



**Environmental  
Hydraulics  
Group**

**Hydraulic Transients (HT)  
- Water & Sewage**

**Project:** York-Durham Sewerage System -  
Event Investigation & Project Review

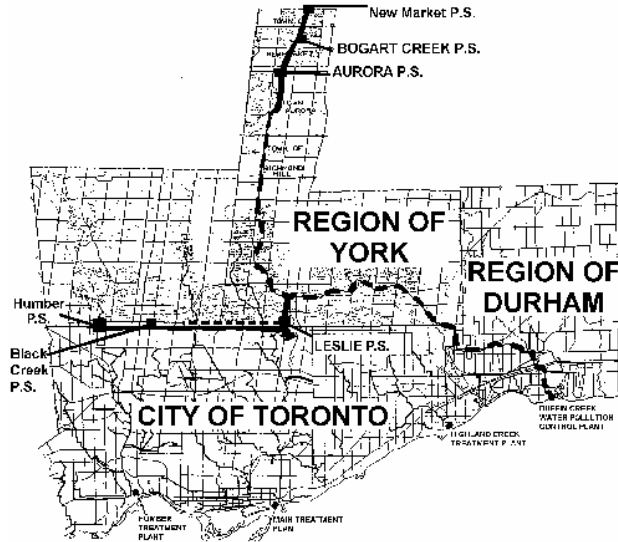
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**Location:** York & Durham Regions

**Client:** MacViro Consultants Inc.

**Completed:** March 2000

**York-Durham Sewerage System**



**Benefits to the Client:** EHG completed a cursory evaluation of the impacts of hydraulic transients on the YDSS pump station and forcemain system. After reviewing five firms' analyses, EHG proposed a pre-feasibility surge protection strategy for 2031:

- Air chambers and surge anticipator valves' settings needed revisions for increased flows.
- Upon power failure, time delays had to be specified to allow transients to decay prior to pump restarts (requires a computer model).
- Power failure for single pump stations may not have been indicative of system-wide behavior: global (all pump stations) and local (only one fails while others were still operating) power failures should have been studied if only to assess flooding or dewatering potential at wet wells.
- Surge conditions resulting from daily operations should also have been checked to minimize wear-and-tear on this aging system.

**Description:** The York-Durham Sewerage System consisted of pumped and gravity trunk sewers serving a large sub-urban population to the north of Toronto, Ontario, Canada. Several pump stations and flow control structures were built in the last 20 years.

EHG also identified a potential for flow instabilities and hydraulic constraints in gravity-flow pipe segments.

