

Dichotomous Key for HGM Wetland Classification in Oklahoma	
1. Wetland is within the 5 year floodplain of a river but not fringing an impounded water body.	<i>Riverine(5)</i>
1. Wetland is associated with a topographic depression, flat or slope	2
2. Wetland is located on a topographic slope (slight to steep) and has groundwater as the primary water source. Wetland does not occur in a basin with closed contours.	<i>Slope (15)</i>
2. Wetland is located in a natural or artificial (dammed/excavated) topographic depression or flat.	3
3. Wetland is located on a flat without major influence from groundwater.	<i>Flat (Hardwood Flat)</i>
3. Wetland is located in a natural or artificial (dammed/excavated) topographic depression.	4
4. Topographic depression has permanent water greater than 2 meters deep and wetlands are restricted to the margin of the depression.	<i>Lacustrine Fringe (10)</i>
4. Topographic depression does not contain permanent water greater than 2 meters.	<i>Depression (11)</i>
Dichotomous Key for Riverine Wetland Subclassification in Oklahoma	
5. The wetland is a remnant river channel that is periodically hydrologically connected to a river or stream every 5 years or more frequently.	Connected Oxbow
5. The wetland is not an abandoned river channel.	6
6. The hydrology of the wetland is impacted by beaver activity.	Beaver Complex
6. The hydrology of the wetland is not impacted by beaver activity.	7
7. The wetland occurs within the bankfull channel (includes vegetated ephemeral channels, bars and islands).	In-channel
7. The wetland is directly adjacent to the river channel or occurs on a topographic floodplain (may include back-channels, swales or other topographic relief).	8
8. Stream is intermittent or ephemeral	Floodplain (Non-perennial)
8. Stream is perennial	9
9. Stream is a 1st or 2nd order	Floodplain (Upper Perennial)
9. Stream is a 3rd order or higher	Floodplain (Lower Perennial)
Dichotomous Key for Lacustrine Wetland Subclassification in Oklahoma	
10. Wetland is associated with a remnant river channel that is hydrologically disconnected from the stream or river of origin.	Disconnected Oxbow
10. Wetland is associated with a reservoir or pond created by impoundment or excavation.	Man-made Lacustrine Fringe
Dichotomous Key for Depressional Wetland Subclassification in Oklahoma	
11. Wetland was created by human activity.	12
11. Wetland was not created by human activity.	13
12. Wetland does not have discernible water outlets.	Closed Impounded Depression
12. Wetland has discernible water outlet(s).	Open Impounded Depression
13. Wetland primary water source is groundwater.	Groundwater Depression
13. Wetland primary water source is surface water.	14
14. Wetland does not have any discernible water outlets.	Closed Surface Water Depression
14. Wetland has discernible water outlet(s).	Open Surface Water Depression
Dichotomous Key for Slope Wetland Subclassification in Oklahoma	
15. Wetland is hydrologically connected to a low order (Strahler <=4), high gradient, or ephemeral stream.	Headwater Slope
15. Wetland is hydrologically connected to a high order (Strahler >=5), low gradient river. Slope may be imperceptible or extremely gradual (includes wet meadows).	Low Gradient Slope

Site Description						
Site Name						
Date of Assessment						
Assessor Name(s)						
Assessor Affiliation(s)						
Location Information						
Site Latitude						
Site Longitude						
Coordinate System						
Level III Omernik Ecoregion						
Directions/Access Notes						
Assessment Area Information						
Size of Wetland						
# of Assessment Areas						
Assessment Area ID		AA Type		AA size		
Reason for Assessment						
HGM Classification (circle one class and any relevant subclasses)						
HGM Class	Depression	Flat	Slope	Lacustrine	Riverine	
Regional Subclass	<i>Closed Impounded</i>	<i>Hardwood</i>	<i>Headwater</i>	<i>Disconnected Oxbow</i>	<i>Connected Oxbow</i>	
	<i>Open Impounded</i>		<i>Low-gradient</i>	<i>Man-made Lacustrine</i>	<i>Beaver Complex</i>	
	<i>Groundwater</i>				<i>In-Channel</i>	
	<i>Open Surface Water</i>				<i>Floodplain (non-perennial)</i>	
	<i>Closed Surface Water</i>				<i>Floodplain (upper perennial)</i>	
					<i>Floodplain (lower perennial)</i>	
Additional Site Characteristics (circle dominant condition)						
Hydrologic Condition at time of assessment	Ponded/inundated		Saturated Soil (no surface water)		Dry	
Hydroperiod	Temporary <i>(inundated for <1 month)</i>		Seasonal <i>(inundated for extended periods of growing season)</i>		Semi-permanent/ Permanent <i>(inundated except during drought years)</i>	
Dominant Vegetation	Forested	Scrub/Shrub	Emergent	Submergent/ Floating Leaved		Unvegetated
Management	Unmanaged		Agriculture	Stormwater	Water treatment	Water supply Wildlife
Site Notes						

Additional AA Description

Site Name						
Date of Assessment						
Location Information						
Site Latitude						
Site Longitude						
Additional Assessment Area Information						
Assessment Area ID		AA Type			AA size	
HGM Classification (circle one class and any relevant subclasses)						
HGM Class	Depression	Flat	Slope	Lacustrine	Riverine	
Regional Subclass	<i>Closed Impounded</i>	<i>Hardwood</i>	<i>Headwater</i>	<i>Disconnected Oxbow</i>	<i>Connected Oxbow</i>	
	<i>Open Impounded</i>		<i>Low-gradient</i>	<i>Man-made Lacustrine</i>	<i>Beaver Complex</i>	
	<i>Groundwater</i>				<i>In-Channel</i>	
	<i>Open Surface Water</i>				<i>Floodplain (non-perennial)</i>	
	<i>Closed Surface Water</i>				<i>Floodplain (upper perennial)</i>	
					<i>Floodplain (lower perennial)</i>	
Additional Site Characteristics (circle dominant condition)						
Hydrologic Condition at time of assessment	Ponded/inundated		Saturated Soil (no surface water)		Dry	
Hydroperiod	Temporary <i>(inundated for <1 month)</i>		Seasonal <i>(inundated for extended periods of growing season)</i>	Semi-permanent/ Permanent <i>(inundated except during drought years)</i>		
Dominant Vegetation	Forested	Scrub/Shrub	Emergent	Submergent/ Floating Leaved		Unvegetated
Management	Unmanaged		Agriculture	Stormwater treatment	Water supply	Wildlife

Additional Assessment Area Notes

1. Hydrologic condition

a. Hydroperiod

Instructions:

1. In the office, mark potential hydroperiod stressors that occur within 500 meters of the AA on aerial imagery for further inspection in the field.
2. In the field, confirm hydroperiod stressors identified in the office, as well as any other hydroperiod stressors observed. Match the alteration observed in the field to the indicator and the severity from the table on the following worksheet (1a.Hydroperiod Indicators). Annotate an aerial image with the aerial extent of impact from all identified indicators.
3. If no hydroperiod stressors are identified, select the "No Indicators of Altered Hydroperiod Present" button. This will autogenerate a score of 1. If the site is not a wetland, select the "AA is not a wetland" button. This will autogenerate a score of 0. Otherwise, if indicators of alteration are present, ensure the "Hydroperiod is impacted" button is selected and continue on to Step 4.
4. Record the percentage (0-100) of the AA impacted by each indicator in the appropriate severity column. Overlapping areas of indicators are only counted once for the highest severity indicator present. Therefore the total percent cover of indicators cannot exceed 100. The metric is autocalculated in the worksheet.

<input type="radio"/> Hydroperiod is impacted <input type="radio"/> No Indicators of Altered Hydroperiod Present <input type="radio"/> AA is not a Wetland					
Indicators of Altered Hydroperiod	Minor	Moderate	Major	Complete Loss	Indicator Description
Fill/sedimentation					
Water being pumped into or out of the wetland					
Water control structures					
Culverts, discharges, ditches or tile drains into our out of the wetland					
Beaver dam removal					
Excavation/Dredging/Mining/Impoundment					
TOTAL IMPACTED AREA					
SEVERITY WEIGHT	0.25	0.5	0.75	1	
SEVERITY WEIGHTED AREA					
METRIC SCORE 1A					

1. Hydrologic condition

a. Hydroperiod		Severity		
Indicators of altered hydroperiod	Minor	Moderate	Major	Complete Loss
1. Fill/sedimentation	Silt covered vegetation, extremely turbid water, AND/OR rills on adjacent uplands	Sediment splays, completely buried vegetation, AND/OR silt deposits around trees	Silt deposits or fill that have greatly reduced wetland volume	Complete loss of basin
2. Water pumping into or out of the wetland	Water level is properly manipulated for wetland management activities including slow, cool-season drawdowns. Desirable annual moist soil plants present.	Water is pumped out of the wetland for agricultural or other human uses OR water level is poorly manipulated for wetland management activities including rapid, warm-season drawdowns. Undesirable weedy plants present (e.g. cocklebur).	n/a	n/a
3. Water control structures	Water level is properly manipulated for wetland management activities including slow, cool-season drawdowns (desirable annual moist soil plants present) OR water is passively managed to mimic natural wetland filling and drawdown.	Water level is poorly manipulated for wetland management activities including rapid, warm-season drawdowns. Undesirable weedy plants present (e.g. cocklebur).	Water control structures are derelict or no longer maintained, resulting in substantial lengthening or shortening of hydroperiod.	Water control structures are derelict or no longer maintained, resulting in complete wetland drainage or permanent deep water.
4. Culverts, discharges, ditches or tile drains in to or out of the wetland	Old drainages present that appear to have minor influences on current wetland hydrology (e.g. old ditches that have sedimented in or tile drains that have been damaged)	Water drained from wetland only during high water events AND/OR water enters wetland from culverts, diversions or ditches only during large storm events AND/OR water is consistently discharged into wetland from irrigation (e.g., agricultural or residential).	Water is drained from wetland at all times of the year but still retains wetland hydrology AND/OR water from culvert, diversion, irrigation or ditch is the dominant water source for the wetland.	Wetland completely dried OR Wetland converted to permanent deepwater
5. Beaver dam removal (excludes maintenance of restoration/ mitigation sites and activity in control structures/ infrastructure)	Beaver activity not a major driver of wetland hydrology and removal caused minimal changes in area, depth and duration of ponding.	n/a	Beaver activity was the primary source of wetland hydrology and removal caused major changes in area, depth and duration of ponding.	Wetland completely dried as a result of dam removal.
6. Excavation/ Dredging/ Mining/ Impoundment (excludes sediment removal to restore hydrology resulting from human-induced sedimentation)	Small areas of excavation within the AA to deepen water for habitat improvement that has minimal impact on the hydrology of the wetland.	n/a	Wetland excavated or impounded but still retains wetland hydrology. Hydroperiod substantially lengthened.	Wetland converted to permanent deepwater OR center of the wetland excavated to permanently dry remainder or wetland.

1. Hydrologic condition

b. Water Source (Depression)

Instructions:

1. In the office, delineate the catchment for the entire wetland that contains the AA.
2. In the office, identify indicators of altered water source with the catchment.
3. Where possible, confirm indicators of altered water source in the field.
4. In the worksheet below, record the percent cover (0-100) of each indicator of altered water source identified within the catchment. If the catchment's water source is completely unaltered, select the box labeled, "No Indicators of Altered Water Source Present". The metric score is autocalculated in the worksheet.

No Indicators of Altered Water Source Present:

Catchment Indicators of altered water source	% Cover	Severity Multiplier	Description
Impervious surface (paved roads and ditches, parking lots, structures and roof tops, and compacted gravel and dirt roads)		1.5	
Irrigated agricultural land (center pivot, ditch, flood etc.)		1.5	
Dryland agricultural land that is tilled		0.5	
Woody encroachment (e.g., eastern red cedar (<i>Juniperus virginiana</i>) and salt cedar (<i>Tamarix sp.</i>))		0.5	
Impounded water		2	
Topographic alteration (leveling, excavation, mining)		1	
Total Altered Cover			
METRIC SCORE 1b			

1. Hydrologic condition

b. Water Source (Riverine)

Instructions:

1. In the office, identify the stream or the river that serves as the primary water source for the study wetland and follow it upstream. Record the distance (in meters) to the first upstream impoundment encountered in the 'Distance' field next to 'Upstream Impoundment'. If no impoundment is reached within 100 km (of stream distance) or before reaching the headwaters of the stream, leave this field blank.
2. In the office, follow the source river downstream. Record the distance (in meters) to the first downstream impoundment encountered in the 'Distance' field next to 'Downstream Impoundment'. If no impoundment is reached within 100 km (of stream distance) or before reaching the downstream confluence (i.e., stream changes name), leave this field blank.
3. In the office, delineate the catchment for the entire wetland that contains the AA.
4. In the office, identify indicators of altered water source within the catchment that are listed in the worksheet.
5. Where possible, confirm indicators of altered water source in the field.
6. In the worksheet, record the percent cover (0-100) of each indicator of altered water source identified within the catchment. If the catchment's water source is completely unaltered and there are no upstream or downstream impoundments, select the box labeled, "No Indicators of Altered Water Source Present". The metric score is autocalculated in the worksheet.

No Indicators of Altered Water Source Present:

HUC 8 Indicators of altered water source	Distance (m)	Score Reduction
Upstream Impoundment		0
Downstream Impoundment		0

Catchment Indicators of altered water source	% Cover	Severity Multiplier	Description
Impervious surface (paved roads and ditches, parking lots, structures and roof tops, and compacted gravel and dirt roads)		1.5	
Irrigated agricultural land (center pivot, ditch, flood etc.)		1.5	
Dryland agricultural land that is tilled		0.5	
Woody encroachment (e.g. eastern red cedar (<i>Juniperus virginiana</i>) and salt cedar (<i>Tamarix</i> sp.))		0.5	
Impounded water		2	
Topographic alteration (leveling, excavation, mining)		1	
Total Altered Cover			
METRIC SCORE 1b Alternate			

1. Hydrologic condition

c. Hydrologic Connectivity

Instructions:

1. When in the field, outline on an aerial image all areas around the boundary of the entire wetland that encompasses the AA where hydrologic connectivity has been altered. In larger wetlands, the assessment of the connectivity metric should be restricted to the portion of the wetland within 500 meters of the AA boundary.
2. If no connectivity stressors are identified, select the "No Indicators of Altered Connectivity Present" button. This will autogenerate a score of 1. If the site is not a wetland, select the "AA is not a wetland" button. This will autogenerate a score of 0. Otherwise, if indicators of alteration are present, ensure the "Connectivity is impacted" button is selected and continue on to Step 3.
3. Record on the worksheet the percentage (0-100) of the perimeter where hydrologic connectivity is impaired. The metric score is autocalculated in the worksheet.



Connectivity is Impacted
 No Indicators of Altered Connectivity Present
 AA is not a Wetland

Indicators of altered connectivity	Perimeter Percentage	Description
Levees, Berms, Dams, Weirs, or other artificially steep grades		
Road Grades		
METRIC SCORE 1C		

2. Water Quality Condition

a. Excess Nutrients and Contaminants

1. When in the field, outline on an aerial image all areas within the AA where nutrient cycling has been altered, matching the alteration to the indicator and the severity on the worksheet titled '2a. Nutrient Indicators'. Complete the same assessment, marking areas where chemical contaminants have been observed, matching the alteration to the indicator and the severity on the worksheet titled '2a. Contaminant Indicators'

2. If no indicators of altered Nutrient Cycling AND no Chemical Contaminants are present, select the "No Indicators of Altered Nutrients and Contaminants Present" button. This will autogenerate a score of 1. If the site is not a wetland, select the "AA is not a wetland" button. This will autogenerate a score of 0. Otherwise, if any indicators of alteration are present, ensure the "Excess Nutrients or Contaminants Present" button is selected and continue on to Step 3.

3. Fill in on the worksheet the percentage (0-100) of the AA impacted by each nutrient stressor indicator in the appropriate severity column. Overlapping areas of nutrient indicators are only counted once for the highest severity indicator present. Complete the same steps above for contaminant indicators. Overlapping areas of chemical contaminants are only counted once for the highest severity indicator present. However, nutrient indicators may overlap chemical contaminant indicators. The metric score is autocalculated in the worksheet.

<input type="radio"/> Excess Nutrients or Contaminants Present <input type="radio"/> No Indicators of Altered Nutrient and Contaminants Present <input type="radio"/> AA is not a Wetland				
Indicators of Altered Nutrient Cycling	Minor	Moderate	Major	Indicator Description
Livestock/animal waste				
Residential Runoff and Septic/sewage discharge				
Crop production				
Excessive algae or <i>Lemna</i> sp. (Do not count this metric if algae or <i>Lemna</i> blooms are a result of evapoconcentration of nutrients as wetland is drying.)				
TOTAL IMPACTED AREA				
SEVERITY WEIGHT	0.25	0.5	0.75	
SEVERITY WEIGHTED AREA				
Indicators of Chemical Contaminants	Minor	Moderate	Major	Indicator Description
Point source discharge (ditch or pipes from industrial sources, etc.)				
Stormwater inputs (ditches, discharge pipes, culverts, adjacent impervious surface or railroad tracks)				
Increased salinity (e.g., salt crust)				
Industrial spills or dumping				
Oil sheen (does not include sheen from iron precipitates)				
TOTAL IMPACTED AREA				
SEVERITY WEIGHT	0.25	0.5	0.75	
SEVERITY WEIGHTED AREA				
METRIC SCORE 2a				

2. Water Quality

a. Nutrients

Indicators of Altered Nutrient Cycling	Severity		
	Minor	Moderate	Major
Livestock/animal waste	Sparse domestic animal feces (e.g., cow pies), evidence of sparse feral pig activity (rooting, wallows, feces)	High concentration of domestic animal feces (e.g., cow pies), evidence of large scale feral pig activity (rooting, wallows, feces)	Runoff from wastewater lagoons into wetland, evidence of manure piles, poultry litter piles draining to wetland
Residential Runoff and Septic/sewage discharge	Residential dwellings within 200 meters of wetland	Residential dwellings within 50 meters of wetland	Discharge from wastewater/sewage treatment plant
Crop Production	n/a	n/a	Land within the AA has been converted to agricultural production, including both dryland and irrigated crops.
Excessive algae or Lemna sp. (Do not count this metric if algae or Lemna blooms are a result of evapoconcentration of nutrients as wetland is drying.)	Sparse mats or blooms of filamentous algae, Lemna, or cyanobacteria. Small contiguous patches are less than 200 square meters	Mats or blooms of filamentous algae, Lemna, or cyanobacteria may cover large areas but will not be contiguous for more than 0.1 hectares and will contain intermittent gaps where no mats or blooms are present.	Mats or blooms of filamentous algae, Lemna, or cyanobacteria that are contiguous for areas larger than 0.1 hectares.

2. Water Quality

a. Contaminants	Severity		
Indicators of Chemical Contaminants	Minor	Moderate	Major
Point source discharge other than wastewater treatment (ditch or pipes from industrial sources, etc.)	n/a	Discharge from industrial point source to adjacent water body that is intermittently connected to wetland	Direct discharge from industrial point source to the wetland
Stormwater inputs (ditches, discharge pipes, culverts, adjacent impervious surface or railroad tracks)	Adjacent impervious surfaces such as paved roads or railroads (within 10 meters of wetland)	Stormwater inputs from culverts or discharge pipes	n/a
Increased salinity (e.g., salt crust, excessively high conductivity)	Oil and gas exploration/extraction within 30 meters of AA (e.g., pumpjacks, tank batteries)	Salt crust present on soil surface (excludes saline wetlands such as those in the Great Salt Plains of Alfalfa County)	n/a
Industrial spills or dumping	Few small containers (5 gallons or less) scattered in the wetland with no signs of chemical contamination AND/OR evidence of limited dumping of trash	55 gallon drums or large industrial containers present, and signs of limited chemical contamination (e.g., sterile ground, dead vegetation) AND/OR construction/ demolition debris, appliance/ automotive parts AND/OR Evidence of drilling mud application.	Knowledge or evidence of industrial spill within or directly adjacent to the wetland AND/OR Mine tailings draining to wetland.
Oil sheen (sheen that breaks apart or fractures into platelets upon contact is a result of normal wetland biogeochemical processes [i.e., iron precipitates] and is not considered a stressor)	Oil sheen present but not contiguous over areas exceeding 200 square meters, likely a result of motorcraft use within or adjacent to the wetland	Oil sheen contiguous over moderate areas within the wetland exceeding 200 square meters but less than 0.1 hectares, likely a result of a spill or adjacent oil and gas extraction/exploration	Oil sheen contiguous over large areas within the wetland exceeding 0.1 hectares, likely a result of a spill or adjacent oil and gas extraction/exploration

2. Water Quality Condition

b. Sediment (Depressional)

1. When in the field, outline on an aerial image all areas within the AA where sediment loading has been altered, matching the alteration to the indicator and severity from the worksheet titled '2b. Sediment Indicators'.
2. If no indicators of excess sediment are present, select the "No Indicators of Excess Sediment Present" button. This will autogenerate a score of 1. If the site is not a wetland, select the "AA is not a wetland" button. This will autogenerate a score of 0. Otherwise, if any indicators of alteration are present, ensure the "Excess Sedimentation Present" button is selected and continue on to Step 3.
3. Fill in on the worksheet, the percentage (0-100) of the AA impacted by each stressor indicator in the appropriate severity column. Overlapping areas of indicators are only counted once for the highest severity indicator present. Therefore, the total percent cover of indicators cannot exceed 100. The metric score is autocalculated in the worksheet.

<input type="radio"/> Excess Sedimentation Present <input type="radio"/> No Indicators of Excess Sediment Present <input type="radio"/> AA is not a Wetland				
Indicators of Altered Sediment loading	Minor	Moderate	Major	Indicator Description
Sedimentation (e.g., presence of sediment plumes, fans or deposits, turbidity, silt laden vegetation)				
Upland erosion (e.g., gullies, rills) within or adjacent to AA				
TOTAL IMPACTED AREA				
SEVERITY WEIGHT	0.25	0.5	0.75	
SEVERITY WEIGHTED AREA				
METRIC SCORE 2b				

2. Water Quality

b. Sediment

Indicators of Altered Sediment Loading	Severity		
	Minor	Moderate	Major
Sedimentation (e.g., presence of sediment plumes, fans or deposits)	Excessive turbidity (in excess of expectation for the system) AND/OR silt laden vegetation	Sediment plumes or fans, silt deposits less than 0.5 centimeters in thickness	Silt deposits greater than 0.5 centimeters in thickness
Upland erosion (e.g., gullies, rills) within or adjacent to AA	Evidence of sheet erosion from adjacent unvegetated or tilled areas. Few or sparse rills connecting upland to wetland. Sediment washing down cattle/wildlife trails.	Dense or numerous rills connecting upland to wetland.	Large rills or gullies connecting upland to wetland.

2. Water Quality Condition

c. Buffer filter

Instructions:

1. In the office, draw eight evenly spaced 250 m lines or buffer transects emanating perpendicularly from the AA perimeter starting at due north on an aerial image of the wetland. For a standard AA, buffers will emerge from the AA in a starburst pattern. If the AA is directly adjacent (i.e., sharing a boundary) to permanent open water (e.g., lake, large river, or slough) at least 30 meters wide, exclude that portion of the boundary from buffer calculations. Permanent open water not directly adjacent to the AA or less than 30 meters wide should be considered buffer.

2. In the field, annotate all human impacted land-use along each of the buffer transects on an aerial photo. Record land-use as high impact, moderate impact or low impact according to the table below

3. In the buffer worksheet, record the distance when high impact land use is encountered along each transect. If no high impact land-use is encountered within 250 meters, record 250. Next, record the distance when moderate-impact land-use is encountered. If no moderate-impact land-use is found within 100 meters of the wetland, record 100. Finally, record the distance when low-impact land-use is encountered. If no low-impact land-use is found within 30 meters of the AA, record 30. The metric score is autocalculated in the worksheet.

Land use category	Types of Land-use Beyond Buffer	Required Buffer width
High Impact	Intensive livestock (feedlot, dairy farm, pig farm) or urban area	250m
Moderate Impact	Conventional tilled agriculture, landscaped park, golf course, suburban area, active construction sites, areas of vegetation removal, earth moving operations	100m
Low Impact	No till agriculture, hay meadow, active paved road (at grade or elevated), gravel dirt/road, minimal use recreation area, silviculture, managed pasture (improved and native range), paved bike/foot trails, horse trails, railroad tracks, mowed lawn	30m
No Impact	Natural uplands and wetlands, rangeland with domestic livestock that mimics natural grazing (flash and low density grazing), water bodies not directly adjacent to AA, wildland parks	n/a

Buffer	Distance to High Impact	Distance to Moderate Impact	Distance to Low Impact	% Intact
1				
2				
3				
4				
5				
6				
7				
8				
Metric Score 2d				

3. Biotic Condition

a. Vegetation condition

Instructions:

1. In the field, conduct a visual assessment of the current percent cover (0-100) of each vegetation layer, including only live vegetation. Record the value in the "Percent Cover of Layer" fields.
2. If the wetland has been converted from a forested wetland to a non-forested wetland (<30% canopy cover), select the 'Historic Forested Wetland has been Cleared' checkbox. This checkbox should be selected based on evidence of removal (e.g., stumps), landscape context and local vegetation knowledge. This box should not be checked for restoration sites on a trajectory towards reforestation.
3. Determine the percent cover (0-100) of all 'Indicators of Vegetation Removal' from anthropogenic activities. Record the **percentage of the AA** where vegetation has been removed for all layers present and impacted. For removal of woody vegetation, it may be necessary to utilize existing stumps and brush to estimate canopy cover lost. The sum of "Percent Cover of Layer" and the "Indicators of Vegetation Removal" for any layer can never exceed 100.
4. Determine the percent cover (0-100) of all 'Indicators of Vegetation Disturbance'. Record the **percentage of the cover of each vegetation layer** where indicators of disturbance are present. The sum of all "Indicators of Vegetation Disturbance" for any layer can never exceed 100.
5. The metric score is autocalculated in the worksheet.

Historic Forested Wetland has been cleared (canopy cover now <30%)- excludes restoration projects on a trajectory towards reforestation

	Vegetation Layers			
	Tree	Shrub/ sapling	Herbaceous / Emergent	Submergent/ Floating leaved
Percent Cover of Layer (live vegetation)				
Indicators of Vegetation Removal from Anthropogenic Activities (Percentage of the AA impacted) ◊				
Tree and shrub cutting (estimate cover lost)				
Ground disturbance exposing soil surface (e.g., excessive grazing†, animal trampling, rooting, or mechanical disturbance)				
Dead vegetation (e.g., herbicide application, or altered hydroperiod:)				
Mechanical disturbance from structures (e.g. rip-rap, or roads etc.)				
Total Removed Cover				
Sum of existing and removed cover				
Indicators of Vegetation Disturbance (Percentage of live vegetation cover impacted)				
Haying, mowing, brush hogging				
Ground surface disturbance but subsequently revegetated (e.g., animal trampling, rooting or mechanical disturbance)				
Invasive species and or crop/pasture *				
Native Monoculture†				
Upland plant encroachment and/or stunted vegetation as a result of altered hydroperiod (increased or decreased) ‡				
Percent disturbed cover per layer				
METRIC SCORE 4a				

Notes:

◊Vegetation removal can be an effective management strategy for improving the quality of wetland vegetation by removing invasive species or native monocultures. Vegetation removal for invasive species or monoculture control should not be included in this field. Vegetation removal resulting from normal flood events is not considered a stressor and should not be listed.

† Excessive grazing represents areas where vegetation is eaten to the ground. Grazing can be an effective management strategy for improving the quality of wetland vegetation by removing invasive species or native monocultures. Grazing for invasive species or monoculture control should not be included in this field.

‡ Only includes changes to vegetation development and/or community composition as a result of hydrologic alteration and does not include normal shifts to more upland dominated plants that may occur seasonally or during periods of drought.

* Invasive species include all plant species listed on the Oklahoma Non-Native Invasive Plant Species List developed by OK Native Plant Society, OK Biological Survey and OSU Natural Resource Ecology and Management Department. A species is considered invasive if it is listed as a problem in border states as well. <https://www.okinvasives.org/plants-database>

† Native monocultures occur when more than 50% of an assessment area is dominated by one native perennial species including cattails (*Typha* sp.), river bulrush (*Schoenoplectus fluviatilis*), giant cutgrass (*Zizaniopsis miliacea*), and reed canary grass (*Phalaris arundinacea*). Native monoculture cover is scored as the percent cover greater than 50%. For example, a wetland with 70% cover reed canary grass would receive a score of 20% (70-50= 20).

3. Biotic Condition

b. Habitat connectivity

Instructions:

1. In the office before visiting the wetland, delineate a 1 km buffer around the boundary of the AA on aerial imagery.
2. In the office, assign all habitat within the 1 km buffer into three categories (natural, marginal and dispersal barriers) using the table below. Delineate a polygon around the AA that only includes connected natural habitat. Delineate a second polygon around the AA that includes connected marginal and natural habitat. Marginal and natural habitat must be at least 25 meters wide to be considered connected to the AA.
3. Print aerial imagery with habitat types marked from Step 2. Confirm land-use within the 1 km buffer in the field for all areas that are feasibly accessed, considering access permission, amount of time required or other logistical constraints
4. Calculate the area within the 1 km buffer created in Step 1. Calculate the area within the natural habitat polygon and the natural/marginal habitat polygons created in Step 2 and confirmed in Step 3.
5. Fill in the buffer and connected habitat areas in the Habitat Connectivity Worksheet. The metric score is autocalculated in the worksheet.

Natural Habitat (includes any linear disturbances that minimally impact wildlife movement)

open water
other wetlands
natural uplands
nature or wildland parks
railroad tracks
roads not hazardous to wildlife (e.g., unpaved roads, farm roads, low speed/low traffic paved roads)
swales and ditches
vegetated levees
open range land

Marginal Habitat

hay meadows
pine plantations
pedestrian/bike trails with near constant traffic
forests converted to rangeland

Dispersal Barriers (not included in connected habitat)

Natural or Marginal habitat less than 25 meters wide
Commercial Developments
Fences that interfere with animal movements (e.g., high fences for commercial hunting)
intensive agriculture (e.g. row crops, orchards, vineyards)
dryland farming
heavily managed pasture lands (e.g., improved bermuda grass pastures)
most paved roads (excludes low speed/low traffic roads)
lawns
parking lots
intensive livestock production (e.g. horse paddocks, feedlots, chicken ranches etc.)
residential areas
sound walls
sports fields
traditional golf courses
urbanized parks with active recreation
energy development

Area of Natural and Marginal Connected Habitat	
Area of Natural Connected Habitat	
Area within 1 km buffer	
METRIC SCORE 3b	

4. OKRAM Overall Condition Score - Depressional

Metric	Score
1 Hydrology	
1a. Hydroperiod	
1b. Water source	
1c. Hydrologic Connectivity	
Hydrology Attribute	
<i>(metric 1a + metric 1b + metric 1c)/3</i>	
2 Water Quality	
2a. Nutrients/Contaminants	
2b. Sediment	
2c. Buffer Filter	
Water Quality Attribute	
<i>(metric 2a + metric 2b + metric 2c)/3</i>	
3 Biota	
3a. Vegetation	
3b. Habitat Connectivity	
Biota Attribute	
<i>(metric 3a + metric 3b)/2</i>	
Overall Condition Score	

4. OKRAM Overall Condition Score- Riverine

	Metric	Score
1	Hydrology	
1a.	Hydroperiod	
1b.	Water source	
1c.	Hydrologic Connectivity	
	Hydrology Attribute	
	$(metric\ 1a + metric\ 1b + metric\ 1c)/3$	
2	Water Quality	
2a.	Nutrients/Contaminants	
2b.	Buffer Filter	
	Water Quality Attribute	
	$(metric\ 2a + metric\ 2b)/2$	
3	Biota	
3a.	Vegetation	
3b.	Habitat Connectivity	
	Biota Attribute	
	$(metric\ 3a + metric\ 3b)/2$	
Overall Condition Score		

5. Additional notes and suggestions to improve this assessment

Metric	Score	Was the metric scored too high or too low? Why?	How can the metric be improved in the future?	Are there additional indicators that need to be considered?
1a. Hydroperiod				
1b. Water Source				
1c. Hydrologic Connectivity				
2a. Nutrients and Contaminants				
2b. Sediment				
2c. Buffer Filter				
3a. Vegetation				
3b. Habitat Connectivity				
Additional Notes				