Plan conservation practices quickly, accurately and online

VISUALIZING WATER DEPTHS: Screen shots in the WetlandBuilder program are color-coded to show varying water depths that will be created. The shots also show contour lines, where the dike will be, and a boundary for the drainage area of the wetland.

LANDSCAPE LOCATION: WaterwayBuilder will locate the centerline of the proposed waterway on an aerial map, measure its length and show multiple reaches

By **LYNN BETTS**

Key Points

- Online conservation planning software is fast and accurate.
- New programs estimate costs for waterways and wetlands.
- Programs can only be used in counties with LiDAR data.

DESKTOP planning for conservation practices got off to a good start in some states a little more than a year ago when online computer programs called PondBuilder and BasinBuilder were introduced to conservationists who plan and design conservation practices for farmers and ranchers.

The programs were touted for significant time-savings in their ability to locate a proposed practice on the landscape and to generate an accurate cost estimate. The one-of-a-kind PondBuilder, for instance, can place a proposed pond in the landscape, generate an aerial photo with the pond's permanent and temporary pool areas clearly drawn, estimate the cubic yards of earthmoving and size and length of pipe needed, and generate an accurate cost estimate in fewer than 15 minutes.

That rapid turnaround time compares to several months using current methods in most parts of the country, where it takes time for conservationists in USDA field offices to schedule and make a field site visit for preliminary surveys, then take more time back in the office to make the calculations for sizes and costs.

WetlandBuilder and WaterwayBuilder

Now, the company behind the first two programs is introducing online planning programs for two more practices: waterways and restored wetlands. WetlandBuilder works much like PondBuilder, locating the dike on an aerial map, estimating costs for pipe and building the dike, and drawing a pool area. In addition, it uses shades of blue to show projected water depth in the wetland at levels of 0 to 1 foot, 1 to 2 feet, 2 to 4 feet, and more than 4 feet over the entire pool area (providing you don't move earth from the wetland area to build the dike).

There's no limit on the drainage area size for the online tool, but it works for dikes only as high as 10 feet, because side slopes, spillways and other features change when a dam exceeds 10 feet. Dams higher than that use the PondBuilder program.

"If you have two low spots in an area you are reconstructing as a wetland, you might want to put in two dikes. This program will accommodate multiple dikes, and saves even more time," says Stan Buman of Agren, the Carroll, Iowa, company that's developing the suite of online planning programs for more than half a dozen conservation practices.

All the programs use LiDAR (Light Detection and Ranging) elevation data that's being made available county by county by government agencies. LiDAR is the key to online planning; programs are available for use only in counties that have made LiDAR available. LiDAR's 3-D location and elevation sketches — accurate to within a foot in most terrain — save time from traditional on-site land surveys for planning purposes.

Buman expects WaterwayBuilder to have even broader appeal than PondBuilder or WetlandBuilder. More waterways are built across the country than ponds or wetlands, and the potential time-savings in waterway estimates are as great or maybe even greater than with the other programs, Buman says.

"Again, the program takes away the need for the time involved in scheduling and making the field survey initially," he explains. "The engineering in the program embeds the newest science, the Natural Resources Conservation Service 'effective stress approach' design, in its calculations. It handles parabolic, trapezoidal and even v-shaped waterways.

"When I talk with states, it's one of the tools they're most interested in," Buman continues. "We have some strong interest in Ohio, Minnesota, Wisconsin, Missouri and Iowa in the Midwest, and from Maryland for Chesapeake Bay work. Those states are also interested in WetlandBuilder."

In Iowa, where conservation districts from 32 counties are licensed to use all the programs through June 15, 2013, conservation agencies see the online programs as a way to cope with the realities of either holding their own or reducing the number of field employees for conservation planning and application. One license makes all the Internet-based tools available to the district.

WetlandBuilder is available now, and WaterwayBuilder is expected to be available in licensed counties by March or April.

"The tools will help us make better use of LiDAR technology and the people we have in the field. Using them is good for all of us — the state and federal agencies, local districts and landowners. As we get more of the pieces added, including terraces, they will be even better," says Jim Gillespie of Iowa's ag department.

For more information, e-mail Buman at *stan@agreninc.com* or go online to *agreninc.com/conservation.php*.

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