

Developing a Tool to Manage Industrial Runoff Releases Using the Water Quality Based Effluent Limits Protocol

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In 1995, Alberta Environmental Protection (now Alberta Environment and Parks; AEP) published a guidance document outlining the procedures to be followed to calculate water quality-based effluent limits (WQBELs) for municipal and industrial effluent releases into the environment. The main objective of the guidance document was to provide municipal and industrial proponents with a mechanism to release a certain volume of effluent into Alberta streams while maintaining surface water quality in the receiving environment.

Although this approach has been used by municipalities for several years, recently the AEP has been requesting industrial facilities manage their releases using the WQBEL approach. In new approvals, AEP is setting strict surface runoff release criteria, generally equivalent to freshwater aquatic life guidelines. This is causing some difficulties for industrial operators to pump off water containing slightly elevated concentrations of various constituents. The AEP has been amenable to setting risk-based surface water release criteria and have been amending approvals based on using a WQBEL approach.

Using a case study from Tolko Industries Ltd. Athabasca Oriented Strand Board (OSB) Facility, this presentation will:

- Discuss the applicability of the WQBEL procedure for industrial water releases into receiving waters
- Describe the WQBEL procedure to calculate released effluent volumes into receiving environment
- Review data collection needs to allow for the calculation of WQBELs, including methods to determine discharge scenarios in the receiving environment
- Discuss setting discharge rate limits under different climate and flow scenarios in the receiving waters, and setting effluent discharge volume limits based on water quality concentrations in an industrial runoff ponds
- Present an effluent release monitoring program designed to monitor for compliance in receiving waters
- Review a tool used by on-site environmental monitors to calculate effluent release volumes under different flow scenarios and effluent water quality conditions
- Discuss the applicability of the WQBEL approach to determine impacts to aquatic receptors at potentially contaminated sites with uncontrolled releases

Chris Banmann

Mr. Chris Banmann is an aquatic scientist and biologist in training with a background in biology and environmental engineering. His technical experience has recently focused on water quality monitoring and analysis, and wetland monitoring and classification. Additionally, he has extensive experience in aquatic and fisheries habitat assessment, aquatic risk assessment, spill response involving aquatic receptors, and constructed wetland design and evaluation.

Shaun Toner

Mr. Shaun Toner is a senior environmental scientist with over 17 years of experience who specializes in the design and execution of complex surface water monitoring projects. These projects include water quantity and quality, sediment, benthic invertebrate, periphyton, and wetland characterization, as well as spill response and residual risk characterization. He is also experienced preparing environmental impact assessments, fish habitat assessments and interfacing with various regulatory agencies. His expertise was gained mainly through his work in linear and infrastructure projects, as well as, oil sands and mining projects located all over Canada.

Sandra Stuart

Mrs. Sandra Stuart is the Environmental Compliance Coordinator for Tolko Industries Ltd. where she works directly with Tolko's manufacturing divisions across Canada to ensure environmental compliance. She is an environmental scientist with over 16 years of experience in the mining and forest products industry and has developed and implemented a variety of environmental programs and tools focusing on water quality and air quality.