Planning Solutions Inc.

Planning Solutions Inc. is an Ajax, Ontario based firm offering stakeholder engagement, planning and resource management services. Planning Solutions Inc. (PSI) is recognized for its ability to leverage social capital at the community level and for producing documents that reflect consensus perspective. Karen Wianecki, Director of Practice, is a Registered Professional Planner and Member in good standing with both the Canadian Institute of Planners and the Ontario Professional Planners Institute. She is a qualified mediator and professional facilitator who specializes in stakeholder engagement. Planning Solutions Inc. has been providing professional planning expertise to public and private sector clients since 2000. PSI believes in providing a customized approach to address the needs of individual clients and promotes a whole team approach to project management. As a former provincial planner responsible for approving Official Plans and Zoning By-laws on behalf of the Province, and as the former Municipal Plan Input & Review Coordinator for the Ministry of Natural Resources, Karen has a broad base of experience in municipal, provincial and resource management policy development and implementation.

PSI's key strength is an ability to develop strong collaborative processes and partnerships. Karen Wianecki, Director of Practice is a seasoned facilitator, mediator, expert communicator, professional planner who has worked with many communities to develop plans for the future while honouring the diverse and at times diverging perspectives of participants. As a leader in collaborative process and co-creative planning, PSI has partnered with public agencies and communities. PSI works collaboratively with communities - municipalities, government, private sector, First Nations and citizens to develop polices, plans and programs by advancing effective and successful civic engagement in public sector decision-making processes. A Company Profile has been included in Appendix B.

Some of our most recent and particularly relevant projects include the following:

<table>
<thead>
<tr>
<th>Recent &amp; Relevant Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Karen Wianecki</strong></td>
</tr>
<tr>
<td>• Currently working with Baird Engineering and Dr. Larry Hildebrand to develop a Nearshore Framework for the Great Lakes. Under contract to Environment Canada.</td>
</tr>
<tr>
<td>• Facilitated hundreds of community meetings.</td>
</tr>
<tr>
<td>• Designed multiple community and stakeholder engagement processes, working with upper levels of government, municipalities and Conservation Authorities across Ontario.</td>
</tr>
<tr>
<td>• Developed Strategic Plans for KRCA, GRCA, Grand River CA, NVCA, LPRCA.</td>
</tr>
<tr>
<td>• Currently developing Strategic Plans for CLOCA and LSRCA.</td>
</tr>
<tr>
<td>• Developed watershed planning and regulation policy manuals for CVC, KRCA and ORCA.</td>
</tr>
<tr>
<td>• Facilitated workshops for MNR to address coastal process and climate change in the Great Lakes.</td>
</tr>
</tbody>
</table>
Karen Wianecki, M.Pl., MCIP, RPP

EDUCATION
MASTER OF URBAN AND REGIONAL PLANNING
Queen’s University, Kingston, Ontario 1985
HONOURS BACHELOR OF ARTS (SPECIALIST) DEGREE, GEOGRAPHY
University of Toronto, Scarborough, Ontario 1981

PROFESSIONAL AFFILIATIONS
Canadian Institute of Planners, Full Member
Ontario Professional Planners Institute, Full Member

Ontario Bar Association, ADR Sector Member
Ontario Waterpower Association, Member
National Association for Dialogue & Deliberation
National Roster & Native Sub-Roster, U.S. Institute for Environmental Conflict Resolution, Tucson Arizona, Roster Mediator

PROFESSIONAL EXPERIENCE

DIRECTOR OF PRACTICE, Planning Solutions Inc.
Founder and Director of Practice of Planning Solutions Inc., a professional consulting firm specializing in multi-party stakeholder engagement and conflict resolution, complex project management and resource-based planning. Service offering and clients are outlined below:

Public Consultation & Stakeholder Engagement: Applying Systems Thinking to Stakeholder Engagement

Stakeholder Engagement Strategy Development & Training
- Northern Ontario School of Medicine. Stakeholder Engagement Strategy. 2014.
- Ontario Ministry of Natural Resources, Species at Risk Branch. April 2011.
- Nottawasaga Valley Conservation Authority. 2010.
- Ontario Public Service. 2009.

Federal Government:
Provincial Government:
- Ontario Ministry of Natural Resources:
  - Biodiversity & Climate Change – A Series of MNR Workshops. March – April 2012.
  - Stakeholder Consultation – Habitat Regulations for 7 Species (Bent Spike-rush; Common Five-lined Skink, Eastern Foxsnake (Carolinian & Georgian Bay populations), Gray Ratsnake (Carolinian & Frontenac Axis population) & Rapids Clubtail. January 2012.
  - Species At Risk Program Advisory Committee Inaugural Meeting. 2008.
  - Renewable Energy Education Advisory Committee.
- Saskatchewan Industry & Resources. Intergovernmental Working Group on Mining Efficiency & Effectiveness.

First Nations: Respecting Aboriginal Way of Life
- Facilitated the Aboriginal Traditional Knowledge Focus Group for the Ontario Ministry of Natural Resources designed to develop a Statement of Aboriginal Perspectives on the Use & Application of Way of Life Knowledge in Resource Management Decision Making.
- Facilitated the Aboriginal Traditional Knowledge Focus Group responsible for providing direction and guidance to Ontario Parks on the updated Provincial Parks & Protected Areas Planning Manual.

Municipal & Regional Government: Creating a Sense of Ownership - Engaging Communities & Community Members.
- Regional Municipality of York:
Transportation Services Division. Operationalizing the Transportation Master Plan. Staff Workshop. 2011.

Transportation Services Division, Lands & Natural Heritage. Stakeholder Workshop to Advance the Greening Strategy. October 2011.


Transportation Services Division. South Yonge Street Corridor Master Plan. Undertaken with The EDA Collaborative Inc. 2011.

- Township of Georgian Bay:


**Industry: Building Effective Partnerships**

- Ontario Waterpower Association

**Conservation Authorities: Promoting Productive Dialogue**

- Credit Valley Conservation:
  - Sustainable Funding Project. 2011, 2012.
  - Planning Services Enhancement Project. 2011.
  - Strategic Plan Review. 2008.
  - Black Creek Subwatershed Study. Inaugural Advisory Committee Meeting. 2008.
- Lake Simcoe Region Conservation Authority:
Resource Management & Municipal Planning: Balancing the Interests of Uses & Users

- Ministry of the Environment:
- Ministry of Natural Resources:
  - Development of the Alternative Dispute Resolution Process for Resource Stewardship Agreements, associated with Forest Management Planning in Ontario
  - MNRNegotiating Team Member, Extraction of Aggregate Below the Water Table on Prime Agricultural Lands (Position Negotiated with the Ministry of Agriculture & Food)
  - Municipal Plan Input & Review Coordinator.
  - Coordinated MNR Response to Ontario Hydro Demand/Supply Plan Hearings.
- Township of Georgian Bay:
- York Region. South Yonge Street Corridor Master Plan. Completed with the EDA Collaborative Inc.

Fact Finding & Program Evaluation: Doing Things Right & Doing the Right Things

- Durham Family Court Clinic. Program Evaluation. Interim Assessment of the Mediation & Information Services Provided to the Superior Court of Justice (Family Division), Durham Region.
- Ministry of Natural Resources:
  - Assessment of Forest Management Plans in Ontario & the Recognition of Resource Based Tourism Values

Report Writing: Providing Clarity & Guidance


Strategic Planning: Embarking On The Path of Progress
• Centre for Excellence in Mining Innovation. Developing a Strategic Research & Development Framework for Sustainable Mines and Sustainable Mining.
• Conservation Ontario:
• Credit Valley Conservation Agency. Strategic Plan Review. 2007.
• Kawartha Region Conservation Authority. Strategic Plan Update. 2011.
• Lac La Ronge Indian Band Strategic Plan. 2006.
• Ministry of Municipal Affairs & Housing. Enhancing the Planning Services Delivery System from a Strategic vantage point.
• Ministry of Natural Resources. Species At Risk Strategic Visioning & Priority Setting Workshop. 2010.
• Nottawasaga Valley Conservation Authority. Strategic Plan Review. 2013.
• Northumberland County Domestic Violence Monitoring Committee. Critical Priority Setting & Governance Model Development. 2012.
• Nottawasaga Valley Conservation Authority. Strategic Plan.
• Ontario Waterpower Association:

Environmental Mediation & Adjudication: Specializing in Multi-Party, Public Policy Disputes
• Ministry of Natural Resources & Canadian Boreal Forest Agreement. Abitibi River Forest. Options to Address the Caribou Conservation Plan. 2012.
• Saskatchewan Forest Service. Co-Mediator with Frank Handy, SFH Group – Multi-Party Stakeholder & First Nation Issue in North-Central Saskatchewan. 2008
• Staff Support to the Ontario Forest Industry & Resource-Based Tourism Sector, Resource Stewardship Agreements Memorandum of Understanding.
• Victim Offender Reconciliation Program. Community Mediator.

1999 – 2002 PROJECT COORDINATOR - Alternative Dispute Resolution Program, Forest Management Branch, Ministry of Natural Resources

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Position</th>
<th>Department/Branch</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994 – 1995</td>
<td>A/MANAGER, STRATEGIC PLANNING</td>
<td>Corporate Policy &amp; Planning Branch, Ministry of Natural Resources</td>
<td>Toronto</td>
</tr>
<tr>
<td>1990 – 1994</td>
<td>POLICY OFFICER</td>
<td>Corporate Policy &amp; Planning Branch, Ministry of Natural Resources</td>
<td>Toronto</td>
</tr>
<tr>
<td>1987 – 1990</td>
<td>PROGRAM COORDINATOR</td>
<td>Plan Input &amp; Review Program, Ministry of Natural Resources</td>
<td>Toronto</td>
</tr>
<tr>
<td>1987</td>
<td>POLICY ADVISOR</td>
<td>Ontario Buildings Branch, Ministry of Housing</td>
<td>Toronto</td>
</tr>
<tr>
<td>1986 – 1987</td>
<td>PROJECT PLANNER</td>
<td>Plans Administration Branch, Ministry of Municipal Affairs</td>
<td>Toronto</td>
</tr>
<tr>
<td>1983 – 1986</td>
<td>COMMUNITY PLANNER</td>
<td>Plans Administration Branch, Ministry of Municipal Affairs</td>
<td>Toronto</td>
</tr>
</tbody>
</table>
Mary Judith (Judy) Sullivan, (P. Eng.) has over 32 years of experience working across the province and offers a variety of professional engineering and project management services including: coastal engineering, coastal zone, shoreline management. Judy Sullivan, P. Eng. is the President of Aqua Solutions 5 Inc. and is a professional civil engineer with over thirty two years experience, bringing in a unique expertise in the fields of coastal, river and geotechnical engineering, adaptive integrated shoreline and watershed management, assessment, policy, technical guidelines and standards development. Ms. Sullivan has conducted numerous structural assessments for coastal structures and has been project manager for many shoreline construction projects over her 32 year career as a coastal engineer. She has been an expert witness in several litigation cases related to coastal engineering issues, Provincial Policy and CA Regulations. Ms. Sullivan is involved in projects which integrate the physical processes, engineering, planning, and environmental aspects of ecosystem management along coastal environments and watershed systems. She is involved various in multi-disciplinary team projects, integrating the natural hazard issues with planning, physical processes, environmental, social and economic aspects of project management.
**Aqua Solutions 5 Inc.**
**Judy Sullivan, P. Eng.**
**President**

15 Woodglen Way, Markham, Ontario L3R 3A8
Phone & Fax: 905-604-1295

Email: aquasolutions5@rogers.com
http://MaryJudithSullivan.com

**COASTAL ENGINEERING, INTEGRATED SHORELINE MANAGEMENT, POLICY & TECHNICAL GUIDELINE DEVELOPMENT, SHORELINE MUNICIPAL CLASS EA**

Ms. Sullivan has been an ‘expert witness’ for various litigation on shoreline issues related to the Provincial Policy Statement (PPS) and the CA’s “Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses” legislation (Flooding, Erosion & Dynamic Beaches).

On behalf of the Ministry of Natural Resource (MNR) Ms. Sullivan developed and provided the Technical Shoreline Training (Flooding, Erosion & Dynamic Beaches) for the Great Lakes, Large Inland Lakes and St. Lawrence River to all of the Conservation Authorities Staff across the Province.

Ms. Sullivan was co-author with the MNR staff of the OMNR Understanding the Hazards document: OMNR. (2001) Understanding Natural Hazards. Great Lakes – St. Lawrence River System and large inland lakes, river and stream systems and hazardous site. An introductory guide for public health and safety policies 3.1 provincial policy statement. Published by Queen’s Printer for Ontario. Copyright © 2001 The Queen's Printer for Ontario.

The Provincial Natural Hazards Training Manual – ‘Understanding the Hazards’ included the following area requirements:

- Great Lakes - St. Lawrence River System (Flooding, Erosion & Dynamic Beach),
- Large Inland Lakes (Flooding, Erosion & Dynamic Beach),
- River and Stream Systems (Flooding & Erosion),
- ‘Stable Slopes - Geotechnical Principles’ for the Province of Ontario’.

Ms Sullivan worked as a team member (one of the authors) in the development of the PPS Section 3.1: Public Health and Safety Policy and the final production of the following technical documents:


OMNR (2001). Dynamic Beach’s for the Great Lakes – St. Lawrence River. Published by Watershed Science Centre, Copyright © 2001 The Queen's Printer for Ontario.

Ms. Sullivan was part of the team which developed and produced the technical guides. It was a multiyear project where coastal engineering processes were detailed and procedures.

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**EDUCATION & MEMBERSHIPS**

- Bachelor of Applied Science (Civil Engineering), Queen’s University, Kingston, ON, 1983
- Professional Engineers Ontario (PEO), Member
- Canadian Coastal Science and Engineering Association (CCSEA), Board of Directors
- Coastal Zone Canada (CZC), Member
- Certified (NAUI) diver
- Newbury Hydraulics (March 2009) 2 day Stream Restoration Design Course by Bob Newbury

**EMPLOYMENT HISTORY**

- May 2009 – Present
  Aqua Solutions 5 Inc., President
- 2008 – April 2009
  Water’s Edge Environmental Solutions Team Ltd. Senior Project Manager
- 2006 – 2008
  The Jones Consulting Group, Senior Project Engineer
- 2006
  Ontario Ministry of Natural Resources (OMNR), Source Water Protection, Senior Policy Advisor
- 1997 – 2006
  Aqua Solutions, President
  Ontario Ministry of Natural Resources (OMNR), Coastal and River Engineer
- 1985 – 1992
  Toronto & Region Conservation Authority Coastal and River Engineer
- 1984
  Public Works Canada & Canadian Coast Guard Coastal Engineer
- 1983
  Johnson Sustronk Weinstein + Associates, Jr. Coastal Engineer

**REFERENCES AVAILABLE UPON REQUEST**
Coastal Engineering and Hazard Management Assessments (Flooding, Erosion and Dynamic Beach) for numerous private shoreline sites along the Great Lakes, Large and Small Inland Lakes (e.g., Lake Ontario, Lake Huron, Georgian Bay, Lake Erie, Lake Simcoe, etc.). Site and structure assessments, evaluations, reports, construction works inspection and management, recommendations on approaches to satisfy the various approval agencies (e.g. Federal Department of Fisheries and Oceans (DFO), Ontario Ministry of Natural Resources (MNR), Transport Canada (TC), local Conservation Authorities (CA), Municipalities & Townships) have been conducted. A variety of site conditions involve coastal; erosion processes, flooding, dynamic beach, slope stability issues, design of shoreline structures, assessment of existing shoreline structures, dredging, docking and boathouse construction and approvals.

Ms. Sullivan carried out the Credit Valley Conservation (CVC) Shoreline Inspection and Inventory Assessment: Structural Assessment Version 1.2 Final Report (Nov 2014) as part of the CVC LOISS Assessment of Coastal Engineering Structures Report. Just over 6 km of the CVC shoreline was assessed; consisting of conducting field investigations and evaluations, shoreline characterization, maintenance and monitoring priorities. She developed an evaluation criteria and a ranking system, evaluating site conditions and characteristics of the shoreline and protection works was carried out. Priority sites were identified and ranked for (1-Risk of Damage, 2-Structure Failure, 3-Personal Safety, 4- Material Condition 5-Environmental Considerations). Recommendations for the future restoration/rehabilitation opportunities and future shoreline construction were also made.

Ms. Sullivan is currently conducting site inventory assessments of the shoreline characteristics, shoreline structure conditions, and erosion for 15 Islands along of shoreline of the St. Lawrence River. Ms. Sullivan also carried out a general assessment of the shoreline structures and erosion, along with a literature review on ship erosion.

Conducted evaluations of Shoreline Structures for The Town of Oakville in 2005-06 and again in 2011-12. The project consisted of conducting field investigations and evaluations, shoreline characterization, development of evaluation criteria and ranking system, evaluation of current conditions and characteristics of the shoreline and protection works. Priority sites were identified which will need immediate protection works, potential recommendations for the shoreline construction and rehabilitation projects, which will meet the requirements of the various agencies. Project costs were estimated for the high priority sites that will need immediate attention. Development of an evaluation scale for Risk of Damage, Personal Safety, Material Condition, Material performance, and Environmental Factors was carried out. Based on the assessment of the conditions and the evaluation scale, the sites were prioritized outlining: immediate or potential construction/rehabilitation, and/or monitoring. The data was compiled into a GIS-based database containing the inventory as well as a summary of the existing conditions.

Conducted numerous assessments of shoreline structures throughout the province: reviewed life expectancy of the structures, make recommendations for maintenance, repairs and/or reconstruction of structures. Associated liabilities (risk of Failure), risk management options and costing are routinely carried out throughout these assessments. Ms. Sullivan has been project manager for numerous shoreline construction projects over her 30 year career as a coastal engineer.

Ms. Sullivan provided assistance as the Adaptive Management Coordinator to the International Joint Commission (IJC) for the Upper Great Lakes Study. This involved review of various aspects of the Adaptive Management Technical Working Group (AMTWG) which focused on many aspects of the Upper Great Lakes Study; Elements of AM Strategy, Risk Evaluation & Plausibility analysis for future scenario’s (e.g. climate change models, Stochastic, Paleo etc.), Coping Zones, Multi-lake Regulation, Governance & Institutional Analysis, Outreach, and AM Findings and Recommendations. She assisted the AMTWG in review of documentation to support the AM areas of study and compiled their findings and recommendations to the Study Board for the Outreach Section of the Study Board Report. She also provided assistance to the Coastal Technical Working Group, coping zone, monitoring and Performance Indicator reports.

Provided an initial coastal engineering assessment and recommendations for the development of a Master Plan for Lafontaine Beach Park on Lake Huron, in the Township of Tiny. As part of the multi-disciplinary design team; identify the Dynamic Beach hazards setback and assist the design team in prioritizing areas for the development of the waterfront plan while maintain the protection of the natural features of the park.

In conjunction with Coldwater Consulting Ltd. and NRSI Inc. the next phase of the project moved forward with the Class EA process for Lafontaine Park. Determination of the approval requirements, feasibility for the possible options and opportunities for improvement to the water quality and recreational swimming at the park was the main focus of the study. Ms. Sullivan is currently the Project Manager and conducting a Municipal Class EA project for this project. The public has been involved throughout the development of various Phases of the project.
Provided an initial coastal engineering assessment and recommendations for the development of a Master Plan for Lafontaine Beach Park on Lake Huron, in the Township of Tiny. As part of the multi-disciplinary design team; identify the Dynamic Beach hazards setback and assist the design team in prioritizing areas for the development of the waterfront plan while maintain the protection of the natural features of the park.

In conjunction with Coldwater Consulting Ltd. and NRSI Inc., the next phase of the project moved forward with the Class EA process for Lafontaine Park. Determination of the approval requirements, feasibility for the possible options and opportunities for improvement to the water quality and recreational swimming at the park was the main focus of the study. Ms. Sullivan is currently the Project Manager and conducting a Municipal Class EA project for this project. The public has been involved throughout the development of various Phases of the project.

Ms. Sullivan in conjunction with Coldwater Consulting Ltd., carried out a study for the MNR for Lake Ontario and The St. Lawrence River shorelines. The IJC study which recommended a new regulation plan (referred to as Plan 2007) and this was the basis for the MNR study. The proposed IJC approach was examined and the existing Ontario policy instruments, programs and their effectiveness along with the implications of a long-term monitoring and adaptive management program, the shoreline management and shoreline policy issues and how they affect the province of Ontario were reviewed.

The study also reviewed current shoreline practices and made further recommendations on possible approaches on how the Province can assist in addressing the IJC development of an adaptive management and monitoring program. The study included a review and identification of issues from policy/planning, science/research and integration/government perspectives and identified approaches which could be considered to support the future development of an integrated adaptive management and monitoring approach for Lake Ontario and The St. Lawrence River shorelines.

Ms. Sullivan provided coastal engineering peer review services for the proposal ‘Review for Sediment Management & Dredging Strategy’ in the Municipality of Port Hope. Ms Sullivan assisted the Ganaraska Region Conservation Authority (GRCA) engineering staff in the review and assessment of several coastal proposals for a project which was to address the dredging issues along Port Hope Harbour.

Provided coastal engineering peer review services for the Maitland Valley Conservation Authority (MVCA) for a revetment design along the Lake Huron shoreline. An assessment of the project consisted of a review of the MVCA Regulation, Provincial Planning Policy and Technical Guides (review of the key aspects of addressing the hazards, the slope stability assessment, interpretation of the policy and resulting setbacks), which support the MVCA Regulation, along with the coastal aspects of the project. Ms. Sullivan provided recommendations to the MVCA on adherence to the technical requirements with respect to the Provincial Policy Statement (PPS) documents and the design of the revetment structure which also support the Authority’s shoreline regulation. She also has provided review for the revetment construction, site inspection, maintenance and continuing monitoring program.

Conducted a Coastal Flood Damage Study for Central Lake Ontario Conservation Authority (CLOCA) along the Port Darlington Shoreline. This study assessed shoreline characteristics, the type and degree of hazards (flooding, erosion, dynamic beach along Lake Ontario & Mouth of Creeks). An evaluation ranking system was developed; a field evaluation of current conditions and characteristics of the shoreline was also conducted. The high priority sections of the shoreline were identified, planning and policy recommendations were made on how to deal with these hazard sections along the shoreline. Existing development that is within the Hazardous areas were evaluated and recommendations were made following the Provincial Policy Technical Guidelines. Planning options were proposed on possible directions, which the Conservation Authority and Municipality could take for future and existing development proposals within the high priority hazard areas. Emergency evacuation routes were also recommended in accordance with Provincial Recommendations.

Provided coastal engineering assessment and recommendations for the; review, updating and redevelopment of the City of Orillia Waterfront Master Plan. Recommended repairs and the reconstruction of existing structures and possible future development sites. Reviewed and recommended docking and alternative boat launching facilities across the City waterfront park systems. As part of the multi-disciplinary team; prioritized areas for the development of the waterfront plan, identified areas in which traffic and public walkway where public safety was an issue, identified problems and recommended options to address the safety issues.

Ms. Sullivan developed and provided the Technical Shoreline Training (Flooding, Erosion & Dynamic Beaches) for the Great Lakes, Large Inland Lakes and St. Lawrence River to all of the Conservation Authorities Staff across the Province on behalf of MNR (March 2011).

Presentations have been made at numerous public meetings, open houses, council meetings and training sessions (e.g., Canadian Coastal Science and Engineering Conference, International Natural Channel Conference, Guelph and Queen’s University, Seneca College, International Polish delegation, engineering seminars, Conservation Authorities, Urban Development Industry, planning groups, Canadian Association of Montessori Teachers Conference, and a variety of local schools). Topics on coastal, river and geotechnical engineering, watershed management strategies, and municipal, environmental, ecosystem planning, Class Environmental Assessments were designed and presented.

Speaker at the “Your Watersheds Our Great Lakes,” A.D. Latornell Conservation Symposium. The session was entitled “Applications of the New Generic Shoreline Regulations” and discussed the issues related to the applications of slope stability, average annual recession rates, flooding, erosion and dynamic beach criteria along shorelines for the CA’s Shoreline Regulations.
Robin G.D. Davidson-Arnott

CONTACTS
Department of Geography, University of Guelph, Guelph, ON, Canada, N1G 2W1
Phone: (519) 824-4120 ext. 56719 (secretary)
FAX (519) 837-2940
e-mail rdarnott@uoguelph.ca
web page http://www.uoguelph.ca/geography/faculty/davidson-arnott-robin
home phone: (416) 231-2110; mobile (416) 347-7125

POSITIONS HELD:
2009- Professor Emeritus Geography, University of Guelph
1992-93 Scientist Ontario Ministry of Natural Resources (seconded)
1988-2009 Professor, Geography, University of Guelph.
1980-88 Associate Professor, Geography, University of Guelph.
1976-80 Assistant Professor, Geography, University of Guelph.
1975-76 Assistant Professor, Geography, University of Toronto (visiting)
1989 (and 4 subsequent occasions) Acting Chair, Geography, University of Guelph.

DEGREES:
B.A. Geography, University of Toronto 1970.
M.A. Geography, University of Toronto 1971.
Ph.D. Geography, University of Toronto 1975.

CAREER INVOLVEMENT IN GRADUATE STUDENT SUPERVISION
MSc. Thesis supervisor 35
Doctoral Thesis supervisor 6

RESEARCH FUNDING RECEIVED
My research until retirement was funded through grants from the Natural Sciences and Engineering Research Council of Canada (Discovery grants; Special Opportunities Research grant and Equipment grants); Parks Canada, and in 2011 as a Co-investigator on a National Science Foundation (USA) research grant (D. Sherman and J. Ellis Principal Investigators).

CONSULTING AND ADVISORY ACTIVITIES
While I am gradually winding down my research following retirement in 2009, I continue to be active as a consultant and advisor to various government organisations as well as working with groups and individual property owners in the Great Lakes and east coast of Canada on issues related to coastal erosion, coastal management and the effects of climate change.

Recent and relevant activities include:

Consultant to the Ausable Bayfield Conservation Authority on updating their Shoreline Management Plan, 2015-2016. (with Judy Sullivan, Coastal Engineer, Aqua Solutions; Karen Wianeki, Facilitator and Moderator, Planning Solutions Inc.; and Ryan Mulligan, Coastal Engineer, Queens University, Ontario – my primary role was to advise on dynamic beach and dune systems, erosion of cohesive bluff shorelines and determination of long-term recession rates for incorporation in setbacks for new development. Shoreline Management Plan, Consultant Recommendation Report, Ausable Bayfield Conservation Authority, August 2016. 126pp. + 5 appendices.

Consultant to Parks Canada, PEI National Park, July-September, 2016. Locating a new Dune Crossing Structure at Cavendish’s Main Beach: Geomorphic Considerations. 7 pages (with Dr. Jeff Ollerhead, Mount Allison University.


Advisor to Long Point Provincial Park on coastal dune restoration Fall, 2014 – replanting of marram and development of a virtual fence system to guide access to the beach

Consultant to Parks Canada, PEI National Park – remediation of beach and dune resources, Cavendish Beach, June, 2014 – development of a virtual fence system, improved walkway access to the beach and replanting of marram.

Consultant to the Geological Survey of Colombia at their First International Technical Workshop on the Marine Geology and Coastal Engineering of the Caribbean Coast of Colombia, November 13-16, 2013. Presented 4 lectures on: Dynamics of Sand and Gravel Beaches; Dynamics of Coastal Sand Dunes; Dynamics of Sand and Gravel Barriers; Shoreline Management Planning – the Ontario Experience.

Advisor to the Lake Huron Centre for Coastal Conservation –

Advisor to the Long Point Conservation Authority on Coastal Processes 2012-
Advisor to Credit Valley Conservation Authority on the development of their Lake Ontario Integrated Shoreline Strategy (LOISS) - 2012-


Consultant to Parks Canada, PEI National Park on strategies for redesigning dune crossings and beach access boardwalks in the face of sea level rise and coastal erosion - Spring, 2011

Coastal Erosion Issues - a review in support of the Atlantic Provinces Regional Adaptation Collaboration. Report prepared (with Dr. J. Ollerhead, Mount Allison University) for Prince Edward Island Department of Natural Resources and Forestry, 45 pages, March, 2011

Expert witness Ontario Municipal Board Hearing into the potential impact of a proposed condominium development at Crystal Beach, Fort Erie, Canada - Fall, 2010


Member of consulting committee for evaluation of proposed strategies for addressing erosion of Gibraltar Point, Toronto Island (Toronto Region Conservation Authority), 2010-2011.

Peer review of development proposal, Lake Huron (Maitland Valley Conservation Authority), November 2006-June 2009 (with J. Sullivan, Aqua Solutions).


PUBLICATIONS

**Books and Chapters in Books**


Referred journal articles


Published Conference Proceedings


ADAM BONNYCASTLE, MSc
37 Raglan St. ● Guelph ● Ontario ● N1H 2S4
226.821.3422 ● abonnyca@uoguelph.ca

PERSONAL PROFILE

• Organized and detail-oriented GIS and remote sensing specialist
• Proven teaching skills across a variety of disciplines
• Develop and implement GIS and remote sensing methodologies for environmental management and assessment, mostly in support of higher education and research

PROFESSIONAL EXPERIENCE

GEOMATICS SUPPORT SPECIALIST 2006 – PRESENT
Department of Geography, University of Guelph, Guelph, ON

• Advise on spatial analysis, remote sensing, and survey methods and techniques for faculty and students
• Primary author of Introduction to ArcGIS and Introduction to Spatial Analyst in ArcGIS course tutorials
• Development of “GIS for Public Health” online curriculum; successful course launch W15
• Design and update lab assignments for geomatics courses (ArcGIS, Idrisi, Geomatica)
• Guide the design and implementation of GIS-based research projects (graduate/undergraduate students; various departments)
• Write batch processing scripts (Python, EASI)
• Research geomatics equipment purchases and set-up
• Liaise with other departments that implement geomatics technologies

SESSIONAL INSTRUCTOR 2009 – 2015
Department of Geography, University of Guelph, Guelph, ON

• GEOG 2480 – Mapping and GIS (F14, F13, W12, F11, F09)
  o Lectures, labs, and formal written examinations to teach theory and practice of thematic cartography and introduce concepts of GIS
  o Supervise multiple Graduate Teaching Assistants
  o Earn positive student evaluations
• GEOG 4480 – Applied Geographic Information Systems (W15, W14, W09)
  o Lectures and informal meetings to guide students through the design and implementation of GIS-based research projects
  o Supervise multiple Graduate Teaching Assistants
  o Earn positive student evaluations

SPATIAL ANALYSIS CONSULTANT & CARTOGRAPHER 2006 – PRESENT

• Cartographic services for academic articles, reports, and posters
• Design GIS methodology to calculate distances, by road, between ~225,000 features
• Prepare spatial data inputs for hydrologic and wind erosion modelling
• Spatial and temporal analysis of urban growth in Ontario
• Classification of SPOT imagery to identify riparian zones
• Research and report on remote sensing technologies to estimate atmospheric aerosols
• Delineate watersheds and analyze landcover in contributing areas
• Digitize spatial database from historic landuse map of Guelph
ADAM BONNYCASTLE, MSc
37 Raglan St. ● Guelph ● Ontario ● N1H 2S4
226.821.3422 ● abonnyca@uoguelph.ca

TEACHING ASSISTANT 2004 – 2006
Department of Geography, University of Guelph, Guelph, ON
- GEOG 4480 – Applied Geographic Information Systems, and
- GEOG 3480 – Geographic Information Systems
  - Taught practical application of GIS technologies
  - Guided students with one-on-one technical GIS advice for their research projects
  - Provided constructive feedback to students on assignments and examinations
  - Consistently earned high student evaluations

RESEARCH ASSOCIATE 2003 – 2004
Applied Geomatics Research Group, Centre of Geographic Sciences (COGS)
Nova Scotia Community College, Middleton, NS
- Processed and validated raw LiDAR data of the Annapolis Valley, NS
- Conducted independent multi-day field work (including at backcountry locations)
- Collected and processed real-time kinematic GPS and total station data
- Updated validation scripts (EASI, AML)

APPLICATIONS PROGRAMMER, WATER RESOURCES GROUP 2003
ESRI Intern Program
Environmental Systems Research Institute, Inc. (ESRI), Redlands, CA
- Extended algorithm that interpolates streambeds from channel bathymetric data to work for streams/rivers with islands or multiple channels (VBA, ArcObjects)
- Programmatically tested spatial and non-spatial query methods on the ArcHydro data model TimeSeries table (VBA, ArcObjects)

OUTDOOR EDUCATOR & ADVENTURE TRIP LEADER 1999 – 2002
Chingachgook YMCA, Glens Falls, NY
- Taught Environmental Education curriculum: ecology; canoeing and hiking; corporate teambuilding; facilitated High Ropes program
- Designed, planned, and provided safe leadership for backcountry canoeing, hiking, and cycling trips lasting 1 – 3 weeks each

INSTRUCTOR 1998
Gould Lake Outdoor Centre, Harrowsmith, ON
- Provided safe leadership for extended wilderness hiking, canoeing, and sea kayaking trips

CANOE INSTRUCTOR & CABIN COUNSELLOR 1997
Camp Kandalore, Minden, ON
- Taught Ontario Recreational Canoeing Association Basic Canoe Levels; supervised campers; provided safe leadership for multi-day wilderness canoe trips
EDUCATION

MASTER OF SCIENCE, GEOGRAPHY
University of Guelph, Guelph, ON 2006
- Cumulative GPA: 84/100
- Developed object-oriented landcover classifications that identify major agricultural crops from Landsat TM imagery
- Analyzed how spatial and temporal land management changes affect hydrologic and economic modeling to target agricultural conservation
- Thesis: Environmental and economic implications of land management changes in agricultural watersheds

ADVANCED DIPLOMA, APPLIED GEOMATICS RESEARCH
Applied Geomatics Research Group, Centre of Geographic Sciences (COGS) 2004
- Graduated with Honours
- Studied the potential application of high-resolution LiDAR data for hydrologic modeling
- Applied GIS, remote sensing, and data management skills

ADVANCED DIPLOMA, GEOGRAPHIC INFORMATION SYSTEMS
Centre of Geographic Sciences (COGS) 2003
- Graduated with Honours
- Focused on GIS and remote sensing skills relating to environmental applications
- Conducted analysis using raster and vector data models; image orthorectification, enhancement, mosaicing, terrain analysis, and classification; developed data management skills; processed satellite, air photo, and LiDAR data

BACHELOR OF SCIENCE, ENGINEERING (WATER RESOURCES)
University of Guelph, Guelph, ON 2001
- Graduated with Honours
- Designed hydrologic systems such as flood control dams and structures, water supply and treatment systems, and soil erosion control devices
- Completed design work for the Town of Oakville incorporating storm water management facilities data into a GIS
MANUALS, REPORTS, AND PRESENTATIONS (SPEAKER IN BOLD)


OTHER EXPERIENCE

CYCLIST 2001

Bike for Cancer

• Cycled across Canada from Vancouver, BC, to St. John’s, NL, with two friends, as a fundraising event for the Canadian Cancer Society (www.bikeforcancer.ca)

RESPONDER 1999 – 2001

University of Guelph First Response Team, Guelph, ON

• Provided first aid to the campus community through an emergency on-call service and special event coverage
COMPUTER SKILLS

PROFICIENT
- ArcGIS, ArcInfo Workstation, ArcView 3.x
- Idri
- PCI Geomatica
- Python scripting
- ArcSWAT, AVSWAT
- MS Office
- Internet for research applications

MODERATE
- ArcHydro
- Kinematic GPS and Total Station surveying
- Adobe Illustrator, Photoshop
- Corel Draw, Photo-Paint
- EASI scripting

BASIC
- ArcObjects, AML, Visual Basic, VBA, VB Script
- ArcPad
- MapInfo, Vertical Mapper
- Oracle 8
- AutoCAD
- Flash MX Studio, MS FrontPage, HTML

CERTIFICATES
- Lifesaving Society Bronze Cross, Standard First Aid, and CPR (2006)
- ESRI ArcHydro (2003)
- American Red Cross Lifeguard Training, CPR, First Aid (2002)

REFERENCES
Excellent references are available upon request
Ryan P. Mulligan, Ph.D., P.Eng.
CURRICULUM VITAE

Personal Information

Ryan P. Mulligan, Ph.D., P.Eng.
Assistant Professor
Department of Civil Engineering, Queen's University
Kingston, ON, Canada  K7L 3N6
Phone: 613-533-6503, email: mulligar@queensu.ca
Website: http://www.civil.queensu.ca/Research/Hydrotechnical/Ryan-Mulligan/

Education

Postdoctoral Fellowship
Bedford Institute of Oceanography, Dartmouth, NS, 2009

Degrees
Ph.D., Dalhousie University (Halifax NS), Oceanography, 2008
M.A.Sc., University of British Columbia (Vancouver BC), Civil Engineering, 1999
B.A.Sc., Queen's University (Kingston ON), Geological Engineering, 1997

Professional Credentials

Professional Engineer registered in Ontario (P.Eng. since 2002)
American Geophysical Union (member since 2000)
Canadian Society for Civil Engineering (member since 2013)

Recognition

Outstanding Contribution Award, American Society of Civil Engineers, Coastal Engineering Research Council, International Conference on Coastal Engineering (ICCE) in Santander, Spain, 2012.


Kathy Ellis Memorial Prize, Department of Oceanography, Dalhousie University, highest grades in graduate courses in oceanography, 2004.

APEGBC Environmental Award, Association of Professional Engineers and Geoscientists of British Columbia, outstanding achievement in environmental engineering, 2002.

Employment History

Assistant Professor, Department of Civil Engineering, Queen’s University, Kingston, ON, 2011-.

Assistant Professor, Department of Geological Sciences, East Carolina University, Greenville, NC, 2009-2011.
Post-doctoral Fellow, Bedford Institute of Oceanography, Fisheries and Oceans Canada, Dartmouth, NS, 2008-2009.

Research Assistant, Department of Oceanography, Dalhousie University, Halifax, NS, 2003-2008.


Research and Teaching Assistant, Department of Civil Engineering, University of British Columbia, Vancouver, BC, 1997-1999.

Junior Civil Engineer, Deardon & Stanton Limited, Orillia, ON, summer 1997.


Research and Teaching Assistant, Department of Geological Engineering, Queen’s University, Kingston, ON, 1995-97.

Peer-Reviewed Journal Publications


Book Chapters


Michael Tanos, P.Eng.

PROFESSIONAL EXPERTISE
• Geotechnical Engineering
• Materials Testing
• Construction Inspection & Supervision
• Technical Policy Development
• Peer Review and Expert Consultations

EDUCATION
B.A.Sc., University of Toronto, 1975
Department of Geological Engineering and Applied Earth Science
Geotechnical Division
Post-graduate Courses, University of Toronto, 1977-1981
Department of Civil Engineering (part time studies)
Geotechnical Division

AFFILIATIONS
Registered Professional Engineer, Province of Ontario
Designated Consulting Engineer, Province of Ontario
Member, Canadian Geotechnical Society
Member, American Society of Civil Engineers
Member, American Society for Testing and Materials

PRESENT RESPONSIBILITIES
Responsible for senior review and guidance of geotechnical and materials projects; and for
administration of head office and branch offices.

PROFESSIONAL HISTORY

<table>
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<tr>
<th>Year</th>
<th>Company</th>
<th>Location</th>
<th>Position</th>
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<tr>
<td>1983 - present</td>
<td>Terraprobe Limited - Brampton, Ontario</td>
<td>Principal, Geotechnical Engineer</td>
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<tr>
<td>1982 - 1983</td>
<td>Dominion Soil Investigation Inc. - London, Ontario</td>
<td>Branch Manager, Geotechnical Engineer</td>
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<tr>
<td>1980 - 1982</td>
<td>Golder Associates - Mississauga, Ontario</td>
<td>Geotechnical Engineer</td>
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<tr>
<td>1977 - 1980</td>
<td>Terraprobe Limited - Brampton, Ontario</td>
<td>Manager, Geotechnical Engineer</td>
<td></td>
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<tr>
<td>1975 - 1977</td>
<td>F.J. Reinders &amp; Associates Limited - Brampton, Ontario</td>
<td>Geotechnical Engineer</td>
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</tr>
</tbody>
</table>

curriculum vitae
B. (Billy) Singh, M.A.Sc., P. Eng.

PROFESSIONAL EXPERTISE

- Geotechnical Engineering & Design
- Slope Stability & Streambank Erosion Studies
- Slope Stabilization & Rehabilitation
- Design & Evaluation of Retaining Walls
- Pavement Design and Evaluation
- Construction Project Management
- Shoreline Slope Risk Assessments
- Slope Stability Training Seminars to Conservation Authorities, Businesses, and Guest Lectures at University of Waterloo

EDUCATION

Master of Applied Science (M.A.Sc.), University of Waterloo, 1996
Geotechnical and Geoenvironmental Engineering

Bachelor of Engineering (B.E.), Civil Engineering
University of Jodhpur, India

CONTINUING EDUCATION

Construction Project Management
Design of Mechanically Stabilized Earth Structures, Retaining Walls
Slope Stability and Streambank Erosion, Slope Stabilization
Pavement Design and Asphalt Technology
Concrete Testing and Quality

PROFESSIONAL AFFILIATIONS

Registered Professional Engineer, Province of Ontario

Past Chair, Canadian Geotechnical Society
Southern Ontario Section, Toronto Group

PROFESSIONAL DESIGNATIONS

Ontario Building Code Qualification

Examinations: Designer Legal Process (OBC)
               Designer Structural (OBC)

Qualified Person - Ontario Ministry of Environment, Ontario Regulation 153

PRESENT RESPONSIBILITIES

Responsible for project management, review and guidance of geotechnical, environmental, construction materials & engineering, inspection and testing projects.

PROFESSIONAL HISTORY

1997 to Date    Terraprobe - Brampton, Ontario
               Senior Geotechnical Engineer, Principal

1997            Toyota Motor Manufacturing Company (TMMC) - Cambridge, Ontario