WETLAND DETERMINATION ON THE SMITH PARCEL
MINOCQUA TOWNSHIP, ONEIDA COUNTY, WISCONSIN

[some names and locations have been changed for this webversion]

ABSTRACT

A wetland determination was conducted on the Smith Parcel in Minocqua, Wisconsin on August 25, August 27 and October 17, 2002. The property is being considered for residential development. The site was composed of uplands containing Acer Quercus/Vaccinium habitat type and wetlands composed of Sedge Meadow. Neighbors recall that the forest was once in pasture, and this was supported by the presence of old barbed wire fences and a farm dump in a portion of the wetlands. The data gathered in the course of the wetland delineation indicated that 4.38 acres out of the 27.75 acres of the Smith Parcel were wetlands. The remaining 23.37 acres had no wetlands. The borders of the wetlands were logged with a GPS unit and marked with pink flagging and wire flags. Development of this site does have the potential to affect wetlands on this site.

PROJECT INFORMATION

Residential development is being considered on the Smith Parcel in Minocqua, Wisconsin (T0N, R0E, S00). This project, known as the Elm Road Project, has the potential to impact wetlands that may exist at this site.

The Federal Clean Water Act, Section 404, authorizes the Army Corps of Engineers, specifically the Chief of Engineers, to issue permits for the discharge of dredged or fill materials into *navigable* waters of the United States. This permitting process is overseen by the Environmental Protection Agency and is reviewed by the Fish and Wildlife Service and the National Marine Fisheries Service. This permit requires that the limits of wetlands are identified and delineated. The resulting wetlands are referred to as *jurisdictional wetlands* and are regulated under Section 404 of the Federal Clean Water Act. The determination of navigability is left entirely to the Corps of Engineers.

The state of Wisconsin has assumed responsibility to regulate and protect wetlands under NR103 and NR299.

Thus, John Doe of Surveying Unlimited arranged for these wetland determinations to be performed by David Schmoller of Yellowfield Biological Surveys. On August 25, August 27, and October 17, 2002, Mr. Schmoller completed the fieldwork of the wetland determinations.

METHODS

Wetland Determinations

Wetland Determinations were performed as outlined in the January 1987 version of the Army Corps of Engineers Wetlands Delineation Manual and in view of Wisconsin Department of Natural Resources regulations outlined in Chapter NR 103, “Water Quality Standards for Wetlands.”

Surveys were conducted within the entire 27.75 acre site. Evidence of disturbance or the existence of abnormal circumstances was documented. The routine wetland determination method was selected for all wetlands. A survey line was established across the wetland to nonwetland gradient.

The three criteria that identify a wetland were determined in the following manner:

Soils: Soil pits were dug in wetlands and nonwetlands at each site and inspected for hydric characteristics. Hydric characteristics included strong, bright mottles, gleying, sulfidic material, thick organic horizon, low matrix chromas, and iron and manganese concretions. The data from these soil pits appears in Table 2, “Soil Pit Data” and on the field data forms. Oneida County Soil Survey maps were consulted.

Hydrology: The site was traversed with an eye for hydrologic characteristics. These characteristics included watermarks, water stained leaves, drift lines, sediment deposits, drainage patterns. Soil pits were inspected for inundation, and saturation of the soil in the root zone. When these appeared, the hydrologic characteristics were recorded on the field data forms.

Vegetation: Vegetation was sampled throughout the site and in vicinity of the soil pits. An attempt was made to identify all species. Each species was assigned a modified cover abundance value as shown in Table 1, "Modified Cover-Abundance Values". Species were listed in order of dominance. A wetland indicator status for each species was determined using the National List of Plant Species that Occur in Wetlands (Reed, 1988). This wetland indicator status is listed for plant species encountered in this survey in Appendix 1, "Plant Names and Wetland Indicator Status". Where dominant species were primarily FAC species, the "FAC Neutral" test would be used.

Table 1. *Modified Cover-Abundance Values*

VALUE	T	1	2	3	4	5	6	7
% COVER	Trace	1-5%	5-15%	15-25%	25-50%	50-75%	75-95%	95-100%

Each plant community was classified. Wetland communities would be classified according to the U. S. Army Corps of Engineers manual *Wetland Plants and Plant Communities of Minnesota and Wisconsin* (Eggers, 1987). Upland communities would be classified according to the Field Guide to Forest Habitat Types of Northern Wisconsin (Kotar, 1988).

A field copy of the "Routine Wetland Determination Data Form" was completed for each soil pit. This form recorded the vegetation, soil, and hydrologic measurements and observations. Latin plant names were used throughout. The field copy was then entered into an Excel spreadsheet for storage and email. Based on the information recorded in the Data Form and Table 2, each plant community that met all three wetland criteria was established as a wetland. The borders of the wetlands were logged with a Trimble Geoexplorer 3 and marked with pink flagging or wire flags.

Base maps were drafted in Autosketch that indicated the project area, vegetation community boundaries, survey lines, soil pit locations, wetlands, and nonwetlands. Wetlands were indicated by marking the vegetation communities identified as wetlands with a "W". Nonwetlands were indicated by marking the vegetation communities identified as nonwetlands with an "N".

Initially, arrangements were made with John Smith, Water Management Specialist with the Wisconsin Department of Natural Resources in Rhinelander, to have him consult State Wetland Inventory records produced by the Wisconsin Department of Natural Resources, Bureau of Water Regulations and Zoning to determine the presence or absence of designated wetlands within the project boundary. On October 15, 2002, John Brown of the US Army Corps of Engineers in Plover instructed Mr. Schmoller to consult the maps himself. He also requested at that time that he establish two more transects across the southern arms of the wetlands.

RESULTS AND DISCUSSION

Two vegetation communities were recognized within the project area: Sedge Meadow (Chadde, 1998) and Acer Quercus/Vaccinium habitat type (Kotar, 1988) The sedge meadow may also be classified as an Open Graminoid Bog: sedge/Sphagnum (Harris, 1996). Portions of the Sedge Meadow had characteristics of Alder Thicket and Shrub-Carr (Chadde, 1998), but by in large the area could be generalized as a Sedge Meadow. State Wetland Inventory Maps classified the heart of the wetlands as E2K wetlands and the outlying wetlands as T3K and T3/8K. The outlying wetlands proved to be difficult to distinguish.

There was seasonality to the wetness of this site. The Sedge Meadow was quite dry in August, with only a small puddle of water in its center. It was possible to traverse its entire length without getting one's shoes wet. The property owner spoke of wide fluctuations in the water table in this area. Soil samples indicated a seasonal wetness. In October, the meadow was partly inundated. The Oneida County Soil Survey indicated that the soils on this site exhibited poor drainage and as such were capable of retaining water in wet periods. This seasonality was not sufficiently radical so as to render this a Problem Seasonal Wetland.

The wetland borders were very distinct within the pure Sedge Meadow. The border became somewhat more indistinct as the wetland graded into Alder Thicket/Shrub-Carr, as upland species were seen intermingled with wetland species. The best boundary detected within this mixture was where the *Ilex verticilata, Nemopanthus*

mucronatus, Rubus hispidua, or *Alnus rugosa (incana)* dropped out. At that point the wetland ended and the uplands began, and that is where the flagging was placed.

The survey determined that there was a total of 4.38 acres out of the 27.75 acres were wetlands. The remaining 23.37 acres had no wetlands.

The survey site had seen disturbance in the past. An old farm dump was located in the south end of the smaller wetland. Prominent were two vintage automobiles buried up to the fenders in the soil. Barbed wire fence was found along the western boundary and within the uplands in the center of the site. Neighbors recalled that the area was once a farmstead. The woodlands were second growth, the oldest trees being scattered 80 year old White pines. They were dominated by early successional species such as Quaking aspen and Paper birch.

Acer Quercus/Vaccinium - Nonwetlands

Vegetation: The original vegetation in this community had been removed decades ago during logging and farming operations. What remained were primarily second growth softwood trees. The species of dominance included *Populus tremuloides, Corylus cornuta, Pteridium aquilinum, Quercus rubra, Acer rubrum, Pinus banksiana,* and *Vaccinium angustifolium.* Hydrophytic vegetation comprised less than half of the species identified as dominant in this community, actually 40%. The majority of the species not being hydrophytic indicated a nonwetland for the vegetation parameter.

Soil: The soils in this vegetation community were primarily *Croswell loamy sand, loamy substratum* (CrA). The soil is not on the US Army Corps of Engineers "Hydric Soils List." This is a moderately well drained soil with rapid permeability, and thus subject to droughtiness. Mottling below the root zone was observed, indicating seasonally high water tables. These CrA soils are probably underlain by a loamy substratum, which would perch the water table. Soil pits dug in this community did not reveal any hydric soil characteristics within the root zone or 16" of the soil surface. Complete Soil Pit data is contained in Table 2. The absence of hydric soil characteristics within the root zone indicated a nonwetland for the soil parameter.

Hydrology: The soil pits did not have any free standing water within the root zone or 16" of the soil surface. No inundation, watermarks, waterstained leaves, reduced leaf litter, driftlines, sediment deposits, or drainage patterns were observed. The absence any hydrologic indicators of a wetland, signified a nonwetland for the hydrologic parameter.

Wetland Inventory Records: State Wetland Inventory records described about half of this area as T3K and T3/8K wetlands, a forested type of wetland. The remaining half was nonwetland. Portions of the Sedge Meadow wetlands below contained forested wetland characteristics. Those forested wetlands that were found are considered under the Sedge Meadow wetlands.

Determination: The Acer Quercus/Vaccinium habitat type in this project area did not present wetland indicators for all three of the parameters and as such did not contain wetlands.

Sedge Meadow - Wetlands

Vegetation: Vegetation in the nonforested portions of this community largely resembled the vegetation that existed in this community prior to settlement. Few marketable, exploitable, or economically significant plants exist in any great numbers in sedge meadows. In this community the species of dominance included *Carex oligosperma, Calamagrostis canadensis, Carex lasiocarpa, Chamaedaphne calyculata, Rubus hispidus,* and *Glyceria canadensis.* Where the Sedge Meadow graded into an Alder Thicket/Shrub-Carr type wetland, there were more *Ilex verticillata, Nemopanthus mucronatus, Alnus rugosa (incana)*, and *Calamagrostis canadensis*. On the forested fringes, trees such as *Populus tremuloides* and *Acer rubra* were common. Hydrophytic vegetation comprised more than half of the species identified as dominant in this community, in fact, 100%. The majority of the species being hydrophytic indicated a wetland for the vegetation parameter.

Soil: The soils in this vegetation community were primarily *Au Gres loamy sand* (Au). The soil is not on the US Army Corps of Engineers "Hydric Soils List." Permeability of these soils is rapid and the seasonally high

water table is typically 0.5 foot to 1.5 feet. All soil pits dug in this community revealed an abundance of poorly decayed organic matter in the A horizon. All had strong mottles, some had staining of the root channels, and a few had low matrix chromas within the root zone. No gleying, histic epipedons, sulfidic material, iron or manganese concretions, or capillary fringe within the root zone were observed. Complete Soil Pit data is contained in Table 2. The presence of strong mottles, staining of root channels, low matrix chromas, and an abundance of poorly decayed organic material throughout the A horizon, a hydric soil characteristic, indicated a wetland for the soil parameter.

Hydrology: In August, no soil pits showed free standing water within the root zone or 16" of the soil surface. Water had not percolated into any of the soil pits when the site was revisited two days later. However, waterstained leaves reduced leaf litter, and watermarks were visible throughout this vegetation community. No driftlines, sediment deposits, or drainage patterns were visible. When the site was revisited in October, most of these soil pits had water. Some of the Sedge Meadow was inundated at that time. The presence of hydrologic indicators of a wetland signified a wetland for the hydrologic parameter.

Wetland Inventory Records: State Wetland Inventory records described the sedge dominated parts of this wetland as E2K wetlands, while the remaining Alder Thicket/Shrub-Carr portions were described as T3K and T3/8K wetlands, a forested type of wetland.

Determination: The Sedge Meadow vegetation community presented wetland indicators for all three of the parameters and as such did contain wetlands.

Table 2. ***Soil Pit Data***

PIT			A Horizon		B Horizon				C Horizon				
#	Type	Depth	Depth	Matrix	Depth	Matrix	Mottle	Gley	Depth	Matrix	Water?	Hydrics?	Wetland?
1	SM	20"	4"	5YR2.5/1	6"	5YR3/3	Yes 7.5YR7/6	None	20"	5YR4/4	No	Yes	Yes
2	DF	20"	3"	7.5YR2.5/2	5"	10YR5/2	None	None	20"	7.5YR5/6	No	No	No
3	SM	20"	7"	7.5YR2.5/1	4"	7/5YR3/2	Yes 7.5YR7/3	None	20"	7/5YR4/4	No	Yes	Yes
4	SM	16"	4"	7.5YR2.5/1	10"	10YR5/3	Yes 7.5YR7/3	None	16"	7.5YR4/4	No	Yes	Yes
5	SM	18"	2"	7.5YR2.5/2	6"	7.5YR4/2	Yes 7.5YR5/6	None	18"	7.5YR6/6	No	Yes	Yes
6	DF	20"	3"	5YR2.5/1	6"	7.5YR5/4	Yes 7.5YR7/6	None	18"	7.5YR4/6	No	No	No
7	DF	20"	3"	7.5YR2.5/1	8"	7.5YR5/2	Yes 7.5YR7/6	None	20"	7.5YR5/4	No	No	No
8	SM	18"	3"	7.5YR2/1	6"	7.5YR3/2	Yes 7.5YR6/8	None	18"	7.5YR7/6	No	Yes	Yes
9	DF	18"	3"	7.5YR2.5/1	5"	7.5YR4/2	Yes 7.5YR7/6	None	18"	7.5YR5/6	No	No	No
10	DF	19"	2"	7.5YR2.5/1	6"	7.5YR5/3	None	None	14"	7.5YR4/4	Yes 14"	No	No
11	DF	18"	2"	10YR2/1	6"	7.5YR5/3	None	None	16"	2.5YR2.5/3	Yes 17"	No	No
12	SM	20"	2"	10YR2/1	6"	10YR5/3	Yes 7.5YR7/6	None	18"	7.5YR4/4	Yes 10"	Yes	Yes
13	DF	20"	2"	10YR2/1	6"	10YR4/2	None	None	18"	7.5YR5/4	Yes 18"	No	No
14	DF	19"	2"	10YR2/1	6"	7.5YR6/2	None	None	18"	10YR4/6	No	No	No
15	SM	20"	2"	10YR2/1	6"	7.5YR3/2	Yes 7.5YR4/6	None	18"	5YR4/6	Yes 12"	Yes	Yes
16	DF	22"	3"	10YR2/1	6"	7.5YR5/3	None until 19"	None	19"	7.5YR6/6	No	No	No
17	SM	22"	2"	10YR2/1	6"	7.5YR6/2	Yes 7.5YR2.5/3	None	19"	10YR6/4	No	Yes	Yes
18	DF	24"	2'	10YR2/1	6"	7.5YR4/6	None	None	19"	Too deep	No	No	No
19	DF	20"	2"	10YR2/1	6"	7.5YR4/4	None	None	19"	Too deep	No	No	No
20	SM	18"	2"	10YR2/1	6"	7.5YR4/6	Yes 5YR4/6	None	17"	5YR4/6	No	Yes	Yes
21	DF	22"	2"	10YR2/1	6"	7.5YR4/6	None	None	20"	Too deep	No	No	No

CONCLUSION AND RECOMMENDATIONS

The vegetation, soil, and hydrologic data gathered in this survey determined that a total of 4.38 acres out of the 27.75 acres were wetlands. The remaining 23.37 acres had no wetlands. The borders of the wetlands were logged with a Trimble Geoexplorer 3 and marked with pink flagging or wire flags.

While this site had seen some significant disturbance in the past 120 years, with the logging episodes and the farmstead, the Sedge Meadow vegetation community remained largely intact. The forested uplands, with their *Pinus strobus* component are likely a mere shadow of the pre-settlement days when they were dominated centuries-old White pine. Nevertheless, the wetland boundaries seen today are probably similar to what existed prior to settlement. But two exceptions must be noted. One is the south half of the 0.66 acre east wetland. Part of the wetland seen here might be a pit excavated during the farmstead days. The south half of the wetland is an old farm dump, containing two cars, two old washtubs, pots and pans, bed frames, and nondescript flotsam and jetsam. It is quite possible that the farm folks enlarged the wetland depression to contain their household trash. Protection of this portion of the eastern wetland might be questionable. The other exception is the snowmobile trail that cuts through the center of the western wetland. In addition to ruts and scarring of the sedge mat, this snowmobile activity appears to have enlarged the wetland on the north and south ends of the main wetland by compaction of the soil and dispersal of wetland species along the compacted trail. Part of the trail on the southern end appears to branch off into wetlands to the west, providing a corridor to other wetlands and possibly creating an artificial drainageway between the wetlands surveyed and wetlands that are connected to the Black River.

Some quotes from the Soil Survey of Oneida County are in order. Regarding the Au Gres soils it says:

> This soil is generally unsuited to septic tank absorption fields because of the seasonal high water table and a poor filtering capacity, which results from the rapid permeability. Overcoming these limitations is difficult. A better suited site should be considered. In some areas the effluent can be pumped to an absorption field established on better suited soils on the higher parts of the landscape.
> Because of the seasonal high water table, this soil is poorly suited to dwellings and local roads and streets. Constructing dwellings without basements on fill material, which raises the level of the site, and constructing basements above the level of wetness help to overcome this situation. The wetness also can be overcome by installing a subsurface drainage system that has a gravity outlet or another dependable outlet. The risk of damage to local roads and streets can be reduced by providing coarse textured fill material, such as sand or gravel, which raises the roadbed above the level of wetness, and providing adequate roadside ditches and culverts, which help to drain the roadbed and maintain the natural drainage system.

Regarding the Croswell soils it says:

> This soil is poorly suited to septic tank absorption fields because of the seasonal high water table; a poor filtering capacity, which results from the rapid permeability in the upper sandy layers; and the moderately slow permeability in the stratified silty, loamy, and sandy deposits. These limitations can be overcome by constructing a mound of suitable filtering material. In some areas the effluent can be pumped to an absorption field established on better suited soils on the higher parts of the landscape.
> The soil is suited to dwellings without basements and to local roads and streets. It is only moderately suited to dwellings with basements because of the seasonal high water table. This limitation can be overcome by constructing the basement above the level of wetness or by installing a subsurface drainage system that has a gravity outlet or another dependable outlet.

As it now stands, any dredging or filling of these wetlands that would occur during the development of this property would require the necessary *Wetland Alteration Permits* from the Wisconsin Department of Natural Resources.

It is always good practice to have the wetland boundaries recorded by a certified land surveyor as soon as possible. Weather and animals take their toll on wetland flagging, and in a few short months all the labor spent in establishing the wetland boundaries can be lost.

Final authority in determining the actuality of a wetland and the allowance of wetland alterations rests with the various interested government agencies.

Copies of this wetland determination are being sent to the U.S. Army Corps of Engineers, the Wisconsin Department of Natural Resources, and John Doe of Surveying Unlimited

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