

Appendix A: CVs of Investigators/authors of the EA Report

PROJECT TEAM BIOGRAPHIES

Development of Environmental Assessment Document

Carys Burgess, MMM

Senior Environmental Specialist (Strum)

Ms. Burgess is an experienced project manager in a variety of business areas with a focus on the application of environmental assessment and policy, pursuant to regulations at federal, provincial, and municipal levels. She has 15 years of experience and has worked on various projects in all aspects of environmental assessment including management of project scopes that have included terrestrial, marine, and freshwater environments, compensation programs and associated various field programs. Her project background includes work under various standing offers including Canadian Coast Guard, Defense Construction Canada, Nova Scotia Environment, and Public Works and Government Services Canada, as well as industry including Nova Scotia Power and Emera Newfoundland and Labrador. Her project experience includes linear transmission/pipe lines, wind farm projects, remediation projects, wildlife and freshwater/marine inventories, fish and fish habitat assessments including assessments of effects on fish habitat (HADD) pursuant to the *Fisheries Act*, and development and negotiation of mitigation measures and fish habitat compensation. Aside from managing and coordinating projects, Carys has also been responsible for collecting and analyzing data, report development, development of mitigative measures/plans and related regulatory permitting, public consultation, liaison with government departments and other stakeholders including Aboriginal groups, and follow-up monitoring and compliance.

Melanie Smith, MES

Environmental Specialist (Strum)

Ms. Smith coordinates and project manages environmental assessments for various types of projects including bridge and other infrastructure replacements, wind farms and other developments. She also develops the work scope and manages the completion of all associated field components that support the EA submission. This includes assessment of wetlands, watercourses, wildlife, birds, noise, fish/fish habitat, vegetation, benthic community, contaminants, archaeology, and species at risk. Ms. Smith is also responsible for completing the environmental effects assessment and developing project specific mitigation measures. Ms. Smith has also worked in a regulatory capacity with Ontario's Ministry of the Environment as a Project Officer in the Environmental Assessment and Approvals Branch. In this capacity, Ms. Smith was responsible for reviewing and coordinating the technical review of environmental assessment reports for large highway projects and landfill sites, providing guidance to proponents, responding to media and stakeholder inquiries, and providing advice to senior management regarding the approval of environmental assessment submissions.

Hydrogeological Assessment

*Bruce Strum BSCS, P.Geo
Hydrogeologist / President (Strum)*

Mr. Strum is currently President of Strum and a Professional Geologist and hydrogeologist with 26 years experience. His experience includes a variety of Phase I Environmental Site Assessments (ESA), Phase II ESAs, Designated Substance and Hazardous Materials Surveys, Remedial Action Plans, Site Remediation Work, detailed Hydrogeological Assessments and Groundwater Studies.

Mr. Strum provides expertise on groundwater issues throughout Atlantic Canada. He has been involved in assessment, characterization and development of commercial water supplies for large towns such as Parrsboro, Amherst and others and now specializes in community systems for un-serviced developments throughout Halifax County and rural Nova Scotia. Mr. Strum has coordinated hydrogeological assessments for over 700 projects ranging from simple three monitor well projects; to complicated three dimensional modeled situations using Mod Flow, Flow Net and others. Involvement in water supply and evaluation studies were aimed at evaluating long-term water supply, aquifer yield, and pumping rates. One study involved the development and testing of an in-river situated vertical well infiltration gallery in the Cape Breton Highlands National Park to provide an Ingonish golf course with irrigation water.

Since Strum's incorporation early in 1995, he has co-coordinated over 2,500 individual projects carried out for the financial industry, consulting engineers, law firms, private industry and commercial developers, as well as provincial and federal government clients.

*Megan Henley, B.Sc. Chem, M.Sc. Candidate
Environmental Specialist (Strum)*

Ms. Henley is involved in various projects including groundwater assessments, water quality assessments, indoor air quality assessments, wetland delineations, and environmental monitoring. The majority of her time at Strum is spent conducting Level I/II Groundwater Assessments related to water supply for residential developments in Halifax Regional Municipality (HRM). She has been responsible for the development of proposals, extensive desktop research for various environmental assessment reports, bird and wildlife surveys, wetland surveys, and coordination of drilling/pump testing, data interpretation, analysis, and reporting. Megan has also been involved in preparing several Environmental Impact Statements for the Nova Scotia Community Based Feed-In Tariffs program (COMFIT).

Wetland Assessment

*Andy Walter, B.Sc Hort
Environmental Specialist (Strum)*

Mr. Walter is a qualified wetland delineator in Nova Scotia. Andy has completed multiple wetland delineation projects for proposed wind farm development sites in Nova Scotia, in addition to hundreds of other large and small scale assessments in support of land development within the province. Projects often involve the completion of species at risk assessments, function assessments, and detailed wetland characterization in support of wetland alteration applications. In addition, Mr. Walter assists in the identification of potential compensation sites for wetland and fish habitat alterations, reviews databases, mapping, and aerial imagery, completes ground truthing and consults with local environmental groups and government to identify potential sites. Following alteration approval, Mr. Walter supervises construction activities for numerous construction projects in wetland habitat ensuring that erosion and sedimentation control measures are implemented prior to construction, and monitors activities during construction to ensure wetland protection measures are effective. Mr. Walter also routinely coordinates and completes post construction monitoring at wetland alteration sites, including soil, vegetation, hydrology, species at risk, and stream assessments as necessary, and authors the associated monitoring reports.

Bird Surveys

*Clarence Stevens
Naturalist*

Mr. Stevens is an experienced birder with extensive knowledge on the identification and behaviour of North American species and with more than 25 years of training and experience in the manner of scientific data collection and environmental surveys. Mr. Stevens also has field experience employing survey methodologies and specialized techniques to gather field data in a way that minimizes disturbance to sensitive species and species of concern. He has extensive experience with provincial, national, and international species of concern and their habitats including those species found on the ACCDC, CDC, COSEWIC, CWS, NSDNR, NSESA, FWS, IUCN, NOAA, and SARA listings. He has worked on numerous projects involving species of concern for a variety of conservation organizations including the Canadian Wildlife Service, National Research Council, Bedford Institute of Oceanography, Canadian Nature Federation, Nova Scotia Nature Trust, Bird Studies Canada, Nature Conservancy of Canada, US Fish and Wildlife Service, and Royal Society for the Protection of Birds. He also conducts numerous training workshops and public education sessions to educate people about wildlife and facilitate work involving species of conservation concern.

Mr. Stevens also possesses an in-depth knowledge of the wildlife of Atlantic Canada, including mammals, amphibians, reptiles, and insects. He has conducted numerous wildlife surveys which focused not only on the identification of wildlife species through direct observation and interpretation of sign, but also on the ecological relationship between Atlantic Canada's wildlife species.

*Garry Gregory, B.Sc Bio (Honours), M.Sc Candidate
Environmental Specialist (Strum)*

Mr. Gregory has experience in a variety of wildlife and ecosystem applications. His academic research focused on the population dynamics of muskrat (and included laboratory examination of carcasses, rigorous mark-recapture studies, habitat surveys, and the analysis of harvest records. Through this work, Mr. Gregory has become skilled at the identification and interpretation of a variety of wildlife signs.

An experienced biologist through his work in wetlands, streams, and forests, Mr. Gregory has also developed a working knowledge of Atlantic Canada's avifauna and an understanding of bird-habitat relationships in the region. He is also skilled at identifying plants in a variety of habitat types, particularly wetlands. With Strum, Garry is active in completing flora and fauna surveys (including avifauna), as well as wetland assessments and habitat characterization. In this regard, Garry relates habitat observations to the wildlife community in an area, always with a focus on identifying suitable habitat for species of conservation concern. He is knowledgeable in the area of provincial and federal approvals processes and works closely with senior staff to prepare regulatory submissions.

Wildlife Assessment

*Garry Gregory, B.Sc Bio (Honours), M.Sc Candidate
Environmental Specialist (Strum)*

*Clarence Stevens
Naturalist*

Sound Assessment

*Ian Bonsma, B.ASc, PEng
Intermediate Engineer, HGC Engineering*

Mr. Bonsma is an Associate of HGC Engineering and has broad experience in structural vibration, environmental and industrial noise, and architectural acoustics. He has conducted acoustic measurements and analysis for a wide range of facilities throughout North America. Ian has also addressed the impact of building vibration on sensitive equipment for medical and industrial applications.

More recently, Mr. Bonsma's work has focused on renewable energy including

applying Ontario's new Renewable Energy Act. He has conducted Acoustic Assessments, Acoustic Audits, and complaint investigations for solar and wind power generating facilities. He has also co-authored a paper on the role of ambient noise monitoring in the assessment of wind farms which was presented at the 2009 Canadian Acoustical Association Conference.

Archaeological Assessment

April MacIntyre, MA

Vice President, Davis MacIntyre & Associates Limited

Ms. MacIntyre has been employed in the consulting field since 1997 and received her Master of Arts in Anthropology from Memorial University of Newfoundland in 2005. Her specialization is in the historic archaeology of Nova Scotia. April has extensive experience in field and laboratory methods as well as in conducting documentary research and is well-trained in eighteenth and nineteenth-century material culture identification and analysis. She has been involved in various historic and pre-contact archaeological investigations including urban and industrial sites, agricultural and occupational sites, as well as burial sites. April is qualified to hold Category A, B and C heritage research permits with the Nova Scotia Museum. She has produced several contractual reports and is actively involved in research and publishing. She served as Secretary and Vice President of the Nova Scotia Archaeology Society and is a current member of the Canadian Archaeological Association, the Society for Historical Archaeology, and the Council for Northeast Historical Archaeology. She is currently engaged as a Research Associate at the Nova Scotia Museum.

Acoustical Analysis (birds)

Dr. Phil Taylor, Ph.D

Professor, Acadia Department of Biology

Chair, Bird Studies Canada

Executive Director, Resilience Alliance

Dr. Phil Taylor is a Professor at Acadia University who actively researches the influence of landscape on the movement, distribution, and population dynamics of animal species. These topics are typically explored using such tools as geographic information systems, remote sensing, individual-based simulation modeling and statistical modeling. One of his primary research interests lies in the use of acoustic monitoring to identify nocturnal migratory birds, which is particularly important in the context of wind power development. As Chair of Bird Studies Canada, Dr. Taylor has taken a lead role in the conservation of bird populations in Canada.

Flora Assessments

Tom Neily M.Sc
Botanist and Lichenologist

Mr Neily has been conducting surveys for the endangered boreal felt lichen and other rare plants and lichens in Nova Scotia for the past 5 years. He is a member of the Boreal felt Lichen Recovery Team, Atlantic Population. Mr. Neily also conducts vascular plant surveys throughout Atlantic Canada for environmental assessments.

Anne Mills B.Sc.

Ms. Mills is a retired biologist/senior laboratory instructor from Dalhousie University where she worked for 26 years. Initially she pursued an interest in identification and distribution of vascular plants in Nova Scotia; however Ms. Mills has since focused on specializing in bryophyte diversity within the province. She is active member of the Nova Scotia Wild Flora Society and has completed multiple courses (both general flora and bryophyte specific) at the Humbolt Research Centre in Maine, NE. Ms. Mills is the primary author in a current study involving bryophytes on Sable Island, NS.

Frances Anderson

Ms. Anderson currently works as a research associate for the Nova Scotia Museum of Natural History and specializes in lichen identification and distribution with Nova Scotia. Her past and current experience includes the completion of lichen status reports for COSEWIC, and the development of a Field Guide to Lichens in Nova Scotia. During the last six years, in association with the Nova Scotia Museum of Natural History, Ms. Anderson has developed a macrolichen checklist for Nova Scotia. Ms. Anderson has attended numerous bryophyte related courses at the Humbolt Research Centre in Maine, NE.

Catherine Pross

Ms. Pross is an amateur mycologist with a specific interest in mycorrhizal fungi. She has taken part in several fungi surveys within Nova Scotia, including locations such as Indian Path Common and Cape Chignecto. She is a lead author of Indian Path Common: Its Flora, Fauna and History and is the current photographer for the Nova Scotia Mycological Society's annual foray. Ms. Pross has been researching and identifying mycorrhizal fungi for the past 8 yearV.

Socio-economic Assessment

Mary-Frances Lynch, MES

Energy Project Officer, Minas Basin Pulp and Power
Author: Socio-Economic Conditions and Effects Management section

Mary-Frances Lynch brings an understanding of the socio-economic conditions of Nova Scotia's communities having contributed to Minas Basin Pulp and Power's tidal energy project, conducting research on tidal energy and coordinating coastal community outreach. She has also conducted research on Mi'kmaw cultural tourism in Nova Scotia, has received community development training in India, and served as a Community Partnerships Research Associate at Dalhousie's College of Sustainability. Mary-Frances' strong environmental research skills stem from previous work as a researcher at the University of Guelph, Dalhousie University, and Statistics Canada. She holds a Bachelor of Geography from the University of Guelph and a Master of Environmental Studies degree from Dalhousie University. Currently Mary-Frances is serving as Energy Project Officer, assisting in project management, research and writing efforts for the South Canoe Wind Project.

Craig Hodder

GIS Technologist



EDUCATION

2000-2002 B.A., Economics, Carleton University, Ottawa, Ontario
1997-2000 Sydney Academy High School, Sydney, NS – Graduated with distinction in the International Baccalaureate Program

PROJECTS

Jamaica Cadastral Conversion Project. The conversion of land parcels using IKONOS satellite imagery as the ground control. Involved in implementing QC procedures.

Involved in the implementation of the Membertou community plan.

Involved in the Wentworth/Membertou softcopy photogrammetry projects.

SKILLS

Computer Assisted Drafting (AutoCAD)
ArcView, ArcMap
DVP Softcopy photogrammetry

EXPERIENCE

- 2002 to Present GIS Technician - Membertou Geomatics Consultants
- Assist a team of GIS specialists and provide GIS data to various projects.
 - Provide consulting services including needs analysis and gap analysis to assist clients in meeting their GIS requirements
 - Assist Membertou First Nation to meet their community planning goals and objectives
- 2002 – 2003 Eastcan Geomatics Limited – Involved in a training program
- Trained in data capturing, data converting.
 - Data converting includes AutoCAD training and softcopy photogrammetry.
 - Involved with quality assurance/quality control aspects.

Dave Moore

Planner \ GIS Technologist



EDUCATION

- 1982 Construction Technology
 Holland College, Charlottetown, P E.I.
- 2000 Bachelor of Design (Honours), Environmental Planning, Minor Degree in Digital Media
 Nova Scotia College of Art and Design, Halifax, N.S.
- 2007 Master of Urban and Regional Planning
 Queen's University, Kingston, ON.

PROJECTS

- Membertou Connector Road, Business Case and Routing Study (CBCL)
- Habitat Threats – Sedimentation – Bras d'Or Lakes Watershed (UINR)
- Physical, infrastructure and policy design, Community Plan, Membertou First Nation
- Parking lot and storm drainage design, Membertou Trade and Convention Centre and Membertou Entertainment Centre
- On-site project management, multi-residential condominiums, Chandler's Cove, Chester, N.S.
- Numerous design and research projects with both public and private engineering and architectural organizations

SKILLS

- | | | |
|--------------------------------|--------------------------|-------------------|
| Remote Sensing (PCI Geomatics) | AutoCad (Autodesk) | SSPS Statistics |
| Civil Design (Autodesk) | 3D Studio Max (Autodesk) | IDRISI Raster GIS |
| ArcView and ArcMap (ESRI) | MapInfo | MS Office |

EXPERIENCE

- 2003 to Present Planner\GIS Technician - Membertou Geomatics Consultants
- 1999- 2001 CAD Technician\Planner, W.M. Fares & Associates, Halifax, N.S.
- 1985- 1995 Survey Supervisor\Cartographic Assistant, Public Works and Government Services Canada
- 1984- 1985 Estimator\Technician, MBB-Trecan, Halifax, N.S.
- 1983- 1984 Project Manager, Research Project, Municipality of Chester

Jason Googoo

Manager



EDUCATION

1999-2001 Centre of Geographic Sciences (C.O.G.S) – Computer Technician/Analyst Diploma
1998 University College of Cape Breton (UCCB) – BA Degree in Sociology

PROJECTS

Jamaica Cadastral Conversion Project. The conversion of land parcels using IKONOS satellite imagery as the ground control. Involved in implementing QC procedures.

Involved in the implementation of the Membertou community plan.

Flood Model Project. Simulated a flood based on Truro, NS. Created several routines which modified and displayed aerial photographs as a flood progressed.

Implemented the Membertou Fisheries into a G.I.S. project.

SKILLS

Computer Assisted Drafting (AutoCAD)

ArcView, ArcMap

Various scripting and programming (VB/VBA, Perl, C/C++, java/javascript)

EXPERIENCE

2002 to Present

Manager – Membertou Geomatics Consultants

- Responsible for supervision and job performance evaluations for staff.
- Assist a team of GIS specialists and provide GIS data to various projects.
- Provide consulting services including needs analysis and gap analysis to assist clients in meeting their GIS requirements
- Assist Membertou First Nation to meet their community planning goals and objectives

2002 – 2003

Eastcan Geomatics Limited – Involved in a training program

- Trained in data capturing, data converting.
- Data converting includes AutoCAD training and softcopy photogrammetry.
- Involved with quality assurance/quality control aspects.

Years in Practice

14

Memberships

Member of Alberta
Society of
Professional
Biologists (ASPB),
2001
AB# 875

Certifications

Watercourse
Alteration
Certification, Nova
Scotia, 2013

Education

Bachelor of Science,
Biology/
Environmental
Studies, University
of Victoria, BC

Training

- ♦ Project
Management
Fundamentals,
2010
- ♦ ISO 14064-1
Essentials:
Greenhouse Gas
Inventories
- ♦ ISO 14064-2
Expert –
Greenhouse Gas
Projects (Carbon
Emissions
Reduction Expert
Course)
- ♦ Standard First Aid
w/ CPR Level C
2012
- ♦ H2S Alive, 2011

Experience Summary

Mr. McCallum is a Registered Professional Biologist with 14 years of experience within the environmental consulting industry. He has completed over 100 Federal environmental assessments (under the Canadian Environmental Assessment Act) and hundreds of Provincial environmental assessments. He was a Responsible Authority under CEAA with the Department of Indian and Northern Affairs. He has assisted numerous clients with corporate environmental project management, environmental operations coordination, regulatory audits, regulatory response and compliance, liability assessments of properties or companies prior to acquisition, and operational project management.

His professional field experience has encompassed environmental management, construction supervision, site assessments, spill response, site remediation, and reclamation projects. He has liaised between Industry, Regulators, First Nations, Special Interest Groups, and working interest partners as required.

Selected Project Experience

Completion of the CEAA screening document and NAV Canada application for the Deer Lake Regional Airport Authority (Newfoundland) Runway expansion, access road relocation, and transmission line relocation, including DFO and NAV Waters application for Hatch Mott MacDonald.

WIND POWER PROJECTS

- Completed the Provincial Environmental Assessment for the 25.2 MW Hampton Mountain Wind Power Project, Bridgetown, Nova Scotia. The Project received Ministerial approval on January 10, 2011.
- Completed Environmental Protection Plan, Erosion & Sedimentation Control Plan, acting as Environmental Monitor and regulatory specialist, and completion of the Federal Cumulative Effects Assessment for the Glen Dhu Wind Power Project in Nova Scotia for Shear Wind Inc.;
- Coordination and completion of the environmental assessment, EPP, and regulatory applications for an 80 MW wind power project in Central Alberta, Canada for Nexen Inc;
- Coordination and completion of all regulatory applications for a 65 MW wind power project in Southern Alberta for Shear Wind Inc.;
- Coordination of regulatory permitting and environmental assessments for a 65 – 100 MW Wind Power Project in New Brunswick (anonymous client);

- Completion of preliminary constraints and regulatory analysis for 3 different wind power projects in Saskatchewan as a component of the Saskatchewan RFP process;
- Construction monitoring for EPP compliance, and reclamation management, at the Kettle Hills Wind Power Project, Alberta;

ALTERNATIVE ENERGY PROJECTS

- Coordination and completion of the 10 year Alberta Environment renewal application for the 105 MW Balzac Thermal Power generating station for Nexen Inc.;

OIL & GAS PROJECTS WHICH REQUIRE FEDERAL APPROVALS

- Completion of 53 regulatory compliance audits for three oil and gas clients in Alberta;
- Completion of site selection, CEAA screening document, first nation consultation, regulatory consultation, and surface land application for a wellsite, access road, and pipeline for Eagle Rock Exploration Inc.;
- Completion of site selection, CEAA screening documents, first nation consultation, regulatory consultation, and surface land applications for 10 wellsites, access road, and pipelines for Maverick Oil & Gas Ltd on the Louis Bull First Nation since 2006;
- Completion of the Cumulative Effects Assessment and Environmental Protection Plan for a 107 shallow gas well program on federally regulated PFRA lands in S.W. Saskatchewan for submission to the Canadian Wildlife Service and Environment Canada;
- Completion of all CEAA environmental applications for 53 oil and gas developments on the Hay Lake I.R. #209, Alberta, since 2001. Conducted construction compliance monitoring, reclamation and completed regulatory compliance audits for ongoing activities
- Completion of construction monitoring for environmental compliance for a 10 km water pipeline for the Joffre Gas Plant, Alberta;

OTHER PROJECTS

- Assistance with project management and regulatory permitting for the 2010 Heritage Gas pipeline expansion within the Halifax Regional Municipality, Halifax, N.S.;

Environmental Experience

McCallum Environmental Ltd., Nova Scotia

President - Since 2001, has provided project management expertise for site and/or route selection, constraints mapping, land acquisition, first nation/public consultation, regulatory consultation, environmental assessments, environmental protection plan development, survey supervision, regulatory applications, license and permit acquisitions, construction monitoring, and reclamation for small and large scale industrial projects. Other responsibilities include marketing, budget management, report preparation and client service.

Indian Oil & Gas Canada, Department of Indian & Northern Affairs, AB

Environmental & Surface Land Analyst (Responsible Authority under CEAA) - applied federal environmental legislation (CEAA, CEPA, Fisheries Act, and Indian Oil & Gas regulations (1995), which incorporate provincial legislation, on oil and gas producing Indian reserves in Canada. Analyzed environmental assessments for proposed projects and conducted site inspections where required (acting as the Responsible Authority under CEAA). Audited projects to ensure compliance with federal and provincial legislation. Negotiated and resolved environmental issues while maintaining an effective working relationship with First Nations, industry, IOGC and other federal and provincial regulators. Conducted reclamation inquiries to ensure compliance with reclamation criteria.

Stantec Consulting Ltd., AB

Project Manager - responsibilities included marketing, budget management, report preparation and client service. Project experience related to reclamation and environmental monitoring of construction projects. Completed federal and provincial environmental assessments, conservation and reclamation plans, designed and monitored environmental Protection Plans for developments in environmentally sensitive areas. Completed Phase I and Phase II Contamination Assessments and dig & dump supervision and closure sampling.

Pioneer Land Services Ltd., Calgary, AB

Assistant Environmental Manager -responsibilities included employee time management, billings, report preparation and quality control, marketing and client service. Consulting responsibilities included project management of reclamation programs, environmental monitoring of pipeline and wellsite construction projects. Completed environmental assessments as per provincial and federal requirements, designed and monitored environmental Protection Plans for developments in environmentally sensitive areas, Phase I and Phase II Contamination Assessments. Developed Emergency Response Plans for field personnel.

Pioneer Land Services Ltd., Grande Prairie, AB

Environmental Division Manager - responsibilities included employee time management, billings, report preparation and quality control, marketing and client service. Consulting responsibilities included project management of reclamation programs, environmental monitoring of pipeline and wellsite construction projects. Designed and monitored environmental Protection Plans for developments in environmentally sensitive areas. Completed Phase I and Phase II Contamination Assessments. Developed Emergency Response Plans for field personnel.

Great White North Environmental Services Ltd., AB

Senior Environmental Scientist - responsible for the preparation and implementation of Phase I and Phase II Contamination Assessments and Risk Assessments. Conducted Waste Auditing, Soil Vapour Surveys, and site remediation.

Years in Practice

10

Certifications

Nova Scotia Advanced Wetlands Delineator and Evaluator

Memberships

Nova Scotia Wetlands Delineation, Maritime College of Forest Technology

Auditing Association of Canada (AAC) - Regional Chapter Committee Member

Education

Master in Environmental Studies (MES), York University, Toronto, Ontario, 1999
BSc. (Biology), Dalhousie University, 1997
BA (Political Science), Honours, Dalhousie University, 1997

Training

- ◆ Nova Scotia Advanced Wetlands Delineation and Evaluation Course, 2009;
- ◆ Water Management and Wetland Restoration Training Course, 2009;
- ◆ Identifying and Delineating Wetlands for Nova Scotia, 2008

Experience Summary

Ms. Milloy oversees, manages, and executes environmental projects. She completes wetland delineations and characterizations, and guides clients through the environmental and permitting stages of development projects. Ms. Milloy also guides clients through provincial and federal environmental assessment requirements. Ms. Milloy has submitted multiple applications for Transport Canada, under the Navigable Waters Protection Program, has submitted numerous Department of Fisheries and Oceans HADD applications (freshwater and marine) and has developed HADD compensation programs. Ms. Milloy regularly completes applications for wetland alteration and development across Atlantic Canada, and has developed and implemented wetland compensation programs. Ms. Milloy is a trained wetland restoration professional. Ms. Milloy is also knowledgeable in preparing Environmental Management Plans and Emergency Preparedness Plans for development projects.

Ms. Milloy is also involved with programs including the remediation of contaminated commercial and residential sites, and the execution of Phased Site Assessments in accordance with the Nova Scotia Management of Contaminated Sites Guidelines and CSA. Ms. Milloy is knowledgeable in risk assessment processes, and completes both qualitative and quantitative risk assessments for commercial and residential properties. Ms. Milloy has extensive experience working with the Atlantic Risk Based Corrective Action (RBCA) risk assessment process for hydrocarbon-impacted sites, and is proficient in plume characterization and exposure assessment.

Selected Project Experience

- Completion of provincial permitting requirements including wetland alteration and compensation planning, and watercourse alteration for a proposed marine terminal and associated 20 km rail and transmission line in Nova Scotia.
- Coordination and completion of federal and provincial regulatory requirements for a large scale commercial and residential development and associated marina in Dartmouth Nova Scotia involving HADD permitting, wetland infill and compensation planning, and completion of a phased assessment, risk assessment and completion of a Certificate of Compliance.
- Completion of 20-30 projects involving wetland delineation, wetland alteration and infill, and compensation planning for numerous residential and commercial large-scale developments across Nova Scotia and New Brunswick.
- Developed and implemented wetland restoration and creation projects as compensation for wetland losses for numerous development clients.
- Completion of more than 50 phased site assessment and remediation projects - Phase I, II, III and risk assessment for commercial property transfers.

Environmental Experience

McCallum Environmental Ltd., Nova Scotia

Project Manager - Provides project management expertise for site and/or route selection, constraints mapping, regulatory consultation, environmental assessments, wetland alteration and restoration planning, environmental protection plan development, regulatory applications, construction monitoring, and reclamation for small and large scale industrial projects. Other responsibilities include marketing, budget management, report preparation and client service.

Strum Environmental Services Ltd., Nova Scotia

Project Manager- From 2000- 2010, provided project management expertise for development clients across Atlantic Canada. Projects included environmental assessment, large scale commercial and residential developments, wetland alteration projects, wetland compensation planning and implementation, wetland restoration and creation projects, phased site assessments, and risk assessment and management.

Environmental Sciences Group, Kingston, ON

Environmental Scientist- in 1997/1998, provided contaminant and project management expertise to Department of National Defense in the Canadian Arctic in support of remediation of several remote military sites. Identified areas required for remediation and completed associated boundary soil and sediment confirmatory sampling and analysis.

Years in Practice

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Education

Masters of Resource and Environmental Management

B.Sc. Advanced Major in Biology & Interdisciplinary Studies in Aquatic Resources

Training

- ◆ Health Safety and Environmental Leadership training and Advanced Safety Audit training, 2009
- ◆ Emergency Operations Centre crisis management training, 2006-2008
- ◆ Introduction to the Fisheries Act and Navigable Waters Protection Act course – ESAA
- ◆ Bear Awareness training and ATV training – Alberta Safety Council, 2006
- ◆ Site Supervisor Safety Training, Construction Safety Training System and W.H.M.I.S., 2005

Summary

Ms. MacDonald has worked in biology related environmental consulting since 2003. She has worked on both research related field assessments and project related field assessments in Nova Scotia, New Brunswick and Alberta.

Experience

McCallum Environmental Ltd., Halifax, Nova Scotia

Environmental Assessment and Approvals Specialist

May-Aug 2011, Jan 2012-Present

Completing biophysical assessments, including flora and fauna surveys, with emphasis on species at risk. Completing wetland and watercourse delineations and assessments and coordinating migratory bird and bat monitoring. Communicating field survey results and methodologies for Environmental Assessments and other Provincial regulatory application.

Amec Colt, Shell/Albian Sands Expansion 1 - Fort McMurray, Alberta.

Environmental Specialist and Area Environmental Lead

July 2008 – October 2009.

Proactively monitored construction activities via inspections, audits and Environmental Work Permits & Protection Plans to ensure compliance with regulatory approvals, the projects' Environmental Control Plan, and best management practices. Investigated and reported incidents, and liaised between contractors and project owners. Implemented Environmental Awareness and communicated issues via weekly newsletters. Developed a greater business sense, working as an independent contractor to Amec Colt.

Canadian Natural Resources Ltd. - Fort McMurray, Alberta

Regulatory and Environmental Specialist

October 2005 – July 2008

Conducted extensive field work in various fish and wildlife programs. Communicated issues with government agencies, contractors and external stakeholders. Performed on-call duties, spill response, and non-compliance reporting and response. Expanded upon site wide procedures for protection of water, wildlife and waterbirds. Played a pivotal role in planning & completion of a fish salvage of 38 km of the Tar River, and in construction of a 77 hectare fish habitat compensation lake (Horizon Lake). Horizon Lake earned CAPP Steward of Excellence Award for Environmental Performance. Hired, trained, and supervised teams of up to four summer interns. Chaired the regional 'Oil Sands Bird and Wildlife Protection Committee.

Nature Conservancy of Canada - Bedford, Nova Scotia

Conservation Intern.

May – August 2005

Worked with NCC staff and local stewards to compile flora, fauna and ecosystem inventories, and write natural area management plans for conservation lands. Mapped property features, delineated aquatic

and terrestrial habitats, identified conservation threats & anthropogenic disturbances.

Department of Fisheries and Oceans - Moncton, NB

Survey Assistant

September 2004.

Participated in a multi-species bottom trawl survey in the Southern Gulf of St. Lawrence aboard the C.C.G.S. Alfred Needler. Gained experience in identification and sampling of marine fishes and invertebrates. Learned to work efficiently in a non-conventional work environment.

St. Mary's River Association - Sherbrooke, Nova Scotia

Species at Risk Field Biologist and Stewardship Coordinator

May – September 2004.

Performed an ecological study of Wood Turtles in the St. Mary's River watershed, expanding the knowledge of local population demographics. Extensive field work to locate, mark and measure turtles and nesting sites. Designed various educational media and delivered presentations to diverse audiences. Gathered anecdotal evidence from local residents, and coordinated volunteer activities. Authored a report on nesting ecology and stewardship for the NS Dept. of Natural Resources

Derrick Mitchell, *BScF, RPF*

511 Bay St. **Home:** (506) 674-9986
Saint John, NB **Cell:** (506) 651-1346
E2M - 7L3 **email:** mitchfor@nb.sympatico.ca

Formal Education and Training

September 1998 - May 2003 **Bachelor of Science in Forestry and Environmental Management**

University of New Brunswick Fredericton, NB

July 2006 **Wetland delineation Course**

Humboldt Field Research Institute Stueben, Me

March 2008 **Watercourse Alteration Certification Course**

Maritime College of Forest Technology Fredericton, NB

November 2010 **Water Management and Wetland Restoration Training Course**

University of Guelph Kemptville, ON

Certifications

- Certified Wetland Delineator with the New Brunswick Department of Environment (NBENV)
- Certified in Watercourse Alteration (NBENV)

Project Work

- **Canaport™ LNG_{LP}** - Wetland compensation projects - Project manager and technical lead (Saint John, NB 2009 – 2011).
- **City of Summerside** – Summerside Windfarm - Bird surveys and bird/bat carcass monitoring (Summerside, PEI 2010).
- **Dexter Construction** – Route 1 Gateway Project – Crew leader for breeding bird and botanical surveys (Saint John, NB 2010).
- **Irving Oil Ltd.** – Project Eider Rock - Crew leader for wetland field assessments and author of the terrestrial technical study of the Environmental Impact Assessment (EIA) (Saint John, NB 2007 – 2009).
- **Aurora Energy Resources** – Uranium mine - Crew leader for Ecological Land Classification (ELC) assessment (Postville, NL 2008).
- **Acciona** – Lameque transmission line and wind farm – Crew leader for wetland field assessments (2008).
- **Newfoundland Hydro** - Lower Churchill Falls Hydro-electric Dam Project – Crew leader for ELC assessment (Goose Bay, NL 2007).
- **Brunswick Pipeline** – LNG Pipeline - Crew leader for wetland field assessments and author of the wetland Valued Ecological Component (VEC) for the EIA (Saint John, NB 2007).
- **New Brunswick Department of Transportation** – Route 1 Gateway Project – Crew leader for wetland field assessments and co-author of the wetland VEC for the EIA (2006 and 2008).
- **New Brunswick Department of Transportation** – Route 7 bypass - Crew leader for wetland field assessments and author of the wetland VEC for the EIA (2007).
- **New Brunswick Department of Transportation** – Route 11 twinning - Designed and implemented wetland monitoring plan (2006 and 2008).
- **TransAlta** – Kent Hills transmission line and wind farm – Crew leader for various field studies including; wetland delineation, wetland functional analysis and migratory bird surveys (2006 and 2008).

Relevant Experience

FUNDY Engineering

**Project Manager
Senior Ecologist**

May 2009 – January 2011

- Designed and implemented wetland restoration plans.
- Conducted wetland delineation and functional analysis.
- Designed and implemented habitat and ecosystem restoration plan designs.
- Designed and implemented wetland monitoring plans.
- Developed mitigation and environmental protection plans for various projects.
- Act as liaison between clients and provincial/federal regulatory authorities.
- Mapped environmental constraints for a variety of projects.
- Conducted environmental monitoring and compliance.
- Prepared environmental permit applications.
- Delineated and assessed watersheds and surface water hydrology.
- Prepared and review project budgets, proposals, permit applications, and reports.
- Conducted botanical assessments and bird field studies.
- Conducted photo interpretation and remote sensing.
- Conducted carcass monitoring and searcher basis trials for windfarm projects.
- Consulted with provincial and federal regulatory authorities.
- Acted as liaison between clients and provincial/federal regulatory authorities.
- Working knowledge of provincial and federal environmental regulations.
- Mentored and supervised junior staff.
- Performed business development.
- Conducted community outreach and guided nature tours.

Jacques Whitford Ltd.

Terrestrial Ecologist

April 2007 – May 2009

- Conducted wetland delineation and functional analysis.
- Designed and implemented habitat and ecosystem restoration plans.
- Prepared and reviewed project proposals, permit applications, and reports.
- Developed environmental effects monitoring plans for wetland project related projects.
- Prepared watercourse and wetland alteration permits.
- Mapped environmental constraints for various types of projects.
- Conducted botanical assessments and bird field studies.
- Conducted photo interpretation and remote sensing.
- Field study planning and coordination in support of environmental assessments.
- Managed and supervised junior field staff.
- Acted as liaison between clients and provincial/federal regulatory authorities.
- Performed business development.

Mitchell Forest Management and Consulting

March 2004 – Present (Part-time)

**Forestry Consultant /Owner
Saint John, NB**

- Developed watershed/resource management plans.
- Generated forest inventory reports and maps.
- Produced maps for industrial and private sector clients using GIS software (ArcView 9.X).
- Conducted remote sensing, photo interpretation and forestry constraints mapping.
- Conducted harvest block layout and reconnaissance for industrial clients this includes: identification of unique features, delineation of plant communities, wetlands and watercourses.
- GIS data quality assurance/quality control auditing.
- Supervised harvesting operations.
- Supervised seasonal employees and subcontractors.

**Greater Fundy Ecosystem Research Group
(Pollett River Watershed Project)**

September 2003 - March 2004

**Resource Manager
Fredericton, NB**

- Produced watershed/resource management plans for woodlot owners in the Pollett River watershed.
- Characterized forest landscape by vegetation community type.
- Generated maps for woodlot owners utilizing GIS and GPS technologies.
- Developed and maintained GIS databases.
- Developed Best Management Practices for woodlot owners.
- Produced progress reports for project coordinator/stakeholders, and development community outreach programs.
- Conducted wildlife habitat assessments including auditory and visual song bird surveys.

Alpha Forestry Contracting and Consulting

May 2003 - August 2003

**Forester
Perth - Andover, NB**

- Produced resource management plans for various private and industrial clients.
- Produced maps employing GPS and GIS technology.
- Developed and maintained GIS database.
- Conducted forest inventories, regeneration surveys, and pre-commercial thinning surveys.
- Conducted remote sensing and photo interpretation.
- Planned and laid out forest extraction roads.
- Supervised road construction and culvert installation.

Senior Thesis Project

September 2002 – April 2003

- Analysed 25 years of GIS forest inventory data to assess forest cover type change that occurred adjacent to Breeding Bird Survey routes.
- Supervised students, coordinated data collection and data entry activities.
- Presented regular progress reports to thesis advisors and funding partners (NBDNRE, Environment Canada, Fundy Model Forest).

Summer Employment

Greater Fundy Ecosystem Research Group

May 1998 - September 2002

**Wildlife Research Technician
Fundy National Park, NB**

- Conducted auditory/visual bird surveys and bird banding.
- Created habitat suitability maps utilizing GIS/GPS technology.
- Developed GIS database for various wildlife research projects using Arcview software.
- Trapped bats using various techniques.
- Tracked bats using radio telemetry.
- Assessed bat roosting and foraging habitat.
- Collected echo-location data with sonar detecting data-loggers.
- Identified bat species by echolocation signature.
- Identified and classified various forest insects.
- Trapped a variety of small mammals for several academic studies.
- Established permanent sample plots.

Professional Affiliations

Association of Registered Professional Foresters of New Brunswick.

Other Training

- April 2011 Workplace Standard First Aid/CPR Level C St. John Ambulance.
- March 2008 Sedge and Grass identification workshop UNB Department of Biology.
- March 2009 Willow and Aquatic plant identification workshop UNB Department of Biology.

Relevant Computer and Technical Skills

- ArcMap 9.X, ArcPad 7.X, Microsoft Office XP 2007 (Word, Excel, Outlook, PowerPoint, Access, Project), SPSS, Sigma Plot, Pathfinder Office, Remsoft Woodstock.
- Proficient with the use of micro-computing devices and various GPS systems (Trimble Nomad, Geneq Recon etc).

Volunteer Experience

- Municipal Plan Citizens Advisory Committee (City of Saint John)
- Hammond River Angling Association executive board member (1st Vice chair)
- New Brunswick Wetland Delineators Association (Vice chair)
- New Brunswick Protected Natural Areas Committee (Past member)

Publications

- Betts, M.G., **Mitchell, D.**, Diamond, A.W. and Bety, J. Uneven rates of landscape change as a source of bias in roadside wildlife surveys. Journal of Wildlife Management. 2007.

References

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Senior Environmental Scientist
Fundy Engineering
Saint John, NB

Gareth Davies (RFT)
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Canadian Forest Service -Atlantic Region
Natural Resources Canada
Fredericton, NB



McCallum Environmental Ltd.

Richard Hatch
Halifax, Nova Scotia
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902.479.3067

Birding Skills and Experience

- I have over twenty years of experience researching and studying flora and fauna throughout Nova Scotia, focused primarily on extensive reading and field studies.
- Ten-year apprenticeship of bird identification under recognized expert birder, Fulton Lavendar.
- Completed breeding bird surveys and nocturnal owl surveys for Dillon Consulting.
- Participant in research for the Maritime Breeding Bird Atlas.
- Bird identification consultant and vegetation field assistant for Dr. Duncan Cameron Ltd throughout 2004-2005 for the Keltic Petro-chemical environmental assessment.
- Participant in the Audubon Christmas Bird Count from 1993-2010.
- Contributor of bird sighting information for the Nova Scotia Bird Society.
- Participant in the North American Migration count for five years.
- Provincial Park project foreman for nine months, studies flora and fauna, weather and water flows throughout the park.
- Shell Canada wood duck nesting box project participant.
- Contributor to Fisheries Research project on freshwater fish.
- Experienced power-boat operator, and experience working with helicopters.
- CPR and First Aid training, and extensive construction safety training.



BARRY TURNER, Ph. D., ACM, Senior Meteorologist
GENIVAR

CAREER SUMMARY

After completing his Ph.D. in meteorology, Barry Turner worked as a Research Associate at McGill University in Montreal. His research at McGill, and earlier at the Université du Québec à Montréal, concerned short-term forecasting of rainfall and studies of atmospheric turbulence. Barry has an additional six years of experience as a project manager and business analyst in the software industry, and is an Accredited Consulting Meteorologist of the Canadian Meteorological and Oceanographic Society. He joined GENIVAR in July 2007, where he applies his knowledge to wind resource assessment, climate suitability studies and applied meteorological research.

EXPERTISE

Wind Energy
Environment

EDUCATION

Ph.D., Atmospheric and Oceanic Sciences, McGill/UQAM **1991-1999**
M.Sc., Meteorology, McGill University **1988-1991**
B.Sc., Physics and Mathematics, University of Waterloo **1984-1988**

Society of Actuaries/Casualty Actuarial Society:
Exam 1 (P), Exam 2 (FM), Exam M

WORK EXPERIENCE

- 2007-Present** Project management, wind resource assessment and applied research, PHOENIX ENGINEERING / GENIVAR
- 2001-2007** Research Associate and instructor, McGill UNIVERSITY
 - Application of weather radar data to precipitation forecasting, communications system design and emergency preparedness
 - Instructor for courses in meteorology, oceanography and remote sensing
- 1999-2001** Software design and support for remote asset monitoring and supply chain logistics for the rail and trucking industries, DOLPHIN / TERION
 - Analysis of network performance for a mobile radio communication system

- Software design and support for remote asset monitoring and supply chain logistics, particularly for the rail industry.
- Data modelling, data mining and design of business intelligence applications;
- Customer technical support;
- Completed Project Management training at McGill International Executive Institute.

PRESENTATIONS AND PUBLICATIONS

- Istchenko, R. and B. Turner, 2008: Extrapolation of wind profiles using indirect measures of stability. *Wind Engineering*, 32, 433-438.
- The Pre-Construction Estimation of Wind Turbine Icing Losses, CanWEA 2007, Quebec, Canada
- Short Period Non-Catastrophic Rainfall Options, presentation at ARC (Actuarial Research Conference) 2006, Montreal, Canada. Awarded second prize for conference presentation
- Lin, C., S. Vasic, A. Kilambi, B.J. Turner and I. Zawadzki, 2005: Precipitation forecast skill of numerical weather prediction models and radar nowcasts *Geophys. Res. Lett.*, 32, L14801
- Real-Time Determination of the Area of Influence of CBRN (Chemical, Biological, Radiological and Nuclear) Releases, CRTI Summer Symposium, June 2004, Ottawa, Canada
- Turner, B.J., I. Zawadzki and U. Germann, 2004: Predictability of precipitation from continental radar images. Part III: Operational Nowcasting Implementation (MAPLE). *Journal of Applied Meteorology*, 43, 231-246
- Turner, B.J. and M.Y. Leclerc, 1994: Conditional sampling of coherent structures in atmospheric turbulence using the wavelet transform. *J. Atmos. Ocean. Tech.*, 11, 205-209
- Turner, B.J., M.Y. Leclerc, M. Gauthier, K.E. Moore and D. R. Fitzjerald, 1994: Identification of turbulence structures above a forest canopy using the wavelet transform. *J. Geophys. Res.*, 99D, 1919-1926
- B. Turner and G.L. Austin, 1993: Spatial Variability of Summer Florida Precipitation and Its Impact on Microwave Radiometer Rainfall Measurement Systems. *J Appl. Met.* 32 (2), 172-181