

From Start to Finish



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The key to easy landscape maintenance is in the design

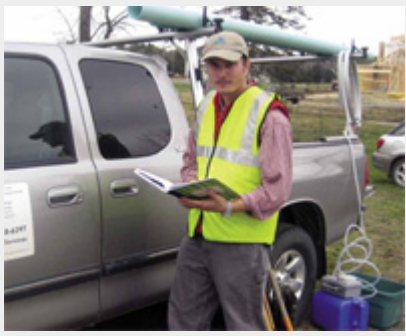
David Whitney, a civil and environmental engineer, started his company, EcoSolutions, LLC in Burlington, Vt., in 2005 out of a desire to do wetland wastewater design.

Five years later, he has transformed the company into an engineering consulting and design firm providing services in design/build projects, as well as operation and maintenance services with projects in place from Vermont to the West Indies, Pakistan, Costa Rica and Burkina Faso. The focus is on low-impact development as it relates to wastewater and stormwater treatment, water re-use, pond systems and landscaping systems. Clients come from the residential, commercial and municipal sectors.

At the University of Vermont, Whitney helped develop an interdisciplinary wetland research collaborative, the University of Vermont Constructed Wetland Center. There, he focused his efforts on integrated design, which combines function and aesthetics by integrating infrastructure with the surrounding landscape. By doing so, the site has enhanced environmental protection.

EcoSolutions also offers the Advanced Wetland Treatment System, an on-site system that uses plants to pretreat wastewater. Constructed wetlands serve as a form of stormwater treatment.

“As our company progressed, as an engineer by nature, I started to recognize it isn’t just people getting the wetland, it’s the whole system that matters,” says Whitney. “Collection, pretreatment and what do you do with your clean water at the end?”



David Whitney,
president of
EcoSolutions, prepares
to perform quarterly
water sampling and
maintenance on a
wastewater wetland in
Vermont.
*Photos courtesy of
EcoSolutions.*

“So, we started doing designs and as we did that, we saw some overlapping similarities with low-impact design techniques for stormwater. We started to broaden our scope; we offered construction and maintenance services.”

Whitney points out that every step in a landscaping project, from conception to maintenance, is a key to its ultimate success and will dictate how well maintenance will go. “If you have a bad design, your construction is going to be tough, and then your maintenance is going to be even harder; it may not even be possible,” he says. “And you could have a good design, poor construction and maintenance can be difficult. You could have good design and good construction, but if you don’t have good directions for maintenance, the poor maintenance guy cannot have a clue either. What it requires is communication skills throughout, from design all the way through to the end.”



A “sludge judge” is used to quantify the amount of sediment that has been collected in a stormwater wetland.

He adds, "We often try to segregate everything. The engineer only does the design, the contractor does construction and the maintenance guy does the maintenance and keeps track of things. The reality is you have to have communication across the board. There's always a little bit of overlap, and that overlap is what's key."

He makes an analogy to turf: "When you lay down sod and leave gaps between your sod when you put it in, it dies."

EcoSolution's approach to maintenance is to be as pre-emptive as much as possible, says Whitney.

"There's a practical limit to that because there's only so much cost a user will bear, so you have to weigh your risk and reward, but we definitely have standard things that we've replaced and we check up on regularly," he says.

For example, if the site has aeration component, EcoSolutions will replace air filters once a year, whether they are dirty or not. The company also weeds out invasive plants about twice a year.

While EcoSolutions answers emergency calls to address unforeseen circumstances, the company tries to avoid those calls by providing information to clients based on their previous experience that predicts what is likely to go wrong in the ensuing five years of a new landscaping project and how the client needs to plan for that, including financially. "Then they're safe for the rainy day," Whitney says.



Kelly Wasserbach checks the water level in several monitoring wells in Vermont.

These days, there is a bigger focus on prevention because of the pollution problems stormwater causes in the environment, Whitney points out. His company designs, installs and maintains plant-based stormwater treatment systems.

"The common question we're always asked is how much do we need to take care of the plant? Plants are one aspect of it. We've thought about the design so

we control the flow of water through it," he says. "So, if you don't maintain the plants, recognize that birds and creatures are going to go in there, and something is going to colonize and take over based on what nature wants. Is that what you want? We encourage people to get to know their systems. If you can increase people's sense of ownership in a project, your success is going to be much higher."

To educate clients, EcoSolutions employees meet with them and continue to make themselves available as a fundamental business practice.

Low-impact development has different maintenance implications than other approaches.

"Low-impact development techniques are settled around water and resource management and they're typically plant-based systems," says Whitney. "The opposite side of that spectrum are mechanical systems or something that's got some kind of intellectual property that protects it. The trade-off between the two is that something mechanically complex typically can have a smaller footprint, but have higher operating costs."

Proprietary systems can experience a catastrophic failure that requires heavy equipment to address, Whitney points out.

In contrast, "If you have a low-impact design approach, it usually takes up a larger space, but it's simpler," he adds. "When it's simpler, they are easier and cheaper to maintain."

Grass will filter stormwater, infiltrate back into the ground and complete the hydrologic cycle, Whitney says. "When it starts to fail, you'll see it on the surface and typically you can fix it with a shovel and a wheelbarrow," he says. "It's a less technical skill set, and ultimately cheaper. That's also how you can empower homeowners. You do a job at a new community and put in low-impact development and tell them if they see the soil washing out, they can fix it rather than if somebody sees their catch basin is clogged, they're going to crawl on the roof."

EcoSolutions has five employees, including Whitney, two other engineers, a landscape architect and a construction foreman. The willingness to go anywhere for a job requires employees to be savvy about regional considerations, not only for the designing and building of a project, but for advising on its maintenance after the company's employees are finished.



David Whitney teaches a class about the concepts behind the stormwater wetland being installed at Shelburne Farms in Vermont.

"Whenever we are working outside of our immediate geographic region, we always have a local partner we're working with," says Whitney. "My design portion of the contract would be for something that we're specifically good at, like a wetland. The local engineer will do the full site plan and permitting. You have to have that local guy in order for a project to be successful. We're not going to be there afterwards at their beck and call, so we have to have somebody else to take those questions and ask us if they need help later."

The most important challenge with respect to turf these days is water, Whitney points out. "Where people get their water, that's huge," he says. "We're not necessarily seeing more people being charged for it, but people are definitely questioning that. In order to get LEED certification, there is a question about water-efficient landscaping. Whenever you hear somebody talking about water budgets, they talk about lawns."



Brian Malone enters data from wastewater samples taken from a wastewater wetland in Vermont.

Fertilizers are another issue, Whitney points out. "It becomes a stormwater issue: what are you fertilizing your lawn with, when are you doing it, does it run off and ultimately deposit in the Chesapeake Bay, the Mississippi River and out to the Gulf and contribute to the dead zones? Those are big issues and we're seeing people steer away from that."

Whitney believes people are becoming "more sophisticated" in their landscaping plans. "Plants were and still are a bit of an afterthought and in all of these construction projects, the landscaping budget is typically a small portion of the overall budget," he says.

"Sometimes people don't recognize there are different varieties for shade, sandy soils and muddy areas. We always get a specific mix based on the soil

type. If things are thought out well, it shouldn't take a lot to maintain it."

Carol Brzozowski is a member of the Society of Environmental Journalists and has written extensively about environmental issues for numerous trade journals for more than a decade. She resides in Coral Springs, Fla.

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