

Grinder Pumps Fuel Economic Growth

By Joseph Harmes

Arkansas city installs low-pressure sewer system

“Improving the wastewater system represents the absolute top priority,” was the urgent message of the 2009 Batesville Comprehensive Plan.

The message applied not only to Batesville—the second-oldest city in Arkansas and the Independence County seat—but also to Southside, an unincorporated patchwork quilt of small towns across the White River.

“That’s an important infrastructure to have in order to create growth,” said John Richardson, general manager of Southside Public Water Authority (SPWA).

Until recently, Southside’s wastewater system—like 40% of Arkansas homes—consisted of septic tanks, some a half-century old. Given the flush-and-forget mentality of many owners, hundreds of systems had degraded into fragile, leaky, smelly sources of pollution, and many more failed each year. Percolation vital to septic drain fields is substandard in a terrain of shallow soil already soggy for months because of 30 to 40 in. of annual rainfall.

“Existing subdivisions could not grow anymore and were becoming unsafe due to raw sewage because of bad percolation,” Richardson said. A new collection system was fundamental, he added, “for growth, both residential and commercial.”

The region faced other daunting challenges. As a rural water authority, it was powerless. Unincorporated areas possess few fiscal resources. Even with millions of dollars for the lift stations

alone, a traditional gravity sewer system requiring deep trenching would have been a massive, environmentally disruptive project over a wide stretch that once was quarried for its extensive limestone and marble formations.

Envisioning an LPS

With the help of Crist Engineers Inc., located 90 miles southwest in Little Rock, Ark., SPWA conceived of a low-pressure sewer system (LPS) incorporating an initial 613 grinder pumps to service about 675 homes and the business district concentrated along the five-lane Hwy. 167, also called Batesville Boulevard.

That was the easy part.

“The real story is how setback after setback was dealt with to accomplish the project,” said Mark Carlson, SPWA’s wastewater plant supervisor. “The area that could be effectively served was put on the election ballot as a Sewer Improvement District for voter approval of a tax. On the same ballot there was an incorporation of Southside issue to preclude any desire the city of Batesville might have to annex parts of Southside. Voters tied the two issues together and voted both down.”

Armed with political and business influence in the state capitol, a law was passed that allowed the Southside Rural Water Assn. to transition to SPWA. This made public financing and grants possible, Carlson said.

After that, the capitalization was “pretty straightforward,”



Grinder pump



PHOTO COURTESY OF CRIST ENGINEERS INC.

The LPS system transports the slurry through small-diameter pipe to roadside force mains.

according to Matt Dunn, a partner with Crist Engineers, who oversaw the Southside project and design. “We do this with our municipal clients all the time.”

SPWA bankrolled a project that included a packaged extended aeration activated sludge treatment plant, an HDPE pipe collection system, two lift stations and Environment One Corp. (E/One) manufactured grinder pumps after Dunn helped secure a loan of \$8.2 million from the U.S. Department of Agriculture-Rural Development; a loan of \$300,000 from the Arkansas Natural Resources Commission; and a \$300,000 grant from the Delta Regional Authority.

“Our firm has done other LPS projects with E/One,” Dunn said. “We wrote a spec around the E/One station and kind of pre-qualified E/One, and it actually was a bidder.”

A Turnkey Service

Although E/One’s grinder pumps are installed worldwide, SPWA went a step further to sell the 40-year-old technology and LPS concept to its wary, often cash-strapped neighbors.

One of the most significant decisions made by SPWA included a turnkey service to purchase, install, own and operate the grinder

pumps and LPS connections on private properties. This blueprint required extensive system design, property surveys, deed preparation, easement negotiations/acquisitions and construction observation on private property.

“We’re just a large rural area. We don’t have the ability to force people who are already on private septic to hook on a public system,” Richardson said. “We offered all the equipment and installation and even the switchover from their homes to the tank at zero cost to them.”

“By the end of the project, we had a pretty much 90-plus signup percentage in the area we served,” Dunn said.

The team moved into more than 600 backyards and business lots to install mostly 230-gal-capacity WH231 “Squat” model grinder pumps, self-contained units each barely larger than a washing machine, featuring 1-hp motors with integral controls and level sensing.

The grinder pump automatically is activated and runs for short periods. Electrical consumption by the grinder pump is low—a household that uses 250 gal per day of water should use less than 10 kWh per month to run the pump.

An LPS system begins at the

grinder pump, which accepts wastewater, grinds its contents into fine slurry, and transports it through 2- to 4-in. PVC pipe buried just beneath the frost line to roadside force mains.

“In many cases, we set the grinder station in the footprint of the septic tank if we had to, or just adjacent to the septic tank,” Dunn said.

Because he has a mechanically inclined staff and the station’s components are accessible by removing just three bolts, Richardson said, “We felt like we could do our own service work if E/One would allow us, as opposed to sending it to a middle man and waiting long periods of time. [E/One] okayed that and sent people to train our people on actually completely rebuilding the pumps. It saves money.”

SPWA also maintains its own inventory of parts and pumps, and performs its own warranty work.

Since the original installation, SPWA has added almost 100 new customers who now are required to pay a connection fee that equals the cost of a grinder pump, a power source to the basin and connecting the drain line to pipe SPWA will stub out, Carlson said.

The impact of the pressure sewer system has been an economic generator, and builders and developers are seeing revenue from areas they never thought possible. Carlson cited school expansions, a supermarket, car dealerships, airport upgrades, duplex homes, apartments and restaurants among other growth, such as single-family residential homes on lots once left vacant due to the inability to secure a new septic permit.

“The value of property has risen along Highway 167 (Batesville Blvd.) where sewer service is available,” Carlson said. **PS**

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