



**Environmental  
Hydraulics  
Group**

**Hydraulic Design**  
- Water & Sewage

**Project: Tri-City Water System: Demand Forecasts and Strategic Plan – IT**

**1991-081**

**Location: Region of Waterloo**

**Client: Acres & Associates Ltd.**

**Completed: April 1993**

**Description:** EHG contributed to a water supply and distribution study for the cities of Cambridge, Kitchener and Waterloo in the Region of Waterloo, Ontario. Water is supplied from a mixture of several groundwater and surface water sources with many storage reservoirs and treatment plants. The distribution system consists of several pump stations, storage tanks and pipes with various materials and sizes. Population is projected to increase from 300,000 (1993) to 500,000 over the next 25 years due to the region's rapid urbanization and 20,000 ha of development is anticipated for the full range of land uses. The total water demand forecast for all users is 3500 ML/d over the 25 year horizon.

**Findings:** EHG's comprehensive water demand analysis included forecasts based on land uses, population, zoning and weather as well as hydraulic modeling of water (WATNET with 2000 pipes) and wastewater (EXTRAN) networks to support the generation of alternatives. EHG developed a complete demand-forecasting model: 'FLOWGEN' capable of using data in existing regional databases to predict water and wastewater flows for various development alternatives and population growth scenarios. The predicted flows were input directly to water and wastewater models of distribution/collection systems.

**Benefits to the Client:** EHG provided a strategic servicing plan based on detailed forecasts as input to the three cities' planning and capital allocation budgets. This was backed by comprehensive hydraulic network modeling to evaluate the existing and proposed water and sewer systems.

**Value Added:** Major capital expenditures can be prioritized and delayed to reduce the taxpayer burden.

