Basic Information: Vernal Pool Systems

Assessment Area Name:	
Project Name:	
Assessment Area ID #:	
Project ID #:	**Date:**

Assessment Team Members for This AA

AA Location:
 Latitude: **Longitude:**   **Datum:**

Wetland Category:
　　□ Natural　　　□ Constructed　　　□ Restoration　 (Rehabilitation OR Enhancement)

If Created or Restored, does the action encompass:
　　　　□ entire wetland　　　　□ portion of the wetland

What best describes the hydrologic state of the wetland at the time of assessment?
　　　□ ponded/inundated　　　□ saturated soil, but no surface water　　　□ dry

Does the vernal pool system connect with the floodplain of a nearby stream?
　　　　□ yes　□ no

　Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		**North**			
2		**South**			
3		**East**			
4		**West**			
5					
6					

Comments:

Scoring Sheet: Vernal Pool Systems

AA Name:					Date:
Attributes and Metrics			Alpha.	Numeric	**Comments/Scores**
Attribute 1: Buffer and Landscape Context (pp. 8-15)					
(A) Aquatic Area Abundance					
(B): *Percent of AA with Buffer*	Alpha.	Numeric			
(C): *Average Buffer Width*					
(D): *Buffer Condition*					
Initial Attribute Score $= A + [D \times (B \times C)^{1/2}]^{1/2}$					**Final Attribute Score =** **(Initial Score/24) x 100**
Attribute 2: Hydrology (pp. 16-18)					
Water Source					
Hydroperiod					
Hydrologic Connectivity					
Initial Attribute Score= sum of metric scores					**Final Attribute Score =** **(Initial Score/36) x 100**
Attribute 3: Physical Structure (pp. 19-28)					
Structural Patch Richness					
Pool and Swale Density					
Topographic Complexity					
Initial Attribute Score= sum of metric scores					**Final Attribute Score =** **(Initial Score/36) x 100**
Attribute 4: Biotic Structure (pp. 29-34)					
Horizontal Interspersion and Zonation					
Plant Community submetric A: Number of Co-dominant species	Alpha.	Numeric			
Plant Community submetric B: Percent Non Native					
Plant Community submetric C: Endemic Species Richness					
Plant Community Composition Metric *(numeric average of submetrics A-C)*					
Initial Attribute Score= sum of metric scores					**Final Attribute Score =** **(Initial Score/24) x 100**
Overall AA Score (Average of four Final Attribute Scores)					

Worksheet 1: Aquatic Area Abundance for Vernal Pool Systems

Percentage of Each Transect Line Crossing Wetland or Other Aquatic Habitat	
Transect	Percent Crossing Aquatic Area
North	
South	
East	
West	
Average value for all Four Transects *Round to the nearest integer*	

Worksheet 2: Percent of AA with Buffer	Worksheet 3: Calculating average buffer width of AA	
In the space provided below make a quick sketch of the AA, or on aerial the imagery, indicate where buffer is present, and record the total amount in the space provided.	Record the length of each buffer measurement.	
	Transect	**Buffer Width (m)**
	A	
	B	
	C	
	D	
	E	
	F	
	G	
	H	
Percent of AA with Buffer: _____%	**Average Buffer Width *Round to nearest integer***	

Worksheet 4: Structural Patch Types for Vernal Pool Systems

Identify each type of patch that is observed in the AA and use the total number of observed patch types in Table 15. Each patch should occupy at least 3 m^2 of area in aggregate within the AA, with some exceptions (see definitions below).

Structural Patch Type	Check for Presence
Adjacent shrub or tree cover	
Animal mounds and burrows	
Bare soil	
Cobble and boulders	
Complexly-shaped pools	
Drainage branches (more than 1 drainage branch)	
Islands	
Large individual pools	
Large swales	
Mima mounds	
Patches of dense vegetation	
Pool Cluster	
Simply-shaped pools	
Small individual pools	
Small swales	
Soil cracks	
Within Pool Mounds	
Total Possible	**17**
No. Observed Patch Types (enter here and use in Table 15)	

Worksheet 5: Pool and Swale Density for Vernal Pool Systems

Pool and Swale Density Worksheet		
Transect	Transect Length (m)	Length Crossing Pool or Swale (m)
Long Axis		
Short Axis		
Sum of Length (m)		
Percent Pool and Swale (Sum of Pools & Swales/Sum of Transect Lengths)*100 *Round to nearest integer*		

Worksheet 6: Rating of Topographic Complexity for Vernal Pool Systems

Replicate Number	Replicate Score (A = 12; B = 9; C = 6; D = 3)	
	Alpha.	*Numeric*
Replicate 1		
Replicate 2		
Replicate 3		
Overall Average Score for All Pool Replicates ***Round to nearest integer*** **(enter here and use in Table 19)**		

Worksheet 7: Rating of Horizontal Interspersion for Vernal Pool Systems

Replicate Number	Replicate Score (A = 12; B = 9; C = 6; D = 3)	
	Alpha.	*Numeric*
Replicate 1		
Replicate 2		
Replicate 3		
Overall Average Score for All Pool Replicates ***Round to nearest integer*** **(enter here and use in Table 21)**		

Worksheet 8: Plant Community Metric –
List of Unique Co-dominant Plant Species from all Vernal Pools Combined

Plant Name	Check if non-native	Check if in Appendix I	Pool 1	Pool 2	Pool 3
Total number of co-dominant species in each pool					
Average number of co-dominant species *round to nearest integer* Enter here and use in Table 22					
Total number of co-dominant species (A)					
Total number of co-dominant species that are non-native (B)					
Percent non-native (B/A) x 100 *Round to nearest integer* Enter here and use in Table 23					
Total number of co-dominant species that are endemic Enter here and use in Table 24					

Pool Replicate 1

Worksheet 6a: Sketches of Vernal Pool Profiles for Topographic Complexity Along the long axis of the pool and perpendicular to the long axis across the middle, make a sketch of the profile of each of the three pools from its outside edge (1-3m landward or away from the saturated zone of the pool) to its deepest areas then back out to the outside margin. Try to capture the major breaks in slope and the intervening micro-topographic relief. Based on the sketches, choose a single profile from Figure 9 that best represents the pool overall.
Long Axis
Perpendicular to Long Axis

Worksheet 7a: Sketch of Vernal Pool Horizontal Interspersion and Zonation

Pool 1	
	Assigned Zones: 1) 2) 3) 4) 5)

Pool Replicate 2

Worksheet 6a: Sketches of Vernal Pool Profiles for Topographic Complexity
Along the long axis of the pool and perpendicular to the long axis across the middle, make a sketch of the profile of each of the three pools from its outside edge (1-3m landward or away from the saturated zone of the pool) to its deepest areas then back out to the outside margin. Try to capture the major breaks in slope and the intervening micro-topographic relief. Based on the sketches, choose a single profile from Figure 9 that best represents the pool overall.
Long Axis
Perpendicular to Long Axis

Worksheet 7a: Sketch of Vernal Pool Horizontal Interspersion and Zonation

Pool 2	
	Assigned Zones: 1) 2) 3) 4) 5)

Pool Replicate 3

Worksheet 6a: Sketches of Vernal Pool Profiles for Topographic Complexity
Along the long axis of the pool and perpendicular to the long axis across the middle, make a sketch of the profile of each of the three pools from its outside edge (1-3m landward or away from the saturated zone of the pool) to its deepest areas then back out to the outside margin. Try to capture the major breaks in slope and the intervening micro-topographic relief. Based on the sketches, choose a single profile from Figure 9 that best represents the pool overall.
Long Axis
Perpendicular to Long Axis

Worksheet 7a: Sketch of Vernal Pool Horizontal Interspersion and Zonation

Pool 3	
	Assigned Zones:
	1)
	2)
	3)
	4)
	5)

Table 25: Wetland disturbances and conversions

Has a major disturbance occurred at this wetland?	Yes	No		
If yes, was it a flood, fire, landslide, or other?	flood	fire	landslide	other
If yes, then how severe is the disturbance?	likely to affect site next 5 or more years	likely to affect site next 3-5 years	likely to affect site next 1-2 years	
Has this wetland been converted from another type? If yes, then what was the previous type?	depressional	vernal pool	vernal pool system	
	non-confined riverine	confined riverine	bar-built estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Worksheet 9: Stressor Checklist.

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and likely to have significant negative effect on AA
Point Source (PS) discharges (POTW, other non-stormwater discharge)		
Non-point Source (Non-PS) discharges (urban runoff, farm drainage)		
Flow diversions or unnatural inflows		
Dams (reservoirs, detention basins, recharge basins)		
Flow obstructions (culverts, paved stream crossings)		
Weir/drop structure, tide gates		
Dredged inlet/channel		
Engineered channel (riprap, armored channel bank, bed)		
Dike/levees		
Groundwater extraction		
Ditches (borrow, agricultural drainage, mosquito control, etc.)		
Actively managed hydrology		
Comments		

PHYSICAL STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and likely to have significant negative effect on AA
Filling or dumping of sediment or soils **(N/A for restoration areas)**		
Grading/ compaction **(N/A for restoration areas)**		
Plowing/Discing **(N/A for restoration areas)**		
Resource extraction (sediment, gravel, oil and/or gas)		
Vegetation management		
Excessive sediment or organic debris from watershed		
Excessive runoff from watershed		
Nutrient impaired (PS or Non-PS pollution)		
Heavy metal impaired (PS or Non-PS pollution)		
Pesticides or trace organics impaired (PS or Non-PS pollution)		
Bacteria and pathogens impaired (PS or Non-PS pollution)		
Trash or refuse		
Comments		

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and Likely to Have Significant negative effect on AA
Mowing, grazing, excessive herbivory (within AA)		
Excessive human visitation		
Predation and habitat destruction by non-native vertebrates (e.g., *Virginia opossum* and domestic predators, such as feral pets)		
Tree cutting/sapling removal		
Removal of woody debris		
Treatment of non-native and nuisance plant species		
Pesticide application or vector control		
Biological resource extraction or stocking (fisheries, aquaculture)		
Excessive organic debris in matrix (for vernal pools)		
Lack of vegetation management to conserve natural resources		
Lack of treatment of invasive plants adjacent to AA or buffer		
Comments		

BUFFER AND LANDSCAPE CONTEXT ATTRIBUTE (WITHIN 500 M OF AA)	Present	Present and likely to have significant negative effect on AA
Urban residential		
Industrial/commercial		
Military training/Air traffic		
Dams (or other major flow regulation or disruption)		
Dryland farming		
Intensive row-crop agriculture		
Orchards/nurseries		
Commercial feedlots		
Dairies		
Ranching (enclosed livestock grazing or horse paddock or feedlot)		
Transportation corridor		
Rangeland (livestock rangeland also managed for native vegetation)		
Sports fields and urban parklands (golf courses, soccer fields, etc.)		
Passive recreation (bird-watching, hiking, etc.)		
Active recreation (off-road vehicles, mountain biking, hunting, fishing)		
Physical resource extraction (rock, sediment, oil/gas)		
Biological resource extraction (aquaculture, commercial fisheries)		
Comments		