Based in Santa Rosa, California, Sonoma Water serves communities in the Sonoma area, a world-famous wine growing region, tourist destination – and once home to the legendary creator of Peanuts, Charles M. Schulz. The agency manages and maintains a water transmission system that delivers naturally filtered water from the Russian River to nine cities and special districts that, in turn, deliver drinking water to more than 600,000 residents of Sonoma and Marin counties. This water system includes 90 miles of underground aqueduct pipes, as well as storage tanks that convey and store approximately 130 million gallons of water for the agency’s clients. In addition, Sonoma Water operates the waste water collection system for many of the smaller communities in the county.

In 2018, the agency was experiencing a drop off in pump efficiency in one of its sewer collection systems and force mains. The agency deduced that there was blockage in a sewer force main that goes from a lift station where sewage is collected, and runs under pressure directly to the waste water treatment plant in Petaluma.

“While we typically don’t have blockages in our force mains due to the lines being under pressure, we do recognize that biofilm accumulates on the inside of the lines and thickens over time,” said David Royall, Environmental Services Coordinator for Sonoma Water.

This situation became exacerbated during extreme wet weather events when the system became susceptible to inflow and infiltration into the gravity sections of the sewer systems through joints in the pipes or holes in the manholes. In those instances, the pumps needed to push more water down the line than they were meant to handle. As a result, there were numerous sanitary sewer overflows upstream of the lift station.

It’s the most efficient and effective means of cleaning a force main that I could find. I must admit, it almost seemed too good to be true – how can something so simple be so effective?

- David Royall, Environmental Services Coordinator, Sonoma Water

**Project Summary**

**Customer:**
Sonoma Water, California

**Type of Project:**
Advanced Pipe Cleaning Technology

**Date:** 2018

**Results:**
12 - 15% increase in pump efficiency
We had an increase in pump efficiency of twelve percent on the northern section and fifteen percent on the southern section.

-David Royall, Environmental Services Coordinator, Sonoma Water

After determining that a restriction existed, Sonoma Water decided to move forward with cleaning the line to see if that would solve the problem. An initial strategy involved putting breaches in the force main to provide access points that would allow for manual cleaning of the line. However, it quickly became apparent that this system was going to be problematic and very expensive. Sonoma Water would have to acquire easements in some locations to gain access to its pipeline. Additionally, it would have to factor in excavation costs and the expense of putting valves into each section of the pipe.

"This method was going to be very costly; there had to be another way. I did an Internet search to discover other ways to clean sewer force mains without intruding into the pipe itself. I came across ice pigging from Suez Advanced Solutions and from there, contacted the company. Suez’s Water System Consultant Daniel Eisenberg called me back, and the rest is history," noted Royall.

Ice pigging is a sustainable – and powerful – method to clean wastewater force mains and siphons as well as potable water distribution lines. The ice pigging process uses ice rather than a hard pig to clean the main. This offers numerous benefits and significant cost saving over both traditional pigging and other cleaning methods.

"Ice pigging was the most unobtrusive means of cleaning these lines I could find. All we had to do was install a two-inch fitting so that the ice pigging truck could tie directly into it. Then the truck pumped the slurry directly into our force main. We didn’t have to cut any pipes or dig anything up – you’re just inserting the ice mixture into your system. Once you empty the truck, you turn the pumps on, and the pumps force the pig down the line," Royall noted, adding, "It’s the most efficient and effective means of cleaning a force main that I could find. I must admit, it almost seemed too good to be true – how can something so simple be so effective?"

The effectiveness of the ice pigging solution became evident when one of Sonoma Water’s engineers revisited the efficiency of the pumps. "We had an increase in pump efficiency of twelve percent on the northern section and fifteen percent on the southern section," said Royall.

In addition, in spite of having an extremely wet winter, Sonoma Water experienced virtually no overflows, preventing costs such as fines and eliminating the time and expense needed to send notices out to customers.

Another benefit was the tremendous cost savings over excavation and its related requirements. Sonoma Water estimates that cost savings were tantamount to 10 to one.