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HDD Plays Key Role in South Dakota Project

City of Sioux Falls Uses HDD, Pipe Ramming and HDPE Plowing to Install 11 Miles of an HDPE Gas Line

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Communities across the United States are currently facing many challenges. Two of these challenges are the creation of new sources of revenue and the proper handling of waste generated at local landfills.

Ellingson Companies helped the City of Sioux Falls, S.D., create a solution that addressed both of these issues by making the garbage placed at the Sioux Falls Regional Sanitary Landfill generate revenue for the City.

In 2008, the City of Sioux Falls established its Leading Green Initiative. The Leading Green Initiative “seek[s] to make Sioux Falls a more environmentally, economically and socially sustainable community.” One of the first steps Sioux Falls took in this initiative was partnering with POET Biorefining and the United States Environmental Protection Agency (EPA) to utilize the Landfill Methane Outreach Program (LMOP).

According to the EPA, the LMOP promotes using methane gas produced at landfills as a renewable source of energy to help reduce the environmental impact of the “second largest source of human-related methane emissions in the United States.” Capturing this landfill gas and putting it to good use helps reduce odor and minimizes other environmental hazards associated with landfill gas emissions.

In fall 2008, as part of the Leading Green Initiative and LMOP, Ellingson Companies partnered with the City of Sioux Falls for a cutting-edge, environmentally sensitive gas line installation project. The project allows Sioux Falls to turn its garbage into \$1.8 million annually and significantly reduce its output of the potent greenhouse gas methane. At the announcement of the project on April 10, 2008, Sioux Falls Mayor Dave Munson said: “The City feels fortunate to be able to make a significant impact on the environment and improve revenue at the landfill at the same time.”

The City is now piping the methane generated at the Sioux Falls Regional Sanitary Landfill to the POET ethanol production facility near Chancellor, S.D. POET is using the methane to help power its solid waste fuel boiler that was specifically designed to take advantage of alternative energy sources like methane gas. Utilizing the methane gas produced at the landfill allows POET to decrease its use of natural gas. It will also cut plant CO2 emissions by more than 26,000 tons in 2010 and reduce overall operating costs at the Chancellor facility.

“This was a very challenging and unique project,” said Ellingson Companies chief operating officer Jeremy Ellingson. “POET and the City of Sioux Falls made a real commitment to environmental sensitivity, both with the purpose of the project and in the means of installation.”

Trenchless Work

Beginning in September 2008, Ellingson Companies professionally installed more than 60,000 ft — more than 11 miles — of 12-in. high-density polyethylene (HDPE), for use as a low-pressure gas pipeline, using three primary installation techniques: horizontal directional drilling (HDD), HDPE plowing and pipe ramming. Given the nature of the project, the trenchless techniques used by Ellingson Companies saved the City of Sioux Falls both time and money.

“The fact that we were able to install a lot of pipe using trenchless methods was important,” explained Jason Gillard, Ellingson Companies trenchless division manager. “Reduced time and cost for restoration was a real



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key," Gillard added.

Nearly 52,000 ft of 12-in. HDPE gas line was installed in under three weeks utilizing the Ellingson Companies HDPE plowing method. HDPE plowing, using a Bron 450, allowed Ellingson to replace traditional open-cut installation methods and install the gas line with little downtime, minimal road closures and without a majority of the restoration costs associated with traditional open-cut methods. By using HDPE plowing, Ellingson Companies was able to install the gas line three to four times faster than traditional open-cut methods. The speed of installation and limited restoration significantly reduced the inconvenience on homeowners near the project and lowered overall project costs for the City.

Ellingson Companies also installed nearly 8,000 ft of HDPE through the horizontal directional drilling method. Ellingson used a Ditch Witch 8020 drill to install the gas line under roads, driveways and throughout the landfill. With heavy truck traffic at the landfill, shutting down vehicle access would have been inconvenient and costly. The ability to install the gas line without creating an inconvenience to the City of Sioux Falls, the Sioux Falls Regional Sanitary Landfill or POET Biorefining was an important aspect of Ellingson Companies' installation plan.

Directional drilling was also used to install the gas line near environmentally sensitive areas and areas congested with underground utilities. Ellingson encountered various sloughs during installation and drilled through two separate creek crossings.

Drilling these areas with a Ditch Witch 8020 allowed Ellingson Companies to install the gas line without disturbing these fragile environmental habitats. High-pressure gas lines, rural water lines and various other utilities were also encountered during installation. Ellingson Companies used directional drilling to install thousands of feet of 12-in. HDPE, as standard open-cut installation would have been costly and time consuming when dealing with these utilities.

During the last installation phase of the project, Ellingson Companies installed 120 ft of 16-in. steel casing underneath the railroad spurs that enter into the ethanol plant. Ellingson Companies used the pipe ramming method and a TT Technologies Grundoram to accomplish this portion of the project.

Once the launch pit was established, the installation of the casing and carrier pipe took approximately one day and did not create an inconvenience for the plant or the railroad.

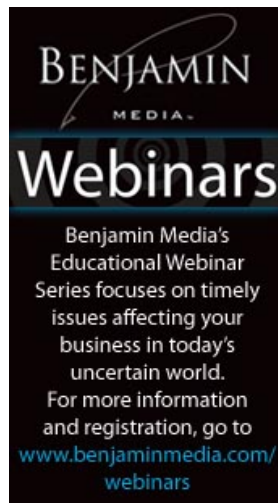
"The installation methods Ellingson Companies proposed saved weeks of construction time," said City of Sioux Falls project manager, D.J. Buthe. "This allowed us to complete construction multiple weeks ahead of schedule, saving the city \$2,500 in revenue per day."

"We feel very fortunate to have worked with so many great people on this project," said Ellingson Companies project manager Matt Lawrence. "Everyone we worked with from the City of Sioux Falls, R.W. Beck, Sayer Associates and POET Biorefining played an important role in helping complete this project ahead of schedule."

According to POET, the Sioux Falls Regional Sanitary Landfill began supplying methane to its Chancellor, S.D.-ethanol plant ahead of schedule at the end of February, 2009. A ribbon cutting for the project was held in March 2009 at the Sioux Falls Regional Sanitary Landfill.

Started in 1970, Ellingson Companies is a family-owned business specializing in agricultural drainage, community septic systems and a variety of trenchless technologies.

Michael S. Schnell is with marketing and government affairs with Ellingson Companies.



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