

The Veolia and Hardin County Water District #1 management team reviews project progression maps related to the SSES (Sanitary Sewer Evaluation Study) project. The team includes, from left, Anthony Link, project manager; Kenneth Morley, collections system supervisor; Preston Pendley, engineering manager; Brett Pyles, operations manager; Jim Bruce, general manager; and Justin Metz, WWTP operations supervisor/safety coordinator.



habbed on that line, another 1,000 manholes are to be inspected as part of the overall project.

“Some of the manholes were installed back in the 1930s. We’ve got very old pictures that show they’re brick,” Morley says. He expects many of the older ones to be replaced. “It’s gotten to the point where the hydrogen sulfide has deteriorated the manholes pretty badly.”

Closer look

In Phase 2, problem areas identified from the flow monitoring will get a closer look, using dye water flooding and dual smoke blower testing, Morley says. In addition, the cleaning and CCTV contractor will inspect and clean those portions of the system.

“We’ve got 75,000 feet of cleaning and camera work to be done by the contractor,” Morley says. “Once that’s done, we will be able to determine what lines need to be repaired or replaced throughout the post.”

Where possible, crews will rehabilitate existing lines by lining them with CIPP products from Insituform Technologies. Where lines are too far gone for lining to do the job, they’ll be replaced outright.

“Once all that’s done, we will go back to the initial spots where we had the flow monitors, reinstall them, and do the final review to analyze what all our efforts have accomplished,” Morley says.

Project management

There are other projects alongside the main one. The fort’s two largest lift stations will be replaced, several storm sewer lines will be repaired,

and a 40-inch box culvert under the two main railroad lines serving the fort will be replaced as well.

In addition, the storm drainage system at the Fort Knox airfield is being renovated. That is in part to accommodate potential future runway renovations. Those are all outside the SSES program, with separate funding and their own project management plans.

But the SSES is the big one, and requires a level of organization to pull it off that is worthy of the Army itself — an institution well known for its expertise at organizing and deploying a detailed and complex strategic project.

With the deadline at the end of the current year, “it’s a pretty tight schedule,” says Morley. “That’s why we chose a contractor that is capable of putting multiple crews if needed on the proj-

“Some of the manholes were installed back in the 1930s. We’ve got very old pictures that show they’re brick. It’s gotten to the point where the hydrogen sulfide has deteriorated the manholes pretty badly.”

Kenneth Morley

ect to complete it in that timeframe.” The deadline was written right into the bid’s “scope of work” section.

Meetings and partnerships

So how to keep all those plates spinning?

Regular progress meetings are a given — once a month to start with, and once a week when construction ramps up.

Strong partnerships are key. Veolia, Hardin County Water District No.



Electrician David Miller at the main control panel at the wastewater treatment plant in the PTB building (monitor by Pro-face).

1, and Fort Knox are all partners, of course. But there are other partnerships as well.

“We set the project up so it would involve a partnership between an engineering firm and a general contractor,” Morley says.

The project was set up as a design/build project. TSI Paving of New Albany, Ind., is filling the general contractor role. It is teaming with engineering firm Burgess & Niple, based in Columbus, Ohio, with offices in Louisville. Insituform Technologies has the lining work, and Hydromax USA, with its headquarters in Chandler, Ind., and a Kentucky office in Florence, has the CCTV inspection and cleaning portion of the project.

Routine responsibilities

Veolia doesn’t depend on outside

contractors for everything at Fort Knox. The company’s agreement calls for it to take responsibility for doing regular routine maintenance itself.

The Fort Knox Veolia crews clean and conduct CCTV inspections annually, covering about 10 percent of the system each year. “We line 3,600 feet of lateral lines a year using the Perma-Liner system and materials,” Morley says. There’s also an annual catch basin and culvert repair and replacement protocol.

And those responsibilities continue, even amid all the new inspection, detection, rehab and new construction. This year Veolia is maintaining its routine contractual obligations with a primary focus on basins not included in the SSES project.

Key equipment includes a 2008 Vactor HD combination truck owned by Hardin County Water District No. 1 and operated by Veolia. The truck is equipped with a 2,000-gallon debris bed, a 1,500-gallon water tank, and a 3,000 psi, 80 gpm pumping system.

The Fort Knox operation also has four CCTV cameras altogether: a CUES mainline camera, two Pearpoint cameras for smaller lines, and an Envirosight pole camera.

The location’s jetter was recently transferred to a Veolia operation in Monroe, La., and a new Harben piston-pump trailer jetter is to replace it at Fort Knox.

And going forward, crews will get another new tool to help them.

Over the course of the SSES project the Veolia GIS technician — that’s a full-time post at the company — is revisiting every basin in the Fort Knox sanitary sewer GIS system. As work proceeds, it will be recorded directly in the GIS, so that all of the information is up to date with respect to replacement, rehab and other work.

The result, says Morley, will be “an ongoing living document that tells us the progress we’ve made.”

For the Fort Knox system, that alone promises to be a golden opportunity to ensure it keeps up its record of excellence in serving the needs of America’s military. ♦

MUNICIPAL SEWER & WATER™

FOR SANITARY, STORM AND WATER SYSTEM MAINTENANCE PROFESSIONALS

August 2012

www.mswmag.com

MILITARY PRECISION

Fort Knox I&I reduction project requires careful coordination and timing

PAGE 22

PERMA-LINER INDUSTRIES, INC.

Perma-Liner Industries, Inc.
13000 Automobile Boulevard, Suite 300
Clearwater, Florida 33762
(866) 336-2568 Toll Free
www.perma-liner.com

Kenneth Morley
Collections system supervisor
Fort Knox, Ky.

TECHNOLOGY TEST DRIVE:
STEERABLE TRANSPORTER PROVIDES
IMPROVED CAPABILITIES

PAGE 28

BETTER MOUSETRAPS: PERMEABLE
PAVERS ALLEVIATE COMMUNITY'S
STORMWATER ISSUES

PAGE 26

HUMAN SIDE: BREAK DOWN BARRIERS
AND IMPROVE CUSTOMER SERVICE

PAGE 32

FOCUS: SEWER

MILITARY PRECISION

Fort Knox I&I project requires partnership and planning to meet tight deadlines

By Erik Gunn



Senior field service technician Bill Mills (left), field technician/CIPP lining lead Gene Robillard, and field technician Bobby VanMeter perform a lining job using equipment from their Perma-Liner turnkey lateral lining and sectional point repair trailer. (Photography by Jay May)

It was a busy spring on the grounds at Fort Knox in Kentucky.

In March, work crews installed 41 flow monitors throughout the fort's sewer collection system to identify leaks in the 91.2 miles of main sewer line serving the U.S. Army Base. They also replaced a 30-inch sewer bypass line.

But that was just the start. Also on the punch list: a round of CCTV inspections, an examination of 1,000 manholes, the cleaning of 75,000 feet of mainline, and a series of cured-in-place pipelining projects — all due to be finished by the end of 2012.

It's all part of a \$2 million Sanitary Sewer Evaluation Study (SSES) under way at Fort Knox.

The project is under the direction of Hardin County Water District No. 1 and Veolia Water North America and its collection system supervisor at Fort Knox, Kenneth Morley. Veolia runs the Fort Knox sewer collection and treatment system day to day under a 20-year contract with the district. Under the Department of Defense utility privatization initiative, Hardin County Water District No. 1 in 2005 took over ownership and operation of both the sanitary and stormwater sewer systems at Fort Knox from the Army, which until then had operated the systems itself.

The SSES project is part of ongoing efforts by Veolia and Hardin County to get a handle on the inflow and infiltration problem at Fort Knox, says Morley. It's a problem that shows up with every major rainfall, when suddenly the water coming into the onsite treatment plant at the fort turns a lot cleaner to the eye.

"During a rain event we see dramatic increases in the flow at the wastewater plant, and we know based on the amount of water coming into the plant that there are major I&I issues," says Morley.

Operational excellence

The Fort Knox sewage treatment plant has an 18 mgd peak capacity and is designed for an average flow of



The Fort Knox team includes, from left, Mike Shanahan, field technician/vacuum truck operator; David Miller, electrician; Bobby VanMeter, field technician; Kenneth Morley, collections system supervisor; David Russelburg, field lead; Gene Robillard, field technician/CIPP lining lead; and Bill Mills, senior field service technician. The team is pictured with their 2008 Vector HD combination truck.



PROFILE:

Fort Knox, Ky.,
sanitary sewer
collection and treatment

POPULATION SERVED:
31,426

AREA SERVED:
U.S. Army's Fort Knox, Ky.

**TREATMENT CAPACITY/
DAILY VOLUME:**
18 mgd peak, 6 mgd average,
1.8 mgd daily

INFRASTRUCTURE:
91.2 miles of sewer mains,
2,540 manholes, 39 lift
stations

ANNUAL BUDGET:
\$2.86 million

WEBSITE:
[www.veoliawaterna.com/
media/case-studies/
hardin-county-fort-knox-
kentucky.htm](http://www.veoliawaterna.com/media/case-studies/hardin-county-fort-knox-kentucky.htm) and
www.knox.army.mil

6 mgd. Most days it processes just a fraction of that, however, averaging 1.8 mgd.

Currently the system serves some 31,000 people — a number expected to grow by as much as 20 percent by 2020.

To date the highest flow has been about 13 mgd. Because it's supposed to be sanitary sewage only, that peak is a pretty good indicator of just how big the I&I problem is, Morley says.

"We also have 39 lift stations in the collection system," he says. "We'll see heavy rain come into the lift stations as well."

Up to now the treatment plant has always managed to stay ahead of the heaviest rains, avoiding sewage overflows that have plagued even some of the most well run large municipal systems. For three years running, the system has been recognized for oper-

ational excellence by the Kentucky-Tennessee Water Environment Association. Since 2005, previous I&I construction projects by Veolia and Hardin County have reduced average daily flows by 20 percent.

But past success doesn't guarantee future results. The SSES project is aimed at bringing all that I&I under control.

One big project

Originally, the federal government had authorized funds for a series of individual projects focusing on a couple basins in the system.

"As opposed to doing those basins individually, we decided to do this all in one big project," Morley says. "We've been asking for this money for some time."

The resulting SSES project will

cover eight of the system's 10 basins on the fort grounds.

Phase 1, now completed, consisted of about eight weeks of flow monitoring. That phase also included replacing 295 feet of failing bypass sanitary sewer line crossing a creek on the grounds of the fort with a new 30-inch line, as well as the rehab of two manholes on the line.

The 528-foot-long bypass line serves as an alternative to two mainlines — one 36 inches, the other 30 inches — that enter the plant at about the same point. Once bypass functionality is restored, Morley says, either of the mains can be temporarily shut off to allow for cleaning and CCTV work. That will enable Veolia to do those jobs in-house instead of contracting them out.

Besides the two manholes re-

A CHANGING COMMUNITY

With some 31,000 people either living or working at the base, Fort Knox, about 35 miles south of Louisville, is the equivalent of a small city.

Technically, it's not — contrary to popular belief — where the nation's gold reserves are stored. That's next door to the fort, at the United States Bullion Depository.

But the fort itself has been changing — and more change is on the horizon.

The fort still has a highly active training mission, says Kenneth Morley, collection system supervisor for Veolia Water North America, which runs the Fort Knox wastewater collection and treatment operations under an agreement with Hardin County Water District No. 1.

Before going to work for Veolia, Morley worked for a demolition contractor for seven years. He started his career in 1988 in the industrial cleaning and environmental emergency response industry.

Now, though, the fort is the headquarters for the Army's human resources operations, housed in a new building built two years ago. Only the Pentagon is bigger.

"It's the second largest office under one roof" in the Army, Morley says.

Along with the new HR office, the fort also is the home for the Warrior Transition program, where injured soldiers who have returned from combat go to adjust to a return to life at home.

Operating in a military base setting creates special circumstances and challenges in the area of wastewater treatment, Morley allows.

Public communication is one example.

Getting the message out to customers is important for any big municipal utility agency. You want them and others to understand what's going on, especially during a big disruption like that caused by the Sanitary Sewer Evaluation Study (SSES) project now underway. An Army base puts its own twist on things, though.

Take smoke testing to identify sewer leaks. That could require an explanation anywhere, but on a military post, it could lead some to think they're under attack.

"We'll have to notify all of the people here on post," says Morley. "We want to let everybody know that the ground isn't on fire."