CHAPTER 3.

ASSESSING YOUR WETLAND'S POTENTIAL FOR RESTORATION

"A properly restored wetland blends beautifully into its surroundings. An altered system just never finds its place in the landscape."

– Jeff Nania, Wisconsin Waterfowl Association

This chapter describes wetland restoration and leads you through the assessment of your land for its restoration potential. The information you gather on the site's soils, topography, drainage, and plant communities will be used in Chapter 4 to plan the restoration.

Remember that at any point you can seek help from the agencies and organizations described in Chapter 8. Restoration projects need considerable planning and may require local, state, and federal permits. Unless you are willing to pay for the restoration costs yourself, you may want to seek other sources of funding for your project. What may seem like obstacles early in the process can be overcome with careful planning, patience, and diligence. Remember that it took thousands of years for your wetland to evolve, decades or centuries to degrade it, and if it takes you a few years to see progress on your restoration, it is time well spent!

Restoration, Enhancement, and Creation . . .

Various terms are used in reference to wetland restoration. Definitions follow for several key terms that are used in this handbook. Check the glossary for other terms related to wetlands.

Wetland restoration is defined as the reestablishment of wetland conditions similar to the original condition in an area where wetlands were altered by past human activities.

Many of the state's former wetlands are significantly disturbed and have been altered by such activities as ditching, drain tile installation, stream channelization, and sedimentation. These areas generally have hydric soils typical of wetlands, and may have some wetland plants growing among weeds or crops. The key to wetland restoration of these sites is reestablishing the area's original hydrology and topography, and restoring natural processes including the original native plant cover.

Wetland enhancement is defined as the maintenance and management of existing wetlands for a particular function or value, sometimes at the expense of other functions or values. Degrees of enhancement activity range from simple measures to more complex activities. Generally, wetland enhancement activities are used to restore severely degraded wetlands to higher quality sites.

Art Kitchen

An example of an historic wetland "enhancement" where a pond was excavated from a sedge meadow wetland. The spoil piles are dominated by reed canary grass, an undesirable invasive species.

Enhancement includes management activities that affect wildlife habitat and vegetation. These activities compensate for natural processes that no longer exist. Examples include using prescribed burns, controlling invasive species, planting upland buffer zones, and providing nest boxes for wildlife (see Chapters 6 & 11).

Wetland enhancement can change the physical characteristics of a functioning wetland. Examples include impounding water behind a dike or dam at higher levels than historically present or dredging a pond in a relatively undisturbed wetland. These activities usually require permits and result in enhancing one wetland function at the expense of others. As we learn more about wetland diversity and functions, some practices undertaken with good intentions years ago, such as dynamiting ponds in wooded wetlands or sedge meadows, or planting reed canary grass, today are seen as unfortunate mistakes. Enhancement techniques should be evaluated carefully, because one generation's enhancement could create unintended problems for the next generation.

Wetland creation is the establishment of a wetland in an area where a wetland *never* existed historically. We create artificial wetlands by

impounding water behind a dike or dam or excavating surface soils in upland areas to create a depression. These efforts are costly and labor-intensive and the resulting "wetland" may not fit into the landscape and may never function as a natural wetland. Wetland creation requires a higher level of science than presently available.

The first problem encountered in creating wetlands is establishing suitable wetland hydrology. Even if that is accomplished, hydric soils appear to be critical to establishing a healthy wetland plant community. It is difficult to create the soil conditions that were formed by natural processes over thousands of years.

What Kind of Restoration Has the Best Track Record?

Based on the hundreds of wetland restorations and wetland enhancements and alterations that have been made across the state during the last 50 years, we are beginning to learn what works and what doesn't. ***The most ecologically sound and most cost-efficient approach to wetland restoration is to restore degraded, formerly drained wetlands by systematically undoing the activities that were done to alter them.***

Gathering Information on Your Wetland

You may have already begun exploring and documenting the features and ecology of your site as described in Chapter 2. To actually plan a restoration project, a more thorough site analysis is needed requiring information from diverse sources, including county and federal agencies.

Mapping the Site

Start your planning by sketching a rough map of your site based on simple field techniques. You will add detail as you locate additional information from diverse sources. The map you create will be the framework of your restoration plan.

For your mapping project, be sure to bring everything you need into the field (see checklist).

THINGS TO BRING:

- ☑ Notepad
- ☑ Pencil (to prevent ink smears)
- ☑ Camera
- ☑ Plant identification book
- ☑ Compass
- ☑ Bright-colored surveyor's tape or scraps of cloth torn into strips
- ☑ Recent aerial photo of the site (discussed later in this chapter)

You also need to measure your "pace." Most people have a pace, or stride, between 2.5 and 3 feet long. Your pace will be shorter in rough or wet terrain and on slopes. Measure an average stride against a marked flat surface (or take 5-10 strides, measure the distance, and divide by the number of steps taken) before heading into the field.

Your map helps create a general picture of your land with any special or unique features identified on it. Find a

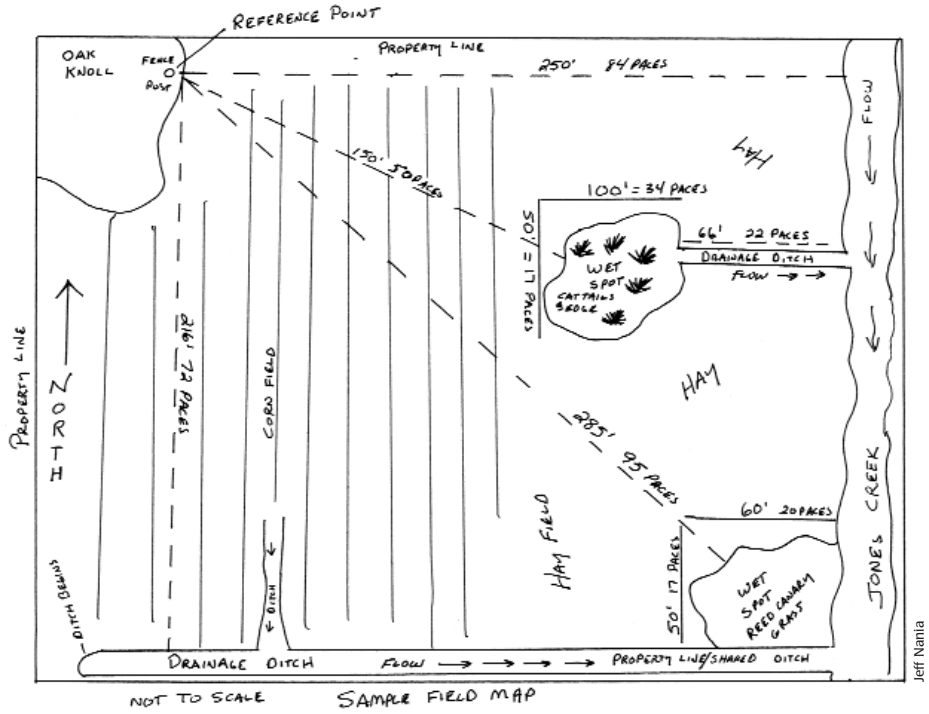
good reference point to start from, selecting a spot that offers a good view of the whole property, such as an oak knoll or the edge of a road. Note the location of your reference point on your notepad, for example: "standing on an oak knoll, next to a small oak tree, facing west." Mark your reference point with a piece of surveyor's tape or cloth.

Standing at your reference point, make a sketch map of your site. As you look across the site, note on the map the approximate locations of special features such as:

- ☑ Lakes, streams, or rivers nearby (including name if known).
- ☑ Topography of property (flat or hilly, note any large hills).
- ☑ Ditches.
- ☑ Drain tile outlets.
- ☑ Springs.
- ☑ Potential sources of water.
- ☑ Standing water.
- ☑ Cropland.
- ☑ Roads/culverts.
- ☑ Noticeable change in the types of plants.
- ☑ Mature trees or shrubs.
- ☑ Waterfowl or muskrat using the waterways.
- ☑ Any other clues of wildlife use.

Take a few pictures from your reference point by facing in different compass directions. Try to shoot overlapping images so they can be placed side to side when you review them at home.

Continue mapping your wetland by pacing distances from your reference point to any special features. Note distances and compass direction on your map. Document abrupt changes in vegetation, ditches, culverts, signs of disturbance, etc. When you get to a special feature, take a picture and make a



Jeff Nania

A hand-drawn field map will provide useful information for planning your restoration.

note of it. In this way you will build an archive of information and photos about the site. If you are working alone or with a technical consultant on your restoration plan, the more detailed information you can gather about the specific conditions and features of the area, the more complete will be the plan.

What Plants Occur on the Site?

You don't have to be an expert botanist to gather valuable information. Learning to identify the few invasive plants described in Chapter 6 is an important starting point. Use your field guide to identify the most common wetland plants at your site. It is easiest to identify plants when they are in bloom. Many wetland flowers begin blooming as early as April, although the majority will bloom in mid- to late summer.

You can be as specific as you like with your plant inventory, but if you are a novice at this try to get a general sense of what is found on the site. If you look at a wetland area and find no, or very few, invasive plants and many different types of plants, you are probably observing a good-quality community. Conversely, if you only see one or several different kinds of plants and one or more of them is an invasive plant described in Chapter 6, then you are likely in a lower quality plant community. Take a photo of the area, and of flowers and leaves of unknown plants if you need to confirm your identifications later.

Locate and note the most common plants on your map, and indicate the approximate size of the area. If the area of special interest is too large to measure easily by pacing, make a note of that and determine its size later by using the aerial photographs you will be obtaining for the planning process. Use the same technique for all the wet areas and any upland areas included in your project boundaries.

Where wetland plants occur is important because it denotes an area where some degree of wetland hydrology remains, and native plants may exist that you want to protect and promote during restoration. Areas with invasive weeds need control measures as part of the restoration process.

If you need help with plant identification contact the agencies or organizations listed in Chapter 8, find a friend who knows plants, ask for help at a nature center or local biology department of a college or university, or hire a plant ecologist to assist you.

Unraveling the Past

An investigation into the history of the wetland is important when planning how to restore the land. With perseverance you can find old maps and aerial photos, drainage plans and tile lines, historic crop yields, former owners or other kinds of details that piece together your property's history. At a minimum, you need to know the legal description—the *county, township, range, and section*—of the site. If you don't have this on a survey map of your property, the easiest way to find it is in a county plat book. Many government offices such as the county clerk or assessor's offices, libraries, and even real estate companies have plat books. Get a copy of the correct plat page and highlight the property location.

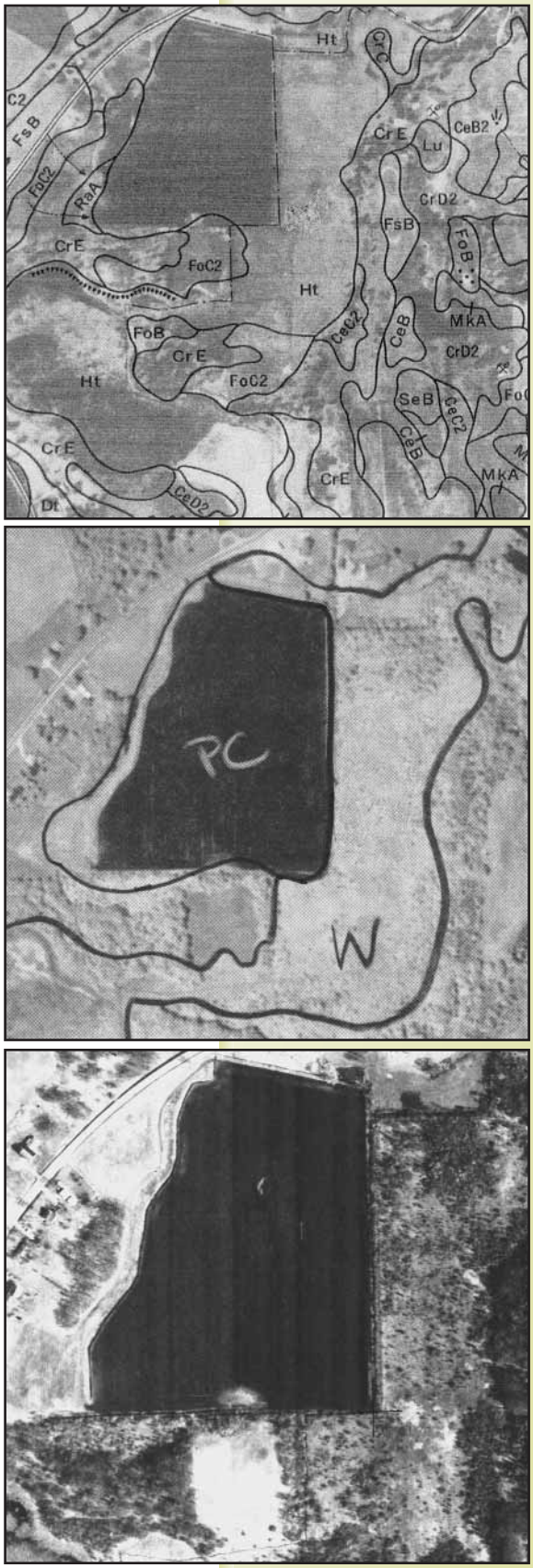
Visit the NRCS

Contact the Natural Resources Conservation Service (NRCS) office (formerly known as the Soil Conservation Service) or County Land Conservation office in the county in which your site is located. Make an appointment to obtain soil information about your property. You need to know what wetland soils you have on your site and where they occur. These hydric soil areas are where you can begin to restore wetland hydrology.

Bring all of the site information you gathered, including a copy of the page from the plat map, to your appointment. The agent will show you soil maps and can help you interpret them. The soil maps are aerial photos overlain with black lines and abbreviations of the mapped soil units, such as Ht for Houghton, Pa for Palms and VwA for Virgil, all of which are wetland soils, and PnC2 for Plano, an upland soil type (see map at top right).

Ask for a copy of the soil map and descriptions of the soil types on your site. Ask whether or not these are wetland soils. During your meeting, take notes about the soils and ask the NRCS staff if they have other information on the drainage of your site, such as maps of drain tile lines.

You should also ask if Farm Service Agency (FSA) aerial photographs exist for your site (see photo at bottom right). NRCS offices also have wetland inventory maps on aerial photographs, some with wetland soils already mapped (see photo at middle right). This soil mapping is a little different because it combines some current site



Top, the NRCS soil map of a drained, ditched and farmed wetland (dark area, upper left) shows the type of wetland (hydric) soil. Here, Houghton muck (Ht), a typical peat soil, occurs on the site. The land to the east of the drained site is an undisturbed wetland. A channelized stream flows on the east side of the drained field, and ditches have been dug on the other three sides.

Middle, the NRCS wetland inventory map of the same site labels the drained wetland as "PC", for "prior-converted" and the intact healthy wetland as "W." The site may be a good candidate for restoration, as the adjoining wetland could be a natural source of seeds and wetland wildlife that will reinhabit a restored wetland.

Bottom, the recent aerial photo is of the same site. Note how the intact wetland is considerably more brushy than what appears in the wetland map, which was based on an earlier aerial photo, perhaps due to a change in hydrology from the extensive ditching and channelization of the original wetland and stream.

Top and Middle Photos: Natural Resources Conservation Service, Bottom Photo: Southeastern Wisconsin Regional Planning Commission

WISCONSIN WETLAND INVENTORY MAPS
available from:
Wisconsin Wetland Inventory
Wisconsin Department of Natural Resources, FH/3
P.O. Box 7921
Madison, WI 53707
(608) 266-8852
www.dnr.wi.gov/org/water/fhp/wetlands/mapping.shtml

The Wisconsin State Cartographers office maintains the **WISCONSIN CATALOG OF AERIAL PHOTOGRAPHY** on-line that provides a comprehensive listing of aerial photography acquired by federal, state and local agencies, and other groups. Photos listed in this catalog span the period from 1936-2000. You can search for a photograph by county or area. The information will include what kind of photo it is, the year it was taken, the scale, where you can view the photo, and where you can purchase it. The on-line catalog is found at:
www.geography.wisc.edu/sco/aerial_sat/apsi.html
or call the State Cartographers office at: (608) 262-3065

The **ROBINSON MAP LIBRARY**, located on the University of Wisconsin campus has a world-wide collection of maps and an extensive collection of aerial photography of Wisconsin. The library is located in the Science Hall, 3rd Floor, 550 N. Park, Madison, WI.
Call for hours: (608) 262-1471 or visit their web site at:
www.geography.wisc.edu/map_lib.htm.

UNITED STATES GEOLOGICAL SURVEY TOPOGRAPHIC MAPS
available from:
Wisconsin Geological and Natural History Survey
3817 Mineral Point Road
Madison, WI 53705
(608) 263-7389
www.uwex.edu/wgnhs/

conditions and crop histories with the hydric soil types and can indicate what type of cropping or drainage history your site has. The abbreviations on the NRCS Wetland Inventory maps are:

PC for **PRIOR CONVERTED**, referring to a former wetland that has been drained to the point that it can be farmed most of the time.

FW for **FARMED WETLAND**, lands that were partially altered but because of wetness can't be farmed every year.

W for **WETLAND**, areas that are essentially unaltered or non-cropped that have been altered but still retain wetland characteristics. Many of these areas in parts of the state were timbered and possibly farmed in the past.

NW for **NON-WETLAND** can refer to upland or to non-cropped wetland areas that are so well drained that they no longer have any wetland characteristics.

NI means **NOT INVENTORIED**. The lack of any symbol also indicates NRCS personnel have not evaluated the site.

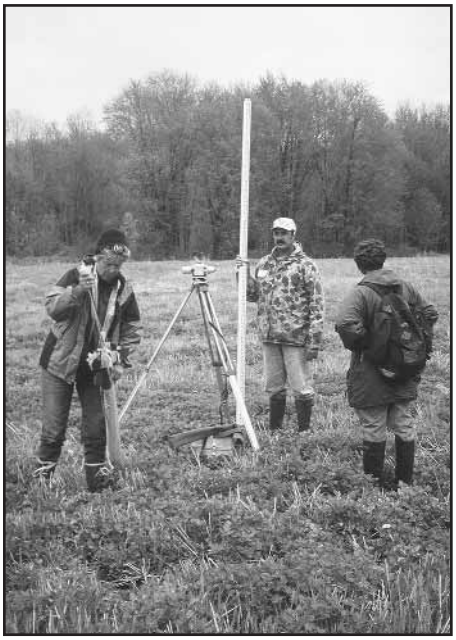
You can request this evaluation of your site at no charge, if you wish. Although these terms are used for farm program purposes and are not absolute determinations of wetland conditions, they are very useful for wetland restoration.

Obtain Other Maps

The Wisconsin Wetland Inventory has mapped known wetlands of two or five acres or larger in each town on aerial photographs. These maps are continually updated. Revised maps may show wetlands smaller than 2 acres. Maps of your town can be requested from the Wisconsin DNR office in Madison (see side bar). These maps provide a general idea of vegetation and hydrology on your site or adjacent wetland areas. Even if your site is not mapped, nearby wetlands may give you a clue about how best to restore your site.

Your county offices may know of other aerial photos by a public agency, such as the Southeast Wisconsin Regional Planning Commission (SEWRPC), which takes aerial photographs of its region every five years. If photos exist, order one for each year flown to determine changes to your site and adjacent properties over time. Aerial photos from the late 1930's to early 1940's are available for most areas of the state. Visit the state cartographers web site for more information (see side bar).

United States Geological Survey (USGS) topographical ("topo") maps can be obtained from the Wisconsin Geological and Natural History Survey in Madison. Topo maps will show the general direction of water flow. If a stream meanders it is less altered than a straightened stream. Because the topographic contour interval, which indicates elevation changes, is 10 feet, the maps may lack detail on your site. They do, however, provide an overview of how your site fits into the larger landscape. Your county may have more accurate topo maps with 2-foot contours; ask at the county or regional planning office.


Alice Thompson

Surveying a wetland restoration project.

Topographic Survey

The most useful survey for wetland restoration is a 1-foot contour map. However, the 2-foot interval map may be enough to plan your restoration with some additional site information provided by a surveyor. If you hire a professional survey team, discuss the restoration objectives and site plans with them. For all ditches on site that you plan to fill or plug you need the width and height of the spoil bank on the side of the ditch, and the depth, width, and length of the ditch so that you can estimate the quantities of soil you will need during construction to fill the ditch. You will want the elevation of the bottom of the ditch as it enters and leaves the property as well.

Have the surveyor take a survey line across the width and length of the site, mapping low spots and high points to understand how water will flow or collect. You need to know the elevation of all low areas on neighboring properties to determine if restoring your site will flood them. The impact of increased water on neighboring property owners could be higher than the expected level of surface water and may extend 2-3 feet above that water level, depending on the soils and sources of water. You may need technical assistance to help you determine if your project will flood your neighbor's land if you do not own the entire wetland basin.

Interview the "Elders"

It is very helpful to speak with previous landowners that farmed or altered the site to find out how it changed. You may be able to track down previous owners through the county register of deeds or tax office. Another source of information is a neighboring landowner or town historian. Set up a visit, bring your maps and questions and start making a valuable friend. Questions to ask include:

- ☑ What did the land look like before it was drained?
- ☑ Was it shallow marsh, wet meadow, willow brush, or forested?
- ☑ When was the site farmed and was it farmed every year or only during dry seasons?
- ☑ When was it ditched?
- ☑ Does it have drain tiles, and if so are they clay, concrete or plastic? Is there a drain tile map for the field?

All of this information will contribute to your restoration plan.

If you cannot find the landowner, the NRCS or the County Land Conservation Department may have historic records of the property. In order to restore hydrology you need to find out what was done to the site. If you can locate this information, you have saved yourself many hours of hard work!

Putting It All Together

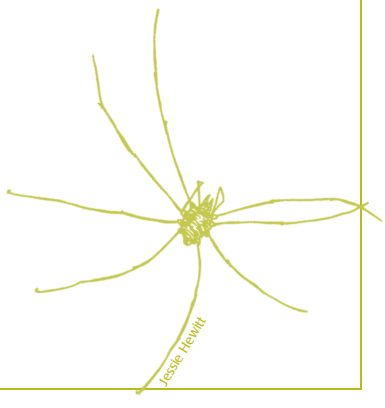
Now you'll need to compare all your maps. Refine your hand-drawn site map using the new information and correlate your photographs, air photos, soils map, and hand-drawn map. The FSA air photo, for example, is at a scale of 660 feet on the ground to 1 inch on the map; use this along with your pace to estimate the distances on your map. Your map should show the drainage features, wetland soils, remnant wetland plants, and upland areas. The map you produce will be the framework for your wetland restoration project. Giving adequate attention to map-making is well worth the effort.

What can you conclude about the history of your site? By examining aerial photos and talking to others, you will know crop history, past forest cover, when it was drained, and if it was ditched or tiled. Knowing the past helps you plan for the future.

Is There an Undisturbed Wetland Nearby to Study?

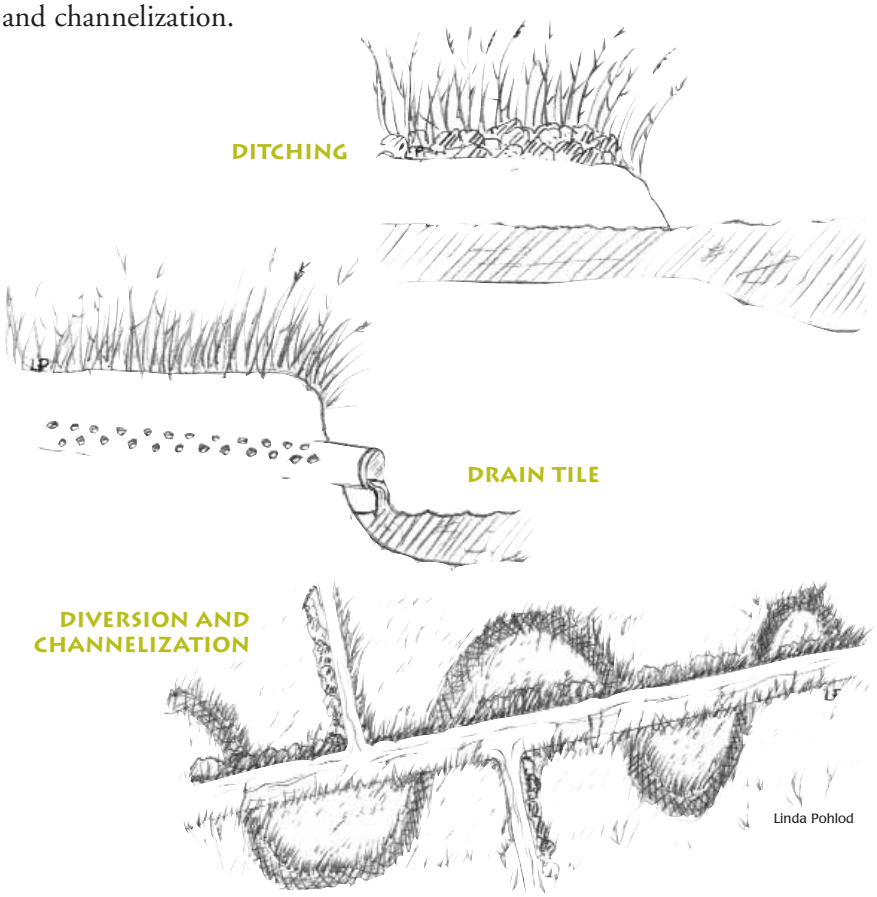
Once you determine the wetland soils on your site, check all the references you have gathered: the NRCS soil survey, USGS topography map, and the FSA aerial photograph to find areas nearby with the same soil types as yours. Can you find areas that haven't been as severely altered, perhaps unditched sites or public lands nearby? Either visit the publicly owned wetland, or ask a landowner's permission to study a nearby property. What is the vegetation there? Is it forested, shrub-dominated, or a grass or sedge wetland? How deep is the water? If possible, study the area over several seasons, to see how the hydrology changes. Take photos to document the site. If the site is in relatively good condition, you may want to use it as a model for your restoration efforts.


Linda Pohlod


Jessie Hewitt

Where Did the Water Go?

To determine if your site is restorable you need to discover if, when, and how it was drained. If your site was drained, you need to know by what means to help determine how to reestablish hydrologic conditions. The most common hydrologic alterations are ditching, drain tile, diversions, and channelization.



Most sites have experienced a combination of several modifications; for example, rows of drain tile running to a ditch. If there are no obvious drainage features on the landscape, you may need some assistance to determine whether the land has been drained.

DITCHING is the most common alteration technique. Dug in the wetland, the ditch usually begins at the wetland's lowest point, and it lowers the water table and channels the water from the wetland.

USING DRAIN TILE involves placing underground perforated drainage tubes made of plastic, concrete, or clay at regular intervals across the wetland at depths from 2 to 5 feet. Slots in the tubes collect water from below the surface and channel it to a ditch or stream.

DIVERSION or **CHANNELIZATION** alters a stream that once ran though a wetland. The stream is blocked and a channel dug to straighten the stream and divert the water away from the wetland to another ditch or stream.

How about the Soil Conditions?

Another significant disturbance on many sites is sedimentation, or siltation, caused by eroded soils transported in runoff following rain or rapid snow melt. The impact of sedimentation on wetlands is so pervasive it is common to find sediment deposits completely burying original wetland soils. This is often found in wetlands downslope of cultivated agricultural fields or in floodplains. Even if an upland field is now fallow, erosion and deposition of sediments onto the wetland may have occurred years ago when early settlers cut down


Art Kitchen

Light-colored silt eroded from upland areas has accumulated over the darker wetland (hydric) soils.

"Soil is the hidden, secret friend, which is the root domain of lively darkness and silence"

– Francis D. Hole

upland forests and farmed the land. Eroded soils are carried to the lowest point in the landscape, generally wetlands. Floodwaters of rivers and streams continually deposit sediment in adjacent wetlands over time.

There are few wetlands in hilly agricultural settings that have not been impacted by sedimentation. In the "driftless" unglaciated southwest region of the state, sediment accumulation is so deep that entire river valleys are now 8 to 10 feet higher than they were historically, and it is impossible to reverse the impact.

If you suspect that sedimentation has occurred on your restoration site, you need the following tools to assess the site: a spade (a narrow bladed "sharpshooter" works well), a post hole digger or soil probe, and strips of lath or wooden wedges to mark the edge of the sediment layer.

If your wetland is adjacent an upland farm field, dig a series of holes from the interior of the wetland where you think there is no sediment towards the upland slope where you suspect there is sediment. The original edge of some wetlands is considerably farther "up slope" from where it is now, buried by sediment. Look, as you dig, for a change in color and texture between the soil layers or profile. The sediment tends to be brown with fine loose particles, horizontally stratified (as if deposited in layers), and has no sands or gravels. The buried wetland soil should be a characteristic black or very dark gray color. Peats or muck soils will be very black, spongy, and once water is squeezed out, very light in weight. Buried wetland mineral soils will be black to very dark gray in color. Depending on the soil types, there may be a very visible line where this change takes place, for example a distinct color change at thirteen inches below the soil surface where a brown silt overlays a black muck wetland soil.

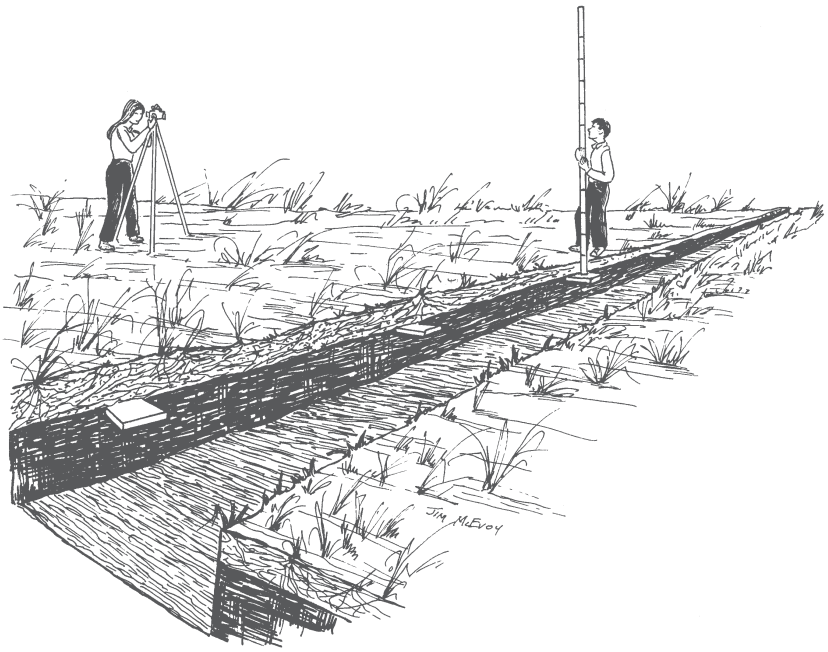
Several inches of non-wetland soils in soil pit are visible above the wooden shim that marks the darker hydric soil.

Photos: Alice Thompson

Push a wedge or wood strip "shim" into the side of the pit at the boundary between soil layers (see photo at left), and measure and record the depth to the boundary. Flag your pits so you can locate them again. Dig several lines of pits to determine the depth of sediment across the site. If the sediment is deeper than you are able to reach by hand digging, you can try to determine the depth of wetland soil using a soil probe at the bottom of the pit (A typical soil probe can be purchased for less than $100.00 in environmental supply catalogs and has a reach of 3 feet. Large diameter tubes (1¼″) collect samples much better in wetland soils than narrow probe tubes). Again, as you probe deep, look for the change in texture and color and measure the distance from the soil surface. In sites with very thick sediment accumulations, or in very large sites, a backhoe for digging a trench may be the only feasible way to find the original wetland soil level. If the sediment is too thick, it may not be possible to remove it at all because of the cost of equipment time or the lack of available upland space for the removed material.

While you are investigating the soils, you may want to take soil samples and test them for the presence of viable wetland seeds. Carefully remove a sample of the original wetland soil from within the soil pit and place it in a plastic bag marked with the location of where the sample was taken. See the discussion in Chapter 5 on how to conduct a seed bank test.

You need to keep careful notes of the position of each pit and the depth of sediment. To accurately determine the former topography of the



Surveying for original topography by taking elevations on the original hydric soil layer and the current ground surface.

wetland before the sediment was deposited, you need to have your site surveyed. The surveyor needs to take two elevations at the soil pit: the elevation of the existing ground surface next to your hole, and the elevation of the original soil, which is where you placed the shim. Using these elevations you can draw two cross-sections for your site- one that shows the existing grade and one that shows the original grade. The difference between them is an estimate of how much soil needs to be removed if you want to restore the original basin.

Do You Have a Restorable Wetland?

The aim of all the research thus far is to determine your site's condition, if and how it has been significantly altered and drained, and what the site may have looked like before the alterations took place. You will use this information in deciding what steps to take in management or restoration. Generally there are three possibilities:

1. **Wetland needs conservation and management.**
   You may have discovered that your wetland is relatively diverse and not significantly altered. If it supports a native plant community, you have something of great value worth preserving and protecting for native wetland plants, mammals, amphibians, reptiles, and birds. The site may require some management and little else. The use of fire, brush cutting, mowing or other management activities may improve the wetland's condition. Your restoration efforts may best be focused on an upland buffer planted with native species to increase wildlife habitat and use surrounding your wetland (see Chapter 11).

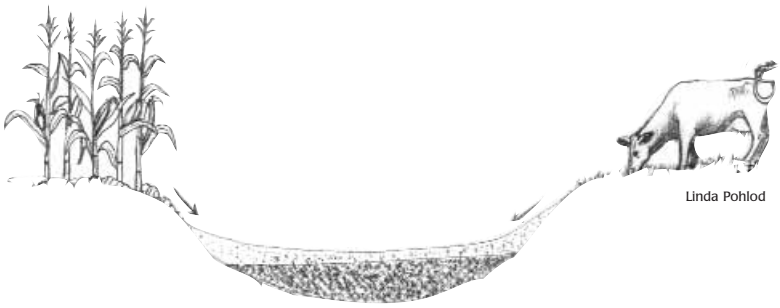
2. **Wetland is very degraded and can be restored.**

   The site may have undergone significant changes due to draining and/or cultivation, and supports little to no native wetland vegetation. In the process of researching your site, you have uncovered the artificial drainage features and now have enough information to plan the restoration. You may need a survey to determine that neighboring lands will not be affected when you restore the hydrology to original conditions. This book is for you!

3. **Wetland is very degraded but cannot be readily restored.**

   If your site lacks drainage features such as ditches or tile lines, there may be nothing you can do to restore the hydrology, short of massive excavation. This may be the case where a small shallow wetland has been filled with sediments and no longer supports wetland vegetation. Excavation may be fruitless if the water table has been drawn down on the site.

   Often, your restoration activities could cause problems for your neighbors, especially if it alters the movement of water on their land. You may own only a part of the entire original wetland, and need to join in partnership with your neighbors to restore a larger site to ensure that the hydrology is adequately restored. Another option is to wait for neighboring land to come up for sale. At this point you may want to consult with an expert to help determine what options are available to you.



Linda Pohlod

Agricultural activities may lead to soil erosion, which leads to sedimentation of lowland areas, including wetlands.

U. of Florida, Center for Aquatic Plants (Gainesville)

What to Look for If You Are Purchasing a Wetland to Restore

This chapter was intended for those who own land and want to find out if it can be restored. Many landowners, however, seek properties to purchase and restore. To make a wise investment you will want to evaluate potential for wetland restoration of a site very carefully. The strategies outlined in this chapter can help you assess whether the property you plan to purchase can be effectively restored to a self-maintaining wetland system. Case Study #2 in Chapter 13 is an example of a wetland restoration that included an exhaustive site search. Much of the success of that site comes from finding a great site to restore.

Occasionally wetland enthusiasts purchase an existing wetland assuming they can flood it or dredge it to alter its function, only to find they are unable to obtain the needed Wisconsin DNR permit. Typically, the Wisconsin DNR determines, for good reason, that the existing wetland should remain intact and not be changed. Impounding water on a healthy sedge meadow or swamp forest, or dredging a healthy wetland, can destroy most of the natural plant

and animal diversity these wetlands support. While the open water created in such a project may attract waterfowl initially, once wetlands are altered, they become prone to invasion by non-native plants, and their habitat value diminishes over time. They are often very expensive to maintain.

Purchasing drained cropland with wetland soils, and restoring the hydrology and vegetation is more cost-effective and ecologically sound. Following are characteristics to look for in a potential wetland site to restore. The characteristics listed and terms used were discussed earlier in this chapter. Before you purchase land for restoration you may need a survey crew to determine if neighboring lands would be affected.

Look for the following features in a potential wetland restoration site:

- ☑ Not mapped as wetland in the Wisconsin Wetland Inventory.
- ☑ NRCS mapped as "prior converted" (PC) wetland or "farmed wetlands" (FW).
- ☑ NRCS mapped soils are wetland soils.
- ☑ Site has functioning drainage features: drain tiles, ditches, diversions, pumps.
- ☑ Topography allows restoration of hydrology without affecting neighboring land, which may require a topographic survey to determine.
- ☑ If actively cropped, wetland plants are found in edges or between cropped plants.
- ☑ Buffer areas can be incorporated into the site to lessen pollution impacts and sedimentation from roads, lawns, farms, etc.

If you purchase prior converted cropland that has great restoration potential, continue to have the site farmed and maintained until you are ready to construct the wetland. Farming the site will keep invasive wetland weeds from taking over while you finalize permits and plans and will make the construction phase more feasible.