

LEED®-NC Gold Certified

Owner:

Niagara Peninsula Conservation Authority

Architect:

MacDonald Zuberec Ensslen Architects Inc.

**LEED Consultant,
M/E Engineers,
Commissioning
Agent, Monitoring &
Verification:**

Enermodal Engineering Ltd.

Structural Engineer:

Lee Yung & Associates

Civil Engineer:

MTE Consultants Inc

Contractor:

Merit Contractors

Landscape Architect:

Niagara Peninsula Conservation Authority

Ball's Falls Centre for Conservation

Jordan, Ontario



PHOTO CREDIT MZE/STEPHEN DOMINICK

Ball's Falls Conservation Area is one of the premier parks in the Niagara Peninsula Conservation Authority's open space system, and is frequented by thousands of visitors each year. The Centre for Conservation is part of the Ball's Falls experience. Through design features and day-to-day operations, this building is a living demonstration of conservation initiatives, a place where visitors can observe energy and water conservation in action.

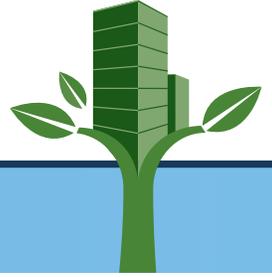
The building design is sensitive to the natural environment and yet meets all the requirements of a contemporary education centre. Key design features include the following:

- three 44 m³ cisterns
- on-site sewage treatment
- extensive landscaping using local plant species
- a ground source heat pump system for heating and cooling
- non-polluting materials, finishes, and furnishings

Reducing the Impact of Urban Development

The Centre for Conservation is a protected natural area within a rapidly urbanizing region. Many measures were taken to reduce the impact of building construction and operation on local habitats. Exterior lighting will not spill onto neighbouring properties or into natural areas. A reflective metal roof and a gravel parking lot will not contribute to the warming urban atmosphere.

Several measures on the construction site prevented soil erosion and thus sedimentation impacts in the nearby river. Stormwater runoff is reduced by the use of three 44 m³ rainwater cisterns. Cistern overflow is directed through a grassy swale and into a nearby wooded area where the water is filtered and absorbed by the soil.



From Source to Treatment, Not a Drop is Wasted

Water conservation is a vital concern in the Niagara Region, where water supplies can be scarce, and thus careful water use was a guiding principle during building design. An outdoor irrigation system was eliminated through the use of native landscaping plants. Indoors, water-conserving plumbing fixtures were used throughout the Centre. Rainwater stored in cisterns is used for toilet flushing, further reducing the use of treated water.

All wastewater is treated by an innovative sewage treatment system called a [Waterloo Biofilter](#). The environmental impacts of the system are significantly less than those associated with conventional septic systems. The resulting effluent is of higher quality, requires less space, and does not require a sand bed.

These measures result in a remarkable 87% reduction in water use.

Ground Source Heat Pump System

The earth itself is an integral part of the Centre's mechanical system. Ground source heat pumps use the latent warmth of the earth in winter to heat the building. There are many times when the air in one section of the Centre will be warmed by sunlight entering through large windows. At these times, the heat pump system will move this warmed air to cool parts of the building, and this eliminates the need for mechanical heating.

During the summer, excess heat from the building will be exhausted to the underground heat pump tubing instead of to the outdoors. This eliminates much of the need for a mechanical air conditioning system.

Other energy conservation measures include high efficiency lighting, energy recovery ventilators, and a well-insulated building envelope. The Centre is expected to achieve a 62% annual energy savings.

The Environment Indoors

The Centre for Conservation is primarily a public education centre, and thus the quality of the indoor environment—air quality, daylighting, temperature and humidity control—is very important.

Measures taken during construction prevented contaminants from entering the indoor air stream. Construction materials and furnishings were selected for low toxicity. These materials include adhesives, sealants, paints, carpet, composite wood, and laminates. Furnishings are GREENGUARD certified.

Adjustable air inlets allow for individual control over workplace air temperature and volume, and over light levels (from natural and artificial lighting). The Centre has abundant natural lighting through large windows that also provide wide-angle views of beautiful landscaping. Light levels are controlled by both occupancy and daylighting sensors.

For more information, contact
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