

Wetland Delineation



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3 Parameters – Federal/Corps...

- Vegetation
- Soils
- Hydrology



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3 Parameters – but only 1 needed for State/Coastal Commission

- Vegetation
- Soils
- Hydrology



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Vegetation



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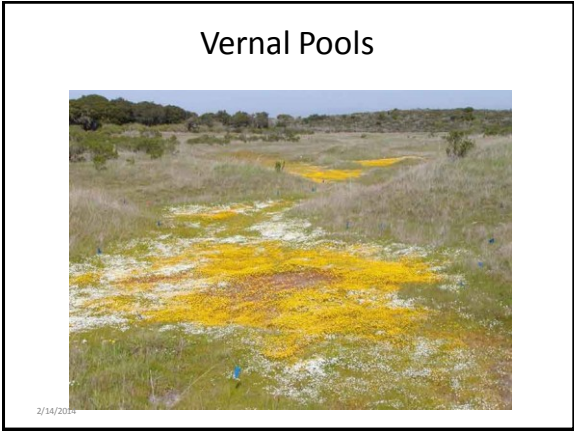


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Vernal Pools



Alkali Wet Meadows



Shallow Freshwater Wetlands



Freshwater Wet Meadows



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Oso Flaco Lake, SLO County

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Marine



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Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated conditions.



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Indicator	Category	
	Primary	Secondary
Group A – Observation of Surface Water or Saturated Soils		
A1 – Surface water	X	
A2 – High water table	X	
A3 – Saturation	X	
Group B – Evidence of Recent Inundation		
B6 – Surface soil cracks	X	
B7 – Inundation visible on aerial imagery	X	
B9 – Water-stained leaves	X	
B11 – Salt crust	X	
B12 – Biotic crust	X	
B13 – Aquatic invertebrates	X	
B1 – Water marks	X	X (riverine)
B2 – Sediment deposits	X	X (riverine)
B3 – Drift deposits	X	X (riverine)
B10/11 – Drainage patterns		X

Group C – Evidence of Current or Recent Soil Saturation		
C1 – Hydrogen sulfide odor	X	
C3 – Oxidized rhizospheres along living roots	X	
C4 – Presence of reduced iron	X	
C6 – Recent iron reduction in tilled soils	X	
C7 – Thin muck surface	X	
C2 – Dry-season water table		X
C8 – Crayfish burrows		X
C9 – Saturation visible on aerial imagery		X
Group D – Evidence from Other Site Conditions or Data		
D3 – Shallow aquitard		X
D5 – FAC-neutral test		X

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HYDROLOGY			
Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required, check all that apply)		Secondary Indicators (2 or more required):	
Surface Water (A1)	<input type="checkbox"/>	Salt Crust (B1)	<input type="checkbox"/>
High Water Table (A2)	<input type="checkbox"/>	Basic Crust (B2)	<input type="checkbox"/>
Saturation (A3)	<input type="checkbox"/>	Aquatic Invertebrates (B13)	<input type="checkbox"/>
Water Marks (B1) (Nonriverine)	<input type="checkbox"/>	Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>
Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/>
Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/>	Presence of Reduced Iron (C4)	<input type="checkbox"/>
Surface Soil Cracks (B6)	<input type="checkbox"/>	Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/>
Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Thin Muck Surface (C7)	<input type="checkbox"/>
Water-Strained Leaves (B9)	<input type="checkbox"/>	Other (Explain in Remarks)	<input type="checkbox"/>
Field Observations:			
Surface Water Present?	Yes	No	Depth (inches):
Water Table Present?	Yes	No	Depth (inches):
Saturation Present?	Yes	No	Depth (inches):
(Includes capillary tubes)			
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			



MudCracks



Salt Crust

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Culverts



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WHEN DO WE OBSERVE
Hydrology Indicators?

“Beginning and ending dates of the growing season may be needed to evaluate certain wetland indicators, such as visual observation of flooding, ponding, or shallow water tables on potential wetland sites.” Arid West – p 59; WMVC – p. 56

We observe hydrology indicators during the growing season



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Growing Season:

Vegetative Growth

Start of the growing season: observation of growth or activity in vascular plants

- Emergence of herbaceous plants from ground
- Appearance of new growth from bulbs, etc
- Bud burst on woody plants
- Emergence or elongation of leaves of woody plants
- Emergence or opening of flowers



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Growing Season

Vegetative Growth

End of the growing season:

- Woody deciduous species lose their leaves
- Herbaceous plants cease flowering
- Herbaceous leaves become dry or brown
- Don’t confuse with early plant senescence which may occur in the summer dry season – ie Buckeyes



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Visual observation of inundation. : The Wingtip Test



“If it’s wet, it’s wet... But if it’s not wet, it may be wet”



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DEFINITIONS:

Saturation

“For wetland delineation purposes, a soil layer is saturated if virtually all pores between soil particles are filled with water under 0 tension (National Research Council 1995, Vepraskas and Sprecher 1997). This definition includes part of the capillary fringe above the water table (i.e., the tension-saturated zone) in which soil water content is approximately equal to that below the water table (Freeze and Cherry 1979).” Manuals p 117 & 135



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Capillary Fringe

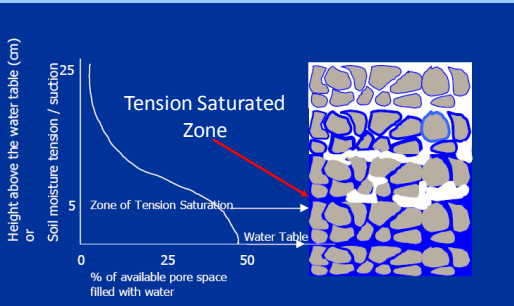
A zone immediately above the water table in which water is drawn upward by capillary action.

“This definition (of saturation) includes part of the capillary fringe above the water table (i.e., the tension saturated zone) in which soil water content is approximately equal to that below the water table (Freeze and Cherry 1979).” (glossary – both manuals).



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Hypothetical Capillary Fringe

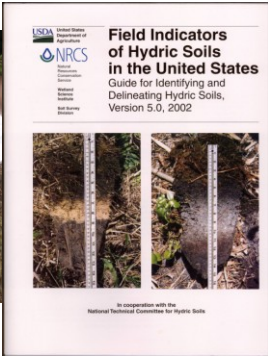


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Soils



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Redoximorphic Features



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Soils: Definition – “Field Indicators” are:

- Layers of soil whose
- Thickness
 - Depth
 - Color characteristics
 - Abundance and contrast of redox. features
- have been rigidly defined.



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Soils
“Field indicators” are designed to find soils that have been anaerobic in their “upper part.”

- These soils are **saturated** and have little or **no dissolved O₂** in the water.
- Oxidation-reduction reactions have occurred in the soil to make it **anaerobic**.



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For wetland analysis...what should you see?

- Maps
 - 3-parameter vs. 1-parameter boundaries
 - Buffers
- Datasheets– with range of dates!



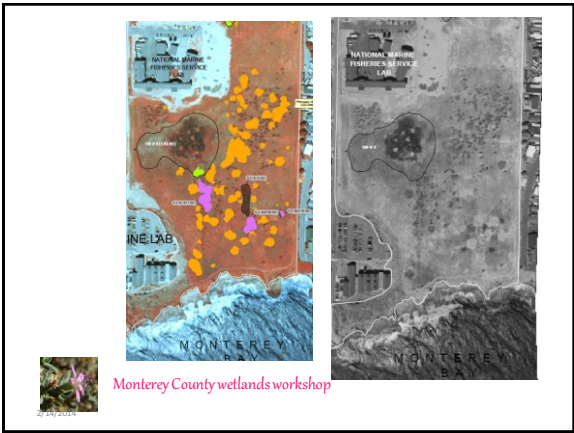
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California Coastal Act

Environmentally Sensitive Habitat Area (ESHA)

- Environmentally Sensitive Habitat Area
 - Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and
 - which could be easily disturbed or degraded by human activities and developments

Definition (CA Coastal Act, §30107.5)



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California Coastal Act

Environmentally Sensitive Habitat Area (ESHA)

- Environmentally Sensitive Habitat Area
 - Prohibition of significant disruption of habitat values
 - Limits development within ESHA to uses that are dependent on the resources
 - Requires adjacent development be sited and designed to be compatible with the continuance of the habitat
(CA Coastal Act, §30240)



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California Coastal Act

Wetlands

- Wetlands
 - Land within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens
 - **Definition (CA Coastal Act, §30121)**
 - Land where the water table is at, near, or above the land surface long enough to:
 - Promote the formation of hydric soils OR
 - Support the growth of hydrophytes
- (CCR §13577(b) of Title 14, Division 5.5, Article 18)



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California Coastal Act

Wetlands (cont)

- Wetlands
 - Shall also include wetlands where vegetation is lacking and soil is poorly developed or absent
 - As a result of frequent/dramatic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts
 - Recognized by the presence of surface water or saturated substrate at some time each year
 - Location within, or adjacent to, vegetated wetlands or deep-water habitats
- (CCR §13577(b) of Title 14, Division 5.5, Article 18)



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California Coastal Act

Wetlands (cont)

- Wetlands
 - Prohibition of significant disruption of habitat values
(Coastal Act §30233)
 - Coastal-dependent development shall not be sited in a wetland, except as provided elsewhere in the section
(CA Coastal Act §30255)
 - Shall include 100-foot setback
(CCR §13577(b) of Title 14, Division 5.5, Article 18)



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Wetlands (cont)

- Wetlands
 - Shall not include wetland habitat created by the presence of and associated with artificial ponds and reservoirs where:
 - Pond or reservoir was constructed for ag purposes
 - No evidence that wetland habitat pre-dated pond or reservoir
- (CCR §13577(b) of Title 14, Division 5.5, Article 18)



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California Coastal Act

Wetlands (cont)

- Wetlands
 - Limits diking, filling or dredging to very narrow situations
 - Port, energy and coastal dependent facilities
 - Maintaining or restoring previously existing facilities
 - Piers in open waters for public access
 - Public service purposes (i.e. burying cables and pipes, maintenance of existing intake and outfall lines)
 - Mineral extraction, incl sand for restoring beaches, except in ESHA
 - Restoration
- (CA Coastal Act §30233)




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California Coastal Act

Wetlands (cont)

- Flood control
 - Includes channelization, dams, or other substantial alterations of rivers and streams
 - Shall incorporate the best mitigation measures feasible
 - Limited to projects where no other method for protecting existing structure in the floodplain is feasible
 - Where necessary for public safety or to protect existing development

(CA Coastal Act §30233)




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California Coastal Act

Bolsa Chica decision

- Bolsa Chica decision confirmed requirements to avoid disruption of habitat values
 - In ESHA per §30240
 - In Wetlands per §30233
- Providing mitigations not sufficient justification for allowing development



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California Coastal Act

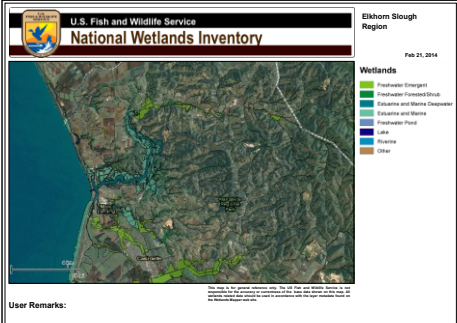
Resources

- California Coastal Commission
<http://www.coastal.ca.gov/>
- Environmentally Sensitive Habitat Areas
http://www.coastal.ca.gov/la/lcpguide/lcpguide_resources_4.pdf
- Wetlands
http://www.coastal.ca.gov/la/wetland_def.html



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<http://www.fws.gov/wetlands/Data/Mapper.html>





USGS Topo Map of Triangle M Ranch

