

Emergency Response and Remediation of a Crude Oil Release in Abbotsford, BC

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In June 2020, a crude oil release occurred at the Trans Mountain Sumas Station in Abbotsford, British Columbia (Site). Approximately 190 cubic metres of crude oil were released to the environment (soil, groundwater, air) as a result of the Incident. Crude oil was released from piping upstream of the Site's Equation of States (EOS) building to the ground surrounding the nearby piping infrastructure and drained through a culvert into the adjacent agricultural field to the south. The Site is surrounded by agricultural and rural residential land, within the Sumas Prairie, in an area that has significance to nearby Indigenous communities as well as a high potential for archaeological artifacts. The aquifer at the Site is unconfined and shallow, and the groundwater table elevation fluctuates significantly with the seasons, creating a dynamic groundwater flow system that directly influences the behaviour of subsurface impacts.

Trans Mountain, GHD, and other contractors completed initial response activities including recovery and disposal of free product, impacted soil, and impacted groundwater. Throughout 2020 and 2021, comprehensive remediation efforts were conducted including air monitoring for the protection of the surrounding community as well as extensive soil and groundwater remediation efforts to the extent practicable while maintaining the geotechnical integrity of the surrounding pipeline infrastructure and facility. Remediation and monitoring work continues in 2022.

This presentation will focus on soil remediation activities, challenges encountered during remediation, and next steps, such as those outlined below:

- Executing a complex soil excavation and product recovery program at a live pump station, within complex geotechnical and facility operation constraints, under a condensed timeframe.
- Conducting a thorough subsurface soil investigation following excavation activities to collect soil quality data above and below the groundwater table and to delineate soil impacts where excavation was not practicable due to geotechnical or facility integrity constraints.

- Implementing a light non-aqueous phase liquid (LNAPL) recovery and monitoring program to recover LNAPL from slotted stand pipes (SSPs), monitor the LNAPL footprint, and conduct LNAPL transmissivity and biodegradation testing.
- Using data and information collected throughout 2021 and available data from 2022 to develop a long-term Site management strategy. This will consider both the additional use of engineered systems and strategies focused on natural processes.
- The significant effort made to engage and consult with Indigenous communities, regulatory agencies, and other interested parties.
- Establishing practical remedial endpoints within the Canada Energy Regulator regulatory setting while meeting expectations of numerous interested parties.

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Kris is an Associate and Project Director for GHD's Emergency Response and Preparedness program (GHD FIRST) in British Columbia, currently the largest consultant-based spill preparedness and response program in Canada. She has managed, coordinated, and responded to numerous environmental emergencies including train derailments, pipeline spills, port and marine incidents, highway truck crashes, chemical fires, and residential heating oil releases in British Columbia and across Canada. Kris has gained experience working with British Columbia's regulators, stakeholders, and First Nations groups during several environmental emergency response events and exercises. Additionally, Kris brings significant experience with contaminated site remediation, risk assessment and toxicology, industrial hygiene and air monitoring, wildlife management, and site restoration.