



**Gartner
Lee
Associates Limited**

Consulting
Engineering
Geologists and
Hydrogeologists

Toronto - Buttonville Airport ■ Markham, Ontario ■ L3P 3J9 ■ 416-477-8400

Telex - 06-986278

HYDROGEOLOGICAL STUDY
FINAL REPORT
PROPOSED BURLINGTON LANDFILL
SITE EXPANSION

PROJECT No: 78-92

SEPTEMBER, 1979

DISTRIBUTION:

75 CC: CLIENT
1 CC: FILE

4.1.2. SURFACE WATER:

Leachate from the existing facility is entering the surface drainage system and has had an impact on the quality of the water in Falcon Creek. A toe-drain system has been designed, but not currently installed, to control leachate springs around the periphery of the waste and thus protect the surface water environment.

At the proposed expanded facility, leachate springs can also be anticipated. These springs if not intersected, could potentially affect water quality in Falcon Creek. Also there is a potential for contaminants to enter the Indian Creek basin by surface flow which constitutes the eastern portion of the proposed expansion area.

The proposed expansion area is less than 1% of the total area of the Falcon Creek basin and about 1% of the total area of the Indian Creek basin. Thus, any affect on the water budget of the drainage basins as a result of the expansion may be considered minimal.

4.2 DEVELOPMENT ASPECTS:

4.2.1. GENERAL:

The proposed expansion area may be developed for both area fill and a trench type of operations. It is recommended that a minimum of 1.5 m of glacial till be retained between the waste and the rock. Where existing soil depths are insufficient, clay type fill material, compacted to 100% standard Proctor, should be placed to a total soil depth of 1.5 m, if these areas are to be landfilled.

We recommend that a minimum 10 m buffer be maintained between the top of the Falcon Creek valley wall and the waste. As well, no waste should be placed north of the ground water divide shown on Plate 5.

4.2.2. LEACHATE COLLECTION SYSTEMS:

As discussed in Section 4.1.1. of this report, leachate is expected to migrate away from the fill area. Although the impact on the existing water quality southeast under the present site is anticipated to be minimal, there is a concern with contaminated ground water flowing towards Falcon Creek.

We therefore, recommend that a leachate collection underdrain system be installed on the floor of the disposal site to reduce the exfiltration of leachate and to minimize ground water mounding in the waste. The system should be designed and constructed as suggested below:

- The system should operate by gravity drainage with flow in a southerly direction.
- The collector laterals should be perforated pipe of adequate strength to support the weight of the refuse.
- The collector laterals should be placed at a maximum 45 m spacing.
- Pipe sizing may be based on anticipated leachate volumes of 5.7 litres per minute per hectare.