AquaPoint™
Performance Based Wastewater Treatment Solutions

City Chooses Distributed Wastewater Over Coventional Sewer

LOCATION: Piperton, Tennessee
A fast-growing Suburb of Memphis

We've all seen rural towns get "discovered" when they are within commuting distance of a thriving metropolitan area. Practically "overnight" it seems pastures are transformed into sub-divisions.

With its lower tax rate and a brand new exit on the Interstate loop, the city of Piperton was well poised for growth. Its population has doubled in the last three years and is expected to reach 20,000 by 2024. Given the chance to design their infrastructure from scratch, Piperton's city government took the opportunity to choose "smart growth" for their community.

Bob Conrad, President of Mid-South Engineering Consultants, LLC, has been the City Engineer since 2004. His experience and understanding of wastewater treatment made him well prepared to support the newly formed Sewer Committee. Their mission was to determine the best method to treat wastewater for Piperton's anticipated population boom.

"Initially, we looked at running lines to tie into a centralized sewer system in one of the two neighboring towns. To our surprise, both Rossville to the east and Collierville to west were reluctant to allot capacity for Piperton residents," said Bob Conrad.

"Beyond the $2-5 million dollar capital outlay, we knew the real issue with building our own treatment plant would be the operational costs. Initially, there would be only a handful of households to pay for the full-time staff required to manage such a facility," he explained.

> "Once we knew we'd go distributed, we agreed it should be fixed film…. We compared four companies & AquaPoint came out on top."
> — BOB CONRAD

The Sewer Committee agreed they did not want put an unfair burden on the taxpayers in anticipation of growth so they decided to look at a decentralized (distributed) wastewater treatment solution that could be expanded as the city grew.

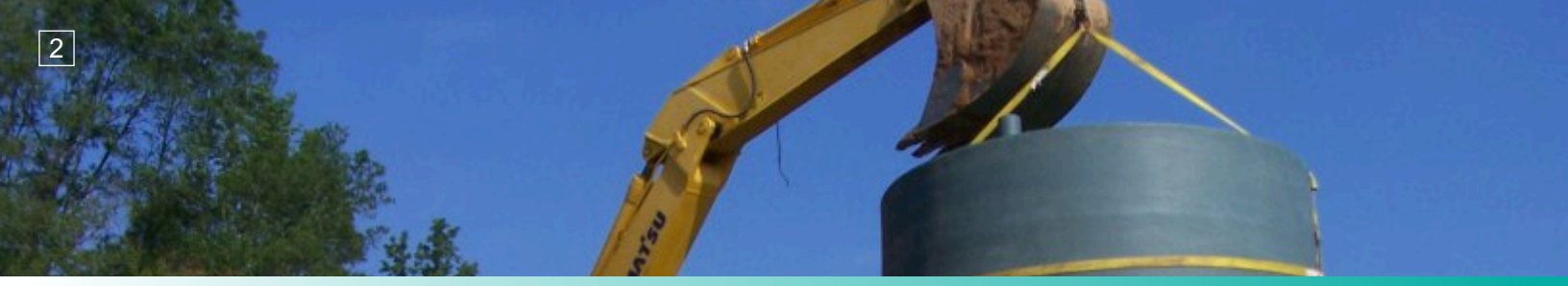
Bob Conrad outlined the 4 key reasons a distributed sewer solution made more sense for Piperton:

1. Development can be on a "pay as you build" basis
2. Low operational manpower requirements
3. The drip/disposal field would satisfy Piperton's open space requirement
4. The drip/disposal field could be installed in flood plain areas that otherwise would not be used in a development

"Besides the synergy of multi-purpose land use for open space, flood plain and drip field, the operational piece was a big part of the decision to go with distributed treatment," Mr. Conrad added.

“Rather than pay for 2-3 full-time employees for a centralized treatment plant, many times we’ll only need one hour a week for a public works employee to visit each distributed plant. Another advantage is the effluent only needs to be sampled on a quarterly basis because the treated water goes into the ground and undergoes additional natural filtration. Central Wastewater Treatment Plants that discharge to surface water require daily effluent sampling that becomes part of the operator's job."

next page ▶



Distributed Wastewater Infrastructure For

"They (AquaPoint) always had a representative on site during the installation process which was great," he said.

"The ability to use the same field for three functions - open space, flood plain and drip irrigation was also too good to pass up. It really was a perfect opportunity to maximize the use of land so efficiently."

"Once we knew we'd go distributed, we agreed the technology should be a fixed film, attached growth trickling filter treatment (FFTF) because of its successful track record in other parts of the state. We compared four companies and AquaPoint came out on top," said Bob Conrad.

Key Challenges:

The AquaPoint Design Team needed to address these specific requirements for Piperton's situation.

- Make each system "modular and scalable" so it could be "phased-in" as needed on two levels: within each individual system as well as for the town's entire wastewater infrastructure.
- Accommodate flows ranging from 500 gpd to 100,000 gpd.
- Provide easy to operate technology with a minimal time requirement for the operator.
- Have very low life cycle & operation and maintenance costs (O&M)
- Use the effluent for drip irrigation

"...their control system had the capability to call our maintenance personnel …That saves real money for Piperton ratepayers."

The AquaPoint Solution

According to Bob Conrad, the Sewer Committee selected AquaPoint's Bioclere™ technology for the following reasons:

- AquaPoint had a proven track record of successful installations across the state and elsewhere in the country
- Bioclere had the lowest maintenance requirements
- Bioclere was the easiest to install and operate
- Bioclere has low capital and O&M costs
- AquaPoint's monitoring system could alert someone immediately about an alarm condition

"Their control system had the capability to call our maintenance personnel when there was an alarm condition. That single component has the biggest impact on how we operate day-to-day. Knowing we'll be notified when a system needs attention means that our public works employee can be working on something else without worrying about the treatment systems. That saves real money for Piperton ratepayers."

The Aqua Alert™ Remote Telemetry Monitoring System is a customized control package that monitors each individual system on one common network. Each system's control panel transmits data related to the mechanical functionality of that specific Bioclere to an internet-based software program.




Integrated Water Resource Management

Aqua Alert uses wireless transmission and allows the operator to check, in real time, the working condition of each unit from one remote location. This makes it easy for a single operator to oversee and have access to a large number of distributed plants because it allows the operator to:

- Monitor system components
- Adjust all settings
- React immediately to alarm conditions

The main advantage of Aqua Alert and it's integrated Auto-Dialer is that it allows an operator to address any mechanical issue in the most timely and cost-efficient manner. This ensures low O&M expenditures and consistent compliance.

Finally, the installation process is simple with Bioclere. "From their design review through installation, they were right there. AquaPoint always had a representative on site during the installation process which was great," he said.

Results

As of March, 2008, Piperton has installed four systems with two under construction. When these are all operational the Bioclere systems will be capable of treating wastewater from 750 homes. The systems range in size from 20,000 gpd to 80,000 gpd. Currently, the total distributed network can handle 280,000 gpd.

> "We believe choosing the distributed method and installing the treatment plants ignited our growth and gave us an advantage over other locales."

But this is just the beginning. Piperton is in the initial stages of development and their decision to go with distributed wastewater treatment has already proven to be a smart choice.

"At the time we were contemplating this, there were only 1-2 subdivisions in the preliminary stages. We believe choosing the distributed method and installing the treatment plants ignited our growth and gave us an advantage over other locales. Five high-quality developers came in after we authorized distributed sewer. That was a welcome surprise," said Bob Conrad. "The kind of developers we want to attract spend millions of dollars so putting in a sound treatment technology is critical."

The town of Piperton named the AquaPoint Bioclere System their preferred and standard treatment technology. From the beginning, their goal was to select one brand of treatment plant for future development throughout the entire town for several reasons:

- Allows their Maintenance Department to stock one set of spare parts
- Eliminates the need to communicate with and rely on multiple manufacturers
- Simplifies training and O&M

Project Facts: Piperton, TN Case Study

Treatment Standards:

	Pollutant	mg/l
Influent	BOD_5	250
	TKN	45
Effluent	BOD_5	<45
	NO_3	<20
	FC	<23

BOD_5 = Biological Oxygen Demand
TKN = Total Kejldahl Nitrogen
NO_3 = Total Nitrate
FC = Fecal Coliform

Capital & Installation Cost Per Home: $5,000.00

O&M Labor: 1 hr/wk 4 hr/mo

Standard System Components:

Flow Equalization
Recirculation Tank
Weir Splitter Box (above 20,000 gpd)
Aquapoint Biocleres
UV Disinfection Units
Drip Irrigation System

Electrical Consumption:

Flow	kWhrs/Mo	Cost/kWhr	Cost/Mo	Cost/Home/Mo
20,000 gpd	(+/-) 2000	$0.08	$160	$2.96
80,000 gpd	(+/-) 5000	$0.08	$400	$1.85

ABOUT

AquaPoint designs and manufactures wastewater treatment systems for distributed wastewater infrastructure and comprehensive water resource management.

At AquaPoint, we believe each wastewater treatment solution is unique. With our advanced portfolio of fixed-film, biological treatment technologies, we can address a wide variety of waste stream characteristics and meet the most demanding treatment standards.

All AquaPoint products, processes and resources generate cost-benefit advantages greater than those associated with conventional onsite systems and traditional sewer. We deliver real cost savings by integrating modular and scalable technologies that have been selected specifically for their simplicity, natural stability, capital & life cycle cost efficiencies and regulatory acceptance. **AquaPoint is a 'Green Gazelle' company and compatible with LEED certification projects.**

If you are a Town Planner, Read This:

An innovative concept used successfully by Piperton was 'Proactive Retrofit Planning'. City Commissioners required an extra 25% capacity be designed into each decentralized system. This way they would be able to accommodate and retrofit any of the town's pre-existing homes on failing septic systems.

continued from page 3

“Another reason the developers were happy with the town's choice was that the Bioclere system has a small footprint. That means the developer can utilize the maximum amount of area for residential lots” added Mr. Conrad.

> “I think the re-use of the water for irrigation is going to be one of the most important benefits in the years to come”

Aside from the quantifiable wastewater treatment objectives, the city of Piperton achieved its goals in less measurable areas such as aesthetics and conservation.

An important benefit of the Bioclere units is their small footprint which makes them visually unobtrusive. Additionally, Bioclere treatment systems are both quiet and odorless.

Piperton is using the effluent for drip irrigation. "I think the re-use of the water for irrigation is going to be one of the most important benefits in the years to come so I'm glad we're ahead of the curve. Water conservation across the country is beginning to be a huge issue," added Mr. Conrad.

In conclusion, with AquaPoint's Bioclere technology, the city of Piperton achieved its goal of building infrastructure as they need to by having the developers put in additional units at a low cost. Piperton’s decision to forge private/public partnerships has helped them develop their wastewater infrastructure.

“I would definitely recommend AquaPoint to other municipalities and engineers. We worked really well with them - their technical expertise and support were first rate. I don't know what else I could have asked for," said Mr. Conrad.

Reference Information:

Mid-South Engineering Consultants. LLC
Bob Conrad, President
11284 Gulf Stream Road
Arlington TN 38002
p : (901) 867-2085
e : bconrad@midsouthseptic.com

Please contact us:

AquaPoint
Performance Based Wastewater Treatment Solutions

259A Samuel Barnet Blvd.
New Bedford, MA 02745
www.aquapoint.com

p : 508.998.7577 X 6
f : 508.998.7177
e : sales@aquapoint.com