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URBAN GEOLOGY: An Introduction

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URBAN GEOLOGY
An Introduction

The following paper by Eyles, Boyce and Hibbert is the first in a series on urban geology that will appear at regular intervals in coming issues of *Geoscience Canada*. "Urban geology" can be defined as the study of the Earth's materials and groundwater resources as they relate to the development, re-development and expansion of urban areas. Urban geology, therefore, directly or indirectly affects a majority of Canadians, and is one of the most rapidly expanding areas in earth science.

Due to the complex relationship between urban areas and their underlying geology, urban geology tends to encompass several earth science disciplines, including hydrogeology, geoengineering, geophysics, geomorphology and paleoecology. The investigative techniques employed in urban geology are not novel: most involve standard geological field procedures, whose broad range will be illustrated in this series.

The series consists of papers originally presented in the Urban Geology Special Session held at the Toronto '91 Geological Association of Canada — Mineralogical Association of Canada (GAC–MAC) Joint Annual Meeting, and is intended to provide a cross-section of issues in this developing field. The Special Session provided an overview of a wide range of topics, including groundwater supply and contamination problems, landfill siting considerations, the application of geophysics to groundwater investigations, aggregate supply, radon gas, and geological information from construction sites and building stone. Several contributions provided details of the experience of geoscientists from the United States in dealing with urban geology issues. While the series of papers to appear in *Geoscience Canada* is not exhaustive, it will demonstrate the variety of issues involved in urban geology, and their implications to those outside the geoscience community.

The first paper presents a subject of interest to those who must apply geology in the urban setting: landfills on Quaternary glacial deposits and their potential to contaminate groundwater. The paper discusses the difficulties associated with landfill site selection and development in Ontario, and demonstrates the disadvantages of massive silt and sand tills for suitable landfill sites. In fact, the authors have determined that nearly 1200 landfill sites in Ontario lack any engineering for leachate control and, thus, pose a threat to significant groundwater supplies.

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