

Montana Ecological Integrity Assessment Field Form 2018

ASSESSMENT AREA (AA) INFORMATION				
Project Name		Site Visit #	Date(s)	
Site ID		Level 2 <input type="radio"/> Level 3 <input type="radio"/>	Observer(s)	
Site Name				
County	Nearest Town			
General Land Ownership		Mitigation wetland? Y N		
Specific Ownership		Pre-construct. Visit # _____ Post-construct. Visit # _____		
Site Access:		Data Availability:		
<input type="radio"/> Public	<input type="radio"/> Private	<input type="radio"/> Unrestricted	<input type="radio"/> Restricted	<input type="radio"/> All <input type="radio"/> Spatial Only <input type="radio"/> None
Comments		Comments		
Slope & Aspect: Measure aspect while pointing downhill/down the slope		% Upland in AA (CAN'T be >10%):		
Slope 1 (°)	Aspect 1 (°)		AA is: <input type="checkbox"/> Centered on original target coordinates <input type="checkbox"/> Shifted and >60m from original target coordinates <input type="checkbox"/> Shifted but ≤60 m from original target coordinates <input type="checkbox"/> No original target coordinates	
Slope 2 (°)	Aspect 2 (°)			
Slope 3 (°)	Aspect 3 (°)			
Target AA Center Coordinates:				
Latitude (Y)		Longitude (X)		Dimensions of AA: <input type="checkbox"/> 40 m radius circle <input type="checkbox"/> Rectangle, width _____ length _____ <input type="checkbox"/> Other, describe below and take a GPS track
GPS Unit Info. & Unit #:				
Actual AA Center Coordinates:				
Waypoint ID		Latitude (Y)	Longitude (X)	
Datum	UTM Zone	Elevation (m)		Accuracy (m)
If AA is a rectangle, record GPS coordinate information below:				
AA Corner #	Waypoint ID	Latitude (Y)	Longitude (X)	Accuracy (m)
#1				
#2				
#3				
#4				
AA Track	Track Name:	Comments:		
General AA description, including surrounding uplands				
Directions to AA:				

REQUIRED SITE PHOTOS

Camera Info (make/model/ID #/color):

From AA Center	Photo #	Aspect (°)	Description	From AA Center	Photo #	Aspect (°)	Description
North		0		South		180	
East		90		West		270	

Overview	Photo #	Aspect (°)	Waypoint ID	Latitude (Y)	Longitude (X)	Accuracy (m)
Location #1 w/ Photo Board						

Description

Location #1 No Board						
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Description

Location #2 w/ Photo Board (optional)						
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Description

Location #2 No Photo Board (optional)						
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Description

OPTIONAL SITE PHOTOS

Optional photos may include interesting features in the AA or the buffer (i.e., inlets/outlets, springs, beaver dams, AA corner photos from polygonal AAs, additional overview photos, culverts), human impacts (ATV tracks, roads), rare or unknown plants, animals, field crews, etc.

Optional Photos	Photo #	Aspect (°)	Waypoint ID	Latitude (Y)	Longitude (X)	Accuracy (m)
Other						

Description

Other						
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Description

Other						
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Description

Other						
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Description

Other						
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Description

Other						
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Description

Soil Profile Photos – See Pages 17-18.

LEVEL 3 EIAs ONLY: Level 3 Vegetation Module Photos – See Page 21.

ECOLOGICAL CLASSIFICATION

Site Geography (check one in each field):

Topographic Position	% AA Covered by Standing Water	Estimated Depth Standing Water	Surface Water Permanence
slope	none	N/A (check if not water in AA)	Saturated
toeslope	1-25%	< 0.5 m	Permanent
basin floor	26-50%	0.5 - < 1 m	Semipermanent
floodplain	51-75%	1 - 2 m	Seasonal
valley bottom	76-100%	> 2 m	Temporary

Has this wetland been anthropogenically altered (impounded, diked, ditched, drained, etc.)?
 Comments: YES NO

Has this wetland been artificially created, enhanced, or restored?
 Comments: YES NO

Ecological System (check one - use Key to Ecological Systems):

- | | | |
|--|--|--|
| <input type="checkbox"/> GP Prairie Pothole | <input type="checkbox"/> NRM Wooded Vernal Pool | <input type="checkbox"/> RM LM-F Riparian Woodland/Shrubland |
| <input type="checkbox"/> IM Prairie Pothole | <input type="checkbox"/> NRM Conifer Swamp | <input type="checkbox"/> NRM LM Riparian Woodland/Shrubland |
| <input type="checkbox"/> WGP Saline Depression | <input type="checkbox"/> RM S-M Riparian Shrubland | <input type="checkbox"/> RM A-M Wet Meadow |
| <input type="checkbox"/> WGP Open Depression | <input type="checkbox"/> RM S-M Riparian Woodland | <input type="checkbox"/> WGP Wooded Draw/Ravine |
| <input type="checkbox"/> WGP Closed Depression | <input type="checkbox"/> NWGP Riparian | <input type="checkbox"/> IM Basin Greasewood Flat |
| <input type="checkbox"/> NAAW Emergent Marsh | <input type="checkbox"/> NWGP Floodplain | <input type="checkbox"/> RM S-M Fen (see Soil p.15-16) |

Confidence Level: Very High High Medium Low

What attributes led you to this Ecological System in the key?

HGM Class (check one - use Key to Hydrogeomorphic Classes—then check with description below):

Slope – occurs on a slope (slope can be very gradual or nearly flat) where groundwater is the primary hydrologic input, and water flows in one direction, discharging as sheet flow or subsurface flow via seeps or springs with no channel formation. Small rivulets may form to direct water away from wetland, but no channel will convey surface flow into wetland and these rivulets are not subject to overbank flooding. Water does not pond except occasionally in small depressions or behind hummocks. Examples: fens, shrub-carrs, swales.

Lacustrine Fringe – occurs adjacent to large lakes (>8 ha/>20 acres) with >30% non-vegetated, open water (>2.5m/8.2 ft deep). Water elevation of lake maintains the water table in the wetland, though wetland may receive groundwater from upslope wetlands. Vegetation experiences bidirectional flow as result of vertical water level fluctuations of lake. Examples: fringe wetlands around Flathead Lake, Canyon Ferry Lake, Ennis Lake.

Depressional – occurs in topographic depression that allows for accumulation of surface water or surface is saturated at some time during the year. May or may not have an inlet or outlet. If outlet present, it will be higher than the bottom of the depression. Examples: prairie potholes, playas, vernal pools, oxbows that do not flood regularly.

Flat – occurs in broad, flat plains with precipitation the dominant source of water; groundwater and surface runoff are not major hydrologic sources. Usually underlain by a hardpan soil layer which prevents percolation of water into the soil. Example: greasewood flat.

Riverine (floodplain) – occurs in active valley or floodplain associated with a stream/river channel that is inundated by overbank flooding at least every two years. Dominant hydrologic sources are overbank flooding or hyporheic (subsurface moving water adjacent/connected to stream) connections between the stream channel and wetlands. Oxbows and other wetlands in the floodplain receiving floodwaters or hyporheic water as their primary hydrologic source are Riverine. Examples: willow/alder thickets along streams, oxbows that flood regularly.

Confidence Level: Very High High Medium Low

What attributes led you to this HGM Class in the key?

Cowardin Classification: Record ALL Cowardin zones present in AA in the table at the bottom of the page (use Appendix C for definitions & RESTRICTIONS to identify Cowardin Codes. Choose one code from each category to create each Cowardin Code.

SYSTEM	RIVERINE (R): wetlands & deep water contained within stream/river channel, unless vegetated with non-pioneer sp.	LACUSTRINE (L): Either 1) ≥8ha (20 ac), in a depression or dammed river channel, & <30% veg; OR 2) ≥2.5m deep at low water	PALUSTRINE (P): ALL of following: <2.5m deep at low water, <8ha (20 ac), & no wave/bedrock shores *no subsystems		
SUBSYSTEM	RIVERINE			LACUSTRINE	
	Lower Perennial (2): low gradient, water all year, sand/mud substrate, well-developed floodplain	Upper Perennial (3): high gradient, water all year, rock/cobble/gravel substrate, little floodplain development	Intermittent (4): high or low gradient, flowing water only part of year, substrate variable-may be vegetated	Limnetic (1): ≥2.5m at low water	Littoral (2): near shore & <2.5m deep at low water OR max depth of nonpersistent emergents
CLASS & SUBCLASS *IF trees <30% & shrubs <30%, but trees + shrubs ≥30% = SS	CLASS (Use Soil Appendix for fragment size chart)			SUBCLASS	
	Rocky Shore (RS): stones, boulders, bedrock ≥75% cover & <30% vegetation			Bedrock (RS1/RB1/SB1)	Rubble (RS2/RB2/SB2)
	Rock Bottom (RB): stones, boulders, bedrock ≥75% cover			Cobble-gravel (US1/UB1/SB3)	Sand (US2/UB2/SB4)
	Streambed (SB): R4 channels only				
	Unconsolidated Bottom (UB): <30% veg cover, ≥25% substrate < stone size			Mud (US3/UB3/SB5)	Organic (US4/UB4/SB6)
	Unconsolidated Shore (US): <30% veg cover (other than pioneer sp.), <75% substrate is stones, boulders, bedrock			Vegetated (pioneer sp. only) (US5/SB7)	
	Aquatic bed (AB): floating/submerged plants are tallest layer with ≥30% cover			Algal (1)	Aquatic moss (2)
				Rooted vascular (3)	Floating vascular (4)
	Moss-Lichen (ML): moss + lichens ≥30% cover AND EM + SS + FO <30% cover			Moss (1)	Lichen (2)
	Emergent (EM): herbaceous, erect, rooted veg are tallest layer with ≥30% cover			Persistent (1)	Nonpersistent (2)
	Scrub-shrub (SS): shrubs, saplings &/or short trees (≤6m) are tallest layer with ≥30% cover			Broad-leaf decid. (1)	Needle-leaf decid. (2)
				Broad-leaf evergr. (3)	Needle-leaf evergr. (4)
	Forested (FO): trees (>6m) are tallest layer with ≥30% cover			Dead (5)	
WATER REGIMES (MINERAL SOIL)	Intermittently flooded (J): substrate usually exposed; flooding irregular, may have weeks, months, years between flooding				
	Temporarily flooded (A): surface water for few days to weeks; water table usually well below surface most of growing season				
	Seasonally flooded (C): surface water present at least a month, dry by end of growing season; soil saturation highly variable				
	Semipermanently flooded (F): surface water throughout growing season most years, when absent water table at or near surface				
	Intermittently exposed (G): surface water covers substrate throughout year except in years of extreme drought				
	Permanently flooded (H): surface water covers substrate throughout the year in all years				
	Artificially flooded (K): amount & duration of flooding controlled by artificial means: pumps, siphons, dikes, berms, dams				
WATER REGIMES (ORG. SOIL)	Seasonally saturated (B): saturated at or near surface most of growing season, but unsaturated by end of season most years				
	Continuously saturated (D): saturated at or near surface throughout year; can have surface water in shallow depressions				
	Seasonally flooded-saturated (E): surface water present >1mo, absent by end of growing season; remains saturated at/near surface				
MODIFIERS	Beaver (b)	Diked/impounded (h)	Partially ditched/drain (d)	Excavated (x) – For basins or channels	
	Farmed (f)	Artificial substrate (r)	Managed (m) – Water inputs controlled for specific mgmt.	Spoil (s) – Spoil = primary substrate	
NOTE: Not all Cowardin systems, subsystems, classes, subclasses, and water regimes are compatible. For example, intermittent streams (R4) are limited to the streambed (SB) class and its 7 subclasses. Some subclasses work with more than one class. You <u>must</u> use the Water Regime Restriction Table provided in Appendix C to make sure your codes are legal.				Be sure to coordinate all Cowardin Codes in this table with the Cowardin Codes in the Plant Zones table on p. 5!	
SYSTEM	SUBSYSTEM	CLASS	SUBCLASS	Cowardin/Rp Code	% of AA
RIPARIAN (Rp): next to rivers or lakes, vegetation species different or just more robust than adjacent upland vegetation	1 Lotic 2 Lentic	FO Forested	5 Dead 6 Deciduous 7 Evergreen 8 Mixed		
		SS Scrub-shrub)			
		EM Emergent			
Confidence Level: <input type="radio"/> Very High <input type="radio"/> High <input type="radio"/> Medium <input type="radio"/> Low					
What attributes led you to the Cowardin/Riparian Code(s)?					
				+ Upland (see p. 1)	
				TOTAL	100%

PLANT ZONES WITHIN ENTIRE ASSESSMENT AREA

Identify and describe the plant zones that occur within the assessment area. Identify the dominant plant species within each stratum. To be considered a separate plant zone, it must make up more than 5% of the AA (e.g., 250 m² for an AA of 0.5 ha).

Height Class				Cover Class			
1	<0.5 m	6	10-<15 m	1	Trace	6	10-<25%
2	0.5-1 m	7	15-<20 m	2	<1%	7	25-<50%
3	1-<2 m	8	20-<35 m	3	1-<2%	8	50-<75%
4	2-<6 m	9	35-<50 m	4	2-<5%	9	75-<95%
5	6-<10 m	10	≥50 m	5	5-<10%	10	≥95%

Stratum		Avg. Water Depth		Biophysical Setting for Each Plant Zone	
FO	Forest/Woodland (Trees/Shrubs >6 m)	1	Dry	AB	Aquatic Bed
SH	Shrubland (Shrubs 0.5-6 m)	2	Moist	ShMa	Shallow Marsh
H	Herbaceous (e.g., Graminoids, Forbs, Ferns)	3	Saturated	DeMa	Deep Marsh
DS	Dwarf Shrubland (<0.5 m)	4	< 5 cm	SeMe	Sedge Meadow
NV	Nonvascular (Bryophytes, cryptogamic crusts)	5	5-<10 cm	WeMe	Wet Meadow
SD	Standing Dead (>45° angle)	6	10-<20 cm	WWMP	Wet to Wet-Mesic Prairie
SV	Sparsely Vegetated (including bare ground)	7	20-<30 cm	SFM	Seasonally Flooded Mudflat
CW	Coarse Woody Debris (≥ 7.6 cm diameter)	8	30-<40 cm	SFBDF	Seasonally Flooded Basin/Depression/Flat
FW	Fine Woody Debris (≤ 7.5 cm diameter)	9	40-<50 cm	HF	Herbaceous Fen
V	Vines	10	0.5-<0.75 m	SSF	Scrub-Shrub Fen
Collecting unknown plant specimens: collect a specimen to press, assign it a unique number (U1, U2, etc) and record that in the Collect # column for each Plant Zone.		11	0.75-<1 m	SSW	Coniferous Fen
		12	1-<1.5 m	CF	Coniferous Wetland
		13	1.5-<2.5 m	CW	Coniferous Fen
		14	≥2.5 m	FF	Floodplain Forest
				SD	Saline Depression

Summary of Each Plant Zone Within the AA

Plant Zone	% of AA	Cowardin/Riparian Code	Avg. H2O Depth	Biophysical Setting	Comments
1					
2					
3					
4					
5					
Other*		---		---	
Upland		---	---	---	
TOTAL	100%	Coordinate Plant Zone codes & %'s w/Cowardin info (p.4) *Other = Zones <5% of AA + non-vegetated classes			

Plant Zone #1 (indicate location on site drawing)

Collect #	Stratum	Dominant Species	Height Class	Cover Class	Comments

ASSESSMENT AREA DRAWING – Darken the below circle IF it's used for AA assessment. Otherwise, draw own AA dimensions.

Check these off as they are added to the AA drawing:		
<input type="checkbox"/> North arrow	<input type="checkbox"/> Plant zones	<input type="checkbox"/> Surface water inlets and outlets w/SOLID arrows
<input type="checkbox"/> Veg plot/modules	<input type="checkbox"/> Soil pits (S1 & S2)	<input type="checkbox"/> Groundwater/subsurface drainage w/DASHED arrows
<input type="checkbox"/> Anthropogenic features, i.e., culverts, berms, roads...		

***ALSO INDICATE ALL PLANT ZONES ON AERIAL PHOTO, IF POSSIBLE**



Notes:

Blank space for notes.

List of Physical Patch Types within the Assessment Area

NO PHYSICAL PATCH TYPES PRESENT IN AA:

PHYSICAL PATCH TYPE	Cover Class	Comments
Cover Classes 1: trace 2: <1% 3: 1-<2% 4: 2-<5% 5: 5-<10% 6: 10-<25% 7: 25-<50% 8: 50-<75% 9: 75-<95% 10: ≥95%		
Open water-pond or lake: Medium to large natural water body		
Open water -pools: Areas that hold stagnant or slow moving water from groundwater discharge but are not associated with a defined channel.		
Open water-river/stream: Areas of flowing water associated with a sizeable channel.		
Open water-small rivulet: Areas of flowing water associated with a narrow stream channel.		
Open water-oxbow/backwater channel: Areas holding stagnant or slow moving water that have been partially or completely disassociated from the primary river channel.		
Open water-tributary/secondary channel: Areas of flowing water entering the main channel from a secondary source.		
Open water-beaver pond: Areas that hold stagnant or slow moving water behind a beaver dam.		
Active beaver dam: Debris damming a stream clearly constructed by beaver (note gnawed ends of branches)		
Beaver canals: Canals cut through emergent vegetation by beaver.		
Braided river channel: River channel consisting of a network of small channels separated by small and often temporary islands or bars.		
Adjacent or onsite springs/seeps: Localized point of emerging groundwater, often on or at the base of a sloping hillside.		
Debris jams/woody debris: Aggregated woody debris in a stream channel deposited by high flows.		
Deadfall/woody debris: Aggregated clumps of coarse woody debris from dead or downed tree or large shrubs.		
Pool/riffle complex: Deep, slow-moving pools alternating with shallow, fast-moving riffles along the relatively straight course of a stream or river.		
Point bars: A low ridge of sediment (sand or gravel) formed on the inner bank of a meandering stream.		
Bank slumps or undercut banks: A bank slump is the portion of a stream or other wetland bank that has broken free from the rest of the bank but has not eroded away. Undercut banks are areas along a stream bank or shoreline of a wetland that have been excavated by waves or flowing water.		
Mudflats: An accumulation of mud at the edge of shallow waters, such as a lake or pond. Often intermittently flooded or exposed.		
Salt flat/alkali flat: Dry open area of fine-grained sediment and accumulated salts. Often wet in the winter months or with heavy precipitation.		
Animal mounds or burrows: Mounds or holes associated with animal foraging, denning, predation, or other behaviors.		
Plant hummocks: A mound composed of herbaceous plant material resulting in a raised pedestal of persistent roots or rhizomes.		
Tree hummocks: Raised mounds of tree roots surrounding a tree, often with soil and debris, on which various plants often grow.		
Water tracks/hollows: Depressions between hummocks or mounds that remain permanently saturated or inundated with slow moving surface water.		
Natural island: Naturally occurring islands surrounded by water. Island can be dominated by either wetland or upland vegetation.		
Anthropogenic island: Island created by artificial means, often for nesting waterfowl.		
Floating mat: Mats of peat held together by roots and rhizomes of sedges. Floating mats are underlain by water and /or very loose peat.		
Marl/limonite beds: Marl is a calcium carbonate precipitate often found in calcareous fens. Limonite forms in iron-rich fens when iron precipitates from the groundwater incorporating organic matter.		
Other:		

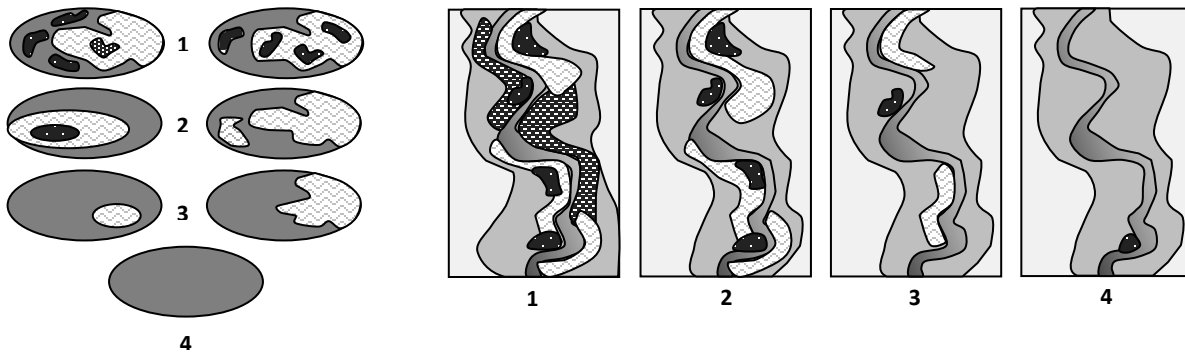
1. Landscape Context Metrics —Circle the applicable number

LANDSCAPE CONTEXT			
Landscape Connectivity within 200 m of the AA perimeter			
Type of Wetland (check one):		Non-Riverine <input type="radio"/>	Riverine <input type="radio"/>
<i>Use the site map to select the statement that best describes the landscape connectivity within a 200 m envelope around the AA perimeter (non-riverine wetlands) or within a 200 m envelope upstream and downstream of the AA perimeter (riverine wetlands).</i>	Intact: AA embedded in >90-100% unfragmented, natural landscape.		1
	Variegated: AA embedded in >75-90% unfragmented, natural landscape.		2
	Fragmented: AA embedded in >50-75% unfragmented, natural landscape.		3
	Severely fragmented: AA embedded in 25-50% unfragmented, natural landscape.		4
	Relictual: AA embedded in <25 % unfragmented, natural landscape.		5
Buffer Length (Perimeter)			
<i>Select the statement that best describes the buffer length around the AA perimeter.</i>	A buffer of at least 30 m occurs around 76-100% of the AA perimeter.		1
	A buffer of at least 30 m occurs around 51-75% of the AA perimeter.		2
	A buffer of at least 30 m occurs around 25-50% of the AA perimeter.		3
	A buffer of at least 30 m occurs around <25% of the AA perimeter, OR NO BUFFER EXISTS.		4
Buffer Width: Select the statement that best describes the buffer width of the AA. Estimate width up to 200 m from AA perimeter at eight evenly spaced intervals. Draw a 'pie' on your aerial photo and determine buffer width for each section.			
N	S	Average buffer width between edge of the AA and the edge of the buffer is >200 m.	1
NE	SW	Average buffer width between edge of AA and the edge of the buffer is >100-200 m.	2
E	W	Average buffer width between edge of the AA and the edge of the buffer is 50-100 m.	3
SE	NW	Average buffer width between edge of the AA and the edge of the buffer is <50 m, OR no buffer exists.	4
Average Buffer Width: _____			
Buffer Condition within 200 m of the AA perimeter			
<i>Select the statement that best describes the plant species composition within a 200 m envelope around the AA perimeter.</i>	Abundant (>95%) native vegetation cover and little or no (<5%) cover of non-native plants.		1
	Substantial (>75–95%) native vegetation cover and low (5–25%) cover of non-native plants.		2
	Moderate (50-75%) native vegetation cover.		3
	Low (<50%) cover of native vegetation, OR NO BUFFER EXISTS.		4
<i>Select the statement that best describes the extent of soil disturbance composition within a 200 m envelope around the AA perimeter.</i>	Soils are intact.		1
	Soils are slightly to moderately disturbed.		2
	Soils are moderately to extensively disturbed.		3
	Soils are highly disturbed OR ground is unnaturally bare, OR NO BUFFER EXISTS.		4
<i>Select the statement that best describes the extent of trash or evidence of human visitation within 200 m of the AA perimeter.</i>	No trash present OR no evidence of human visitation or recreation.		1
	Little trash OR evidence of minor human visitation or recreation.		2
	Moderate or greater amounts of trash OR evidence of moderate human visitation/recreation.		3
	Excessive amounts of trash OR evidence of high intensity human visitation/recreation, OR NO BUFFER EXISTS.		4
Landscape Comments:			

2. Vegetation Metrics—Circle the applicable number

VEGETATION		
Relative cover of native plant species within the AA		
<p>Select the statement that best describes the relative cover of native plant species within the AA.</p>	>99% of the vegetation cover within the AA is comprised of native vegetation.	1
	95-99% of the vegetation cover within the AA is comprised of native vegetation.	2
	80-94% of the vegetation cover within the AA is comprised of native vegetation.	3
	50-79% of the vegetation cover within the AA is comprised of native vegetation.	4
	<50% of the vegetation cover within the AA is comprised of native vegetation.	5
Relative cover of listed noxious weed species within the AA (see State/County Noxious Weed list)		
<p>Select the statement that best describes the relative cover of listed noxious weed species within the AA.</p> <p>Identify and rank the three most common noxious weed species observed in the AA.</p> <p>1) _____</p> <p>2) _____</p> <p>3) _____</p>	No noxious weed species are present in the AA.	1
	<1-3% of the vegetation cover within the AA is comprised of noxious weed species. If weeds occur in patches, then patches are small & isolated (1-2 patches) within the AA.	2
	>3-10% of the vegetation cover within the AA is comprised of noxious weed species. If weeds occur in patches, then patches are moderate in size and common (3-5 patches) within the AA.	3
	>10% of the vegetation cover within the AA is comprised of noxious weed species. If weeds occur in patches, then patches are relatively large and abundant (>5 patches) within the AA.	4
Relative cover of aggressive graminoids within the AA		
<p>Select the statement that best describes the relative cover of aggressive graminoids within the AA.</p> <p>Identify and rank the three most common aggressive graminoids observed in the AA.</p> <p>1) _____</p> <p>2) _____</p> <p>3) _____</p>	No aggressive graminoid species are present in the AA.	1
	Aggressive graminoids are present in the AA, but with low cover (<10% relative cover of cattails or <5% cover of reed canarygrass, common reed, smooth brome, Kentucky bluegrass, common timothy, or meadow foxtail).	2
	Aggressive graminoids are common in the AA (10-25% relative cover of cattails or 5-10% relative cover of reed canarygrass, common reed, smooth brome, Kentucky bluegrass, common timothy, or meadow foxtail).	3
	Aggressive graminoids are abundant in the AA (>25-50% relative cover of cattails or 10-25% relative cover of reed canarygrass, common reed, smooth brome, Kentucky bluegrass, common timothy, or meadow foxtail).	4
	Aggressive graminoids are dominant in the AA (>50% relative cover of cattails or >25% relative cover of reed canarygrass, common reed, smooth brome, Kentucky bluegrass, common timothy, or meadow foxtail).	5
Herbaceous Litter/Woody Debris Accumulation within the AA		
<p>Select the statement that best describes the herbaceous litter/woody debris accumulation of the site. Note: Woody debris only applies to sites with shrubs/trees.</p>	Site has moderate amount of fine litter/woody debris. New growth is more prevalent than previous years' growth. Layers of litter in pools or areas of topographic lows are thin.	1
	Site is characterized by small amounts of litter/woody debris, little plant recruitment	2
	Litter/woody debris is somewhat excessive.	
	Site has scant litter/woody debris	3
	Litter/woody debris is excessive and is blocking plant recruitment.	
Interspersion of Plant Zones within the AA		
<p>Select the statement that best describes the patch interspersion of the site (use the associated schematics at the top of p. 11).</p>	Horizontal structure consists of a very complex array of nested or interspersed irregular biotic patches with no single dominant type.	1
	Horizontal structure consists of a moderately complex array of nested or interspersed irregular biotic patches with no single dominant type.	2
	Horizontal structure consists of a simple array of nested or interspersed irregular biotic patches with no single dominant type.	3
	Horizontal structure consists of one dominant patch type with no interspersion.	4

Plant Zone Interspersion Schematic



Woody Species Establishment and Regeneration within the AA		
<i>Select the statement that best describes woody species establishment and regeneration within the AA.</i>	Woody species are naturally uncommon or absent.	1
	All age classes of native woody species present.	
	Middle age group(s) absent with all other well-represented	2
	Early successional saplings only.	
	Seedlings and saplings and middle age group(s) absent. The stand is comprised mainly of mature species.	3
	Woody species predominately consist of relict or dying individuals	4
AA has a > 5% canopy cover of Russian Olive and/or Salt Cedar.		
Tree and Shrub Utilization within the AA		
<i>Select the statement that best describes the utilization of trees and shrubs in the AA.</i>	Woody species are naturally uncommon or absent.	1
	0-5% of the available second year and older stems are browsed.	
	>5%-25% of the available second year and older stems are browsed.	2
	>25%-50% of the available second year and older stems are browsed.	3
	More than 50% of the available second year and older stems are browsed.	4
Vegetation Comments:		

3. Physicochemical Metrics—Circle the applicable number.

PHYSICOCHEMICAL		
Soil Surface Integrity within the AA		
<i>Select the statement that describes the soil surface integrity within the AA.</i>	Soil disturbance is limited to naturally caused disturbances such as flood deposition or game trails.	1
	Soil disturbance due to human causes (including livestock) is present but minimal. Depth of disturbance is limited to a few inches and does not show evidence of ponding or channeling water. Site will recover within a few years after disturbance removal.	2
	Soil disturbance due to human causes is common and will be slow to recover. Damage is not excessive and the site will recover with the removal of degrading human influences and moderate recovery times.	3
	Soil disturbance is widespread and substantially degrades the site. Water, if present, would be channeled or ponded. The site will not recover without restoration and/or long recovery times.	4

Water Quality: Select the statements that best describe the following water quality indicators within the AA.		
<i>Algae</i>	No water present in AA at time of visit.	N/A
	No visual evidence of degraded water quality. No potential source of water quality degradation observed. Water is clear with minimal algae growth.	1
	Some negative water quality indicators are present and/or some potential sources of water quality degradation observed. Algae are limited to small and localized areas within the wetland. Water may have a minimal greenish tint, cloudiness, or sheen.	2
	Algal growth occurs in large patches throughout the AA. Potential sources of water quality degradation are apparent. Water may have a moderate greenish tint or sheen.	3
	Algal mats may be extensive, blocking light to the bottom. Potential sources of water quality degradation are apparent. Water has strong greenish tint, sheen, or turbidity. The bottom is difficult to see during the growing season.	4
<i>Turbidity</i>	No water present in AA at time of visit.	N/A
	No visual evidence of degraded water quality. No potential source of water quality degradation observed.	1
	Water is slightly cloudy and/or some potential sources of water quality degradation observed, but there is no obvious source of sedimentation	2
	Water is cloudy, but the bottom is still visible. Potential sources of water quality degradation are apparent.	3
	Water is milky and/or muddy. The bottom is no longer visible. Potential sources of water quality degradation are apparent.	4
<i>Sheen (petroleum-based)</i> Note: Sheens can be caused by bacteria. When disturbed, a bacterial sheen will break up into small platelets; petroleum sheens will quickly reform.	No water present in AA at time of visit.	N/A
	No visual evidence of degraded water quality. No potential source of water quality degradation observed. Water is clear with no sheen.	1
	Some negative water quality indicators are present and/or some potential sources of water quality degradation observed. Sheen on the water is limited to small and localized areas within the AA.	2
	Sheen occurs in large patches throughout the surface water of the AA. Potential sources of water quality degradation are apparent. Water may have a moderate sheen.	3
	Sheen is extensive throughout the surface of the water in the AA. Potential sources of water quality degradation are apparent. Water has a strong sheen.	4
Physicochemical Comments:		

4. Hydrologic Metrics—Circle the applicable number.

HYDROLOGY				
Water Inputs into the AA				
<i>Select the statement that best describes the water sources into the AA during the growing season.</i>	Sources are precipitation, groundwater, and/or natural runoff, or natural flow from an adjacent freshwater body, or the AA naturally lacks water in the growing season.			1
	Sources are mostly natural but can include occasional or small effects of modified hydrology. No large point sources or dams control the overall hydrology.			2
	Sources are primarily from anthropogenic sources (e.g., urban runoff, pumped water, impoundments, regulated releases through a dam).			3
	Natural sources have been eliminated based on the following indicators: impoundment of all possible wet season inflows, diversions of all dry-season inflows, predominance of xeric vegetation, etc.			4
<i>Rank major water sources observed in the AA, or observed to potentially impact the AA, starting with 1 being the most dominant through 3. Mark all others present with a 4 and those not present as NA.</i>	Natural Sources/Inflow	Rank	Discrete Inlets	Count
	Overbank flooding		Channels	
	Alluvial storage/hyporheic flow		Spring	
	Throughflow (if yes, rank in Outputs)		Ditches	
	Non-channelized flow from contiguous wetland area		Culvert	
	Groundwater discharge		Pipes	
	Precipitation (ONLY if major hydrologic driver)		Pumps	
	Snowmelt (ONLY if major hydrologic driver)		Other/Comments:	
	Anthropogenic Sources/Inflow	Rank		
	Irrigation run-off/ditches			
	Urban run-off			
	Pipes directly feeding into wetland			
	Culvert			
	Pumps			
Other:				
Water Outputs from the AA				
<i>Select the statement that best describes the water outlet of the AA during the growing season.</i>	Water leaves the site through natural runoff, natural flow, evaporation, or outlet is blocked by natural features (e.g., beaver dam), OR the site naturally lacks water in the growing season.			1
	Outflow is mostly natural, but there is some modification due to anthropogenic restrictions (e.g., filling or development, channelization).			2
	Withdrawals are primarily from anthropogenic sources, and outflow has been significantly altered by flow obstructions (culverts, paved stream crossings, impoundments, ditching).			3
	Natural outflow has been completely eliminated due to the following indicators: dike/levees, railroads, or roads with no culverts.			4
<i>Rank major water outlets observed in the AA, or observed to potentially impact the AA, starting with 1 being the most dominant through 3. Mark all others present with a 4 and those not present as NA.</i>	Natural Outflow	Rank	Discrete Outlets:	Count
	Channelized flow (headwater wetland)		Channels	
	Recharge to adjacent stream		Culvert	
	Throughflow (if yes, rank in Sources/Inflow)		Ditches	
	Non-channelized flow to contiguous wetland area		Pumps	
	No natural outlet		Other/Comments:	
	Anthropogenic Outflow	Rank		
	Culverts under roadways / trails			
	Ditches established to drain wetland			
	Natural outlet blocked/bermed			
	Water is being pumped out of wetland			
	Other:			

Hydroperiod of the AA			
Select the statement that best describes the hydroperiod of the AA. CHOOSE ONE of the following wetland types			
NON-FEN (Depressional, Lacustrine, Slope)		FEN	
Hydroperiod of the AA is characterized by natural patterns of filling or inundation and drying or drawdowns.	1	Hydroperiod of the AA is characterized by stable, saturated hydrology, or by naturally damped cycles of saturation and partial drying.	1
The filling or inundation patterns in the AA are of greater magnitude or duration than would be expected under natural conditions, but thereafter the AA is subject to natural drawdown or drying.	2	Hydroperiod of the AA experiences minor altered inflows or drawdown/drying, as compared to more natural wetlands (e.g., ditching).	2
Hydroperiod of the AA is characterized by natural patterns of filling or inundation, but thereafter, is subject to more rapid or extreme drawdown or drying, as compared to more natural wetlands. OR the filling or inundation patterns in the AA are of substantially lower magnitude or duration than would be expected under natural conditions, but thereafter, the AA is subject to natural drawdown or drying.	3	Hydroperiod of the AA is somewhat altered by greater increased inflow from runoff, or experiences moderate drawdown or drying, as compared to more natural wetlands (e.g., ditching).	3
Both the inundation and drawdown of the AA deviate from natural conditions (either increased or decreased in magnitude and/or duration).	4	Hydroperiod of the AA is greatly altered by increased inflow from runoff or experiences large drawdown or drying, as compared to more natural wetlands (e.g., ditching).	4
Surface Water Connectivity of the AA			
Select the statement that best describes the surface water connectivity of the AA. CHOOSE ONE of the following wetland types			
NON-FEN (Depressional, Lacustrine, Slope)		FEN	
Water, when present, has unrestricted access into or out of the wetland. There are no artificial obstructions to surface water flow.	1	No natural surface water connectivity with surrounding water bodies.	1
Artificial obstructions limit the access of surface water into or out of the wetland, but the limitations exist for < 50% of the AA perimeter.	2	Partial surface water connectivity with surrounding water bodies exists via artificial means (e.g., ditching or draining to dry the fen).	2
Artificial obstructions limit the access of surface water into or out of the wetland for 50–90% of the AA perimeter. Flood flows may exceed the obstructions, but drainage into or out of the AA is probably obstructed.	3	Substantial to full surface water connectivity exists via artificial means that has obvious drying effects on the peat body.	3
Artificial obstructions limit the access of surface water into or out of the wetland for >90% of the AA perimeter.	4		
Hydrology Comments:			

Onsite and Surrounding Disturbances—Indicate Scope and Impact of disturbances (see tables p. 16).

Disturbances Observed <i>and</i> Expected to Impact the Site	Scope		Impact		Field Indicator Observed	LEVEL 3 EVALUATION ONLY
	200 m	AA	200 m	AA		
Only record a Scope/Impact rating if a disturbance is present. Do not use "0" to indicate the absence of a disturbance; "0" indicates a Scope Rating. IF THERE IS NO DISTURBANCE LEAVE THE FIELD BLANK.						
Transportation Disturbances						Total length (m) within 200m buffer
Paved surfaces (e.g., roads, parking lots)						
Unpaved roads						
Railroads						
Land Use Disturbances-Development or Recreation						% 200m buffer affected
Domestic or commercial development						
Intensively managed sports fields, golf courses						
Recreation or human visitation						
Filling or dumping of sediment or fill						
Trash or refuse dumping						
Land Use Disturbances-Agriculture						% 200m buffer affected
Dryland farming (e.g., wheat, barley, etc.)						
Open range livestock grazing						
Horse paddock or private barnyard						
Feedlot operation						
Irrigated cropland						
Irrigated hay pasture						
Irrigation ditches affecting wetland						
Permanent tree plantation						
Cropland treated with pesticides						
Disturbed fallow lands dominated by exotic species						
Haying of native grassland						
Fallow fields (no human use in past 10 years)						
Fields with recent plowing or discing						
Shelterbelts						
Fences (score for potential to impede wildlife movement/migration)						
Land Use Disturbances-Resource Extraction						% 200m buffer affected
Gravel pits, open pit mining						
Small scale mining activity or abandoned mines						
Abandoned oil/gas wells						
Oil/gas pump jacks (active)						
Injection wells, tank batteries, collection facilities, or other oil/gas-associated infrastructure						
Intensive logging (50-75% trees of >50 cm diameter removed)						
Selective logging (<50% of trees >50 cm diameter removed)						

Disturbances Observed <i>and</i> Expected to Impact the Site	Scope		Impact		Field Indicator Observed	LEVEL 3 EVALUATION ONLY
	200 m	AA	200 m	AA		
Land Use Disturbances-Vegetation Removal/Conversion						% 200m buffer affected
Chemical vegetation control						
Evidence of intentional burning						
Mechanical vegetation removal						
Vegetation conversion (e.g., from shrubland to grassland)						
Natural or Environmental Disturbances						% 200m buffer affected
Beetle-killed <i>Pinus</i> species						
Other diseased conifers						
Evidence of recent fire (<5 years)						
Beaver activity						
Evidence of prolonged drought						
Browsing of woody vegetation by native ungulates						
Hydrologic Disturbances						% 200m buffer affected
Upstream spring box						
Impoundment of flowing water						
Potential for agricultural runoff						
Potential for urban runoff						
Culvert						
Upstream dam						
Reservoir/stock pond						
Weir or drop structure						
Dredged inlet/outlet channel						
Engineered channel (e.g., riprap)						
Pumps, diversions, or ditches that move water <i>into</i> wetland						
Pumps, diversions, or ditches that move water <i>out of</i> wetland						
Berms/Dikes/Levees						

Scope and Impact Ratings

Scope of Disturbances		Impact of Disturbances	
5	Pervasive – Affects nearly all (>75%) of the envelope or AA.	4	Extreme – likely to extremely modify, degrade, destroy, or eliminate the wetland.
4	Large – Affects most (>50-75%) of the envelope or AA.	3	Serious – likely to seriously modify, degrade or reduce wetland function or condition.
3	Moderate – Affects much (>25-50%) of the envelope or AA.	2	Moderate – likely to moderately modify, degrade or reduce wetland function or condition.
2	Restricted – Affects some (>10-25%) of the envelope or AA.	1	Slight – likely to only slightly modify, degrade, or reduce wetland function or condition.
1	Small – Affects a small (>1-10%) portion of the envelope or AA.	NOTE: There is no 0 score for Impact. If you record a score for Scope you must record a score for Impact (i.e., a 0 Scope would get an Impact score of 1 at a minimum, though it could be higher).	
0	Nil – Affects little to none (≤1%) of the envelope or AA.		

Soil Pit #: _____	SOIL PROFILE DATA FORM — Dig soil pit to a least 80 cm depth if possible. Draw soil pit locations on site drawing.		
Plant Zone <u>OR</u> Module (circle ONE)	GPS Waypoint ID: _____	Accuracy (m): _____	Depth of standing water (cm) (NP=not present): _____
Located in: #: _____	Latitude (Y): _____	Longitude (X): _____	Depth to Saturation (cm) (NP=not present): _____
			Depth to free water in pit (cm) (NP=not present): _____

SOIL PROFILE DESCRIPTION

*To determine soil texture: Rub sample b/w fingers 10x. If gritty, mineral soil. If greasy, organic. Use hand lens to est. % visible fibers: Peat: ≥40%, Mucky Peat: 16.6 - <40%, Muck: <16.6%

Soil Layer	Depth to Lower Boundary of Layer (cm)	Mineral Soils		Organic Soil Texture: P = Peat M = Muck MP = Mucky Peat	% Visible plant fibers	Soil Matrix Color (must be majority color)*			Redox Concentration Features			Redox Depletion Features					
		Soil Texture (Required)	Soil Texture Modifier (Optional - see below)			H**	V	C	Redox Conc. Abundance (%)	Redox Conc. Color*			Redox Depletion Abundance (%)	Redox Depletion Color*			
										H**	V	C		H**	V	C	

Commonly Observed Hydric Soil Indicators (check all that apply):	Soil Profile Photos	Photo Description
A1. Histosol (≥40 cm of upper 80 cm is organic soil, i.e., P, MP, or M)	Photo #	
A2. Histic Epipedon (Top layer is ≥20 cm of organic soil over mineral layer)	Photo #	
A4. Sulfidic (rotten eggs) odor	Photo #	
Gleyed or Low Chroma Colors	Photo #	
Other	Photo #	

Soil Texture Modifiers: *Note that these <u>ONLY</u> describe a MINERAL Soil Texture: 'Mucky' (mineral soil w/ high organic content) *Add prefix 'VERY' if 'Gravelly' (15-<35% of >2mm-7.6 cm fragments) 35-<60% fragments; Add 'Cobbly' (15-<35% of >7.6-25 cm fragments) 'EXTREMELY' if 60-<90% 'Stony' (15-<35% of >25-60 cm fragments) If ≥90%, layer is Gravel, 'Bouldery' (15-<35% of >60 cm fragments) Cobble, Stone, Boulder.	Remarks:
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*To determine the soil matrix color: If soils are dry, wet sample until it no longer changes color. Always have the sun at your back when comparing to color chart to find best match.
 **Munsell Soil Color Chart: H = Hue, V = Value, C = Chroma

Soil Pit #: _____	SOIL PROFILE DATA FORM — Dig soil pit to a least 80 cm depth if possible. Draw soil pit locations on site drawing.		
Located in: Plant Zone <u>OR</u> Module (circle ONE) #: _____	GPS Waypoint ID: _____	Accuracy (m): _____	Depth of standing water (cm) (NP=not present): _____
	Latitude (Y): _____	Longitude (X): _____	Depth to Saturation (cm) (NP=not present): _____
Depth to free water in pit (cm) (NP=not present): _____			

SOIL PROFILE DESCRIPTION

*To determine soil texture: Rub sample b/w fingers 10x. If gritty, mineral soil. If greasy, organic. Use hand lens to est. % visible fibers: Peat: ≥40%, Mucky Peat: 16.6 - <40%, Muck: <16.6%

Soil Layer	Depth to Lower Boundary of Layer (cm)	Mineral Soils		Organic Soil Texture: P = Peat M = Muck MP = Mucky Peat	% Visible plant fibers	Soil Matrix Color (must be majority color)*			Redox Concentration Features			Redox Depletion Features					
		Soil Texture (Required)	Soil Texture Modifier (Optional - see below)			H**	V	C	Redox Conc. Abundance (%)	Redox Conc. Color*			Redox Depletion Abundance (%)	Redox Depletion Color*			
										H**	V	C		H**	V	C	

Commonly Observed Hydric Soil Indicators (check all that apply):	Soil Profile Photos	Photo Description
A1. Histosol (≥40 cm of upper 80 cm is organic soil, i.e., P, MP, or M)	Photo #	
A2. Histic Epipedon (Top layer is ≥20 cm of organic soil over mineral layer)	Photo #	
A4. Sulfidic (rotten eggs) odor	Photo #	
Gleyed or Low Chroma Colors	Photo #	
Other:	Photo #	
Soil Texture Modifiers: *Note that these ONLY describe a MINERAL Soil Texture: 'Mucky' (mineral soil w/ high organic content) *Add prefix 'VERY' if 'Gravelly' (15-<35% of >2 mm-7.6cm fragments) 35-<60% fragments; Add 'Cobbly' (15-<35% of >7.6-25 cm fragments) 'EXTREMELY' if 60-<90% 'Stony' (15-<35% of >25-60 cm fragments) If ≥90%, layer is Gravel, 'Bouldery' (15-<35% of >60 cm fragments) Cobble, Stone, Boulder.	Remarks:	

*To determine the soil matrix color: If soils are dry, wet sample until it no longer changes color. Always have the sun at your back when comparing to color chart to find best match.
 **Munsell Soil Color Chart: H = Hue, V = Value, C = Chroma

VEGETATION PLOT

For Level 3 Assessments, carry out the full vegetation plot following directions in the field manual.

GPS COORDINATES OF VEGETATION PLOT (NAD 83)

0 m WP #: _____ Latitude (Y): _____ Longitude (X): _____ Accuracy (m): _____

50 m WP #: _____ Latitude (Y): _____ Longitude (X): _____ Accuracy (m): _____

Other: _____ WP#: _____ Latitude (Y): _____ Longitude (X): _____ Accuracy (m): _____

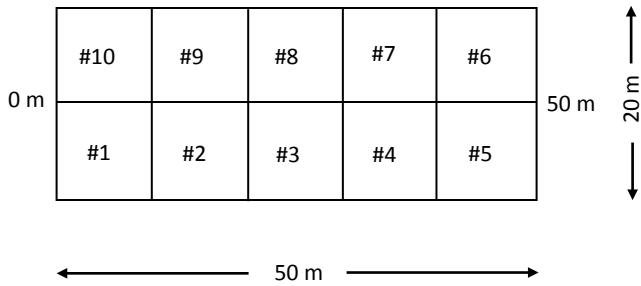
Other: _____ WP#: _____ Latitude (Y): _____ Longitude (X): _____ Accuracy (m): _____

PHOTOS OF VEGETATION PLOT *Aspects for the two plot ends should be EXACTLY 180° apart. Take module pictures standing on plot centerline.

0 m Photo #: _____ Aspect: _____	Module _____ Photo #: _____
50 m Photo #: _____ Aspect: _____	Module _____ Photo #: _____
Other: _____ Photo #: _____ Aspect: _____	Module _____ Photo #: _____
Other: _____ Photo #: _____ Aspect: _____	Module _____ Photo #: _____

LAYOUT OF VEGETATION PLOT

*Circle intensive modules **Draw/note any changes to the plot layout, i.e., 1x5 or 2x2 plot). ***Draw plot layout on p.3 drawing as well.



Plot representativeness (discuss decisions for placement and/or whether the plot is representative of AA, plant zones captured by each module, etc)

VEGETATION MODULE GROUND COVER TABLE

Cover Class 1: trace 2: <1% 3: 1-<2% 4: 2-<5% 5: 5-<10% 6: 10-<25% 7: 25-<50% 8: 50-<75% 9: 75-<95% 10: ≥95%

Height Class 1: <0.5 m 2: 0.5-<1m 3: 1-<2 m 4: 2-<6 m 5: 6-<10 m 6: 10-<15 m 7: 15-<20 m 8: 20-<35 m 9: 35-<50 m 10: ≥50 m

Cover Class/Depth	C/D	C/D	C/D	C/D	
Module →					
Ground Cover					
Cover of deep water >20 cm					
Cover of shallow standing water <20 cm					
Depth of deep water (cm) – average of 4 locations					
Depth of shallow standing water (cm) – average of 4 locations					
Bare Ground--soil, sand, sediments (<2 mm)					
Bare Ground--gravel/cobble (2 mm to 25 cm)					
Bare Ground--rock/stone/boulder (>25 cm)					
Litter					
Litter Depth (take average of 4 locations where litter occurs)					
Coarse Woody Debris (fallen trees, large branches ≥ 7.6 cm in diameter)					
Fine Woody Debris (≤ 7.5 cm diameter)					
Nonvascular (including under vegetation or litter)					
Algae					

Flora Used for Vegetation Identification

Mark a '1' next to the primary flora used for vegetation identification and a '2' next to any other flora used to key & identify plants in the field.

	Manual of Montana Vascular Plants (Lesica 2012)		Field Guide to Sedges of the Pacific NW (Wilson et al. 2008)
	Field Guide to MT's Wetland Vascular Plants (Lesica & Husby 2015)		Field Guide to Intermountain Sedges (USFS 1998)
	Vascular Plants of Montana (Dorn 1984)		Field Guide to Intermountain Rushes (USFS 1994)
	Weeds of the West (Burrill et al 2009)		Field Guide to Willows of E. Central ID (Brunsfeld & Johnson 1985)
	Plants of the Rocky Mountains (Kershaw et al. 1998)		Guide to the Willows of Shoshone NF (USFS 2001)
	Vascular Plants of West-Central MT (Lackschewitz 1991)		Grasses & Grasslike Plants of Utah (Banner et al. 2011)
	Grassland Plants of SD & the Northern Great Plains (Johnson & Larson 2007)		A Field Guide to Wyoming Grasses (Skinner 2014)
	Plants of the Black Hills/Bear Lodge Mountains (Larson & Johnson 2007)		Grasses of Montana (Lavin & Seibert 2011)
	Wetland Plants of the N. Great Plains (Chadde 2012)		Forb Seedling ID Guide for the Inland NW (Pavek et al. 2012)
	Other:		Other:
	Other:		Other:

