



US Army Corps  
of Engineers®

St. Paul District

# Public Notice

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## Guidance on Design, Installation and Interpretation of Monitoring Wells for Wetland Hydrology Determinations

1. The U.S. Army Engineer Research and Development Center (ERDC) has released two recent Technical Notes regarding monitoring wells for wetland hydrology determinations:

*Technical Standard for Water-Table Monitoring of Potential Wetland Sites* (June 2005)  
<http://el.erd.c.usace.army.mil/elpubs/pdf/tnwrap05-2.pdf>

*Water Table Monitoring Project Design* (January 2006)  
<http://el.erd.c.usace.army.mil/elpubs/pdf/tnwrap06-2.pdf>

The 2005 *Technical Standard* is an update of previous ERDC guidance issued in 1993 and revised in 2000. The 2005 *Technical Standard* supersedes the previous guidance.

Guidance includes the following:

- The *1987 Manual* and guidance is an indicator-based approach. Indicators of hydrology, rather than monitoring well data, are to be used as the standard approach. However, for significantly disturbed and/or problematic sites, monitoring well data can be an important factor for interpretation of these difficult sites.
- Monitoring wells, as opposed to piezometers, should be used. Piezometers only reflect the water pressure of discrete zones, usually at the bottom of the well. Therefore, they are much less useful for wetland hydrology determinations. [If a perched wetland condition or recharge/discharge question is important, then both monitoring wells and piezometers can be installed.]
- Use Schedule 40, 1-inch diameter PVC pipe. This size will accommodate most dataloggers. However, an exception can be made for dataloggers that require up to 2-inch diameter PVC. The problem with larger diameter PVC is that it requires

longer periods for water to flow into and then drain out of the pipe, i.e., a sluggish response compared to 1-inch diameter PVC.

- Use commercial well screen. Those with 0.010-inch slots spaced 0.125-inch apart are optimum for most situations. Hack-sawed or hand-drilled PVC should not be used. A filter sock can be used as needed.
- The standard monitoring well for wetland hydrology determinations is set 15 inches below ground because the focus is on the upper root zone. Additional wells at deeper depths (e.g., 30- to 48-inches) are also encouraged to help in interpreting water table fluctuations. The deeper wells may be particularly useful if a site is anticipated to have long periods of a water table below 15 inches, or has drastic fluctuations in the water table. The deeper monitoring wells could be paired with the 15-inch wells; or, every third or fourth well could be a deeper well. See following bullet – deeper wells are more likely to encounter layers of differing permeabilities.
- Monitoring wells must not penetrate restrictive layers (e.g., hardpan), or layers with very dissimilar permeabilities. Adjust the depth of the well as needed to avoid penetrating these layers.
- Install and begin monitoring the wells as soon as frost is out of the ground. The April-May-June “wet season” is the most important time frame to collect data in Minnesota and Wisconsin. Well data collected outside of the “wet season” is given much less weight and is more likely to be inconclusive.
- Install a sufficient number of wells along transects to account for all major variations in the area in question.
- Record water table depths daily. If this is not feasible, consult the Corps for a site-specific plan for frequency of well readings.
- For installing wells in peats/mucks, use the driven well design with a commercial well point (Figure 3 of the June 2005 *Technical Standard*). No augered bore hole or sand pack is used. The idea is to avoid altering the structure of the peat/muck and avoid compaction of these soft soils.

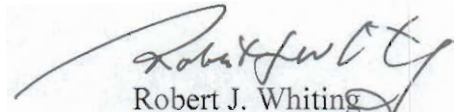
2. Given the dynamic nature of wetland hydrology, 10 years or less of monitoring well data is considered short-term data by ERDC. Three years or less of data is considered very short-term. In the regulatory arena, we frequently are interpreting one year of data. Erroneous delineations have occurred when delineators placed too great an emphasis on very short-term monitoring well data. Such data should not be used to override other indicators of hydrology, hydrophytic vegetation and hydric soils, particularly on sites that are not significantly disturbed or problematic.

It is essential that monitoring well data be placed in the context of antecedent precipitation. The ERDC report by Sprecher and Warne (2000) is recommended:  
<http://el.ercd.usace.army.mil/elpubs/pdf/wrap00-1/wrap00-1.pdf>

3. The 2005 *Technical Standard* includes the National Academy of Sciences recommendation for a nationwide 14-day wetland hydrology criterion to replace the current approach of inundation or saturation to the surface for 5 percent of the growing season. This 14-day criterion is not being implemented by the St. Paul District at this

time. It will be subject to future peer review and a public notice comment period as part of developing regional supplements to the *1987 Manual*.

4. Questions on the above can be directed to Steve Eggers, Senior Ecologist, at 651-290-5371 or [steve.d.eggers@mvp02.usace.army.mil](mailto:steve.d.eggers@mvp02.usace.army.mil) .



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