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Abstract Title: Potable Water Tunnel Inspection Utilizing Remote Technology with Long Tether Capabilities
Abstract Theme: Asset Management,Pipelines' Condition Assessment
Abstract:
Typically, cities convey large volumes of water between water treatment plants, pumping stations, storage reservoirs and to points of supply to the local distribution systems. These water conveyance tunnels are typically large diameter and cover great distances with limited access points. Inspecting potable water trunk lines has typically required that the system be dewatered or not inspected at all.

In 2009, ASI was contracted to inspect a 5 km section of a potable water trunk line running parallel to Lake Ontario. The tunnel was constructed in the 1930's as a mortar-lined rock tunnel at a profile depth of approximately 30m below the ground surface and 15m below the bedrock profile. The tunnel diameter ranges from 2100 mm and 1800 mm. The interior shape of the pipe varies from 'circular' to 'horseshoe' shaped. There are two (2) access shafts/chambers located along the section of the tunnel.

The lack of access points required the need for a long tether ROV with multiple sensors. ASI used two modified ROV's capable of pulling long tethers to fulfill the contract and acquire the necessary data to provide a condition based assessment of the asset. A Seaeye Falcon with 16400-feet (5km) of tether and a Seabotix vLBV and LBV300XL with 8200-feet (2.5km) of tether were used. Having demonstrated excellent results, this approach was employed again in 2014 to provide the same coverage.