

West Virginia Wetland Rapid Assessment Datasheet

Identifiers (refer to page 25 of WVWRAM User Manual)

Site name _____	Date _____	SiteEventCode _____
Crew leader name _____	Field crew name(s) _____	
Time (24 hr) Start _____ End _____	<input type="checkbox"/> gear decontaminated prior to entering site (p.21) <input type="checkbox"/> all datasheets checked by crew leader at end of sampling	
Directions to site: _____		

Notes on land use history, site conditions, wildlife observed, discussions with landowner or other on-site personnel, or deviations from protocol:

GPS make/model _____	GPS datum: <input type="checkbox"/> NAD83 <input type="checkbox"/> other _____	<input type="checkbox"/> Photos of inlet, outlet, NWI types, soils, stressors, and any other key features (p.26)
Coordinates (decimal degrees): _____		

Assessment Area <i>Check one (p.27)</i> <input type="checkbox"/> AA is the entire Wetland Unit (most sites). <input type="checkbox"/> AA is a portion of the very large WU (> 25 acres) <input type="checkbox"/> AA is only the Project Area, smaller than the WU - see manual for exceptions when project area survey is acceptable Comment _____	Purpose of Assessment <i>Check all that apply (p.30)</i> <input type="checkbox"/> pre-impact <input type="checkbox"/> revisit <input type="checkbox"/> other <input type="checkbox"/> restoration <input type="checkbox"/> baseline <input type="checkbox"/> QC duplicate <input type="checkbox"/> random <input type="checkbox"/> years post- _____ <input type="checkbox"/> reference Comment _____ Special Conservation Concern <i>Check one(p.35)</i> _____ B-rank from topmost box in list below. Read definitions in manual! <input type="checkbox"/> old-growth swamp (B3) <input type="checkbox"/> large bog or fen (B4) <input type="checkbox"/> mature forested swamp (B5) <input type="checkbox"/> summit sinkhole (Ridge&Valley only)(B5) <input type="checkbox"/> no known special concern (none) Comment _____	PERIMETER AND NATURAL BUFFER (p.37) Natural perimeter <i>Check one (p.37)</i> <input type="checkbox"/> 100% <input type="checkbox"/> 75-99% <input type="checkbox"/> < 75% 50m (164') natural buffer for water quality <i>Check one (p.38)</i> <input type="checkbox"/> > 90% <input type="checkbox"/> 75-90% <input type="checkbox"/> 50-75% <input type="checkbox"/> < 50% Contiguous 300m (984') natural wildlife buffer <i>Check one (p.39)</i> <input type="checkbox"/> > 90% <input type="checkbox"/> 60-90% <input type="checkbox"/> < 60%
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NON-REGULATORY ADDITIONAL INFORMATION *For land acquisition and full functional scores (p.39)*

Ownership/Access <i>Check one (p.40)</i> <input type="checkbox"/> public, or private with permanent unrestricted access <input type="checkbox"/> private, with seasonal, partial, or case-by-case access <input type="checkbox"/> private, without public access Comment _____	Investment <i>Check one (p.40)</i> <input type="checkbox"/> compensatory mitigation site <input type="checkbox"/> conservation easement <input type="checkbox"/> other conservation investment <input type="checkbox"/> no known conservation investment Comment _____	Recreation Infrastructure <i>Check all that apply (p.41)</i> <input type="checkbox"/> maintained parking <input type="checkbox"/> boardwalk <input type="checkbox"/> informational kiosk or brochure <input type="checkbox"/> maintained road w/i 30m (100') with view <input type="checkbox"/> maintained trail <input type="checkbox"/> boat access <input type="checkbox"/> no infrastructure Comment _____
Planning or scientific use <i>Check all that apply (p.41)</i> <input type="checkbox"/> water quality plan includes wetland <input type="checkbox"/> habitat plan includes wetland <input type="checkbox"/> monitored > 2yrs, non-regulatory, data available to public <input type="checkbox"/> no known planning or sustained scientific use Comment _____	Other Public Use <i>Check all that apply (p.41)</i> <input type="checkbox"/> wetland visible from public area <100m (328') <input type="checkbox"/> evidence of non-consumptive use <input type="checkbox"/> evidence of consumptive use <input type="checkbox"/> no evidence of public use Comment _____	

TOPOGRAPHY AND STRUCTURE (p.41) Depressions <i>Check one (p.42)</i> <input type="checkbox"/> none <input type="checkbox"/> trace-10% <input type="checkbox"/> 10-33% <input type="checkbox"/> >33% Microtopographic complexity <i>Check one (p.42)</i> <input type="checkbox"/> < 3% <input type="checkbox"/> 3-40% <input type="checkbox"/> > 40% Karst topography <i>Check all that apply (p.43)</i> <input type="checkbox"/> limestone spring <input type="checkbox"/> sinkhole <input type="checkbox"/> sinking stream (not on mined land) <input type="checkbox"/> isolated closed depression over limestone <input type="checkbox"/> limestone/dol outcrop <input type="checkbox"/> cave adjacent <input type="checkbox"/> no evidence of karst	Structural Patch Type. $\geq 3 \text{ m}^2$ (32 ft ²) patch unless otherwise specified. <i>Check all that apply (p.44)</i> <input type="checkbox"/> Open water <input type="checkbox"/> Oxbows, secondary channels, swales <input type="checkbox"/> Pools inaccessible to fish <input type="checkbox"/> Springs or upwelling groundwater <input type="checkbox"/> Non-vegetated flats (mudflats, sandflats) <input type="checkbox"/> Animal mounds or burrows <input type="checkbox"/> Beaver dams or lodges <input type="checkbox"/> Abundant deciduous leaf litter <input type="checkbox"/> Plant hummocks or tussocks <input type="checkbox"/> Plant hummocks or tussocks > 25% cover of wetland (abundant) <input type="checkbox"/> Coarse woody debris at least 10 cm (4") diameter and 91 cm (36") long <input type="checkbox"/> Coarse woody debris, abundant: > 3% cover of wetland <input type="checkbox"/> Standing snags at least 7.6 cm (3") diameter and 137 cm (4.5') tall <input type="checkbox"/> Standing snags, abundant: $\geq 3/\text{acre}$ with dbh > 25 cm (10") <input type="checkbox"/> Upturned tree root wads (tip-up mounds) and pits Comment _____
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Site name _____ Date _____

VEGETATION STRUCTURE (p.47)	
Skip if no PFO present. Forest structure. Check all that apply (p.47) Stratum covers ≥ 5% of PFOs or occupies ≥ 0.1 acre: <input type="checkbox"/> Canopy <input type="checkbox"/> Understory <input type="checkbox"/> Shrub <input type="checkbox"/> Herb <input type="checkbox"/> Moss	Skip if no PEM present. PEM canopy height(s). Check all that apply (p.48) Height stratum covers ≥ 5% of PEMs or occupies ≥ 0.1 acre: <input type="checkbox"/> < 30 cm (1 ft) <input type="checkbox"/> 30-100 cm (1-3.3 ft) <input type="checkbox"/> > 100 cm (3.3 ft)
Skip if no PFO present. Forest regeneration. Check one (p.47) All native tree canopy species with >10% cover are present in the sapling layer. <input type="checkbox"/> Yes <input type="checkbox"/> No	Tall (>100 cm) gaminoid marsh Check one (p.48) Tall marsh with at least seasonal standing water and cattails, sedges, bluejoint grass, or bulrushes occupies ≥ 0.1 acre. <input type="checkbox"/> Yes <input type="checkbox"/> No
Vegetation fringing open water Check one (p.49) At least 90% of open water (lake, pond ≥ 0.1 acre, perennial stream) boundaries are fringed by band of wetland vegetation ≥ 10 m (33 ft) wide. <input type="checkbox"/> Yes <input type="checkbox"/> No ("no" includes sites not adjacent to open water)	Mowed or grazed wetland Check one (p.50) Mowed < 15 cm (6") tall or livestock-grazed areas <input type="checkbox"/> none <input type="checkbox"/> trace - 33% <input type="checkbox"/> 33-67% <input type="checkbox"/> > 67%

HYDROLOGY (p.50)

Check one (p.50)

Floodplain Wetland Unit (≥10% of wetland receives overland flow in 100-yr flood or more frequently, or major beaver influence in headwater wetlands)

Non-floodplain Wetland Unit (may have stream associated with it but overland flow or beavers impact <10% of wetland)

Largest water source Check one; note stream order if perm. flowing (p.51) <input type="checkbox"/> relatively permanently flowing and→ <input type="checkbox"/> 1st or 2nd <input type="checkbox"/> 3+ order <input type="checkbox"/> intermittent or ephemeral <input type="checkbox"/> underground spring <input type="checkbox"/> no visible inlet (dispersed groundwater and precipitation only) <input type="checkbox"/> bidirectional (no stream; water level follows lake level or river flood stage)	Largest outlet is... Check one (p.53) <input type="checkbox"/> relatively permanently flowing <input type="checkbox"/> relatively permanently flowing but highly constricted <input type="checkbox"/> intermittent or ephemeral <input type="checkbox"/> no surface outlet (groundwater only)
If largest water source is a surface stream: Check one if applicable <input type="checkbox"/> natural <input type="checkbox"/> altered or constructed Comment _____	If largest outlet is a surface stream: Check one if applicable <input type="checkbox"/> natural <input type="checkbox"/> altered or constructed Comment _____

Overbank flooding and connection to river continuum Check all that are observed within the wetland. Skip if no stream nearby/potentially connected. (pp.53-56)

active beaver dam

flood deposits (sediment deposits, debris, drift deposits, flood wrack)

vegetation flattened and aligned along flow lines

tree trunks with flood lines (water marks, silt coatings, staining, moss or lichen trim lines) or flood impact scars

absence of leaf litter under deciduous trees as a result of flooding (not livestock impacts)

braided stream channels, backwater sloughs, backchannels, or other flood drainage patterns present

flood-prone area (inundated at 2 x maximum bankfull depth) overlaps at least 10% of wetland

Disconnection from river continuum Check all that are observed at the stream that controls the floodplain. Skip if no stream potentially connected. (pp.53-56)

physical barriers between wetland & stream (roads, railbeds, hardened levees)

artificial drainage of floodplain between wetland and stream (ditches, drains, grading of land to improve drainage)

stream channel hardened (riprap, gabions, concrete)

stream channel straightened and/or moved to toeslope (meanders eliminated)

dam upstream significantly reduces flooding

land subsidence or significant streamflow reduction (sinking stream) in mined areas NOT on karst

stream channel banks are steep, eroding, have abundant bank slides or slumps, have < 50% cover of roots, or are unvegetated

stream is entrenched or moderately entrenched (Rosgen ER < 2.2 or Rosgen types A, F, G, B). Entrenchment is calculated as the flood-prone width divided by the bankfull width. Flood-prone width is measured at the elevation equal to twice the maximum bankfull depth. Maximum bankfull depth is the height of bankfull flow above the thalweg.

stream is incised; bank height ratio (BHR) > 1.5. Bank height ratio is calculated as the height of lowest bank divided by maximum bankfull depth.

flood prone area (inundated at 2 x maximum bankfull depth) does not extend to more than 10% of wetland

Worksheet for entrenchment, incisement, and flood-prone area measurements (pp.54-56)

See user manual for diagrams and definitions. Any units may be used as long as they are consistent.

maximum bankfull depth: _____ / _____ = _____

2 x maximum bankfull depth: _____ flood-prone width / bankfull width = entrenchment ratio (ER)

bankfull width: _____

flood-prone width (inundated at 2 x max bankfull depth): _____

lowest bank height: _____ / _____ = _____

lowest bank height / maximum bankfull depth = bank height ratio (BHR)

Site name _____ Date _____

Hydrology Stressors. Check all that apply, then review total disturbance below. (p.57)

- Ditch
- Tile or drain
- Weir, spillway, standing pipe or water control structure
- Impoundment impacting hydrology (excluding beaver dams)
- Berm
- Road or impervious surface (paved and/or not at grade)
- RR track
- Undersized or perched culvert
- Pump, spring box, water well
- Filling/excavating/grading the land surface
- Dredging of aquatic bed
- Point source discharge
- Stormwater input
- Agricultural runoff
- Invasive vegetation concentrated along watercourses, with at least twice as much invasive cover as areas away from watercourses
- Adjacent stream channel/riparian zone aggrading, with fresh splays of sediment, partially buried culverts, or bar formation
- More than 25% of the upland-wetland edge is abrupt and straight, not a gradual and complex transition zone > 3 meters (10 ft) wide
- Wetland is in a floodplain but is disconnected or partially disconnected from the river continuum.
- Other _____

Review the total hydrologic disturbances above and rank severity of impact by checking one box below.

- Intact: Hydrologic regime is characterized by natural patterns, with no major hydrologic stressors present.
- Mild on-going disturbance and/or past disturbance but now essentially recovered. For example, small ditches or diversions; berms or roads at/near grade; or minor flow additions.
- Moderate on-going disturbance and/or in the process of recovering from more severe disturbance in the past. For example, dams upstream or downstream moderately affect hydroperiod; ditches or diversions < 1 m (3.3 ft) deep; two lane roads; culverts adequate for base stream flow but not flood flow; or moderate flow additions. Outlets may be moderately constricted, but flow is still possible.
- Severe on-going disturbance. For example, dams upstream or downstream moderately to substantially affect hydroperiod; a 4-lane highway; diversions upstream or > 1 m (3.3 ft) deep that withdraw a significant portion of flow; large amounts of fill or excavation; significant artificial groundwater pumping; or heavy flow additions. Outlets may be substantially constricted, blocking most flow.
- Hydrology is entirely artificial; no natural inflows. E.g., a water treatment wetland constructed below the outflow from a wastewater treatment plant.

Water Quality Stressors. Check all that apply. (p.57)

- No water quality stressors observed.
- Discharges to the wetland: stormwater discharges, livestock or agricultural runoff, straight pipes, drainage ditches, industrial discharges, oil slicks, sediment plumes, algal mats, odors, adjacent spoil piles, leaking silt fences, road salt, ROW herbicide, or erosion on the upland edges.
- Contiguous water body has algal bloom, power boat use, or other observable impairment.
- Other _____

Vegetation Removal or Alteration. Check one box that best describes the wetland. (p.58)

- Minimal or no signs of anthropogenic vegetation removal or alteration OR impacts occurred in the past (typically > 80 years ago) and the wetland appears to have recovered to near-natural conditions. Examples: mature forested swamps, undisturbed beaver systems, undisturbed peatlands.
- Moderate. Vegetation removal or alteration is on-going and has moderate impact in terms of either severity or extent OR impacts occurred in the past and wetland is still in the process of recovering. Examples: successional swamps (black willow, box elder), young/unstructured swamps, many shrub/emergent.
- Severe. More than half of wetland is impacted by regular mowing, clearing, grazing, timbering, farming, dredging of aquatic bed, herbicide/pesticide/fertilizer application, burning, excessive herbivory or other form of on-going vegetation removal or alteration. Comment _____

Soil Stressors. Check all that apply, then review total disturbance below. (p.59)

- Livestock (trampling, pugging, compaction, or heavy grazing that leads to erosion)
- Machinery (plowing, filling, grading, dredging, compaction)
- ATV or vehicles (ruts, compaction, other disturbance)
- Removal of soil (mining, excavation)
- Replacement of soil with waste or fill (mining spoil, landfill)
- Other trampling or soil compaction
- Other erosion, sedimentation, or stressor. Comment _____

Review the total soil disturbances above and rank severity of impact by checking one box below.

- Intact: no anthropogenic disturbance.
- Small to moderate stress to soil profile. On-going stressors affect < 10% of wetland OR impacts occurred in the past and the soil profile has largely recovered. Depth of disturbance typically < 10 cm (4"); ponding/channeling of water in disturbed areas has little or no impact on overall site hydrology.
- Substantial stress to soil profile with extensive and long-lasting impacts; depth of disturbance > 10 cm (4"), may cause significant ponding or channeling of water that alters hydrology and vegetation.

Site name _____ Date _____

NWI Wetland Types Refer to NWI code sheets. List all NWI codes present in assessment area; minimum 1 soil sample per each NWI code; minimum 1 soil sample per each 10 acres; NWI codes may be sampled more than once.
 Assign System, Class, and Subclass of the NWI code based on vegetation (ex. PEM1). Then sample soil and assign Water Regime, pH, and Soil organic/mineral modifiers. Add Special modifiers if present (ex. PEM1Abtn). (p.33,59,91, Reference Sheets)

NWI Wetland Type Code (refer to NWI Codes diagram)						Sampled	Not sampled (permanently ponded)	Soil notes Optional notes on soil profile or soil features.
NWI System & Class	Sub-class	Wat. reg.	Spe-cial	pH	Soil			
Exmp. PEM	1	B	d	t	n	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Example 0-5cm sapric, 5-15cm mucky mod min, 15-30+cm silt loam 25% redox conc
1.						<input type="checkbox"/>	<input type="checkbox"/>	
2.						<input type="checkbox"/>	<input type="checkbox"/>	
3.						<input type="checkbox"/>	<input type="checkbox"/>	
4.						<input type="checkbox"/>	<input type="checkbox"/>	

NWI Water Regime Refer to NWI code diagram, NWI Water Regime Non-tidal Modifiers, and NWI Water Regime Restriction reference sheets. (p.60)

Add Water Regime modifier to NWI code at top of page:

temporarily flooded (A)	seasonally flooded (C)	seasonally flooded-saturated (E)	permanently flooded (H)
seasonally saturated (B)	continuously saturated (D)	semipermanently flooded (F)	intermittently flooded (J)
		intermittently exposed (G)	artificially flooded (K)

Special Modifiers Only if applicable. Refer to NWI Code diagram and definitions. (p.62)

If applicable, add Special modifier to NWI code at top of page. Add only the first applicable modifier, in this order: b, d, f, m, h, r, s, x
 beaver (b), partly ditched/draind (d), farmed (f), managed (m), diked/impounded (h), artificial substrate (r), spoil (s), excavated (x)

Soil pH pH value of soil at 10 cm (4") below the surface (p.63)

Soil sampling site #					Add pH modifier to NWI code at top of page:
Ex. 1 2 3 4					pH < 5.5 = acid (a)
5.7					pH 5.5-7.4 = circumneutral (t)
					pH > 7.4 = alkaline (i)

ORGANIC MATERIAL

2 cm (0.8") Organic Material Near Surface Remove duff layer. Collect sample from top 8 cm (3") of soil profile. Refer to Organic Soils reference sheet.

Peat, mucky peat, muck, or mucky modified mineral soil in top 8 cm (3") below the soil surface. (p.63 & Reference Sheet)

Soil sampling site #				
1 2 3 4				
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Present: at least 2 cm (0.8") thick organic layer or mucky modified mineral layer			
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Not present			

Total Depth of Surficial Organic Material (not required for impact assessment; required for condition & restoration monitoring) (p.64 & Reference Sheet)

Soil sampling site #					Description of Organic Material: peat/fibric, mucky peat/hemic, muck/sapric, or mucky modified mineral soil. Ex. 0-5cm sapric, 5-15cm mucky mod min
Ex. 1 2 3 4					
15	cm inches				

Deep Organic Soil. Excavate each soil hole to either 40 cm (16") depth of organic soil, or 80 cm (32") total soil depth, whichever comes first.

Histosol: Peat, mucky peat, or muck soil with at least 12-18% organic matter by weight and >= 40 cm (16") deep within the upper 80 cm (32") of soil profile.

Histic epipedon: Peat, mucky peat, or muck soil with at least 12-18% organic matter by weight and >= 20 cm (8") thick, but < 40 cm (16") thick, as a surface horizon. Aquic conditions or artificial drainage is required. Note that mucky modified mineral soil is NOT included in this section. (p.64)

Soil sampling site #					Add Soil modifier to NWI code at top of page:
1 2 3 4					organic (g)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Histosol present; NWI soil modifier = organic (g)				mineral (n)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Histic epipedon present, but no histosol; NWI soil modifier = mineral (n)				
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Neither histosol nor histic epipedon present; NWI soil modifier = mineral (n)				

Site name _____		Date _____		
NW1 Wetland Type Code <small>(p.69)</small> <i>NWI codes must match codes on Soils sheet</i>	Dominant species identified	% of AA <small>field estimate or GIS (p.69)</small>	Total veg cover <small>if < 100%</small>	Sum of identified cover
1. _____	<input type="checkbox"/>			
2. _____	<input type="checkbox"/>			
3. _____	<input type="checkbox"/>			
<p>Dominant species identification (p.69). Sum cover values of identified vascular plant species across all strata within each wetland type. Stop when all dominant vascular plant species (≥ 10% total cover across all strata) AND highly invasive (bolded) plants have been identified AND the sum of species cover is ≥ 80%. For NW1 wetland types with total vegetative cover of < 100% (e.g., aquatic bed, mudflats), the sum of species must be ≥ 80% of the total vegetative cover. Example: PAB has total cover of 40%. 80% of 40% = 32% is the required sum of species cover.</p>				
<p>Species Checklist. Circle space when species has at least 10% cover in wetland type. At the end of each wetland type meander, record cover within circles. Highly invasive wetland species are <u>underlined</u> and must be recorded even if they have < 10% cover. Write in any dominant species not listed. Use absolute cover, not relative cover. Typical cover values are 0.1, 1, 3, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, or 100 percent.</p>				
Aquatic Plants (true aquatic plants that are submergent or have floating leaves)				
NW1 wetland type #		NW1 wetland type #		NW1 wetland type #
1 2 3	1 2 3	1 2 3	1 2 3	1 2 3
___ ___ ___ <i>Brasenia schreberi</i>	___ ___ ___ <i>Lemna minor</i>	___ ___ ___ <i>Potamogeton sp.(not P. crispus)</i>		
___ ___ ___ <i>Callitriche heterophylla</i>	___ ___ ___ <u>Myriophyllum aquaticum</u>	___ ___ ___ <i>Utricularia gibba</i>		
___ ___ ___ <i>Ceratophyllum demersum</i>	___ ___ ___ <i>Nuphar lutea ssp. advena</i>	___ ___ ___ <i>Wolffia brasiliensis</i>		
___ ___ ___ <i>Elodea canadensis</i>	___ ___ ___ <i>Nymphaea odorata</i>	___ ___ ___ _____		
___ ___ ___ <u>Hydrilla verticillata</u>	___ ___ ___ <i>Potamogeton crispus</i>	___ ___ ___ _____		
Trees (woody plants that typically mature to a maximum height > 6 m)				
NW1 wetland type #		NW1 wetland type #		NW1 wetland type #
1 2 3	1 2 3	1 2 3	1 2 3	1 2 3
___ ___ ___ <i>Abies balsamea</i>	___ ___ ___ <i>Crataegus sp.</i>	___ ___ ___ <i>Prunus serotina</i>		
___ ___ ___ <i>Acer negundo</i>	___ ___ ___ <i>Fagus grandifolia</i>	___ ___ ___ <i>Quercus alba</i>		
___ ___ ___ <i>Acer rubrum</i>	___ ___ ___ <i>Fraxinus americana</i>	___ ___ ___ <i>Quercus bicolor</i>		
___ ___ ___ <i>Acer saccharinum</i>	___ ___ ___ <i>Fraxinus pennsylvanica</i>	___ ___ ___ <i>Quercus palustris</i>		
___ ___ ___ <i>Acer saccharum</i>	___ ___ ___ <i>Juglans nigra</i>	___ ___ ___ <i>Quercus rubra</i>		
___ ___ ___ <i>Aesculus flava</i>	___ ___ ___ <i>Liquidambar styraciflua</i>	___ ___ ___ <i>Robinia pseudoacacia</i>		
___ ___ ___ <i>Betula alleghaniensis</i>	___ ___ ___ <i>Liriodendron tulipifera</i>	___ ___ ___ <i>Salix alba</i>		
___ ___ ___ <i>Betula lenta</i>	___ ___ ___ <i>Nyssa sylvatica</i>	___ ___ ___ <i>Salix nigra</i>		
___ ___ ___ <i>Betula nigra</i>	___ ___ ___ <i>Picea rubens</i>	___ ___ ___ <i>Tsuga canadensis</i>		
___ ___ ___ <i>Carpinus caroliniana ssp. virg.</i>	___ ___ ___ <i>Pinus rigida</i>	___ ___ ___ <i>Ulmus americana</i>		
___ ___ ___ <i>Carya cordiformis</i>	___ ___ ___ <i>Platanus occidentalis</i>	___ ___ ___ <i>Ulmus rubra</i>		
___ ___ ___ <i>Carya ovata</i>	___ ___ ___ <i>Populus tremuloides</i>	___ ___ ___ _____		
Shrubs (woody plants with that typically mature to a maximum height < 6 m, often multi-stemmed)				
NW1 wetland type #		NW1 wetland type #		NW1 wetland type #
1 2 3	1 2 3	1 2 3	1 2 3	1 2 3
___ ___ ___ <i>Alnus incana ssp. rugosa</i>	___ ___ ___ <i>Kalmia latifolia</i>	___ ___ ___ <i>Spiraea tomentosa</i>		
___ ___ ___ <i>Alnus serrulata</i>	___ ___ ___ <i>Ligustrum vulgare</i>	___ ___ ___ <i>Vaccinium angustifolia</i>		
___ ___ ___ <i>Aronia melanocarpa</i>	___ ___ ___ <i>Lindera benzoin</i>	___ ___ ___ <i>Spiraea tomentosa</i>		
___ ___ ___ <i>Asimina triloba</i>	___ ___ ___ <i>Lonicera morrowii</i>	___ ___ ___ <i>Vaccinium angustifolia</i>		
___ ___ ___ <i>Berberis thunbergii</i>	___ ___ ___ <i>Physocarpus opulifolius</i>	___ ___ ___ <i>Vaccinium myrtilloides</i>		
___ ___ ___ <i>Cephalanthus occidentalis</i>	___ ___ ___ <i>Rhododendron maximum</i>	___ ___ ___ <i>Vaccinium oxycoccos</i>		
___ ___ ___ <i>Cornus amomum</i>	___ ___ ___ <u>Rosa multiflora</u>	___ ___ ___ <i>Viburnum dentatum</i>		
___ ___ ___ <i>Elaeagnus umbellata</i>	___ ___ ___ <i>Rosa palustris</i>	___ ___ ___ <i>Viburnum nudum var. cassinoides</i>		
___ ___ ___ <i>Gaylussacia baccata</i>	___ ___ ___ <i>Rubus pensilvanicus</i>	___ ___ ___ <i>Viburnum recognitum</i>		
___ ___ ___ <i>Hypericum densiflorum</i>	___ ___ ___ <i>Salix sericea</i>	___ ___ ___ _____		
___ ___ ___ <i>Ilex mucronata</i>	___ ___ ___ <i>Sambucus nigra ssp. canadensis</i>	___ ___ ___ _____		
___ ___ ___ <i>Ilex verticillata</i>	___ ___ ___ <i>Spiraea alba</i>	___ ___ ___ _____		
Woody Vines				
___ ___ ___ <i>Apios americana</i>	___ ___ ___ <u>Lonicera japonica</u>	___ ___ ___ <i>Toxicodendron radicans</i>		
___ ___ ___ <i>Clematis virginiana</i>	___ ___ ___ <i>Rubus hispidus</i>	___ ___ ___ _____		

Site Name: _____

Date: _____

Ferns

NW1 wetland type #			NW1 wetland type #			NW1 wetland type #		
1	2	3	1	2	3	1	2	3
___	___	___	___	___	___	___	___	___
		<i>Dennstaedtia punctilobula</i>			<i>Osmunda cinnamomea</i>			<i>Pteridium aquilinum</i>
___	___	___	___	___	___	___	___	___
		<i>Onoclea sensibilis</i>			<i>Osmunda regalis var. spectabilis</i>			<i>Thelypteris noveboracensis</i>

Forbs (broad-leaved herbs, excluding true aquatics which are in the first section of the checklist)

___	___	___	___	___	___	___	___	___
		<i>Acorus calamus</i>			<u>Iris pseudacorus</u>			<i>Ranunculus hispidus var. nitidus</i>
___	___	___	___	___	___	___	___	___
		<i>Agrimonia parviflora</i>			<i>Justicia americana</i>			<i>Ranunculus repens</i>
___	___	___	___	___	___	___	___	___
		<i>Alisma subcordatum</i>			<i>Laportea canadensis</i>			<i>Sagittaria latifolia</i>
___	___	___	___	___	___	___	___	___
		<i>Apocynum cannabinum</i>			<i>Lespedeza cuneata</i>			<i>Saururus cernuus</i>
___	___	___	___	___	___	___	___	___
		<i>Asclepias incarnata</i>			<i>Ludwigia palustris</i>			<i>Solidago altissima</i>
___	___	___	___	___	___	___	___	___
		<i>Bidens frondosa</i>			<i>Ludwigia peploides</i>			<i>Solidago canadensis</i>
___	___	___	___	___	___	___	___	___
		<i>Bidens tripartita</i>			<i>Lycopus uniflorus</i>			<i>Solidago gigantea</i>
___	___	___	___	___	___	___	___	___
		<i>Boehmeria cylindrica</i>			<i>Lysimachia nummularia</i>			<i>Solidago rugosa</i>
___	___	___	___	___	___	___	___	___
		<i>Caltha palustris</i>			<u>Lythrum salicaria</u>			<i>Solidago uliginosa</i>
___	___	___	___	___	___	___	___	___
		<i>Chelone glabra</i>			<i>Mimulus ringens</i>			<i>Sorghum halapense</i>
___	___	___	___	___	___	___	___	___
		<i>Cicuta maculata</i>			<i>Murdannia keisak</i>			<i>Symphyotrichum lanceolatum</i>
___	___	___	___	___	___	___	___	___
		<i>Diodia virginiana</i>			<i>Myosotis scorpioides</i>			<i>Symphyotrichum lateriflorum</i>
___	___	___	___	___	___	___	___	___
		<i>Dipsacus fullonum</i>			<i>Nasturtium officinale</i>			<i>Symphyotrichum prenanthoides</i>
___	___	___	___	___	___	___	___	___
		<i>Doellingeria umbellata</i>			<i>Packera aurea</i>			<i>Symphyotrichum puniceum</i>
___	___	___	___	___	___	___	___	___
		<i>Epilobium coloratum</i>			<i>Pilea pumila</i>			<i>Symplocarpus foetidus</i>
___	___	___	___	___	___	___	___	___
		<i>Eupatorium perfoliatum</i>			<i>Polygonum amphibium</i>			<i>Trifolium pratense</i>
___	___	___	___	___	___	___	___	___
		<i>Euthamia graminifolia</i>			<i>Polygonum caespitosum longisetum</i>			<i>Verbena hastata</i>
___	___	___	___	___	___	___	___	___
		<i>Galium aparine</i>			<u>Polygonum cuspidatum</u>			<i>Verbesina alternifolia</i>
___	___	___	___	___	___	___	___	___
		<i>Galium tinctorium</i>			<i>Polygonum hydropiperoides</i>			<i>Vernonia noveboracensis</i>
___	___	___	___	___	___	___	___	___
		<i>Glechoma hederacea</i>			<i>Polygonum pennsylvanicum</i>			<i>Viola cucullata</i>
___	___	___	___	___	___	___	___	___
		<i>Helenium autumnale</i>			<u>Polygonum perfoliatum</u>			<i>Xanthium strumarium</i>
___	___	___	___	___	___	___	___	___
		<i>Hibiscus moscheutos</i>			<i>Polygonum punctatum</i>			
___	___	___	___	___	___	___	___	___
		<i>Hypericum mutilum</i>			<i>Polygonum sagittatum</i>			
___	___	___	___	___	___	___	___	___
		<i>Impatiens capensis</i>			<i>Ranunculus acris</i>			

Graminoids (grasses, sedges, rushes)

___	___	___	___	___	___	___	___	___
		<i>Agrostis gigantea</i>			<i>Carex stricta</i>			<i>Juncus effusus</i>
___	___	___	___	___	___	___	___	___
		<i>Agrostis perennans</i>			<i>Carex torta</i>			<i>Juncus tenuis</i>
___	___	___	___	___	___	___	___	___
		<i>Agrostis stolonifera</i>			<i>Carex tribuloides</i>			<i>Leersia oryzoides</i>
___	___	___	___	___	___	___	___	___
		<i>Andropogon gerardii</i>			<i>Carex trisperma</i>			<i>Leersia virginica</i>
___	___	___	___	___	___	___	___	___
		<i>Anthoxanthum odoratum</i>			<i>Carex utriculata</i>			<u>Microstegium vimineum</u>
___	___	___	___	___	___	___	___	___
		<u>Arthraxon hispidus</u>			<i>Carex vulpinoidea</i>			<i>Panicum dichotomiflorum</i>
___	___	___	___	___	___	___	___	___
		<i>Calamagrostis canadensis</i>			<i>Cinna arundinacea</i>			<u>Phalaris arundinacea</u>
___	___	___	___	___	___	___	___	___
		<i>Carex aquatilis</i>			<i>Cinna latifolia</i>			<u>Phragmites australis</u>
___	___	___	___	___	___	___	___	___
		<i>Carex atlantica</i>			<i>Danthonia compressa</i>			<i>Poa compressa /pratensis/trivialis</i>
___	___	___	___	___	___	___	___	___
		<i>Carex canescens</i>			<i>Dichanthelium clandestinum</i>			<i>Poa palustris</i>
___	___	___	___	___	___	___	___	___
		<i>Carex crinita</i>			<i>Dichanthelium dichotomum microcarpor</i>			<i>Rhynchospora alba</i>
___	___	___	___	___	___	___	___	___
		<i>Carex debilis</i>			<i>Dulichium arundinaceum</i>			<i>Schoenoplectus pungens</i>
___	___	___	___	___	___	___	___	___
		<i>Carex echinata</i>			<i>Echinochloa crus-galli</i>			<i>Schoenoplectus tabernaemontani</i>
___	___	___	___	___	___	___	___	___
		<i>Carex folliculata</i>			<i>Eleocharis obtusa</i>			<i>Scirpus atrovirens</i>
___	___	___	___	___	___	___	___	___
		<i>Carex frankii</i>			<i>Eleocharis palustris</i>			<i>Scirpus cyperinus</i>
___	___	___	___	___	___	___	___	___
		<i>Carex grayii</i>			<i>Eleocharis tenuis</i>			<i>Scirpus polyphyllus</i>
___	___	___	___	___	___	___	___	___
		<i>Carex gynandra</i>			<i>Eriophorum virginicum</i>			<i>Setaria faberi</i>
___	___	___	___	___	___	___	___	___
		<i>Carex intumescens</i>			<i>Glyceria laxa</i>			<i>Setaria parviflora</i>
___	___	___	___	___	___	___	___	___
		<i>Carex lupulina</i>			<i>Glyceria melicaria</i>			<i>Sparganium americanum/eurycarpum</i>
___	___	___	___	___	___	___	___	___
		<i>Carex lurida</i>			<i>Glyceria septentrionalis</i>			<i>Sparganium chlorocarpum</i>
___	___	___	___	___	___	___	___	___
		<i>Carex prasina</i>			<i>Glyceria striata</i>			<u>Typha latifolia, Typha sp.</u>
___	___	___	___	___	___	___	___	___
		<i>Carex scoparia</i>			<i>Holcus lanatus</i>			
___	___	___	___	___	___	___	___	___
		<i>Carex squarrosa</i>			<i>Juncus acuminatus</i>			
___	___	___	___	___	___	___	___	___
		<i>Carex stipata</i>			<i>Juncus brevicaudatus /subcaudatus</i>			

Non-vascular Plants (DO NOT INCLUDE non-vascular species in the dominant species calculations)

___	___	___	___	___	___	___	___	___
		<i>Sphagnum spp.</i>			<i>Filamentous Algae</i>			
___	___	___	___	___	___	___	___	___
		Total mosses & liverworts			<i>Chara algae</i>			

Site name _____		Date _____		
NWI Wetland Type Code (p.69)	Dominant species identified	% of AA	Total veg cover	Sum of
NWI codes must match codes on Soils sheet		field estimate or GIS (p.69)	if < 100%	identified cover
# _____	<input type="checkbox"/>			
# _____	<input type="checkbox"/>			
# _____	<input type="checkbox"/>			

Dominant species identification (p.71). Sum cover values of identified vascular plant species across all strata within each wetland type. Stop when all dominant vascular plant species (≥ 10% total cover across all strata) and highly invasive (bolded) plants have been identified AND the sum of species cover is ≥ 80%. For NWI wetland types with total vegetative cover of < 100% (e.g., aquatic bed, mudflats), the sum of species must be ≥ 80% of the total vegetative cover. Example: PAB has total cover of 40%. 80% of 40% = 32% is the required sum of species cover.

Species Checklist. Circle space when species has at least 10% cover in wetland type. At the end of each wetland type meander, record cover within circles. Highly invasive wetland species are underlined and must be recorded even if they have < 10% cover. Write in any dominant species not listed. Use absolute cover, not relative cover. Typical cover values are 0.1, 1, 3, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, or 100 percent.

Aquatic Plants (true aquatic plants that are submergent or have floating leaves)

NWI wetland type #	NWI wetland type #	NWI wetland type #
#_ #_ #_	#_ #_ #_	#_ #_ #_
___ ___ ___ <i>Brasenia schreberi</i>	___ ___ ___ <i>Lemna minor</i>	___ ___ ___ <i>Potamogeton sp. (not P. crispus)</i>
___ ___ ___ <i>Callitriche heterophylla</i>	___ ___ ___ <u>Myriophyllum aquaticum</u>	___ ___ ___ <i>Utricularia gibba</i>
___ ___ ___ <i>Ceratophyllum demersum</i>	___ ___ ___ <i>Nuphar lutea ssp. advena</i>	___ ___ ___ <i>Wolffia brasiliensis</i>
___ ___ ___ <i>Elodea canadensis</i>	___ ___ ___ <i>Nymphaea odorata</i>	___ ___ ___ _____
___ ___ ___ <u>Hydrilla verticillata</u>	___ ___ ___ <i>Potamogeton crispus</i>	___ ___ ___ _____

Trees (woody plants that typically mature to a maximum height > 6 m)

NWI wetland type #	NWI wetland type #	NWI wetland type #
#_ #_ #_	#_ #_ #_	#_ #_ #_
___ ___ ___ <i>Abies balsamea</i>	___ ___ ___ <i>Crataegus sp.</i>	___ ___ ___ <i>Prunus serotina</i>
___ ___ ___ <i>Acer negundo</i>	___ ___ ___ <i>Fagus grandifolia</i>	___ ___ ___ <i>Quercus alba</i>
___ ___ ___ <i>Acer rubrum</i>	___ ___ ___ <i>Fraxinus americana</i>	___ ___ ___ <i>Quercus bicolor</i>
___ ___ ___ <i>Acer saccharinum</i>	___ ___ ___ <i>Fraxinus pennsylvanica</i>	___ ___ ___ <i>Quercus palustris</i>
___ ___ ___ <i>Acer saccharum</i>	___ ___ ___ <i>Juglans nigra</i>	___ ___ ___ <i>Quercus rubra</i>
___ ___ ___ <i>Aesculus flava</i>	___ ___ ___ <i>Liquidambar styraciflua</i>	___ ___ ___ <i>Robinia pseudoacacia</i>
___ ___ ___ <i>Betula alleghaniensis</i>	___ ___ ___ <i>Liriodendron tulipifera</i>	___ ___ ___ <i>Salix alba</i>
___ ___ ___ <i>Betula lenta</i>	___ ___ ___ <i>Nyssa sylvatica</i>	___ ___ ___ <i>Salix nigra</i>
___ ___ ___ <i>Betula nigra</i>	___ ___ ___ <i>Picea rubens</i>	___ ___ ___ <i>Tsuga canadensis</i>
___ ___ ___ <i>Carpinus caroliniana ssp. virg.</i>	___ ___ ___ <i>Pinus rigida</i>	___ ___ ___ <i>Ulmus americana</i>
___ ___ ___ <i>Carya cordiformis</i>	___ ___ ___ <i>Platanus occidentalis</i>	___ ___ ___ <i>Ulmus rubra</i>
___ ___ ___ <i>Carya ovata</i>	___ ___ ___ <i>Populus tremuloides</i>	___ ___ ___ _____

Shrubs (woody plants with that typically mature to a maximum height < 6 m, often multi-stemmed)

NWI wetland type #	NWI wetland type #	NWI wetland type #
#_ #_ #_	#_ #_ #_	#_ #_ #_
___ ___ ___ <i>Alnus incana ssp. rugosa</i>	___ ___ ___ <i>Kalmia latifolia</i>	___ ___ ___ <i>Spiraea tomentosa</i>
___ ___ ___ <i>Alnus serrulata</i>	___ ___ ___ <i>Ligustrum vulgare</i>	___ ___ ___ <i>Vaccinium angustifolia</i>
___ ___ ___ <i>Aronia melanocarpa</i>	___ ___ ___ <i>Lindera benzoin</i>	___ ___ ___ <i>Spiraea tomentosa</i>
___ ___ ___ <i>Asimina triloba</i>	___ ___ ___ <i>Lonicera morrowii</i>	___ ___ ___ <i>Vaccinium angustifolia</i>
___ ___ ___ <i>Berberis thunbergii</i>	___ ___ ___ <i>Physocarpus opulifolius</i>	___ ___ ___ <i>Vaccinium myrtilloides</i>
___ ___ ___ <i>Cephalanthus occidentalis</i>	___ ___ ___ <i>Rhododendron maximum</i>	___ ___ ___ <i>Vaccinium oxycoccos</i>
___ ___ ___ <i>Cornus amomum</i>	___ ___ ___ <u>Rosa multiflora</u>	___ ___ ___ <i>Viburnum dentatum</i>
___ ___ ___ <i>Elaeagnus umbellata</i>	___ ___ ___ <i>Rosa palustris</i>	___ ___ ___ <i>Viburnum nudum var. cassinoides</i>
___ ___ ___ <i>Gaylussacia baccata</i>	___ ___ ___ <i>Rubus pensilvanicus</i>	___ ___ ___ <i>Viburnum recognitum</i>
___ ___ ___ <i>Hypericum densiflorum</i>	___ ___ ___ <i>Salix sericea</i>	___ ___ ___ _____
___ ___ ___ <i>Ilex mucronata</i>	___ ___ ___ <i>Sambucus nigra ssp. canadensis</i>	___ ___ ___ _____
___ ___ ___ <i>Ilex verticillata</i>	___ ___ ___ <i>Spiraea alba</i>	___ ___ ___ _____

Woody Vines

___ ___ ___ <i>Apios americana</i>	___ ___ ___ <u>Lonicera japonica</u>	___ ___ ___ <i>Toxicodendron radicans</i>
___ ___ ___ <i>Clematis virginiana</i>	___ ___ ___ <i>Rubus hispidus</i>	___ ___ ___ _____

West Virginia Wetland Rapid Assessment Datasheet - overflow notes

Site name _____ **Date** _____

Directions to site:

Notes on land use history, site conditions, wildlife observed, discussions with landowner or other on-site personnel, or deviations from protocol:

Other overflow notes (include datasheet heading):

Site name _____ Date _____

NWI Wetland Types Refer to NWI code sheets. List all NWI codes present in assessment area; minimum 1 soil sample per each NWI code; minimum 1 soil sample per each 10 acres; NWI codes may be sampled more than once.
 Assign System, Class, and Subclass of the NWI code based on vegetation (ex. PEM1). Then sample soil and assign Water Regime, pH, and Soil organic/mineral modifiers. Add Special modifiers if present (ex. PEM1Abtn). (p.33,59,91, Reference Sheets)

NWI Wetland Type Code (refer to NWI Codes diagram)						Sampled	Not sampled (permanently ponded)	Soil notes Optional notes on soil profile or soil features.
NWI System & Class	Sub-class	Wat. reg.	Spe-cial	pH	Soil			
Examp. PEM	1	B	d	t	n	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Example 0-5cm sapric, 5-15cm mucky mod min, 15-30+cm silt loam 25% redox conc
_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	
_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	
_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	
_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	

NWI Water Regime Refer to NWI code diagram, NWI Water Regime Non-tidal Modifiers, and NWI Water Regime Restriction reference sheets. (p.60)
 Add Water Regime modifier to NWI code at top of page:
 temporarily flooded (A) seasonally flooded (C) seasonally flooded-saturated (E) permanently flooded (H)
 seasonally saturated (B) continuously saturated (D) semipermanently flooded (F) intermittently flooded (J)
 intermittently exposed (G) artificially flooded (K)

Special Modifiers Only if applicable. Refer to NWI Code diagram and definitions. (p.62)
 If applicable, add Special modifier to NWI code at top of page. Add only the first applicable modifier, in this order: b, d, f, m, h, r, s, x
 beaver (b), partly ditched/drained (d), farmed (f), managed (m), diked/impounded (h), artificial substrate (r), spoil (s), excavated (x)

Soil pH pH value of soil at 10 cm (4") below the surface (p.63)
 Soil sampling site # _____ Add pH modifier to NWI code at top of page:
 Ex. _____ pH < 5.5 = acid (a)
 5.7 _____ pH 5.5-7.4 = circumneutral (t)
 _____ pH > 7.4 = alkaline (i)

ORGANIC MATERIAL
2 cm (0.8") Organic Material Near Surface Remove duff layer. Collect sample from top 8 cm (3") of soil profile. Refer to Organic Soils reference sheet.
 Peat, mucky peat, muck, or mucky modified mineral soil in top 8 cm (3") below the soil surface. (p.63 & Reference Sheet)

Soil sampling site # _____
 Present: at least 2 cm (0.8") thick organic layer or mucky modified mineral layer
 Not present

Total Depth of Surficial Organic Material (not required for impact assessment; required for condition & restoration monitoring) (p.64 & Reference Sheet)
 Soil sampling site # _____
 Ex. _____ cm
 15 _____ inches
Description of Organic Material: peat/fibric, mucky peat/hemic, muck/sapric, or mucky modified mineral soil. Ex. 0-5cm sapric, 5-15cm mucky mod min

Deep Organic Soil. Excavate each soil hole to either 40 cm (16") depth of organic soil, or 80 cm (32") total soil depth, whichever comes first.
Histosol: Peat, mucky peat, or muck soil with at least 12-18% organic matter by weight and >= 40 cm (16") deep within the upper 80 cm (32") of soil profile.
Histic epipedon: Peat, mucky peat, or muck soil with at least 12-18% organic matter by weight and >= 20 cm (8") thick, but < 40 cm (16") thick, as a surface horizon. Aquic conditions or artificial drainage is required. Note that mucky modified mineral soil is NOT included in this section. (p.64)

Soil sampling site # _____ Add Soil modifier to NWI code at top of page:
 Histosol present; NWI soil modifier = organic (g) organic (g)
 Histic epipedon present, but no histosol; NWI soil modifier = mineral (n) mineral (n)
 Neither histosol nor histic epipedon present; NWI soil modifier = mineral (n)

West Virginia Wetland Rapid Assessment Datasheet - Plant Voucher *(p.74 of WVWRAM User Manual)*

Site name _____ Date _____

NWI code _____ Percent cover within the NWI code area _____

Collector _____ Collection # _____

Species name or pseudonym _____

Additional notes (optional):

West Virginia Wetland Rapid Assessment Datasheet - Plant Voucher

Site name _____ Date _____

NWI code _____ Percent cover within the NWI code area _____

Collector _____ Collection # _____

Species name or pseudonym _____

Additional notes (optional):

West Virginia Wetland Rapid Assessment Datasheet - Plant Voucher

Site name _____ Date _____

NWI code _____ Percent cover within the NWI code area _____

Collector _____ Collection # _____

Species name or pseudonym _____

Additional notes (optional):