

Sustainable Land Development Balancing the needs of people, planet, and profit TODAY

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Developments, and More

WASTEWATER

Ozark Mountain Remedy

Pressurized wastewater system has a track record of success for Greens Ferry Lake, a lakeside resort.

By Jon Wartmann

From the moment of its completion decades ago, Greens Ferry Lake became one of the region's most desirable destinations. But its scenic slopes and thin mountain soils demanded an innovative solution to handle the sanitary waste of its popular resort community.

A favorite watery playground in the Ozark Mountains of Arkansas, Greens Ferry Lake, is located in the north-vestal portion of the state, which is about 75 miles north of the capital in Little Rock, two hours south of Branson, Missouri, and three hours from Memphis, Tennessee. The lake was formed by Greens Ferry Dam which was completed in July 1946. The 40,000-acre lake accommodates boaters and the fishing is superb throughout the year. Its pristine waters hold record stocks of game fish, such as rainbow trout, walleye, channel catfish, largemouth bass, white bass, and brook.

Capitalizing on its popularity, the building of Fairfield Bay along the north shore began in 1963 as a resort and retirement community mostly as a summer destination. Since that time, it has evolved into a 16,000 lot development with 2,440 permanent residents and thousands of seasonal visitors. The resort offers two top flight golf courses, tennis and fitness centers, a shopping district, a full-service marina, horseback riding, hiking trails, geological wonders, camping, lake cruises, and accommodations, plus great water sports. There is even a Harris Cup professional miniature golf course.

But Fairfield Bay is also sited in a mountainous area, with elevation

changes of approximately 650 feet with three major drainage basins. Add to that equation shallow clay soils, and you have the formula for challenging wastewater issues.

"We've got a real depth-to-rock problem here" says John Tyer, Utilities Manager for Fairfield Bay Community Club. "There's only about three to four feet of soil before you hit bedrock in most places."

Pressured for a Decision

As the community's build-out progressed through the 1960s, septic system failures became more prevalent and bad installations led to major problems. In 1977 a moratorium on septic permits was threatened by the state unless a remediation process was approved.

It was immediately apparent that central sewer was the only viable option. The community borrowed on the good experience of a sister community, Fairfield Glade, Tennessee, which had good luck with pressure sewer systems. It selected Environment One (E./One) as the supplier of sewage



grinder pumps due to prior experience at other Fairfield communities, installation costs, versatility (the amount of head they could pump), and the ease of repair.

At the Heart of the System

The low pressure sewer system is simple, environmentally sensitive, and economical. At each home site, an E./One sewage grinder pump is installed into the ground, with an access lid for service. These compact pumps - smaller than a washing machine - process the waste into a fine slurry and pump it under pressure into pipes that lead uphill or horizontally to a sewer main. Because of the pressure generated by the pumps, they are able to lift sewage nearly 130 feet vertically, or more than a mile and a half horizontally.

"With our shallow soil, a pressure system is actually less expensive than a gravity system, because it uses compact, rugged, small diameter pipes buried just below the surface," Tyer says.

The grinder pump tank is made from tough, corrosion-resistant high density polyethylene (HDPE), has a capacity of up to 500 gallons, and can accommodate flows from 750 to 600 gallons per day. The pump is automatically activated, because it runs infrequently and for very short periods, its actual electric energy consumption is typically that of a 40 watt light bulb.

According to manufacturers, E./One grinder pumps require little or no preventive maintenance and boast an average mean time of 10 years between



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Recognizing Excellence

By Tony Wernke

The Land Development Visionary Award program instituted by *Land Development Today* and Futurus Communications recognizes the creativity, vision, and the implementation of best practices in land development. The award recognizes not only the planning and design of projects, but also focuses on the complete development process. The July 2006 Visionary Award-winning project, was Auburn Lakes. Attendees at the Land Development Breakthroughs conference in Chicago voted on the projects along with a panel of judges. The following five projects were the finalists for the award this past summer.

Fern Valley

Tewksbury, New Jersey

A luxury residential development community in central New Jersey located 45 minutes from Manhattan, Fern Valley's ecological design utilizes innovative concepts and technologies to improve the water supply, soils, plant and wildlife, while offering all the amenities, conveniences and luxuries homebuyers expect of an upscale, high-end development. This project was submitted by developer Anthony Sblendorio and the design team leader, Back to Nature Landscape Associates of Oldwick(NJ).

The Challenges

Tewksbury Township had a challenging approval process indicative of the township's need to preserve nature in an otherwise densely-populated area of the country. With its surrounding area being comprised predominantly of modest houses on small lots situated off highways for which the term "strip development" might seem to have been invented, this area sought to preserve its rural character and heritage. While other "green homes" had been previously constructed, no other luxury residential development had been previously attempted in New Jersey with the land development goals that Fern Valley espoused.



The Vision

Sblendorio and Back to Nature sought to use the development to improve, rather than destroy, soils, water, plants and wildlife. In terms of its ecological footprint, the Fern Valley development gives back to the land more than it takes. Replicating local natural systems, the vision of Fern Valley was to transcend the boundaries between humans and nature to create a truly sustainable development today, and for future generations. Sblendorio envisioned a holistic design process that included planners, regulators, landscape architects, stormwater management experts, and others, right from the beginning of the planning process to achieve the goals of the project.

The Results

Soil cement dirt roadways that are twice as hard as asphalt, fashioned with a toxin-free glue called Poly Pavement applied to the soil at the site, created inexpensive, aesthetically pleasing, and easily maintainable roads. Roadside wetland pools and swales with oxygenating plant life purified stormwater

and recharged the local aquifer, rather than shooting the water runoff offsite through curbs and storm drains. Plastic liners form a basin and the plants grow hydroponically – without soil – naturally treating pathogens and returning water to near drinkable quality. The result - groundwater recharge is better than it was even before development.

Neighborhood hiking trails were created to meander through reclaimed native habitats. Extensive common open space was dedicated for residents to relax, recreate and explore. Native woodland landscapes feed from the rain barrels and cisterns harvesting rainwater from the roofs of homes.

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