





| Reduction Sequence | | | | |
|-------------------------|-----------|-----------------------------------|--|--|
| Increasing Reduction | Element | Generalized Reaction | | |
| | Oxygen | $O_2 \longrightarrow H_2 0$ | | |
| | Nitrogen | $NO^{3-} \longrightarrow N_2$ | | |
| | Manganese | $MnO_2 \longrightarrow Mn^{2+}$ | | |
| | Iron | $Fe_2O_3 \longrightarrow Fe^{2+}$ | | |
| | Sulfur | $SO_4^{2-} \longrightarrow H_2S$ | | |
| • | Carbon | $CO_2 \longrightarrow CH_4$ | | |
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Field Indicators

Field Indicators are physical, chemical, or biological features of an area that can be easily observed or assayed and that are usually correlated with the presence of a wetland parameter.

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California Hydrology Parameter

Wetland hydrology is present if "the water table is at, near, or above the land surface **long enough** to promote the formation of hydric soils or to support the growth of hydrophytes."

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"The authors of the USFWS wetland classification maintained that it is neither reasonable nor practicable to establish a quantitative hydrologic criterion for field identification of wetlands. We still believe that, in the great majority of cases, wetlands should be identified by vegetation and soils. We argue that hydrology should be used only where soil and vegetation criteria cannot reasonably be applied, such as in highly disturbed wetlands...."

Cowardin, L.M & F.C. Golet. 1995. Vegetatio 118:139-152

Staff Approach to Hydrology

If during most years the soil is continuously covered with water or the upper 12 inches are continuously saturated:

For fewer than 7 days, the area is an upland

For 7 to 13 days, the area may be a wetland

For 14 days or more, the area is a wetland

Hydric Soil Parameter

Hydric soils are "soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil." NRCS

"Hydric soils are soils that for a significant period of the growing season have reducing conditions in the major part of the root zone and are saturated within 25 cm of the surface." 1981 CCC Guidelines

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| Classification of Plant Species That Occur in Wetlands | | |
|---|---------------|---|
| Wetland Indicator Class | <u>Symbol</u> | Frequency of Occurrence in Wetlands |
| Obligate Wetland Plant | OBL | >99% (under natural conditions) |
| Facultative Wetland Plant | FACW | 67% - 99% |
| Facultative Plant | FAC | 33% - 66% |
| Facultative Upland Plant | FACU | 1% - 33% |
| Obligate Upland Plant | UPL | <1% (under natural conditions) 33 |





Assessing Predominance

Dominance Ratio

There is a predominance of hydrophytes if more than 50 percent of the **dominant species** are classified as FAC, FACW, or OBL.

Prevalence Index

There is a predominance of hydrophytes if the weighted average wetland index of **all species** is less 3.0, where 1.0 is all OBL and 5.0 is all UPL.

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| Selection of Dominant Species |
|--|
| The "50/20 Rule": For each stratum in the plant community, dominant species are the most abundant plant species (when ranked in descending order of abundance and cumulatively totaled) that immediately exceed 50 percent of the total dominance measure plus any additional species that comprises 20 percent or more of the total dominance |
| measure. This approach requires a quantitative estimate of abundance. |
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Selection of Dominant Species Wetland Percent Cumulative Species Class Cover Total √Lolium perenne FAC 30 30 Trifolium repens FACU 24 54 74 Rumex crispus FAC 20 OBL 86 Carex obnupta Picris echiodes FACU 6 92 Polypogon monspielensis FACW 4 96 100 Heliotropium curvassicum FACU 4 100 VDominant Species by "50/20 Rule" 38





Factors that Reduce the Reliability of Field Indicators of Hydrophytic Vegetation

- Atypical situations where the vegetation has been removed or altered by human activities
- FAC species dominate the vegetation
- Community characterization based on only one or two species
- Delineation during the dry season when upland species may be abundant in seasonal wetlands
- Species growing in disturbed areas may not have the same indicator status as under natural conditions
- Vegetation present following disturbance may not be characteristic of the long-term community 41

Staff Approach to Problem Areas

- Species listed as OBL, FACW, or FAC are presumed to be growing as "hydrophytes"
- Where there is a predominance of OBL, FACW, or FAC species, the area is presumed to be a wetland
- In problem areas, the wetland presumption is rebuttable by compelling evidence of upland conditions.
- All pertinent evidence may be brought to bear on problem situations, but direct observations of hydrology during normal or unusually wet rainy seasons is most useful

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Field Indicator of Hydric Soils

F6. Redox Dark Surface A layer at least 10 cm (4 in) thick entirely within the upper 30 cm (12 in) of the mineral soil that has:

a. matrix value 3 or less and chroma 1 or less and 2 percent or more distinct or prominent redox concentrations as soft masses or pore linings, or ...

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Factors that Reduce the Reliability of Field Indicators of Hydric Soils

- Soil characteristics, such as low iron content, that prevent the formation of hydric soil features
- Relict features where hydrology has been altered
- Dark coloration caused by high organics in grassland soils

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 Soil disturbance that destroys or covers hydric soil features

SUMMARY

- In the Coastal Zone, wetland delineation is always based on one wetland parameter, usually a preponderance of hydrophytes
- However, wetland parameters cannot be directly observed – their presence is inferred from field indicators that are subject to error
- In problem areas where critical field indicators of wetland parameters may not be reliable, all evidence must be considered
- Therefore, wetland delineation may require professional judgment

