

SERVICES AND PRODUCTS

Greenland International Consulting Engineers

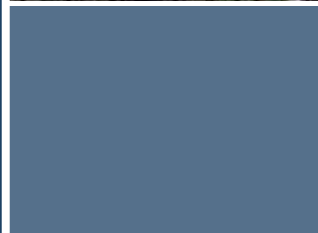
- municipal infrastructure
- environmental management
- landscape architecture
- monitoring
- water resources

Greenland Technologies Group

- information systems
- research & development

Urban Watershed Group

- land development engineering
- site servicing design



GREENLAND[®]
group of companies

Forging new ideas and partnerships while providing high-quality services at a "time for change."



GREENLAND INTERNATIONAL GREENLAND TECHNOLOGIES GRO



INTRODUCTION

"Progress comes from the intelligent use of experience." – Elbert Hubbard

Today, engineering ranks among the most creative of endeavors. Engineers are part of solutions to most environmental problems due to population growth around the globe.

A reputable engineering and information technology enterprise must first establish an extensive track record based on the services it advertises. Since 2003, the **GREENLAND**® Group has scored a perfect "10" by providing high-quality consulting services. The organization has earned an enviable reputation as innovative, Canadian-based companies that provide engineering expertise in the environmental and urban land disciplines.

The **GREENLAND**® Group includes Greenland International – Consulting Engineers, Greenland Technologies Group, Urban Watershed Group and other professional affiliations. Our core business model combines traditional engineering methods with emerging technologies to provide sustainable solutions for public and private sectors. **GREENLAND**® understands that sophisticated engineering practices can be combined



effectively with a "conservationist ethic" to find solutions that can be arrived at in no other way.

Since inception, the **GREENLAND**® Group has demonstrated innovation by forging new ideas and partnerships from scoped research with civil engineering projects. These projects combined infrastructure design, scientific applications and geospatial technologies to derive value added deliverables. As technologies move from leading edge to mainstream, we are keeping pace by enhancing our services and technical systems in response to the needs of our clients. This includes award winning expertise in environmental engineering and urban land servicing, as well as consulting on related matters of policy, regulations and standards.

The **GREENLAND**® Group includes core business units highlighted in this brochure. Our business model includes nurturing the collective culture of our teams to ensure workplace environments where our people consistently do their best. Management supports the education, training and promotion of our staff to further enhance our solid reputation.

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WHY US?

Since 2003, the **GREENLAND**® Group has accomplished many things. Our organization has evolved (and thrived) in a competing global village.

The reason for our success is no secret. It is because of our commitment to innovation; attention to detail; and, enterprise strengths – but with the personality of a small business.

MUNICIPAL INFRASTRUCTURE

"Engineering is an activity other than purely manual and physical work which brings about the utilization of the materials and laws of nature for the good of humanity."

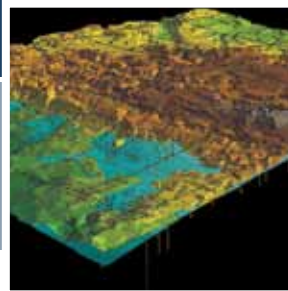
– R. E. Hellmund

We view our role on urban land projects as a proactive one, to ensure that work plans are expedited and our clients' needs are perceived as priorities. This philosophy, combined with a commitment to open interaction with our clients, consistently allows **GREENLAND**® to achieve methodical, practical, yet innovative approaches to problem solving, resulting in viable, cost-effective results.

We offer a breadth of experience with subdivision engineering; water and wastewater system designs; site remediation; fuel storage tank compliance; and, project management. As each project is unique and requires a tailor-made approach to ensure all issues are addressed, **GREENLAND**® knows the necessary planning, engineering and



GREENLAND CONSULTING ENGINEERS URBAN WATERSHED GROUP



consultation tasks. Master servicing plans, for example, should serve as “blueprints” for sustainable developments as we share the same environment with you. This includes the water we drink, the roads we travel, the businesses and industries where we work, and the communities we call home.

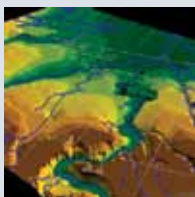


ENVIRONMENTAL MANAGEMENT

“We are faced with the fact, my friends, that tomorrow is today. Procrastination is still the thief of time. Over the bleached bones and jumbled residues of numerous civilizations are written the pathetic words ‘Too late.’”

Dr. Martin Luther King

Our watershed projects utilize professional, multi-disciplinary teams. The cost of preemptive planning, for example, is a small percentage of a development’s cost. Despite its low cost, it can provide invaluable information that can save money during infrastructure design and construction stages. It can also prevent costly rehabilitation works. Our completed contracts are testaments to this fact. Projects use an ecosystem approach and software developed by GREENLAND®, including an integrated water budget, nutrient budget and Best Management Practices model for Public-Private Partnership (P3) projects.



Our team of experts firmly believes that, in order to improve the quality of life anywhere in the world, society must first protect that which is already healthy. Even though each project is client driven, it is ultimately generated by a unique set of circumstances that influence the watershed being examined. While tools and methods may change from time to time, our commitment to the needs of our clients remains a priority.

MONITORING

“You can observe a lot by just watching.” - Yogi Berra

GREENLAND® recognizes that when developing sustainable solutions, any strategy is based on finite information and assumptions about development timing and build-out activity. It is therefore crucial for a project’s successful implementation that a set of targets or indicators be determined at the outset, which can be monitored over time. This applies not only to the natural environment but municipal infrastructure, including existing sewer systems to assess surplus capacities for infill developments (including Brownfield sites) and on-site drainage works ensuring performance and compliance.

Monitoring data helps determine whether a system’s components have been properly conceived, or if changes to a master plan are needed. This includes adapting a



monitoring program to account for changes that have developed in the same area over time.

To accomplish this goal, our specialists use state-of-the-art equipment and facilities for surface water, groundwater and sewer infrastructure projects. Our inhouse teams collect important data that will allow GREENLAND® to find solutions to maintain or enhance the features and functions of the environment.

WATER RESOURCES

“Water is the best of all things.” - Pindar (c. 522 BC - c. 433 BC), Olympian Odes

The major connecting link in a watershed or basin ecosystem is the flow of water. The flow pattern is part of the water balance. How and where the water flows determines the quality of the water, the shape and stability of river banks, the health and diversity of the vegetation, and the availability of fish and wildlife habitat. The primary objective of our approach to water resources projects is to ensure that the operational balance of surface water, groundwater and/or coastal water systems are maintained and that any deliberate interventions are made with a perspective of the entire ecosystem.





INFORMATION SYSTEMS

"It's so much easier to suggest solutions when you don't know too much about the problem." - Malcolm Forbes

Advances in computer technology have allowed our engineering disciplines to explore more design options than in the past. As new technologies are introduced into the market, GREENLAND® keeps pace through its own software development, client training, and dissemination of knowledge on how these technologies relate to our business units.

GREENLAND® originally distributed software for Environment Canada. We then developed and distributed worldwide a popular hydrologic model for stormwater management. After drinking water tragedies in Canada and U.S., we then focused our efforts on developing software tools for nutrient trading and source protection programs. This includes an integrated water balance, Best Management Practices and assimilative capacity model. The software can also be used in the Americas and overseas. The GIS-based model for Canada is called the "Canadian Watershed Evaluation Tool", or "CANWET™". The program includes an intuitive and stable interface to quickly create watershed models. GREENLAND® has incorporated unique model features and customized output files, cross scenario plotting, importing routines and search tools. Further upgrades are ongoing. The current model has infrastructure and climate change modeling capabilities.

GREENLAND® has also developed an integrated real-time hydrologic model with flood forecasting abilities. The software package is known as ISWMS™ (Integrated Stormwater and Watershed Management System).

RESEARCH & DEVELOPMENT

"The famous balance of nature is the most extraordinary of all cybernetic systems. Left to itself, it is always self-regulated."

- Joseph Wood Krutch

The overriding issue of our time is the rapid degradation of the ecosphere. It affects all of us. Recent tragic events have served to forcefully inform, if not shock us, into the realization that systems originally designed to manage and protect water or air may very well be broken or, at best, not operating effectively. The reality may be worse – the environmental infrastructure may not exist.

GREENLAND® has been responsible for environmental research to address problems related to water supply, climate change and water quality, including

- Stormwater management pond performance and maintenance;
- Climate change modeling and web-based information management systems;
- Watershed health and stream restoration monitoring techniques;
- Remote sensing applications for flood hazard mapping;
- Integrated green roof and vegetated or "breathing wall" technologies;
- Natural treatment floating islands rooted in operating principles of biomimicry and hydroponics.

- Integrated mechanical and chemical treatment technologies to safely eradicate invasive fish species in waterways; and,
- Testing of marketable products for removing filterable reactive phosphorous from water-bodies.



CORPORATE OFFICES

Greenland International Consulting Ltd.
Greenland Technologies Group Ltd.
Urban Watershed Group Ltd. (2006)

Head Office: 120 Hume Street
Collingwood, ON Canada L9Y 1V5
Tel.: (705) 444-8805
Fax: (705) 444-5482

Suite 304 - 15955 Airport Road
Caledon East, Ontario, Canada K7C 1H9
Tel.: (905) 584-1458
Fax: (905) 584-1461

E-mails: greenland@grnland.com
urbanwater@grnland.com

Website: www.grnland.com

Since 2003, the GREENLAND® Group has provided developers, industries, utilities and all levels of government with niche services combined effectively with a conservationist ethic. This business model is unique and allows us to find sustainable solutions that can be arrived at in no other way.

R. Mark Palmer, P. Eng.
President