Being green – and living up to it.

THE BIG IDEA

It is often said that we make buildings and then the buildings make us. The Lake Centre is one of the most environmentally well designed buildings in North America and even before it was completed, was recognized with the Bronze Award for North America in the global Holcim Awards for Sustainable Construction in 2008.

AN OUTSTANDING PLACE TO ATTRACT OUTSTANDING PEOPLE

Students and researchers, some visiting from around the world, enriching the learning of Laurentian students, working alongside university and government scientists in the Cooperative Freshwater Ecology Unit, and all contributing to the future of fresh water.

USING LOCAL RESOURCES

- Building material brought to the site by truck, such as the jack pine beams, red pine decking, cedar cladding, Manitoulin limestone, and the drywall were produced and transported from within 800 km of the site.
- Wood siding is untreated white cedar from Manitoulin Island. Resistant to decay, it will weather naturally and last 50 years – long enough for new cedar to grow.
- The main frame of both buildings is jack pine, the overhead decking is red pine. Both came from the forest near Chapleau. The red pine was milled in Thessalon and the laminated beams were manufactured in Quebec.

THE STORY IN THE ROCKS

- Glacial boulders scattered over the site as though left by the melting ice sheet of 10,000 years ago, give voice to 3 billion years of geological history. Bedrock on the hill shows the violence of the Sudbury meteorite impact.
- The "Silver Water" limestone on the face of the building is from Manitoulin Island. Here and there it shows fossil corals that lived in the seas of 450 million years ago.

USING RAIN WATER

- Rain water from the pond is used for flushing toilets instead of municipal drinking water. It passes through sand filters and is disinfected with ultra-violet light before being used and then heading to the city's sewage treatment plant.
- Rain falling on the parking lot drains through the gaps between the lockstone and then to the pond.
- All boats, canoes, paddles, and nets are washed with filtered and disinfected pond water between trips to lakes to remove potentially invasive species. Hydrogen peroxide finishes the wash and the water drains through grit and gravel back to the pond.
- Using rainwater saves about 80% of the municipal water used in conventional buildings of this size.

INDOOR ENVIRONMENTAL QUALITY

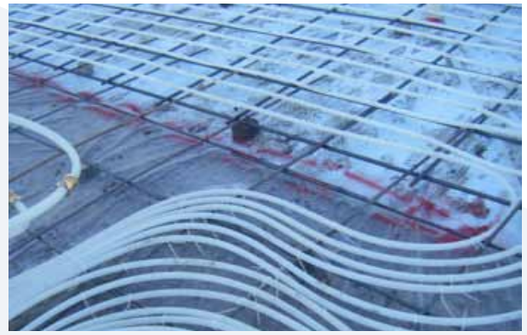
- The carpet and all the glues and materials and finishes used inside the building are low in VOC (volatile organic compound) emissions.
- Plentiful glass and the narrow shape of the building make for bright daylight everywhere. "Sun harvesters" dim internal lights the brighter the day.
- Offices, study areas, labs and classrooms have fresh air vents that allow in the breeze off the lake.
- The open lab on the second floor is classified at the lowest biohazard level (Level 1- water and mild chemicals). Three enclosed labs with fume hoods are located along the south wall.
- The floor of the lab is natural linoleum made of jute and linseed oil not petroleum-based plastic.

ENERGY EFFICIENCY

Buildings in Canada are responsible for 17% of greenhouse gas emissions through the power they consume. All energy saving technology in the Lake Centre is off the shelf and could be widely used. We expect to consume only about 23% of the electricity from the grid compared with conventional buildings of this size. Low energy buildings must soon become the standard instead of the exception.

GEOTHERMAL HEATING SYSTEM

Energy from the natural warmth of the bedrock under the parking lot contributes to winter heating for both buildings. A mixture of glycol and water is warmed to about 8^0 C as it circulates through tubes in 40 holes drilled 120 metres deep below the parking lot. The glycol mix passes through a heat exchanger and heat pump where purified "heating water" is warmed to 44^0C before circulating through a network of tubes embedded in the concrete floor slabs of both buildings. In summer the same circulation carries warmth from the building down to the bedrock where it is stored for the winter.



PREPARING FOR THE CLIMATE OF 2050

Winters in the future will be shorter and less cold while summers will be hotter. By 2050 keeping buildings cool in Northern Ontario may require more energy than heating them in winter. Insulation, window shading, natural shade from trees, and green roofs will become more important.

STAYING COOL

- Horizontal window shades on the south side of the main building intercept high angled sun during the summer keeping the building cool.
- Vertical window shades provide shade from late afternoon summer sun for north facing rooms on the second floor. Trees shade the ground floor.
- Windows in the high ceiling of the atrium above the foyer open automatically when the air temperature inside the windows reaches 27^0C

WARMING OUR WATER WITH THE SUN

- Solar heat exchange panels on the roof of the Watershed Building heat glycol in thread thin aluminum tubes that then warms water before it is heated by a natural gas boiler to supply hot water.

GREEN ROOFS

- Drought-resistant blueberries growing in soil on both roofs reduce heat gain during the summer and heat loss from the buildings during winter. Rain is absorbed in the soil instead of all draining off as storm water.

SOME STATISTICS

- Main building: 22,865 sq. ft (2,125 sq. m)
- Watershed building: 5,576 sq. ft (518 sq. m)
- Volume of red pine, jack pine and cedar used in the structure and cladding: 367 cubic metres, storing about 180 tonnes of carbon

Vale **LIVING WITH LAKES CENTRE**
CENTRE POUR LA VITALITÉ DES LACS Vale

DESIGNING WITH NATURE

The curved shape of the Lake Centre follows a contour of the shore of Ramsey Lake where the water level was about 800 years ago. Glacial rebound is raising the land and will lift the building about another half metre in the next 100 years.

The shape of the centre seen from above, especially the way it divides on either side of the rock mound visible from the foyer, makes it seem like a flowing glacier. Whatever your imagination sees, the lines of Nature's architecture are evident.

BUILT TO INSPIRE

Sudbury has a rich history, an epic story of environmental degradation and successful reclamation. The Vale Living with Lakes Centre is designed to be a constant reminder of our relationship to the water and the land, and an example of using technology and making choices for the best future of that relationship.

We hope our building inspires you.

LaurentianUniversity
Université**Laurentienne**

Vale **LIVING WITH LAKES CENTRE**
CENTRE POUR LA VITALITÉ DES LACS Vale

840 RAMSEY LAKE ROAD
SUDBURY, ONTARIO
705-675-1151, EXT. 3861
www.livingwithlakes.ca

A Global Centre of Excellence for Freshwater Protection and Restoration