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Title: In Service Forcemain Condition Assessment

Theme: Pipelines' Condition Assessment

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Abstract: In Canada, pressurized forcemains that carry sewage make up only about 7.5 percent of the typical wastewater system compared to gravity mains. However, when problems arise, and a critical force main is out of commission, the entire wastewater system can stop causing overflows or the need to implement costly bypass pumping. Because sewer forcemains tend to run constantly, and often operate without redundancy, there is little opportunity to assess the pipes while out of service. Recent developments of inline assessment technologies have made comprehensive condition assessment a more palatable option for utilities.

Over the past decade, water and wastewater pipeline operators have seen new inspection technologies and failure analysis techniques that enable them to determine the condition of their pipeline assets, the pipeline deterioration rate and probability of failure. By combining regular inspections, forensic and failure risk analysis on a pipeline an operator develops an understanding of past events, current events, and what events are likely to happen in the future. To this end, to gain the knowledge required to make the appropriate decisions regarding renewal of their aging infrastructure, many utilities are utilizing state of the art non-destructive technologies coupled with structural engineering performance assessments.

In-line technologies take a snapshot of the current condition of these pipelines. The assessment technologies available today assist in 1) identifying, localizing, and quantifying the presence of damage in the pipe wall and leaks in individual segments of pipe along the pipeline and 2) providing risk analysis and repair prioritization for pipes identified with damage and leakage. With this information a pipeline owner can categorize the structural damage found, allowing it to prioritize its rehabilitation program and allocate funds accordingly in an emergency and/or an annual basis. This paper will review recent in service forcemain condition assessments completed. The projects demonstrate that by using quantitative data from assessment projects, a customized pipe rehabilitation solution can be built that saves money and resources allowing utilities to make more informed decisions regarding the aging infrastructure.