APPENDIX D: ASSESSMENT AREA DATA FORMS

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: 1	
Project Name: CHSR	
Assessment Area ID #:	
Project ID #:	**Date:** 9/10/19
Assessment Team Members for This AA:	
RJ, DM	
Average Bankfull Width: 3m	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): 100 m	
Upstream Point Latitude: 37.757598	**Longitude:** -122.392632
Downstream Point Latitude: 37.756704	**Longitude:** -122.392568
Wetland Sub-type: ~~Confined~~ Non-confined — steep hillside on west side - rail track on east side	
AA Category: Restoration, Mitigation, Impacted, Ambient, Reference, Training. Other: Pre-project	
Did the river/stream have flowing water at the time of the assessment? yes ~~no~~ — Wet - not really flowing	
What is the apparent hydrologic flow regime of the reach you are assessing? The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. *Perennial* streams conduct water all year long, whereas *ephemeral* streams conduct water only during and immediately following precipitation events. *Intermittent* streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source. perennial / intermittent / ephemeral	

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		Upstream			
2		Middle Left			
3		Middle Right			
4		Downstream			
5					
6					
7					
8					
9					
10					

Site Location Description:

Comments:

Scoring Sheet: Riverine Wetlands

AA Name: 1					Date: 9/10/19	
Attribute 1: Buffer and Landscape Context (pp. 11-19)					**Comments**	
Stream Corridor Continuity (D)			Alpha. D	Numeric 3		
Buffer:						
Buffer submetric A: Percent of AA with Buffer	Alpha. C	Numeric 6			<50%	
Buffer submetric B: Average Buffer Width	D	3			8.3 meters wide	
Buffer submetric C: Buffer Condition	C	6				
Raw Attribute Score = D+[C x (A x B)^{½}]^{½}				8.04	**Final Attribute Score = (Raw Score/24) x 100**	33.5
Attribute 2: Hydrology (pp. 20-26)						
			Alpha.	Numeric		
Water Source			C	6	Street runoff	
Channel Stability			B	9		
Hydrologic Connectivity			A	12	10m	
Raw Attribute Score = sum of numeric scores				27	**Final Attribute Score = (Raw Score/36) x 100**	75
Attribute 3: Physical Structure (pp. 27-33)						
			Alpha.	Numeric		
Structural Patch Richness			D	3		
Topographic Complexity			D	3		
Raw Attribute Score = sum of numeric scores				6	**Final Attribute Score = (Raw Score/24) x 100**	25
Attribute 4: Biotic Structure (pp. 34-41)						
Plant Community Composition (based on sub-metrics A-C)						
Plant Community submetric A: Number of plant layers	Alpha. C	Numeric 6				
Plant Community submetric B: Number of Co-dominant species	D	3				
Plant Community submetric C: Percent Invasion	B	9			Ck grass spp	
Plant Community Composition Metric *(numeric average of submetrics A-C)*				6		
Horizontal Interspersion			D	3		
Vertical Biotic Structure			D	3		
Raw Attribute Score = sum of numeric scores				12	**Final Attribute Score = (Raw Score/36) x 100**	33.33
Overall AA Score (average of four final Attribute Scores)					42	

300
288
240

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

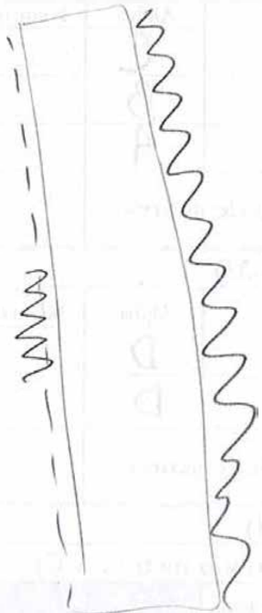
Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	390	1	500
2		2	
3		3	
4		4	
5		5	
Upstream Total Length	390	Downstream Total Length	500

No stream DS of AA

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

completed on desktop



~~~ - Not 10m buffer

Percent of AA with Buffer: %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	6
B	5
C	9
D	10
E	9
F	9
G	9
H	10
Average Buffer Width *Round to the nearest integer*	8.3
~~~

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	☒ The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA.
	☐ Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it.
	☐ There is leaf litter, thatch, or wrack in most pools (if pools are present).
	☐ The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area.
	☒ There is little or no active undercutting or burial of riparian vegetation.
	☐ If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation.
	☐ Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar).
	☐ There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA
	☐ The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	☐ The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs.
	☐ There are abundant bank slides or slumps.
	☐ The lower banks are uniformly scoured and not vegetated.
	☐ Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel.
	☐ An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation.
	☐ The channel bed appears scoured to bedrock or dense clay.
	☐ Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided).
	☐ The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	☐ There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year.
	☐ There are partially buried living tree trunks or shrubs along the banks.
	☒ The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced.
	☒ There are partially buried, or sediment-choked, culverts.
	☐ Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour.
	☐ There are avulsion channels on the floodplain or adjacent valley floor.
Overall	**Equilibrium** **Degradation** **Aggradation**

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.				
Steps	**Replicate Cross-sections** ⟶	**TOP**	**MID**	**BOT**
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	3m	3m	3m
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	0.5m	0.5m	0.5m
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	1m	1.0m	1m
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	30m	30m	30m
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	10m	10m	10m
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			10m

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

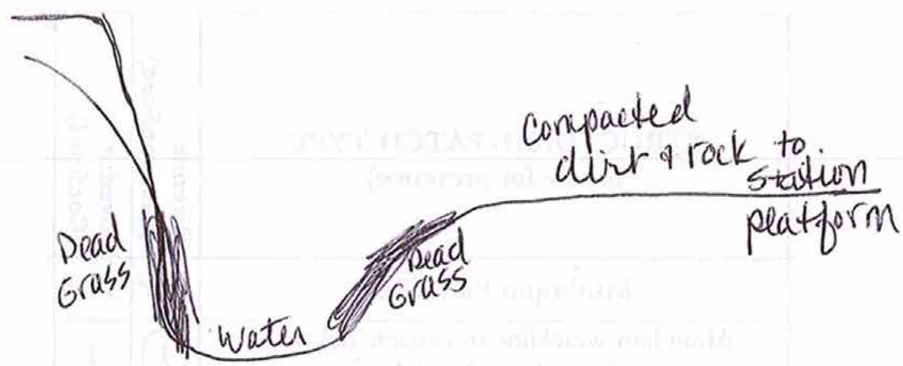
Please refer to the CRAM Photo Dictionary at** www.cramwetlands.org **for photos of each of the following patch types.

STRUCTURAL PATCH TYPE (circle for presence)	**Riverine (Non-confined)**	**Riverine (Confined)**
Minimum Patch Size	**3 m^2**	**3 m^2**
Abundant wrackline or organic debris in channel, on floodplain	1	1
Bank slumps or undercut banks in channels or along shoreline	1	1
Cobbles and/or Boulders	1	1
Debris jams	1	1
Filamentous macroalgae or algal mats	1	1
Large woody debris	1	1
Pannes or pools on floodplain	1	N/A
Plant hummocks and/or sediment mounds	1	1
Point bars and in-channel bars	1	1
Pools or depressions in channels (wet or dry channels)	1	1
Riffles or rapids (wet or dry channels)	1	1
Secondary channels on floodplains or along shorelines	1	N/A
Standing snags (at least 3 m tall)	1	1
Submerged vegetation	1	N/A
Swales on floodplain or along shoreline	1	N/A
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	1	1
Vegetated islands (mostly above high-water)	1	N/A
Total Possible	17	12
No. Observed Patch Types (enter here and use in Table 14 below)	2	

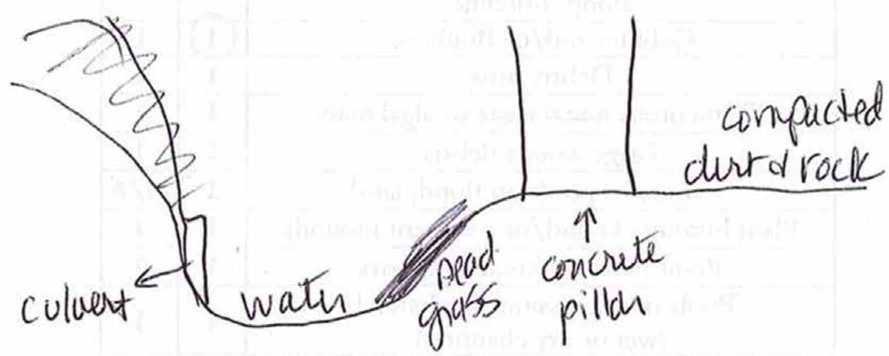
Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

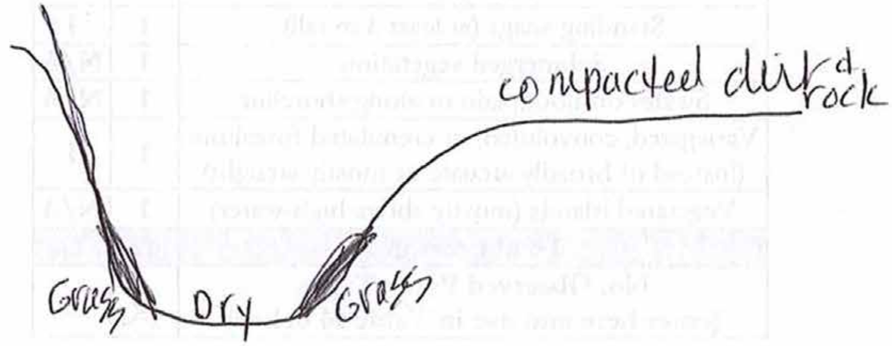
Profile 1



Profile 2



Profile 3



Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
(A dominant species represents ≥10% *relative* cover)

Special Note:

** Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
Lemna spp	N	Cynodon dactylon	Y
		Malva nicaeensis	~~Y~~ N
		Parietaria judaica	~~Y~~ N

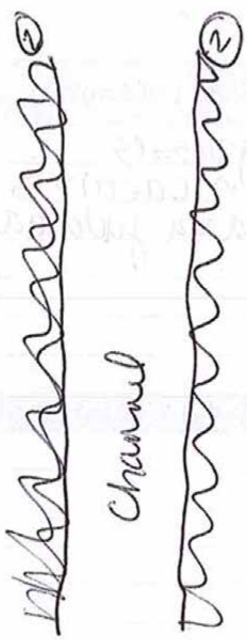
Medium (0.5-1.5 m)	Invasive?	Tall (1.5-3.0 m)	Invasive?

Very Tall (>3.0 m)	Invasive?

Total number of co-dominant species for all layers combined (enter here and use in Table 18)	4
Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	25

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.



Assigned zones:

1) Channel

2) Grasses

3)

4)

5)

6)

Worksheet for 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	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: 2	
Project Name:	
Assessment Area ID #:	
Project ID #:	**Date:** 9/10/19
Assessment Team Members for This AA:	
RJ, DM	
Average Bankfull Width: 7 m	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): 145	
Upstream Point Latitude: 37.724475	**Longitude:** -122.396906
Downstream Point Latitude: 37.723197	**Longitude:** -122.397281
Wetland Sub-type: Confined Non-confined	
AA Category: Restoration Mitigation Impacted Ambient Reference Training Other: Pre-project	
Did the river/stream have flowing water at the time of the assessment? yes no	

What is the apparent hydrologic flow regime of the reach you are assessing?

The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. *Perennial* streams conduct water all year long, whereas *ephemeral* streams conduct water only during and immediately following precipitation events. *Intermittent* streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source.

perennial intermittent ephemeral

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		Upstream			
2		Middle Left			
3		Middle Right			
4		Downstream			
5					
6					
7					
8					
9					
10					

Site Location Description:

Comments:

Scoring Sheet: Riverine Wetlands

AA Name: 2			**Date:** 9/10/19	
Attribute 1: Buffer and Landscape Context (pp. 11-19)			**Comments**	
Stream Corridor Continuity (D)	Alpha. D	Numeric 3		
Buffer:				
Buffer submetric A: Percent of AA with Buffer	Alpha. D	Numeric 3	10%	
Buffer submetric B: Average Buffer Width	D	3	6.5 m avg buffer	
Buffer submetric C: Buffer Condition	D	3	Buffer <5m on both sides except 10%	
Raw Attribute Score = D+[C x (A x B)^{½}]^{½}		6	**Final Attribute Score = (Raw Score/24) x 100**	25
Attribute 2: Hydrology (pp. 20-26)				
Water Source	Alpha. C	Numeric 6	Runoff	
Channel Stability	B	9		
Hydrologic Connectivity	A	12	4.28 Entrenchment	
Raw Attribute Score = sum of numeric scores		27	**Final Attribute Score = (Raw Score/36) x 100**	75
Attribute 3: Physical Structure (pp. 27-33)				
Structural Patch Richness	Alpha. D	Numeric 3		
Topographic Complexity	D	3		
Raw Attribute Score = sum of numeric scores		6	**Final Attribute Score = (Raw Score/24) x 100**	25
Attribute 4: Biotic Structure (pp. 34-41)				
Plant Community Composition (based on sub-metrics A-C)				
Plant Community submetric A: Number of plant layers	Alpha. B	Numeric 9		
Plant Community submetric B: Number of Co-dominant species	D	3		
Plant Community submetric C: Percent Invasion	D	3		
Plant Community Composition Metric *(numeric average of submetrics A-C)*		5		
Horizontal Interspersion	D	3		
Vertical Biotic Structure	C	9		
Raw Attribute Score = sum of numeric scores		17	**Final Attribute Score = (Raw Score/36) x 100**	47.22
Overall AA Score (average of four final Attribute Scores)			43	

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	312	1	66
2	40	2	281
3		3	
4		4	
5		5	
Upstream Total Length	352	Downstream Total Length	347

*0 = 500

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

computed on desktop

Percent of AA with Buffer: 100% %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	5
B	6
C	6
D	7
E	7
F	7
G	7
H	7
Average Buffer Width *Round to the nearest integer*	6.5

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	☒ The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. ☐ Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. ☐ There is leaf litter, thatch, or wrack in most pools (if pools are present). ☐ The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. ☒ There is little or no active undercutting or burial of riparian vegetation. ☐ If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation. ☐ Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). ☐ There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA ☐ The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	☐ The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. ☐ There are abundant bank slides or slumps. ☐ The lower banks are uniformly scoured and not vegetated. ☐ Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. ☐ An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation. ☐ The channel bed appears scoured to bedrock or dense clay. ☐ Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided). ☐ The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	☐ There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. ☐ There are partially buried living tree trunks or shrubs along the banks. ☒ The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. ☒ There are partially buried, or sediment-choked, culverts. ☒ Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. ☐ There are avulsion channels on the floodplain or adjacent valley floor.
Overall	**Equilibrium** **Degradation** **Aggradation**

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.				
Steps	**Replicate Cross-sections →**	**TOP**	**MID**	**BOT**
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	7m	7m	7m
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	2m	2m	2m
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	4m	4m	4m
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	30m	30m	30m
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	4.28 m	4.28 m	4.28m
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			4.28m

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

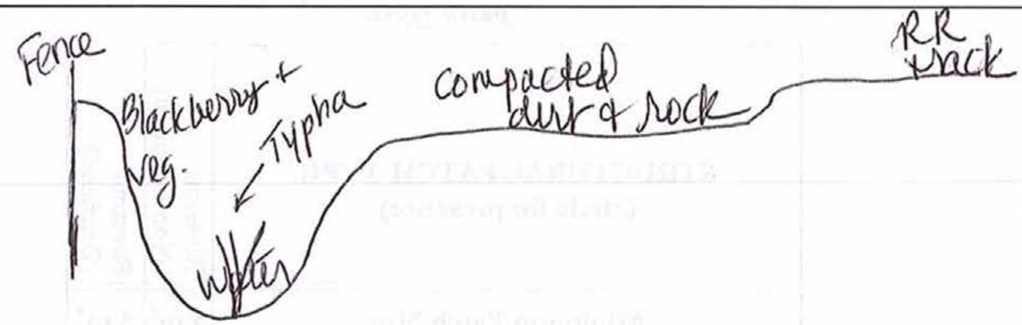
Please refer to the CRAM Photo Dictionary at** www.cramwetlands.org **for photos of each of the following patch types.

STRUCTURAL PATCH TYPE (circle for presence)	Riverine (Non-confined)	Riverine (Confined)
Minimum Patch Size	**3 m²**	**3 m²**
Abundant wrackline or organic debris in channel, on floodplain	1	1
Bank slumps or undercut banks in channels or along shoreline	1	1
Cobbles and/or Boulders	1	1
Debris jams	1	1
Filamentous macroalgae or algal mats	1	1
Large woody debris	1	1
Pannes or pools on floodplain	1	N/A
Plant hummocks and/or sediment mounds	1	1
Point bars and in-channel bars	1	1
Pools or depressions in channels (wet or dry channels)	1	1
Riffles or rapids (wet or dry channels)	1	1
Secondary channels on floodplains or along shorelines	1	N/A
Standing snags (at least 3 m tall)	1	1
Submerged vegetation	1	N/A
Swales on floodplain or along shoreline	1	N/A
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	1	1
Vegetated islands (mostly above high-water)	1	N/A
Total Possible	**17**	**12**
No. Observed Patch Types (enter here and use in Table 14 below)	2	

Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

Profile 1



Profile 2

Same as 1

Profile 3

Same as 1

Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
(A dominant species represents ≥10% *relative* cover)

Special Note:

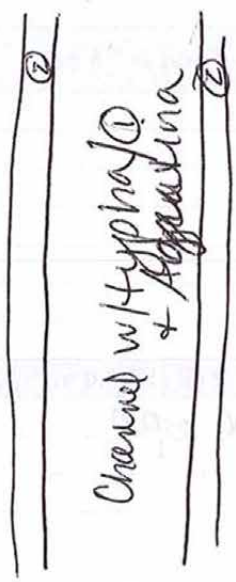
* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
Medium (0.5-1.5 m)	**Invasive?**	**Tall (1.5-3.0 m)**	**Invasive?**
Rubus armeniacus	Y	Typha spp	N
Centranthus ruber	N		
Ageratina adenophora	Y		
Very Tall (>3.0 m)	**Invasive?**	**Total number of co-dominant species for all layers combined (enter here and use in Table 18)**	4
Typha spp	N		
		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	50%

4/2

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.



Assigned zones:

1)

2) Blackberry/ Centranthus

3)

4)

5)

6)

Worksheet for 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	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: 3	
Project Name: CAHSR	
Assessment Area ID #:	
Project ID #:	**Date:** 9/10/19
Assessment Team Members for This AA:	
RJ, DM	
Average Bankfull Width: 1.2	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): 100m	
Upstream Point Latitude: 37.722071	**Longitude:** -122.397495
Downstream Point Latitude: 37.721224	**Longitude:** -122.397780
Wetland Sub-type: Confined / Non-confined	
AA Category: Restoration / Mitigation / Impacted / Ambient / Reference / Training / Other: Pre-project	
Did the river/stream have flowing water at the time of the assessment? yes / no	

What is the apparent hydrologic flow regime of the reach you are assessing?

The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. *Perennial* streams conduct water all year long, whereas *ephemeral* streams conduct water only during and immediately following precipitation events. *Intermittent* streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source.

perennial   intermittent   ephemeral

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		Upstream			
2		Middle Left			
3		Middle Right			
4		Downstream			
5					
6					
7					
8					
9					
10					

Site Location Description:

Comments:

Scoring Sheet: Riverine Wetlands

AA Name: 3			**Date:** 9/10/19
Attribute 1: Buffer and Landscape Context (pp. 11-19)			**Comments**
	Alpha.	Numeric	
Stream Corridor Continuity (D)	D	3	850 m of non-buffer land cover
Buffer:			
	Alpha.	Numeric	
Buffer submetric A: Percent of AA with Buffer	B	9	Buffer on 1/2
Buffer submetric B: Average Buffer Width	D	3	9.90m avg width
Buffer submetric C: Buffer Condition	D	3	width <5m
Raw Attribute Score = D+[C x (A x B)$^{1/2}$]$^{1/2}$		6.9	**Final Attribute Score = (Raw Score/24) x 100**: 28.95
Attribute 2: Hydrology (pp. 20-26)			
	Alpha.	Numeric	
Water Source	C	6	Runoff
Channel Stability	B	9	Concrete-lined channel
Hydrologic Connectivity	A	12	
Raw Attribute Score = sum of numeric scores		27	**Final Attribute Score = (Raw Score/36) x 100**: 75
Attribute 3: Physical Structure (pp. 27-33)			
	Alpha.	Numeric	
Structural Patch Richness	D	3	
Topographic Complexity	D	3	
Raw Attribute Score = sum of numeric scores		6	**Final Attribute Score = (Raw Score/24) x 100**: 25
Attribute 4: Biotic Structure (pp. 34-41)			
Plant Community Composition (based on sub-metrics A-C)			
	Alpha.	Numeric	
Plant Community submetric A: Number of plant layers	D	3	~~No plants~~ Ivy
Plant Community submetric B: Number of Co-dominant species	D	3	
Plant Community submetric C: Percent Invasion	D	3	
Plant Community Composition Metric *(numeric average of submetrics A-C)*		3	
Horizontal Interspersion	D	3	
Vertical Biotic Structure	D	3	
Raw Attribute Score = sum of numeric scores		9	**Final Attribute Score = (Raw Score/36) x 100**: 25
Overall AA Score (average of four final Attribute Scores)			38

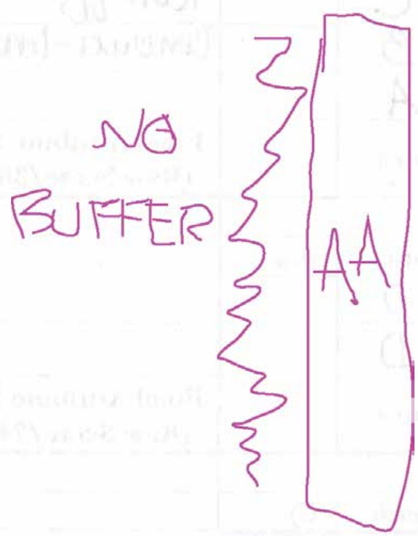
Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	86	1	
2	264	2	
3		3	
4		4	
5		5	
Upstream Total Length	350	Downstream Total Length	500

No stream DS of AA

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: ______ %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	9.78
B	9.66
C	9.32
D	9.47
E	9.34
F	7.89
G	8.28
H	9.0
Average Buffer Width *Round to the nearest integer*	9.09

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	[x] The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. ☐ Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. ☐ There is leaf litter, thatch, or wrack in most pools (if pools are present). ☐ The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. [x] There is little or no active undercutting or burial of riparian vegetation. ☐ If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation. ☐ Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). ☐ There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA ☐ The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	☐ The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. ☐ There are abundant bank slides or slumps. ☐ The lower banks are uniformly scoured and not vegetated. ☐ Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. ☐ An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation. ☐ The channel bed appears scoured to bedrock or dense clay. ☐ Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided). ☐ The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	☐ There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. ☐ There are partially buried living tree trunks or shrubs along the banks. [x] The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. ☐ There are partially buried, or sediment-choked, culverts. ☐ Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. ☐ There are avulsion channels on the floodplain or adjacent valley floor.
Overall	**Equilibrium** **Degradation** **Aggradation**

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.

Steps	Replicate Cross-sections ⟶	TOP	MID	BOT
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	1.2	1.2m	1.2
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	.4	.4m	.4
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	.8	.8m	.8
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	3.4	3.4m	3.4
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	2.83	2.83	2.83
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			2.83

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

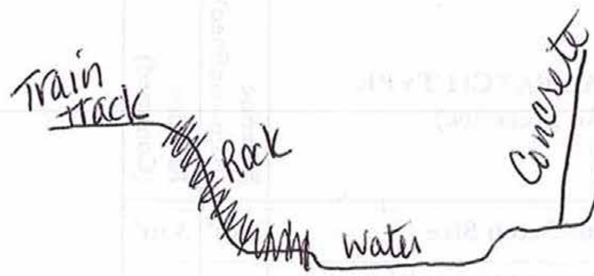
**Please refer to the CRAM Photo Dictionary at www.cramwetlands.org for photos of each of the following patch types.*

STRUCTURAL PATCH TYPE (circle for presence)	Riverine (Non-confined)	Riverine (Confined)
Minimum Patch Size	**3 m^2**	**3 m^2**
Abundant wrackline or organic debris in channel, on floodplain	**1**	**1**
Bank slumps or undercut banks in channels or along shoreline	**1**	**1**
Cobbles and/or Boulders	**1**	**1**
Debris jams	**1**	**1**
Filamentous macroalgae or algal mats	**1**	**1**
Large woody debris	**1**	**1**
Pannes or pools on floodplain	**1**	**N/A**
Plant hummocks and/or sediment mounds	**1**	**1**
Point bars and in-channel bars	**1**	**1**
Pools or depressions in channels (wet or dry channels)	**1**	**1**
Riffles or rapids (wet or dry channels)	**1**	**1**
Secondary channels on floodplains or along shorelines	**1**	**N/A**
Standing snags (at least 3 m tall)	**1**	**1**
Submerged vegetation	**1**	**N/A**
Swales on floodplain or along shoreline	**1**	**N/A**
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	**1**	**1**
Vegetated islands (mostly above high-water)	**1**	**N/A**
Total Possible	**17**	**12**
No. Observed Patch Types (enter here and use in Table 14 below)		

Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

Profile 1



Profile 2

Same as 1

Profile 3

Same as 1

Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
(A dominant species represents ≥10% *relative* cover)

Special Note:

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
Hedera canariensis	Y		
Medium (0.5-1.5 m)	**Invasive?**	**Tall (1.5-3.0 m)**	**Invasive?**
Very Tall (>3.0 m)	**Invasive?**	**Total number of co-dominant species for all layers combined (enter here and use in Table 18)**	1
		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	100%

~~No plants~~

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.

No plants - only ivy overhanging 1 spot in channel	**Assigned zones:** 1) 2) 3) 4) 5) 6)

Worksheet for 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	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Slope Wetlands

Assessment Area Name: AA - 4	
Project Name: HSR	
Assessment Area ID#: 4	
Project ID#:	**Date** 9/10/19
Assessment Team Members for This AA: MAL, MCM	
Assessment Area Size: 360 x 15 m	
Surface water present during the assessment? ☐ Yes ☐ No **Flowing?** ☐ Yes ☑ No	
Briefly describe the hydrology of the AA (e.g., water sources, channels, swales, etc.) small basin with wetland veg that flows into plastic lined channel and into culvert	

AA Category:

☐ Pre-Restoration ☐ Post-Restoration ☐ Pre-Mitigation ☐ Post-Mitigation

☐ Pre-Impact ☐ Post-Impact ☐ Ambient ☐ Reference

☐ Training ☐ Other:

Which best describes the type of wetland?

☑ Channeled Wet Meadow (assoc. with a fluvial channel) ☐ Non-Channeled Wet Meadow

☐ Channeled Forested Slope ☐ Non-Channeled Forested Slope ☐ Seep or Spring

Are peat soils present in the AA? ☐ Yes ☑ No

AA Encompasses:

☑ entire wetland ☐ portion of the wetland

Which best describes the dominant hydrologic state of the AA at the time of assessment?

☐ ponded/inundated ☐ saturated soil, but no surface water ☑ moist ☑ dry

What is the apparent hydrologic regime of the wetland?

Perennial slope wetlands contain surface water year-round, *seasonal* slope wetlands support surface water for 4-11 months of the year (in > 5 out of 10 years.) *Temporarily flooded* slope wetlands possess surface water between 2 weeks and 4 months of the year.

☐ perennial ☐ seasonal ☑ temporarily flooded

Photo Identification Numbers and Description:		
	Photo ID No.	**Description**
1	1	~~Looking North into the AA~~ DS to DS 37.6974123, -122.4053085
2	2	~~Looking South into the AA~~ DS to US ↓
3	3	~~Looking East into the AA~~ to ~~West~~ 37.6985576 -122.4054442
4	4	~~Looking West into the AA~~ to east ↓
5	5	small lined channel 37.6990881 -122.4053987
6	6	UP to DS 37.6999754 -122.4053821
7	7	UP to UP ↓
8		
9		
10		

Site Location Description (including County and USGS Topographic Quadrangle if known):

Culvert DS is 48", flows from low point basin to channel

Comments:

Redrew AA to be above culvert

Scoring Sheet: Slope Wetlands

AA Name: 4					Date	
Attribute 1: Buffer and Landscape Context					**Comments**	
Aquatic Area Abundance (D)			Alpha: D	Numeric: 3		
Buffer						
Buffer submetric A: Percent of AA with Buffer	Alpha: A	Numeric: 12			100	
Buffer submetric B: Average Buffer Width	B	9			157	
Buffer submetric C: Buffer Condition	C	6				
Raw Attribute Score = D+[C x (A x B)½]½ (do not round)				10.9	**Final Attribute Score = (Raw Score/24) x 100**	45.4
Attribute 2: Hydrology						
Water Source			Alpha: B	Numeric: 9	mostly natural some develop runoff	
Hydroperiod			C	6	developed Areas	
Hydrologic Connectivity (all but Channeled)			—	—		
Hydro Connectivity submetric A: Bank Height Ratio	Alpha: A	Numeric: 12			1.07	
Hydro Connectivity submetric B: Percent Dewatered	D	3			most water doesnt get into soil	
Hydrologic Connectivity for Channeled (*avg. of submetrics A-B*)				7.5		
Raw Attribute Score = sum of numeric scores				22.5	**Final Attribute Score = (Raw Score/36) x 100**	62.5
Attribute 3: Physical Structure						
Structural Patch Richness			Alpha: D	Numeric: 3		
Topographic Complexity			D	3		
Raw Attribute Score = sum of numeric scores				6	**Final Attribute Score = (Raw Score/24) x 100**	25
Attribute 4: Biotic Structure						
Plant Community Composition (submetric A is not applicable for Non-Channeled meadows)						
Plant Community submetric A: Number of plant layers	Alpha: B	Numeric: 9				
Plant Community submetric B: Number of Co-dominant species	C	6				
Plant Community submetric C: Percent Invasive species	D	3				
Plant Comm. Composition (*avg. of submetrics A-C or B-C*)				6		
Horizontal Interspersion			Alpha: C	Numeric: 6		
Plant Life Forms			C	6		
Raw Attribute Score = sum of numeric scores				18	**Final Attribute Score = (Raw Score/36) x 100**	50
Overall AA Score (average of four final Attribute Scores)					46	

Aquatic Area Abundance Worksheet

Percentage of Transect Lines that Contains Wetland or Aquatic Habitat of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	11.6
South	10.1
East	16.4
West	0
Average Percentage of Transect Length That Is an Aquatic Feature	7

Percent of AA with Buffer Worksheet

In the space provided on the datasheet, make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

100% done on desktop

Worksheet for calculating Average Buffer Width of AA

Line	Buffer Width (m)
A	63
B	61
C	64
D	64
E	250
F	250
G	250
H	250
Average Buffer Width	157

Channeled Wet Meadow and Channeled Forested Slope Wetland Bank Height Calculation Worksheet

The following 4 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.

Steps	Replicate Cross-sections ⟶	TOP	MID	BOT
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. \Measure the distance between the right and left bankfull contours.	4.8	2.2	3.6
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; measure the height of the line above the thalweg (the deepest part of the channel).	.51	.25	.4
3: Estimate max. bank height	Identify the location of the top of bank. Measure the height between the thalweg and the top of bank location.	.7	.5	.6
4: Calculate bank height ratio.	Divide the bank height (Step 3) by the bankfull depth (Step 2). Keep two significant figures.	1.37	.2	1.5
5: Calculate average bank height ratio.	Calculate the average results for Step 4 for all 3 replicate cross-sections. Enter the average result here and use it in Table 14. Keep two significant figures (hundredths).			1.02

Worksheet for Assessing Hydrologic Connectivity: Percent Dewatered for Slope Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Intact Hydrologic Connectivity	☐ No channel incision ☐ Vigor of plant species, especially hydrophytes ☐ Low or no cover of upland plant species ☐ No rill or gully development ☐ No areas of bare soil ☐ No soil cracking ☐ No changes in soil structure or moisture content ☐ Surface water present on the wetland plain late into the summer season ☐ Groundwater emerging ☐ Moist peat soil ☐ Floating fens ☐ Evidence of regular inundation on floodplain slope wetlands (wrack etc.)
Indicators of Degraded Hydrologic Connectivity (dewatering)	☐ Evidence of channel incision, including low entrenchment ratios, undercut banks, block bank failures, sloughing banks, hanging or exposed roots, channel scoured to bedrock or dense clay, active knickpoints, active gully erosion, active headcutting ☐ Stress or mortality of plants ☐ Presence of xeric plant species ☐ Development of rills or gullies on the wetland surface ☐ Areas of bare soil ☐ Areas of soil cracking ☐ Drying of peat ☐ Decrease in vigor of hydrophytes ☐ Changes in plant or animal species or communities ☑ Changes in soil structure or moisture content ☐ More than 5% cover in the AA of upland conifer species (e.g. Douglas fir (*Pseudotsuga menziesii*), Lodgepole Pine (*Pinus contorta*), see special note) ☐ More than 5% cover in the AA of upland broadleaf tree species (e.g. tanoak (*Notholithocarpus densiflorus*), coast live oak (*Quercus agrifolia*) ☐ More than 5% cover in the AA of upland shrub species (e.g. sagebrush (*Artemisia tridentate*), rabbitbrush (*Ericameria nauseosa*), French broom (*Genista monspessulana*) ☐ More than 5% cover in the AA of upland vines (e.g. English ivy (*Hedera helix*), Himalayan blackberry (*Rubus armeniacus*), field bindweed (*Convolvulus arvensis*) ☐ More than 5% cover in the AA of upland grasses (e.g. ripgut brome (*Bromus diandrus*), cheatgrass (*Bromus tectorum*), needlegrass (*Stipa pulchra*) ☑ More than 5% cover in the AA of upland herbs and forbs (e.g. ragweed (*Ambrosia artemisiifolia*), mustard (*Brassica rapa*), yellow star thistle (*Centaurea solstitialis*)
Overall area of the wetland showing evidence of dewatering	☐ **No dewatering** ☐ **<25% dewatered** ☐ **25-50% dewatered** ☑ **>50% dewatered**

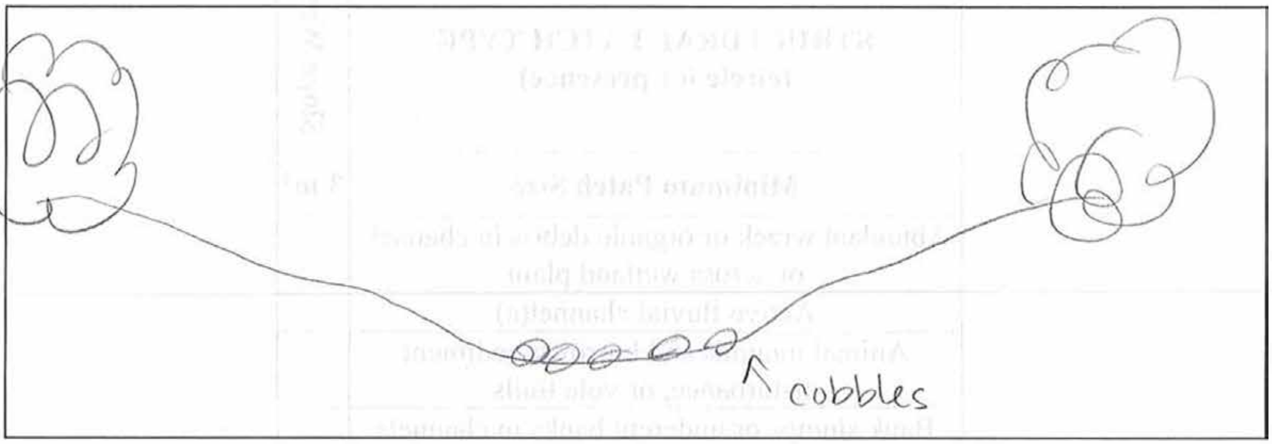
Structural Patch Type Worksheet for Slope Wetlands

Check each type of patch that is observed in the AA and use the total number of observed patches in Table 17 below.

STRUCTURAL PATCH TYPE (circle for presence)	**Slope Wetland**
Minimum Patch Size	**3 m^2**
Abundant wrack or organic debris in channel, or across wetland plain	
Active fluvial channel(s)	
Animal mounds and burrows, sediment disturbance, or vole trails	
Bank slumps or undercut banks in channels	
Beaver dams or lodges	
Boulders or bedrock outcrop	
Cutoff channels or oxbows	
Filamentous macroalgae or algal mats	
Gravel, cobble, or sand	
Large woody debris	✓
Moss	
Non-vegetated flats or bare ground	
Pannes or pools on wetland surface	
Plant hummocks and/or tussocks	
Sediment mounds around the bases of shrubs or trees	
Sediment splays	
Soil cracks	
Springs or upwelling groundwater	
Standing snags (at least 3 m tall)	
Submerged vegetation (in channels or open water)	
Swales	✓
Thatch	
Variegated, convoluted, or crenulated upland edge (not broadly arcuate or mostly straight)	
Total Possible	**23**
No. Observed Patch Types (enter here and use in Table 17 below)	2

Worksheet for AA Topographic Complexity

Complete a sketch of the topographic profile of the AA along a cross section perpendicular to the overall slope of wetland within the AA. Draw the section to include both AA boundaries. Include both the ground surface and the vegetation roughness. Indicate the letter grade for each component in the space below the sketch. Note the AA boundaries and important topographic features.



Physical topographic complexity score D Vegetation roughness score D

Plant Community Metric Worksheet: Co-dominant species richness for Channeled Wet Meadow, Channeled Forested Slope Wetlands, Non-channeled Forested Slope Wetlands, and Seeps and Springs
(A dominant species represents ≥10% *relative* cover)

Special Note:

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming	Invasive?	Short (<0.3 m)	Invasive?
		lotus	N
		Polypogon mon	Y
Medium (0.3-1.0 m)	**Invasive?**	**Tall (1.0-3.0 m)**	**Invasive?**
phalaris anin	Y	genista (french broom)	Y
Festuca perrenus	Y		
Bristly ox tongue	Y		
Very Tall (>3.0 m)	**Invasive?**	**Total number of co-dominant species for all layers combined (enter here and see Table 21)**	6
		Percent Invasion (enter here and see Table 21)	90+%

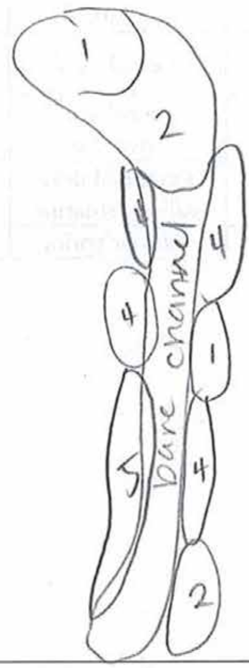
Non-Channeled Wet Meadows Worksheet for Co-dominant Plant Species

Note: A dominant species represents ≥10% *relative* cover. Count species only once when calculating any Plant Community sub-metric. Invasive species are listed in Appendix IV of the User's Manual.

Co-dominant Species	Check if Invasive
Total Number of Co-dominants	
Total Number of Invasive Co-dominant species	
Percent Invasive Species (round to nearest integer)	

Horizontal Interspersion Worksheet

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 17 that best represents the AA overall.



Assigned zones:

1) willow

2) pickleweed / eleocharis

3) typha

4) Bristly / phalaris / mellilotus birds foot

5) French broom

6)

Plant Life Forms Worksheet

Life Form	**Present in > 5% of AA?**
Bryophytes (mosses, liverworts, hornworts)	
Coniferous Trees	
Deciduous Broadleaf Trees	
Evergreen Broadleaf Trees	
Ferns	
Grasses	✓
Herbs/Forbs	✓
Lichens or Fungi	
Sedges/Rushes	
Shrubs	✓
Vines	
Total Number of life forms	

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	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Worksheet: 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

lined channel

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		

Basic Information Sheet: Slope Wetlands

Assessment Area Name: AA5

Project Name:

Assessment Area ID#: 5

Project ID#: **Date** 9/10/19

Assessment Team Members for This AA:

MAL, MCM

Assessment Area Size: 108m x 70m

Surface water present during the assessment? □ Yes ☑ No **Flowing?** □ Yes □ No

Briefly describe the hydrology of the AA (e.g., water sources, channels, swales, etc.)

Winding channels made from trail use as seen on aerials. Area appear to be low point but berms have been constructed to direct flow to plastic lined channel.

AA Category:

□ Pre-Restoration □ Post-Restoration □ Pre-Mitigation □ Post-Mitigation

□ Pre-Impact □ Post-Impact □ Ambient □ Reference

□ Training □ Other:

Which best describes the type of wetland?

☑ Channeled Wet Meadow (assoc. with a fluvial channel) ~~☑ Non-Channeled Wet Meadow~~

□ Channeled Forested Slope □ Non-Channeled Forested Slope □ Seep or Spring

Are peat soils present in the AA? □ Yes ☑ No

AA Encompasses:

☑ entire wetland maybe □ portion of the wetland

Which best describes the dominant hydrologic state of the AA at the time of assessment?

□ ponded/inundated □ saturated soil, but no surface water □ moist ☑ dry

What is the apparent hydrologic regime of the wetland?

Perennial slope wetlands contain surface water year-round, *seasonal* slope wetlands support surface water for 4-11 months of the year (in > 5 out of 10 years.) *Temporarily flooded* slope wetlands possess surface water between 2 weeks and 4 months of the year.

□ perennial □ seasonal ☑ temporarily flooded

Photo Identification Numbers and Description:		
	Photo ID No.	**Description**
1	1	Looking North into the AA 37.6994996, -122.4047035
2	2	Looking South into the AA
3	3	Looking East into the AA
4	4	Looking West into the AA
5		
6		
7		
8		
9		
10		

Site Location Description (including County and USGS Topographic Quadrangle if known):

Created variegated shallow channels that dont lead OR come from specific flow areas. 3 sides with berm, non-bermed side flows into lined impervious channel.

Comments:

Scoring Sheet: Slope Wetlands

AA Name: 6				Date	
Attribute 1: Buffer and Landscape Context				**Comments**	
		Alpha	Numeric		
Aquatic Area Abundance (D)		C	6	19.25	
Buffer					
Buffer submetric A: Percent of AA with Buffer	Alpha A	Numeric 12		100%	
Buffer submetric B: Average Buffer Width	A	12		199 m Avg	
Buffer submetric C: Buffer Condition	B	9			
Raw Attribute Score = D+[C x (A x B)$^{1/2}$]$^{1/2}$ (do not round)			16.39	**Final Attribute Score = (Raw Score/24) x 100**	68.3
Attribute 2: Hydrology					
		Alpha	Numeric		
Water Source		A	12		
Hydroperiod		B	9		
Hydrologic Connectivity (all but Channeled)					
Hydro Connectivity submetric A: Bank Height Ratio	Alpha D	Numeric 3		5 ← maybe considered non-channeled since Artificial	
Hydro Connectivity submetric B: Percent Dewatered	B	9		small amount dewatered	
Hydrologic Connectivity for Channeled (*avg. of submetrics A-B*)			6		
Raw Attribute Score = sum of numeric scores			27	**Final Attribute Score = (Raw Score/36) x 100**	75
Attribute 3: Physical Structure					
		Alpha	Numeric		
Structural Patch Richness		C	6		
Topographic Complexity		A	12	7 types, 10.5 (A+B)	
Raw Attribute Score = sum of numeric scores			18	**Final Attribute Score = (Raw Score/24) x 100**	75
Attribute 4: Biotic Structure					
Plant Community Composition (submetric A is not applicable for Non-Channeled meadows)					
Plant Community submetric A: Number of plant layers	Alpha B	Numeric 9		3 layers	
Plant Community submetric B: Number of Co-dominant species	B	9		7 co-doms	
Plant Community submetric C: Percent Invasive species	C	6		29%	
Plant Comm. Composition (*avg. of submetrics A-C or B-C*)			8		
		Alpha	Numeric		
Horizontal Interspersion		A	12		
Plant Life Forms		B	9	4 forms	
Raw Attribute Score = sum of numeric scores			29	**Final Attribute Score = (Raw Score/36) x 100**	80.56
Overall AA Score (average of four final Attribute Scores)				75	

Aquatic Area Abundance Worksheet

Percentage of Transect Lines that Contains Wetland or Aquatic Habitat of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	17% + 11 = 28%
South	= 35%
East	10 + 3.6 = 13.6
West	.4 = .4
Average Percentage of Transect Length That Is an Aquatic Feature	77% / 4 = 19.25

Percent of AA with Buffer Worksheet

In the space provided on the datasheet, make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

100% buffer

Worksheet for calculating Average Buffer Width of AA

Line	Buffer Width (m)
A	250
B	250
C	90
D	194
E	250
F	110
G	105
H	240
Average Buffer Width	198

Channeled Wet Meadow and Channeled Forested Slope Wetland Bank Height Calculation Worksheet

The following 4 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.

Steps	Replicate Cross-sections →	TOP	MID	BOT
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Measure the distance between the right and left bankfull contours.	1.0	.7	.9
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; measure the height of the line above the thalweg (the deepest part of the channel).	.08	.08	.08
3: Estimate max. bank height	Identify the location of the top of bank. Measure the height between the thalweg and the top of bank location.	.2	.35	.4
4: Calculate bank height ratio.	Divide the bank height (Step 3) by the bankfull depth (Step 2). Keep two significant figures.	2.5	4.4	5.0
5: Calculate average bank height ratio.	Calculate the average results for Step 4 for all 3 replicate cross-sections. Enter the average result here and use it in Table 14. Keep two significant figures (hundredths).			3.9

↑ channels are very shallow water likely tops and spills over easily. all veg appear similar

Worksheet for Assessing Hydrologic Connectivity: Percent Dewatered for Slope Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Intact Hydrologic Connectivity	☐ No channel incision ☐ Vigor of plant species, especially hydrophytes ☐ Low or no cover of upland plant species ☐ No rill or gully development ☐ No areas of bare soil ☐ No soil cracking ☐ No changes in soil structure or moisture content ☐ Surface water present on the wetland plain late into the summer season ☐ Groundwater emerging ☐ Moist peat soil ☐ Floating fens ☐ Evidence of regular inundation on floodplain slope wetlands (wrack etc.)
Indicators of Degraded Hydrologic Connectivity (dewatering)	☐ Evidence of channel incision, including low entrenchment ratios, undercut banks, block bank failures, sloughing banks, hanging or exposed roots, channel scoured to bedrock or dense clay, active knickpoints, active gully erosion, active headcutting ☐ Stress or mortality of plants ☐ Presence of xeric plant species ☐ Development of rills or gullies on the wetland surface ☐ Areas of bare soil ☐ Areas of soil cracking ☐ Drying of peat ☐ Decrease in vigor of hydrophytes ☐ Changes in plant or animal species or communities ☐ Changes in soil structure or moisture content ☐ More than 5% cover in the AA of upland conifer species (e.g. Douglas fir (*Pseudotsuga menziesii*), Lodgepole Pine (*Pinus contorta*), see special note) ☐ More than 5% cover in the AA of upland broadleaf tree species (e.g. tanoak (*Notholithocarpus densiflorus*), coast live oak (*Quercus agrifolia*) ☐ More than 5% cover in the AA of upland shrub species (e.g. sagebrush (*Artemisia tridentate*), rabbitbrush (*Ericameria nauseosa*), French broom (*Genista monspessulana*) ☐ More than 5% cover in the AA of upland vines (e.g. English ivy (*Hedera helix*), Himalayan blackberry (*Rubus armeniacus*), field bindweed (*Convolvulus arvensis*) ☐ More than 5% cover in the AA of upland grasses (e.g. ripgut brome (*Bromus diandrus*), cheatgrass (*Bromus tectorum*), needlegrass (*Stipa pulchra*) ☐ More than 5% cover in the AA of upland herbs and forbs (e.g. ragweed (*Ambrosia artemisiifolia*), mustard (*Brassica rapa*), yellow star thistle (*Centaurea solstitialis*)
Overall area of the wetland showing evidence of dewatering	**☐ No dewatering** **☐ <25% dewatered** **☐ 25-50% dewatered** **☐ >50% dewatered**

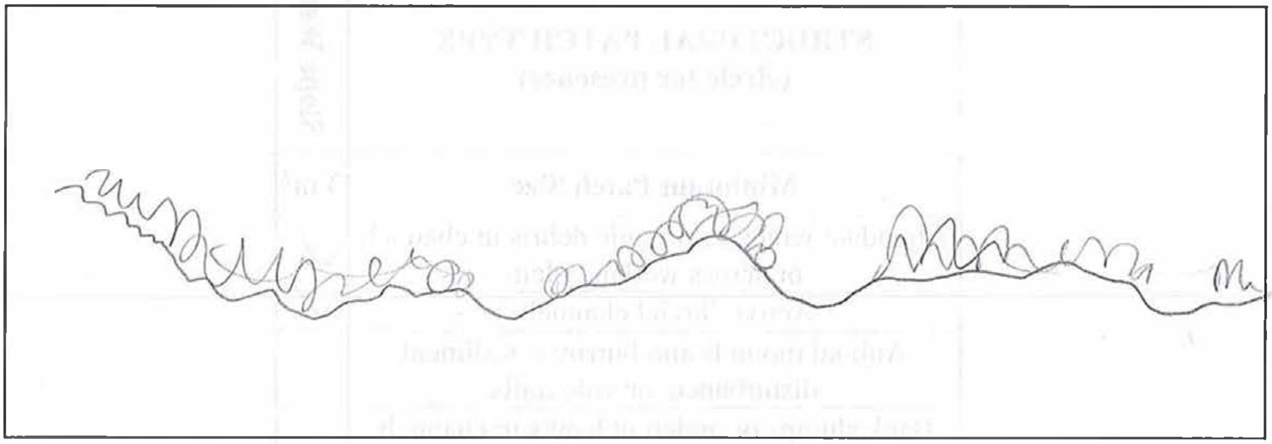
Structural Patch Type Worksheet for Slope Wetlands

Check each type of patch that is observed in the AA and use the total number of observed patches in Table 17 below.

STRUCTURAL PATCH TYPE (circle for presence)	**Slope Wetland**
Minimum Patch Size	**3 m^2**
Abundant wrack or organic debris in channel, or across wetland plain	✓
Active fluvial channel(s)	✓
Animal mounds and burrows, sediment disturbance, or vole trails	
Bank slumps or undercut banks in channels	
Beaver dams or lodges	
Boulders or bedrock outcrop	
Cutoff channels or oxbows	
Filamentous macroalgae or algal mats	✓
Gravel, cobble, or sand	✓
Large woody debris	
Moss	
Non-vegetated flats or bare ground	
Pannes or pools on wetland surface	✓
Plant hummocks and/or tussocks	
Sediment mounds around the bases of shrubs or trees	
Sediment splays	
Soil cracks	
Springs or upwelling groundwater	
Standing snags (at least 3 m tall)	
Submerged vegetation (in channels or open water)	
Swales	✓
Thatch	✓
Variegated, convoluted, or crenulated upland edge (not broadly arcuate or mostly straight)	
Total Possible	**23**
No. Observed Patch Types (enter here and use in Table 17 below)	7

Worksheet for AA Topographic Complexity

Complete a sketch of the topographic profile of the AA along a cross section perpendicular to the overall slope of wetland within the AA. Draw the section to include both AA boundaries. Include both the ground surface and the vegetation roughness. Indicate the letter grade for each component in the space below the sketch. Note the AA boundaries and important topographic features.



Physical topographic complexity score B Vegetation roughness score A

Plant Community Metric Worksheet: Co-dominant species richness for Channeled Wet Meadow, Channeled Forested Slope Wetlands, Non-channeled Forested Slope Wetlands, and Seeps and Springs

(A dominant species represents ≥10% *relative* cover)

Special Note:

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming	Invasive?	Short (<0.3 m)	Invasive?
		polypogon mono	Y
		salt grass	N
Medium (0.3-1.0 m)	**Invasive?**	**Tall (1.0-3.0 m)**	**Invasive?**
Eleocharis sp.	N		
Bolboschoenus maritimus	N		
Rumex crispus	Y		
Chenopodium sp.	N		
Very Tall (>3.0 m)	**Invasive?**	**Total number of co-dominant species for all layers combined (enter here and see Table 21)**	7
Salix sp.	N		
		Percent Invasion (enter here and see Table 21)	29%

2/7 = 29%

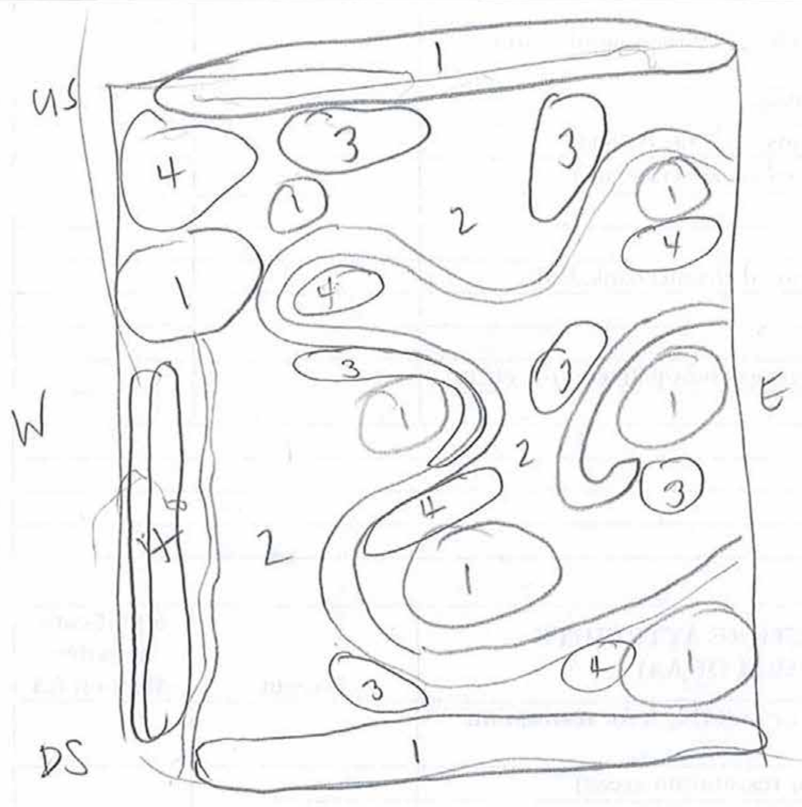
Non-Channeled Wet Meadows Worksheet for Co-dominant Plant Species

Note: A dominant species represents ≥10% *relative* cover. Count species only once when calculating any Plant Community sub-metric. Invasive species are listed in Appendix IV of the User's Manual.

Co-dominant Species	**Check if Invasive**
Total Number of Co-dominants	
Total Number of Invasive Co-dominant species	
Percent Invasive Species (round to nearest integer)	

Horizontal Interspersion Worksheet

Use the spaces below to make a sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign names to the zones and record them on the right. Based on the sketch, choose a single profile from Figure 8 that best represents the AA overall.



Assigned zones:

1) willow

2) saltgrass background

3) sedge, rush

4) polygon mono

5)

6)

Wetland disturbances and conversions Worksheet

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? may have been non-channeled converted to channelled	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	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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		

Horizontal Interspersion Worksheet

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 17 that best represents the AA overall.

ON other page	**Assigned zones:** 1) 2) 3) 4) 5) 6)

Plant Life Forms Worksheet

Life Form	**Present in > 5% of AA?**
Bryophytes (mosses, liverworts, hornworts)	
Coniferous Trees	
Deciduous Broadleaf Trees	yes
Evergreen Broadleaf Trees	
Ferns	
Grasses	yes
Herbs/Forbs	yes
Lichens or Fungi	
Sedges/Rushes	yes
Shrubs	
Vines	
Total Number of life forms	4

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	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Worksheet: 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 appears to be an old fill		

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

in the past maybe had sig ~~[illegible]~~ effect

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

Basic Information Sheet: Slope Wetlands

Assessment Area Name: AA 06	
Project Name:	
Assessment Area ID#: 6	
Project ID#:	**Date** 9/16/19
Assessment Team Members for This AA: MAL, MCM	
Assessment Area Size: 100 x 80 m	
Surface water present during the assessment? ☐ Yes ☑ No **Flowing?** ☐ Yes ☐ No	
Briefly describe the hydrology of the AA (e.g., water sources, channels, swales, etc.) Same as AA5	

AA Category:

☑ Pre-Restoration ☐ Post-Restoration ☑ Pre-Mitigation ☐ Post-Mitigation

☐ Pre-Impact ☐ Post-Impact ☐ Ambient ☐ Reference

☐ Training ☑ Other:

Which best describes the type of wetland?

☐ Channeled Wet Meadow (assoc. with a fluvial channel) ☐ Non-Channeled Wet Meadow

☐ Channeled Forested Slope ☑ Non-Channeled Forested Slope ☐ Seep or Spring

Are peat soils present in the AA? ☐ Yes ☑ No

AA Encompasses:

☑ entire wetland ☐ portion of the wetland

Which best describes the dominant hydrologic state of the AA at the time of assessment?

☐ ponded/inundated ☐ saturated soil, but no surface water ☐ moist ☑ dry

What is the apparent hydrologic regime of the wetland?

Perennial slope wetlands contain surface water year-round, *seasonal* slope wetlands support surface water for 4-11 months of the year (in > 5 out of 10 years.) *Temporarily flooded* slope wetlands possess surface water between 2 weeks and 4 months of the year.

☐ perennial ☐ seasonal ☑ temporarily flooded

Photo Identification Numbers and Description:

	Photo ID No.	Description
1	1	Looking North into the AA
2	2	Looking South into the AA 37.6985416 -122.4646291
3	3	Looking East into the AA
4	4	Looking West into the AA
5		
6		
7		
8		
9		
10		

Site Location Description (including County and USGS Topographic Quadrangle if known):

non-channeled wet meadow with ~~Bdon~~ berms that appear to direct flows + lined small channel to flow out of wetland depression

Comments:

Scoring Sheet: Slope Wetlands

AA Name: 10				**Date**	
Attribute 1: Buffer and Landscape Context				**Comments**	
Aquatic Area Abundance (D)		Alpha: D	Numeric: 3	15% Avg	
Buffer					
Buffer submetric A: Percent of AA with Buffer	Alpha: A	Numeric: 12		100% buffer	
Buffer submetric B: Average Buffer Width	Alpha: B	Numeric: 9		194 m Avg	
Buffer submetric C: Buffer Condition	Alpha: C	Numeric: 6		NN veg	
Raw Attribute Score = D+[C x (A x B)½]½ (do not round)			10.92	**Final Attribute Score = (Raw Score/24) x 100**	45.5
Attribute 2: Hydrology					
Water Source		Alpha: B	Numeric: 9		
Hydroperiod		C	6		
Hydrologic Connectivity (all but Channeled)		C	6		
Hydro Connectivity submetric A: Bank Height Ratio	Alpha: —	Numeric: —			
Hydro Connectivity submetric B: Percent Dewatered	~~C~~	~~6~~			
Hydrologic Connectivity for Channeled (*avg. of submetrics A-B*)			—		
Raw Attribute Score = sum of numeric scores			21	**Final Attribute Score = (Raw Score/36) x 100**	58.33
Attribute 3: Physical Structure					
Structural Patch Richness		Alpha: D	Numeric: 3		
Topographic Complexity		B	9		
Raw Attribute Score = sum of numeric scores			12	**Final Attribute Score = (Raw Score/24) x 100**	50
Attribute 4: Biotic Structure					
Plant Community Composition (submetric A is not applicable for Non-Channeled meadows)					
Plant Community submetric A: Number of plant layers	Alpha: —	Numeric: —			
Plant Community submetric B: Number of Co-dominant species	A	12			
Plant Community submetric C: Percent Invasive species	B	9			
Plant Comm. Composition (*avg. of submetrics A-C or B-C*)			10.5		
Horizontal Interspersion		Alpha: B	Numeric: 9		
Plant Life Forms		B	9		
Raw Attribute Score = sum of numeric scores			28.5	**Final Attribute Score = (Raw Score/36) x 100**	79.17
Overall AA Score (average of four final Attribute Scores)				58	

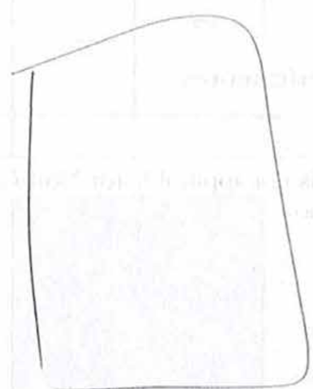
Aquatic Area Abundance Worksheet

Percentage of Transect Lines that Contains Wetland or Aquatic Habitat of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	40
South	0
East	13 + 3.2 = 16.2
West	3.4
Average Percentage of Transect Length That Is an Aquatic Feature	14.9

Percent of AA with Buffer Worksheet

In the space provided on the datasheet, make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

all sides have buffer



Worksheet for calculating Average Buffer Width of AA

Line	Buffer Width (m)
A	250
B	250
C	250
D	112
E	100
F	150
G	250
H	186
Average Buffer Width	194

Channeled Wet Meadow and Channeled Forested Slope Wetland Bank Height Calculation Worksheet

The following 4 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.				
Steps	**Replicate Cross-sections** →	**TOP**	**MID**	**BOT**
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Measure the distance between the right and left bankfull contours.			
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; measure the height of the line above the thalweg (the deepest part of the channel).			
3: Estimate max. bank height	Identify the location of the top of bank. Measure the height between the thalweg and the top of bank location.			
4: Calculate bank height ratio.	Divide the bank height (Step 3) by the bankfull depth (Step 2). Keep two significant figures.			
5: Calculate average bank height ratio.	Calculate the average results for Step 4 for all 3 replicate cross-sections. Enter the average result here and use it in Table 14. Keep two significant figures (hundredths).			

Worksheet for Assessing Hydrologic Connectivity: Percent Dewatered for Slope Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Intact Hydrologic Connectivity	☐ No channel incision ☐ Vigor of plant species, especially hydrophytes ☐ Low or no cover of upland plant species ☐ No rill or gully development ☐ No areas of bare soil ☒ No soil cracking ☐ No changes in soil structure or moisture content ☐ Surface water present on the wetland plain late into the summer season ☐ Groundwater emerging ☐ Moist peat soil ☐ Floating fens ☐ Evidence of regular inundation on floodplain slope wetlands (wrack etc.)
Indicators of Degraded Hydrologic Connectivity (dewatering)	☐ Evidence of channel incision, including low entrenchment ratios, undercut banks, block bank failures, sloughing banks, hanging or exposed roots, channel scoured to bedrock or dense clay, active knickpoints, active gully erosion, active headcutting ☐ Stress or mortality of plants ☐ Presence of xeric plant species ☐ Development of rills or gullies on the wetland surface ☒ Areas of bare soil ☐ Areas of soil cracking ☐ Drying of peat ☐ Decrease in vigor of hydrophytes ☐ Changes in plant or animal species or communities ☐ Changes in soil structure or moisture content ☐ More than 5% cover in the AA of upland conifer species (e.g. Douglas fir (*Pseudotsuga menziesii*), Lodgepole Pine (*Pinus contorta*), see special note) ☐ More than 5% cover in the AA of upland broadleaf tree species (e.g. tanoak (*Notholithocarpus densiflorus*), coast live oak (*Quercus agrifolia*) ☐ More than 5% cover in the AA of upland shrub species (e.g. sagebrush (*Artemisia tridentate*), rabbitbrush (*Ericameria nauseosa*), French broom (*Genista monspessulana*) ☐ More than 5% cover in the AA of upland vines (e.g. English ivy (*Hedera helix*), Himalayan blackberry (*Rubus armeniacus*), field bindweed (*Convolvulus arvensis*) ☐ More than 5% cover in the AA of upland grasses (e.g. ripgut brome (*Bromus diandrus*), cheatgrass (*Bromus tectorum*), needlegrass (*Stipa pulchra*) ☐ More than 5% cover in the AA of upland herbs and forbs (e.g. ragweed (*Ambrosia artemisiifolia*), mustard (*Brassica rapa*), yellow star thistle (*Centaurea solstitialis*)
Overall area of the wetland showing evidence of dewatering	**☐ No dewatering** **☐ <25% dewatered** **☐ 25-50% dewatered** **☒ >50% dewatered**

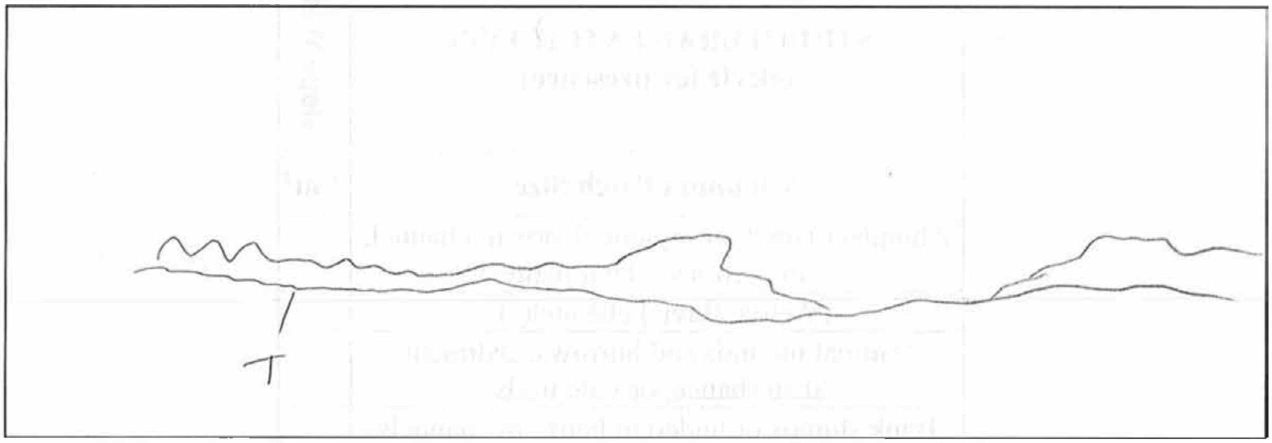
Structural Patch Type Worksheet for Slope Wetlands

Check each type of patch that is observed in the AA and use the total number of observed patches in Table 17 below.

STRUCTURAL PATCH TYPE (circle for presence)	Slope Wetland
Minimum Patch Size	**3 m^2**
Abundant wrack or organic debris in channel, or across wetland plain	
Active fluvial channel(s)	
Animal mounds and burrows, sediment disturbance, or vole trails	
Bank slumps or undercut banks in channels	
Beaver dams or lodges	
Boulders or bedrock outcrop	
Cutoff channels or oxbows	
Filamentous macroalgae or algal mats	
Gravel, cobble, or sand	
Large woody debris	
Moss	
Non-vegetated flats or bare ground	✓
Pannes or pools on wetland surface	
Plant hummocks and/or tussocks	
Sediment mounds around the bases of shrubs or trees	
Sediment splays	
Soil cracks	
Springs or upwelling groundwater	
Standing snags (at least 3 m tall)	
Submerged vegetation (in channels or open water)	
Swales	✓
Thatch	
Variegated, convoluted, or crenulated upland edge (not broadly arcuate or mostly straight)	
Total Possible	**23**
No. Observed Patch Types (enter here and use in Table 17 below)	2

Worksheet for AA Topographic Complexity

Complete a sketch of the topographic profile of the AA along a cross section perpendicular to the overall slope of wetland within the AA. Draw the section to include both AA boundaries. Include both the ground surface and the vegetation roughness. Indicate the letter grade for each component in the space below the sketch. Note the AA boundaries and important topographic features.



Physical topographic complexity score __B__ Vegetation roughness score __B__

Plant Community Metric Worksheet: Co-dominant species richness for Channeled Wet Meadow, Channeled Forested Slope Wetlands, Non-channeled Forested Slope Wetlands, and Seeps and Springs

(A dominant species represents ≥10% *relative* cover)

Special Note:

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming	Invasive?	Short (<0.3 m)	Invasive?
		Polypogon mon.	Y
		Chenopodium murale	N
		Plantago c.	N
		Salt grass	N
Medium (0.3-1.0 m)	**Invasive?**	**Tall (1.0-3.0 m)**	**Invasive?**
Melilotus albus	N		
Cyperus er.	N		
Schoenoplectus	N		
Juncus balt	N		
Very Tall (>3.0 m)	**Invasive?**	**Total number of co-dominant species for all layers combined (enter here and see Table 21)**	9
Salix sp	N		
		Percent Invasion (enter here and see Table 21)	11%

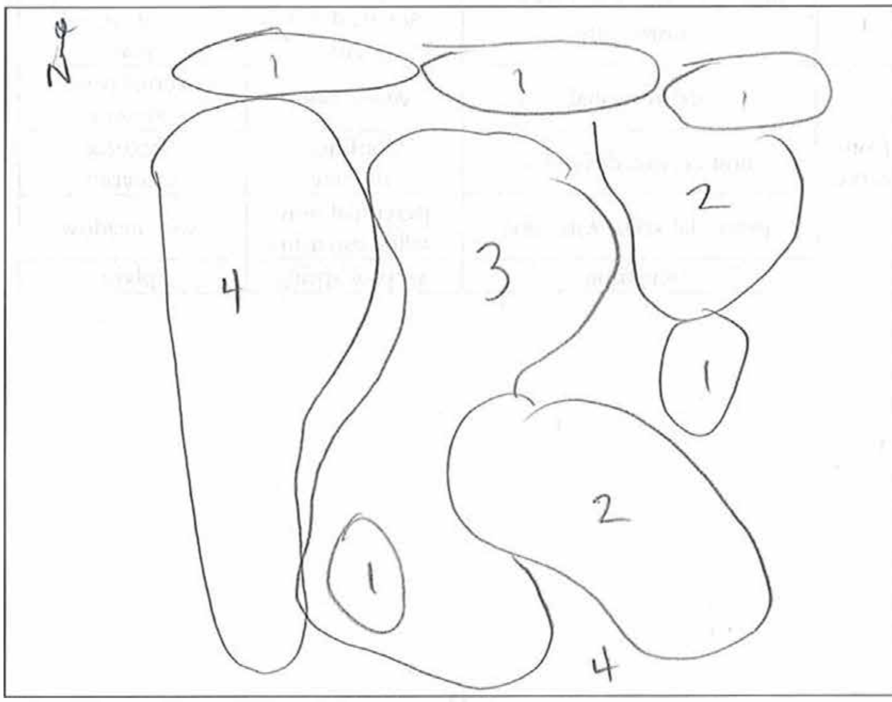
Non-Channeled Wet Meadows Worksheet for Co-dominant Plant Species

Note: A dominant species represents ≥10% *relative* cover. Count species only once when calculating any Plant Community sub-metric. Invasive species are listed in Appendix IV of the User's Manual.

Co-dominant Species	Check if Invasive
polypogon mon	✓
Cheno podium murale	
Plantago	
salix sp	
melitotus albus	
cyperus	
Schoenoplectus	
Juncus	
Total Number of Co-dominants	9
Total Number of Invasive Co-dominant species	1
Percent Invasive Species (round to nearest integer)	11%

Horizontal Interspersion Worksheet

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 17 that best represents the AA overall.



Assigned zones:

1) willow

2) cyperus

3) melilotus

4) polypogon mon./ chenopodium

5)

6)

Plant Life Forms Worksheet

Life Form	Present in > 5% of AA?
Bryophytes (mosses, liverworts, hornworts)	
Coniferous Trees	
Deciduous Broadleaf Trees	y
Evergreen Broadleaf Trees	
Ferns	
Grasses	y
Herbs/Forbs	y
Lichens or Fungi	
Sedges/Rushes	y
Shrubs	
Vines	
Total Number of life forms	4

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	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Worksheet: 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		

Basic Information Sheet: Depressional Wetlands

Assessment Area Name: AA-7	
Project Name:	
Assessment Area ID #: 7	
Project ID #:	**Date:** 9/10/19
Assessment Team Members for This AA	
MAL, MCM	

AA Category:

Pre-Restoration Post-Restoration Pre-Mitigation Post-Mitigation

☑ Pre-Impact ☐ Post-Impact ☐ Training ☐ Ambient

☐ Reference ☐ Other:

Origin of Wetland (if known):

☑ Natural system ☐ Artificial system

Type of Management (if known):

☐ waterfowl/birds ☐ amphibians ☐ general wildlife ☐ sediment ☐ water quality ☐ stormwater

☐ water supply (agriculture) ☐ water supply (livestock) ☐ not managed ☐ other:

Which best describes the type of depressional wetland?

☑ freshwater marsh ☐ alkaline marsh ☐ brackish marsh

☐ other (specify):

AA Encompasses:

☑ entire wetland ☐ portion of the wetland

Which best describes the hydrologic state of the wetland at the time of assessment?

ponded/inundated saturated soil, but no surface water dry

What is the apparent hydrologic regime of the wetland?

Perennially flooded systems contain surface water year-round, *seasonally flooded* depressional wetlands are defined as supporting surface water for 4-11 months of the year (in > 5 out of 10 years.) *Temporarily flooded* depressional wetlands possess surface water between 2 weeks and 4 months of the year.

perennially flooded seasonally flooded temporarily flooded

Does your wetland connect with the floodplain of a nearby stream? yes no

(system subject to overbank flow, a dammed stream does not count)

Does the wetland have a defined on undefined outlet? defined undefined

Does the wetland have a defined on undefined inlet? defined undefined

Are the inlet and outlet at the same location? □ yes □ no

Is the topographic basin of the wetland distinct **or** indistinct **?**

An *indistinct* topographic basin is one that lacks obvious boundaries between wetland and upland. Examples of such features are seasonal, depressional wetlands in very low-gradient landscapes.

Photo Identification Numbers and Description:

Photos should be taken from edge of AA looking toward the centroid of AA

	Photo ID No.	Description	Latitude	Longitude	Datum
1	1	(to) North	37.6976173	-122.4029822	
2	2	(to) East			
3	3	(to) South			
4	4	(to) West			
5	1	DS looking US	37.696297	-122.402975	
6					
7					
8					
9					
10					

Site Location Description and Land Use:

Historical fill site. Adjacent to train tracks. Dominated by salt grass. Pampas grass lining perimeter, mostly. Sparse willows @ northern end. Evidence of past vehicle movement through AA.

Comments:

Scoring Sheet: Depressional Wetlands

AA Name: 7	Date:

Attribute 1: Buffer and Landscape Context (pp. 8-15)			Alpha.	Numeric	Comments
Aquatic Area Abundance Score (D)			D	3	
Buffer:	Alpha.	Numeric			
Buffer submetric A: Percent of AA with Buffer	A	12			
Buffer submetric B: Average Buffer Width	B	9			
Buffer submetric C: Buffer Condition	C	6			
Raw Attribute Score = D+[C x (A x B)^{½}]^{½}				10.92	**Final Attribute Score = (Raw Score/24) x 100** 45.5

Attribute 2: Hydrology (pp. 16-21)	Alpha.	Numeric	Comments
Water Source	B	9	Surrounding Berms, railroad berm, affluent swale to the north
Hydroperiod	C	6	Swale north of AA
Hydrologic Connectivity	C	6	Berms, RR
Raw Attribute Score = sum of numeric scores		21	**Final Attribute Score = (Raw Score/36) x 100** 58.33

Attribute 3: Physical Structure (pp. 22-28)	Alpha.	Numeric	Comments
Structural Patch Richness	D	3	Algae, large woody debris, Island
Topographic Complexity	C	6	Lightly
Raw Attribute Score = sum of numeric scores		9	**Final Attribute Score = (Raw Score/24) x 100** 37.5

Attribute 4: Biotic Structure (pp. 29-39)			Alpha.	Numeric	Comments
Plant Community Composition (based on submetrics A-C)	Alpha.	Numeric			
Plant Community submetric A: Number of plant layers	B	9			3 layers
Plant Community submetric B: Number of Co-dominant species	D	3			4 Dominants
Plant Community submetric C: Percent Invasion	D	3			50%
Plant Community Composition Metric *(numeric average of submetrics A-C)*				5	
Horizontal Interspersion			C	6	
Vertical Biotic Structure			D	3	No canopy
Raw Attribute Score = sum of numeric scores				14	**Final Attribute Score = (Raw Score/36) x 100** 38.89
Overall AA Score (average of four final Attribute Scores)					45

Worksheet for Aquatic Area Abundance Metric (Method 1)

Percentage of Transect Lines that Contains Aquatic Area of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	50
South	3
East	3
West	0
Average Percentage of Transect Length That Is an Aquatic Feature	14

Percent of AA with Buffer Worksheet.

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

Percent of AA with Buffer: 100 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	250
B	250
C	55
D	55
E	55
F	250
G	200
H	250
Average Buffer Width *Round to the nearest whole number (integer)*	170

Structural Patch Type Worksheet for Depressional Wetlands

Check each type of patch that is observed in the AA and use the total number of observed patches in Table 15.

STRUCTURAL PATCH TYPE (circle for presence)	**Depressional**
Minimum Patch Size	**3 m^2**
Abundant wrack or organic debris in channel, on floodplain, or across depressional wetland plain	
Animal mounds and burrows	
Bank slumps or undercut banks in channels or along shoreline	
Cobbles and Boulders	
Concentric or parallel high water marks	
Filamentous macroalgae or algal mats	✓
Islands (mostly above high-water)	✓
Large woody debris	✓
Non-vegetated flats or bare ground (sandflats, mudflats, gravel flats, etc.)	
Open water	
Plant hummocks and/or sediment mounds	
Soil cracks	
Standing snag(s) (1 or more at least 3 m tall)	
Submerged vegetation	
Swales on floodplain or along shoreline	
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	
Woody vegetation in water	
Total Possible	**17**
No. Observed Patch Types (enter here and use in Table 15 below)	3

Worksheet for AA Topographic Complexity

At two locations in the AA, make a sketch of the profile from the AA boundary to AA boundary. Try to capture the major topographic features, slopes and intervening micro-topographic relief. Based on these sketches and the profiles in Figure 7, choose a description in Table 17 that best describes the overall topographic complexity of the AA.

North to South

East to West

Plant Community Metric Worksheet 2 of 8: Co-dominant species richness
(A dominant species represents ≥10% *relative* cover)

** Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

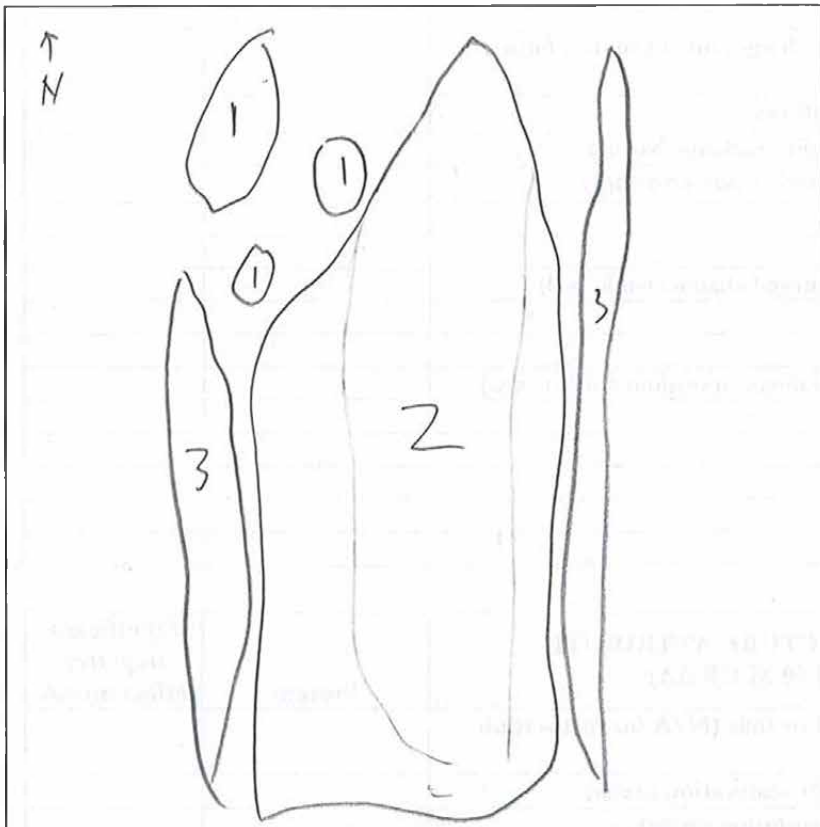
Floating or Canopy-forming	Invasive?	Short (<0.5 m)	Invasive?
		Distichlis spicata	N
		~~[illegible]~~	
		Polypogon	Y

Medium (0.5 – 1.5 m)	Invasive?	Tall (1.5 – 3.0 m)	Invasive?
		Pampas grass	Y

Very Tall (>3.0 m)	Invasive?		
Salix lasiolepis	N	Total number of co-dominant species for all layers combined (enter here and use in Table 19)	4
		Percent Invasion *Round to the nearest whole number (integer)* (enter here and use in Table 19)	50

Horizontal Interspersion Worksheet

Use the spaces below to make a sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign names to the zones and record them on the right. Based on the sketch, choose a single profile from Figure 8 that best represents the AA overall.



Assigned zones:

1) Salix lasiolepis

2) Distichlus spicata

3) Pampas grass

4)

5)

6)

Wetland disturbances and conversions Worksheet

<table>
<tr><td>Has a major disturbance occurred at this wetland?</td><td>Yes</td><td>No</td><td></td><td></td></tr>
<tr><td>If yes, was it a flood, fire, landslide, or other?</td><td>flood</td><td>fire</td><td>landslide</td><td>other</td></tr>
<tr><td>If yes, then how severe is the disturbance?</td><td>likely to affect site next 5 or more years</td><td>likely to affect site next 3-5 years</td><td colspan="2">likely to affect site next 1-2 years</td></tr>
<tr><td rowspan="4">Has this wetland been converted from another type? If yes, then what was the previous type?</td><td>depressional</td><td>vernal pool</td><td colspan="2">vernal pool system</td></tr>
<tr><td>non-confined riverine</td><td>confined riverine</td><td colspan="2">bar-built estuarine</td></tr>
<tr><td>perennial saline estuarine</td><td>perennial non-saline estuarine</td><td colspan="2">wet meadow</td></tr>
<tr><td>lacustrine</td><td>seep or spring</td><td colspan="2">playa</td></tr>
</table>

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Depressional Wetlands

Assessment Area Name: 8	
Project Name: CA HSR	
Assessment Area ID #:	
Project ID #:	**Date:** 9/10/19
Assessment Team Members for This AA	
RJ, DM	

AA Category:

☐ Pre-Restoration ☐ Post-Restoration ☐ Pre-Mitigation ☐ Post-Mitigation

☒ Pre-Impact ☐ Post-Impact ☐ Training ☐ Ambient

☐ Reference ☐ Other:

Origin of Wetland (if known):

☐ Natural system ☒ Artificial system Along RR line

Type of Management (if known):

☐ waterfowl/birds ☐ amphibians ☐ general wildlife ☐ sediment ☐ water quality ☒ stormwater ?

☐ water supply (agriculture) ☐ water supply (livestock) ☐ not managed ☐ other:

Which best describes the type of depressional wetland?

☒ freshwater marsh ☐ alkaline marsh ☐ brackish marsh

☐ other (specify):

AA Encompasses:

☒ entire wetland ☐ portion of the wetland

Which best describes the hydrologic state of the wetland at the time of assessment?

☐ ponded/inundated ☒ saturated soil, but no surface water ☐ dry

What is the apparent hydrologic regime of the wetland?

Perennially flooded systems contain surface water year-round, *seasonally flooded* depressional wetlands are defined as supporting surface water for 4-11 months of the year (in > 5 out of 10 years.) *Temporarily flooded* depressional wetlands possess surface water between 2 weeks and 4 months of the year.

☐ perennially flooded ☐ seasonally flooded ☒ temporarily flooded

Does your wetland connect with the floodplain of a nearby stream? ☐ yes ☒ no

(system subject to overbank flow, a dammed stream does not count)

Does the wetland have a defined on undefined outlet? ☐ defined ☒ undefined

Does the wetland have a defined on undefined inlet? ☐ defined ☒ undefined

Are the inlet and outlet at the same location? ☐ yes ☒ no

Is the topographic basin of the wetland ☒ distinct **or** ☐ indistinct **?**

An *indistinct* topographic basin is one that lacks obvious boundaries between wetland and upland. Examples of such features are seasonal, depressional wetlands in very low-gradient landscapes.

Photo Identification Numbers and Description:

Photos should be taken from edge of AA looking toward the centroid of AA

	Photo ID No.	Description	Latitude	Longitude	Datum
1		(to) North			
2		(to) East			
3		(to) South			
4		(to) West			
5					
6					
7					
8					
9					
10					

Site Location Description and Land Use:

Comments:

Scoring Sheet: Depressional Wetlands

AA Name: 8				Date: 9/10/19	
Attribute 1: Buffer and Landscape Context (pp. 8-15)				**Comments**	
Aquatic Area Abundance Score (D)		Alpha. D	Numeric 3	48/4=12	
Buffer:					
	Alpha.	Numeric			
Buffer submetric A: Percent of AA with Buffer	B	9		50%	
Buffer submetric B: Average Buffer Width	C	6		~112. Avg	
Buffer submetric C: Buffer Condition	C	6			
Raw Attribute Score = D+[C x (A x B)^{½}]^{½}			9.64	**Final Attribute Score = (Raw Score/24) x 100**	40.17
Attribute 2: Hydrology (pp. 16-21)					
		Alpha.	Numeric		
Water Source		B	9	RR track compacted soil + rock	
Hydroperiod		A	12		
Hydrologic Connectivity		D	3	weir on east and RR track on west	
Raw Attribute Score = sum of numeric scores			24	**Final Attribute Score = (Raw Score/36) x 100**	66.67
Attribute 3: Physical Structure (pp. 22-28)					
		Alpha.	Numeric		
Structural Patch Richness		C	6		
Topographic Complexity		C	6		
Raw Attribute Score = sum of numeric scores			12	**Final Attribute Score = (Raw Score/24) x 100**	50
Attribute 4: Biotic Structure (pp. 29-39)					
Plant Community Composition (based on submetrics A-C)					
	Alpha.	Numeric			
Plant Community submetric A: Number of plant layers	A	12			
Plant Community submetric B: Number of Co-dominant species	C	6			
Plant Community submetric C: Percent Invasion	D	3			
Plant Community Composition Metric *(numeric average of submetrics A-C)*			7		
Horizontal Interspersion		D ~~C~~	3		
Vertical Biotic Structure		C	6		
Raw Attribute Score = sum of numeric scores			16	**Final Attribute Score = (Raw Score/36) x 100**	44.44
Overall AA Score (average of four final Attribute Scores)				50	

Worksheet for Aquatic Area Abundance Metric (Method 1)

Percentage of Transect Lines that Contains Aquatic Area of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	10.6
South	20
East	16
West	26
Average Percentage of Transect Length That Is an Aquatic Feature	48.6 / 4 = 12

10.6

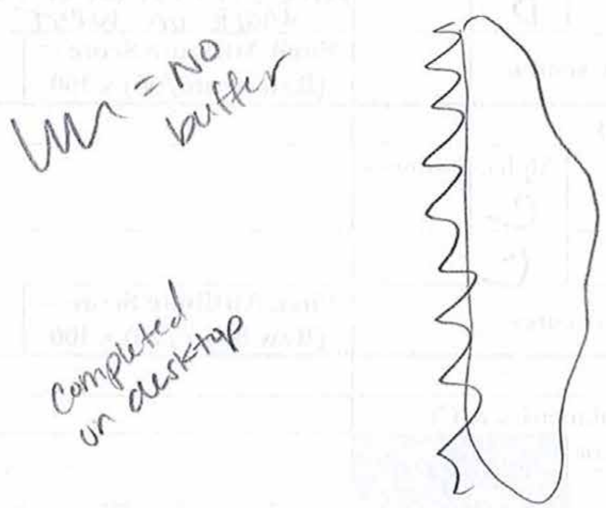
10+6

9+15+2

11
15

Percent of AA with Buffer Worksheet.

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: 50% %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	114
B	113
C	112
D	113
E	110
F	109
G	113
H	112
Average Buffer Width ***Round to the nearest whole number (integer)***	112.5/14

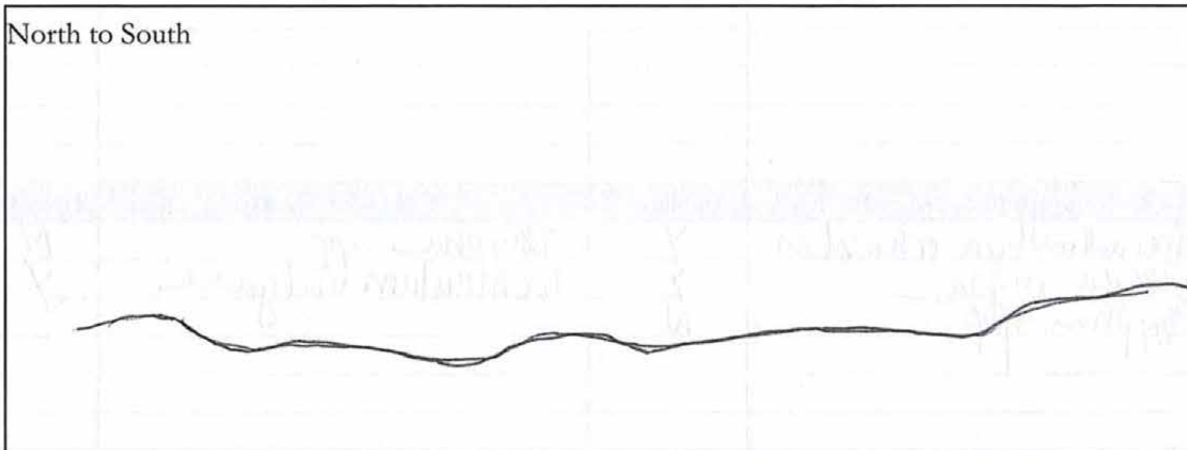
Structural Patch Type Worksheet for Depressional Wetlands

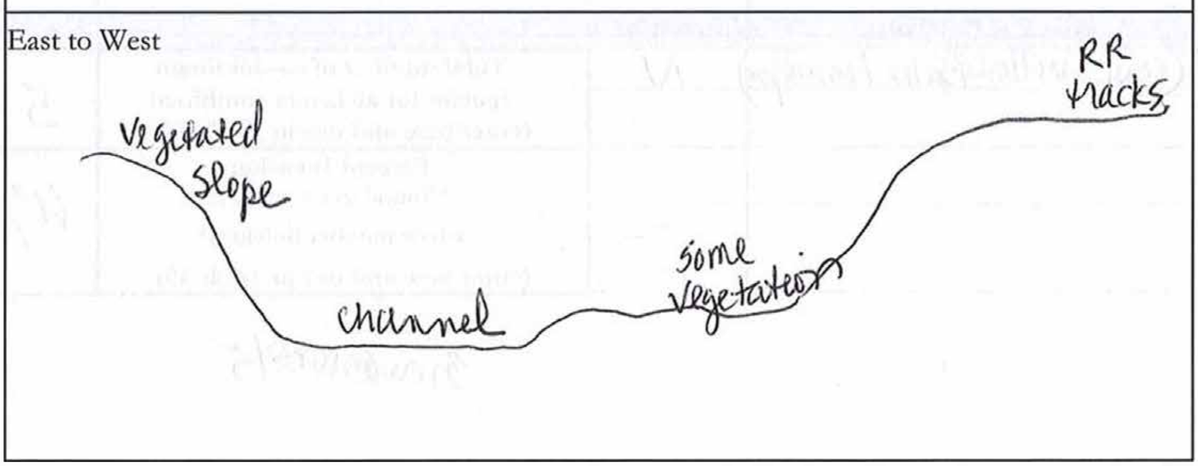
Check each type of patch that is observed in the AA and use the total number of observed patches in Table 15.

STRUCTURAL PATCH TYPE (circle for presence)	Depressional
Minimum Patch Size	**3 m^2**
Abundant wrack or organic debris in channel, on floodplain, or across depressional wetland plain	✓
Animal mounds and burrows	
Bank slumps or undercut banks in channels or along shoreline	
Cobbles and Boulders	✓
Concentric or parallel high water marks	
Filamentous macroalgae or algal mats	
Islands (mostly above high-water)	
Large woody debris	
Non-vegetated flats or bare ground (sandflats, mudflats, gravel flats, etc.)	✓
Open water	
Plant hummocks and/or sediment mounds	
Soil cracks	
Standing snag(s) (1 or more at least 3 m tall)	
Submerged vegetation	
Swales on floodplain or along shoreline	
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	
Woody vegetation in water	✓
Total Possible	**17**
No. Observed Patch Types (enter here and use in Table 15 below)	4

Worksheet for AA Topographic Complexity

At two locations in the AA, make a sketch of the profile from the AA boundary to AA boundary. Try to capture the major topographic features, slopes and intervening micro-topographic relief. Based on these sketches and the profiles in Figure 7, choose a description in Table 17 that best describes the overall topographic complexity of the AA.





Plant Community Metric Worksheet 2 of 8: Co-dominant species richness
(A dominant species represents ≥10% *relative* cover)

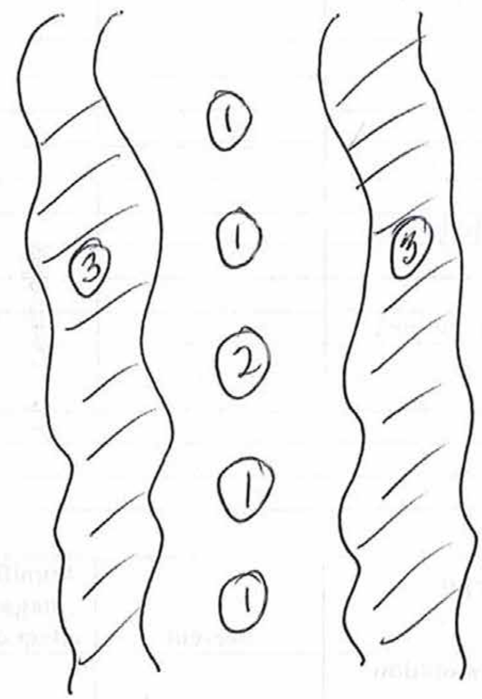
* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming	Invasive?	Short (<0.5 m)	Invasive?
		Helminthotheca echoides	Y
Medium (0.5 – 1.5 m)	**Invasive?**	**Tall (1.5 – 3.0 m)**	**Invasive?**
Helminthotheca echiodes	Y	Typha spp	N
Brassica nigra	Y	Foeniculum Vulgare	Y
Typha spp	N		
Very Tall (>3.0 m)	**Invasive?**		
Arroyo willow (Salix lasiolepis)	N	**Total number of co-dominant species for all layers combined (enter here and use in Table 19)**	5
		Percent Invasion *Round to the nearest whole number (integer)* (enter here and use in Table 19)	60%

3 invasives/5

Horizontal Interspersion Worksheet

Use the spaces below to make a sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign names to the zones and record them on the right. Based on the sketch, choose a single profile from Figure 8 that best represents the AA overall.



Assigned zones:

1) Typha spp
2) Bare
3) Mustard/Bristly ox tongue
4)
5)
6)

Wetland disturbances and conversions Worksheet

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	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Depressional Wetlands

Assessment Area Name: 9	
Project Name:	
Assessment Area ID #:	
Project ID #:	**Date:** 9/11/19
Assessment Team Members for This AA	
D Maniscalco, M. Lewis	

AA Category:

Pre-Restoration Post-Restoration Pre-Mitigation Post-Mitigation

☒ Pre-Impact ☐ Post-Impact ☐ Training ☐ Ambient

☐ Reference ☐ Other:

Origin of Wetland (if known): RR track adjacent to AA

☐ Natural system ☒ Artificial system

Type of Management (if known):

☐ waterfowl/birds ☐ amphibians ☐ general wildlife ☐ sediment ☐ water quality ☐ stormwater

☐ water supply (agriculture) ☐ water supply (livestock) ☒ not managed ☐ other:

Which best describes the type of depressional wetland?

☒ freshwater marsh ☐ alkaline marsh ☐ brackish marsh

☐ other (specify):

AA Encompasses:

☒ entire wetland ☐ portion of the wetland

Which best describes the hydrologic state of the wetland at the time of assessment?

ponded/inundated saturated soil, but no surface water dry

What is the apparent hydrologic regime of the wetland?

Perennially flooded systems contain surface water year-round, *seasonally flooded* depressional wetlands are defined as supporting surface water for 4-11 months of the year (in > 5 out of 10 years.) *Temporarily flooded* depressional wetlands possess surface water between 2 weeks and 4 months of the year.

perennially flooded seasonally flooded temporarily flooded

Does your wetland connect with the floodplain of a nearby stream? yes no

(system subject to overbank flow, a dammed stream does not count)

Does the wetland have a defined on undefined outlet? defined undefined

Does the wetland have a defined on undefined inlet? defined undefined

Are the inlet and outlet at the same location? ☐ yes ☒ no

Is the topographic basin of the wetland distinct **or** indistinct ?

An *indistinct* topographic basin is one that lacks obvious boundaries between wetland and upland. Examples of such features are seasonal, depressional wetlands in very low-gradient landscapes.

Photo Identification Numbers and Description:

Photos should be taken from edge of AA looking toward the centroid of AA

	Photo ID No.	Description	Latitude	Longitude	Datum
1	1	(to) North	37.69522	-122.40163	
2	2	(to) East			
3	3	(to) South			
4	4	(to) West			
5					
6					
7					
8					
9					
10					

Site Location Description and Land Use:

Historic fill site and next to RR track.

Comments:

Scoring Sheet: Depressional Wetlands

AA Name: 9			Date: 9/11/19	
Attribute 1: Buffer and Landscape Context (pp. 8-15)			**Comments**	
	Alpha.	Numeric		
Aquatic Area Abundance Score (D)	D	3	12.5 [illegible]	
Buffer:				
	Alpha.	Numeric		
Buffer submetric A: Percent of AA with Buffer	B	9	105% [illegible]	
Buffer submetric B: Average Buffer Width	B	9	169m avg width	
Buffer submetric C: Buffer Condition	C	6		
Raw Attribute Score = D+[C x (A x B)$^{1/2}$]$^{1/2}$		10.35	**Final Attribute Score = (Raw Score/24) x 100**	43.12
Attribute 2: Hydrology (pp. 16-21)				
	Alpha.	Numeric		
Water Source	B	9		
Hydroperiod	A	12		
Hydrologic Connectivity	D	3		
Raw Attribute Score = sum of numeric scores		24	**Final Attribute Score = (Raw Score/36) x 100**	66.67
Attribute 3: Physical Structure (pp. 22-28)				
	Alpha.	Numeric		
Structural Patch Richness	D	3		
Topographic Complexity	C	6		
Raw Attribute Score = sum of numeric scores		9	**Final Attribute Score = (Raw Score/24) x 100**	37.5
Attribute 4: Biotic Structure (pp. 29-39)				
Plant Community Composition (based on submetrics A-C)				
	Alpha.	Numeric		
Plant Community submetric A: Number of plant layers	A	12		
Plant Community submetric B: Number of Co-dominant species	C	6		
Plant Community submetric C: Percent Invasion	D	3		
Plant Community Composition Metric *(numeric average of submetrics A-C)*				
Horizontal Interspersion	C	6		
Vertical Biotic Structure	D	3		
Raw Attribute Score = sum of numeric scores		16	**Final Attribute Score = (Raw Score/36) x 100**	44.44
Overall AA Score (average of four final Attribute Scores)			48	

Worksheet for Aquatic Area Abundance Metric (Method 1)

Percentage of Transect Lines that Contains Aquatic Area of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	30
South	11.2
East	9.6
West	0
Average Percentage of Transect Length That Is an Aquatic Feature	50.8 = 12.5

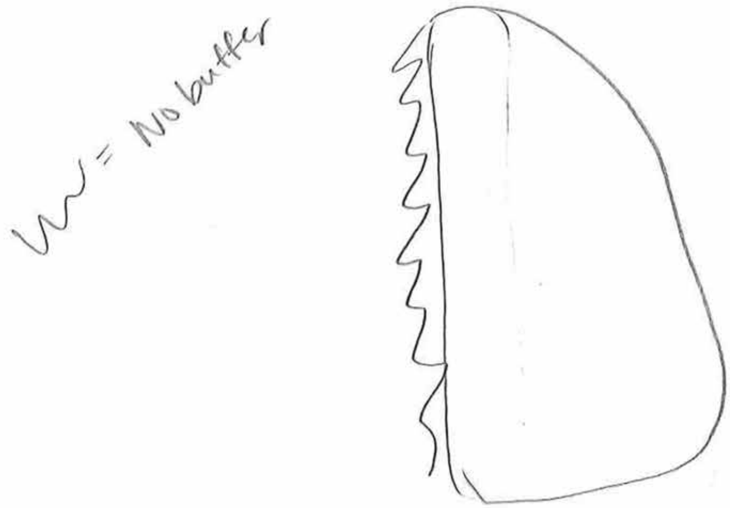
4

30

27.6

Percent of AA with Buffer Worksheet.

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: 65 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	167
B	134
C	137
D	169
E	163
F	203
G	169
H	206
Average Buffer Width *Round to the nearest whole number (integer)*	169

Structural Patch Type Worksheet for Depressional Wetlands

Check each type of patch that is observed in the AA and use the total number of observed patches in Table 15.

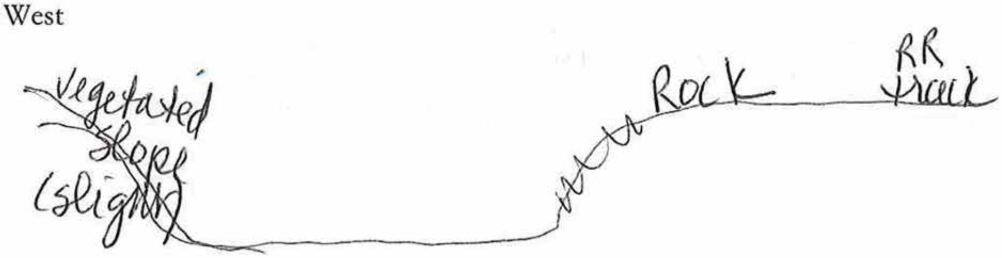
STRUCTURAL PATCH TYPE (circle for presence)	**Depressional**
Minimum Patch Size	**3 m^2**
Abundant wrack or organic debris in channel, on floodplain, or across depressional wetland plain	1
Animal mounds and burrows	
Bank slumps or undercut banks in channels or along shoreline	
Cobbles and Boulders	
Concentric or parallel high water marks	
Filamentous macroalgae or algal mats	
Islands (mostly above high-water)	
Large woody debris	
Non-vegetated flats or bare ground (sandflats, mudflats, gravel flats, etc.)	
Open water	
Plant hummocks and/or sediment mounds	
Soil cracks	
Standing snag(s) (1 or more at least 3 m tall)	
Submerged vegetation	
Swales on floodplain or along shoreline	1
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	
Woody vegetation in water	
Total Possible	**17**
No. Observed Patch Types (enter here and use in Table 15 below)	2

Worksheet for AA Topographic Complexity

At two locations in the AA, make a sketch of the profile from the AA boundary to AA boundary. Try to capture the major topographic features, slopes and intervening micro-topographic relief. Based on these sketches and the profiles in Figure 7, choose a description in Table 17 that best describes the overall topographic complexity of the AA.

North to South

East to West



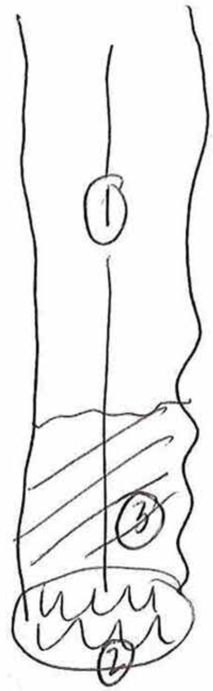
Plant Community Metric Worksheet 2 of 8: Co-dominant species richness
(A dominant species represents ≥10% *relative* cover)

** Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming	Invasive?	Short (<0.5 m)	Invasive?
		Himalayan blackberry	Y
Medium (0.5 – 1.5 m)	**Invasive?**	**Tall (1.5 – 3.0 m)**	**Invasive?**
Bristly oxtongue	Y	Foeniculum vulgare	Y
Brassica negra	Y		
Very Tall (>3.0 m)	**Invasive?**		
Arroyo-Salix lasiolepis	N	**Total number of co-dominant species for all layers combined (enter here and use in Table 19)**	5
		Percent Invasion *Round to the nearest whole number (integer)* (enter here and use in Table 19)	80%

Horizontal Interspersion Worksheet

Use the spaces below to make a sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign names to the zones and record them on the right. Based on the sketch, choose a single profile from Figure 8 that best represents the AA overall.



Assigned zones:

1) Bristly oxtongue
2) Willow
3) Mustard
4)
5)
6)

Wetland disturbances and conversions Worksheet

Has a major disturbance occurred at this wetland?	Yes	No		
If yes, was it a flood, fire, landslide, or other?	flood	fire	landslide	other - RR track

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? Unknown	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

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Scoring Sheet: Depressional Wetlands

AA Name: 10					Date: 9/11/19
Attribute 1: Buffer and Landscape Context (pp. 8-15)					**Comments**
Aquatic Area Abundance Score (D)			Alpha.	Numeric	
			D	3	
Buffer:					
Buffer submetric A: Percent of AA with Buffer	Alpha.	Numeric			100% buffered
	A	12			
Buffer submetric B: Average Buffer Width	B	9			133m avg width
Buffer submetric C: Buffer Condition	C	6			
Raw Attribute Score = $D+[C \times (A \times B)^{1/2}]^{1/2}$				10.89	**Final Attribute Score = (Raw Score/24) x 100** 45.4
Attribute 2: Hydrology (pp. 16-21)					
			Alpha.	Numeric	
Water Source			B	9	
Hydroperiod			A	12	
Hydrologic Connectivity			D	3	
Raw Attribute Score = sum of numeric scores				24	**Final Attribute Score = (Raw Score/36) x 100** 66.67
Attribute 3: Physical Structure (pp. 22-28)					
			Alpha.	Numeric	
Structural Patch Richness			C	6	
Topographic Complexity			C	6	
Raw Attribute Score = sum of numeric scores				12	**Final Attribute Score = (Raw Score/24) x 100** 50
Attribute 4: Biotic Structure (pp. 29-39)					
Plant Community Composition (based on submetrics A-C)					
	Alpha.	Numeric			
Plant Community submetric A: Number of plant layers	B	9			
Plant Community submetric B: Number of Co-dominant species	D	3			
Plant Community submetric C: Percent Invasion	D	3			
Plant Community Composition Metric *(numeric average of submetrics A-C)*				5	
Horizontal Interspersion			C	6	
Vertical Biotic Structure			D	3	No overlap - all willows
Raw Attribute Score = sum of numeric scores				14	**Final Attribute Score = (Raw Score/36) x 100** 38.89
Overall AA Score (average of four final Attribute Scores)					50

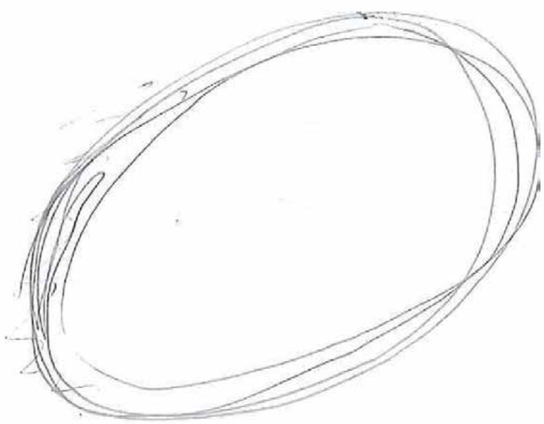
Worksheet for Aquatic Area Abundance Metric (Method 1)

Percentage of Transect Lines that Contains Aquatic Area of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	10
South	12.6
East	3.6
West	0
Average Percentage of Transect Length That Is an Aquatic Feature	1.3

Percent of AA with Buffer Worksheet.

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

AA - in buffer



Percent of AA with Buffer: 100 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	250
B	204
C	127
D	150
E	139
F	133
G	26
H	37
Average Buffer Width *Round to the nearest whole number (integer)*	133

Structural Patch Type Worksheet for Depressional Wetlands

Check each type of patch that is observed in the AA and use the total number of observed patches in Table 15.

STRUCTURAL PATCH TYPE (circle for presence)	**Depressional**
Minimum Patch Size	**3 m²**
Abundant wrack or organic debris in channel, on floodplain, or across depressional wetland plain	1
Animal mounds and burrows	
Bank slumps or undercut banks in channels or along shoreline	
Cobbles and Boulders	
Concentric or parallel high water marks	
Filamentous macroalgae or algal mats	
Islands (mostly above high-water)	1
Large woody debris	1
Non-vegetated flats or bare ground (sandflats, mudflats, gravel flats, etc.)	
Open water	
Plant hummocks and/or sediment mounds	
Soil cracks	
Standing snag(s) (1 or more at least 3 m tall)	
Submerged vegetation	
Swales on floodplain or along shoreline	1
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	
Woody vegetation in water	
Total Possible	**17**
No. Observed Patch Types (enter here and use in Table 15 below)	4

Worksheet for AA Topographic Complexity

At two locations in the AA, make a sketch of the profile from the AA boundary to AA boundary. Try to capture the major topographic features, slopes and intervening micro-topographic relief. Based on these sketches and the profiles in Figure 7, choose a description in Table 17 that best describes the overall topographic complexity of the AA.

North to South

East to West

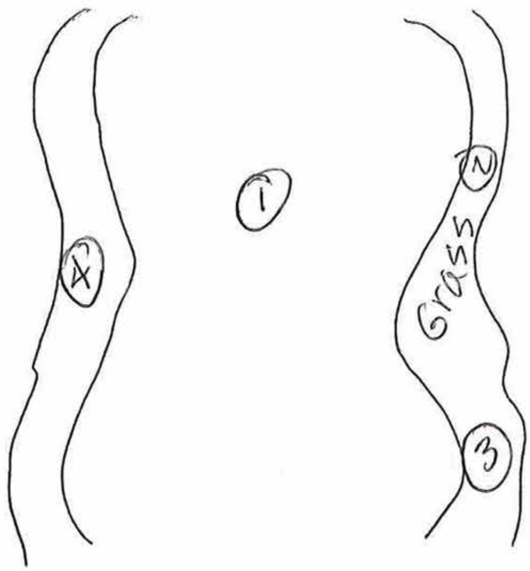
Plant Community Metric Worksheet 2 of 8: Co-dominant species richness
(A dominant species represents ≥10% *relative* cover)

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming	Invasive?	Short (<0.5 m)	Invasive?
Medium (0.5 – 1.5 m)	**Invasive?**	**Tall (1.5 – 3.0 m)**	**Invasive?**
Bristly oxtongue	Y	Fennel	Y
Very Tall (>3.0 m)	**Invasive?**		
Salix laepsolis	N	Total number of co-dominant species for all layers combined (enter here and use in Table 19)	3
		Percent Invasion *Round to the nearest whole number (integer)* (enter here and use in Table 19)	66%

Horizontal Interspersion Worksheet

Use the spaces below to make a sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign names to the zones and record them on the right. Based on the sketch, choose a single profile from Figure 8 that best represents the AA overall.



Assigned zones:

1) Willows
2) Grassland
3) French broom
4) Oxtongue/fennel
5)
6)

Wetland disturbances and conversions Worksheet

Has a major disturbance occurred at this wetland?	Yes	No		
If yes, was it a flood, fire, landslide, or other?	flood	fire	landslide	other RR
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	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Depressional Wetlands

Assessment Area Name: AA-11

Project Name: HSR FJ

Assessment Area ID #:

Project ID #: | **Date:** SEPT 10 2019

Assessment Team Members for This AA

RJV, MCM, MAL, DCM

AA Category:

Pre-Restoration | Post-Restoration | Pre-Mitigation | Post-Mitigation

☒ Pre-Impact ☐ Post-Impact ☐ Training ☐ Ambient

☐ Reference ☐ Other:

Origin of Wetland (if known): ~~UNKNOWN~~

☐ Natural system ☒ Artificial system

Type of Management (if known):

☐ waterfowl/birds ☐ amphibians ☐ general wildlife ☐ sediment ☐ water quality ☐ stormwater

☐ water supply (agriculture) ☐ water supply (livestock) ☐ not managed ☐ other: UNKNOWN

Which best describes the type of depressional wetland?

☒ freshwater marsh ☐ alkaline marsh ☐ brackish marsh

☐ other (specify):

AA Encompasses:

☒ entire wetland ☐ portion of the wetland

Which best describes the hydrologic state of the wetland at the time of assessment?

ponded/inundated saturated soil, but no surface water dry

What is the apparent hydrologic regime of the wetland?

Perennially flooded systems contain surface water year-round, *seasonally flooded* depressional wetlands are defined as supporting surface water for 4-11 months of the year (in > 5 out of 10 years.) *Temporarily flooded* depressional wetlands possess surface water between 2 weeks and 4 months of the year.

perennially flooded seasonally flooded temporarily flooded

Does your wetland connect with the floodplain of a nearby stream? yes no

(system subject to overbank flow, a dammed stream does not count)

Does the wetland have a defined on undefined outlet? defined undefined

Does the wetland have a defined on undefined inlet? defined undefined

Are the inlet and outlet at the same location? □ yes □ no

Is the topographic basin of the wetland distinct **or** indistinct ?

An *indistinct* topographic basin is one that lacks obvious boundaries between wetland and upland. Examples of such features are seasonal, depressional wetlands in very low-gradient landscapes.

Photo Identification Numbers and Description:

Photos should be taken from edge of AA looking toward the centroid of AA

	Photo ID No.	Description	Latitude	Longitude	Datum
1		(to) North			
2		(to) East			
3		(to) South			
4		(to) West			
5					
6					
7					
8					
9					
10					

Site Location Description and Land Use:

Comments:

Scoring Sheet: Depressional Wetlands

AA Name: AA11			**Date:**	
Attribute 1: Buffer and Landscape Context (pp. 8-15)	Alpha.	Numeric	**Comments**	
Aquatic Area Abundance Score (D)	D	3	No aquatic areas	
Buffer:				
Buffer submetric A: Percent of AA with Buffer	A	12	100% buffer	
Buffer submetric B: Average Buffer Width	D	3	57m avg buffer length	
Buffer submetric C: Buffer Condition	C	6		
Raw Attribute Score = D+[C x (A x B)^{½}]^{½}		9	**Final Attribute Score = (Raw Score/24) x 100**	37.5
Attribute 2: Hydrology (pp. 16-21)	Alpha.	Numeric		
Water Source	B	9		
Hydroperiod	A	12		
Hydrologic Connectivity	C	6		
Raw Attribute Score = sum of numeric scores		27	**Final Attribute Score = (Raw Score/36) x 100**	75
Attribute 3: Physical Structure (pp. 22-28)	Alpha.	Numeric		
Structural Patch Richness	D	3		
Topographic Complexity	B	9		
Raw Attribute Score = sum of numeric scores		12	**Final Attribute Score = (Raw Score/24) x 100**	50
Attribute 4: Biotic Structure (pp. 29-39)				
Plant Community Composition (based on submetrics A-C)	Alpha.	Numeric		
Plant Community submetric A: Number of plant layers	B	9		
Plant Community submetric B: Number of Co-dominant species	D	3		
Plant Community submetric C: Percent Invasion	D	3		
Plant Community Composition Metric *(numeric average of submetrics A-C)*		5		
Horizontal Interspersion	C	6		
Vertical Biotic Structure	A	12		
Raw Attribute Score = sum of numeric scores		23	**Final Attribute Score = (Raw Score/36) x 100**	63.89
Overall AA Score (average of four final Attribute Scores)			57	

Worksheet for Aquatic Area Abundance Metric (Method 1)

Percentage of Transect Lines that Contains Aquatic Area of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	0
South	0
East	0
West	0
Average Percentage of Transect Length That Is an Aquatic Feature	0

Percent of AA with Buffer Worksheet.

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

100% buffer

Percent of AA with Buffer: ______ %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	250
B	62
C	37
D	12
E	5
F	8
G	14
H	71
Average Buffer Width *Round to the nearest whole number (integer)*	57

Structural Patch Type Worksheet for Depressional Wetlands

Check each type of patch that is observed in the AA and use the total number of observed patches in Table 15.

STRUCTURAL PATCH TYPE (circle for presence)	Depressional
Minimum Patch Size	**3 m^2**
Abundant wrack or organic debris in channel, on floodplain, or across depressional wetland plain	
Animal mounds and burrows	
Bank slumps or undercut banks in channels or along shoreline	
Cobbles and Boulders	
Concentric or parallel high water marks	
Filamentous macroalgae or algal mats	
Islands (mostly above high-water)	
Large woody debris	
Non-vegetated flats or bare ground (sandflats, mudflats, gravel flats, etc.)	
Open water	
Plant hummocks and/or sediment mounds	
Soil cracks	
Standing snag(s) (1 or more at least 3 m tall)	
Submerged vegetation	
Swales on floodplain or along shoreline	X
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	
Woody vegetation in water	
Total Possible	**17**
No. Observed Patch Types (enter here and use in Table 15 below)	1

Worksheet for AA Topographic Complexity

At two locations in the AA, make a sketch of the profile from the AA boundary to AA boundary. Try to capture the major topographic features, slopes and intervening micro-topographic relief. Based on these sketches and the profiles in Figure 7, choose a description in Table 17 that best describes the overall topographic complexity of the AA.

North to South

East to West

Plant Community Metric Worksheet 2 of 8: Co-dominant species richness
(A dominant species represents ≥10% *relative* cover)

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

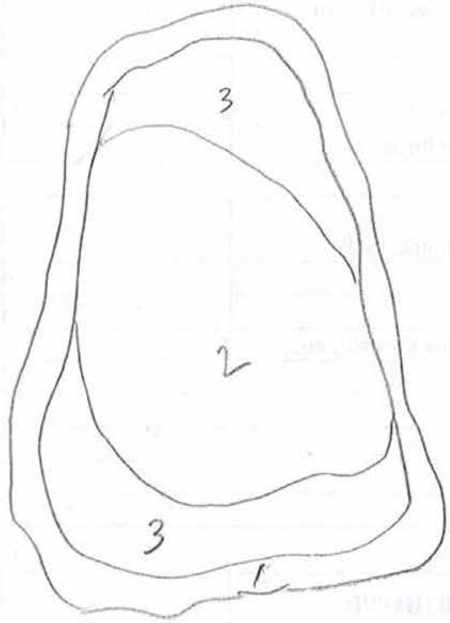
Floating or Canopy-forming	Invasive?	Short (<0.5 m)	Invasive?
		BRISTLY OX TONGUE	Y
		(HELMINTECA ECHIOIDES)	

Medium (0.5 – 1.5 m)	Invasive?	Tall (1.5 – 3.0 m)	Invasive?
BRISTLY OX TONGUE	Y	TYPHA SP.	N
EPILOBIUM CILIATUM	N	FOENICULUM VULGARE	Y

Very Tall (>3.0 m)	Invasive?		
		Total number of co-dominant species for all layers combined (enter here and use in Table 19)	4
		Percent Invasion *Round to the nearest whole number (integer)* (enter here and use in Table 19)	50

Horizontal Interspersion Worksheet

Use the spaces below to make a sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign names to the zones and record them on the right. Based on the sketch, choose a single profile from Figure 8 that best represents the AA overall.



Assigned zones:

1) UPLAND

2) TYPHA

3) CYPERUS etc.

4)

5)

6)

Wetland disturbances and conversions Worksheet

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	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

*Redrew boundary of AA due to 2 different wetland types w/in AA.

Basic Information Sheet: ~~Slope~~ Depressional Wetlands

Assessment Area Name: 12	
Project Name: CA HSR	
Assessment Area ID#:	
Project ID#:	**Date** 9/11/19
Assessment Team Members for This AA: D. Maniscalco, M. Lewis	
Assessment Area Size: —	
Surface water present during the assessment? ☐ Yes ☒ No **Flowing?** ☐ Yes ☒ No	
~~Briefly describe the hydrology of the AA (e.g., water sources, channels, swales, etc.)~~ Origin of wetland ☐ Natural ☒ Artificial - Historical fill Type of Management - not managed Does wetland connect w/ floodplain of nearby stream? ~~Yes~~ No	

AA Category:

☐ Pre-Restoration ☐ Post-Restoration ☐ Pre-Mitigation ☐ Post-Mitigation

☒ Pre-Impact ☐ Post-Impact ☐ Ambient ☐ Reference

☐ Training ☐ Other:

Which best describes the ~~type of~~ wetland?

☐ ~~Channeled Wet Meadow (assoc. with a fluvial channel)~~ ☐ Non-Channeled Wet Meadow

☐ ~~Channeled Forested Slope~~ ☐ Non-Channeled Forested Slope ☐ Seep or Spring

~~**Are peat soils present in the AA?** ☐ Yes ☐ No~~

AA Encompasses:

☒ entire wetland ☐ portion of the wetland

Which best describes the dominant hydrologic state of the AA at the time of assessment?

☒ ponded/inundated ☐ saturated soil, but no surface water ☐ moist ☒ dry

What is the apparent hydrologic regime of the wetland?

Perennial slope wetlands contain surface water year-round, *seasonal* slope wetlands support surface water for 4-11 months of the year (in > 5 out of 10 years.) *Temporarily flooded* slope wetlands possess surface water between 2 weeks and 4 months of the year.

☒ perennial ☐ seasonal ☒ temporarily flooded

- Undefined inlet and outlet
- Inlet and outlet are not in the same location
- ~~Defined~~ Distinct topographic basin

Photo Identification Numbers and Description:

	Photo ID No.	Description
1	2	Looking North into the AA 37.694351 -122.400253
2	3	Looking South into the AA 37.694079 -122.399922
3	1	Looking East into the AA 37.694403 -122.399787
4	4	Looking West into the AA 37.694153 -122.400265
5		
6		
7		
8		
9		
10		

Site Location Description (including County and USGS Topographic Quadrangle if known):

Near factory off of Tunnel Rd.

Comments:

Depressional

Scoring Sheet: ~~Slope~~ Wetlands

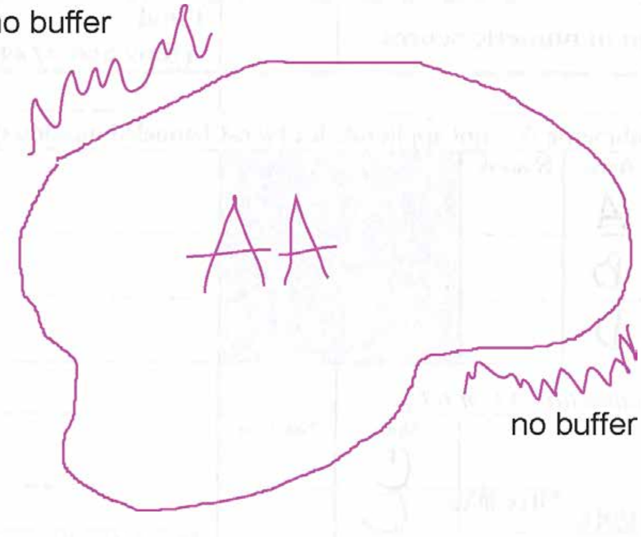
AA Name: 12					Date	9/11/19
Attribute 1: Buffer and Landscape Context					**Comments**	
			Alpha	Numeric		
Aquatic Area Abundance (D)			D	3	3%	
Buffer						
	Alpha	Numeric				
Buffer submetric A: Percent of AA with Buffer	B	9			73% buffer	
Buffer submetric B: Average Buffer Width	D	3			26m avg width	
Buffer submetric C: Buffer Condition	C	6				
Raw Attribute Score = D+[C x (A x B)$^{1/2}$]$^{1/2}$ (do not round)				8.6	**Final Attribute Score = (Raw Score/24) x 100**	35.8
Attribute 2: Hydrology						
			Alpha	Numeric		
Water Source			B	9		
Hydroperiod			A	12		
Hydrologic Connectivity ~~(all but Channeled)~~			B	9		
	~~Alpha~~	~~Numeric~~				
~~*Hydro Connectivity submetric A: Bank Height Ratio*~~						
~~*Hydro Connectivity submetric B: Percent Dewatered*~~						
~~Hydrologic Connectivity for Channeled *(avg. of submetrics A-B)*~~						
Raw Attribute Score = sum of numeric scores				30	**Final Attribute Score = (Raw Score/36) x 100**	83.3
Attribute 3: Physical Structure						
			Alpha	Numeric		
Structural Patch Richness			C	6		
Topographic Complexity			C	6		
Raw Attribute Score = sum of numeric scores				12	**Final Attribute Score = (Raw Score/24) x 100**	50
Attribute 4: Biotic Structure						
Plant Community Composition (submetric A is not applicable for Non-Channeled meadows)						
	Alpha	Numeric				
Plant Community submetric A: Number of plant layers	A	12				
Plant Community submetric B: Number of Co-dominant species	B	9				
Plant Community submetric C: Percent Invasive species	D	3				
Plant Comm. Composition *(avg. of submetrics A-C or B-C)*				8		
			Alpha	Numeric		
Horizontal Interspersion			C	6		
~~Plant Life Forms~~ Vertical biotic structure			C	6		
Raw Attribute Score = sum of numeric scores				20	**Final Attribute Score = (Raw Score/36) x 100**	55.6
Overall AA Score (average of four final Attribute Scores)					56	

Aquatic Area Abundance Worksheet

Percentage of Transect Lines that Contains Wetland or Aquatic Habitat of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	0
South	0
East	0
West	14
Average Percentage of Transect Length That Is an Aquatic Feature	3

Percent of AA with Buffer Worksheet

In the space provided on the datasheet, make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Worksheet for calculating Average Buffer Width of AA

Line	Buffer Width (m)
A	52
B	32
C	21
D	11
E	29
F	19
G	20
H	21
Average Buffer Width	26

Channeled Wet Meadow and Channeled Forested Slope Wetland Bank Height Calculation Worksheet

The following 4 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.

Steps	Replicate Cross-sections ⟶	TOP	MID	BOT
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Measure the distance between the right and left bankfull contours.			
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; measure the height of the line above the thalweg (the deepest part of the channel).			
3: Estimate max. bank height	Identify the location of the top of bank. Measure the height between the thalweg and the top of bank location.			
4: Calculate bank height ratio.	Divide the bank height (Step 3) by the bankfull depth (Step 2). Keep two significant figures.			
5: Calculate average bank height ratio.	Calculate the average results for Step 4 for all 3 replicate cross-sections. Enter the average result here and use it in Table 14. Keep two significant figures (hundredths).			

Worksheet for Assessing Hydrologic Connectivity: Percent Dewatered for Slope Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Intact Hydrologic Connectivity	☐ No channel incision ☐ Vigor of plant species, especially hydrophytes ☐ Low or no cover of upland plant species ☐ No rill or gully development ☐ No areas of bare soil ☐ No soil cracking ☐ No changes in soil structure or moisture content ☐ Surface water present on the wetland plain late into the summer season ☐ Groundwater emerging ☐ Moist peat soil ☐ Floating fens ☐ Evidence of regular inundation on floodplain slope wetlands (wrack etc.)
Indicators of Degraded Hydrologic Connectivity (dewatering)	☐ Evidence of channel incision, including low entrenchment ratios, undercut banks, block bank failures, sloughing banks, hanging or exposed roots, channel scoured to bedrock or dense clay, active knickpoints, active gully erosion, active headcutting ☐ Stress or mortality of plants ☐ Presence of xeric plant species ☐ Development of rills or gullies on the wetland surface ☐ Areas of bare soil ☐ Areas of soil cracking ☐ Drying of peat ☐ Decrease in vigor of hydrophytes ☐ Changes in plant or animal species or communities ☐ Changes in soil structure or moisture content ☐ More than 5% cover in the AA of upland conifer species (e.g. Douglas fir (*Pseudotsuga menziesii*), Lodgepole Pine (*Pinus contorta)*, see special note) ☐ More than 5% cover in the AA of upland broadleaf tree species (e.g. tanoak (*Notholithocarpus densiflorus*), coast live oak (*Quercus agrifolia*) ☐ More than 5% cover in the AA of upland shrub species (e.g. sagebrush (*Artemisia tridentate)*, rabbitbrush (*Ericameria nauseosa)*, French broom (*Genista monspessulana*) ☐ More than 5% cover in the AA of upland vines (e.g. English ivy (*Hedera helix)*, Himalayan blackberry (*Rubus armeniacus)*, field bindweed (*Convolvulus arvensis*) ☐ More than 5% cover in the AA of upland grasses (e.g. ripgut brome (*Bromus diandrus*), cheatgrass (*Bromus tectorum)*, needlegrass (*Stipa pulchra*) ☐ More than 5% cover in the AA of upland herbs and forbs (e.g. ragweed (*Ambrosia artemisiifolia)*, mustard (*Brassica rapa)*, yellow star thistle (*Centaurea solstitialis*)
Overall area of the wetland showing evidence of dewatering	**☐ No dewatering** **☐ <25% dewatered** **☐ 25-50% dewatered** **☐ >50% dewatered**

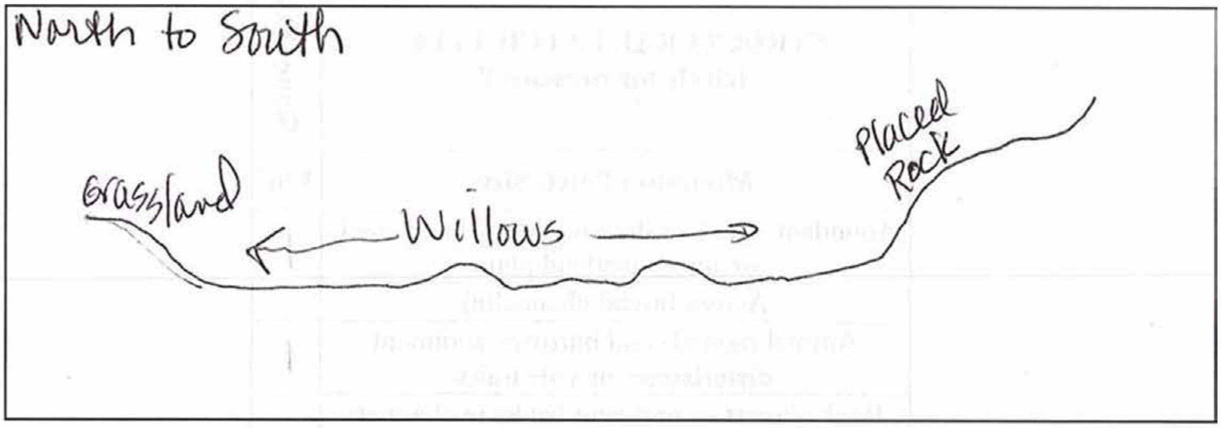
Structural Patch Type Worksheet for Slope Wetlands

Check each type of patch that is observed in the AA and use the total number of observed patches in Table 17 below.

STRUCTURAL PATCH TYPE (circle for presence)	**Slope Wetland**
Minimum Patch Size	**3 m^2**
Abundant wrack or organic debris in channel, or across wetland plain	1
Active fluvial channel(s)	
Animal mounds and burrows, sediment disturbance, or vole trails	1
Bank slumps or undercut banks in channels	
Beaver dams or lodges	
Boulders or bedrock outcrop	
Cutoff channels or oxbows	
Filamentous macroalgae or algal mats	
Gravel, cobble, or sand	
Large woody debris	1
Moss	
Non-vegetated flats or bare ground	1
Pannes or pools on wetland surface	
Plant hummocks and/or tussocks	
Sediment mounds around the bases of shrubs or trees	
Sediment splays	
~~Soil cracks~~	~~1~~
Springs or upwelling groundwater	
Standing snags (at least 3 m tall)	
Submerged vegetation (in channels or open water)	
Swales	1
Thatch	
Variegated, convoluted, or crenulated upland edge (not broadly arcuate or mostly straight)	
Total Possible	**23**
No. Observed Patch Types (enter here and use in Table 17 below)	5

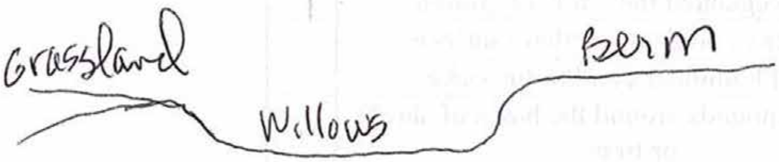
Worksheet for AA Topographic Complexity

Complete a sketch of the topographic profile of the AA along a cross section perpendicular to the overall slope of wetland within the AA. Draw the section to include both AA boundaries. Include both the ground surface and the vegetation roughness. Indicate the letter grade for each component in the space below the sketch. Note the AA boundaries and important topographic features.



~~Physical topographic complexity score~~ ________ ~~Vegetation roughness score~~ ________

East to West



Plant Community Metric Worksheet: Co-dominant species richness for Channeled Wet Meadow, Channeled Forested Slope Wetlands, Non-channeled Forested Slope Wetlands, and Seeps and Springs

(A dominant species represents ≥10% *relative* cover)

Special Note:

** Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

		5	
Floating or Canopy-forming	**Invasive?**	**Short (<0.3 m)**	**Invasive?**
		English ivy	Y
		Avena spp	Y
5 5		5	
Medium (0.3-1.0 m)	**Invasive?**	**Tall (1.0-3.0 m)**	**Invasive?**
Cyperus eragrostis	N	Salix lasiolepis	N
Bristly oxtongue	Y	Toyon	N
Phalaris aquatica	Y		
Very Tall (>3.0 m)	**Invasive?**	**Total number of co-dominant species for all layers combined (enter here and see Table 21)**	8
Salix lasiolepis	N		
Eucalyptus	Y		
Toyon	N	**Percent Invasion (enter here and see Table 21)**	63%

4 layers

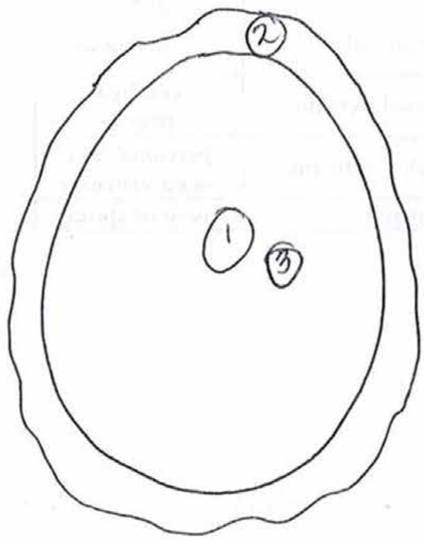
Non-Channeled Wet Meadows Worksheet for Co-dominant Plant Species

Note: A dominant species represents ≥10% *relative* cover. Count species only once when calculating any Plant Community sub-metric. Invasive species are listed in Appendix IV of the User's Manual.

Co-dominant Species	Check if Invasive
Total Number of Co-dominants	
Total Number of Invasive Co-dominant species	
Percent Invasive Species (round to nearest integer)	

Horizontal Interspersion Worksheet

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 17 that best represents the AA overall.



Assigned zones:

1) Willows

2) Grasses + oxtongue

3) Ivy as lower layer

4)

5)

6)

Plant Life Forms Worksheet

Life Form	Present in > 5% of AA?
Bryophytes (mosses, liverworts, hornworts)	
Coniferous Trees	
Deciduous Broadleaf Trees	
Evergreen Broadleaf Trees	
Ferns	
Grasses	
Herbs/Forbs	
Lichens or Fungi	
Sedges/Rushes	
Shrubs	
Vines	
Total Number of life forms	

Wetland disturbances and conversions

<table>
<tr><td>Has a major disturbance occurred at this wetland?</td><td>Yes</td><td colspan="2">No</td><td></td><td></td></tr>
<tr><td>If yes, was it a flood, fire, landslide, or other?</td><td>flood</td><td colspan="2">fire</td><td>landslide</td><td>other</td></tr>
<tr><td>If yes, then how severe is the disturbance?</td><td colspan="2">likely to affect site next 5 or more years</td><td colspan="2">likely to affect site next 3-5 years</td><td>likely to affect site next 1-2 years</td></tr>
<tr><td rowspan="4">Has this wetland been converted from another type? If yes, then what was the previous type?</td><td colspan="2">depressional</td><td colspan="2">vernal pool</td><td>vernal pool system</td></tr>
<tr><td colspan="2">non-confined riverine</td><td colspan="2">confined riverine</td><td>seasonal estuarine</td></tr>
<tr><td colspan="2">perennial saline estuarine</td><td colspan="2">perennial non-saline estuarine</td><td>wet meadow</td></tr>
<tr><td colspan="2">lacustrine</td><td colspan="2">seep or spring</td><td>playa</td></tr>
</table>

Worksheet: 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		

Basic Information Sheet: Perennial Estuarine Wetlands

Assessment Area Name: AA-13	
Project Name: CHSR	
Assessment Area ID #:	
Project Site ID #:	Date: 9/9/19

Assessment Team Members for This AA

RJ, Donna M, Marty L, Melissa Maggio

Center of AA:

Latitude: **Longitude:** **Datum:**

Wetland Sub-type:

Perennial Saline Perennial Non-saline

AA Category:

Restoration Mitigation Impacted Ambient Reference Training

Other: Pre-project

What best describes the tidal stage over the course of the time spent in the field?
Note: It is recommended that the assessment be conducted during low tide.

high tide low tide mid-tide flooding

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		North			
2		South			
3		East			
4		West			
5					
6					
7					
8					
9					
10					

Site Location Description:

Looks like location of an old dump. Lots of bottles + cans in water

Comments:

Scoring Sheet: Perennial Estuarine Wetlands

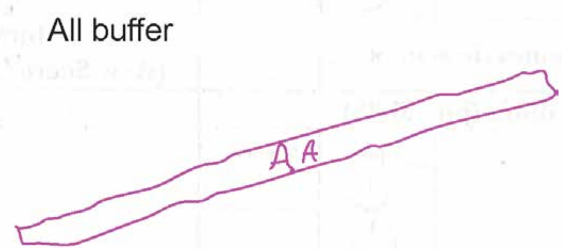
AA Name:			**Date:**	
Attribute 1: Buffer and Landscape Context (pp. 8-14)			**Comments**	
	Alpha.	Numeric		
Aquatic Area Abundance (D)	D	3	1% of lines cross an aquatic area	
Buffer (based on sub-metrics A-C)				
Buffer submetric A: Percent of AA with Buffer	A	12	100% buffer	
Buffer submetric B: Average Buffer Width	B	9	avg width = 136m	
Buffer submetric C: Buffer Condition	D	3	Highly disturbed soils. Old landfill with trash exposed in areas	
Raw Attribute Score = $D+[C \times (A \times B)^{1/2}]^{1/2}$		8.58	**Final Attribute Score = (Raw Score/24) x 100**	35.77
Attribute 2: Hydrology Attribute (pp. 15-19)				
	Alpha.	Numeric		
Water Source	C	6		
Hydroperiod	B	9		
Hydrologic Connectivity	C	6		
Raw Attribute Score = sum of numeric scores		21	**Final Attribute Score = (Raw Score/36) x 100**	58.33
Attribute 3: Physical Structure Attribute (pp. 20-25)				
	Alpha.	Numeric		
Structural Patch Richness	C	6		
Topographic Complexity	C	6		
Raw Attribute Score = sum of numeric scores		12	**Final Attribute Score = (Raw Score/24) x 100**	50
Attribute 4: Biotic Structure Attribute (pp. 26-34)				
Plant Community Composition (based on sub-metrics A-C)				
	Alpha.	Numeric		
Plant Community submetric A: Number of plant layers	C	6		
Plant Community submetric B: Number of Co-dominant species	D	3		
Plant Community submetric C: Percent Invasion	A	12		
Plant Community Composition *(numeric average of submetrics A-C)*		7		
Horizontal Interspersion	D	3		
Vertical Biotic Structure	D	3		
Raw Attribute Score = sum of numeric scores		13	**Final Attribute Score = (Raw Score/36) x 100**	36.11
Overall AA Score (average of four final Attribute Scores)		45		

Worksheet for Aquatic Area Abundance Metric for Estuarine Wetlands

Percentage of Transect Lines that Contains an Aquatic Feature of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	0
South	0
East	14
West	0
Average Percentage of Transect Length that is an Aquatic Feature	1

Percent of AA with Buffer Worksheet.

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: 100 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	79
B	36
C	51
D	83
E	87
F	250
G	250
H	250
Average Buffer Width *Round to the nearest integer*	136

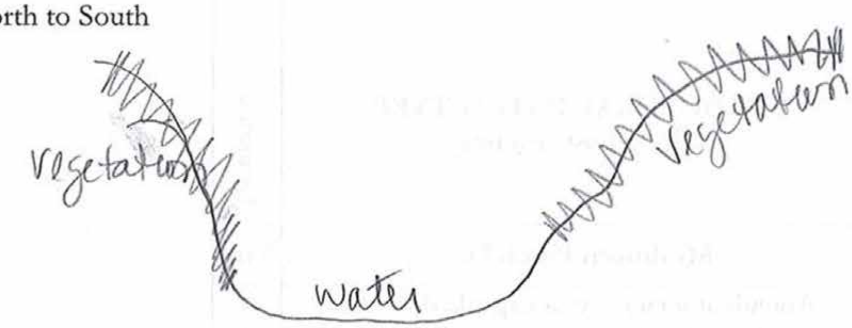
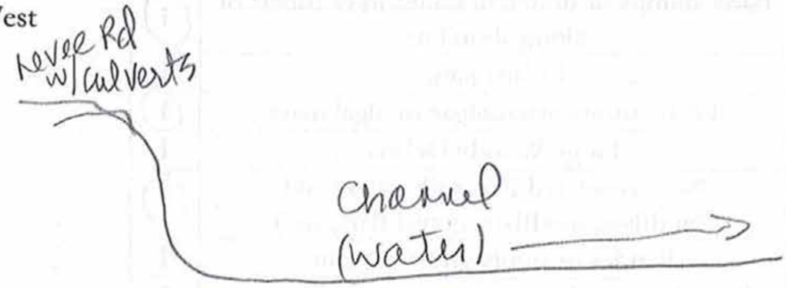
Structural Patch Type Worksheet for Estuarine Wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in the worksheet below.

STRUCTURAL PATCH TYPE (circle for presence)	Estuarine
Minimum Patch Size	**3 m²**
Abundant wrackline or organic debris in channel, on floodplain, or across depressional wetland plain	**1**
Animal mounds and burrows	**1**
Bank slumps or undercut banks in channels or along shoreline	**1**
Debris jams	**1**
Filamentous macroalgae or algal mats	**1**
Large Woody Debris	**1**
Non-vegetated flats or bare ground (sandflats, mudflats, gravel flats, etc.)	**1**
Pannes or pools on floodplain	**1**
Plant hummocks and/or sediment mounds	**1**
Point bars and in-channel bars	**1**
Pools or depressions in channels (wet or dry channels)	**1**
Secondary channels	**1**
Shellfish beds (living)	**1**
Soil cracks	**1**
Standing snags (at least 3 m tall)	**1**
Submerged vegetation	**1**
Total Possible	**16**
No. Observed Patch Types (enter here and use in Table 14 below)	3

Worksheet for AA Topographic Complexity

At two locations in the AA, make a sketch of the profile from the AA boundary to AA boundary. Try to capture the major channels, slopes and intervening micro-topographic relief. Based on these sketches and the profiles in Figure 8, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

North to South 
East to West 

Plant Community Metric Worksheet: Co-dominant species richness
(A dominant species represents ≥10% *relative* cover)

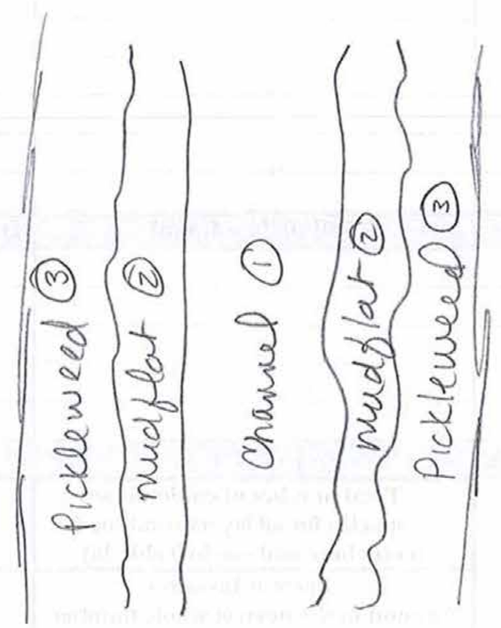
Special Note:

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming	Invasive?	Short (<0.3 m)	Invasive?
Medium (0.3 – 0.75 m)	**Invasive?**	**Tall (0.75 – 1.5 m)**	**Invasive?**
Pickleweed	N		
Very Tall (>1.5 m)	**Invasive?**		
		Total number of co-dominant species for all layers combined (enter here and use in Table 18)	1
		Percent Invasion *Round to the nearest whole number (integer)* (enter here and use in Table 18)	0%

Horizontal Interspersion Complexity Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Each zone should comprise as least 5% of the AA. Based on the sketch, choose a single profile from Figure 10 that best represents the AA overall.



Assigned zones:

1) Channel

2) Mudflat

3) Pickleweed

4)

5)

6)

Table 21: 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	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Depressional Wetlands

Assessment Area Name: 14	
Project Name: CAHSR	
Assessment Area ID #:	
Project ID #:	**Date:** 9/9/19
Assessment Team Members for This AA	
ML, DM, MM, RJV	

AA Category:

Pre-Restoration Post-Restoration Pre-Mitigation Post-Mitigation

☒ Pre-Impact ☐ Post-Impact ☐ Training ☐ Ambient

☐ Reference ☐ Other: Pre-project

Origin of Wetland (if known):

☐ Natural system ☒ Artificial system

Type of Management (if known):

☐ waterfowl/birds ☐ amphibians ☐ general wildlife ☐ sediment ☐ water quality ☒ stormwater

☐ water supply (agriculture) ☐ water supply (livestock) ☐ not managed ☐ other:

Which best describes the type of depressional wetland?

☐ freshwater marsh ☐ alkaline marsh ☐ brackish marsh

☒ other (specify): stormwater basin

AA Encompasses:

☒ entire wetland ☐ portion of the wetland

Which best describes the hydrologic state of the wetland at the time of assessment?

ponded/inundated saturated soil, but no surface water dry

What is the apparent hydrologic regime of the wetland?

Perennially flooded systems contain surface water year-round, *seasonally flooded* depressional wetlands are defined as supporting surface water for 4-11 months of the year (in > 5 out of 10 years.) *Temporarily flooded* depressional wetlands possess surface water between 2 weeks and 4 months of the year.

perennially flooded seasonally flooded temporarily flooded

Does your wetland connect with the floodplain of a nearby stream? yes no

(system subject to overbank flow, a dammed stream does not count)

Does the wetland have a defined on undefined outlet? defined undefined

Does the wetland have a defined on undefined inlet? defined culvert undefined

Are the inlet and outlet at the same location? □ yes ☒ no

Is the topographic basin of the wetland distinct **or** indistinct **?**

An *indistinct* topographic basin is one that lacks obvious boundaries between wetland and upland. Examples of such features are seasonal, depressional wetlands in very low-gradient landscapes.

Photo Identification Numbers and Description:

Photos should be taken from edge of AA looking toward the centroid of AA

	Photo ID No.	Description	Latitude	Longitude	Datum
1		(to) North			
2		(to) East			
3		(to) South			
4		(to) West			
5					
6					
7					
8					
9					
10					

Site Location Description and Land Use:

Comments:

Scoring Sheet: Depressional Wetlands

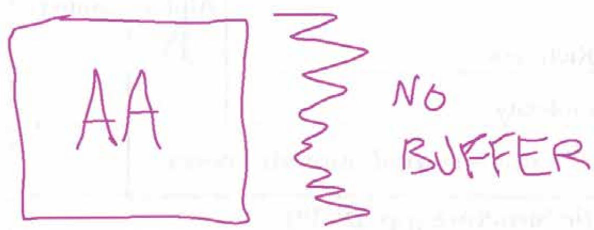
AA Name: 14			**Date:** 9/19/19		
Attribute 1: Buffer and Landscape Context (pp. 8-15)				**Comments**	
Aquatic Area Abundance Score (D)		Alpha. D	Numeric 3	6%	
Buffer:					
Buffer submetric A: Percent of AA with Buffer	Alpha. A	Numeric 12		75% buffer	
Buffer submetric B: Average Buffer Width	A	12		201 avg width	
Buffer submetric C: Buffer Condition	D	3		Soils highly disturbed. Old landfill	
Raw Attribute Score = D+[C x (A x B)^{½}]^{½}			9	**Final Attribute Score = (Raw Score/24) x 100**	37.5
Attribute 2: Hydrology (pp. 16-21)		Alpha.	Numeric		
Water Source		C	6		
Hydroperiod		D	3		
Hydrologic Connectivity		D	3	Ditch from road runoff	
Raw Attribute Score = sum of numeric scores			12	**Final Attribute Score = (Raw Score/36) x 100**	33.33
Attribute 3: Physical Structure (pp. 22-28)		Alpha.	Numeric		
Structural Patch Richness		D	3		
Topographic Complexity		D	3		
Raw Attribute Score = sum of numeric scores			6	**Final Attribute Score = (Raw Score/24) x 100**	25
Attribute 4: Biotic Structure (pp. 29-39)					
Plant Community Composition (based on submetrics A-C)					
Plant Community submetric A: Number of plant layers	Alpha. D	Numeric 3		No plants - basin lined w/ black hard plastic material	
Plant Community submetric B: Number of Co-dominant species	D	3			
Plant Community submetric C: Percent Invasion	D	3			
Plant Community Composition Metric *(numeric average of submetrics A-C)*			3		
Horizontal Interspersion		D	3		
Vertical Biotic Structure		D	3		
Raw Attribute Score = sum of numeric scores			9	**Final Attribute Score = (Raw Score/36) x 100**	25
Overall AA Score (average of four final Attribute Scores)				30	

Worksheet for Aquatic Area Abundance Metric (Method 1)

Percentage of Transect Lines that Contains Aquatic Area of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	0
South	3
East	23
West	0
Average Percentage of Transect Length That Is an Aquatic Feature	6

Percent of AA with Buffer Worksheet.

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: 75 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	250
B	250
C	250
D	250
E	245
F	250
G	63
H	51
Average Buffer Width *Round to the nearest whole number (integer)*	201

Structural Patch Type Worksheet for Depressional Wetlands

Check each type of patch that is observed in the AA and use the total number of observed patches in Table 15.

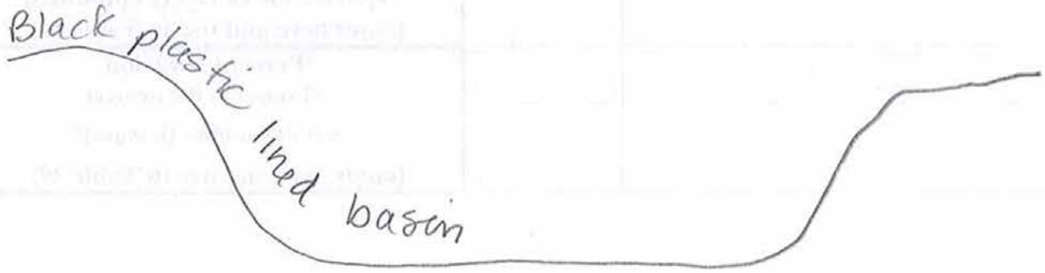
STRUCTURAL PATCH TYPE (circle for presence)	Depressional
Minimum Patch Size	**3 m^2**
Abundant wrack or organic debris in channel, on floodplain, or across depressional wetland plain	
Animal mounds and burrows	
Bank slumps or undercut banks in channels or along shoreline	
Cobbles and Boulders	
Concentric or parallel high water marks	
Filamentous macroalgae or algal mats	
Islands (mostly above high-water)	
Large woody debris	
Non-vegetated flats or bare ground (sandflats, mudflats, gravel flats, etc.)	
Open water	
Plant hummocks and/or sediment mounds	
Soil cracks	
Standing snag(s) (1 or more at least 3 m tall)	
Submerged vegetation	
Swales on floodplain or along shoreline	
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	
Woody vegetation in water	
Total Possible	**17**
No. Observed Patch Types (enter here and use in Table 15 below)	Ø

Worksheet for AA Topographic Complexity

At two locations in the AA, make a sketch of the profile from the AA boundary to AA boundary. Try to capture the major topographic features, slopes and intervening micro-topographic relief. Based on these sketches and the profiles in Figure 7, choose a description in Table 17 that best describes the overall topographic complexity of the AA.

North to South

East to West



Plant Community Metric Worksheet 2 of 8: Co-dominant species richness
(A dominant species represents ≥10% *relative* cover)

** Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

No plants

Floating or Canopy-forming	Invasive?	Short (<0.5 m)	Invasive?
Medium (0.5 – 1.5 m)	**Invasive?**	**Tall (1.5 – 3.0 m)**	**Invasive?**
Very Tall (>3.0 m)	**Invasive?**		
		Total number of co-dominant species for all layers combined (enter here and use in Table 19)	
		Percent Invasion *Round to the nearest whole number (integer)* (enter here and use in Table 19)	

Horizontal Interspersion Worksheet

Use the spaces below to make a sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign names to the zones and record them on the right. Based on the sketch, choose a single profile from Figure 8 that best represents the AA overall.

No plants	**Assigned zones:** **1)** **2)** **3)** **4)** **5)** **6)**

Wetland disturbances and conversions Worksheet

<table>
<tr><td>Has a major disturbance occurred at this wetland?</td><td>Yes</td><td colspan="2">No</td><td></td><td></td></tr>
<tr><td>If yes, was it a flood, fire, landslide, or other?</td><td>flood</td><td colspan="2">fire</td><td>landslide</td><td>other</td></tr>
<tr><td>If yes, then how severe is the disturbance?</td><td>likely to affect site next 5 or more years</td><td colspan="2">likely to affect site next 3-5 years</td><td colspan="2">likely to affect site next 1-2 years</td></tr>
<tr><td rowspan="4">Has this wetland been converted from another type? If yes, then what was the previous type?</td><td>depressional</td><td colspan="2">vernal pool</td><td colspan="2">vernal pool system</td></tr>
<tr><td>non-confined riverine</td><td colspan="2">confined riverine</td><td colspan="2">bar-built estuarine</td></tr>
<tr><td>perennial saline estuarine</td><td colspan="2">perennial non-saline estuarine</td><td colspan="2">wet meadow</td></tr>
<tr><td>lacustrine</td><td colspan="2">seep or spring</td><td colspan="2">playa</td></tr>
</table>

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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		
Detention basin		

PHYSICAL STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	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		
Old landfill		

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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		

Basic Information Sheet: Depressional Wetlands

Assessment Area Name: 15	
Project Name:	
Assessment Area ID #:	
Project ID #:	**Date:** 9/11/19
Assessment Team Members for This AA	
M. Lewis, D. Mariscalco	

AA Category:

Pre-Restoration | Post-Restoration | Pre-Mitigation | Post-Mitigation

☒ Pre-Impact ☐ Post-Impact ☐ Training ☐ Ambient

☐ Reference ☐ Other:

Origin of Wetland (if known):

☐ Natural system ☒ Artificial system Detention basin

Type of Management (if known):

☐ waterfowl/birds ☐ amphibians ☐ general wildlife ☐ sediment ☐ water quality ☒ stormwater

☐ water supply (agriculture) ☐ water supply (livestock) ☐ not managed ☐ other:

Which best describes the type of depressional wetland?

☐ freshwater marsh ☐ alkaline marsh ☐ brackish marsh

☒ other (specify): detention basin

AA Encompasses:

☒ entire wetland ☐ portion of the wetland

Which best describes the hydrologic state of the wetland at the time of assessment?

ponded/inundated saturated soil, but no surface water dry

What is the apparent hydrologic regime of the wetland?

Perennially flooded systems contain surface water year-round, *seasonally flooded* depressional wetlands are defined as supporting surface water for 4-11 months of the year (in > 5 out of 10 years.) *Temporarily flooded* depressional wetlands possess surface water between 2 weeks and 4 months of the year.

perennially flooded seasonally flooded temporarily flooded

Does your wetland connect with the floodplain of a nearby stream? yes no

(system subject to overbank flow, a dammed stream does not count)

Does the wetland have a defined on undefined outlet? defined undefined

Does the wetland have a defined on undefined inlet? defined undefined

Are the inlet and outlet at the same location? ☐ yes ☒ no

Is the topographic basin of the wetland distinct or indistinct ?

An *indistinct* topographic basin is one that lacks obvious boundaries between wetland and upland. Examples of such features are seasonal, depressional wetlands in very low-gradient landscapes.

Photo Identification Numbers and Description:

Photos should be taken from edge of AA looking toward the centroid of AA

	Photo ID No.	Description	Latitude	Longitude	Datum
1	3	(to) North	37.695645	-122.395839	
2	2	(to) East			
3	1	(to) South			
4	4	(to) West			
5					
6					
7					
8					
9					
10					

Site Location Description and Land Use:

Detention basin lined w/ hard black plastic. Soil treatment facility.

Comments:

Scoring Sheet: Depressional Wetlands

AA Name: 15			**Date:** 9/11/19	
Attribute 1: Buffer and Landscape Context (pp. 8-15)			**Comments**	
	Alpha.	Numeric		
Aquatic Area Abundance Score (D)	D	3	10%	
Buffer:				
	Alpha.	Numeric		
Buffer submetric A: Percent of AA with Buffer	C	6	40%	
Buffer submetric B: Average Buffer Width	C	6	106 avg buffer width	
Buffer submetric C: Buffer Condition	D	3		
Raw Attribute Score = D+[C x (A x B)$^{1/2}$]$^{1/2}$		7.24	**Final Attribute Score = (Raw Score/24) x 100**	30.18
Attribute 2: Hydrology (pp. 16-21)				
	Alpha.	Numeric		
Water Source	C	6		
Hydroperiod	C	6		
Hydrologic Connectivity	D	3		
Raw Attribute Score = sum of numeric scores		15	**Final Attribute Score = (Raw Score/36) x 100**	41.67
Attribute 3: Physical Structure (pp. 22-28)				
	Alpha.	Numeric		
Structural Patch Richness	D	3		
Topographic Complexity	D	3		
Raw Attribute Score = sum of numeric scores		6	**Final Attribute Score = (Raw Score/24) x 100**	25
Attribute 4: Biotic Structure (pp. 29-39)				
Plant Community Composition (based on submetrics A-C)				
	Alpha.	Numeric		
Plant Community submetric A: Number of plant layers	D	3	No Plants	
Plant Community submetric B: Number of Co-dominant species	D	3		
Plant Community submetric C: Percent Invasion	D	3		
Plant Community Composition Metric *(numeric average of submetrics A-C)*		3		
Horizontal Interspersion	D	3		
Vertical Biotic Structure	D	3		
Raw Attribute Score = sum of numeric scores		9	**Final Attribute Score = (Raw Score/36) x 100**	25
Overall AA Score (average of four final Attribute Scores)			30	

Worksheet for Aquatic Area Abundance Metric (Method 1)

Percentage of Transect Lines that Contains Aquatic Area of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	2.5
South	0
East	33
West	3
Average Percentage of Transect Length That Is an Aquatic Feature	10

Percent of AA with Buffer Worksheet.

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

Percent of AA with Buffer: 40 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	83
B	89
C	95
D	109
E	107
F	103
G	111
H	148
Average Buffer Width *Round to the nearest whole number (integer)*	106

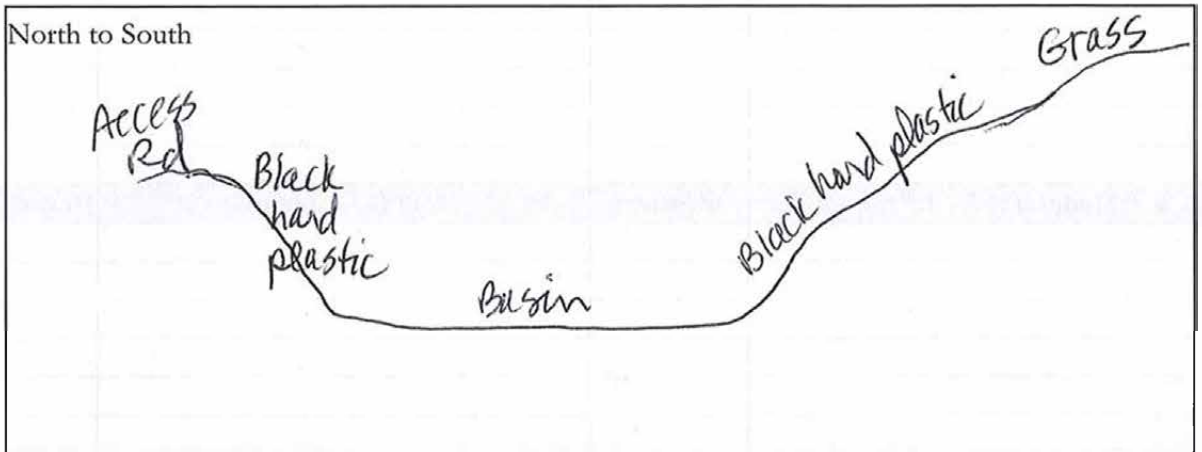
Structural Patch Type Worksheet for Depressional Wetlands

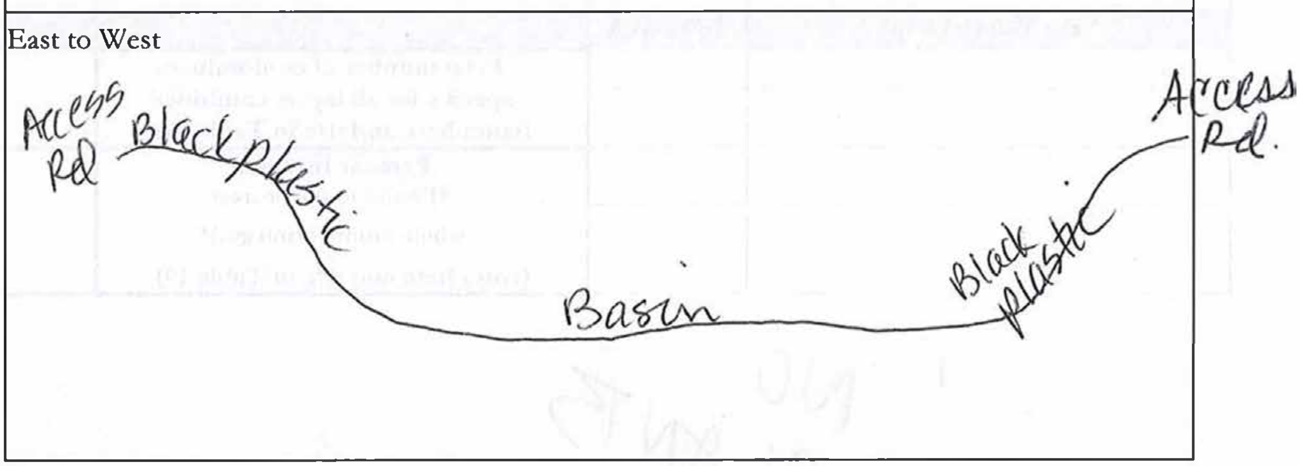
Check each type of patch that is observed in the AA and use the total number of observed patches in Table 15.

STRUCTURAL PATCH TYPE (circle for presence)	Depressional
Minimum Patch Size	**3 m^2**
Abundant wrack or organic debris in channel, on floodplain, or across depressional wetland plain	
Animal mounds and burrows	
Bank slumps or undercut banks in channels or along shoreline	
Cobbles and Boulders	
Concentric or parallel high water marks	
Filamentous macroalgae or algal mats	
Islands (mostly above high-water)	
Large woody debris	
Non-vegetated flats or bare ground (sandflats, mudflats, gravel flats, etc.)	
Open water	
Plant hummocks and/or sediment mounds	
Soil cracks	1
Standing snag(s) (1 or more at least 3 m tall)	
Submerged vegetation	1
Swales on floodplain or along shoreline	
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	
Woody vegetation in water	
Total Possible	**17**
No. Observed Patch Types (enter here and use in Table 15 below)	2

Worksheet for AA Topographic Complexity

At two locations in the AA, make a sketch of the profile from the AA boundary to AA boundary. Try to capture the major topographic features, slopes and intervening micro-topographic relief. Based on these sketches and the profiles in Figure 7, choose a description in Table 17 that best describes the overall topographic complexity of the AA.





Plant Community Metric Worksheet 2 of 8: Co-dominant species richness
(A dominant species represents ≥10% *relative* cover)

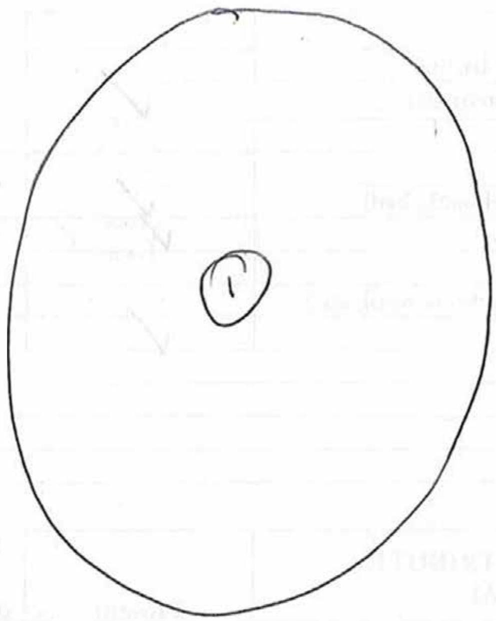
* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming	Invasive?	Short (<0.5 m)	Invasive?
Medium (0.5 – 1.5 m)	**Invasive?**	**Tall (1.5 – 3.0 m)**	**Invasive?**
Very Tall (>3.0 m)	**Invasive?**		
		Total number of co-dominant species for all layers combined (enter here and use in Table 19)	
		Percent Invasion *Round to the nearest whole number (integer)* (enter here and use in Table 19)	

NO PLANTS

Horizontal Interspersion Worksheet

Use the spaces below to make a sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign names to the zones and record them on the right. Based on the sketch, choose a single profile from Figure 8 that best represents the AA overall.



Assigned zones:

1) Basin

2)

3)

4)

5)

6)

Wetland disturbances and conversions Worksheet

<table>
<tr><td>Has a major disturbance occurred at this wetland?</td><td colspan="2">Yes</td><td colspan="2">No</td><td></td><td></td></tr>
<tr><td>If yes, was it a flood, fire, landslide, or other?</td><td>flood</td><td colspan="2">fire</td><td colspan="2">landslide</td><td>other</td></tr>
<tr><td>If yes, then how severe is the disturbance?</td><td>likely to affect site next 5 or more years</td><td colspan="3">likely to affect site next 3-5 years</td><td colspan="2">likely to affect site next 1-2 years</td></tr>
<tr><td rowspan="4">Has this wetland been converted from another type? If yes, then what was the previous type?</td><td>depressional</td><td colspan="3">vernal pool</td><td colspan="2">vernal pool system</td></tr>
<tr><td>non-confined riverine</td><td colspan="3">confined riverine</td><td colspan="2">bar-built estuarine</td></tr>
<tr><td>perennial saline estuarine</td><td colspan="3">perennial non-saline estuarine</td><td colspan="2">wet meadow</td></tr>
<tr><td>lacustrine</td><td colspan="3">seep or spring</td><td colspan="2">playa</td></tr>
</table>

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Depressional Wetlands

Assessment Area Name: 16	
Project Name: CA HSR	
Assessment Area ID #:	
Project ID #:	**Date:** 9/11/19
Assessment Team Members for This AA	
D Maniscalco, M. Lewis	

AA Category:

Pre-Restoration   Post-Restoration   Pre-Mitigation   Post-Mitigation

☒ Pre-Impact   ☐ Post-Impact   ☐ Training   ☐ Ambient

☐ Reference   ☐ Other:

Origin of Wetland (if known):

☐ Natural system   ☒ Artificial system   Fill + road ~ 10 ft from edge of wetland

Type of Management (if known):

☐ waterfowl/birds ☐ amphibians ☐ general wildlife ☐ sediment ☐ water quality ☐ stormwater

☐ water supply (agriculture) ☐ water supply (livestock) ☒ not managed ☐ other:

Which best describes the type of depressional wetland?

☒ freshwater marsh   ☐ alkaline marsh   ☐ brackish marsh

☐ other (specify):

AA Encompasses:

☒ entire wetland   ☒ portion of the wetland

Which best describes the hydrologic state of the wetland at the time of assessment?

ponded/inundated   saturated soil, but no surface water   dry ☒

What is the apparent hydrologic regime of the wetland?

Perennially flooded systems contain surface water year-round, *seasonally flooded* depressional wetlands are defined as supporting surface water for 4-11 months of the year (in > 5 out of 10 years.) *Temporarily flooded* depressional wetlands possess surface water between 2 weeks and 4 months of the year.

perennially flooded   seasonally flooded   temporarily flooded

Does your wetland connect with the floodplain of a nearby stream? yes **no**

(system subject to overbank flow, a dammed stream does not count)

Does the wetland have a defined on undefined outlet? defined **undefined**

Does the wetland have a defined on undefined inlet? defined **undefined**

Are the inlet and outlet at the same location? ☐ yes ☒ no

Is the topographic basin of the wetland distinct **or** indistinct **?**

An *indistinct* topographic basin is one that lacks obvious boundaries between wetland and upland. Examples of such features are seasonal, depressional wetlands in very low-gradient landscapes.

Photo Identification Numbers and Description:

Photos should be taken from edge of AA looking toward the centroid of AA

	Photo ID No.	Description	Latitude	Longitude	Datum
1	1	(to) North	37.688935	-122.397423	
2	4	(to) East	↓	↓	
3	3	(to) South			
4	2	(to) West			
5					
6					
7					
8					
9					
10					

Site Location Description and Land Use:

Area off road + Brisbane Lagoon to the south.

Comments:

Scoring Sheet: Depressional Wetlands

AA Name: 16				**Date:** 9/11/19	
Attribute 1: Buffer and Landscape Context (pp. 8-15)				**Comments**	
Aquatic Area Abundance Score (D)		Alpha. D	Numeric 3	13%	
Buffer:					
Buffer submetric A: Percent of AA with Buffer	Alpha. A	Numeric 12		75%	
Buffer submetric B: Average Buffer Width	B	9		134 avg width	
Buffer submetric C: Buffer Condition	C	6			
Raw Attribute Score = D+[C x (A x B)^{½}]^{½}			10.9	**Final Attribute Score = (Raw Score/24) x 100**	45.4
Attribute 2: Hydrology (pp. 16-21)					
		Alpha.	Numeric		
Water Source		C	6		
Hydroperiod		B	9		
Hydrologic Connectivity		C	6		
Raw Attribute Score = sum of numeric scores			21	**Final Attribute Score = (Raw Score/36) x 100**	58.33
Attribute 3: Physical Structure (pp. 22-28)					
		Alpha.	Numeric		
Structural Patch Richness		D	3		
Topographic Complexity		C ~~D~~	6		
Raw Attribute Score = sum of numeric scores			9	**Final Attribute Score = (Raw Score/24) x 100**	37.5
Attribute 4: Biotic Structure (pp. 29-39)					
Plant Community Composition (based on submetrics A-C)					
	Alpha.	Numeric			
Plant Community submetric A: Number of plant layers	D	3			
Plant Community submetric B: Number of Co-dominant species	D	3			
Plant Community submetric C: Percent Invasion	D	3			
Plant Community Composition Metric *(numeric average of submetrics A-C)*			3		
Horizontal Interspersion		C	6		
Vertical Biotic Structure		A	12		
Raw Attribute Score = sum of numeric scores			21	**Final Attribute Score = (Raw Score/36) x 100**	58.33
Overall AA Score (average of four final Attribute Scores)				50	

Worksheet for Aquatic Area Abundance Metric (Method 1)

Percentage of Transect Lines that Contains Aquatic Area of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	0
South	45
East	8
West	0
Average Percentage of Transect Length That Is an Aquatic Feature	13

Percent of AA with Buffer Worksheet.

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

Percent of AA with Buffer: 75 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	6
B	85
C	88
D	92
E	107
F	190
G	250
H	250
Average Buffer Width *Round to the nearest whole number (integer)*	134

Structural Patch Type Worksheet for Depressional Wetlands

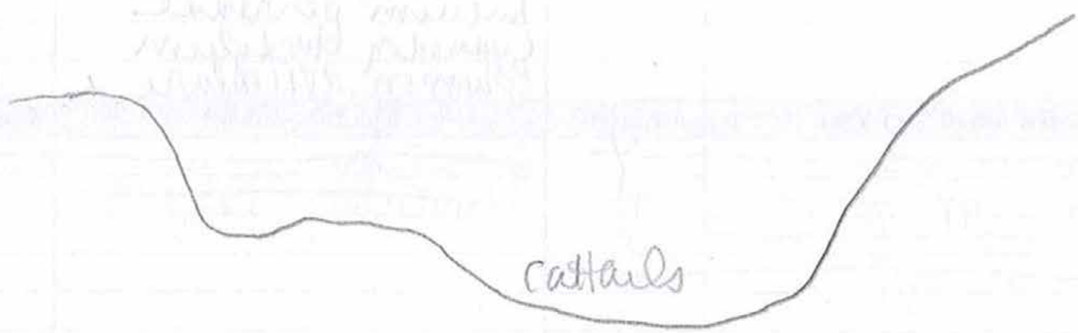
Check each type of patch that is observed in the AA and use the total number of observed patches in Table 15.

STRUCTURAL PATCH TYPE (circle for presence)	**Depressional**
Minimum Patch Size	**3 m^2**
Abundant wrack or organic debris in channel, on floodplain, or across depressional wetland plain	
Animal mounds and burrows	
Bank slumps or undercut banks in channels or along shoreline	
Cobbles and Boulders	
Concentric or parallel high water marks	
Filamentous macroalgae or algal mats	
Islands (mostly above high-water)	
Large woody debris	
Non-vegetated flats or bare ground (sandflats, mudflats, gravel flats, etc.)	
Open water	
Plant hummocks and/or sediment mounds	
Soil cracks	
Standing snag(s) (1 or more at least 3 m tall)	
Submerged vegetation	
Swales on floodplain or along shoreline	
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	
Woody vegetation in water	
Total Possible	**17**
No. Observed Patch Types (enter here and use in Table 15 below)	Ø

Worksheet for AA Topographic Complexity

At two locations in the AA, make a sketch of the profile from the AA boundary to AA boundary. Try to capture the major topographic features, slopes and intervening micro-topographic relief. Based on these sketches and the profiles in Figure 7, choose a description in Table 17 that best describes the overall topographic complexity of the AA.

North to South



East to West

Plant Community Metric Worksheet 2 of 8: Co-dominant species richness
(A dominant species represents ≥10% *relative* cover)

** Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

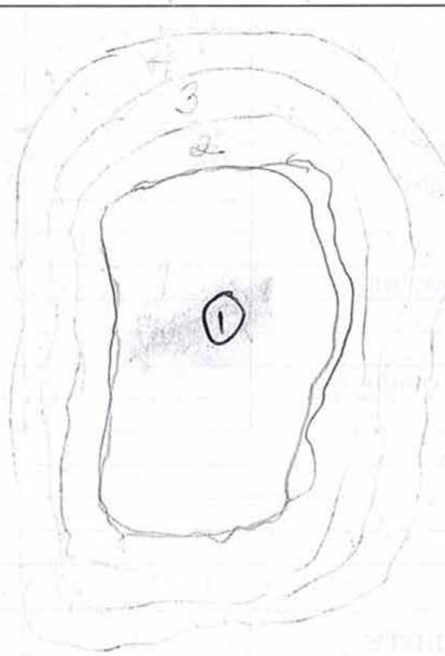
Floating or Canopy-forming	**Invasive?**	**Short (<0.5 m)**	**Invasive?**
		~~Bristly oxtongue~~	~~Y~~
		~~Epilobium spp~~	
		Avena spp.	Y
		Lolium perrenne	Y
		Cyanodon dactylum	Y
		Polygonon aviculare	N
Medium (0.5 – 1.5 m)	**Invasive?**	**Tall (1.5 – 3.0 m)**	**Invasive?**
~~Bristly oxtongue~~	~~Y~~	~~Cattail spp~~	~~N~~
~~Cattail spp Typha~~	~~N~~	~~Foeniculum vulgare~~	~~Y~~
~~Foeniculum vulgare~~	~~Y~~		
~~Epilobium spp~~	~~N~~		
Very Tall (>3.0 m)	**Invasive?**		
		Total number of co-dominant species for all layers combined (enter here and use in Table 19)	4
		Percent Invasion *Round to the nearest whole number (integer)* (enter here and use in Table 19)	75% ~~50%~~ -D

~~Bristly oxtongue Helminthotheca echioides~~

Epilobium ~~ciliatum willow herb~~

Horizontal Interspersion Worksheet

Use the spaces below to make a sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign names to the zones and record them on the right. Based on the sketch, choose a single profile from Figure 8 that best represents the AA overall.



Assigned zones:

1) Grasses

2) ~~Bristly oxtongue~~ Epilobium spp.

3) Bristly oxtonge

4) Foeniculum vulgare

5)

6)

Wetland disturbances and conversions Worksheet

<table>
<tr><td>Has a major disturbance occurred at this wetland?</td><td colspan="2">Yes</td><td colspan="2">No</td><td></td><td></td></tr>
<tr><td>If yes, was it a flood, fire, landslide, or other?</td><td colspan="2">flood</td><td colspan="2">fire</td><td>landslide</td><td>other</td></tr>
<tr><td>If yes, then how severe is the disturbance?</td><td colspan="2">likely to affect site next 5 or more years</td><td colspan="3">likely to affect site next 3-5 years</td><td>likely to affect site next 1-2 years</td></tr>
<tr><td rowspan="4">Has this wetland been converted from another type? If yes, then what was the previous type?</td><td colspan="2">depressional</td><td colspan="3">vernal pool</td><td>vernal pool system</td></tr>
<tr><td colspan="2">non-confined riverine</td><td colspan="3">confined riverine</td><td>bar-built estuarine</td></tr>
<tr><td colspan="2">perennial saline estuarine</td><td colspan="3">perennial non-saline estuarine</td><td>wet meadow</td></tr>
<tr><td colspan="2">lacustrine</td><td colspan="3">seep or spring</td><td>playa</td></tr>
</table>

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Perennial Estuarine Wetlands

Assessment Area Name: AA-17	
Project Name: HSR	
Assessment Area ID #: 17	
Project Site ID #:	Date: 9/11/19

Assessment Team Members for This AA

RJV

MCM

Center of AA:

Latitude: 37.676815 **Longitude:** -122.389747 **Datum:** NAD 83

Wetland Sub-type:

Perennial Saline Perennial Non-saline

AA Category:

Restoration Mitigation Impacted Ambient Reference Training

Other:

What best describes the tidal stage over the course of the time spent in the field?
Note: It is recommended that the assessment be conducted during low tide.

high tide low tide

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		North			
2		South			
3		East			
4		West			
5					
6					
7					
8					
9					
10					

Site Location Description:

estuary corner dominated by pickleweed. Small inlet that connects to bay: there is open water just beyond AA boundary.

Comments:

Some homeless evidence / trash

Scoring Sheet: Perennial Estuarine Wetlands

AA Name: AA-17			**Date:** 9/11/19
Attribute 1: Buffer and Landscape Context (pp. 8-14)			**Comments**
	Alpha.	Numeric	
Aquatic Area Abundance (D)	C	6	26%
Buffer (based on sub-metrics A-C)			adjusted AA

	Alpha.	Numeric	Comments
Buffer submetric A: Percent of AA with Buffer	A	12	52m width Avg
Buffer submetric B: Average Buffer Width	D	3	
Buffer submetric C: Buffer Condition	B	9	some nnl veg and some homeless presence

Raw Attribute Score = D+[C x (A x B)$^{1/2}$]$^{1/2}$	1	13.85	**Final Attribute Score = (Raw Score/24) x 100**	[illegible]

Attribute 2: Hydrology Attribute (pp. 15-19)	Alpha.	Numeric	Comments
Water Source	B	9	
Hydroperiod	B	9	blocked off but inlet allows tides to pass under road
Hydrologic Connectivity	C	6	2/3 obstructed by rr and road
Raw Attribute Score = sum of numeric scores		24	**Final Attribute Score = (Raw Score/36) x 100** 66.7

Attribute 3: Physical Structure Attribute (pp. 20-25)	Alpha.	Numeric	Comments
Structural Patch Richness	C	6	5 types
Topographic Complexity	B	9	
Raw Attribute Score = sum of numeric scores		15	**Final Attribute Score = (Raw Score/24) x 100** 62.5

Attribute 4: Biotic Structure Attribute (pp. 26-34)

Plant Community Composition (based on sub-metrics A-C)

	Alpha.	Numeric	Comments
Plant Community submetric A: Number of plant layers	B	9	2 layers
Plant Community submetric B: Number of Co-dominant species	B	9	
Plant Community submetric C: Percent Invasion	B	9	

	Alpha.	Numeric	Comments
Plant Community Composition *(numeric average of submetrics A-C)*		9	
Horizontal Interspersion	C	6	mainly pickleweed dominated
Vertical Biotic Structure	B	9	possibly a little less than 1/2 with dense canopy
Raw Attribute Score = sum of numeric scores		24	**Final Attribute Score = (Raw Score/36) x 100** 66.7

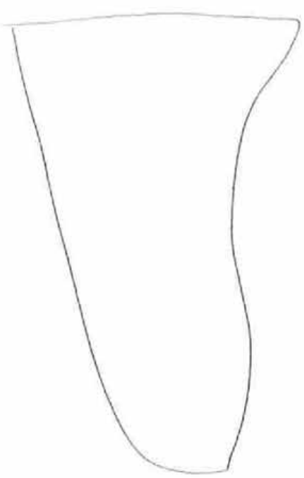
Overall AA Score (average of four final Attribute Scores)	60

Worksheet for Aquatic Area Abundance Metric for Estuarine Wetlands

Percentage of Transect Lines that Contains an Aquatic Feature of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	97
South	0%
East	6
West	0%
Average Percentage of Transect Length that is an Aquatic Feature	26

Percent of AA with Buffer Worksheet.

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: 100 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	32
B	43
C	28
D	42
E	30
F	7
G	7
H	250
Average Buffer Width *Round to the nearest integer*	54

Structural Patch Type Worksheet for Estuarine Wetlands

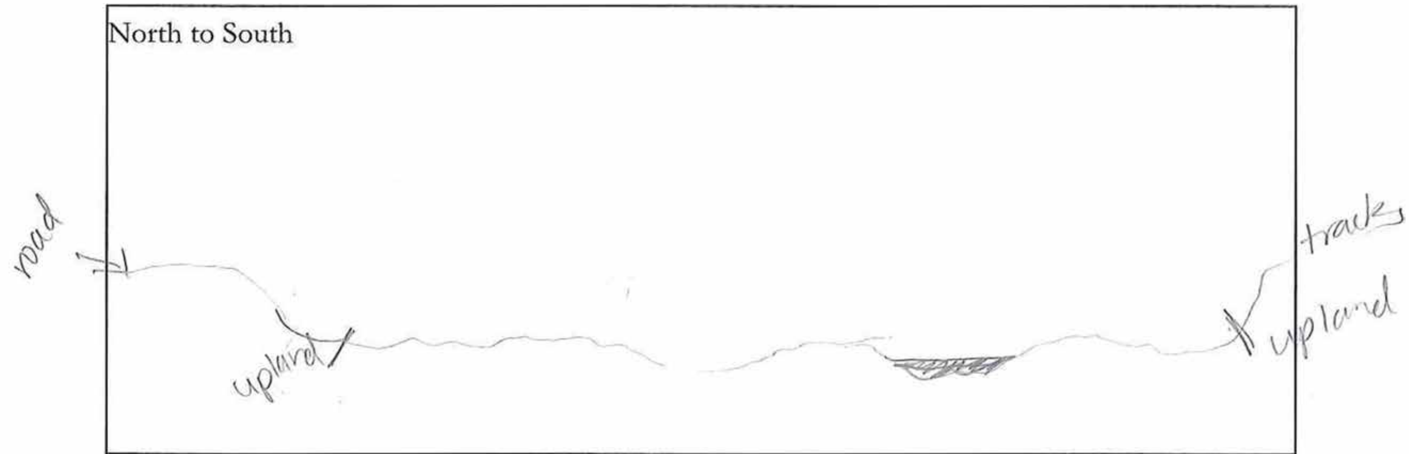
Circle each type of patch that is observed in the AA and enter the total number of observed patches in the worksheet below.

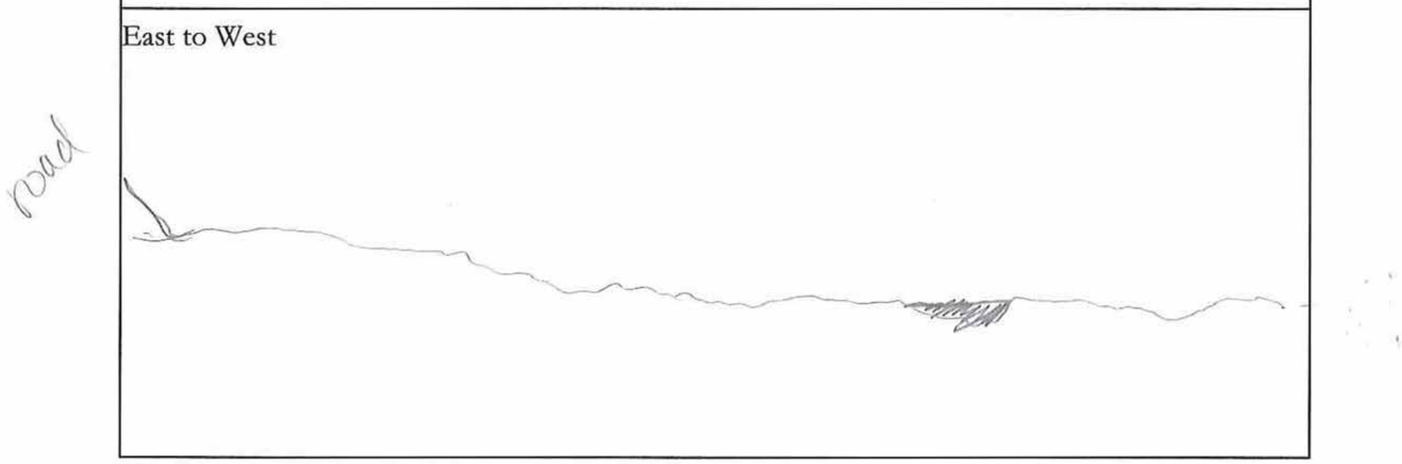
STRUCTURAL PATCH TYPE (circle for presence)	Estuarine	
Minimum Patch Size	**3 m^2**	
Abundant wrackline or organic debris in channel, on floodplain, or across depressional wetland plain	**1**	
Animal mounds and burrows	**1**	
Bank slumps or undercut banks in channels or along shoreline	**1**	
Debris jams	**1**	
Filamentous macroalgae or algal mats	**1**	✓
Large Woody Debris	**1**	
Non-vegetated flats or bare ground (sandflats, mudflats, gravel flats, etc.)	**1**	✓
Pannes or pools on floodplain	**1**	✓
Plant hummocks and/or sediment mounds	**1**	
Point bars and in-channel bars	**1**	
Pools or depressions in channels (wet or dry channels)	**1**	[illegible]
Secondary channels	**1**	
Shellfish beds (living)	**1**	
Soil cracks	**1**	✓
Standing snags (at least 3 m tall)	**1**	✓
Submerged vegetation	**1**	
Total Possible	**16**	
No. Observed Patch Types (enter here and use in Table 14 below)	5	

Grindelia stricta

Worksheet for AA Topographic Complexity

At two locations in the AA, make a sketch of the profile from the AA boundary to AA boundary. Try to capture the major channels, slopes and intervening micro-topographic relief. Based on these sketches and the profiles in Figure 8, choose a description in Table 16 that best describes the overall topographic complexity of the AA.





Plant Community Metric Worksheet: Co-dominant species richness
(A dominant species represents ≥10% *relative* cover)

Special Note:

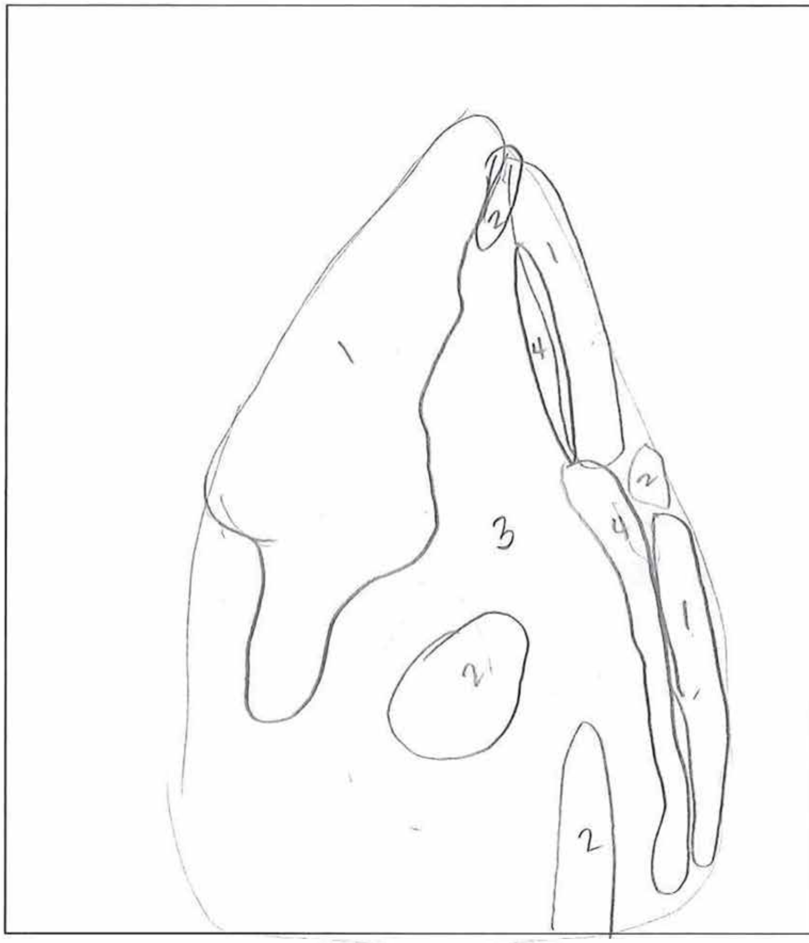
* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming	Invasive?	Short (<0.3 m)	Invasive?
		Salicornia	
		Salsola soda	✓
		Frankenia	
Medium (0.3 – 0.75 m)	**Invasive?**	**Tall (0.75 – 1.5 m)**	**Invasive?**
Grindelia stricta			
Salicornia			
Salsola soda	✓		
Very Tall (>1.5 m)	**Invasive?**		
		Total number of co-dominant species for all layers combined (enter here and use in Table 18)	4
		Percent Invasion *Round to the nearest whole number (integer)* (enter here and use in Table 18)	25%

2 layers

Horizontal Interspersion Complexity Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Each zone should comprise as least 5% of the AA. Based on the sketch, choose a single profile from Figure 10 that best represents the AA overall.



Assigned zones:

1) gumweed

2) open wate/ Bare

3) pickleweed

4) Sea lavender/Frankenia

5)

6)

Table 21: 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	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

featherbed railroad company
B&B
near Clear lake

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: AA18	
Project Name: HSR	
Assessment Area ID #: 18	
Project ID #:	**Date:** 9/11/19
Assessment Team Members for This AA:	
RJV	
MCM	
Average Bankfull Width: 2.3	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): 100	
Upstream Point Latitude: 37.642130	**Longitude:** -122.413284
Downstream Point Latitude: 37.641251	**Longitude:** -122.413224
Wetland Sub-type: Confined Non-confined	
AA Category: Restoration Mitigation Impacted Ambient Reference Training Other:	
Did the river/stream have flowing water at the time of the assessment? yes no	
What is the apparent hydrologic flow regime of the reach you are assessing? The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. *Perennial* streams conduct water all year long, whereas *ephemeral* streams conduct water only during and immediately following precipitation events. *Intermittent* streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source. perennial intermittent ephemeral	

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		Upstream			
2		Middle Left			
3		Middle Right			
4		Downstream			
5					
6					
7					
8					
9					
10					

Site Location Description:

Comments:

Scoring Sheet: Riverine Wetlands

AA Name: 18			Date:
Attribute 1: Buffer and Landscape Context (pp. 11-19)			**Comments**
	Alpha.	Numeric	
Stream Corridor Continuity (D)	D	3	500 m UP 106 m DS
Buffer:			
Buffer submetric A: Percent of AA with Buffer	B	9	50%
Buffer submetric B: Average Buffer Width	D	3	
Buffer submetric C: Buffer Condition	D	3	HIGHLY COMPACTED, TRAIN ROW
Raw Attribute Score = D+[C x (A x B)$^{1/2}$]$^{1/2}$		6.95	**Final Attribute Score = (Raw Score/24) x 100** 28.95
Attribute 2: Hydrology (pp. 20-26)			
	Alpha.	Numeric	
Water Source	C	6	
Channel Stability	B	9	SOME AGGRADATION
Hydrologic Connectivity	A	12	8.1 ENT. RATIO
Raw Attribute Score = sum of numeric scores		27	**Final Attribute Score = (Raw Score/36) x 100** 75
Attribute 3: Physical Structure (pp. 27-33)			
	Alpha.	Numeric	
Structural Patch Richness	D	3	1 PATCH
Topographic Complexity	D	3	SIMPLE, EARTHEN DITCH
Raw Attribute Score = sum of numeric scores		6	**Final Attribute Score = (Raw Score/24) x 100** 25
Attribute 4: Biotic Structure (pp. 34-41)			
Plant Community Composition (based on sub-metrics A-C)			
	Alpha.	Numeric	
Plant Community submetric A: Number of plant layers	D	3	0 PLANTS
Plant Community submetric B: Number of Co-dominant species	D	3	0 PLANTS
Plant Community submetric C: Percent Invasion	D	3	0 PLANTS
Plant Community Composition Metric *(numeric average of submetrics A-C)*		3	
Horizontal Interspersion	D	3	0 PLANTS
Vertical Biotic Structure	D	3	0 PLANTS
Raw Attribute Score = sum of numeric scores		9	**Final Attribute Score = (Raw Score/36) x 100** 25
Overall AA Score (average of four final Attribute Scores)			38

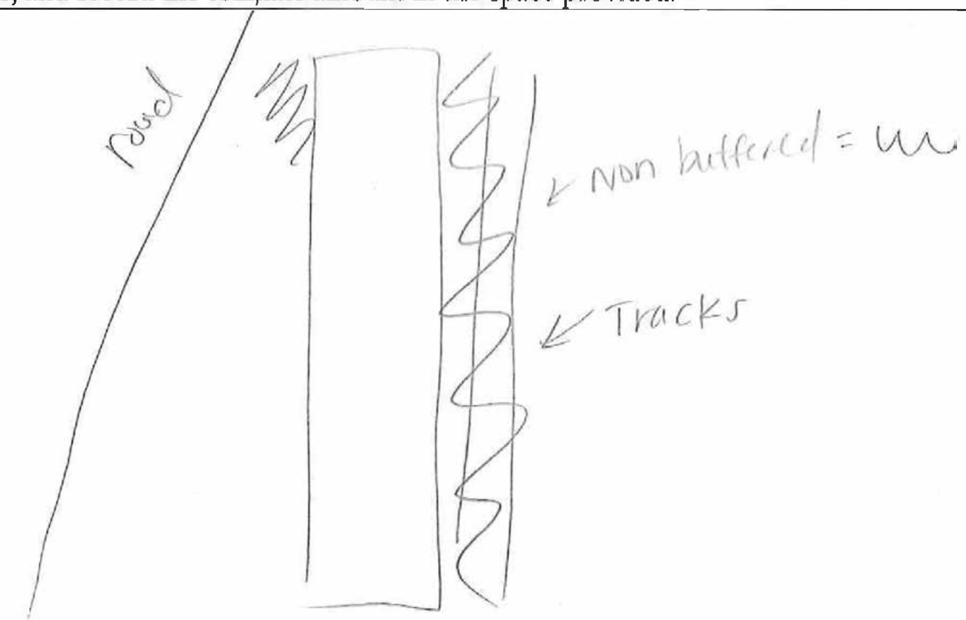
No stream
US of AA

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		**Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA**		
Segment No.	Length (m)	Segment No.	Length (m)	
1	500x2	1	30x2	60
2	500	2	8x2	16
3		3	15x2	30
4		4		
5		5		
Upstream Total Length	1000	Downstream Total Length	106	

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: 58 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	5
B	6
C	6
D	6
E	6
F	5
G	6
H	5
Average Buffer Width *Round to the nearest integer*	6

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	☐ The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. ☐ Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. ☐ There is leaf litter, thatch, or wrack in most pools (if pools are present). ☐ The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. ☑ There is little or no active undercutting or burial of riparian vegetation. ☐ If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation. ☐ Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). ☐ There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA ☐ The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	☐ The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. ☐ There are abundant bank slides or slumps. ☐ The lower banks are uniformly scoured and not vegetated. ☐ Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. ☐ An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation. ☐ The channel bed appears scoured to bedrock or dense clay. ☐ Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided). ☐ The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	☐ There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. ☐ There are partially buried living tree trunks or shrubs along the banks. ☑ The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. ☑ There are partially buried, or sediment-choked, culverts. trash choked ☐ Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. ☐ There are avulsion channels on the floodplain or adjacent valley floor.
Overall	**Equilibrium** **Degradation** **Aggradation**

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.				
Steps	**Replicate Cross-sections** →	**TOP**	**MID**	**BOT**
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	3	2.3	1.7
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	.4	.40	.35
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	.80	.80	.70
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	15	3.6	30
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	5	1.6	17.6
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			8.1

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

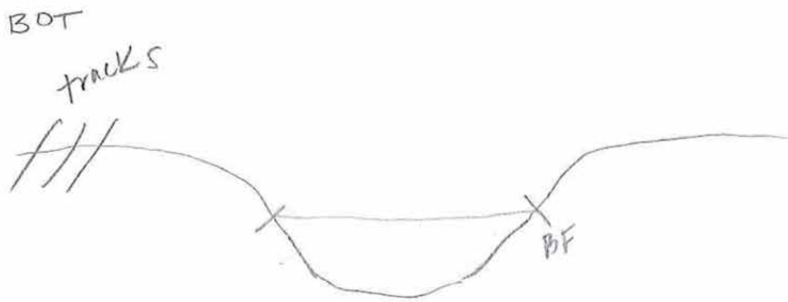
**Please refer to the CRAM Photo Dictionary at www.cramwetlands.org for photos of each of the following patch types.*

STRUCTURAL PATCH TYPE (circle for presence)	**Riverine (Non-confined)**	**Riverine (Confined)**
Minimum Patch Size	**3 m^2**	**3 m^2**
Abundant wrackline or organic debris in channel, on floodplain	**1**	**1**
Bank slumps or undercut banks in channels or along shoreline	**1**	**1**
Cobbles and/or Boulders	**1**	**1**
Debris jams	**1**	**1**
Filamentous macroalgae or algal mats	**1**	**1**
Large woody debris	**1**	**1**
Pannes or pools on floodplain	**1**	**N/A**
Plant hummocks and/or sediment mounds	**1**	**1**
Point bars and in-channel bars	**1**	**1**
Pools or depressions in channels (wet or dry channels)	**1**	**1**
Riffles or rapids (wet or dry channels)	**1**	**1**
Secondary channels on floodplains or along shorelines	**1**	**N/A**
Standing snags (at least 3 m tall)	**1**	**1**
Submerged vegetation	**1**	**N/A**
Swales on floodplain or along shoreline	**1**	**N/A**
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	**1**	**1**
Vegetated islands (mostly above high-water)	**1**	**N/A**
Total Possible	17	12
No. Observed Patch Types (enter here and use in Table 14 below)	1	

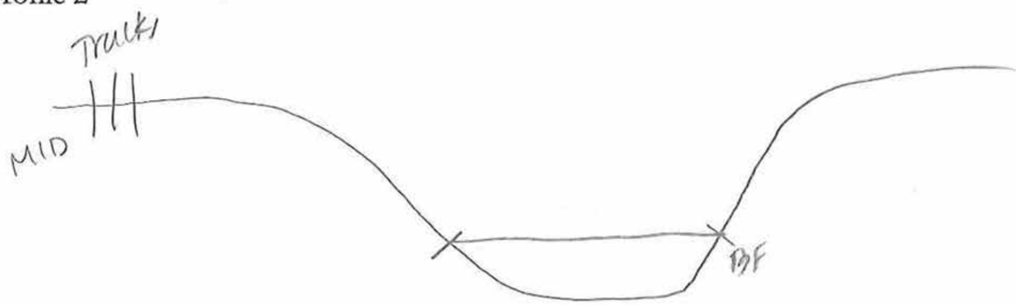
Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

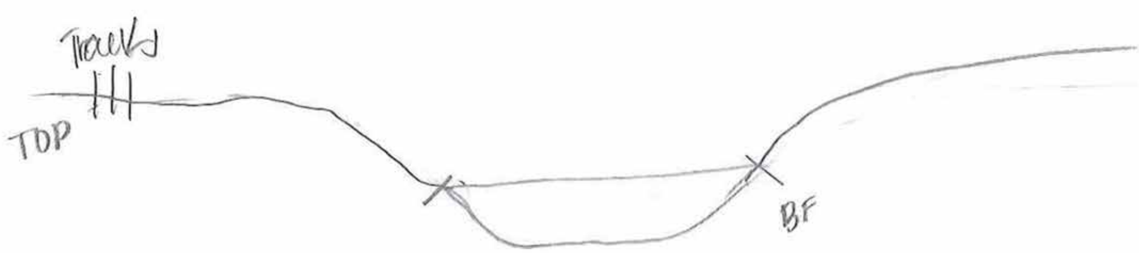
Profile 1



Profile 2



Profile 3



Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
(A dominant species represents ≥10% *relative* cover)

Special Note:

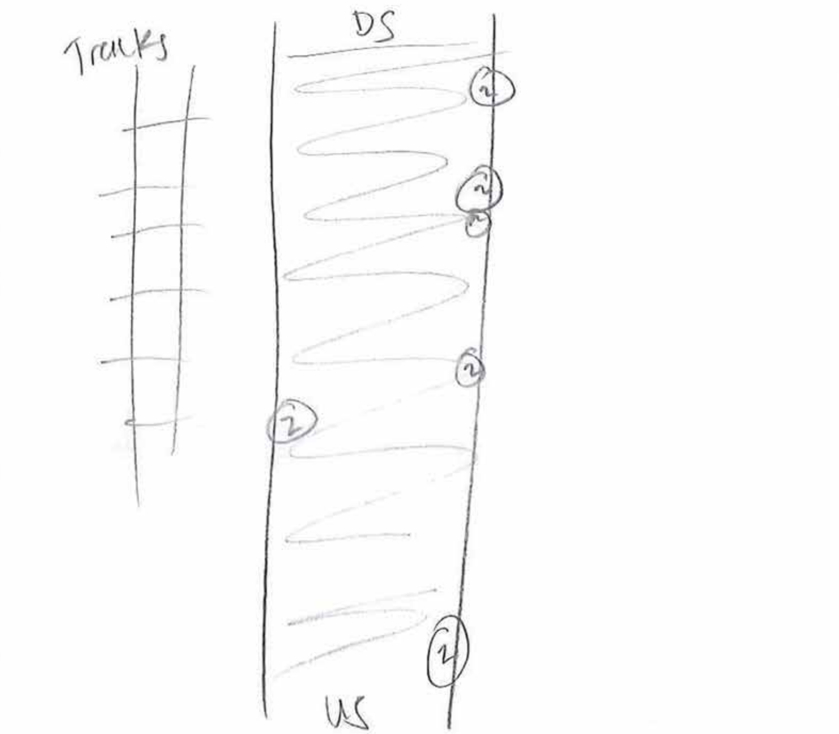
* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
Medium (0.5-1.5 m)	**Invasive?**	**Tall (1.5-3.0 m)**	**Invasive?**
Very Tall (>3.0 m)	**Invasive?**	**Total number of co-dominant species for all layers combined (enter here and use in Table 18)**	0
		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	

NO PLANTS

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.



Assigned zones:

1) rocked

2) pampas grass

3)

4)

5)

6)

Worksheet for Wetland disturbances and conversions

<table>
<tr><td>Has a major disturbance occurred at this wetland?</td><td>Yes</td><td colspan="2">No</td><td></td><td></td></tr>
<tr><td>If yes, was it a flood, fire, landslide, or other?</td><td>flood</td><td colspan="2">fire</td><td>landslide</td><td>other</td></tr>
<tr><td>If yes, then how severe is the disturbance?</td><td>likely to affect site next 5 or more years</td><td colspan="2">likely to affect site next 3-5 years</td><td colspan="2">likely to affect site next 1-2 years</td></tr>
<tr><td rowspan="4">Has this wetland been converted from another type? If yes, then what was the previous type?</td><td>depressional</td><td colspan="2">vernal pool</td><td colspan="2">vernal pool system</td></tr>
<tr><td>non-confined riverine</td><td colspan="2">confined riverine</td><td colspan="2">seasonal estuarine</td></tr>
<tr><td>perennial saline estuarine</td><td colspan="2">perennial non-saline estuarine</td><td colspan="2">wet meadow</td></tr>
<tr><td>lacustrine</td><td colspan="2">seep or spring</td><td colspan="2">playa</td></tr>
</table>

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: AA-19	
Project Name: HSR	
Assessment Area ID #: 19	
Project ID #:	**Date:** 9/11/19
Assessment Team Members for This AA:	
RJV	
MCM	
Average Bankfull Width: 2.09 m	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): 100	
Upstream Point Latitude: 37.638159	**Longitude:** -122.413029
Downstream Point Latitude: 37.637304	**Longitude:** -122.412972
Wetland Sub-type: Confined Non-confined	
AA Category: Restoration Mitigation Impacted Ambient Reference Training Other:	
Did the river/stream have flowing water at the time of the assessment? yes no	
What is the apparent hydrologic flow regime of the reach you are assessing? The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. *Perennial* streams conduct water all year long, whereas *ephemeral* streams conduct water only during and immediately following precipitation events. *Intermittent* streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source. perennial intermittent ephemeral	

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		Upstream			
2		Middle Left			
3		Middle Right			
4		Downstream			
5					
6					
7					
8					
9					
10					

Site Location Description:

Comments:

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	16 480	1	54 100
2	30	2	120 120
3	150	3	
4		4	
5		5	
Upstream Total Length	170 480	Downstream Total Length	220

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

Percent of AA with Buffer: 51 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	7
B	8
C	11
D	7
E	7
F	7
G	11
H	9
Average Buffer Width *Round to the nearest integer*	8

Scoring Sheet: Riverine Wetlands

AA Name:			**Date:**
Attribute 1: Buffer and Landscape Context (pp. 11-19)			**Comments**
	Alpha.	Numeric	
Stream Corridor Continuity (D)	C	6	
Buffer:			
Buffer submetric A: Percent of AA with Buffer	B	9	51%
Buffer submetric B: Average Buffer Width	D	3	8m avg width
Buffer submetric C: Buffer Condition	D	3	COMPACTED SOILS. TRAIN ROW
Raw Attribute Score = $D+[C \times (A \times B)^{1/2}]^{1/2}$		9.95	**Final Attribute Score = (Raw Score/24) x 100** 41.45
Attribute 2: Hydrology (pp. 20-26)			
	Alpha.	Numeric	
Water Source	C	6	
Channel Stability	B	9	SOME AGGRADATION
Hydrologic Connectivity	A	12	7.7 ENT. RATIO
Raw Attribute Score = sum of numeric scores		27	**Final Attribute Score = (Raw Score/36) x 100** 75
Attribute 3: Physical Structure (pp. 27-33)			
	Alpha.	Numeric	
Structural Patch Richness	D	3	1 PATCH
Topographic Complexity	D	3	SIMPLE. NO BENCHES. EARTHEN DITCH
Raw Attribute Score = sum of numeric scores		6	**Final Attribute Score = (Raw Score/24) x 100** 25
Attribute 4: Biotic Structure (pp. 34-41)			
Plant Community Composition (based on sub-metrics A-C)			
	Alpha.	Numeric	
Plant Community submetric A: Number of plant layers	C	6	2 LAYERS
Plant Community submetric B: Number of Co-dominant species	D	3	3 CO-DOMS
Plant Community submetric C: Percent Invasion	D	3	66% INVASION
Plant Community Composition Metric *(numeric average of submetrics A-C)*		4	
Horizontal Interspersion	D	3	MINIMAL INTERSP.
Vertical Biotic Structure	D	3	
Raw Attribute Score = sum of numeric scores		10	**Final Attribute Score = (Raw Score/36) x 100** 27.78
Overall AA Score (average of four final Attribute Scores)			42

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	☐ The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA.
	☐ Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it.
	☐ There is leaf litter, thatch, or wrack in most pools (if pools are present).
	☐ The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area.
	☑ There is little or no active undercutting or burial of riparian vegetation.
	☐ If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation.
	☐ Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar).
	☐ There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA
	☐ The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	☐ The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs.
	☐ There are abundant bank slides or slumps.
	☐ The lower banks are uniformly scoured and not vegetated.
	☐ Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel.
	☐ An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation.
	☐ The channel bed appears scoured to bedrock or dense clay.
	☐ Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided).
	☐ The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	☐ There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year.
	☐ There are partially buried living tree trunks or shrubs along the banks.
	☑ The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced.
	☐ There are partially buried, or sediment-choked, culverts.
	☐ Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour.
	☐ There are avulsion channels on the floodplain or adjacent valley floor.
Overall	**Equilibrium** **Degradation** **Aggradation**

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.

Steps	Replicate Cross-sections ⟶	TOP	MID	BOT
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	1.7	1.7	1.9
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	.4	.4	.4
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	.8	.8	.8
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	3.5	3.5	4.1
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	2.05	2.05	2.16
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			2.09

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

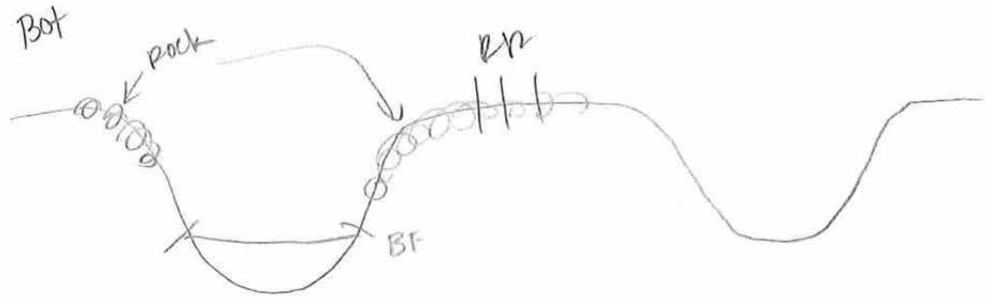
**Please refer to the CRAM Photo Dictionary at www.cramwetlands.org for photos of each of the following patch types.*

STRUCTURAL PATCH TYPE (circle for presence)	Riverine (Non-confined)	Riverine (Confined)
Minimum Patch Size	**3 m^2**	**3 m^2**
Abundant wrackline or organic debris in channel, on floodplain	1	1
Bank slumps or undercut banks in channels or along shoreline	1	1
Cobbles and/or Boulders	1	1
Debris jams	1	1
Filamentous macroalgae or algal mats	1	1
Large woody debris	1	1
Pannes or pools on floodplain	1	N/A
Plant hummocks and/or sediment mounds	1	1
Point bars and in-channel bars	1	1
Pools or depressions in channels (wet or dry channels)	1	1
Riffles or rapids (wet or dry channels)	1	1
Secondary channels on floodplains or along shorelines	1	N/A
Standing snags (at least 3 m tall)	1	1
Submerged vegetation	1	N/A
Swales on floodplain or along shoreline	1	N/A
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	1	1
Vegetated islands (mostly above high-water)	1	N/A
Total Possible	**17**	**12**
No. Observed Patch Types (enter here and use in Table 14 below)	4	

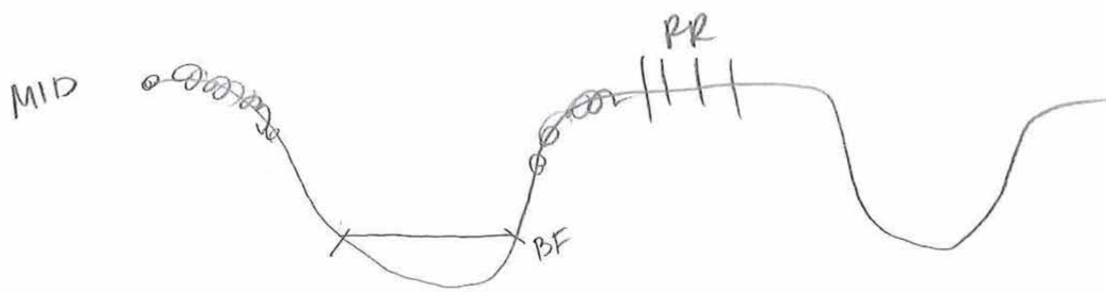
Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

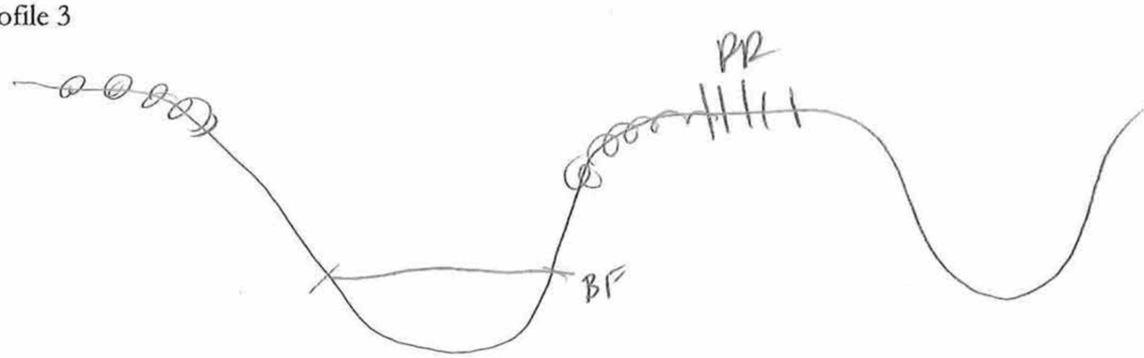
Profile 1



Profile 2



Profile 3



Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
(A dominant species represents ≥10% *relative* cover)

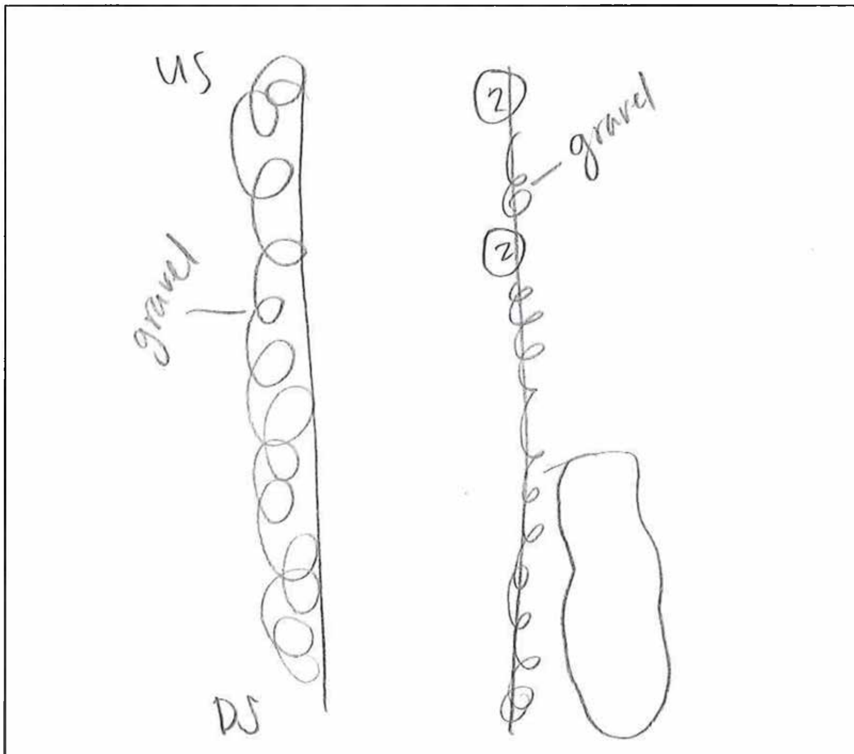
Special Note:

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
Medium (0.5-1.5 m)	**Invasive?**	**Tall (1.5-3.0 m)**	**Invasive?**
Very Tall (>3.0 m)	**Invasive?**	**Total number of co-dominant species for all layers combined (enter here and use in Table 18)**	1
Eucalyptus sp.	Y		
		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	100%

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.



Assigned zones:

1) Eucalyptus

2) PAMPAS

3)

4)

5)

6)

Worksheet for 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	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

juncus durbins
epilobium sp.

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: AA-20	
Project Name: HSR	
Assessment Area ID #: 20	
Project ID #:	**Date:** 9/11/19
Assessment Team Members for This AA:	
RJV	
MCM	
Average Bankfull Width: 2.8 m	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m):	
Upstream Point Latitude: 37.638224	**Longitude:** -122.413176
Downstream Point Latitude: 37.637300	**Longitude:** -122.413154

Wetland Sub-type:

Confined Non-confined

AA Category:

Restoration Mitigation Impacted Ambient Reference Training

Other: PRE-IMPACT

Did the river/stream have flowing water at the time of the assessment? yes no

What is the apparent hydrologic flow regime of the reach you are assessing?

The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. *Perennial* streams conduct water all year long, whereas *ephemeral* streams conduct water only during and immediately following precipitation events. *Intermittent* streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source.

perennial intermittent ephemeral

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		Upstream			
2		Middle Left			
3		Middle Right			
4		Downstream			
5					
6					
7					
8					
9					
10					

Site Location Description:

Comments:

Scoring Sheet: Riverine Wetlands

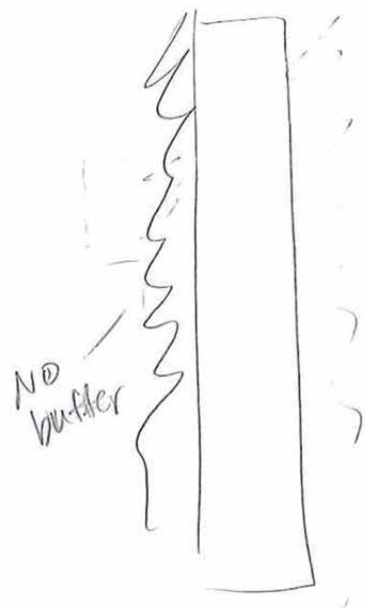
AA Name:			Date:
Attribute 1: Buffer and Landscape Context (pp. 11-19)			**Comments**
	Alpha.	Numeric	
Stream Corridor Continuity (D)	C	6	
Buffer:			
	Alpha.	Numeric	
Buffer submetric A: Percent of AA with Buffer	C	6	
Buffer submetric B: Average Buffer Width	D	3	
Buffer submetric C: Buffer Condition	D	3	COMPACTED SOILS, TRAIN ROW
Raw Attribute Score = D+[C x (A x B)$^{1/2}$]$^{1/2}$		9.57	**Final Attribute Score = (Raw Score/24) x 100** 39.87
Attribute 2: Hydrology (pp. 20-26)			
	Alpha.	Numeric	
Water Source	C	6	
Channel Stability	B	9	LITTLE AGGRADATION
Hydrologic Connectivity	B	9	2.09 ENT. RATIO
Raw Attribute Score = sum of numeric scores		24	**Final Attribute Score = (Raw Score/36) x 100** 66.67
Attribute 3: Physical Structure (pp. 27-33)			
	Alpha.	Numeric	
Structural Patch Richness	D	3	4 PATCHES
Topographic Complexity	D	3	SIMPLE
Raw Attribute Score = sum of numeric scores		6	**Final Attribute Score = (Raw Score/24) x 100** 25
Attribute 4: Biotic Structure (pp. 34-41)			
Plant Community Composition (based on sub-metrics A-C)			
	Alpha.	Numeric	
Plant Community submetric A: Number of plant layers	D	3	1 PLANT LAYER
Plant Community submetric B: Number of Co-dominant species	D	3	1 CO-DOM
Plant Community submetric C: Percent Invasion	D	3	100% INVASION
Plant Community Composition Metric *(numeric average of submetrics A-C)*		3	
Horizontal Interspersion	D	3	MINIMAL INTERSP.
Vertical Biotic Structure	D	3	1 LAYER, SPARSE VEG.
Raw Attribute Score = sum of numeric scores		9	**Final Attribute Score = (Raw Score/36) x 100** 25
Overall AA Score (average of four final Attribute Scores)			39

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	16	1	54
2	30	2	120
3	130	3	
4		4	
5		5	
Upstream Total Length	176	Downstream Total Length	174

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: 40% %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	5
B	5
C	5
D	5
E	5
F	5
G	5
H	5
Average Buffer Width *Round to the nearest integer*	5

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	☐ The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. ☐ Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. ☐ There is leaf litter, thatch, or wrack in most pools (if pools are present). ☐ The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. ☑ There is little or no active undercutting or burial of riparian vegetation. ☐ If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation. ☐ Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). ☐ There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA ☐ The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	☐ The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. ☐ There are abundant bank slides or slumps. ☐ The lower banks are uniformly scoured and not vegetated. ☐ Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. ☐ An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation. ☐ The channel bed appears scoured to bedrock or dense clay. ☐ Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided). ☐ The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	☐ There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. ☐ There are partially buried living tree trunks or shrubs along the banks. ☑ The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. ☑ There are partially buried, or sediment-choked, culverts. ☐ Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. ☐ There are avulsion channels on the floodplain or adjacent valley floor.
Overall	**Equilibrium** **Degradation** **Aggradation**

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.

Steps	Replicate Cross-sections ⟶	TOP	MID	BOT
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	2.9	2.7	2.8
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	.35	.35	.35
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	.7	.7	.7
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	25	20	20
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	8.6	7.4	7.1
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			7.7

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

Please refer to the CRAM Photo Dictionary at** www.cramwetlands.org **for photos of each of the following patch types.

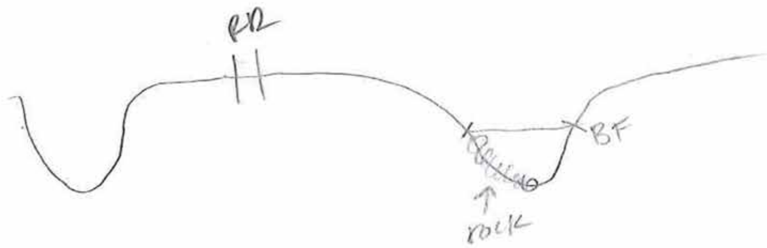
STRUCTURAL PATCH TYPE (circle for presence)	Riverine (Non-confined)	Riverine (Confined)
Minimum Patch Size	**3 m²**	**3 m²**
Abundant wrackline or organic debris in channel, on floodplain	**1**	**1**
Bank slumps or undercut banks in channels or along shoreline	**1**	**1**
Cobbles and/or Boulders	**1**	**1**
Debris jams	**1**	**1**
Filamentous macroalgae or algal mats	**1**	**1**
Large woody debris	**1**	**1**
Pannes or pools on floodplain	**1**	**N/A**
Plant hummocks and/or sediment mounds	**1**	**1**
Point bars and in-channel bars	**1**	**1**
Pools or depressions in channels (wet or dry channels)	**1**	**1**
Riffles or rapids (wet or dry channels)	**1**	**1**
Secondary channels on floodplains or along shorelines	**1**	**N/A**
Standing snags (at least 3 m tall)	**1**	**1**
Submerged vegetation	**1**	**N/A**
Swales on floodplain or along shoreline	**1**	**N/A**
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	**1**	**1**
Vegetated islands (mostly above high-water)	**1**	**N/A**
Total Possible	**17**	**12**
No. Observed Patch Types (enter here and use in Table 14 below)	1	

Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

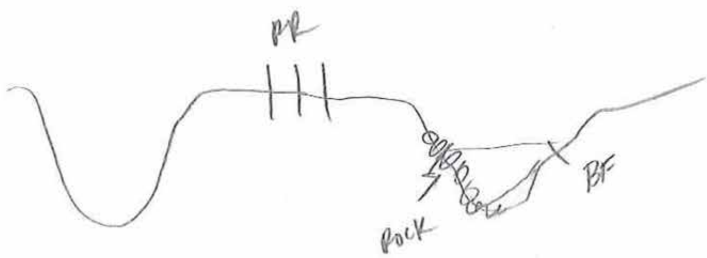
Profile 1

Bot



Profile 2

MID



Profile 3

TOP

Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands

(A dominant species represents ≥10% *relative* cover)

Special Note:

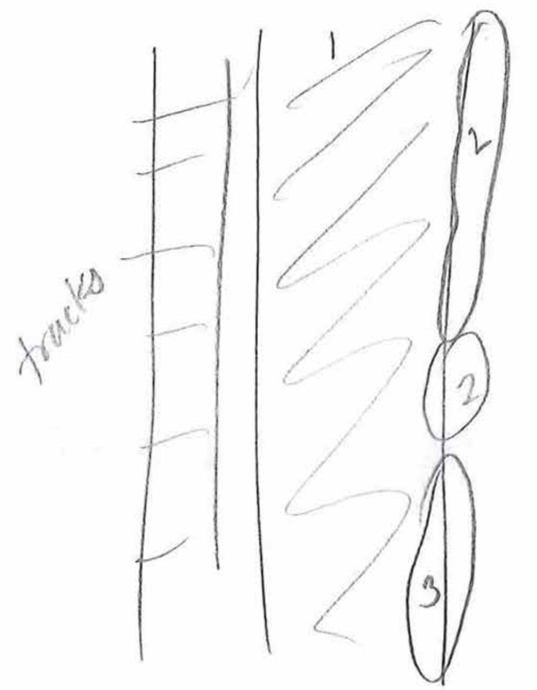
* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
Medium (0.5-1.5 m)	**Invasive?**	**Tall (1.5-3.0 m)**	**Invasive?**
Bristly ox tongue	y	Avena sp	y
		Erigeron canadensis	N
Very Tall (>3.0 m)	**Invasive?**	**Total number of co-dominant species for all layers combined (enter here and use in Table 18)**	3
		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	2/3 66%

2/3

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.



Assigned zones:

1) tracked

2) Bristly ox tongue/ Avena

3) Erigeron

4)

5)

6)

Worksheet for 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	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: AA 21	
Project Name: HSR	
Assessment Area ID #: 21	
Project ID #:	**Date:** 9/11/19
Assessment Team Members for This AA:	
RJV	
MCM	
Average Bankfull Width: 3.33	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): 100m	
Upstream Point Latitude: 37.619556	**Longitude:** -122.404928
Downstream Point Latitude: 37.620335	**Longitude:** -122.405514
Wetland Sub-type: Confined Non-confined	
AA Category: Restoration Mitigation Impacted Ambient Reference Training Other:	
Did the river/stream have flowing water at the time of the assessment? yes no	

What is the apparent hydrologic flow regime of the reach you are assessing?

The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. *Perennial* streams conduct water all year long, whereas *ephemeral* streams conduct water only during and immediately following precipitation events. *Intermittent* streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source.

perennial intermittent ephemeral

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		Upstream			
2		Middle Left			
3		Middle Right			
4		Downstream			
5					
6					
7					
8					
9					
10					

Site Location Description:

Comments:

Scoring Sheet: Riverine Wetlands

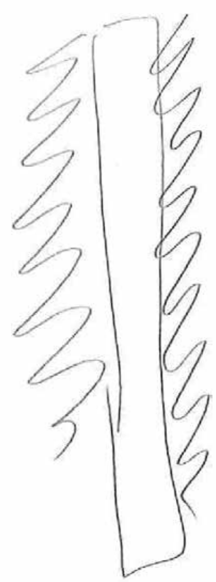
AA Name:			**Date:**
Attribute 1: Buffer and Landscape Context (pp. 11-19)	Alpha.	Numeric	**Comments**
Stream Corridor Continuity (D)	D	3	
Buffer:			
Buffer submetric A: Percent of AA with Buffer	D	3	10%
Buffer submetric B: Average Buffer Width	D	3	14m avg width
Buffer submetric C: Buffer Condition	D	3	
Raw Attribute Score = D+[C x (A x B)$^{1/2}$]$^{1/2}$			**Final Attribute Score = (Raw Score/24) x 100** 25
Attribute 2: Hydrology (pp. 20-26)	Alpha.	Numeric	
Water Source	C	6	
Channel Stability	C	6	
Hydrologic Connectivity	B	9	
Raw Attribute Score = sum of numeric scores		21	**Final Attribute Score = (Raw Score/36) x 100** 58.33
Attribute 3: Physical Structure (pp. 27-33)	Alpha.	Numeric	
Structural Patch Richness	D	3	
Topographic Complexity	D	3	
Raw Attribute Score = sum of numeric scores		6	**Final Attribute Score = (Raw Score/24) x 100** 25
Attribute 4: Biotic Structure (pp. 34-41)			
Plant Community Composition (based on sub-metrics A-C)	Alpha.	Numeric	
Plant Community submetric A: Number of plant layers	B	9	
Plant Community submetric B: Number of Co-dominant species	D	3	
Plant Community submetric C: Percent Invasion	D	3	
Plant Community Composition Metric *(numeric average of submetrics A-C)*		5	
Horizontal Interspersion	C	6	
Vertical Biotic Structure	D	3	
Raw Attribute Score = sum of numeric scores		14	**Final Attribute Score = (Raw Score/36) x 100** 38.9
Overall AA Score (average of four final Attribute Scores)			37

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	486 x2	1	395 x 2 =
2		2	
3		3	
4		4	
5		5	
Upstream Total Length	972	Downstream Total Length	790

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: 10 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	8
B	7
C	7
D	7
E	22
F	20
G	19
H	19
Average Buffer Width *Round to the nearest integer*	14

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	☐ The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. ☐ Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. ☑ There is leaf litter, thatch, or wrack in most pools (if pools are present). ☐ The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. ☐ There is little or no active undercutting or burial of riparian vegetation. ☐ If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation. ☐ Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). ☐ There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA ☐ The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	☐ The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. ☐ There are abundant bank slides or slumps. ☐ The lower banks are uniformly scoured and not vegetated. ☐ Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. ☐ An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation. ☐ The channel bed appears scoured to bedrock or dense clay. ☐ Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided). ☐ The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	☐ There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. ☐ There are partially buried living tree trunks or shrubs along the banks. ☑ The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. ☐ There are partially buried, or sediment-choked, culverts. ☑ Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. ☐ There are avulsion channels on the floodplain or adjacent valley floor.
Overall	**Equilibrium** **Degradation** **Aggradation**

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.

Steps	Replicate Cross-sections ⟶	TOP	MID	BOT
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	3.0	3.0	4.0
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	.6	.6	.6
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	1.2	1.1	1.2
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	5.0	5.0	20
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	1.6	1.6	5
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			2.7

black berry = no access to top + Mid

↑ both confined

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

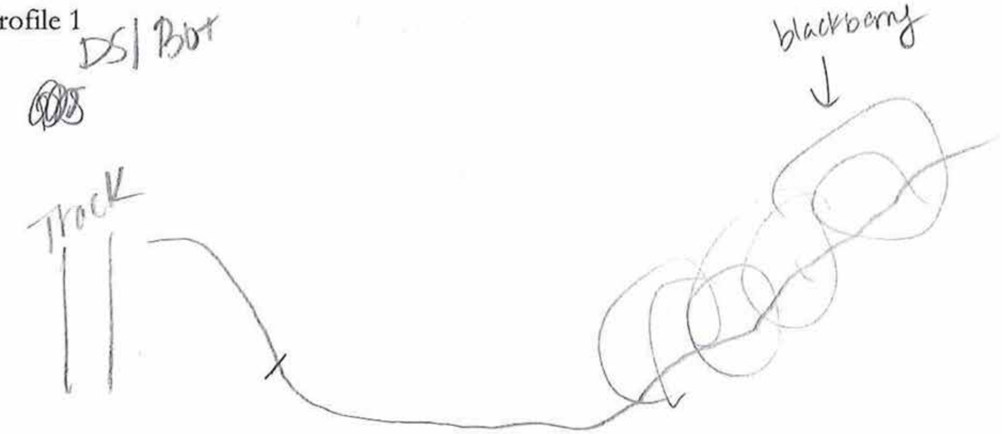
**Please refer to the CRAM Photo Dictionary at www.cramwetlands.org for photos of each of the following patch types.*

STRUCTURAL PATCH TYPE (circle for presence)	Riverine (Non-confined)	Riverine (Confined)
Minimum Patch Size	**3 m^2**	**3 m^2**
Abundant wrackline or organic debris in channel, on floodplain	1	1
Bank slumps or undercut banks in channels or along shoreline	1	1
Cobbles and/or Boulders	1	1
Debris jams	1	1
Filamentous macroalgae or algal mats	1	1
Large woody debris	1	1
Pannes or pools on floodplain	1	N/A
Plant hummocks and/or sediment mounds	1	1
Point bars and in-channel bars	1	1
Pools or depressions in channels (wet or dry channels)	1	1
Riffles or rapids (wet or dry channels)	1	1
Secondary channels on floodplains or along shorelines	1	N/A
Standing snags (at least 3 m tall)	1	1
Submerged vegetation	1	N/A
Swales on floodplain or along shoreline	1	N/A
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	1	1
Vegetated islands (mostly above high-water)	1	N/A
Total Possible	**17**	**12**
No. Observed Patch Types (enter here and use in Table 14 below)		3

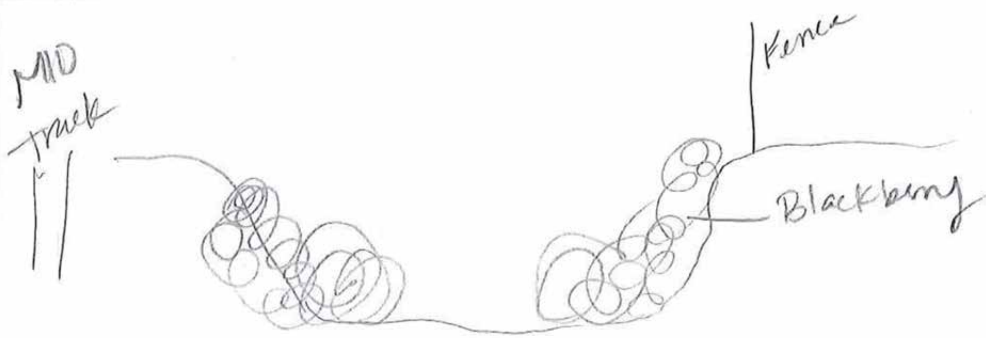
Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

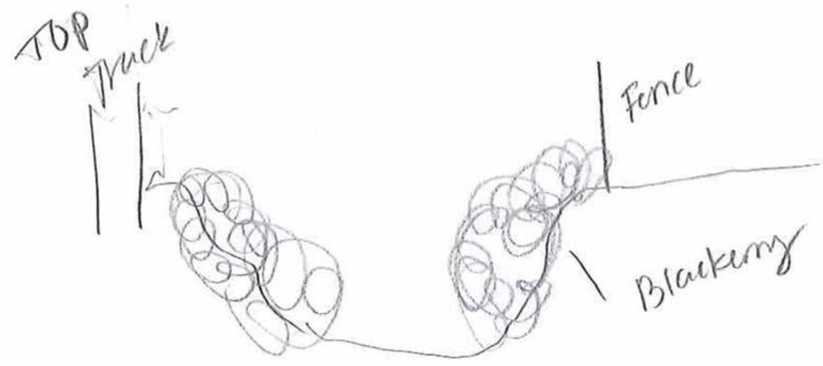
Profile 1



Profile 2



Profile 3



Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
(A dominant species represents ≥10% *relative* cover)

Special Note:

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

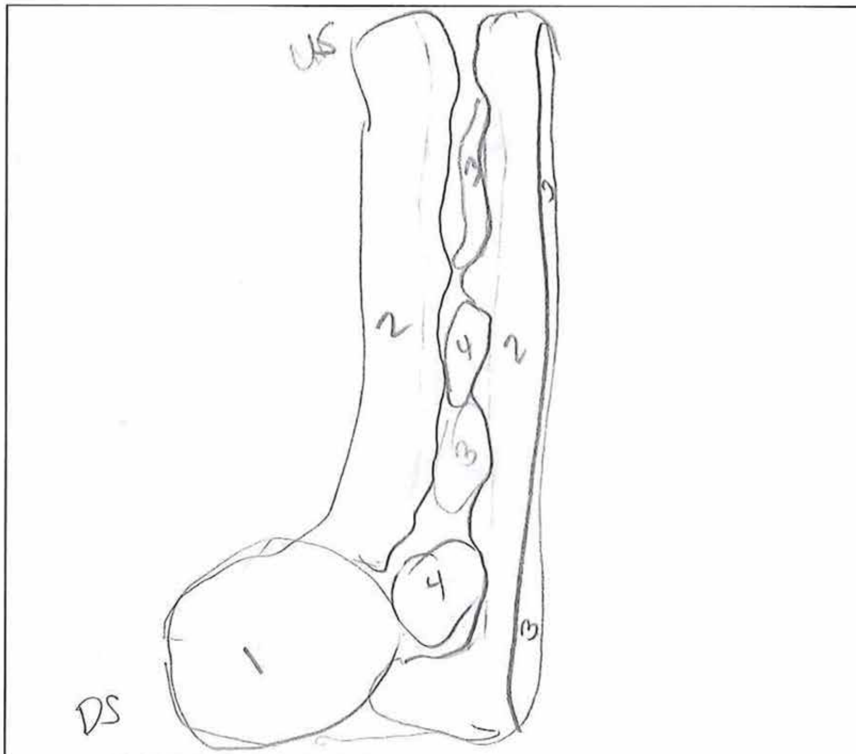
Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
		bermuda grass	y

Medium (0.5-1.5 m)	Invasive?	Tall (1.5-3.0 m)	Invasive?
		rubus armeniacus	y

Very Tall (>3.0 m)	Invasive?		
salix lasiolepis		Total number of co-dominant species for all layers combined (enter here and use in Table 18)	3
		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	66.67%

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.



Assigned zones:

1) willow

2) blackberry

3) Bermuda grass

4) cyperus

5)

6)

Worksheet for Wetland disturbances and conversions

<table>
<tr><td>Has a major disturbance occurred at this wetland?</td><td colspan="2">Yes</td><td colspan="2">No</td><td></td><td></td></tr>
<tr><td>If yes, was it a flood, fire, landslide, or other?</td><td colspan="2">flood</td><td colspan="2">fire</td><td>landslide</td><td>other</td></tr>
<tr><td>If yes, then how severe is the disturbance?</td><td>likely to affect site next 5 or more years</td><td colspan="3">likely to affect site next 3-5 years</td><td colspan="2">likely to affect site next 1-2 years</td></tr>
<tr><td rowspan="4">Has this wetland been converted from another type? If yes, then what was the previous type?</td><td>depressional</td><td colspan="3">vernal pool</td><td colspan="2">vernal pool system</td></tr>
<tr><td>non-confined riverine</td><td colspan="3">confined riverine</td><td colspan="2">seasonal estuarine</td></tr>
<tr><td>perennial saline estuarine</td><td colspan="3">perennial non-saline estuarine</td><td colspan="2">wet meadow</td></tr>
<tr><td>lacustrine</td><td colspan="3">seep or spring</td><td colspan="2">playa</td></tr>
</table>

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: AA-22	
Project Name: HSR	
Assessment Area ID #: 22	
Project ID #:	**Date:** 9/11/19
Assessment Team Members for This AA:	

Average Bankfull Width: 2.2 m

Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): 100 m

Upstream Point Latitude: 37.582313 **Longitude:** -122.350334

Downstream Point Latitude: 37.581883 **Longitude:** -122.349336

Wetland Sub-type:

Confined Non-confined

AA Category:

Restoration Mitigation Impacted Ambient Reference Training

Other:

Did the river/stream have flowing water at the time of the assessment? yes no

What is the apparent hydrologic flow regime of the reach you are assessing?

The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. *Perennial* streams conduct water all year long, whereas *ephemeral* streams conduct water only during and immediately following precipitation events. *Intermittent* streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source.

perennial intermittent ephemeral

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		Upstream			
2		Middle Left			
3		Middle Right			
4		Downstream			
5					
6					
7					
8					
9					
10					

Site Location Description:

Comments:

Scoring Sheet: Riverine Wetlands

AA Name: 22			Date:
Attribute 1: Buffer and Landscape Context (pp. 11-19)			**Comments**
	Alpha.	Numeric	
Stream Corridor Continuity (D)	D	3	
Buffer:			

	Alpha.	Numeric	Comments
Buffer submetric A: Percent of AA with Buffer	B	9	50
Buffer submetric B: Average Buffer Width	D	3	19m avg width
Buffer submetric C: Buffer Condition	C	6	dirt parking lot

Raw Attribute Score = $D+[C \times (A \times B)^{1/2}]^{1/2}$	8.58	**Final Attribute Score = (Raw Score/24) x 100**	35.77

Attribute 2: Hydrology (pp. 20-26)	Alpha.	Numeric	Comments
Water Source	C	6	
Channel Stability	C	6	
Hydrologic Connectivity	C	6	

Raw Attribute Score = sum of numeric scores	18	**Final Attribute Score = (Raw Score/36) x 100**	50.0

Attribute 3: Physical Structure (pp. 27-33)	Alpha.	Numeric	Comments
Structural Patch Richness	A	12	
Topographic Complexity	C	6	

Raw Attribute Score = sum of numeric scores	18	**Final Attribute Score = (Raw Score/24) x 100**	15.0

Attribute 4: Biotic Structure (pp. 34-41)

Plant Community Composition (based on sub-metrics A-C)

	Alpha.	Numeric	Comments
Plant Community submetric A: Number of plant layers	A	12	
Plant Community submetric B: Number of Co-dominant species	C	6	
Plant Community submetric C: Percent Invasion	D	3	
Plant Community Composition Metric *(numeric average of submetrics A-C)*		7	
Horizontal Interspersion	C	6	
Vertical Biotic Structure	B	9	

Raw Attribute Score = sum of numeric scores	22	**Final Attribute Score = (Raw Score/36) x 100**	61

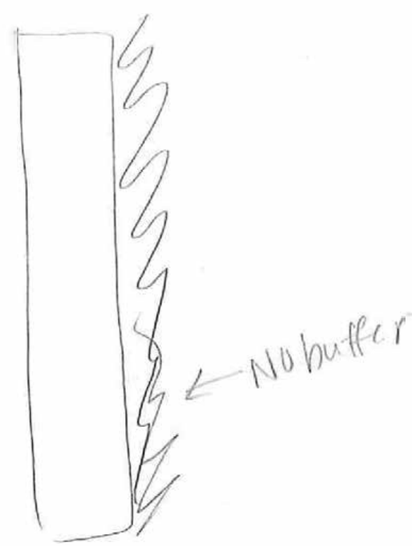
Overall AA Score (average of four final Attribute Scores)	55

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	461x2	1	150 x 2 = 300
2		2	
3		3	
4		4	
5		5	
Upstream Total Length	922	Downstream Total Length	300

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: 50 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	16
B	17
C	23
D	23
E	24
F	17
G	15
H	17
Average Buffer Width ***Round to the nearest integer***	19

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	☐ The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. ☐ Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. ☐ There is leaf litter, thatch, or wrack in most pools (if pools are present). ☐ The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. ☐ There is little or no active undercutting or burial of riparian vegetation. ☐ If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation. ☐ Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). ☐ There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA ☐ The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	☐ The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. ☑ There are abundant bank slides or slumps. ☐ The lower banks are uniformly scoured and not vegetated. ☐ Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. ☐ An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation. ☑ The channel bed appears scoured to bedrock or dense clay. ☐ Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided). ☐ The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	☐ There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. ☐ There are partially buried living tree trunks or shrubs along the banks. ☐ The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. ☐ There are partially buried, or sediment-choked, culverts. ☐ Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. ☐ There are avulsion channels on the floodplain or adjacent valley floor.
Overall	**Equilibrium** **Degradation** **Aggradation**

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.				
Steps	**Replicate Cross-sections** ⟶	**TOP**	**MID**	**BOT**
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	2.7	2.1	1.7
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	.45	.55	.4
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	.9	1.10	.8
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	3.5	3.0	3.2
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	1.29	1.43	1.88
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			1.5

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

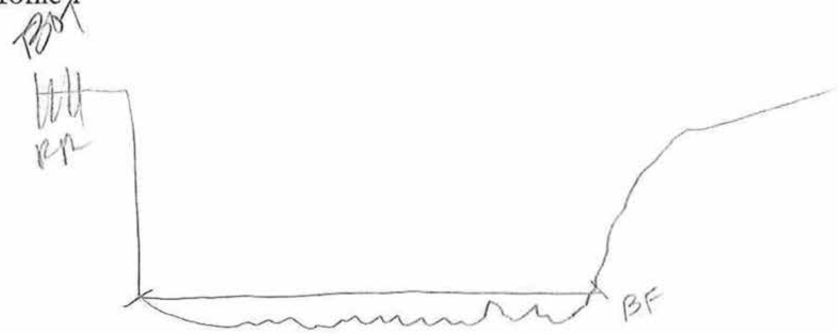
Please refer to the CRAM Photo Dictionary at www.cramwetlands.org for photos of each of the following patch types.

STRUCTURAL PATCH TYPE (circle for presence)	Riverine (Non-confined)	Riverine (Confined)	
Minimum Patch Size	**3 m²**	**3 m²**	
Abundant wrackline or organic debris in channel, on floodplain	**1**	**1**	✓
Bank slumps or undercut banks in channels or along shoreline	**1**	**1**	✓
Cobbles and/or Boulders	**1**	**1**	✓
Debris jams	**1**	**1**	✓
Filamentous macroalgae or algal mats	**1**	**1**	✓
Large woody debris	**1**	**1**	✓
Pannes or pools on floodplain	**1**	**N/A**	
Plant hummocks and/or sediment mounds	**1**	**1**	
Point bars and in-channel bars	**1**	**1**	
Pools or depressions in channels (wet or dry channels)	**1**	**1**	✓
Riffles or rapids (wet or dry channels)	**1**	**1**	✓
Secondary channels on floodplains or along shorelines	**1**	**N/A**	
Standing snags (at least 3 m tall)	**1**	**1**	
Submerged vegetation	**1**	**N/A**	
Swales on floodplain or along shoreline	**1**	**N/A**	
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	**1**	**1**	
Vegetated islands (mostly above high-water)	**1**	**N/A**	
Total Possible	**17**	**12**	
No. Observed Patch Types (enter here and use in Table 14 below)		8	

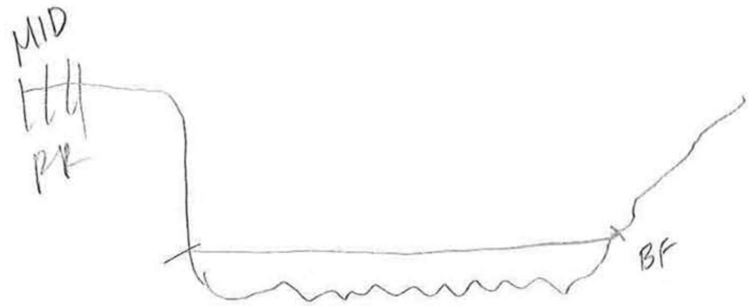
Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

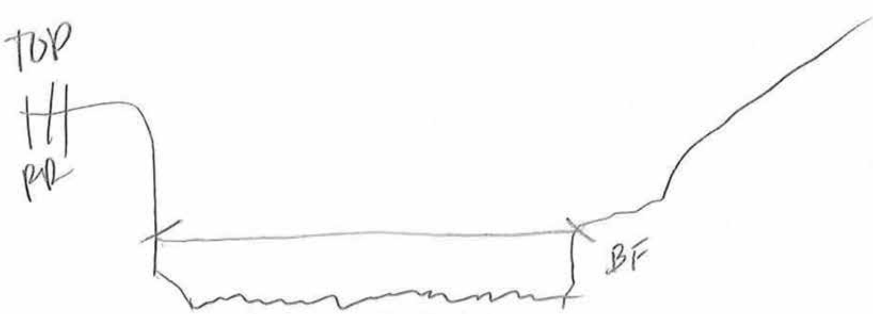
Profile 1



Profile 2



Profile 3



Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
(A dominant species represents ≥10% *relative* cover)

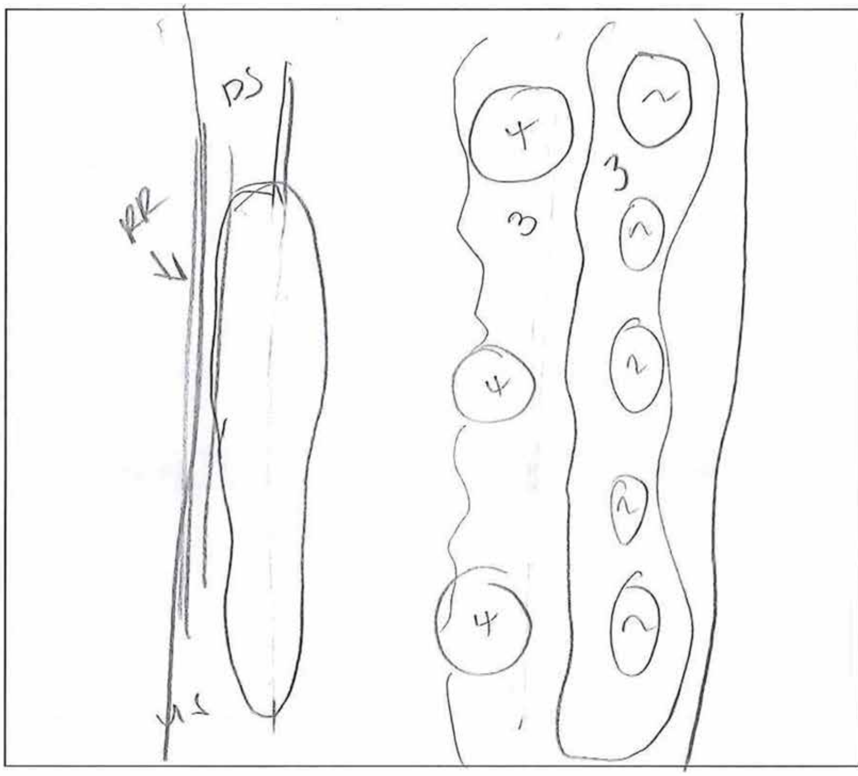
Special Note:

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
		Bromus . diandrus	Y
Medium (0.5-1.5 m)	**Invasive?**	**Tall (1.5-3.0 m)**	**Invasive?**
smilo grass	Y	english ivy	Y
French broom genista mon	Y		
Very Tall (>3.0 m)	**Invasive?**	**Total number of co-dominant species for all layers combined (enter here and use in Table 18)**	5
Eucalyptus	Y		
		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	100

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.



Assigned zones:

1) english ivy
2) Eucalyptus
3) NN grasse
4) french brome
5)
6)

Worksheet for Wetland disturbances and conversions

<table>
<tr><td>Has a major disturbance occurred at this wetland?</td><td>Yes</td><td colspan="2">No</td><td colspan="2"></td><td></td></tr>
<tr><td>If yes, was it a flood, fire, landslide, or other?</td><td>flood</td><td colspan="2">fire</td><td colspan="2">landslide</td><td>other</td></tr>
<tr><td>If yes, then how severe is the disturbance?</td><td colspan="2">likely to affect site next 5 or more years</td><td colspan="2">likely to affect site next 3-5 years</td><td colspan="2">likely to affect site next 1-2 years</td></tr>
<tr><td rowspan="4">Has this wetland been converted from another type? If yes, then what was the previous type?</td><td colspan="2">depressional</td><td colspan="2">vernal pool</td><td colspan="2">vernal pool system</td></tr>
<tr><td colspan="2">non-confined riverine</td><td colspan="2">confined riverine</td><td colspan="2">seasonal estuarine</td></tr>
<tr><td colspan="2">perennial saline estuarine</td><td colspan="2">perennial non-saline estuarine</td><td colspan="2">wet meadow</td></tr>
<tr><td colspan="2">lacustrine</td><td colspan="2">seep or spring</td><td colspan="2">playa</td></tr>
</table>

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: AA 23	
Project Name: HSR FJ	
Assessment Area ID #: AA23	
Project ID #:	**Date:** 9/12/19
Assessment Team Members for This AA:	
RJV, MAL	
Average Bankfull Width: 2.33m	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): 100m	
Upstream Point Latitude: 37.55394	**Longitude:** -122.31015
Downstream Point Latitude: 37.55306	**Longitude:** -122.30975

Wetland Sub-type:

Confined Non-confined

AA Category:

Restoration Mitigation Impacted Ambient Reference Training

Other: PRE-IMPACT

Did the river/stream have flowing water at the time of the assessment? yes no

What is the apparent hydrologic flow regime of the reach you are assessing?

The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. *Perennial* streams conduct water all year long, whereas *ephemeral* streams conduct water only during and immediately following precipitation events. *Intermittent* streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source.

perennial intermittent ephemeral

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		Upstream			
2		Middle Left			
3		Middle Right			
4		Downstream			
5					
6					
7					
8					
9					
10					

Site Location Description:

Comments:

Scoring Sheet: Riverine Wetlands

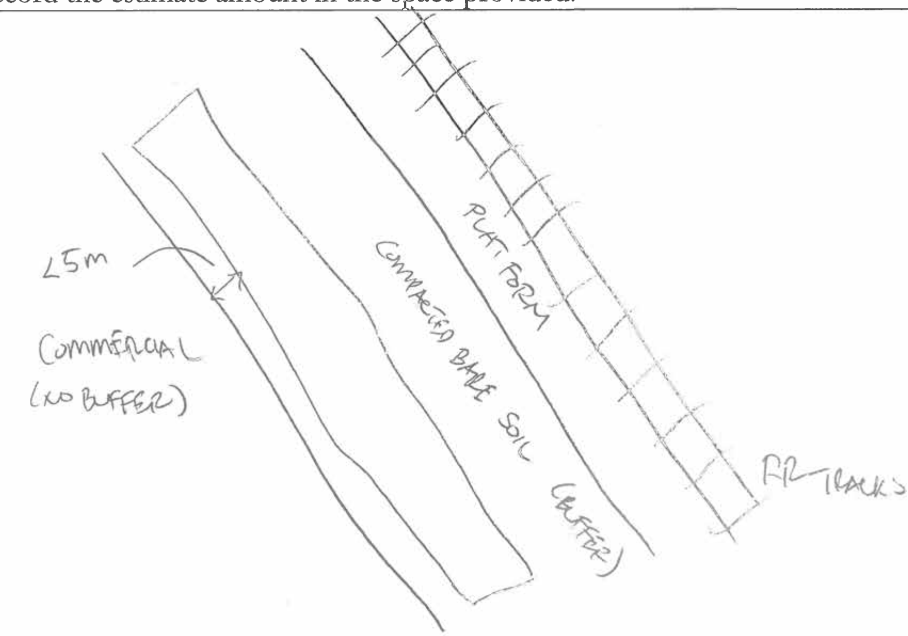
AA Name: AA23			Date: 9/12/19
Attribute 1: Buffer and Landscape Context (pp. 11-19)			**Comments**
	Alpha.	Numeric	
Stream Corridor Continuity (D)	D	3	>100m OF NON-BUFFER US+DS
Buffer:			
Buffer submetric A: Percent of AA with Buffer	B	9	50%
Buffer submetric B: Average Buffer Width	D	3	AVG BUFFER = 5 m
Buffer submetric C: Buffer Condition	D	3	Compacted, Barren little
Raw Attribute Score = D+[C x (A x B)^{½}]^{½}		6.948	**Final Attribute Score = (Raw Score/24) x 100**: 28.95
Attribute 2: Hydrology (pp. 20-26)			
	Alpha.	Numeric	
Water Source	C	6	More than 20% developed
Channel Stability	B	9	EQUILIB. w/ MINOR AGG.
Hydrologic Connectivity	B	9	ER = 1.7
Raw Attribute Score = sum of numeric scores		24	**Final Attribute Score = (Raw Score/36) x 100**: 66.67
Attribute 3: Physical Structure (pp. 27-33)			
	Alpha.	Numeric	
Structural Patch Richness	D	3	2 PATCHES
Topographic Complexity	C	6	Some benching
Raw Attribute Score = sum of numeric scores		9	**Final Attribute Score = (Raw Score/24) x 100**: 37.5
Attribute 4: Biotic Structure (pp. 34-41)			
Plant Community Composition (based on sub-metrics A-C)			
	Alpha.	Numeric	
Plant Community submetric A: Number of plant layers	C	6	2 layers
Plant Community submetric B: Number of Co-dominant species	D	3	2 codoms
Plant Community submetric C: Percent Invasion	D	3	100%
Plant Community Composition Metric *(numeric average of submetrics A-C)*		4	
Horizontal Interspersion	D	3	MINIMAL PLANT ZONES
Vertical Biotic Structure	D	3	VERY LITTLE OVERLAP
Raw Attribute Score = sum of numeric scores		10	**Final Attribute Score = (Raw Score/36) x 100**: 27.78
Overall AA Score (average of four final Attribute Scores)			40

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	13	1	
2	337	2	
3		3	
4		4	
5		5	
Upstream Total Length	350	Downstream Total Length	475

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: 50 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	5m for all
B	
C	
D	
E	
F	
G	
H	
Average Buffer Width *Round to the nearest integer*	5

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	☐ The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. ☐ Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. ☐ There is leaf litter, thatch, or wrack in most pools (if pools are present). ☐ The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. ☐ There is little or no active undercutting or burial of riparian vegetation. ☐ If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation. ☐ Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). ☑ There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA ☐ The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	☐ The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. ☐ There are abundant bank slides or slumps. ☐ The lower banks are uniformly scoured and not vegetated. ☐ Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. ☐ An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation. ☐ The channel bed appears scoured to bedrock or dense clay. ☐ Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided). ☐ The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	☐ There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. ☐ There are partially buried living tree trunks or shrubs along the banks. ☐ The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. ☑ There are partially buried, or sediment-choked, culverts. ☐ Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. ☐ There are avulsion channels on the floodplain or adjacent valley floor.
Overall	**Equilibrium** **Degradation** **Aggradation**

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.

Steps	Replicate Cross-sections ⟶	TOP	MID	BOT
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	2.7	1.5	2.8
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	0.18	0.16	0.23
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	0.36	0.32	0.46
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	4.3	2.9	4.2
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	1.6	1.9	1.5
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			1.7

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

**Please refer to the CRAM Photo Dictionary at* www.cramwetlands.org *for photos of each of the following patch types.*

STRUCTURAL PATCH TYPE (circle for presence)	Riverine (Non-confined)	Riverine (Confined)
Minimum Patch Size	**3 m^2**	**3 m^2**
Abundant wrackline or organic debris in channel, on floodplain	1	1
Bank slumps or undercut banks in channels or along shoreline	1	1
Cobbles and/or Boulders	1	1
Debris jams	1	1
Filamentous macroalgae or algal mats	1	1
Large woody debris	1	1
Pannes or pools on floodplain	1	N/A
Plant hummocks and/or sediment mounds	1	1
Point bars and in-channel bars	1	1
Pools or depressions in channels (wet or dry channels)	1	1
Riffles or rapids (wet or dry channels)	1	1
Secondary channels on floodplains or along shorelines	1	N/A
Standing snags (at least 3 m tall)	1	1
Submerged vegetation	1	N/A
Swales on floodplain or along shoreline	1	N/A
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	1	1
Vegetated islands (mostly above high-water)	1	N/A
Total Possible	**17**	**12**
No. Observed Patch Types (enter here and use in Table 14 below)		2

Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

Profile 1

Profile 2

Profile 3

Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
(A dominant species represents ≥10% *relative* cover)

Special Note:

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

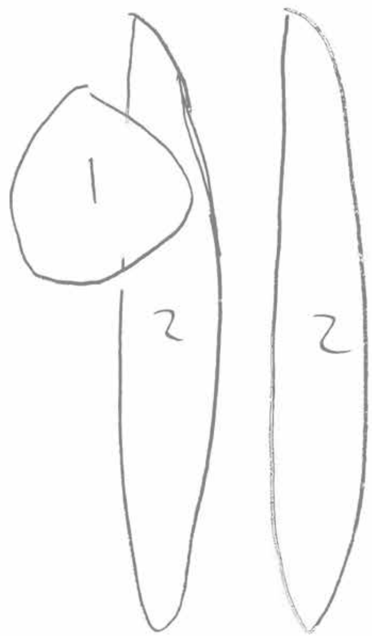
Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
		Cynodon dactylon	Y

Medium (0.5-1.5 m)	Invasive?	Tall (1.5-3.0 m)	Invasive?

Very Tall (>3.0 m)	Invasive?		
Eucalyptus spp.	Y	Total number of co-dominant species for all layers combined (enter here and use in Table 18)	2
		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	100

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.



Assigned zones:

1) Eucalyptus

2) Cynodon dactylon

3)

4)

5)

6)

Worksheet for Wetland disturbances and conversions

<table>
<tr><td>Has a major disturbance occurred at this wetland?</td><td colspan="2">Yes</td><td colspan="2">No</td><td colspan="2"></td><td></td></tr>
<tr><td>If yes, was it a flood, fire, landslide, or other?</td><td colspan="2">flood</td><td colspan="2">fire</td><td colspan="2">landslide</td><td>other</td></tr>
<tr><td>If yes, then how severe is the disturbance?</td><td colspan="2">likely to affect site next 5 or more years</td><td colspan="3">likely to affect site next 3-5 years</td><td colspan="3">likely to affect site next 1-2 years</td></tr>
<tr><td rowspan="4">Has this wetland been converted from another type? If yes, then what was the previous type?</td><td colspan="2">depressional</td><td colspan="3">vernal pool</td><td colspan="3">vernal pool system</td></tr>
<tr><td colspan="2">non-confined riverine</td><td colspan="3">confined riverine</td><td colspan="3">seasonal estuarine</td></tr>
<tr><td colspan="2">perennial saline estuarine</td><td colspan="3">perennial non-saline estuarine</td><td colspan="3">wet meadow</td></tr>
<tr><td colspan="2">lacustrine</td><td colspan="3">seep or spring</td><td colspan="3">playa</td></tr>
</table>

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Point Source (PS) discharges (POTW, other non-stormwater discharge)		
Non-point Source (Non-PS) discharges (urban runoff, farm drainage)	Y	
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	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	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	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

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: AA24	
Project Name: HSR FJ	
Assessment Area ID #: AA24	
Project ID #:	**Date:** 9/12/19
Assessment Team Members for This AA:	
RJV ,MAL	
Average Bankfull Width: 3.9 m	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): 100 m	
Upstream Point Latitude: 37.55100	**Longitude:** -122.30837
Downstream Point Latitude: 37.55028	**Longitude:** -122.30783

Wetland Sub-type:

Confined Non-confined

AA Category:

Restoration Mitigation Impacted Ambient Reference Training

Other: PRE IMPACT

Did the river/stream have flowing water at the time of the assessment? yes no

What is the apparent hydrologic flow regime of the reach you are assessing?

The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. *Perennial* streams conduct water all year long, whereas *ephemeral* streams conduct water only during and immediately following precipitation events. *Intermittent* streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source.

perennial intermittent ephemeral

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		Upstream			
2		Middle Left			
3		Middle Right			
4		Downstream			
5					
6					
7					
8					
9					
10					

Site Location Description:

Comments:

Scoring Sheet: Riverine Wetlands

AA Name:					Date:	
Attribute 1: Buffer and Landscape Context (pp. 11-19)					**Comments**	
Stream Corridor Continuity (D)			Alpha. D	Numeric 3	7/00m NON-BUFFER	
Buffer:						
Buffer submetric A: Percent of AA with Buffer	Alpha. D	Numeric 3			NO BUFFER	
Buffer submetric B: Average Buffer Width	D	3				
Buffer submetric C: Buffer Condition	D	3				
Raw Attribute Score = D+[C x (A x B)$^{1/2}$]$^{1/2}$				6	**Final Attribute Score = (Raw Score/24) x 100**	25
Attribute 2: Hydrology (pp. 20-26)						
			Alpha.	Numeric		
Water Source			C	6	DEVELOPED WATERSHED	
Channel Stability			A	12	LITTLE/NO EROSION/AGGRAD.	
Hydrologic Connectivity			D	3	1.1 ENT. RATIO	
Raw Attribute Score = sum of numeric scores				21	**Final Attribute Score = (Raw Score/36) x 100**	58.33
Attribute 3: Physical Structure (pp. 27-33)						
			Alpha.	Numeric		
Structural Patch Richness			D	3	3 PATCHES	
Topographic Complexity			D	3	CONCRETE V-DITCH	
Raw Attribute Score = sum of numeric scores				6	**Final Attribute Score = (Raw Score/24) x 100**	25
Attribute 4: Biotic Structure (pp. 34-41)						
Plant Community Composition (based on sub-metrics A-C)						
Plant Community submetric A: Number of plant layers	Alpha. C	Numeric 6			2 LAYERS	
Plant Community submetric B: Number of Co-dominant species	C	6			6 CO-DOMS	
Plant Community submetric C: Percent Invasion	D	3			50%	
Plant Community Composition Metric *(numeric average of submetrics A-C)*				5		
Horizontal Interspersion			D	3	MINIMAL INTERSPERSION	
Vertical Biotic Structure			D	3	LITTLE OVERLAP	
Raw Attribute Score = sum of numeric scores				11	**Final Attribute Score = (Raw Score/36) x 100**	30.56
Overall AA Score (average of four final Attribute Scores)					35	

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	440m	1	31
2		2	
3		3	
4		4	
5		5	
Upstream Total Length	440m	Downstream Total Length	31

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

NO BUFFER

Percent of AA with Buffer: 0 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	
B	
C	
D	
E	
F	
G	
H	
Average Buffer Width *Round to the nearest integer*	0

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	☐ The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. ☐ Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. ☐ There is leaf litter, thatch, or wrack in most pools (if pools are present). ☐ The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. ☑ There is little or no active undercutting or burial of riparian vegetation. ☐ If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation. ☐ Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). ☐ There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA ☐ The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	☐ The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. ☐ There are abundant bank slides or slumps. ☐ The lower banks are uniformly scoured and not vegetated. ☐ Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. ☐ An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation. ☐ The channel bed appears scoured to bedrock or dense clay. ☐ Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided). ☐ The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	☐ There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. ☐ There are partially buried living tree trunks or shrubs along the banks. ☑ The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. ☐ There are partially buried, or sediment-choked, culverts. ☐ Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. ☐ There are avulsion channels on the floodplain or adjacent valley floor.
Overall	**Equilibrium** **Degradation** **Aggradation**

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.				
Steps	**Replicate Cross-sections** ⟶	**TOP**	**MID**	**BOT**
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	"	"	3.9
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	"	"	.42
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	"	"	.84
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	"	"	4.4
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	"	"	1.1
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			1.1

CONCRETE V-DITCH

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

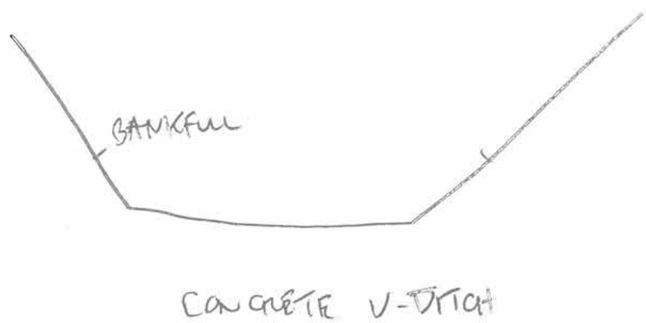
Please refer to the CRAM Photo Dictionary at** *www.cramwetlands.org* **for photos of each of the following patch types.

STRUCTURAL PATCH TYPE (circle for presence)	Riverine (Non-confined)	Riverine (Confined)
Minimum Patch Size	**3 m^2**	**3 m^2**
Abundant wrackline or organic debris in channel, on floodplain	1	1
Bank slumps or undercut banks in channels or along shoreline	1	1
Cobbles and/or Boulders	1	1
Debris jams	1	1
Filamentous macroalgae or algal mats	1	1
Large woody debris	1	1
Pannes or pools on floodplain	1	N/A
Plant hummocks and/or sediment mounds	1	1
Point bars and in-channel bars	1	1
Pools or depressions in channels (wet or dry channels)	1	1
Riffles or rapids (wet or dry channels)	1	1
Secondary channels on floodplains or along shorelines	1	N/A
Standing snags (at least 3 m tall)	1	1
Submerged vegetation	1	N/A
Swales on floodplain or along shoreline	1	N/A
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	1	1
Vegetated islands (mostly above high-water)	1	N/A
Total Possible	**17**	**12**
No. Observed Patch Types (enter here and use in Table 14 below)		3

Worksheet for AA Topographic Complexity

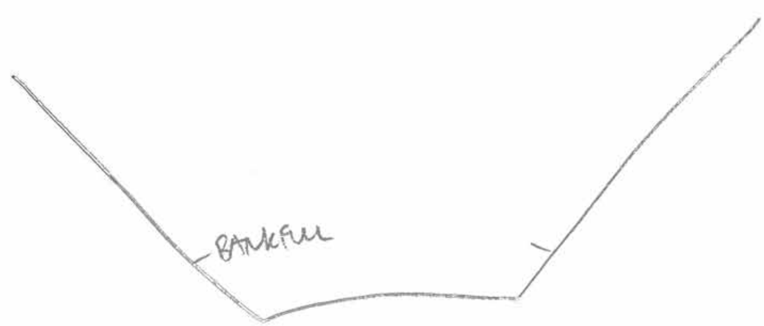
At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

Profile 1



Profile 2

Profile 3



Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
(A dominant species represents ≥10% *relative* cover)

Special Note:

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

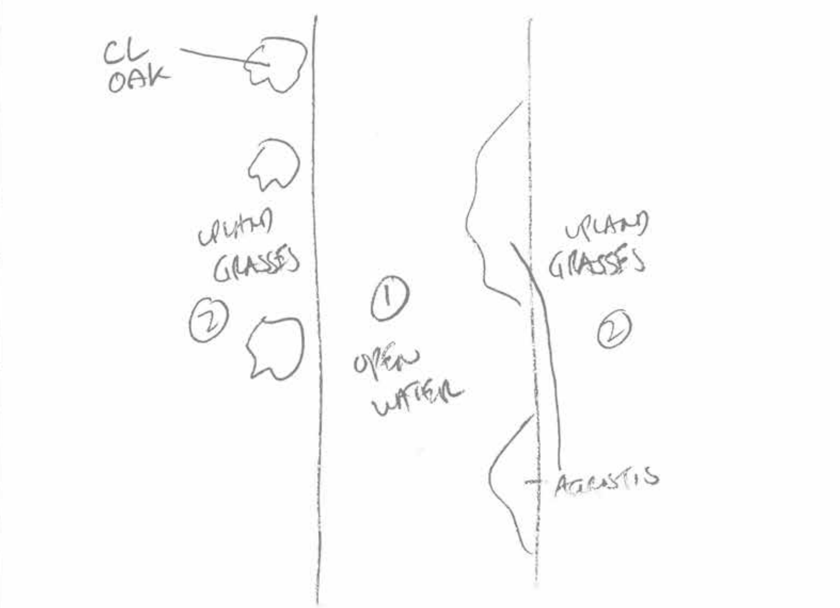
Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
		Avena sp.	Y
		Lactuca serriola	N
		ox-tongue	Y
		DITTRICHIA GRAVEOLENS (Stink wort)	Y
		AGROSTIS CAPILLARIS (Bent grass)	N

Medium (0.5-1.5 m)	Invasive?	Tall (1.5-3.0 m)	Invasive?
		Quercus agrifolia	N

Very Tall (>3.0 m)	Invasive?		
		Total number of co-dominant species for all layers combined (enter here and use in Table 18)	6
		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	50%

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.



Assigned zones:

1) AGROSTIS

2) UPLAND GRASSES / COAST LIVE OAK

3)

4)

5)

6)

Worksheet for Wetland disturbances and conversions

<table>
<tr><td>Has a major disturbance occurred at this wetland?</td><td>Yes</td><td colspan="2">No</td><td></td><td></td></tr>
<tr><td>If yes, was it a flood, fire, landslide, or other?</td><td>flood</td><td colspan="2">fire</td><td>landslide</td><td>other</td></tr>
<tr><td>If yes, then how severe is the disturbance?
NO</td><td colspan="2">likely to affect site next 5 or more years</td><td colspan="2">likely to affect site next 3-5 years</td><td>likely to affect site next 1-2 years</td></tr>
<tr><td rowspan="4">Has this wetland been converted from another type? If yes, then what was the previous type?
NO</td><td colspan="2">depressional</td><td colspan="2">vernal pool</td><td>vernal pool system</td></tr>
<tr><td colspan="2">non-confined riverine</td><td colspan="2">confined riverine</td><td>seasonal estuarine</td></tr>
<tr><td colspan="2">perennial saline estuarine</td><td colspan="2">perennial non-saline estuarine</td><td>wet meadow</td></tr>
<tr><td colspan="2">lacustrine</td><td colspan="2">seep or spring</td><td>playa</td></tr>
</table>

Stressor Checklist Worksheet

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

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

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Mowing, grazing, excessive herbivory (within AA)		
Excessive human visitation		X
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	X	
Pesticide application or vector control	X	
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	Significant negative effect on AA
Urban residential		X
Industrial/commercial		X
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		X
Rangeland (livestock rangeland also managed for native vegetation)		
Sports fields and urban parklands (golf courses, soccer fields, etc.)	X	
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		

Basic Information Sheet: Depressional Wetlands

Assessment Area Name: AA25	
Project Name: HSR FJ	
Assessment Area ID #: AA25	
Project ID #:	**Date:** 9/12/19
Assessment Team Members for This AA	
RJV, MAL	

AA Category:

Pre-Restoration Post-Restoration Pre-Mitigation Post-Mitigation

☑ Pre-Impact ☐ Post-Impact ☐ Training ☐ Ambient

☐ Reference ☐ Other:

Origin of Wetland (if known):

☐ Natural system ☑ Artificial system

Type of Management (if known):

☐ waterfowl/birds ☐ amphibians ☐ general wildlife ☐ sediment ☐ water quality ☐ stormwater

☐ water supply (agriculture) ☐ water supply (livestock) ☑ not managed ☐ other:

Which best describes the type of depressional wetland?

☑ freshwater marsh ☐ alkaline marsh ☐ brackish marsh

☐ other (specify):

AA Encompasses:

☑ entire wetland ☐ portion of the wetland

Which best describes the hydrologic state of the wetland at the time of assessment?

ponded/inundated saturated soil, but no surface water dry

What is the apparent hydrologic regime of the wetland?

Perennially flooded systems contain surface water year-round, *seasonally flooded* depressional wetlands are defined as supporting surface water for 4-11 months of the year (in > 5 out of 10 years.) *Temporarily flooded* depressional wetlands possess surface water between 2 weeks and 4 months of the year.

perennially flooded seasonally flooded temporarily flooded

Does your wetland connect with the floodplain of a nearby stream? *(system subject to overbank flow, a dammed stream does not count)*	yes / no

Does the wetland have a defined on undefined <u>outlet</u>? defined ~~undefined~~

Does the wetland have a defined on undefined <u>inlet</u>? defined undefined

Are the inlet and outlet at the same location? ☐ yes ☐ no

Is the topographic basin of the wetland distinct **or** indistinct **?**

An *indistinct* topographic basin is one that lacks obvious boundaries between wetland and upland. Examples of such features are seasonal, depressional wetlands in very low-gradient landscapes.

Photo Identification Numbers and Description:

Photos should be taken from edge of AA looking toward the centroid of AA

	Photo ID No.	Description	Latitude	Longitude	Datum
1		(to) North			
2		(to) East			
3		(to) South			
4		(to) West			
5					
6					
7					
8					
9					
10					

Site Location Description and Land Use:

North of staging yard. WL leads into yard, which is filled over culvert. Completely surrounded by development. RR directly east (adjacent).

Comments:

Scoring Sheet: Depressional Wetlands

AA Name: AA 25			Date: 9/12/19	
Attribute 1: Buffer and Landscape Context (pp. 8-15)			**Comments**	
Aquatic Area Abundance Score (D)	Alpha. D	Numeric 3	<1 % AQUATIC IN TRANSECTS	
Buffer:				
Buffer submetric A: Percent of AA with Buffer	Alpha. D	Numeric 3	NO BUFFER	
Buffer submetric B: Average Buffer Width	D	3		
Buffer submetric C: Buffer Condition	D	3	NO buffer	
Raw Attribute Score = D+[C x (A x B)^{½}]^{½}		6	**Final Attribute Score = (Raw Score/24) x 100**	25
Attribute 2: Hydrology (pp. 16-21)	**Alpha.**	**Numeric**		
Water Source	C	6	HIGHLY DEVELOPED WATERSHED	
Hydroperiod	A	12	NO CONTROLLED STRUCTURES	
Hydrologic Connectivity	D	3	LITTLE/NO TRANSITION AREAS	
Raw Attribute Score = sum of numeric scores		21	**Final Attribute Score = (Raw Score/36) x 100**	58.33
Attribute 3: Physical Structure (pp. 22-28)	**Alpha.**	**Numeric**		
Structural Patch Richness	D	3	2 patches	
Topographic Complexity	C	6	MINOR TOPO	
Raw Attribute Score = sum of numeric scores		9	**Final Attribute Score = (Raw Score/24) x 100**	37.50
Attribute 4: Biotic Structure (pp. 29-39)				
Plant Community Composition (based on submetrics A-C)				
Plant Community submetric A: Number of plant layers	Alpha. B	Numeric 9	3 LAYERS	
Plant Community submetric B: Number of Co-dominant species	D	3	5 CO-DOMS	
Plant Community submetric C: Percent Invasion	C	6	25%	
Plant Community Composition Metric *(numeric average of submetrics A-C)*		6		
Horizontal Interspersion	C	6	MINIMAL	
Vertical Biotic Structure	D	3	Method 1 - No [illegible]	
Raw Attribute Score = sum of numeric scores		15	**Final Attribute Score = (Raw Score/36) x 100**	41.67
Overall AA Score (average of four final Attribute Scores)			41	

Worksheet for Aquatic Area Abundance Metric (Method 1)

Percentage of Transect Lines that Contains Aquatic Area of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	1
South	0
East	1
West	0
Average Percentage of Transect Length That Is an Aquatic Feature	0,5

Percent of AA with Buffer Worksheet.

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

NO BUFFER

Percent of AA with Buffer: ______ %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	
B	
C	
D	
E	
F	
G	
H	
Average Buffer Width *Round to the nearest whole number (integer)*	

Structural Patch Type Worksheet for Depressional Wetlands

Check each type of patch that is observed in the AA and use the total number of observed patches in Table 15.

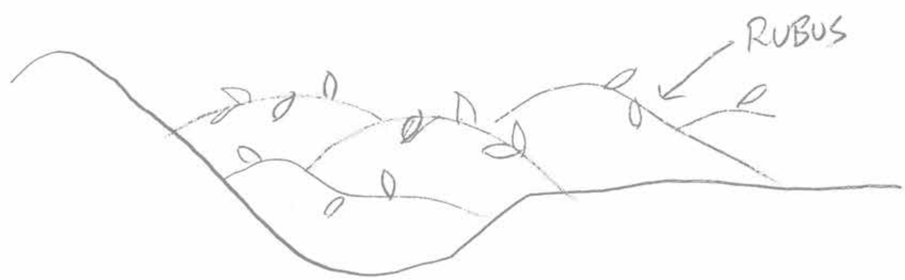
STRUCTURAL PATCH TYPE (circle for presence)	**Depressional**
Minimum Patch Size	**3 m^2**
Abundant wrack or organic debris in channel, on floodplain, or across depressional wetland plain	1
Animal mounds and burrows	
Bank slumps or undercut banks in channels or along shoreline	
Cobbles and Boulders	1
Concentric or parallel high water marks	
Filamentous macroalgae or algal mats	
Islands (mostly above high-water)	
Large woody debris	
Non-vegetated flats or bare ground (sandflats, mudflats, gravel flats, etc.)	
Open water	
Plant hummocks and/or sediment mounds	
Soil cracks	
Standing snag(s) (1 or more at least 3 m tall)	
Submerged vegetation	
Swales on floodplain or along shoreline	
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	
Woody vegetation in water	
Total Possible	**17**
No. Observed Patch Types (enter here and use in Table 15 below)	2

Worksheet for AA Topographic Complexity

At two locations in the AA, make a sketch of the profile from the AA boundary to AA boundary. Try to capture the major topographic features, slopes and intervening micro-topographic relief. Based on these sketches and the profiles in Figure 7, choose a description in Table 17 that best describes the overall topographic complexity of the AA.

North to South

East to West



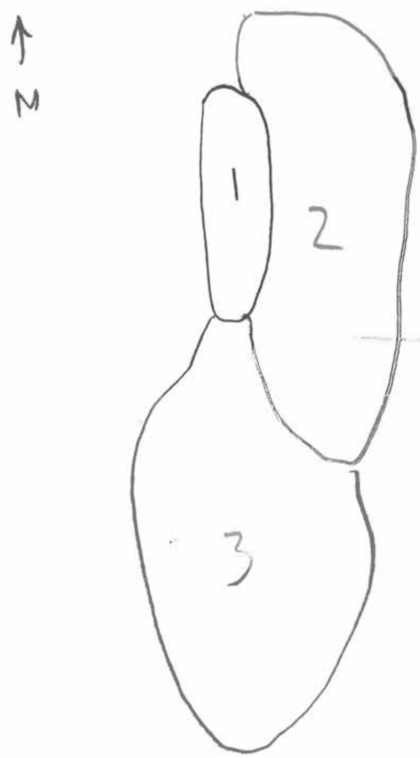
Plant Community Metric Worksheet 2 of 8: Co-dominant species richness
(A dominant species represents ≥10% *relative* cover)

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming	Invasive?	Short (<0.5 m)	Invasive?
Medium (0.5 – 1.5 m)	**Invasive?**	**Tall (1.5 – 3.0 m)**	**Invasive?**
Rubus armeniacus	Y	Erigeron canadensis	N
		Typha sp.	N
		Epilobium brachycarpum	N
Very Tall (>3.0 m)	**Invasive?**		
Rubus armeniacus	Y	**Total number of co-dominant species for all layers combined (enter here and use in Table 19)**	5
		Percent Invasion *Round to the nearest whole number (integer)* (enter here and use in Table 19)	25%

Horizontal Interspersion Worksheet

Use the spaces below to make a sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign names to the zones and record them on the right. Based on the sketch, choose a single profile from Figure 8 that best represents the AA overall.



Assigned zones:

1) Typha

2) Erigeron / Epilobium

3) Rubus

4)

5)

6)

Wetland disturbances and conversions Worksheet

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? POSSIBLY USED TO BE A CHANNEL. DISTURBANCE DUE TO CONSTRUCTION OF ADJACENT RAIL	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	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Point Source (PS) discharges (POTW, other non-stormwater discharge)		
Non-point Source (Non-PS) discharges (urban runoff, farm drainage)		X
Flow diversions or unnatural inflows		X
Dams (reservoirs, detention basins, recharge basins)		
Flow obstructions (culverts, paved stream crossings)		X
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	Significant negative effect on AA
Filling or dumping of sediment or soils **(N/A for restoration areas)**		
Grading/ compaction **(N/A for restoration areas)**	X	
Plowing/Discing **(N/A for restoration areas)**		
Resource extraction (sediment, gravel, oil and/or gas)		
Vegetation management	X	
Excessive sediment or organic debris from watershed		
Excessive runoff from watershed		X
Nutrient impaired (PS or Non-PS pollution)		X
Heavy metal impaired (PS or Non-PS pollution)		X
Pesticides or trace organics impaired (PS or Non-PS pollution)		
Bacteria and pathogens impaired (PS or Non-PS pollution)		X
Trash or refuse		
Comments		

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Mowing, grazing, excessive herbivory (within AA)		
Excessive human visitation		X
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	X	
Pesticide application or vector control	X	
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	X	
Comments		

BUFFER AND LANDSCAPE CONTEXT ATTRIBUTE (WITHIN 500 M OF AA)	Present	Significant negative effect on AA
Urban residential		X
Industrial/commercial		X
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		X
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		

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: AA 26	
Project Name: HSR FJ	
Assessment Area ID #: AA 26	
Project ID #:	**Date:** ~~AA26~~ 9/12/2016
Assessment Team Members for This AA:	
RJV, MAL	
Average Bankfull Width: 6.1m	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): 100m	
Upstream Point Latitude: 37.42459	**Longitude:** -122.13477
Downstream Point Latitude: 37.42402	**Longitude:** -122.13388

Wetland Sub-type:

Confined　　Non-confined

AA Category:

Restoration　Mitigation　Impacted　Ambient　Reference　Training

Other: PRE-IMPACT

Did the river/stream have flowing water at the time of the assessment? yes　no

What is the apparent hydrologic flow regime of the reach you are assessing?

The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. *Perennial* streams conduct water all year long, whereas *ephemeral* streams conduct water only during and immediately following precipitation events. *Intermittent* streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source.

perennial　　intermittent　　ephemeral

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		Upstream			
2		Middle Left			
3		Middle Right			
4		Downstream			
5					
6					
7					
8					
9					
10					

Site Location Description:

Concrete lined channel, west adjacent of RR

Surrounded by residential.

Comments:

Scoring Sheet: Riverine Wetlands

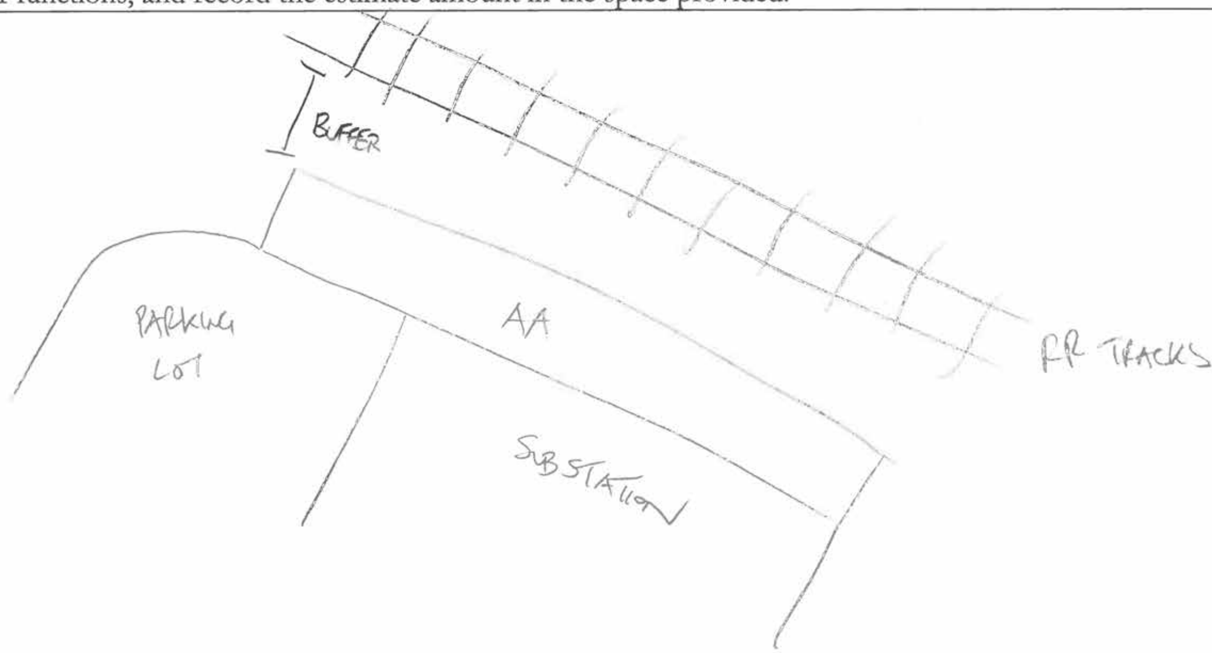
AA Name: AA26			Date:
Attribute 1: Buffer and Landscape Context (pp. 11-19)			**Comments**
	Alpha.	Numeric	
Stream Corridor Continuity (D)	B	9	
Buffer:			BUFFER ON ONE SIDE ONLY
Buffer submetric A: Percent of AA with Buffer	B	9	50% BUFFER
Buffer submetric B: Average Buffer Width	D	3	6m AVG BUFFER
Buffer submetric C: Buffer Condition	D	3	COMPACTED SOILS, LITTLE/NO VEG.
Raw Attribute Score = D+[C x (A x B)½]½		12.95	**Final Attribute Score = (Raw Score/24) x 100** 53.95
Attribute 2: Hydrology (pp. 20-26)			
	Alpha.	Numeric	
Water Source	C	6	DEVELOPED WATERSHED
Channel Stability	A	12	CONCRETE CHANNEL, STABILE
Hydrologic Connectivity	D	3	ENT. RATIO = 1
Raw Attribute Score = sum of numeric scores		21	**Final Attribute Score = (Raw Score/36) x 100** 58.33
Attribute 3: Physical Structure (pp. 27-33)			
	Alpha.	Numeric	
Structural Patch Richness	C	6	4 patches
Topographic Complexity	D	3	Concrete channel
Raw Attribute Score = sum of numeric scores		9	**Final Attribute Score = (Raw Score/24) x 100** 37.50
Attribute 4: Biotic Structure (pp. 34-41)			
Plant Community Composition (based on sub-metrics A-C)			
	Alpha.	Numeric	
Plant Community submetric A: Number of plant layers	C	6	2 LAYERS
Plant Community submetric B: Number of Co-dominant species	C	6	5 CO-DOMS
Plant Community submetric C: Percent Invasion	C	6	40% INVASIVE
Plant Community Composition Metric *(numeric average of submetrics A-C)*		6	
Horizontal Interspersion	D	3	MINIMAL ZONES
Vertical Biotic Structure	D	3	VERY LITTLE OVERLAP
Raw Attribute Score = sum of numeric scores		12	**Final Attribute Score = (Raw Score/36) x 100** 33.33
Overall AA Score (average of four final Attribute Scores)			46

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	35	1	100
2	50	2	20
3		3	
4		4	
5		5	
Upstream Total Length	85	Downstream Total Length	120

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: ______ %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	6
B	6
C	7
D	6
E	6
F	6
G	5
H	6
Average Buffer Width *Round to the nearest integer*	6

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	☐ The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA.
	☐ Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it.
	☐ There is leaf litter, thatch, or wrack in most pools (if pools are present).
	☐ The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area.
	☒ There is little or no active undercutting or burial of riparian vegetation.
	☐ If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation.
	☐ Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar).
	☐ There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA
	☐ The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	☐ The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs.
	☐ There are abundant bank slides or slumps.
	☐ The lower banks are uniformly scoured and not vegetated.
	☐ Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel.
	☐ An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation.
	☐ The channel bed appears scoured to bedrock or dense clay.
	☐ Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided).
	☐ The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	☐ There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year.
	☐ There are partially buried living tree trunks or shrubs along the banks.
	☒ The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced.
	☐ There are partially buried, or sediment-choked, culverts.
	☐ Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour.
	☐ There are avulsion channels on the floodplain or adjacent valley floor.
Overall	**Equilibrium** **Degradation** **Aggradation**

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.				
Steps	**Replicate Cross-sections** →	**TOP**	**MID**	**BOT**
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	6.1	6.1	6.1
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).			
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.			
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	6.1	6.1	6.1
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	1	1	1
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			1

– Probably 1m

Unable to measure. Concrete boxed channel

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

Please refer to the CRAM Photo Dictionary at** www.cramwetlands.org **for photos of each of the following patch types.

STRUCTURAL PATCH TYPE (circle for presence)	**Riverine (Non-confined)**	**Riverine (Confined)**
Minimum Patch Size	**3 m^2**	**3 m^2**
Abundant wrackline or organic debris in channel, on floodplain	1	1
Bank slumps or undercut banks in channels or along shoreline	1	1
Cobbles and/or Boulders	1	1
Debris jams	1	1
Filamentous macroalgae or algal mats	1	1
Large woody debris	1	1
Pannes or pools on floodplain	1	N/A
Plant hummocks and/or sediment mounds	1	1
Point bars and in-channel bars	1	1
Pools or depressions in channels (wet or dry channels)	1	1
Riffles or rapids (wet or dry channels)	1	1
Secondary channels on floodplains or along shorelines	1	N/A
Standing snags (at least 3 m tall)	1	1
Submerged vegetation	1	N/A
Swales on floodplain or along shoreline	1	N/A
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	1	1
Vegetated islands (mostly above high-water)	1	N/A
Total Possible	**17**	**12**
No. Observed Patch Types (enter here and use in Table 14 below)		4

Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

Profile 1

Profile 2

Profile 3

CONCRETE CHANNEL

Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
(A dominant species represents ≥10% *relative* cover)

Special Note:

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

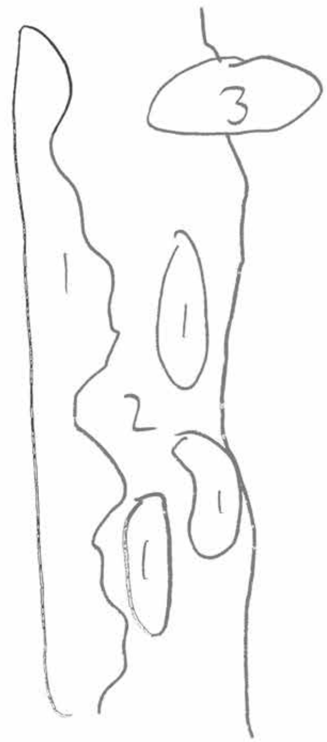
Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
Lemna sp.	N		
Nasturtium officinale	N		
Medium (0.5-1.5 m)	**Invasive?**	**Tall (1.5-3.0 m)**	**Invasive?**

Very Tall (>3.0 m)	Invasive?
Baccharis pilularis	N
~~English ivy~~	~~Y~~
Cotoneaster franchettii	Y
Hedera helix	Y

Total number of co-dominant species for all layers combined (enter here and use in Table 18)	5
Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	40%

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.



Assigned zones:

1) Nasturtium

2) Lemna

3) Very tall

4)

5)

6)

Worksheet for Wetland disturbances and conversions

<table>
<tr><td>Has a major disturbance occurred at this wetland?</td><td>Yes</td><td colspan="2">No</td><td colspan="2"></td><td></td></tr>
<tr><td>If yes, was it a flood, fire, landslide, or other?</td><td>flood</td><td colspan="2">fire</td><td colspan="2">landslide</td><td>other</td></tr>
<tr><td>If yes, then how severe is the disturbance?</td><td colspan="2">likely to affect site next 5 or more years</td><td colspan="2">likely to affect site next 3-5 years</td><td colspan="2">likely to affect site next 1-2 years</td></tr>
<tr><td rowspan="4">Has this wetland been converted from another type? If yes, then what was the previous type? NO</td><td colspan="2">depressional</td><td colspan="2">vernal pool</td><td colspan="2">vernal pool system</td></tr>
<tr><td colspan="2">non-confined riverine</td><td colspan="2">confined riverine</td><td colspan="2">seasonal estuarine</td></tr>
<tr><td colspan="2">perennial saline estuarine</td><td colspan="2">perennial non-saline estuarine</td><td colspan="2">wet meadow</td></tr>
<tr><td colspan="2">lacustrine</td><td colspan="2">seep or spring</td><td colspan="2">playa</td></tr>
</table>

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		

Basic Information Sheet: Depressional Wetlands

Assessment Area Name: 2'1	
Project Name: CA HSR	
Assessment Area ID #:	
Project ID #:	**Date:** 9/10/19
Assessment Team Members for This AA	
RJ, DM	

AA Category:

☐ Pre-Restoration ☐ Post-Restoration ☐ Pre-Mitigation ☐ Post-Mitigation

☒ Pre-Impact ☐ Post-Impact ☐ Training ☐ Ambient

☐ Reference ☐ Other:

Origin of Wetland (if known):

☐ Natural system ☒ Artificial system Along RR track

Type of Management (if known):

☐ waterfowl/birds ☐ amphibians ☐ general wildlife ☐ sediment ☐ water quality ☐ stormwater

☐ water supply (agriculture) ☐ water supply (livestock) ☒ not managed ☐ other:

Which best describes the type of depressional wetland?

☒ freshwater marsh ☐ alkaline marsh ☐ brackish marsh

☐ other (specify):

AA Encompasses:

☒ entire wetland ☐ portion of the wetland

Which best describes the hydrologic state of the wetland at the time of assessment?

☐ ponded/inundated ☒ saturated soil, but no surface water ☒ dry

What is the apparent hydrologic regime of the wetland?

Perennially flooded systems contain surface water year-round, *seasonally flooded* depressional wetlands are defined as supporting surface water for 4-11 months of the year (in > 5 out of 10 years.) *Temporarily flooded* depressional wetlands possess surface water between 2 weeks and 4 months of the year.

☐ perennially flooded ☒ seasonally flooded ☐ temporarily flooded

Does your wetland connect with the floodplain of a nearby stream? ☐ yes ☒ no

(system subject to overbank flow, a dammed stream does not count)

Does the wetland have a defined on undefined outlet? ☐ defined ☒ undefined

Does the wetland have a defined on undefined inlet? ☐ defined ☒ undefined

Are the inlet and outlet at the same location? ☐ yes ☒ no

Is the topographic basin of the wetland ☒ distinct **or** ☐ indistinct **?**

An *indistinct* topographic basin is one that lacks obvious boundaries between wetland and upland. Examples of such features are seasonal, depressional wetlands in very low-gradient landscapes.

Photo Identification Numbers and Description:

Photos should be taken from edge of AA looking toward the centroid of AA

	Photo ID No.	Description	Latitude	Longitude	Datum
1		(to) North			
2		(to) East			
3		(to) South			
4		(to) West			
5					
6					
7					
8					
9					
10					

Site Location Description and Land Use:

Comments:

Scoring Sheet: Depressional Wetlands

AA Name: 27					Date: 9/10/19	
Attribute 1: Buffer and Landscape Context (pp. 8-15)					**Comments**	
Aquatic Area Abundance Score (D)			Alpha.	Numeric		
			D	3	7%	
Buffer:						
	Alpha.	Numeric			50% buffer	
Buffer submetric A: Percent of AA with Buffer	B	9				
Buffer submetric B: Average Buffer Width	C	6			118 m Avg	
Buffer submetric C: Buffer Condition	C	6				
Raw Attribute Score = D+[C x (A x B)^{½}]^{½}				9.64	**Final Attribute Score = (Raw Score/24) x 100**	40.17
Attribute 2: Hydrology (pp. 16-21)						
			Alpha.	Numeric	RR track-compacted soil + rock	
Water Source			B	9		
Hydroperiod			A	12		
Hydrologic Connectivity			D	3		
Raw Attribute Score = sum of numeric scores				24	**Final Attribute Score = (Raw Score/36) x 100**	66.67
Attribute 3: Physical Structure (pp. 22-28)						
			Alpha.	Numeric		
Structural Patch Richness			C	6		
Topographic Complexity			B	9		
Raw Attribute Score = sum of numeric scores				15	**Final Attribute Score = (Raw Score/24) x 100**	62.5
Attribute 4: Biotic Structure (pp. 29-39)						
Plant Community Composition (based on submetrics A-C)						
	Alpha.	Numeric				
Plant Community submetric A: Number of plant layers	C	6			2 layers	
Plant Community submetric B: Number of Co-dominant species	D	3			4 spp	
Plant Community submetric C: Percent Invasion	D	3			50%	
Plant Community Composition Metric *(numeric average of submetrics A-C)*				4		
Horizontal Interspersion			D	3		
Vertical Biotic Structure			D	3	Typha only areas of entrainment	
Raw Attribute Score = sum of numeric scores				10	**Final Attribute Score = (Raw Score/36) x 100**	27.78
Overall AA Score (average of four final Attribute Scores)					49	

Worksheet for Aquatic Area Abundance Metric (Method 1)

Percentage of Transect Lines that Contains Aquatic Area of Any Kind	
Segment Direction	Percentage of Transect Length That is an Aquatic Feature
North	18
South	0
East	2
West	8
Average Percentage of Transect Length That Is an Aquatic Feature	7

Percent of AA with Buffer Worksheet.

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

Percent of AA with Buffer: 50 **%**

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	118
B	118
C	118
D	118
E	116
F	119
G	119
H	119
Average Buffer Width ***Round to the nearest whole number (integer)***	118

Structural Patch Type Worksheet for Depressional Wetlands

Check each type of patch that is observed in the AA and use the total number of observed patches in Table 15.

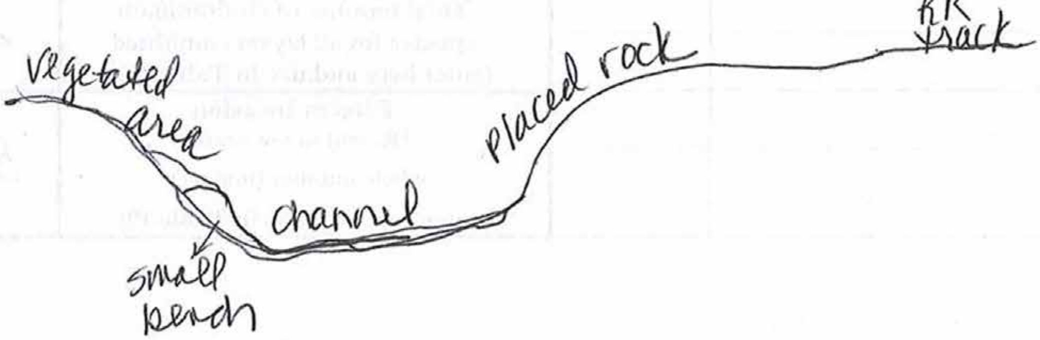
STRUCTURAL PATCH TYPE (circle for presence)	Depressional
Minimum Patch Size	$3\ m^2$
Abundant wrack or organic debris in channel, on floodplain, or across depressional wetland plain	✓
Animal mounds and burrows	✓
Bank slumps or undercut banks in channels or along shoreline	
Cobbles and Boulders	✓
Concentric or parallel high water marks	
Filamentous macroalgae or algal mats	✓
Islands (mostly above high-water)	
Large woody debris	
Non-vegetated flats or bare ground (sandflats, mudflats, gravel flats, etc.)	✓
Open water	
Plant hummocks and/or sediment mounds	
Soil cracks	✓
Standing snag(s) (1 or more at least 3 m tall)	
Submerged vegetation	
Swales on floodplain or along shoreline	
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	
Woody vegetation in water	
Total Possible	**17**
No. Observed Patch Types (enter here and use in Table 15 below)	6

Worksheet for AA Topographic Complexity

At two locations in the AA, make a sketch of the profile from the AA boundary to AA boundary. Try to capture the major topographic features, slopes and intervening micro-topographic relief. Based on these sketches and the profiles in Figure 7, choose a description in Table 17 that best describes the overall topographic complexity of the AA.

North to South

East to West



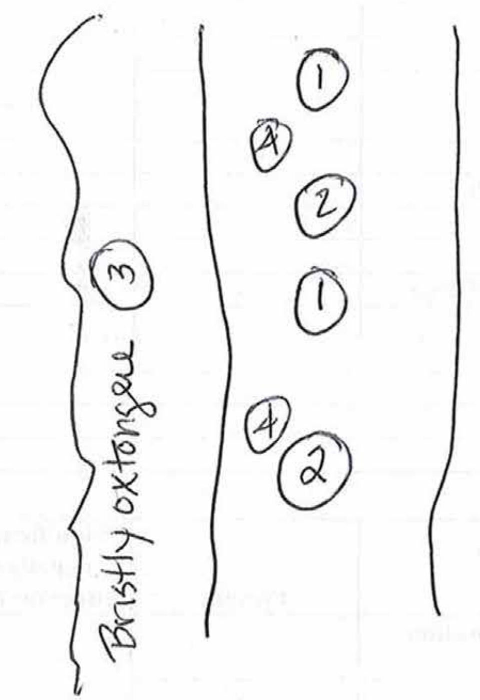
Plant Community Metric Worksheet 2 of 8: Co-dominant species richness
(A dominant species represents ≥10% *relative* cover)

* *Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.*

Floating or Canopy-forming	Invasive?	Short (<0.5 m)	Invasive?
Medium (0.5 – 1.5 m)	**Invasive?**	**Tall (1.5 – 3.0 m)**	**Invasive?**
Helminthotheca echiodees	Y	Typha spp	N
Brassica nigra	Y		
Typha spp	N		
Bolboschonus meridinus	N		
Very Tall (>3.0 m)	**Invasive?**		
		Total number of co-dominant species for all layers combined (enter here and use in Table 19)	4
		Percent Invasion *Round to the nearest whole number (integer)* (enter here and use in Table 19)	50%

Horizontal Interspersion Worksheet

Use the spaces below to make a sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign names to the zones and record them on the right. Based on the sketch, choose a single profile from Figure 8 that best represents the AA overall.



Assigned zones:

1) Typha

2) Bare

3) Oxtongue/mustard

4) Bolboshenus

5)

6)

Wetland disturbances and conversions Worksheet

<table>
<tr><td>Has a major disturbance occurred at this wetland?</td><td>Yes</td><td colspan="2">No</td><td></td><td></td></tr>
<tr><td>If yes, was it a flood, fire, landslide, or other?</td><td>flood</td><td colspan="2">fire</td><td>landslide</td><td>other</td></tr>
<tr><td>If yes, then how severe is the disturbance?</td><td>likely to affect site next 5 or more years</td><td colspan="2">likely to affect site next 3-5 years</td><td colspan="2">likely to affect site next 1-2 years</td></tr>
<tr><td rowspan="4">Has this wetland been converted from another type? If yes, then what was the previous type?</td><td>depressional</td><td colspan="2">vernal pool</td><td colspan="2">vernal pool system</td></tr>
<tr><td>non-confined riverine</td><td colspan="2">confined riverine</td><td colspan="2">bar-built estuarine</td></tr>
<tr><td>perennial saline estuarine</td><td colspan="2">perennial non-saline estuarine</td><td colspan="2">wet meadow</td></tr>
<tr><td>lacustrine</td><td colspan="2">seep or spring</td><td colspan="2">playa</td></tr>
</table>

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	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	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	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	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		