

What is a Wetland CEF?

• Definition:

- "Wetlands are transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface and may have shallow water present"
 Environmental Criteria Manual (ECM) 1.10.3 (E)
- ECM defers to the United States Army Corps of Engineers (USACE) 1987 Wetlands Delineation Manual
- 3 Parameters/Criteria
 - Hydrophytic Vegetation
 - Hydric Soils
 - Hydrology







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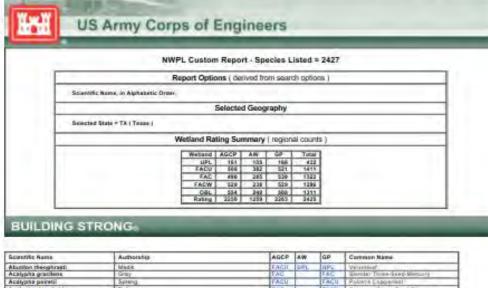


Hydrophytic Vegetation

- Based on the wetland indicator status of the 2018 National Wetland Plant List (USACE)
 - Obligate Wetland Plants (OBL) estimated probability >99%
 - Facultative Wetland Plants (FACW) estimated probability 67-99%
 - Facultative Plants (FAC) estimated probability 34-66%
 - Facultative Upland Plants (FACU) estimated probability 1-33%
 - Obligate Upland Plants (UPL) estimated probability <1%
- Abrupt boundary between FACW/OBL community and upland community



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NWPL - National Wetland Plant List

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Abunion theoghrasti	Matik	FAGII	DEL	IIP-	Velocities
Acatypha gracitems	Gray	EAG		FAC	Standar Tores-Sung-Mercury
Assiypts poired	Spring	FACU		FACU	Pakert Copperat
Acalypha monstoidea	Raf.	FAC		FACU	Common Tress-Sund-Mirrary
Acatholica virginica Acanthocereus tetragonus	L. i Humes	FACU		FACU	Virginia Tatte-Seed-Bottury Triangle Captus
Acer grandidentatum	Fast.	11111	EACU.	FAC	Caryon Marie
Acer negando	L.	FAC	FACW	FAG	Ast-Lost Missin
Acet /utnut.	L	FAC		FAC	Red Maple
Acer saccharinum	E	FAC	255	FAC	Sitent Raple
Actolea milefolium	10	FACU	FACU	FAGU	Continue Varraw
Actnotherum hymenoides	(Rearrier & J.A. Schules) Barkworth		U.S.	FACU	Taglac Rice States
Achestherum nelsonii	(Slovbo.) Barbyorth.		EAGO	HPC	Balanca Rica Gosta
Achyranthos aspera	L.	UPL		MPL.	Certifo-Horswehip
Acres la repens	(Walk, L.C. Rich.	FACIN	-	EACW.	Opposite Lost Sporthwar
Acrylepos Americanus	(Nutt.) Rysts:	FAGU	191	FACU	Atterican Dearwest
Acorus calerous		COL	OBL	CSIL	Single-Veils Systemag
Adiantum capillus-veneris	L	FAGU	ENCH	Eacts.	Staffers Waltersaler
Adiantum trichalegia	Edit			FAG	Fuzzy Maldestall
Asschynomene indica	L	FAGW		FACW	Teddorf Jord-Vetch
Associate glabra	Wilk	EACH		FéC	One Backeye
Assessas pavia	L	FAGU		FAG	Red Ruckeye
Agatine catyons	Pethal		Ollin	CHL	Leoncilla Falsa Foxgrove
Agations fasciculate	(Git) Rati	FAC		FAS	Basch Falls Forgove
Agatine harperi	Pathali	FAC			Contai-Plant False Faugitore
Agatinis heterophytis	Over Secure or Bett-	FAGIE		EAC	Prairie Foine Forestone
Agaticia maritima	(Rat.) Rat	COL		GRU	Sattrarat Constitution
Agadinia oligophylla	Pethal	FAC			Ridge-Street Factor Foughtree
Againis pulcheits	Passal	FACIN		1	St Mart's Faine Forgimes.
Agains parpures	-U-1 Permet	EAGIN	-	EASIE	Pareir Estar Figurities
Agatinis tenuifolia	(Variy Rat.	FACU		FAG	Special-Leaf Falay Forgions
Agave unericana	L	UPL	DOT.	MPC	American Century-Plant
Ageratina altinaiosa	II-1 King A.H.S. Rissins	EAGU	-	MPL	White Seakerook
Aperature houstonianum	P.MII	FAGU	FACU	FACIL	Disamirk



Obligate Wetland Plant (OBL) Example

• Mexican primrose willow (Ludwigia octovalvis)



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Facultative Wet Plant (FACW) Example

• Sand spikerush (Eleocharis montevidensis)







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Facultative Wet Plant (FACW) Example • Black willow (Salix nigra)



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Facultative Wetland Plant (FAC) Example

• Annual marshelder (Iva annua)





Hydric Soils

• Definition

"A hydric soil is a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation..."
 –USACE 1987 Wetlands Delineation Manual Part 36

Two of the four supporting criteria (Part 37):

"C. Soils that are ponded for long or very long duration during the growing season; or"

• "D. Soils that are frequently flooded for long duration or very long duration during the growing season."

• growing season = year-round in Austin

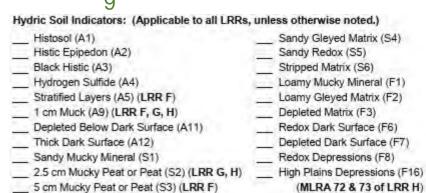
• long duration =7-30 days

very long duration >30 days



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- Hydric soil indicators
 - Redoxomorphic or redox features
 - Concentrations: Iron (Fe) or Manganese (Mn)
 - Depletions
 - Value and chroma using Munsell Soil Book
 - Example: Depleted Matrix
- Problematic hydric soils
 - No typical indicators
 - Meets definition of hydric soil





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_____ 1 cm Muck (A9) (LRR I, J)
_____ Coast Prairie Redox (A16) (LRR F, G, H)
_____ Dark Surface (S7) (LRR G)
_____ High Plains Depressions (F16)
_____ (LRR H outside of MLRA 72 & 73)
_____ Reduced Vertic (F18)

Indicators for Problematic Hydric Soils3:

Red Parent Material (TF2)

Very Shallow Dark Surface (TF12)

___ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

https://www.pantone.com/products/munsell/munse Il-soil-color-identification-2pack?utm_source=googlefeed&gclid=Cj0KCQiAy579B RCPARIsAB6QoIZNEpEzf5KhzEbECOvDINmbGJBGb3Lq hxaikz2FurFDK-OmVNxEoT4aAsPFEALw_wcB





Hydrology

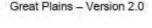
• Definition

 Wetland hydrology- "all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season." –USACE 1987 Wetlands Delineation Manual Part 46

HYDROLOGY

Primary Indicators (minimum of one required; check all that apply)					Secondary Indicators (minimum of two required)		
Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)		Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living Roots (C3) (where not tilled) Presence of Reduced Iron (C4) Thin Muck Surface (C7) Other (Explain in Remarks)		Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8) Drainage Patterns (B10) Oxidized Rhizospheres on Living Roots (C3)			
Field Observations:	Von	No	Don'th (inches):				
Vater Table Present?			Depth (inches): Depth (inches):				
Saturation Present? includes capillary fringe)	7.115		Depth (inches):	Wetland Hydrology Present? Yes No			
Describe Recorded Data (stre	eam gauge	, monitorin	g well, aerial photos, previous insper	ctions), if ava	ailable:		

US Army Corps of Engineers





- Surface Water
- Saturation



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• Surface Soil Cracks



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• Crawfish Burrows



• Drift Deposits



 $https://www.sas.usace.army.mil/Portals/61/docs/regulatory/Workshop_Hydrology_Fall2011.pdf$

• Algal Mat or Crust



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• Seasonally influenced or ephemeral can be misleading need all three criteria



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What isn't a Wetland CEF?

- "Permitted water quality wet ponds, roadside ditches, and ponds fed by wells or other artificial sources of hydrology"
 ECM 1.10.3 (E)
- Hydrology source
 - Natural
 - Sheet flow or groundwater
 - Artificial
 - Well or windmill





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Why are Wetland CEFs important?

• Hydrologic Function

- Flood protection/storm runoff for sheet flow
- Replenish groundwater (percolation/recharge aquifer)
- Erosion control

• Water Quality Improvement

- Retain pollutants
- Reduce sediment
- Sequester carbon

• Ecosystem

- Habitat/critical resources for variety of aquatic and terrestrial flora and fauna
- Fringe along creek or shoreline vs. isolated emergent wetland

• Aesthetically appealing





Why I love Wetland CEFs?

- Wetlands are...
 - Beautiful
 - Vibrant
 - Diverse
 - Complex
- Wetlands provide numerous benefits to the natural landscape
- Wetlands make fieldwork interesting ©



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How to protect Wetland CEFs?

- Protective buffers/no development surrounding wetland CEFs
 - Immediately surrounding wetland CEFs
 - Topographically upgradient/upstream
 - Source of water (i.e. stream or lake)
 - Topographically downgradient/downstream
 - Adjacent surface water resources associated with wetland
- Protect surrounding physical, chemical, or biological characteristics that support the wetland
 - Retain canopy coverage
- Maintain/improve quality of features
 - Restoration or enhancement (native plantings)
 - Remove invasive species
 - Biofiltration ponds and stormwater quality features that enhance standard sedimentation/filtration water quality



Thank You!

Questions?

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