

ABSTRACT
Performance Evaluation of a Sediment Control Pond

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Current erosion and sediment control practices include the use of sediment control ponds that are designed using the 1994 Ministry of the Environment (MOE) Stormwater Management Practices and Design Manual. These design criteria aim at reducing pollutant loads from developed areas. However, the effectiveness of these design criteria when used for areas undergoing construction has yet to be determined in the field. Thus, this thesis is a performance evaluation of a sediment control pond that was designed using the 1994 MOE stormwater design criteria. The objectives of this thesis include the characterization of the runoff and sediments entering, depositing, and leaving the sediment control pond during the construction phase, and the evaluation of the sediment removal efficiencies of the pond. Generally, the pond was successful in reducing many of the pollutants transported to the pond from the catchment area. Suspended solids were the primary pollutants monitored. Heavy metals and general water quality parameters such as chemical oxygen demand, pH, and alkalinity were also monitored. Suspended solids concentrations were high exiting the pond during several events. The particle size distribution predominantly consisted of fine particles. Most heavy metals including beryllium, cadmium, lead, and nickel were reduced in concentration to levels under their Provincial Water Quality Objectives (PWQO). However, some heavy metals had concentrations above their PWQO when exiting the pond.