturbed than above; with no vegetation other than crop residue in clods, or rutted, or feedlot, urban area, fill, etc.	0

V4 **Vbuff - Buffer Zone Adjacent to Wetland**

Dominant landuse in a 50 foot wide strip around the wetland being considered.
NOTE: If upland landuse (Vup) is 1.0, then Buffer (Vbuff) is also a 1.0

A. No alteration, buffer of persistent herbaceous or woody vegetation $\geq$ 50 ft wide is present around $\geq$ 75% of wetland edge.	1
B. Buffer is 30-50 ft wide **OR** tillage disrupts $\leq$ 50% of buffer zone width or 25-50% of continuity around wetland, OR annual haying with >1 cutting/year, **OR** heavy grazing of buffer (with no tillage).	0.75
C. Buffer 15-35 ft wide and tillage disrupts < 50% of continuity **OR** no buffer but no-till agriculture on the buffer and area adjacent, **OR** buffer 5-15 feet wide with continuity around > 75% of edge around wetland.	0.5
D. Non-tilled buffer >5 feet but <15 feet wide and $\geq$ 25% buffer continuity around wetland	0.25
E. No buffer or < 25% continuity, but adequate erosion controls on adjacent ag lands	0.1
F. No buffer, inadequate erosion control on adjacent ag lands.	0

V5 **Vtile - Subsurface Drainage of the Wetland**

Applies to conditions in the portion of wetland being investigated.

A. No tile lines are present in the wetland **NOR** is the wetland within the drainage zone of any tile located outside the wetland boundary.	1
B. No tile within wetland **but** wetland is within the drainage zone of nearby tile **OR** there is tile within the wetland but it is not functioning.	0.75
C. Some tile within wetland but it affects < 50% of the basin.	0.5
D. Some tile within wetland, affects ≥ 50% of wetland, but not pattern tiled.	0.25
E. Extensive (pattern) tile within the wetland	0.1

V6 **Vsurout - Surface Water Outlet From Wetland**

A. No modification of natural outlet, no surface water intake or constructed surface drainage ditch into the wetland or within 100 feet of wetland.	1
B. Surface intake is present but function is impaired **OR** surface drainage feature outside wetland but within 50 feet of wetland edge.	0.75
C. Surface drainage feature present but low point of outlet is above bottom of wetland.	0.5
D. Fully functioning tile intake	0.25
E. Surface drainage feature within wetland with an outlet elevation below the lowest elevation point of wetland	0.1
F. Wetland drained and graded or filled so that it no longer ponds surface water **OR** within 50 feet of a drainage ditch that is ≥ 3 feet below wetland bottom.	0

V7 **Vsed - Sediment Delivery to Wetland**

A. No evidence of recent sediment delivery to wetland	1
B. Infrequent delivery from overland flow, but good buffer/filter strip adjacent to wetland **OR** upland slopes are < 5%, i.e. 'B' slope soil map units.	0.75
C. Evidence of sediment delivery to wetland seen in staining of detritus or slight accumulations on plant stems in temporary zone or wetland edge. May be evidence of old, stabilized sediment fans. **OR** >75% of buffer continuity disrupted by a low residue tillage system.	0.5
D. Moderate, obvious accumulation of sediment in Temporary wetland zone. Sediment seen on plant stems, evidence of sediment buried detritus. **OR** tillage through the buffer zone into the temporary wetland zone.	0.25
E. Sediment delivery is evidenced by buried detritus and/or vegetation on wetland edge. No BMP's to control excessive erosion on adjacent ag lands. Recent deltas, sediment plumes, etc., in areas of concentrated flows.	0.1

V8 **Vsoil - Soil Conditions of Wetland**

Note: Select conditions that most closely describe wetland soil. Conditions are for a moist, not wet or dry soil.

A. Soil has not been compacted or rutted by tillage or grazing when wet. Soil has conditions approximating those of an undisturbed soil profile for that soil type. No recent evidence of overwash sediments, little evidence of a compacted plow pan. May be evidence of worms, invertebrates such as crayfish, etc. in wetland.	1
B. Wetland may be grazed or farmed, but little evidence of compaction of the soil profile or rutting from farming when too wet. Soil profile may be disrupted but not enough to prevent water movement within the soil profile. May be some recent deposition of overwash sediment on soil surface or plant stems.	0.5
C. Wetland shows obvious signs of being farmed or grazed when too wet. Evidence of rutting by machinery, heavily trampled and churned by livestock. Well formed plow pan may be evident. Soil profile so disrupted that normal water movement within the soil profile unlikely to occur. May be obvious overwash deposition and sediment fans.	0.1
D. Paved, feed lot, or other artificial surface **OR** soil conditions so changed that normal water movement within the soil profile can not occur.	0

V9 **Vdetritus - Organic residue within Wetland**

ASSUMED Standard litter depths for model purposes are: Ephemeral Zone, ≤ 0.5 inch; Temporary Zone - About 1 inch deep; Seasonal Zone - 1 -3 inches; > 3 inches in semipermanent and wetter zones.
Note: Detritus is litter or plant residue in various stages of decomposition

A. Litter is between 75-125% of Standard values above in each zone	1
B. Litter is between 75-125% of above Standard in all zones wetter than Temporary Zone, and Temporary and ephemeral zones are between 25-75% of Standard	0.75
C Litter is between 25-75% of above Standard in all zones wetter than Temporary Zone, and >10% in Temporary Zone **OR** litter is > 125% of standard in Seasonal and wetter zones.	0.5
D. Litter is between 10-25% of Standard	0.1
E. Litter <10% of Standard	0

V10 **Vpabun - Plant Abundance within Wetland**

A. Wetland is dominated (use 50:20 rule) by a mixture of > 4 persistent wetland species such as cattails, bullrushes, rushes, spikerushes, flatsedges, sedges, or woody vegetation representing ≥ 3 genera. Area may include patches of open water or mud flats.	1
B. Wetland dominated (≥ 3 dom sps) by grassy species such as prairie cordgrass, rice cutgrass, sedges or similar grassy type vegetation, **AND/OR** by FAC or wetter woody species. Site mostly vegetated, little open water or bare ground from drawdowns.	0.75
C. Wetland is mix of persistent wetland species, perennial grasses, and annual weeds, (≥ 3 dom sps.) but does meet A or B above. Open areas and weeds are the result of seasonal drownout or drawdowns not from livestock grazing or weed control.	0.5
D. SIte dominated by annual weeds or 'dirty' cropfield with many weeds in crops **OR** a monotypic stand of one dominant species.	0.25
E. Site is mostly 'clean' cropfield conditions with little weed pressure	0.1

V11 **Vpratio - Native to Non-native Plant Ratio**

ADD LIST to MODEL APPENDIX for Individual States Needs - Natives are wetland species you would expect to see in good quality wetlands in the region in which the assessment is being applied.
NOTE: USE 50:20 RULE TO DETERMINE THE DOMINANT SPECIES IN EACH VEG STRATA.

A. More than 75% of dominant species are on list of 'native' hydrophytes, areas of open water may be present, mud flats or bare areas are result of seasonal hydrologic fluctuations.	1
B. More than 50% of dominants are 'native', and all dominant species are hydrophytes hydrology and soil conditions as above	0.75
C. Site is mix of bare soil and hydrophytes - bare soil result of disturbance, cropping or grazing previous years or weed control current year (scattered, sparse hydrophytes, <50% cover)	0.5
D. Site primarily crop but at least one dominant hydrophyte **OR** site is a monoculture of 1 invasive species such as reed canarygrass or cattail.	0.25
E. Site primarily crop but has some hydrophtyes, none are dominant species	0.1
F. Site is all crop, any weeds are non-hydrophytes **OR** site is all bare ground	0

NOTE - FOR PURPOSES OF THIS VARIABLE, SEE EXAMPLES LISTED BELOW:

"NATIVES"		"NON-NATIVES"
River and Green Bulrush	Prairie Cordgrass	Pennsylvania Smartweed
Soft and Hard Stem Bulrush	Rice Cutgrass	Reed Canarygrass
Cattails	White Grass	Barn-yard Grass
False/Dull Leaf Indigo	Bluejoint	Yellow Nutsedge
Amphibious Smartweed	All Spikerushes	Purple Loosestrife
Tearthumb Smartweed	Sedges, FAC or wetter	Quackgrass
Pepper Smartweed	Most flatsedges	Yellow Foxtail
Arrowhead	Bidens	Kentucky Bluegrass
Waterplantain		etc.
Bur-reed		

Vwl - Maintenance of Characteristic Wildlife Populations

V12

A. Seasonal and wetter zones are characterized by persistent vegetation with no tillage or infrequent/iregular tillage or haying, only light grazing usage. At least 4 of the following wildlife groups must use the site for either nesting; winter cover; resident on site for season or year long; migratory staging; or feeding: 1) Migratory waterfowl, 2) other migratory bird species, 3) Non-migratory birds, 4) Resident mammals, 5) Amphibians, or 6) Invertebrate species, crayfish, etc.	1
B. Wetland vegetation as above but disturbed less than 5 years in 10 by tillage, haying, or moderate to heavy grazing. At least 3 of above wildlife groups use the area as described in A.	0.75
C. Wetland vegetation mix of persistent and weedy species. Regularly disturbed, at least 5 of 10 years, by tillage, cropping, haying or continuous grazing. At least 3 of above wildlife groups use area.	0.5
D. Site is primarily unvegetated but may have some areas of weeds, etc. Site provides sheetwater some time during the year that is used by $\geq$ 3 of wildlife groups above.	0.35
E. Wetland regularly disturbed and vegetation is a mixture of crop and annual weed species. No conventional tillage in fall, good residue over winter if tilled with patches of weeds remaining	0.25
F. Site is primarily sheetwater in spring or after heavy rains. Mostly unvegetated. Evidence of use by at least one of above wildlife groups.	0.1
E. Regularly cropped or hayed more than once annually, mostly clean field conditions irregardless of when tillage occurs. Little evidence of sheetwater	0