TREATMENT PLANT OPERATOR tpo

Process Protection

A SPECIALLY DESIGNED RECEIVING STATION ENABLES AN ILLINOIS VILLAGE TO RECEIVE SEPTAGE AS A SOURCE OF REVENUE WITHOUT CREATING TREATMENT PLANT PROCESS ISSUES

By Ted J. Rulseh

In 2005, the Illinois village of Richmond built a $7 million wastewater treatment plant to support anticipated growth, including a 396-home subdivision.

The subdivision was never built, and its expected revenue never came — yet the plant went online as scheduled, and loan payments were due. The village searched for a new revenue stream to replace the connection fees and ongoing water and sewer charges from the failed subdivision project.

In 2011, the treatment plant turned to receiving septage, but that caused a variety of operations and process issues. Two years later, plant team members found a solution in a new septage receiving and treatment station. Today, the process functions smoothly, and revenue from septage treatment helps sustain plant maintenance and protect the village's investment in the treatment facility — now needed for a new surge of growth.

The Beast septage receiving system (Enviro-Care) at Richmond includes a screen, hauler station, and hauler access panel.

STRESS ON THE HEADWORKS

Richmond, in northeastern Illinois just south of the Wisconsin border, was incorporated in 1872 and is home to about 1,900. It is mainly residential with some light industry. Although the downturn in housing starts after 2008 temporarily slowed growth, the village expects its population to grow to as many as 15,000 by 2030.

When the new treatment plant began receiving septage, problems were not long in coming. It brought a heavy organic solids load, plus debris including rocks. Haulers were discharging septage directly into a manhole just upstream from the plant headworks screen, which was not designed or sized for the material. Soon the screen basket was out for rebuild. Solids were accumulating in the influent channel, in the oxidation ditch and on the aerators, and were clogging pumps.

> "Everything the manufacturer told us it would do, it has done."
> **BILL PRICE**

Treatment capacity was not the issue — the new Richmond plant was permitted to accept 10,000 gpd of septage and was designed for expansion. The question was whether the village could continue to receive septage and the attendant revenue — and take in more of it. That depended on finding a method of pretreating septage before the headworks, thus avoiding excessive maintenance costs and protecting plant equipment life.

Representatives from municipalities in northern Illinois and southern Wisconsin attend a demonstration of Richmond's Beast installation.

TURNING TO TECHNOLOGY

Richmond plant team members were familiar with the Beast, a septage receiving station manufactured by Enviro-Care near Rockford, about an hour west. The unit, recently introduced, does not require a rock trap or grinders. It is designed to screen heavy solids and remove them rapidly. Enviro-Care agreed to let Richmond use the equipment on a 90-day trial, with the option to purchase it thereafter.

A concrete pad was poured for the unit next to the headworks building, and temporary wiring and water

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After the driver enters a hauler ID and the type of waste, a knife valve in the hauler station opens and the driver can begin discharging from the truck.

connections were installed. The device operated Monday through Thursday; within two weeks of startup it was generating on average 3 cubic yards of screenings over those four-day runs.

The receiving unit Richmond tested was part of an integrated system. The Beast unit, with its heavy-duty, dual-drive drum screen in a specially designed tank, was connected to a hauler station with a knife valve and flowmeter. A hauler access panel and Flo-Logic software for data logging, security and billing completed the system. While delivery data was monitored in the treatment plant office, billing information was sent via Wi-Fi to the village hall for invoicing.

SUCCESSFUL TRIAL

Well before the end of the 90-day trial, the village board took the advice of treatment plant personnel and voted to purchase the receiving system. The final step was to prepare a permanent location for the unit at the plant.

Bill Price, Richmond Public Works supervisor, says that in several months of operation the unit has successfully removed paper, rags, plastics and other materials from the waste stream and protected downstream processes. "Everything the manufacturer told us it would do, it has done," he says.

"The materials are removed and placed in a 3-cubic-yard dump container. Odors from the process are nearly nonexistent. There's a cover on the container, which we change out about every week to week and a half, depending on how many haulers come in."

In winter when cold weather causes the unit to freeze up, haulers revert to emptying into the manhole, but traffic during that season drops substantially, from multiple trucks per day to perhaps one truck every third day. "We can tolerate that," Price says. "And if we were to put up a structure around the machine, we could run it year-round. We haven't ruled that out.

"The Flo-Logic software is very nice. I can see what one truck off-loads. It keeps a tally of how much we've had that day, that month and that year. The software is very easy to work with. Programming a new user into the system is a matter of a few keystrokes. All in all, it's a very effective system." **tpo**