The predominant land use in the North Campus is currently rural, consisting of active agricultural fields. The Environmental Reserve study area contains minimal agricultural land but is bounded by agricultural land. Another significant land use is open space. A large portion of the open space land is associated with the Laurel Creek corridor, within which the majority of the Environmental Reserve study area is situated.

The Environmental Reserve already has a number of recreational uses that revolve around the use of the Laurel Trail and the extensive informal network of pathways associated with it. The property is actively used by the University and the broader community with activities generally centered around passive walking, cycling, jogging, bird watching, and botanizing. The adjacent development poses an interesting challenge: to meet the needs of a greater number of future users while protecting the integrity of the nature reserve. The development of specific recreational uses will be refined once the context and the complex interrelationship of the elements of the reserve are more clearly understood.
Environmental Reserve Research and Technology Park Functional Study and Preliminary Design

WATER QUALITY AND AQUATIC HABITAT

The principal source of current water quality data for the Environmental Reserve is the City of Waterloo’s monitoring program. Water quality parameters include:

- Dissolved oxygen
- pH
- Total phosphorus
- Total suspended solids

Data for the period of 1997 – 2001 were reviewed. Over that period, the occurrence of parameters exceeding maximum guidelines has decreased.

The Columbia Lake and Laurel Creek reaches within the surrounding lands are considered to be a degraded system in which the water quality and habitat has little resiliency to respond to negative land use impacts. The Laurel Creek System has been classified as a warmwater sportfish habitat, supporting warmwater sport fish and coarse fish (i.e. carp). In the reaches abutting Columbia Lake, the limiting factors to fish are poor substrate quality, high sediment levels, and a degraded benthic community.
The groundwater flow system is influenced by the seasonal variation in the water level within Columbia Lake. During low-flow, winter conditions, the lake is drawn down for flood control. This operating condition represents the most natural groundwater flow conditions in the watershed.

The Pleistocene Geology mapping of the site indicates that the site is located on hummocky terrain underlain by Tavistock Till. The Tavistock Till is characterized as a clayey silt till. The southern limits of the reserve are geologically described as ice-contact sand and the eastern edge of the site is composed of lacustrine silt and clay deposits. The geologic mapping provides an explanation for the complex soil layering encountered at the site.
This project is subject to the planning and decision-making requirements set out in the Municipal Class Environmental Assessment (EA). Class EA projects are characterized as being recurring, usually similar in nature, often limited in scale, have a predictable range of environmental effects, and are responsive to mitigating measures. There are 3 categories of Class EA projects:

- **Schedule A** projects are pre-approved and can be implemented without further study.
- **Schedule B** projects require screening as there may be adverse impacts on the environment. Public and agency consultation is mandatory.
- **Schedule C** projects have the potential for significant environmental impacts and must be assessed in greater detail. Public and agency consultation are mandatory, as is the requirement for documentation.

This project will follow the Schedule C process:

- **Phase 1** involves the review of background studies, public notification of project initiation and preliminary discussions with review agencies.
- **Phase 2** activities concentrate on technical and environmental analysis to evaluate alternative solutions and to determine a preferred solution to the problem defined in Phase 1.
- **Phase 3** involves the evaluation of alternative methods or ‘design concepts’ to implement the preferred solution identified in Phase 2 and stakeholder consultation.
- **Phase 4** addresses the documentation requirements; that is, the completion of an Environmental Study Report and a public review period.
- **Phase 5** involves detailed design, permitting and implementation of the project and monitoring for adherence to environmental provisions and commitments made during the decision-making process.

As this project is funded in part by Industry Canada, the Federal EA requirements just also be satisfied. This will require the consideration of the “cumulative” impacts of proposed solutions.