

## Management of Significant PHC Impacts in an Urban/Community Setting – Case Study

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Subsurface petroleum hydrocarbon (PHC) impacts in urban settings can be difficult to address due to existing residential and commercial development. Remediation of contaminated sites in residential areas can be especially challenging when managing concerns raised by neighbouring homeowners/occupants. The presentation will focus on the implementation of a successful site management plan at a residential community in Calgary. The plan was intended to manage risks to public health and the environment associated with subsurface PHC contamination (including free product). Management of the issue involved extensive monitoring at the site, completion of a detailed risk assessment, and implementation of an effective remediation plan.

Community “buy-in” to the management plan was accomplished through an active public and government consultation program. Consultation with the area residents involved “face-to-face” meetings and the regular distribution of up-to-date newsletters that notified residents of current investigation activities, progress, and planned testing and remediation activities. Immediate health concerns were addressed and alleviated through a multi-year volunteer soil vapour monitoring program. Results were provided to individual property owners as data became available. In conjunction to the empirical data that was collected at the site, a Tier 3 human health risk assessment was conducted on an individual residence basis to develop soil and groundwater criteria for the protection of indoor vapour inhalation. The criteria were used to dramatically reduce the area of concern and the number of potentially affected properties. A site-specific remediation strategy based on a multi-phase vapour extraction system was developed and successfully implemented in the community.

Karl Bresee, B.Sc., PBD Ecotoxicology, P.Biol. Mr. Bresee specializes in human and ecological risk assessment with extensive experience in exposure modeling. Mr. Bresee has 10 years of experience in human, aquatic and wildlife toxicology, fate and transport modeling and exposure modeling. Recent projects include the development of probabilistic models for the wide-area ecological risk assessment of Teck Cominco’s lead/zinc smelter in Trail, British Columbia, and the ecological risk assessment related to smelter emissions in the City of Greater Sudbury and surrounding area in Ontario. He has been the technical lead on both human and ecological risk assessments of contaminated sites in urban areas. Mr. Bresee’s role in these projects was project management, multiple pathway exposure assessment, chemical toxicity assessment, risk characterization and public/stakeholder consultation. He has conducted deterministic and probabilistic risk assessments across Canada and the United States for both industry and government.

Mr. Bresee holds a Minor in Geology, a B.Sc. in Biology, a Post Bachelor’s Diploma in Ecotoxicology and is a member of the Alberta Society of Professional Biologists.

William R. Morgan, P. Geol.

William Morgan is responsible for overseeing the environmental practice of Clifton Associates Ltd. in Alberta and provides senior project engineering services in Clifton’s Calgary office. Mr. Morgan has 29 years of geological experience and 16 years of experience in geo-environmental engineering. Prior to joining Clifton Associates Ltd. in 1993, he worked for 12 years as an exploration and development geologist with a number of petroleum companies in Western Canada. Since 1993, he has assumed increasing responsibility within Clifton, culminating in his appointment as Director of Environmental Services in 2007. He has provided professional advice to clients for environmental assessments, and decommissioning and remediation of commercial, industrial, and residential properties. His experience includes site assessments, and design and operation of in situ remediation systems. Mr. Morgan has developed and implemented environmental monitoring programs including the management of contaminated sites, phased environmental site assessments, environmental risk assessments, evaluated remedial options and completed site clean ups. His specialty within remediation is liquid petroleum hydrocarbon recovery.