

Case Study

A Dose of Prevention Protects a \$7 Mil. Investment

Preface

Extending the life of a wastewater treatment plant is an ongoing challenge for owners and plant operating personnel. Plants that have addressed equipment life and maintenance costs as part of a pro-active management program are saving money and maintaining or improving process efficiency. Improvement opportunities can take two forms: one is solving an existing problem, the second is preventing a problem before it occurs. The following case study focuses on prevention. It illustrates why one municipality was willing to make an additional investment in septage receiving equipment in order to save maintenance costs going forward and prevent premature aging of WWTP equipment.

Overview

The Village of Richmond is located in north-eastern Illinois just shy of the Wisconsin border. It was incorporated in 1872 and currently has a population of 1,874. There is some light industry in Richmond, but the Village is primarily residential. Although the downturn in housing starts has temporarily slowed growth, it is anticipated that by 2030 the Richmond population could grow to 15,000. In 2005, the Village of Richmond built a new \$ 7 million wastewater treatment plant to support the anticipated growth and revenue from a 396-home subdivision. While the subdivision was never built, the plant was, and loan payments were due. The Village was searching for a new revenue stream to replace the connection fees from the failed subdivision project. The plant turned to receiving septage in 2011 as a potential revenue source.



Flo-Beast Liquid Waste Receiving System - Richmond, Illinois

Problem

Within 18 months, the septage was taking its toll on the plant. Septage has a heavy solids loading that includes rocks plus other solids normally found in wastewater but in much higher concentrations. Septage was being discharged directly into a manhole just upstream from the headworks screen. The headworks screen was not designed or sized for septage. Very soon, the screen basket was out for rebuild and the solids were accumulating in the influent channel, oxidation ditch, on aerators and clogging pumps.

Richmond not only wanted to continue receiving septage, they wanted more septage and the revenue it produced for the Village. Treatment plant capacity was not a problem. The new Richmond WWTP is currently permitted to accept 10,000 gpd of septage but the system was designed for expansion.

The questions still remained: Could Richmond continue to receive septage without a better method of removing solids and what would be the cost in terms of maintenance and equipment life to the plant if they did not pre-treat the septage.

Solution

Richmond was familiar with septage receiving equipment manufactured by a company located about an hour west of the Village. This unit was recently introduced to the market and had many innovative features. This equipment dubbed the Beast, did not require the usual rock trap or high maintenance grinders. It was specifically designed to screen heavy solids and remove them faster.

The manufacturer agreed to provide the equipment on a 90-day trial. If the equipment proved it could generate a significant cost savings to the Village, Richmond would purchase it at the end of 90 days. A concrete pad was poured next to the headworks building and temporary wiring and water connections were installed.

Within two weeks of the start up of the Beast, which operated Monday through Thursday, an average of 3 cubic yards of screenings was being generated every four days.

This particular septage receiving unit was actually part of an integrated system. The system included the Beast which is a heavy-duty, dual drive drum screen in a specially designed tank which is connected to a hauler station with a knife valve and flow meter. A hauler access panel and Flo-Logic software for data logging, security and billing completed the system. While data was monitored in the WWTP office, billing information was transmitted via WiFi to the Village hall for invoicing.

Results

The Village realized that in order to continue to receive septage and benefit from the revenue it produced, it would be necessary to purchase septage receiving equipment. The cost calculations proved that spending the money now to protect their \$7 million investment in a new wastewater treatment plant saved money going forward and would extend the life of their investment.

Well before the end of the 90-day trial, the Village voted to purchase the Saveco Beast Septage Receiving System. The final step was to decide on the Beast's permanent location at the plant.



Beast Demonstration at Richmond Illinois.



Municipalities from Northern Illinois and Southern Wisconsin attended the Beast demonstration.



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