FIA FIELD PROCEDURES FOR WETLANDS IDENTIFICATION

Introduction

Recent inventories of North Carolina (1990), Virginia (1992), South Carolina (1993), Florida (1995), and Georgia (1997) included a sampling procedure to identify forested locations that met the criteria common to wetlands definitions (U.S. Army Corps of Engineers 1987). Each forested location was assessed for hydric vegetation, hydric soils, and wetland hydrology, using methods described in FIA Field Procedures for Wetland Identification (USDA Forest Service 1989). Sites that met all three criteria were classified as wetland. At each forested wetland location, standard forest inventory measurements were collected in order to quantify and describe the attributes of forested wetlands (Brown 1997).

A copy of the field manual for wetlands identification appears on the following pages. Although intended for use by data collection crews as a training device and field reference, it should provide users of FIA wetlands data with a detailed description of the procedures used to identify and inventory wetlands locations.

References

Brown, Mark J. 1997. Distribution and characteristics of forested wetlands in the Carolinas and Virginia. Southern Journal of Applied Forestry, Vol. 21, No. 2, May 1997. 64-70.

U.S. Army Corps of Engineers. 1987. Wetlands delineation manual. Dept. of the Army, U.S. Army Corps of Eng. Tech. Rep. Y-87-1.

USDA Forest Service, 1989. FIA field procedures for wetland identification. Unpubl. doc. on file at Southern Research Station, Asheville, NC. 11p.

X.xx Wetlands Classification (Optional Zone D)

Field crews will determine at each sample location which, if any, of three variables typical of forested wetland are present on the sample acre. These variables are hydrophytic vegetation, hydric soil, and wetland hydrology. Criteria for assessing each variable are described below.

Record a 1-digit code in optional column "D" reflecting which variable or combination of variables is present. A code of "O" (zero) is invalid.

1 -No wetland indicators present.
2 -Vegetation is hydrophytic. Other variables are absent.
3 -Soils are hydric. Other variables are absent.
4 -Hydrology is hydric. Other variables are absent.
5 -Vegetation and soils are hydric - wet hydrology is absent.
6 -Vegetation and hydrology are hydric - hydric soils are absent.
7 -Soils and hydrology are hydric - hydrophytic vegetation is absent.
8 -Soils are hydric, vegetation is hydrophytic, and wetland hydrology is present.

Use the following methods and criteria in assessing whether these variables are present in the stand.

VEGETATION

Determine if the stand supports predominantly hydrophytic vegetation. Each species present in the stand has been assigned an indicator status that will be used in making this determination. Status for Southeastern species are from the "National List of Plant Species That Occur in Wetlands: Southeast (Region 2)", USDI, FWS, Biological Report 88(26.2), 5/88.

Wetlands, at some time or another, are flooded or the soil is saturated and therefore anaerobic conditions develop in the rooting zone. Hydrophytic species have physiological mechanisms, morphological structures, and reproductive adaptations that allow them to exist, grow, and reproduce in areas that are periodically inundated or that have saturated soil conditions.

Indicator Status - the indicator status reflects the range of estimated probabilities of a species occurring naturally in a wetland condition versus a non-wetland across the entire normal distribution of the species. In other words, the categories reflect the likelihood that a species will be found in a wetland.

Indicator categories are listed below:

Obligate (OBL) - OBL species, under natural conditions, almost always (probability > 99%) occur in wetlands. Examples of obligate species are bald cypress and water tupelo.

Facultative Wet (FACW) - FACW species usually occur in wetlands (probability of 67% - 99%), but can be found occasionally in non-wetlands. Examples of FACW species are pond pine, slash pine, laurel oak, and gallberry.

Facultative (FAC) - FAC species have about an equal likelihood of occurring in wetlands as in non-wetlands (probability of occurring in wetlands is 34% to 66%). Examples of FAC species are loblolly pine, red maple, sweetgum, blue beech, sumac, and yaupon. Species that are classed FAC normally can be found over a very broad range of habitats.

Facultative upland (FACU) - FACU species usually occur in non-wetlands but occasionally can be found in wetlands. Estimated probability of occurrence in wetlands is 1% to 33%. Probability of occurrence in uplands is >34%. Examples of FACU species are white pine, basswood, redbud, and mountain laurel.

Obligate Upland (UPL) - UPL species almost always occur in non-wetlands (probability 99% + of occurrence in uplands - probability of only 1% of occurrence in wetland) under natural conditions. Examples of UPL species are Virginia pine, shortleaf pine, scarlet oak, and flame azalea.

When assessing the vegetation component, emphasis is placed on the entire plant community rather than on a few scattered individuals of obligate wetland or upland species. An individual stem of a particular species may exhibit extreme tolerance or adaptability to conditions that are atypical for the species as a whole. Determining if a community is hydrophytic should take little effort when evaluating stands on either end of the hydrologic continuum (a longleaf/turkey oak sand ridge, or a gum/cypress stand). Plant communities such as mixed pine-hardwood stands on mesic sites that support a variety of species, especially species that exhibit broad habitat adaptability, may require more thorough examination to classify. Also, stands that have many strata may prove more difficult to classify than very homogenous stands with few strata (such as a pine plantation with a grass understory or a mature hardwood stand in a deep swamp with no understory). The forest stand should be evaluated as a whole, taking into account overstory, understory, and ground vegetation - both woody and herbaceous. All strata must be evaluated and shrub layers should be given equal consideration with overstory trees. While mature trees may reflect the long-term hydrologic history of an area, understory vegetation may be representative of current situations.

Sampling of Forest Vegetation - The following methods are routinely used for sampling forest vegetation. More detailed descriptions of vegetative sampling procedures are found in Forest

Survey Handbook FSH 4813.1 (3/67), SE-191 (4/79), and FIA Field Instructions for the Southeast (11/85 not numbered).

Poletimber and Sawtimber - At each sample location, all live trees 5.0 inches diameter breast height (d.b.h) and larger on a 37.5 BAF variable radius plot are measured on 3-5 subplots within the sampling acre. Methods are described in the FIA field procedures handbook for systematically locating subplots within the sample acre. There are specific guidelines for establishing less than 5 subplots. In addition to other variables; species, DBH to within 0.1", crown class (dominant, codominant, intermediate, and overtopped) and bole length to the nearest 1 foot, are collected for each tree tallied. These tree characteristics will be used for determining if hydrophytic vegetation is present.

Saplings - Trees 1.0-4.9 inches d.b.h are measured on a 1/300th-acre fixed plot (radius = 6.8') at the same subplot locations used for sampling poletimber and sawtimber-size trees. For saplings, total height rather than bole length is recorded.

Seedlings - Seedlings are sampled on a 1/300th-acre circular plot at each of the subplot locations. Total number of softwood and hardwood seedlings per acre is determined. Only free-to-grow seedlings are recorded. Detailed species is not collected for seedling counts, but is recorded for seedlings while assessing the understory.

Understory - At one subplot representative of the condition being sampled, understory vegetation is measured on a 1/10th-acre circular fixed plot (37.01 radius). This sample plot is usually centered on the first subplot but may be relocated to another subplot if vegetation on subplot 1 is atypical of the entire sample as a whole.

After locating the sampling unit, vegetative layers are determined based on changes in density (ocular estimates of # stems/unit area or % aerial cover), species composition, and changes in dominance of species. A shift in dominance or prevalence of a certain species is reason to designate a vegetation layer. In order to maintain flexibility in describing the condition, fixed strata heights are not predetermined. Rather, vegetative zones can be recognized in varying height increments. Within the first horizontal foot, layers may be identified to the nearest 0.1-foot. Above the 1-foot height zone, layers are identified to the nearest whole foot. Zones above 1 foot may range from 1 foot to the height of the tallest stem on the sample plot. There is no limitation to the number of zones that can be identified. Any apparent change in total stocking of vegetation, species mix, or species abundance may be reason to designate a height zone at any level in the canopy. For each zone identified, the horizontal area is ocularly divided into l-foot square sampling units with a vertical measure equal to the height of the zone. Each cubic foot of space within the entire height zone represents the basic sampling unit. The frequency of sampling units occupied by stems of live vegetation is recorded. This is the frequency or percent sample occupancy for this stratum, and a frequency for each height zone identified should be determined. All live vegetation, including deciduous and coniferous trees less than 1.0-inch d.b.h are sampled. Trees greater than 1.0 inch are identified on the tree sample explained above.

After the vegetative layer to be sampled is identified, and the overall frequency of all vegetation determined, the broad classes of vegetation within each layer are recorded. For each zone, the percent contribution of each broad class of vegetation to the total occupancy of vegetation is determined. Broad classes identified are yellow pines, other softwoods, hardwoods, tropical tree species, woody shrubs, vines, grasses and other grasslikes, and forbs. The frequency for broad classes may vary by height zone, but will sum to 100 percent for each zone.

Finally, for each broad species class within a height zone, the species within each broad grouping are listed in order of descending abundance. Record as "Other" those species that are not coded or cannot be identified.

During the sixth reinventory of North Carolina, approximately 35 species were added to FIA's list of species identified. These species were added because they were good indicators of either wetlands (obligate hydrophytes and facultative wet species) or uplands (obligate upland or facultative upland species). A complete list of species identified is found in the FIA Field Instructions for the Southeast and includes 122 tree species, 9 tropical tree species, 50 woody shrubs, 12 vines, 29 grasses or grasslikes, and several species of other herbaceous vegetation.

Classification of hydrophytic vegetation - An area meets the hydrophytic vegetation criterion if more than 50 percent of the dominant species from each identified strata are obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC) species. For stands that have not been disturbed since the last survey cycle, a valid understory stratum for determining dominants in the plant community must have at least 5 percent frequency (of space occupied). Valid poletimber and sawtimber strata must have at least 15 sq.ft. of basal area per acre (approximately 2 trees sampled on 5 points). A valid sapling layer must have 20 percent stocking (2 saplings tallied on 5 points or 120 stems per acre). The following strata are to be treated separately if they occur together on the sample plot, and dominants should be identified for each of these strata:

1.) All identified height zones in the understory with > 5 percent occupancy.

2.) Intermediate and overtopped saplings if greater than 20 percent stocking.

3.) Intermediate and overtopped poletimber if 15 sq.ft. of basal area per acre.

4.) Dominant and codominant saplings if greater than 20 percent stocking.

5.) Dominant and codominant poletimber and sawtimber if 15 sq.ft. of basal area per acre.

For each stratum in the community being sampled, dominant species will be determined by ranking all species in descending order of dominance and cumulatively totaling species until they exceed 50 percent of the total dominance measure. All species that contribute to exceeding the 50 percent level are considered dominant species. Any additional species that may comprise 20 percent or more of the total dominance measure for the stratum are also considered dominant species. All dominants, regardless of stratum (position in canopy) are treated equally in determining the presence of hydrophytic vegetation. If 2 or more species have equal measures of abundance -either basal area, stems count, or relative frequency - and if the addition of one of these species accounts for the portion needed to exceed 50 percent of the dominance measure, include all of the species having equal values in the dominant list for that stratum. Do not arbitrarily choose one species over another if two are equally represented in any stratum on the sample acre.

When facultative species occur in any zone as dominants along with both obligate wet dominants and obligate upland dominants, the facultative species will be considered as neutral, and the vegetative classification will be based on the relationship between obligate wet and obligate upland species. FAC species should be treated neutral for a zone ONLY if there are both obligate upland and obligate wetland species present.

Saplings - Use basal area as a dominance measure for saplings. Saplings are measured on a fixed plot, with each stem having an equal probability of sampling. Using basal area as a dominance measure puts more emphasis on larger stems, which presumably have occupied the stand longer and may be more indicative of the site. For all points, calculate the basal area for each tree tallied on each fixed subplot. Sum the total basal area and sum the basal areas for each species. Calculate the proportion of total basal made up by each species and rank these proportions in descending order. Identify as dominants those species that cumulatively account for greater than 50 percent of the total basal area. Include any species that may singly account for greater than 20 percent of the basal area. Repeat this procedure for overtopped and intermediate saplings (saplings a component of an older stand) and for dominant and codominant saplings (saplings constitute the primary stand).

Poletimber and Sawtimber - Trees greater than 5.0" d.b.h are sampled on a variable plot, with the probability of sampling being proportional to diameter. Therefore, stem counts must be used as dominance measure rather than basal area. The procedure is similar to that for saplings but uses stem counts rather than basal area. Sum the number of stems of all species tallied to arrive at a total stem count. Determine the proportion for each species by dividing the number of stems tallied for a species by the total number of stems. Rank species in descending order of abundance. Identify the dominants - those species that cumulatively account for greater than 50 percent of total stocking of stems. Identify and include any single species that accounts for 20 percent or more of the total number of stems. Repeat the procedure for dominant and codominant poletimber and sawtimber, and for intermediate or overtopped poletimber and sawtimber.

Understory - Each height zone in the understory will be treated as a separate stratum. Assign a rank to each species identified in each broad class - 9 to 1 for the most to least abundant. Weight these ranks by the broad species percent. Sum the weighted ranks, and divide each weighted rank by the sum to arrive at a relative frequency for individual species within the zone. Rank the relative frequencies in descending sequence. Those species that cumulatively account for greater than 50 percent of the total frequency measure are dominants for the strata. Include any species that account for greater than 20 percent relative frequency but which were not used to exceed 50 percent. Count as dominants all species with equal relative frequencies if 1 or more were needed to exceed the 50 percent level. Repeat this procedure for all height zones identified in the understory that have greater than 5 percent occupancy.

List all dominants from all strata on the sample plot. If 50 percent or more of the species in this listing are FAC, FACW, or OBLW, then code hydrophytic vegetation.

As with individual zones for the entire sample, if the species list of dominants includes both obligate wetland species and obligate upland species, ignore the facultative species (treat as neutral) and classify based on the number of wetland vs. upland species.

HYDROLOGY

A sample has wetland hydrology when subplot #1 is inundated and or saturated at the surface by either surface water or ground water, or is saturated to within l foot of the soil surface for a period of 7 consecutive days or more during the growing season.

Growing season will be defined by the field supervisor for individual units and corresponds to the date of the last killing frost in the Spring and to the first killing frost in the Fall. For most areas in the SE, this time frame extends from early April to late October. Growing season may extend thru November in Units 3&4 Florida, and may begin as late as May and end October 1 in north Georgia, western North Carolina, and southwest Virginia.

If a stand is flooded on a continuing basis, as is often the case in deep swamps, categorizing this variable presents no problem. Several facts, however, confound the classification of hydrology. An area meets the wetland hydrology criteria by direct measurement of inundation or soil saturation during the growing season. Many times field crews will not be present to make classifications at the right time of the year - FIA sampling is conducted year-round. Sample locations that are wet (flooded or saturated soil) in February may not be wet in April thru September. Field personnel must use professional judgments in determining if locations that are not visited during the growing season are wet during that time. The use of aerial photographs taken in previous years, the use of aerial photographs used by FIA crews last survey, and FIA field records for several previous inventories may be helpful in indicating growing-season hydrology.

Atypical rainfall patterns may cause many sites that are normally flooded during the wet months and sometimes wet during the summer to become dry year-round. The decision as to what constitutes "normal" hydrology for an area, and whether current conditions are only temporary is a difficult one. Even when occupying sites during the growing season, interpretation should be done with consideration of short-term weather patterns, such as intense rainfall or droughty conditions during the weeks previous to sampling. Permeability varies according to soil texture and organic matter content. Sandy soils flooded in recent rains will drain more quickly than clay soils. Clayey soils will remain saturated much longer. Hydrology should be based on the continued norm rather than infrequent or atypical occurrences. The effect of physical site factors such as soil texture and slope should be considered.

Also confounding the classification of hydrology is the time requirement for saturation. Data collection for a typical FIA sample will be between 2 to 6 hours. Based upon observations made while the site is occupied for this short time, crews will need to extrapolate if hydrology occurs for at least 1 week.

For these reasons, the initial estimate of hydrology will be made by FIA office personnel using soil survey maps, hydric soils data, and historical flooding/saturation data. When county data are received at field locations, they will include a plot listing indicating locations that have hydrology. This determination is made based upon the information in "Hydric Soils of the United States" SCS (12/87). First, soil series for each FIA sample are identified using SCS county soil surveys. Second, soil series are compared to the list of hydric soils. Plots with soil series in the following hydrology categories are classified as having wetland hydrology:

Soil series that are somewhat poorly drained and have a water table less than 0.5 feet from the surface for a significant period (usually a week or more) during the growing season.

Soil series that have a water table less than 1.0 ft. from the surface for a week or more during the growing season if permeability is > 6.0 in/hr in all layers within 20".

Soil series that are ponded for long duration or very long duration during the growing season.

Soil series that are frequently flooded for long duration or very long duration during the growing season.

A "1" in optional column 1 on the A-1 record indicates that the hydrology component is present and an "O" in column 1 suggests that there is no wetland hydrology.

IT IS EXTREMELY IMPORTANT THAT THE FIELD CREW OCCUPYING THE SAMPLE PLOT MAKE THE FINAL DECISION CONCERNING HYDROLOGY. Obviously, if a plot is sampled in July and is flooded to a depth of two feet, the decision is not difficult. In an instance such as this, if the office classification suggests that the hydrology is not there, disregard the office classification. Plot locations may be inaccurate on the photos, the sample may not fall in the soil series described, the sample location may fall in an inclusion within the soil series delineation, or hydrology may have been altered. DISAGREE WITH THE OFFICE CLASSIFICATION IF YOU ARE CERTAIN IT IS INCORRECT. In some instances, hydrology will change. Areas may be drained or dammed. Road construction can often cause inundation. BE CERTAIN HOWEVER THAT TIMING IS CORRECT AND THAT THE AREA IS WET DURING THE GROWING SEASON. If a plot is sampled during the winter months, look for positive indicators of the hydrological status during the growing season before changing the office classification. IF YOU CANNOT POSITIVELY ASSESS THE HYDROLOGY TYPICAL DURING THE GROWING SEASON, AGREE WITH THE OFFICE CLASSIFICATION.

If the site is sampled during the growing season, and if the plot is apparently dry for the entire growing season, determine whether this is a short-term result of current weather conditions or whether it is a long-term condition. There is no clearcut division between long-term and short-term conditions. The decision rests with the person doing the sampling. The "normal" hydrologic conditions of an area should be described. Use your best judgment. Field experience is a valuable asset in making this determination. REMEMBER THAT STANDING WATER NEED NOT BE PRESENT FOR THE HYDROLOGY CRITERIA TO BE WET. SATURATED SOIL WITHIN 1.0 FOOT OF THE SOIL SURFACE FULFILLS THE REQUIREMENT.

Indicators-of Wetland Hydrology -

Field indicators that suggest that the hydrology component may be met include drainage patterns, drift lines, sediment deposition, watermarks on tree boles and visual observation of saturated soils and inundation. If the soil is spongy and seeps as it is walked upon, it is saturated below the surface. Water that can be squeezed or shaken from a soil sample at the soil surface indicates current hydrology. A distinct rotten egg odor within 12 inches of the soil surface indicates prolonged hydrology. Crews should look for the presence of free water in old stump holes and wildlife dens. These indicators suggest saturation, but not necessarily during the growing season. Plant morphological adaptations that are responses to prolonged growing-season inundation or saturation include cypress knees, flared or swell-buttressed tree trunks, prop roots, adventitious roots, hypertrophied lenticels, and leaves and stems of plants with organs developed for floatation. Some plants are able to exist in saturated soil conditions by transporting oxygen to the root zone. Bright reddish or orange colors along the channels of living roots (iron oxide concretions) provide evidence of soil saturation for a significant period during the growing season.

Coding on A-1:

0 - Wetland hydrology component not satisfied.
1 - Wetland hydrology component satisfied.

HYDRIC SOILS

Hydric soils are defined as soils that are saturated, flooded, or ponded for a long enough period to develop anaerobic conditions in the upper horizons. These soils possess characteristics that are associated with reducing conditions and in turn favor the regeneration, growth and development of hydrophytic vegetation. Hydric soils may be either drained or undrained. A soil that has been drained or partially drained may still be classified as hydric if other necessary criteria are present. Hydric soils may or may not support hydrophytic vegetation. The species present or the current hydrology should not influence the classification of soils. Each wetland variable should be evaluated independently and the presence or absence of one variable should not influence the classification of other variables.

Many factors acting in unison influence the development of a soil and the horizons characteristic of a particular soil. Examples are the parent material from which a soil is derived, the climate, topography and relief, biological activity of organisms present on site, mechanical weathering, and the influence of roots. The degree of development of a soil horizon is influenced by time. However, the most influential factor in determining the development and characteristics of a hydric soil is the hydrological regime. Because of flooding and saturation, hydric soils exhibit particular characteristics. Prolonged anaerobic conditions lead to a reducing environment. This chemical state brings about the soil colors and other physical characteristics that are usually indicative of hydric soils. Soil color is probably the most diagnostic indicator of hydric soils; it is strongly influenced by the frequency and duration of soil saturation and flooding. SOIL COLOR WILL BE USED AS THE PRIMARY CRITERIA IN DETERMINING HYDRIC SOILS ON FIA PLOTS.

Hydric soils can be of two types - mineral or organic.

Organic soils - The organic matter content in organic soils exceeds a minimum percentage in relation to total composition. This proportion varies according to soil texture. Generally, when more than 50 percent of the upper 32 inches of soil is composed of organic material, the soil is considered organic. Organic soils are saturated for long periods and are commonly called peats or mucks. Because of the strong colloidal bonding between water and organic matter, most organic soils are poorly drained. ALL ORGANIC SOILS IN THE SE WILL BE CLASSIFIED ORGANIC. The colors of organic hydric soils range from deep black-colored mucks to dark brown-colored peat.

Mineral soils - Mineral soils are those with less accumulation of organic matter. These soils have mainly mineral content (sand, silt or clay). The proportion of soil aggregates in mineral soils varies and colors range from red to gray. Mineral hydric soils typically become gleyed or can have bright mottles and low matrix chrome. Refer to SCS soils handouts for explanation of value, hue and chroma. Gleyed soils are those with bluish, greenish, or grey color. Under reducing conditions, iron and manganese are reduced which produces a characteristic gray color.

Sampling Procedures - At each sample location, determine if the soil is a hydric or non-hydric soil. Take soil samples to a depth of 1.5 feet using a 1" diameter soil probe. Classification of soils will be made at subplot #1. Three soil cores should be sampled, starting at north (O degrees) of plot center and proceeding east (90 degrees) to south (180 degrees of plot center). Samples should be taken 5 feet from the pin marking plot center in each of the cardinal directions noted. If there is an obstruction at 5 feet, such as a tree bole or rock, sample directly beyond the obstruction. If a core sample includes significant tree root material or voids, which may falsely indicate aerobic conditions, move the sampling location to avoid the problem. Observe the soil core. Use the Munsell Color Chart for color comparison with the soil sample. Soils with a matrix chroma of 2 or less will be classified as hydric.

Other evidence of hydric soils include:

Sulfidic material - Hydrogen sulfide is present if a soil emits an odor of rotten eggs. Sulfides are only produced in a reducing environment, and so such odors are only detected in waterlogged soils that are permanently saturated.

Histic epideons - This is an 8- to 16-inch organic layer at or near the surface of a mineral soil which contains at least 20 percent organic matter and that is saturated with water for 30 consecutive days or more in most years. Because of the saturation, decomposition (which is aerobic) of the organic surface is retarded. These soils can be identified by a thin layer of peat or muck below the surface.

Iron and Manganese Concretion. - Concretions (aggregates or nodules) of iron and manganese >2mm in diameter within 3 inches of the soil surface are evidence that the soil is saturated for periods long enough to be considered hydric.

Organic matter in sandy soils - Sandy soils that are inundated ay have buildups of organic matter close to the soil surface. Sandy soil that has been stained by organic matter vertically at differential rates across the horizon suggests saturation. Finally, organic pans close to the surface in sandy soils suggest high water tables.

Mottling - Mottles are spots of different colors interspersed within the matrix. Mineral soils that are alternately saturated and aerated usually exhibit mottling. Mineral soils with a gray matrix and yellow or brown mottling are usually saturated during the growing season and are probably hydric.

Spodosols - These soils have a "spodic" horizon of accumulated organic matter below a gray/white "albic" horizon.

Remember the following points when assessing wetland characteristics:

1.) Sample locations will be classified for the point in time at which they are occupied.

2.) Do not infer the presence of one variable from the presence of another. A positive indicator must be present for each variable to be recorded. For example, an area that has recently become inundated due to a beaver pond or road impoundment and exhibits hydrology at the time of sampling will be coded as having hydrology. Hydric soils may not have yet developed. If this is the case, do not code hydric soils. If the species mix has not shifted from upland to wetland species, vegetation should not be classed as hydrophytic. As another example, if major drainage efforts have occurred in the past, such as can happen with urban development, and hydrology is absent, do not code hydrology. Hydric soils may be present due to former hydrology since they can persist for a period even in aerobic conditions in the absence of saturation.

3.) Planted stands will be evaluated based on the species planted and the current understory present.

4.) Newly harvested stands will be classified on basis of remnant trees, regeneration, and remaining understory. Disregard the stocking requirements for undisturbed stands (5% cover in understory, 20 percent stocking of saplings, and 20 percent stocking of pole and sawtimber). In the event of a site prep and burn, where disking or drum chopping has removed all vegetation, base the vegetation classification on the former tally. Try to locate undisturbed soil for assessing the soil variable.

5.) Other classifications will be made independent of the wetland classifications. For instance, in assessing water type (Item 57), a sample may have seasonal or permanent water and no hydrology, since the hydrology classification requires inundation during the growing season, and the water classification is year-round.

6.) ASSESS THE SITE AS IT APPEARS AT THE SAMPLING MOMENT. The only exception will be in evaluating hydrology during obvious drought years. If rainfall has been below normal for several years and there is direct evidence that wetland hydrology is present under normal circumstances of weather, and there is hydric soils and vegetation on the plot, code wetland hydrology. Acceptable evidence would be past flooding or saturation recorded on tally sheets of previous survey periods, direct contact with landowners, or other recorded data.