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## REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE MEETING OF MARCH 25, 2026

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**SUBJECT**     **November 2025 Core Area Residual Solids Conveyance Line Blockage**

### **ISSUE SUMMARY**

To provide an overview of the November 2025 Residual Solids Conveyance Line (RSCL) blockage event, associated costs, and lessons learned.

### **BACKGROUND**

The Residual Solids Conveyance System is comprised of a forcemain and three intermediate pump stations transporting sewage sludge from the McLoughlin Point Wastewater Treatment Plant (MPWWTP) to the Residuals Treatment Facility (RTF), adjacent to the Hartland Landfill, to produce biosolids. The RSCL is a 250-millimeter (mm) diameter pipeline, spanning 19.3-kilometers (km) in length. There is also a 300 mm diameter pipeline, 12.4 km in length, that conveys effluent from the RTF to the Marigold Pump Station, and generally follows the same alignment.

There is no redundancy to the Residual Solids Conveyance pipe; if this pipe is removed from service, sludge accumulated at MPWWTP must be trucked to the RTF or around the point of interruption, or the plant needs to undertake an emergency bypass to the marine environment. To optimize operation and minimize the risk of unplanned outages, ongoing preventative maintenance of the line and the associated pump stations are required.

Regular maintenance of the RSCL includes “pigging” the line annually, a process where a pipeline inspection gauge (PIG) is inserted into a pipe to clean the line without disrupting the flow of sludge. The PIG is made of a high-density foam in a cylindrical shape with an internal electromagnetic transmitter to track, monitor, and aid locating the PIG. During pigging, the PIG is propelled by the pressure of the sludge in the pipe, dislodging debris from the sides and bottom of the pipe while travelling between a launch and a receiving location.

The RSCL pigging operation is broken into four sections which include:

- 9.2 km from MPWWTP to Pump Station No. 2 located at Interurban Rd. and Courtland Ave.
- 3.8 km from Pump Station No. 2 to Pump Station No. 3 located on Interurban Rd. adjacent to 5058 West Saanich Rd.
- 4.9 km from Pump Station No. 3 to Pump Station No. 4 located beside 320 Willis Point Rd.
- 1.3 km from Pump Station No. 4 to the RTF.

The RSCL is a unique and specialized piece of infrastructure due to its length, changes in elevation, and the number of fittings and appurtenances. The first section of this pipeline is the longest stretch at 9.2 km, with the most frequent elevation changes and the greatest number of bends.

The CRD successfully completed the pigging of all four sections of the RSCL in March 2023 and March 2024. In late 2025, a high-pressure and a reduced flow rate indicated increased solids

accumulation and triggered the urgent need for pigging the RSCL which had been delayed seven months, due to reasons that are further explained below.

### **SERVICE DELIVERY RISKS**

Continual operation of the Residual Solids Conveyance System is critical, as after approximately 8-12 hours of down-time, alternative methods of transporting sludge must be implemented to prevent a bypass of the MPWWTP and avoid significant operational, biological and structural failures at the RTF. Bypass of the MPWWTP entails a large-scale discharge of untreated effluent into the marine environment (Salish Sea).

For the RTF digester, a constant and balanced supply of organic matter is required. When the supply of sludge to the digester is interrupted, the specialized microbial community begins to die, leading to a wide range of impacts from system failure, reduced biogas production, increased operating costs, equipment damage, dangerous gas build-up, structural corrosion, and impaired biosolids quality.

### **EVENT DESCRIPTION**

On November 14, 2025, operations staff began the pigging operation, launching the PIG from MPWWTP. The total travel time for the planned section of the pipe was five hours. After the PIG did not arrive within the anticipated timing window, staff began to troubleshoot the issue attempting to locate the PIG utilizing the sensor/transmitter. It was determined that the PIG had become lodged in the RCSL; however, the specific location within the 9.2km section could not be determined. Staff attempted to locate the PIG using the sensor/transmitter but were unable to locate a reading from the transmitter. Instead, staff were forced to remove drain valves to gain access to sections of the pipe. Once opened, staff utilized camera equipment and flushing equipment at access points in chambers along the RSCL to determine if the pig had passed and narrow the location of the blockage.

As staff worked to locate the location of the blockage, third party contractors were engaged Saturday, November 15, to begin hauling sludge via trucks from MPWWTP to the RTF.

On November 18, 2025, a Department Operations Centre (DOC) was activated at MPWWTP by Infrastructure and Water Services (IWS), and the Capital Regional District (CRD) Emergency Operations Centre (EOC) was activated at Level 1 to provide coordination and support that included Corporate Communications, Finance, Health and Safety, Environmental Protection, Protective Services, Risk and Insurance, and Synagro, our partner and operator of the RTF. During this time, staff-to-staff communication occurred with the municipalities of Esquimalt and Saanich to aid coordination of traffic plans, noise, and traffic disruption to residents. A Public Service Announcement was also released to provide information to the public, First Nations and neighboring municipalities.

To maintain service delivery and prevent the environmental impact from a bypass event, sludge was transported around the blocked section of the RSCL from MPWWTP to the RTF utilizing hydro-excavation trucks. To reduce the number of loads required, and manage the cost, the sludge concentration was increased, reducing the total volume of water.

The PIG was successfully retrieved November 21, 2025 from a chamber located on Grange Rd.

Staff determined the PIG had become lodged in the section of pipe under the Trans-Canada Highway. Due to the location and pipe configuration in that section, the signal from the transmitter could not be read. Ultimately, staff were able to dislodge the PIG by pressurizing the line upstream of the PIG and pushing the PIG back through the line. The Residual Solids Conveyance System was restarted on November 23.

In total, the RSCL was offline for 10 days, approximately 480 sludge loads were hauled between MPWWTP and the RTF, and the EOC/DOC was active for 8 days.

### **IMPACT ASSESSMENT**

The RSCL blockage posed no threat to public health and safety, and regular service delivery was maintained throughout the repair and retrieval work.

Impacts to residents of the municipalities of Esquimalt, Saanich, Victoria and View Royal included 24-hour truck traffic, localized odour issues, traffic delays and additional noise during hauling operations.

### **TOTAL EVENT COST**

The emergency response for the project required 24/7 sludge hauling to mitigate the risk of an environmental discharge from MPWWTP and the operational risks for the RTF. The total cost associated with this event was \$860,000, with the bulk of those costs associated with sludge haulage and the required supports.

Of the total cost, \$635,000 was covered by the annual budget for emergency repairs with the remainder being split between operational accounts for 2025 and 2026.

### **ROOT CAUSE ANALYSIS**

On Feb 5, 2026, CRD conducted an after-action review with key parties from each of the CRD divisions involved. The following provides an initial summary of the primary root causes identified and the actions being taken to mitigate future blockages. The two root causes identified as part of the after action included:

1. Increased sediment accumulation due to delay in annual preventative maintenance (pigging activity): The annual pigging maintenance was originally scheduled for March 2025, however maintenance was delayed seven months while staff worked to update safety procedures required to undertake the work. The Pig Launching Valve Chamber is a confined space which requires preapproved safety documentation. Due to recent valve and piping work at MPWWTP, a new Alternative Measures procedure (safety documentation) was required to be submitted to WorkSafeBC for approval. Due to the complexity of this infrastructure and a number of knock-on impacts, the scope of the safety review expanded, extending the timeline for the submission and ultimately delaying the work.
2. The reduced flow rate in the RSCL available to push the PIG through the pipe was due to two factors:

- A MPWWTP isolation valve was not sealing properly, resulting in reduced pressure in the RSCL needed to push the PIG through the pipe.
- The storage tanks at the MPWWTP were not continually monitored or set to maintain enough volume to supply the minimum required flowrate through the pipe. Once the low level was reached operators were able to rapidly correct the issue, but the three-minute delay made the PIG lose velocity and stop. The MPWWTP Standard Operating Procedure (SOP) did not adequately state the criticality of this process for the maintenance procedure.

Overall, the combination of reduced flow rate and increased sediment through a complex stretch of pipe contributed to the RSCL blockage. After identifying the root cause, staff identified the following actions:

### **Operational**

1. Increase “pigging” frequency from annual to semi-annual to reduce the load of sediment build up in the pipe and to allow for unanticipated project delays.
2. Need for further coordination between participating division/departments to establish joint priorities and meet project timelines. Use of a new project “go/no go checklist” must be completed prior to scheduling all pigging maintenance to ensure Core Area Wastewater Operations, Wastewater Conveyance Operations, Systems Maintenance, and Corporate Health and Safety are all prepared to proceed, which includes:
  - All safety documentation.
  - Confirmation of infrastructure maintenance schedules/completion for critical pumps, check valves, and isolation valves.
  - Availability of critical spares.
  - Completion of an annual SOP and Emergency Response Procedure (ERP) review.
3. Implement a practice of regularly scheduled joint divisional training sessions to review and update pigging SOPs and ERPs. Emphasizing clear lines of communication between Plant and Field Operations, with a focus on critical interdependent steps to maintain minimum flow rate.

### **Infrastructure**

1. Ensure preventative maintenance checks for all pumps, check valves, and isolation valves critical to pigging at both MPWWTP and the RSCL have been completed 1-2 months prior, and all findings have been reviewed during a project coordination meeting.
2. Adequate Plant storage tank volume is maintained and monitored to meet the minimum SOP flow rate through use of an automated level controller with operator oversight.

The RSCL blockage was the first time the Infrastructure Wastewater Operations team responded to this type of event. Staff are already proceeding with implementation of the outlined actions.

### **CONCLUSION**

On November 18, 2025, technical and operational deficiencies contributed to a blockage in the Residual Solids Conveyance Line (RSCL). Staff were able to maintain service with crews working

day and night to coordinate sludge haulage, continually adjust MPWWTP operations and locate the PIG. Though service was maintained there was a financial impact though this was absorbed into provisional emergency repairs budget.

An after-action review of the event was conducted to determine the root cause and identified action items to mitigate future blockage. Several recommendations were identified, including heightened project coordination and a “go/no go checklist”, joint divisional training, and increased frequency of scheduled maintenance. Prior to any future RSCL pigging maintenance, the new risk mitigation steps identified will all be implemented.

**RECOMMENDATION**

There is no recommendation. This report is for information only.

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