

**ATTACHMENT 7: WETLAND DELINEATION**

## WETLAND DELINEATION

This wetlands delineation utilized protocols defined in the 1987 *Corps of Engineers Wetlands Delineation Manual* (Technical Report Y-87-1) and subsequent interpretative guidance published by the Corps on 7 October 1991 and 6 March 1992. This methodology is currently required by the Corps for wetlands determinations.

The identification of wetlands is based on the mandatory technical criteria and methods as outlined in the 1987 Corps Manual. As defined (33 CFR § 328.3 (b)), jurisdictional wetlands include:

"...those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

In accordance with the Corps of Engineers methodology, the three mandatory technical criteria that define wetlands, and must be present under normal circumstances, include hydrophytic vegetation, hydric soils, and wetland hydrology. Therefore, the focus of this study was to thoroughly sample and evaluate representative points on the subject site for the three criteria as outlined in the 1987 Corps Manual. Areas showing positive evidence of hydrophytic vegetation, wetland hydrology, and hydric soils, as outlined below.

- 1. Hydrophytic Vegetation:** The presence of hydrophytic vegetation is generally defined in the Corps Manual when, under normal circumstances, more than 50 percent of the dominant species from all strata are obligate-wetland ("OBL", almost always found in wetlands), facultative-wetland ("FACW", usually found in wetlands), or facultative species ("FAC", species equally likely to be found in wetlands as uplands). Facultative-upland ("FACU") and upland ("UPL") species are less likely to be found in wetlands. For Virginia, wetland indicators for plants are published in the National List of Plant Species that Occur in Wetlands: Northeast (Region 1) (U.S.F.W.S. Biol. Rep. 88(26.1)).
- 2. Wetland Hydrology:** The Corps manual defines wetland hydrology as encompassing "all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an over-riding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively. Such characteristics are usually present in areas that are inundated or have soils that are saturated to the surface for sufficient duration to develop hydric soils and support vegetation typically

adapted for life in periodically anaerobic conditions." The Manual acknowledges that hydrology is often the least exact of the parameters, and lists a number of primary field indicators that may be used to determine if wetland hydrology is present. These primary indicators include: visual observation of inundation, visual observation of soil saturation, watermarks on woody vegetation, drift lines, sediment deposits, and drainage patterns within wetlands.

The guidance documents published by the Corps on 7 October 1991 and 6 March 1992 provided further clarification on the use of the 1987 Manual, particularly with respect to the hydrology criterion. These documents specified threshold levels for the duration of saturation within the growing season for the hydrology criterion to be satisfied. Lacking specific data from the long-term monitoring of shallow groundwater wells, these guidance documents also clarified the use of the primary indicators of hydrology outlined in the 1987 manual, and stressed the cautious use of secondary indicators such as oxidized root channels, water stained leaves, soil survey data, and the FAC-neutral test.

3. **Hydric Soils:** The Corps manual identifies hydric soils as "...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." Listings of hydric soils and use of local soil survey mapping is often helpful in the identification of potential wetlands areas. On-site soil evaluations are used to augment soil survey data, or to confirm mapping provided by local soil survey mapping. Soil colors and other characteristics can be used to identify the presence of hydric soils. Munsell Soil Color Charts are used to numerically classify soil colors; soil texture and other characteristics are also evaluated in the field. Hydric soils are identified based on the color features as described in the 1987 Manual and subsequent guidance. According to recent Corps guidance, hydric soils may also be identified using methods described in the current version of the Field Indicators of Hydric Soils in the United States (Version 5.9). According to this method, hydric mineral soils are identified by a detailed system of indicators, but usually have one of the following features:

- (a) Dominant matrix chroma of  $\leq 2$  with values of  $\geq 6$  within the 6" – 12" zone,
- (b) Dominant matrix chroma of  $\leq 1$  with values of  $\geq 5$  within the 6" – 12" zone,
- (c) Moist chroma  $\leq 2$  and value of  $\geq 4$  and presence of distinct or prominent mottles within the 6" – 12" zone and common to many distinct or prominent 10YR or 7.5YR mottles of  $\geq 6$  chroma.

While these characteristics generally reflect reducing conditions resulting from past anaerobic conditions, the existence of a hydric soil alone cannot be used to ascertain wetland hydrology. This is because the existing soil may only reflect a past relic condition in an otherwise drained area.

The site is predominantly maintained in the production of hay. Trees line the bank of Gish Branch and the unnamed tributary near the confluence with Gish Branch. The west north and east perimeters of the site are deciduous forest. Dominant tree species included typical floodplain species: sycamore (*Platanus occidentalis*), osage orange (*Maclura pomifera*), hawthorne (*Crataegus sp.*), walnut (*Juglans nigra*), red maple (*Acer rubrum*), tulip poplar (*Liriodendron tulipifera*), red oak (*Quercus rubra*), white oak (*Quercus alba*), and box elder (*Acer negundo*).

Soil sampled were an orange silt loam (7.5YR 5/6). According to the U.S. Soil Conservation Service (SCS), *Soil Survey of Roanoke and Salem, Virginia* (1985), soils at the site are classified as Sequoia silt loam, 7 to 15 percent slopes. The soil is not listed as a hydric soils, based on information obtained from the SCS, *Hydric Soils of the United States* (1991).

Other than the stream channels no indicators of wetland hydrology were present.

The intermittent streams and springs on the site are COE jurisdictional Waters of the U.S. Based on the visual inspection, no other jurisdictional wetlands were found at the subject site. It is noted that only US Army Corps of Engineers can make the final determination as to jurisdictional status of any wetlands on the site. Modification of the antenna array does not involve a significant change in surface features or impact to waterways on the subject site. If the project requires impacts to Gish Branch or its tributaries, permits are required from the COE and Virginia Department of Environmental Quality. The streams and springs were flagged with pink and black flagging tape for survey and confirmation by the COE.

DATA FORM  
 ROUTINE WETLAND DETERMINATION  
 (1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: 1002 Newman Drive  
 Applicant/Owner: WYBE Antenna Array  
 Investigator: L.Billow/Stokes Environmental Associates, Ltd.  
 Do Normal Circumstances exist on the site? (Yes/No) Yes  
 Is the site significantly disturbed (Atypical Situation)? (Yes/No) No  
 Is the area a potential Problem Area? (If needed, explain on reverse) (Yes/No) No

Date: 17 December 2009  
 County: Roanoke  
 State: Virginia  
 Community ID: Floodplain Forest

**Vegetation**

Dominant Plant Species	Stratum	Indicator
1. -- Sycamore ( <i>Platanus occidentalis</i> )	Tree	FACW
2. - Osage Orange ( <i>Maclura pomifera</i> )	Tree	Upl
3. - Tulip poplar ( <i>Liriodendron tulipifera</i> )	Tree	FACU
4. - Black Walnut ( <i>Juglans nigra</i> )	Tree	FACU
5. - Hawthorne ( <i>Crataegus sp.</i> )	Sapling	FACU
6. - Red Maple ( <i>Acer rubrum</i> )	Sapling	FAC
7. - Grape ( <i>Vitis labrusca</i> )	Vine	FACU
8. - Honeysuckle ( <i>Lonicera japonica</i> )	Vine	FAC-
9. - Christmas fern ( <i>Polystichum agrostichoide</i> )	Herb	FACU-
10 - Goldenrod ( <i>Solidago Canadensis</i> )	Herb	FACU

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 22 %

Remarks:

**Hydrology**

Recorded Data (Describe in Remarks): Field Observations

Stream, Lake or Tide Gauge       Depth of Surface Water: (inches)  
 Aerial Photographs                 Depth to Free Water in Pit: (inches)  
 Other                                         Depth to Saturated Soil: (inches)  
 No Recorded Data Available

Wetland Hydrology Indicators:

Primary Indicators:

No Inundated  
 No Saturated in Upper 12 Inches  
 No Water Marks  
 No Drift Lines  
 No Sediment Deposits  
 No Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

No Oxidized Root Channels in Upper 12 Inches  
 No Water-Stained Leaves  
 No Local Soil Survey Data  
 No FAC-Neutral Test (\_\_\_ Wet, \_\_\_ Up)  
 Other (Explain in Remarks)

Remarks: No indicators of wetland hydrology

**Soils**

Map Unit Name (Series and Phase): Sequoia silt loam, 7 to 15 percent slopes      Drainage Class: moderately well drained  
 Taxonomy (Subgroup): mesic Typic Hapludult      Field Observations Confirm Mapped Type (Yes/No): Yes

Profile Description:

Depth	Horizon	Matrix Color	Mottle Color	Texture
0-10	B	orange 7.5YR 5/6	none	silt loam

Hydric Soil Indicators:

Histosol                                         Concretions  
 Histic Epipedon                                 Organic Streaking in Sandy Soils  
 Sulfidic Odor                                     Listed on Local Hydric Soils List  
 Aquic Moisture Regime                         High Organic Content in Surface Layer in Sandy Soils  
 Reducing Conditions                          Other (Explain in Remarks)  
 Gleyed or Low-Chroma Colors

Remarks:

**Wetland Determination**

Hydrophytic Vegetation Present? No  
 Wetland Hydrology Present? No  
 Hydric Soils Present? No      Is this Sampling Point Within a Wetland? No

Remarks: