B&L Woodwaste Site

Critical Areas Study

Appendix A
Wetland Determination Methods

Appendix A

METHODS OF DETERMINING WETLAND CHARACTERISTICS AND CLASSIFICATION

WETLAND CHARACTERISTICS

The U.S. Army Corps of Engineers (Corps 1987) usually require that the following three characteristics be present for an area to be identified as a wetland: (1) hydrophytic vegetation, (2) hydric soil, and (3) wetland hydrology. The following subsections detail the methods we used to determine whether these characteristics are present on site.

Hydrophytic Vegetation

To determine whether an area has hydrophytic vegetation, the dominant plant species are identified. The Floyd|Snider AMEC-Geomatrix project team (Project Team) uses the method described in the 1989 Federal Manual for Wetland Identifying and Delineating Jurisdictional Wetlands (FICWD. 1989) to determine the dominant plants in each stratum. Dominant plants are those species that, when ranked in descending order of abundance and cumulatively totaled, immediately exceed 50 percent of the dominance threshold number, plus any additional species comprising 20 percent or more of the sum of the midpoints for a given stratum. The dominance threshold number is equal to 50 percent of the sum of the midpoints for a given stratum. Cover classes (and midpoints) are as follows: T = <1% (none), 1 to 5% (3.0), 6 to 15% (10.5), 16 to 25% (20.5), 26 to 50% (38.0), 51 to 75% (63.0), 76 to 95% (85.5), 95 to 100% (98.0). The PLANTS database (NRCS 2008) lists the wetland indicator status of plants based on the species' probability of occurring in wetlands (Table 1). A plant community dominated by species commonly found in wetlands (OBL, FACW, and FAC) meets the criteria for hydrophytic vegetation.

TABLE 1
KEY TO WETLAND INDICATOR STATUS

Code	Wetland Indicator Status	Probability of Occurrence in Wetland
OBL	Obligate wetland species	>99%
FACW	Facultative wet	67 to 99%
FAC	Facultative	34 to 66%
FACU	Facultative upland	1 to 33%
UPL	Obligate upland	<1%
NI	No indicator	—

Hydric Soil

To determine whether an area has hydric soil, test pits are dug and the soil color and other characteristics are examined. Soil in which any of the following indicators is present meets the criteria for hydric soil:

Low chroma matrix. Soil with a low chroma matrix typically develops when mineral soil is saturated or inundated for sufficient periods of time to result in anaerobic (oxygen less) conditions. Anaerobic conditions cause elements common in soil, particularly iron compounds, to exist in reduced forms that are usually bluish, greenish, or grayish in color. Soil colors are determined using a Munsell color chart (Kollmorgen, 1995), which uses abbreviations to describe colors; e.g., 10YR 2/1. In the abbreviation, the last number indicates the chroma; a chroma of 1 (without mottles) or 2 (with mottles) in the subsurface horizon is considered low. Soils with a matrix chroma of 2 are usually considered hydric when mottles are present.

Mottles. In seasonally saturated wetlands, fluctuating water levels can trap air bubbles in the soil. The air pockets allow magnesium and iron compounds in the soil to oxidize, forming rust colored mottles (spots or blotches). Mottles found in soil with a matrix chroma of 2 or less often indicate the soil is hydric.

High organic content. Organic soils form if inundation prevents decomposition and organic debris accumulates. Organic content is considered high if the soil is composed of more than 20 to 30 percent (range fluctuates depending upon other soil characters) organic material by weight in the upper 32 inches of the soil profile.

Other hydric indicators. Other positive indicators of hydric soils include histic epipedons, sulfide or “rotten egg” odor, aquic or peraquic moisture regimes, presence of soils listed as hydric soils, and presence of iron or manganese concretions.

WETLAND HYDROLOGY

To determine whether an area has wetland hydrology, the area is examined for inundation, soil saturation, or shallow groundwater tables, or for hydrologic indicators. In western Washington, an area in which soils are saturated to the surface for at least 12.5 percent of the growing season (30 days) meets the criteria for wetland hydrology; however, seasonal changes in water levels and immediacy of precipitation events must be considered when an area’s hydrology is evaluated. When wetland hydrology is not present at the time of the site visit, it can be inferred from the presence of any of the following hydrologic indicators: watermarks on vegetation, drift lines, sediment deposits, water stained leaves, surface scoured areas, wetland drainage patterns, oxidized root channels, or a positive FAC neutral test. A positive FAC neutral test is defined as when the number of species with indicator status of FACW- or wetter is greater than the number of species with indicator status FACU+ or drier. Presence of hydrophytic vegetation and hydric soils also are strong indicators that wetland hydrology is likely present.

CLASSIFICATION

Wetlands are classified according to Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). Under the Cowardin classification scheme, wetlands and deepwater habitats are grouped into systems based on shared hydrologic factors. The systems described in Cowardin et al. are palustrine, marine, estuarine, riverine, and lacustrine.

The palustrine system includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, mosses and lichens, and all such wetlands that occur in tidal areas where the salinity due to ocean derived salts is below 5 parts per thousand. Wetlands included in the palustrine system are those commonly referred to as marshes, swamps, bogs, fens, prairies, seeps, and intermittent ponds.

Palustrine wetlands are divided into classes by the dominant vegetation: Forested wetlands are dominated by trees greater than approximately 20 feet tall with 30 percent cover, scrub shrub wetlands are dominated by woody shrubs, and emergent wetlands are dominated by nonwoody plants. Other common palustrine wetland classes include unconsolidated bottom (<30% plant cover) and aquatic bed. These latter two classes are usually permanently inundated areas and sometimes referred to as open water.

REFERENCES

Cowardin, L.M., Carter, V., Golet, F.C., and LaRoe, E.T. 1979. Classification of Wetlands and Deepwater Habitats of the United States: U.S. Fish and Wildlife Service, Office of Biological Services, Publication FWS/OBS 79/31, Washington, D.C.

Federal Interagency Committee for Wetland Delineation (FICWD). 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands: U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Department of Agriculture Soil Conservation Service, cooperative technical publication, Washington, D.C.

Kollmorgen Corporation. 1995. Munsell Soil Color Charts: Kollmorgen Corporation, Baltimore, Maryland.

Natural Resources Conservation Service (NRCS). 2008. The PLANTS Database: National Plant Data Center, Natural Resources Conservation Service Natural Resources Conservation Service, U.S. Department of Agriculture, Baton Rouge, Louisiana, http://plants.usda.gov (accessed May 14, 2008).

U.S. Army Corps of Engineers. 1987. Corps of Engineers Wetlands Delineation Manual: Corps, Waterways Experiment Station, Technical Report Y-87-1, Vicksburg, Mississippi.