

# **Appendix O**

**CVs of Study Team Members**



Kelley is a Project Manager who has been with Stantec for eight years. She has conducted environmental assessments in various jurisdictions and has been responsible for project management and coordination, field coordination, document writing and production, public, regulatory and stakeholder consultation, and invoicing and budget management. Kelley also conducts detailed quantitative ecological risk assessments and other natural resource and sustainability studies. She remains current in the industry and has attended recent conferences and workshops on Wind Energy, Mi'kmaq Ecological Knowledge, Species at Risk Stewardship and Land Reclamation.

## EDUCATION

Masters Environmental Studies (M.E.S.), Dalhousie University, School for Resource and Environmental Studies, Halifax, Nova Scotia, 2004

Bachelor of Science, Honours (Environmental Science), Acadia University, Wolfville, Nova Scotia, 2001

## SELECTED PROJECT EXPERIENCE

### Wind Power

Amherst Wind Energy Project, Amherst, Nova Scotia (Project Coordinator)

*This project was a joint provincial-CEAA screening assessment for a wind farm site in Amherst, Nova Scotia. This was the first wind farm approval for Stantec in Nova Scotia. Duties included coordinating field work, meeting with Canadian Wildlife Service to scope avian surveys, planning two open houses, writing reports, communicating with clients and working with regulators. The project received EA approval in 2008.*

Digby Wind Power Project, Digby, Nova Scotia (Project Manager/Project Coordinator)

*Duties include preparing provincial environmental assessments for a proposed wind farm site in Digby, Nova Scotia. The project received EA approval in 2009.*

Wind Power Issues Identification Reports, Various, Nova Scotia (Project Coordinator/Manager)

*Duties included writing issues identification reports for over 15 proposed wind farm locations in Nova Scotia and New Brunswick. These reports helped with determining the suitability for each wind farm site based on federal and provincial guidelines for wind farm site selection.*

Beaver Mountain Wind Power Project, Beaver Mountain, Nova Scotia (Project Coordinator)

*Duties include preparing provincial environmental assessments for a proposed wind farm site in Beaver Mountain, Nova Scotia.*

Kent Hills Wind Energy Project, Kent Hills, Nova Scotia (Project Coordinator)

*This was a joint provincial-CEAA screening assessment for a wind farm located at Kent Hills, New Brunswick. Duty was to assist the Saint John, NB Jacques Whitford office with coordinating the field work data and integrating the information into the EA.*

### Environmental Impact Assessments

CEAA Screening Assessments for Highway 104, New Glasgow to Sutherlands River; and Highway 104 Antigonish, New Glasgow and Antigonish, Nova Scotia (Project Scientist)

*Two key CEAA screening assessments for Highway 104, New Glasgow to Sutherlands River; and Highway 104 Antigonish, NS were conducted over the past few years. Duties included assisting with field work, open houses, report research and writing. Currently assisting with the preparation of HADD compensation reports for Hwy 104 Antigonish.*

Alton Natural Gas Storage Project, Alton, Nova Scotia (Project Manager)

*Duties included coordinating the environmental assessment and follow-up permitting for the proposed Alton Natural Gas Storage Project. This was a landmark project that involved site selection as well as detailed regulatory and public consultation for an underground salt cavern storage project. Specific duties included coordinating field work, several sub-consultants including those who conducted a Mi'kmaq Ecological Knowledge Study, planning two open houses and a working group session with DFO, writing reports and communicating with clients and regulators regularly.*

# Kelley Fraser B.Sc. (Hons), M.E.S.

## Project Manager

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### CEAA Screening for Membertou Road Connector, Sydney, Nova Scotia (Project Manager)

*Duties include preparing a CEAA screening assessment for a new road that will connect the Membertou lands to the local hospital. Involves coordinating field work, regulatory consultation and engagement, and report preparation.*

### CEAA Screenings for Four Separate Bridge Replacement Projects in Nova Scotia, Halifax County, Guysborough County and Inverness County, Nova Scotia (Project Manager)

*Duties include conducting CEAA screening assessments for four bridge replacement projects in Nova Scotia. A field program component was also included.*

### CEAA Screening Assessments, Environmental Protection Plans and Marine Underwater Habitat Surveys and Underwater Benthic Surveys for DFO Small Craft Harbour Sites, Various Locations, Nova Scotia (Project Manager/Project Coordinator)

*Duties include managing CEAA screening assessments and Environmental Protection Plans (EPPs), as well as coordinating Marine Underwater Habitat Surveys and Underwater Benthic Surveys for several sites in Nova Scotia including sites such as Pinkneys Point, Little River Harbour, Lower East Pubnico, Denis Point, Ingomar, Inverness, Yarmouth Bar, Camp Cove, Lower Prospect and Cape St. Marys. Duties also include being the co-client contact for PWGSC screening proposals and projects under the current standing offer.*

### Environmental Assessments for Quarry Developments, Various Locations, Nova Scotia (Project Coordinator)

*Several environmental assessments, including Elmsdale and MacLeod's Settlement Rock Quarries, Elmsdale and Cape Breton, NS were prepared recently. Duties included coordinating all aspects of the environmental assessments and other follow-up permitting to obtain the approvals for quarry development.*

### Bear Head Liquefied Natural Gas (LNG) Terminal, Bear Head, Nova Scotia (Project Scientist)

*The Bear Head Liquefied Natural Gas (LNG) Terminal was a joint provincial/CEAA Screening assessment. Duties included assisting with report writing for this large scale and landmark EA for Stantec and Nova Scotia.*

### Risk Management Plans for Three DFO Small Craft Harbour Sites, Little River Harbour, Dennis Point Harbour and Lower East Pubnico Harbour, Nova Scotia (Project Manager)

*Duties include preparing risk management plans for three Fisheries and Oceans Canada Small Craft Harbour sites. Involved reviewing previously written Marine Sediment Sampling Plans, updating them with the new October 2008 CCME Soil Quality Guidelines, and preparing risk management options for each site.*

### Natural Resource Services

#### Training Area Management Plans, Halifax, Nova Scotia (Project Manager)

*Prepared Training Area Management Plans (including site user interviews, literature reviews, research, and writing) for several MARLANT properties in Nova Scotia and Newfoundland.*

### ESSIM Human Use Objectives Workshop, Dartmouth, Nova Scotia (Workshop Coordinator and Liaison)

*Duty was to coordinate and help plan the ESSIM Human Use Objectives Workshop at the Bedford Institute of Oceanography in Dartmouth, NS.*

\* denotes projects completed with other firms

# Heather Giddens MES

Project Manager and Team Leader



Heather is a Project Manager and Team Leader of the Environmental Permitting and Planning Group in Dartmouth, NS. Since joining Stantec in 1998, Heather has managed or been involved in various environmental management projects including environmental impact assessment reports, regulatory permitting, environmental protection plans, environmental management systems, baseline studies, and waste management studies for several private and public sector clients. Although she has provided environmental management services for various sectors, her work has predominantly been related to environmental impact assessment and permitting of transportation and offshore/onshore energy projects.

## EDUCATION

Master of Environmental Studies, Dalhousie University, Halifax, Nova Scotia, 1998

Bachelor of Science with Honours (Biology), Acadia University, Wolfville, Nova Scotia, 1996

Executive Leadership Program, Queen's University, Kingston, Ontario, 2008

## AWARDS

2010 Stantec Managerial Award of Excellence

## PROJECT EXPERIENCE

### Renewable Energy

West Jeddore Wind Farm, West Jeddore, Nova Scotia (Project Manager)

*Coordinating field programs, regulatory and stakeholder consultation and environmental assessment report for wind farm.*

Wedgeport Wind Farm, Argyle, Nova Scotia (Project Manager)

*Coordinating field programs, regulatory and stakeholder consultation and environmental assessment report for wind farm.*

Environmental Assessment for Confidential Wind Farm, Pictou/Antigonish, Nova Scotia (Project Manager)

*Managing multi-disciplinary teams to prepare environmental assessments for wind power project.*

Wind Farm Issues Identification Study, Antigonish, Nova Scotia (Project Manager)

*Provided senior guidance and review for issues identification/constraint mapping and regulatory roadmap for environmental approvals.*

Environmental Assessment for Digby Wind Power Project, Digby, Nova Scotia (Project Manager)

*Managed multidisciplinary team to prepare provincial/federal compliant EA report, conducted Aboriginal engagement and regulatory consultation.*

Environmental Issues and Regulatory Roadmap for Tidal Power Project, Halifax, Nova Scotia (Project Manager)

*Conducted issues identification/constraint mapping exercise; provided summary of environmental regulatory framework for project.*

### Environmental Impact Assessments

Highway 107 Extension to Highway 102 Environmental Assessment, Bedford, Nova Scotia (Project Manager)

*This should explain what "YOUR" role was on the job. Managing field work program and preparation of environmental assessment document for regulatory approval.*

Environmental Assessment and Regulatory Approvals for Lake Banook Canoe Course Improvements, Dartmouth, Nova Scotia (Project Manager)

*Responsible for preparing CEAA screening reports and obtaining watercourse alteration and NWPA authorizations on behalf of Halifax Regional Municipality; participated in stakeholder and Aboriginal consultations.*

Environmental Assessment and Regulatory Approvals for North Dartmouth Trunk Sewer Project, Dartmouth, Nova Scotia (Project Manager)

*Responsible for preparing CEAA screening reports and obtaining watercourse alteration and NWPA authorizations on behalf of Halifax Water; participated in stakeholder and Aboriginal consultations.*

CEAA Standing Offer for Public Works and Government Services Canada, 2007-2010, Halifax, Atlantic Canada (Senior Assessor)

*Provided senior review of CEAA screenings.*

\* denotes projects completed with other firms

# Heather Giddens MES

Project Manager and Team Leader

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CEAA Environmental Screening for Sackville River Bridge, Sackville, Nova Scotia (Environmental Analyst)  
*Prepared CEAA screening document for bridge crossing.*

Various Environmental Screenings for Department of National Defence, Halifax, Nova Scotia (Project Manager and Environmental Analyst)  
*Conducted due diligence EAs (compliant with CEAA) for routine construction/demolition projects.*

Environmental Assessment Registration for Sovereign Resources Quarry Modification, Bedford, Nova Scotia (Environmental Analyst)  
*Conducted environmental and socioeconomic assessment of quarry project and participated in stakeholder consultations.*

Environmental Assessment Guidance Document for MARLANT Routine Projects, Halifax, Nova Scotia (Project Manager)  
*Reviewed DND EA Guidance and prepared specific guidance document to assist DND users with environmental assessment of routine projects at selected MARLANT sites.*

CEAA Environmental Screening for Halifax Harbour Solutions Project, Halifax, Nova Scotia (Project Coordinator / Environmental Analyst)  
*Coordinated preparation of environmental assessment of wastewater treatment program.*

Environmental Assessment Highway 104 Antigonish Provincial, Antigonish, Nova Scotia (Environmental Analyst/Project Coordinator)  
*Coordinated multidisciplinary team to conduct field work and compiled EA Report.*

Environmental Approvals Highway 102 Larry Uteck Interchange, Halifax, Nova Scotia (Project Manager)  
*Coordination of field work, preparation of CEAA compliant screening and provincial water/wetland alteration approvals.*

Environmental Assessment Registration for Beaver Bank Bypass, Sackville, Nova Scotia (Environmental Analyst and Project Coordinator)  
*Coordinated multidisciplinary team to conduct field work and compiled EA Report, responsible for preparing socio-economic analysis.*

Environmental Assessment Highway 101 Digby to Weymouth North, Digby, Nova Scotia (Environmental Analyst and Project Coordinator)  
*Coordinated multidisciplinary team to conduct field work and compiled EA Report, responsible for preparing socio-economic analysis.*

Environmental Assessment Report Highway 101 Phase 4 Twinning, Nova Scotia (Project Manager)  
*Managed multidisciplinary team to conduct field work and prepare EA Report to meet provincial/federal EA requirements, primary reviewer and editor of EA Report.*

CEAA Screening Highway 104 Antigonish, Antigonish, Nova Scotia (Senior Reviewer)  
*Conducted senior review of CEAA screening and provided senior support to Project Manager.*

## **Natural Resource Services**

Natural Resource Management Plans for MARLANT Properties in Newfoundland, Halifax, Nova Scotia (Project Manager)  
*Prepared natural resource inventories and site specific mitigation for long term planning.*

Natural Resource Management Plans for Select MARLANT Properties in Nova Scotia, Halifax, Nova Scotia (Project Manager)  
*Prepared natural resource inventories and site specific mitigation for long term planning.*

\* denotes projects completed with other firms

# Laird Niven

Archaeologist and Cultural Resource Specialist



Laird has been working as a professional archaeologist in Nova Scotia since 1984 and has worked with Stantec Consulting Ltd. since 2000. Mr. Niven has worked on many federal and provincial environmental assessments and has been responsible for designing site-specific methodologies, conducting field studies, public consultation, and document writing, editing, and production.

## EDUCATION

Archaeology upgrading, Saint Mary's University,  
Halifax, Nova Scotia, 1984

Bachelor of Arts (Anthropology), Dalhousie University,  
Halifax, Nova Scotia, 1981

## PROJECT EXPERIENCE

### Archaeology

Archaeological Impact Assessment for the Lands  
contained within the Debert Air Industrial Park, Debert,  
Nova Scotia (Archaeologist)

*The work included the development of a testing strategy,  
supervision of the testing, and synthesis of the results in the final  
report. Permit holder.*

Archaeological Assessment and Testing of Highway  
103, Port Mouton to Port Joli, Nova Scotia  
(Archaeologist)

*A late Woodland Mi'kmaq site was discovered within the RoW  
of the proposed highway. Permit holder.*

Archaeological Excavations at the Hollis and Morris Site,  
Halifax, Nova Scotia (Archaeologist)

*Recovered thousands of artifacts from two middens and two  
privies (c. 1760 to c. 1860).*

Archaeological assessment of Doyles Bridge, Martin  
Rogers Bridge, Murray Bridge, and, Reids Bridge, Nova  
Scotia (Archaeologist)

Archaeological Assessment and Monitoring of the  
Purdy's Shoal Dredging Project and Archaeological  
Assessment of Proposed Work at Fairview Cove, Pier 9,  
and, Pier C, Halifax, Nova Scotia (Archaeologist)

Archaeological Assessment of the Membertou Connector  
Road, Membertou, Nova Scotia (Archaeologist)

Archaeological Assessment of Aberdeen Hardscratch,  
Martin Marietta, Stewartdale, and, Panuke Quarries,  
Nova Scotia (Archaeologist)

Archaeological Assessment and Testing of Highway  
103, Tantallon to Hubbards, Nova Scotia  
(Archaeologist)

Archaeological Assessment of the Beaver Mountain  
Wind Project, Beaver Mountain, Nova Scotia  
(Archaeologist)

Environmental Assessment of the North Dartmouth Trunk  
Sewer, Dartmouth, Nova Scotia (Archaeologist)

*The work included historical back ground research, field  
surveys, and monitoring of excavation.*

Archaeological Impact Assessment for the Lands  
Contained within the Debert Air Industrial Park, Debert,  
Nova Scotia (Archaeologist)

*The work included the development of a testing strategy,  
supervision of the testing, and synthesis of the results in the final  
report.*

Environmental Assessment of Highway 101 Twinning  
Three Mile Plains to Falmouth, Nova Scotia  
(Archaeologist)

*The work included development of methodology, background  
research, and field studies.*

Environmental Assessment of the Alton Natural Gas  
Storage Facility, Hants County, Nova Scotia

*The work included designing and conducting a pedestrian  
survey and testing strategy.*

\* denotes projects completed with other firms



# Laird Niven

## Archaeologist and Cultural Resource Specialist

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### Environmental Assessment of the Brunswick Natural Gas Pipeline Between Saint John and St. Stephen, New Brunswick (Archaeologist)

*The work included the development of a survey strategy, assessment of archaeological potential of watercourses, and an excavation of the pre-Contact site at the Digedequash River.*

### Environmental Assessment of Two Proposed Routes for the Twinning of Highway 104, New Glasgow/Sutherlands River, Nova Scotia (Archaeologist)

*Environmental assessment of two proposed routes for the twinning of Highway 104 from New Glasgow to Sutherlands River. The work included development of methodology, background research, and field studies.*

### Proposed Liquid Natural Gas Facility, Bear Head, Nova Scotia (Archaeologist)

*This assessment was for a proposed Liquid Natural Gas facility at Bear Head, Richmond County. The project involved the use of GIS, which resulted in the identification of several historic-period structures.*

### Assessment of a Proposed Mine Project at Silver Mine, Cape Breton County, Nova Scotia (Archaeologist)

*This project was the assessment of a proposed mine project at Silver Mine, Cape Breton County, including background research and field studies.*

### Proposed New Highway Bridge, Elmsdale, Nova Scotia (Archaeologist)

*This project assessed the archaeological impact of a proposed new highway bridge at Elmsdale, Hants County, which was located near several significant First Nation's archaeological sites.*

### Halifax Sewage Treatment Plant, Halifax, Nova Scotia (Field/Lab Chief)

*This large-scale project uncovered the remains of several nineteenth century buildings, including seven privies.*

### Blue Atlantic Project, East Jordan, Nova Scotia (Archaeologist)

*This assessment was part of the proposed Blue Atlantic Project in East Jordan, Shelburne County and included archaeological screening of several proposed sites, detailed background research, and extensive fieldwork.*

### Proposed Twinning of Highway 104 at Antigonish, Antigonish, Nova Scotia (Archaeologist)

*This assessment involved the proposed twinning of Highway 104 at Antigonish and incorporated background research, predictive modeling, and fieldwork.*

### Halifax Harbour Solutions Project, Halifax, Nova Scotia (Archaeologist)

*This assessment looked at two areas where facilities were proposed as part of the Halifax Harbour Solutions Project. Background research was conducted in tandem with Parks Canada and extensive fieldwork was carried out on the sites in Point Pleasant Park and downtown Halifax.*

### Potential Deep Panuke Project, Goldboro, Nova Scotia (Archaeologist)

*This project involved detailed background research on the archaeological potential Deep Panuke Project at Goldboro, Guysborough County as well as ground-truthing through fieldwork.*

### Proposed Gypsum Quarry Assessment, Melford, Nova Scotia (Archaeologist)

*This assessment looked at the potential negative impact a proposed gypsum quarry in Melford, Inverness County, would have on Aboriginal and historic archaeological resources. Detailed archival research was conducted followed by extensive archaeological fieldwork and testing.*

### Maritimes and Northeast Pipeline Project\*, Nova Scotia (Field Director)

*This project involved the supervision of archaeological crews as part of the Maritimes and Northeast Pipeline project. The work was conducted under Davis Archaeological Consultants.*

\* denotes projects completed with other firms



Dr. John Walker is a Senior Associate and Senior Project Manager in the Stantec Dartmouth office with 29 years of experience in the environmental consulting industry. He earned his doctorate in air pollution meteorology and environmental physics from the University of Guelph in 1980. John has worked on air quality, noise, hazardous waste, environmental management and other studies for such diverse clients as Michelin (Canada), Nova Scotia Power, INCO, El Paso Corporation, Shell Brunei, Harvard School of Public Health, El Paso Corporation, Petro-Canada, and Environment Canada. He has assisted many of these organizations to permit facilities, solve problems and to adapt and benefit from changes in the policy and regulatory environments. His international work has included World Bank and private sector clients in China, Kazakhstan, Iran, Syria, Brunei, Brazil, Chile, and Argentina.

## EDUCATION

Doctor of Philosophy, Air Pollution Meteorology,  
University of Guelph, Guelph, Ontario, 1980

Master of Science, Geography (Climatology), Queen's  
University, Kingston, Ontario, 1976

Bachelor of Science, Geography (Honors), Queen's  
University, Kingston, Ontario, 1975

## MEMBERSHIPS

Immediate Past Chair, Atlantic Section, Air & Waste  
Management Association

## PROJECT EXPERIENCE

### Noise Assessments

South Fraser Perimeter Road, Vancouver, British  
Columbia (Lead, Noise Team)

*Led the noise team to do traffic noise modeling, noise barrier and berm design, and mitigation design for 40 km of arterial roadway on the south shore of the Fraser River.*

Petro-Canada Sturgeon Upgrader, Fort Saskatchewan,  
Alberta (Principal Scientist and Task Manager)

*Conducted an assessment of noise impacts for the Petro-Canada Sturgeon Upgrader Project, Fort Saskatchewan, Alberta.*

ConocoPhillips Surmont Project, Fort McMurray, Alberta  
(Project Manager and Principal Scientist)

*Conducted an assessment of noise impacts for the ConocoPhillips Noise Impact Assessment, Fort McMurray, Alberta.*

Highway 104, Salt Springs Provincial Park, Nova Scotia  
(Project Manager)

*Conducted an assessment of noise and noise barrier design for Highway 104 at Salt Springs Provincial Park, Nova Scotia.*

Third-Lane Project for the Macdonald Bridge, Halifax-  
Dartmouth, Nova Scotia (Project Manager)

*Conducted an assessment of potential construction noise impacts of the Third-Lane Project for the Macdonald Bridge, Halifax-Dartmouth, Nova Scotia.*

### Assessments, Permitting, and Compliance

Maritime Steel, New Glasgow, Nova Scotia (Manager  
and Consultant)

*Manager of source testing, dispersion modelling and consultation for the repermitting of the facility in New Glasgow, Nova Scotia.*

NPRI and Greenhouse Gas Studies, Pictou, Nova Scotia  
(Project Manager)

*Managed the update of the NPRI reporting and greenhouse gas inventory for Neenah Paper, Pictou, Nova Scotia.*

Sydney Tar Ponds Environmental Assessment,, Sydney,  
Nova Scotia (Principal Scientist)

*Conducted noise and air quality for the environmental assessment of the Sydney Tar Ponds Cleanup.*

Whites Point Quarry Environmental Assessment, Digby,  
Nova Scotia (Task Manager)

*Conducted noise and air quality impact assessment for the Whites Point Quarry, Nova Scotia.*

Blue Atlantic Transmission System, Halifax, Nova Scotia  
(Project Manager)

*Set up air quality programs including modelling and monitoring for the Blue Atlantic Transmission System and the Sable Offshore Energy Program.*

# John I. Walker Ph.D.

Senior Associate and Project Manager

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## Michelin (Canada) Air Quality Training Programs, Waterville, Granton, and Bridgewater, Nova Scotia (Project Manager)

*Involved in a series of projects for Michelin, including training programs in air quality regulations and compliance for environmental staff of all Michelin (Canada) facilities; source testing at Waterville facility; dispersion modelling and permitting assistance at Waterville, Granton, and Bridgewater plants.*

## Turbine Generator Project, Charlottetown, Prince Edward Island (Project Manager and Principal Scientist)

*Conducted a study of baseline noise during operation and shutdown modes of the Maritime Electric Company Limited plant in Charlottetown, Prince Edward Island, and Principal Scientist for acceptance testing and verification.*

## Dispersion Modelling for the Peaking Power Turbines, Burnside, Victoria Junction, and Tusket, Nova Scotia (Project Manager)

*Conducted dispersion modelling for the peaking power turbines at Burnside, Victoria Junction, and Tusket, Nova Scotia.*

## Voisey's Bay Mine Environmental Assessment, Labrador, Newfoundland (Project Manager)

*Designed two meteorological and air quality stations for installation in northern Labrador during the Voisey's Bay Environmental Assessment.*

## Air Quality Modelling, Voisey's Bay Smelter/Refinery, Labrador, Newfoundland (Task Manager)

*Performed air quality modelling for the Voisey's Bay smelter/refinery complex at Argentina.*

## Air Quality Issues, Charlottetown,, Prince Edward Island (Project Manager)

*Conducted study of the air quality issues with respect to the Prince Edward Home wood-fired system, Charlottetown, Prince Edward Island.*

## Sydney Tar Ponds Cleanup\*, Sydney, Nova Scotia (Project Manager)

*Designed (in conjunction with Environment Canada and the Nova Scotia Department of Environment) and managed the implementation of the air quality monitoring program for the Sydney Tar Ponds Cleanup.*

## Lower Churchill Hydroelectric Development, Lower Churchill, Newfoundland and Labrador (Team Leader, Noise)

*Conducted noise modeling for the proposed hydroelectric developments on the Lower Churchill River, Labrador, including operational and construction phase assessments.*

## Total Upgrader, Fort Saskatchewan, Alberta (Task Leader - Noise Impact Assessment)

*Directed the baseline noise survey and preliminary modeling, performed Senior Review on final modeling and backup to Energy Resources Conservation Board Hearings.*

## Fort Hills Upgrader, Fort Saskatchewan, Alberta (Task Leader - Noise Impact Assessment)

*Directed the baseline noise survey and noise attenuation modeling, prepared the noise impact assessment document, and provided testimony at regulator hearings.*

## Surmont SAGD, Fort MacMurray, Alberta (Acoustic Consultant)

*Conducted baseline sound measurements at the project site and a pilot plant, prepared a noise impact assessment in fulfillment of requirements under the Energy Utilities Board.*

## Fort Nelson Gas Plant, Fort Nelson, British Columbia (Task Leader - Noise Impact Assessment)

*Conducted noise impact assessment for a gas plant, including inventory of equipment and modeling using Cadna.*

## EnCana Cabin Gas Plant, Remote northern British Columbia (Task Leader - Noise Impact Assessment)

*Prepared an inventory of equipment and led team conducting noise modeling, impact assessment, and mitigation design for a gas plant in northern British Columbia.*

## Irving Oil, Eider Rock Refinery, Saint John, New Brunswick (Team Lead, Noise, Light)

*Directed the team conducting the light impact assessment for the proposed Eider rock Refinery in Saint John, NB.*

\* denotes projects completed with other firms

Gillian is a Project Manager and Air Quality Scientist in the Environmental Management group with the Dartmouth office. Ms. Asche has a Bachelor's degree in Environmental Biology and a Masters of Applied Science in Environmental Engineering, from Memorial University. Since joining Stantec in 2007, Gillian has been involved in numerous projects including air dispersion modeling (ISC, AERMOD, CALPUFF), sound pressure level modelling, source emissions testing, ambient air and sound quality monitoring, emissions inventories and environmental assessments. As well, Gillian has successfully completed training related to GHG Verification Using ISO 14064, orientation to the Canadian Environmental Assessment Act, sound pressure level modelling using Cadna, and air dispersion modelling using CALPUFF.

## EDUCATION

Master of Applied Science, Environmental Engineering,  
Memorial University, St. John's, Newfoundland, 2005

Bachelor of Science (Environmental Biology), Memorial  
University, Sir Wilfred Grenfell College, Corner Brook,  
Newfoundland, 2004

## PROJECT EXPERIENCE

### Wind Power

Bowers Wind Farm Project, Thomaston, Maine (Air  
Quality Scientist)

*Conducted acoustic modeling using Cadna for a proposed  
Wind Farm in Maine.*

Digby Wind Power Project, Digby, Nova Scotia (Noise  
Quality Scientist)

*Analyzed baseline ambient noise data collected at three  
locations near the proposed wind turbine Project site and  
predicted the expected Project emissions based on the  
operation of a 30 MW wind turbine farm using Cadna A.*

Lamèque Wind Power Project, Lamèque, New Brunswick  
(Noise Quality Scientist)

*Conducted sound pressure level modeling for the proposed  
wind turbine farm in Lamèque, NB, using Cadna A.*

### Environmental Assessments

Environmental Assessment Hants County Aggregate  
Quarry Extension Project, Windsor, Nova Scotia (Project  
Coordinator)

*Coordinated the preparation and submission of an  
environmental assessment for the extension of a quarry.*

Environmental Assessment Duncan Gillis Quarry  
Extension Project, Baddeck, Nova Scotia (Project  
Coordinator)

*Coordinated the preparation and submission of an  
environmental assessment for the extension of a quarry.*

Environmental Assessment of the Proposed Twinning of  
Highway 103, Tantallon to Hubbards, Nova Scotia  
(Project Scientist)

*Prepared the Atmospheric Environment Valued Ecosystem  
component for the proposed twinning of Highway 103.*

Environmental Assessment Whycocomagh Quarry  
Extension Project, Whycocomagh, Nova Scotia (Project  
Coordinator)

*Coordinated the preparation and submission of a environmental  
assessment for the extension of a quarry.*

Environmental Assessment of Geohazard Surveys for  
Exploration Licence EL1105, 2010-2020, Offshore  
Western Newfoundland (Project Scientist)

*Prepared a screening report for Corridor Resources Ltd. for a  
geohazard program proposed for offshore Western  
Newfoundland.*

Environmental Assessment of the Proposed Hebron  
Offshore Production Platform, Eastern Newfoundland (Air  
Quality Scientist)

*Prepared the atmospheric environment valued ecosystem  
component for the construction, installation, operation and  
decommissioning of the proposed Hebron Offshore Production  
facility.*

**Environmental Assessment Mulgrave Quarry Fines Storage Project, Mulgrave, Nova Scotia (Project Coordinator)**

*Coordinated the preparation of an environmental assessment for the development of a quarry fines storage area.*

**Environmental Assessment of Project Eider Rock, Saint John, New Brunswick (Noise Quality Scientist)**

*Prepared the Acoustic Section of an Environmental Assessment for an oil refinery: Marine Terminal in Saint John, NB based on a Comprehensive Study.*

**Environmental Assessment of a Marine Terminal, Sydney, Nova Scotia (Air & Noise Quality Scientist)**

*Completed the Atmospheric Environment Valued Ecosystem Component of an Environmental Assessment for the construction and operation of a Marine Terminal in Sydney, Nova Scotia. The proposed Project involves dredging a section of the channel leading to the terminal.*

**Noise Assessments**

**Noise Monitoring, Seabrook Quarry, Digby, Nova Scotia (Project Manager)**

*Conducted a 24-hour noise monitoring event at a quarry located in Digby, Nova Scotia and analyzed the results to determine compliance with the NSE Guidelines.*

**Baseline Monitoring, Panuke Quarry, Windsor, Nova Scotia (Project Manager)**

*Conducted baseline monitoring studies, including noise, at a quarry located in Windsor, Nova Scotia as per their permitting requirements.*

**Highway 104 Noise Assessment, Antigonish, Nova Scotia (Noise Quality Scientist)**

*Conducted a noise study on a proposed new section of Highway to determine how the noise emissions varied in a nearby town given different construction options.*

**Baseline Ambient Noise Monitoring and Noise Monitoring Plan, Goldboro, Nova Scotia (Noise Quality Scientist)**

*Conducted baseline ambient noise monitoring and developed a Noise Monitoring Plan for a proposed Petrochemical Plant.*

**Baseline Ambient Noise Monitoring for a Quarry Extension Project, Bedford, Nova Scotia (Air & Noise Quality Scientist)**

*Conducted baseline ambient noise monitoring using Type II sound pressure level meters at five locations surrounding a Quarry site. The results were analyzed and a final report of the ambient monitoring program was prepared.*

**Oil Refinery: Marine Terminal Acoustic Technical Study, Saint John, New Brunswick (Noise Quality Scientist)**

*Prepared an Acoustic Technical Study for the proposed Oil Refinery and Marine Terminal in Saint John, NB. This study involved collecting baseline ambient noise data and predicting the expected Project noise emissions using Cadna A. The work also involved completing the Acoustic Sections of a Comprehensive Environmental Impact Assessment.*

**Air and Noise Quality Component for the Environmental Assessment of Highway 101, Windsor, Nova Scotia (Air & Noise Quality Scientist)**

*Completed the Atmospheric Environment Valued Ecosystem Component of an Environmental Assessment for a Highway Twinning Project in Windsor, Nova Scotia. This work also involved collecting baseline ambient noise measurements.*

**Acoustic Assessment of Gas Turbines, Dartmouth, Nova Scotia (Air and Noise Quality Scientist)**

*Conducted a noise assessment in the neighborhood surrounding a power plant.*

Michael is a terrestrial ecologist with over 27 years experience with Stantec Consulting Ltd. He is a highly experienced botanist and plant ecologist having conducted numerous botanical surveys and plant community studies in a wide range of habitat types throughout Atlantic Canada. Michael is also an experienced wildlife ecologist. He has conducted breeding bird surveys, aerial raptor and waterfowl surveys, aerial large mammal surveys, small mammal trapping, general mammal surveys, reptile surveys and amphibian surveys for a wide variety of projects throughout Atlantic Canada. His terrestrial ecological skills are used mainly in environmental assessments to assess the effects of various anthropogenic activities on rare or endangered species and sensitive habitats. As part of this process Michael develops mitigative measures to eliminate or reduce the adverse effects of these activities. Michael has been responsible for designing and implementing a variety of environmental monitoring programs for rare or endangered species as well as terrestrial and wetland habitats. He is also experienced in conducting wetland evaluations and wetland functional analyses. Michael is also experienced in air photo interpretation and plant community mapping from air photos as well as the description of plant communities. He has used these skills to prepare ecological land classifications for various areas in Atlantic Canada.

## EDUCATION

Master of Science, Dalhousie University, Halifax, Nova Scotia, 1988

Bachelor of Science (Honours), Terrestrial Ecology, Joint Degree awarded by Mount St. Vincent University and Dalhousie University, Halifax, Nova Scotia, 1981

## PROJECT EXPERIENCE

### Environmental Assessments

CEAA Screening Assessments for DFO Small Craft Harbour Sites, Various Locations, Nova Scotia (Terrestrial Ecologist)

*Provided terrestrial ecology services including wetland services to support screenings.*

Donkin Exploratory Mining Environmental Assessment, Donkin, Nova Scotia (Terrestrial Ecologist)

*Conducted a variety of field surveys on the Project Site and along a proposed transportation corridor including vascular plant surveys, breeding bird surveys, seabird colony survey, wetland delineation, and wetland functional assessment. Analysed the data and prepared data reports describing the results of the wildlife surveys.*

West River Hydrotechnical and Environmental Assessment, Antigonish, Nova Scotia (Vegetation Ecologist)

*Reassessed the potential adverse effects of bridge construction on flood plain habitat on the West River following a change in the design of the bridge. Determined whether the design changes would alter the potential effects of bridge construction on rare plants and plant communities as discussed in the original environmental assessment.*

Georgeville Quarry Expansion Environmental Assessment, Georgeville, Nova Scotia (Terrestrial Ecologist)

*Conducted a rare plant survey and a breeding bird survey as part of an environmental assessment for the expansion of the Georgeville quarry.*

Membertou Heritage Centre Environmental Assessment, Sydney, Nova Scotia (Terrestrial Ecologist)

*Compiled a vascular plant inventory for a proposed heritage centre site.*

Environmental Assessment for Twinning of Route 1 between Rothesay Avenue and Highway 111, Saint John, New Brunswick (Terrestrial Ecologist)

*Conducted botanical surveys in wetlands potentially affected by twinning of Highway 1. These botanical inventories were used to complete wetland functional assessments for affected wetlands in support of the environmental assessment.*



# Michael Crowell M.Sc.

## Principal

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### Highway 103 Twinning Environmental Assessment, Tantallon, Nova Scotia (Terrestrial Ecologist)

*Conducted various field surveys in support of an environmental assessment for the twinning of Highway 103 between Tantallon and Simms Settlement. Studies included a vascular plant inventory, breeding bird surveys, wetland delineation, and wetland functional assessment surveys. Also conducted air photo interpretation for wetland mapping and augmentation of available habitat mapping. Prepared text for the wildlife valued ecosystem component.*

### Environmental Assessment for Twinning of Highway 11 between Shediac and Richibucto, Shediac, Buctouche, Richibucto, New Brunswick (Terrestrial Ecologist)

*Conducted numerous wetland delineations and wetland functional assessments as well as upland botanical surveys as part of the environmental assessment for twinning of Highway 11 between Shediac and Richibucto.*

### Stone Haven Wind Farm Environmental Assessment, Bathurst, New Brunswick (Wetland Ecologist)

*Conducted botanical surveys, wetland delineation as part of an environmental assessment for a wind farm development at Stone Haven near Bathurst.*

### Highway 103 Twinning Environmental Assessment, Upper Tantallon, Nova Scotia (Terrestrial Ecologist)

*Conducted breeding bird, rare plant, wetland delineation and wetland functional assessment surveys. Analyzed data and wrote the wildlife section of the environmental assessment.*

### Maritimes & Northeast Pipeline, Halifax Lateral Environmental Assessment, Halifax, Nova Scotia (Terrestrial Ecologist)

*Conducted rare plant surveys, wetland surveys, breeding bird surveys, aerial deer wintering area surveys and herpetofaunal surveys along the Halifax lateral pipeline route. Analysis and report writing for terrestrial valued ecological components.*

### Halifax Stanfield International Airport Air Freight Terminal Environmental Assessment, Enfield, Nova Scotia (Terrestrial Ecologist)

*Conducted breeding bird, mammal, herpetile and vascular plant surveys as part of the environmental assessment for an air freight terminal.*

### Wetlands Assessments

#### Sutherlands River Marsh Wetland Delineation, Sutherlands River, Nova Scotia (Wetland Ecologist)

*Conducted a wetland delineation on the portion of the Sutherlands River marsh wetland located adjacent to a proposed bridge construction. The margin of the wetland was flagged to facilitate avoidance of construction related disturbance to wetland habitat.*

#### Wetland Inventory at a Housing Development Site in Rockingham, Halifax, Nova Scotia (Wetland Ecologist)

*Compiled an inventory of wetlands present on a property slated for a housing development. Each wetland was delineated and inventories of plants and animals were compiled. A functional assessment was conducted for each wetland.*

#### MK Airlines Crash Site Environmental Investigations, Enfield, Nova Scotia (Wetland Ecologist)

*Inspected Johnson River from the sewage treatment plant to Soldier Lake looking for evidence of contamination by aviation fuel.*

### Vegetation and Wildlife Assessments

#### Species at Risk Survey at DREA, Dartmouth, Nova Scotia (Terrestrial Ecologist)

*Conducted vegetation and wildlife surveys to determine if SARA listed species were present on the DREA property.*

#### West River Riparian Habitat Restoration Project, Antigonish, Nova Scotia (Vegetation Ecologist)

*Identified and marked all non-native trees and shrubs present in the cleared right-of-way at the West River bridge site. These trees and shrubs would be selectively cleared when the bridge was constructed.*

#### Gullivers Cove Wind Farm Transmission Line Rare Species Habitat Modeling, Gullivers Cove, Nova Scotia (Terrestrial Ecologist)

*Used Atlantic Canada Conservation Data Centre flora and fauna records and habitat mapping for a proposed electrical transmission line to predict the potential presence of plant and animal species of conservation concern along the route.*

\* denotes projects completed with other firms

# Michael Crowell M.Sc.

## Principal

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### Bird Hazard Assessments at 12 Wing Shearwater and 14 Wing Greenwood, Dartmouth and Greenwood, Nova Scotia (Wildlife Ecologist)

*Compiled existing information regarding avifauna distribution and abundance on and around the 12 Wing and 14 Wing aerodromes and prepared a bird hazard assessment for each aerodrome.*

### Assessment of Effects of Harbour Modifications on Wintering Harlequin Ducks, Cape St. Marys, Nova Scotia (Wildlife Ecologist)

*Collected existing information regarding use of Cape St. Marys Harbor by wintering Harlequin Ducks. Assessed the potential adverse effects of extension of breakwaters and groynes on this species and developed mitigative measures to minimize adverse effects and designed a monitoring program to verify the environmental effects prediction and assess the efficacy of the mitigation.*

### Sandy Cove Wind Turbine Assessment, Ketch Harbour, Nova Scotia (Wildlife Ecologist)

*Developed and implemented a bird survey program to collect data regarding use of the Sandy Cove area by birds during the breeding season, fall migration, spring migration, and winter. Analyzed the data and prepared a report describing use of the area by birds. This was conducted as part of the approval process for placement of a wind turbine at the NRC Sandy Cove facility.*

### Halifax Stanfield International Airport Wildlife Management Plan, Enfield, Nova Scotia (Wildlife Ecologist)

*Developed a wildlife management plan for the Halifax Stanfield International Airport. The wildlife management plan identifies potential wildlife hazards and provides recommendations to minimize these hazards.*

### M&NP Natural Gas Pipeline – Goldboro to Maine and Goldboro to Saint John, Nova Scotia and New Brunswick (Wildlife Ecologist)

*Conducted aerial moose and white-tailed deer wintering surveys as well as aerial raptor and waterfowl surveys along the M&NP natural gas pipeline between Goldboro, Nova Scotia and the Maine border.*

### DND Natural Resources Management Plans for DCD School, Osbourne Head and 12 Wing Shearwater, Dartmouth and Halifax, Nova Scotia (Terrestrial Ecologist)

*Conducted botanical, wildlife and wetland inventories at three DND properties to provide natural resources inventories to be used in planning land uses at these facilities.*

### Wetland Monitoring on the Encana Goldboro Pipeline Route, Goldboro, Nova Scotia (Wetland Ecologist)

*Delineated and conducted wetland functional assessments for wetlands crossed by the natural gas pipeline. Also established and collected plant community data in semi-permanent monitoring plots in the wetlands to monitor recovery of wetland habitat following completion of wetland restoration work.*

### Southern Twayblade Monitoring at the Halifax Stanfield International Airport, Enfield, Nova Scotia (Vegetation Ecologist)

*Monitored the abundance of Southern Twayblade (*Listera australis*) a rare orchid species in a wetland adjacent to a taxiway at the airport. Also monitored changes in plant species composition of disturbed and undisturbed portions of the wetland.*

### Confederation Bridge Wildlife and Vegetation Monitoring Program, Cape Jourmain, N.B. and Borden P.E.I., New Brunswick and Prince Edward Island (Terrestrial Ecologist)

*Designed and conducted monitoring studies investigating the effects of bridge construction and operation on waterfowl, seabirds, sea ducks, land birds, rare plants and salt marsh plant communities. Prepared yearly reports discussing the study findings.*

\* denotes projects completed with other firms





# Greg A. M. Johnson B.Sc., M.Sc.

Associate, Project Manager and Senior Terrestrial Ecologist



Mr. Johnson is an Associate and Senior Environmental Scientist in Stantec's Saint John office. A terrestrial ecologist with over 14 years of environmental consulting experience, Mr. Johnson is responsible for terrestrial ecological assessments, including wildlife, rare plants and wetlands, for habitat and environmental baseline assessments, environmental assessments, and environmental permitting in New Brunswick. He also manages federal and provincial environmental assessments for small to large-sized projects in New Brunswick, with an emphasis on linear and energy projects. He has contributed to and/or managed environmental assessments and related studies for a range of developments including provincial highway projects, transmission lines, natural gas pipelines, wind power projects, power plant expansions, a refinery and a hydro dam development.

## EDUCATION

M.Sc. (Ecology), Dalhousie University, Halifax, Nova Scotia, 1998

B.Sc. (Biology, Advanced Major - cum Laude), Dalhousie University, Halifax, Nova Scotia, 1992

## Environmental Services for Proposed Wind Farms, New Brunswick (Terrestrial Biologist/Project Manager)

*Stantec has provided environmental services to several confidential clients for up to 11 proposed projects in support of environmental approvals or feasibility of the potential projects. Of these projects, Mr. Johnson has managed, designed and implemented year-long bird studies, bat studies, and/or critical issues analyses, for all of these projects.*

## MEMBERSHIPS

Member/Website Editor, Atlantic Society of Fish and Wildlife Biologists

## Power Transmission & Distribution

### Kent Hills Transmission Line Project, Salisbury, New Brunswick (Project Manager)

*The Kent Hills Transmission Line Project is a 30 km long, 138kV transmission line constructed in 2008, which connects the Kent Hills Wind Farm to the NB grid. Mr. Johnson managed the environmental planning and permitting services for this project, including: a provincial Environmental Impact Assessment (EIA) registration; regulatory, stakeholder and public consultation; and the baseline data collection in support of the registration report. Follow-up work included a well survey, nest surveys prior to spring clearing activities, the evaluation and reporting for a realignment following Project approval, and post-construction monitoring of birds.*

## PROJECT EXPERIENCE

### Wind Power

#### Kent Hills Wind Farm Environmental Services – Phases 1 and 2, Moncton, New Brunswick (Project Manager)

*Since 2006, Stantec has provided environmental services to TransAlta in support of two phases of wind development at the Kent Hills in Albert County, New Brunswick. Phase 1 of New Brunswick's first utility-level wind farm development consisted of 32 wind turbines totalling 96MW capacity, with 18 additional turbines expected to be in service by the end of 2010, for a total of 50 turbines with a capacity of 150 MW. Environmental services managed by Mr. Johnson have included environmental baseline data collection including four season bird migration and breeding bird surveys, aquatic surveys, wetland and rare plant surveys, archaeological and heritage resources assessments, public consultation, environmental impact assessments, and post construction monitoring of birds and bats following construction.*

## Other Energy Projects

### Eider Rock: Proposed Petroleum Refinery and Marine Terminal, Saint John, New Brunswick (Terrestrial Environment Team Leader)

*Led the environmental effects assessment of the Terrestrial Environment Valued Environmental Component (VEC) for the proposed Eider Rock Petroleum Refinery. This work consisted of characterization of terrestrial habitat and wildlife in the study area including the survey of rare plants, bird populations and wetlands, with particular emphasis on species at risk.*

\* denotes projects completed with other firms

# Greg A. M. Johnson B.Sc., M.Sc.

Associate, Project Manager and Senior Terrestrial Ecologist

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St. George Hydro Redevelopment, St. George, New Brunswick (Terrestrial Environment Technical Leader and Project Manager (during operational monitoring))  
*Addressed terrestrial components of environmental assessment pre-construction, and managed environmental monitoring during construction and operation, including monitoring for potentially acid-generating rock.*

Liquefied Natural Gas (LNG) Marine Terminal Facility in Saint John Harbour, Saint John, New Brunswick (Terrestrial Environment Technical Leader)  
*Aided in the design and participated in the terrestrial field program for the CEAA Screening and provincial EIA Registration. Advised on data analyses, and provided senior technical review for the terrestrial VECs.*

## Transportation

Route 2 Trans Canada Highway Expansion, Grand Falls to Fredericton New Brunswick (Terrestrial Environment Wildlife Biologist / Technical Leader / Advisor)

*Stantec provided services for the Route 2 Trans-Canada Highway Expansion in three sections: Grand Falls to Aroostook; Perth-Andover to Woodstock; and Pokiok to Long's Creek. This work required baseline environmental field surveys for 133 kilometres of proposed four-lane highway. In total, the project crossed 73 fish bearing watercourses and 26 hectares of wetlands.*  
*Mr. Johnson designed, managed and/or undertook the terrestrial field work collection including wetlands, birds, mammals, and rare plants. We used the baseline reports to complete a provincial environmental impact assessment and a CEAA screening report.*

Route 11 Bypass, Tracadie-Sheila to Six Roads Area (8.2 km two-lane), New Brunswick (Terrestrial Environment Technical Leader / Advisor)  
*Designed the terrestrial field program for the CEAA Screening and provincial EIA Registration, advised on data analyses, and provided senior technical review of Terrestrial VECs.*

Route 1, Route 127 Area (Gilman's Corner) to St. George/Letang River (27 km four-lane), New Brunswick (Terrestrial Environment Technical Leader / Advisor and Senior Reviewer)  
*Designed the terrestrial field program for the CEAA Screening and provincial EIA Registration, advised on data analyses, and*

*provided senior technical review of Terrestrial VECs.*

Route 8 Bypass, Marsville to South Portage (36 km four-lane), New Brunswick (Terrestrial Environment Technical Leader / Advisor and Senior Reviewer)  
*Aided in the design and participated in the terrestrial field program for the CEAA Screening and provincial EIA Registration. Advised on data analyses, and provided senior technical review for the terrestrial VECs.*

Route 7 Bypass, Welsford to Nerepis (9.8 km two-lane), Southern, New Brunswick (Terrestrial Environment Technical Advisor and Senior Reviewer)  
*Aided in the design and participated in the terrestrial field program for the CEAA Screening and provincial EIA Registration. Advised on data analyses, and provided senior technical review for the terrestrial VECs.*

## Environmental Monitoring and Management

Maritimes & Northeast Pipeline Mainline Natural Gas Pipeline Project, New Brunswick and Nova Scotia (Project Biologist)  
*Monitored raptor nests during construction.*

Confederation Bridge Terrestrial Environmental Effects Monitoring (TEEM) Program, NB & PEI (Contract Project Biologist)  
*Participated in field work, statistical analysis and reporting for the TEEM Program involving monitoring of waterfowl and breeding birds in marshes and forest habitat along the bridge approaches.*

Maritimes & Northeast Pipeline Saint John Lateral Natural Gas Pipeline Project, Saint John, New Brunswick (Project Biologist)  
*Coordinated and participated in the Migratory Bird Monitoring Program, including migratory breeding bird and rare bird surveys in advance of Right of Way clearing. This monitoring program included nest monitoring to determine fledging times for bird species discovered nesting within or the pipeline RoW.*

Gunningsville Bridge Replacement Project, Moncton, New Brunswick (Project Manager and Terrestrial Biologist)  
*Conducted multi-year monitoring program for Nelson's Sharp tailed Sparrow.*

\* denotes projects completed with other firms

Mr. Quinn is the New Brunswick/PEI senior technical lead for wetland assessment and botanical surveys and has professional and educational experience in forestry, wildlife ecology, and wetland restoration with over 10 years of experience. He is a wetland specialist and Chair of the New Brunswick Wetland Delineators Association. Mr. Quinn has a broad range of experience in the assessment vegetation communities and wildlife habitat, and has designed and implemented follow-up monitoring and restoration programs for wetlands and vegetation for various projects in the Maritime Provinces. He has acted as discipline lead for the environmental assessment of wetland and vegetation for several large projects in New Brunswick and PEI, including several highway projects. His experience in the forestry industry has provided him with comprehensive technical abilities in biophysical inventories; air photo interpretation; Geographic Information Systems; and Global Positioning Systems.

## EDUCATION

B.Sc.F Forestry and Environmental Management,  
University of New Brunswick, Fredericton, NB, 2001

M.A.Sc Biology (in progress), Saint Mary's University,  
Halifax, NS, 2012

Water Management and Wetland Restoration Training,  
University of Guelph, Kemptville, Ontario, 2010

Wetland Identification and Delineation Course,  
Humboldt Institute, Eagle Hill, Maine, 2009

Standard Workplace First Aid, St. John Ambulance,  
Fredericton, New Brunswick, 2011

Graminoid Identification Course, University of New  
Brunswick Herbarium, Fredericton, New Brunswick,  
2009

Bear Awareness Training, Fredericton, New Brunswick,  
2007

Green Defensive Driving Course (online), Fredericton,  
New Brunswick, 2008

Workplace Hazardous Materials Information System  
(WHMIS), Fredericton, New Brunswick, 2009

Business Ethics, Fredericton, New Brunswick, 2010

Association: New Brunswick Wetland Delineators  
Association, Fredericton, New Brunswick, 2010

Association: New Brunswick Botany Club, Fredericton,  
New Brunswick, 2009

Association: New Brunswick Naturalists Society,  
Fredericton, New Brunswick, 2010

## PROJECT EXPERIENCE

### Environmental Assessments

Elmtree Property Gold Mine, Bathurst, New Brunswick  
(Discipline Lead)

*Greg coordinated and led the fieldwork for the wetlands and vegetation assessments and is the primary author for the wetlands and vegetation VECs for the environmental assessment under CEAA for a proposed gold mine in northern New Brunswick.*

Route 11 Shediac to Richibucto Highway Expansion,  
Shediac to Richibucto, New Brunswick (Wetland  
Ecologist)

*Greg coordinated and led the wetland and vegetation assessments in support of the federal and provincial environmental assessments for a proposed 55 km twinning of a major highway.*

Pokeshaw Wind Energy Development, Pokeshaw, New  
Brunswick (Discipline Lead)

*Greg coordinated the wetlands and vegetation assessments and was the primary author for the wetlands and vegetation VECs for the environmental assessment under CEAA.*

# Greg Quinn B.Sc.F.

## Biologist

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### Route 17 Upgrade: Violette Brook to Hammond Gate Area, Saint Leonard to Saint Quentin, New Brunswick (Discipline Lead)

*Greg coordinated and led the fieldwork for the wetlands and vegetation assessment and was the primary author for the wetland and vegetation VEC assessments for the environmental assessment under NB EIA.*

### Route 108 Highway Upgrade, Plaster Rock to Renous, New Brunswick (Discipline Lead)

*Greg coordinated and led the fieldwork for the wetlands and vegetation assessment for a proposed highway upgrade.*

### 75 km Transmission Line Construction Project, Prince Edward Island (Discipline Lead)

*Greg coordinated the wetlands and vegetation assessment and served as the primary author for the wetland and vegetation VEC assessments for the Environmental Assessment.*

### Route 11 Shediac to Richibucto Highway Expansion, Shediac to Richibucto, New Brunswick (Discipline Lead)

*Greg coordinated the wetlands and vegetation assessments and served as the primary author for the wetland delineation report in support of an environmental assessment under NB EIA.*

### Route 1 Gilmans Corner to St. George Highway Expansion, St. George, New Brunswick (Field Lead)

*Greg was the field lead for wetlands and vegetation assessments and primary author for the amendment to the EA report.*

## Wetland Restoration and Mitigation

### EMERA Brunswick Pipeline Project, Saint John, New Brunswick (Wetland Ecologist)

*Greg designed, conducted and authored the wetland follow-up monitoring program for the Environmental Management Plan supporting a large natural gas pipeline in southern New Brunswick.*

### Jonathan Creek Restoration: Post-Construction Monitoring, Moncton, New Brunswick (Wetland Biologist)

*Greg conducted wetland and vegetation post-construction monitoring and reporting for the Jonathan Creek Restoration, implemented as mitigation in the environmental assessment for the Modifications to the Petitcodiac River Causeway project.*

### Modifications to the Petitcodiac River Causeway Project, Petitcodiac, New Brunswick (Wetland Biologist)

*Greg designed the wetland restoration plan for coastal wetland affected by the causeway modification.*

## Wetlands Assessments

### Loganville & Lower Cove Wind Energy Development, Loganville and Lower Cove, Nova Scotia (Wetland and Vegetation Biologist)

*Greg conducted wetlands and vegetation field assessments and assisted with habitat modeling for the wind development sites.*

### Route 1 Gateway Mackay Highway Expansion, Saint John, New Brunswick (Wetland Biologist)

*Greg conducted vegetation and wetland assessments in support of an amendment to the EA.*

### Grand Falls Hydroelectric Generating Station Upgrades, Grand Falls, New Brunswick (Discipline Lead)

*Greg coordinated and led the fieldwork for the wetland and vegetation assessments to develop the baseline environmental conditions within the project area in support of the planning process (pre-environmental assessment) for a proposed upgrade.*

### Cranberry Farming Development Project, Rogersville, New Brunswick (Team Leader)

*Greg coordinated the wetlands and vegetation assessment, habitat modeling and served as the primary author for the wetland delineation report in support of an environmental assessment under NB EIA.*

### Lameque Wind Development, Lameque Island, New Brunswick (Team Lead)

*Greg conducted the wetlands and botanical survey, habitat modeling and served as the primary author for the wetland delineation report in support of an environmental assessment under NB EIA.*

## Wildlife Biology

### Various Wind Energy Projects, New Brunswick, Nova Scotia and Ontario (Wildlife Biologist)

*Greg identified bat carcasses and acoustic monitoring echolocation data from wind farm monitoring programs in eastern Canada.*

\* denotes projects completed with other firms

Ms. Mathieson is a plant ecologist and recognized Wetland Delineator within the Province of New Brunswick with Stantec in Saint John, New Brunswick, working in the Environmental Sciences Group. She has conducted wetland delineations, wetland functional assessments, vegetation and rare plant surveys, and developed wetland monitoring programs associated with a range of developments including road and bridge construction, wind power developments, transmission line construction, water pipeline upgrades, oil refinery planning, and sub-division development. Prior to joining the Stantec team, Krystal was a field supervisor and botanist at the University of New Brunswick, Saint John, specializing in bryophyte ecology, and also taught several undergraduate biology courses.

## EDUCATION

Masters of Science, Biology, University of New Brunswick, Saint John, New Brunswick, 2008

Bachelor of Science, University of New Brunswick, Saint John, New Brunswick, 2002

## MEMBERSHIPS

Member, Canadian Botanical Association

## PROJECT EXPERIENCE

### Wetlands

Wetland Monitoring Plan, New Brunswick

*Developed a wetland monitoring plan for wetlands slated for disturbance associated with water transmission line installation.*

Petitcodiac River Causeway, New Brunswick

*Developed a wetland monitoring plan for a heavily impacted coastal wetland adjacent to the Petitcodiac River Causeway. Conducted extensive baseline interpretation of coastal wetlands and mudflats downstream of the Petitcodiac River Causeway for use in future monitoring.*

### Wind Farm Development

Frosty Hollow and Stonehaven Projects, New Brunswick

*Conducted wetland delineations, wetland functional assessments, and vegetation surveys for Frosty Hollow and Stonehaven projects. Completed aerial photo-interpretation of wetlands within 100 m of project footprints.*

### Mining

Wetland Delineations, New Brunswick

*Conducted wetland delineations, wetland functional assessments, and vegetation and rare plant surveys to aid in project design.*

Wetland Delineations, New Brunswick

*Conducted wetland delineations, wetland functional assessments, and vegetation and rare plant surveys for supporting infrastructure.*

### Refinery / Upgrader Facilities

Project Eider Rock, New Brunswick

*Collected field data, completed wetland functional assessments and optimized aerial photo-interpretation of wetlands within 100 m of project footprints for Project Eider Rock. Authored Standard Wetland Delineation and Functional Assessment report.*

### Roadways

Wetland Assessments, New Brunswick

*Conducted wetland delineations, wetland functional assessments, and vegetation surveys for Route 1 MacKay Highway, Route 1 Existing Sections Upgrades, Route 7, Route 8, and Route 11 projects. Completed aerial photo-interpretation of wetlands within 100 m of project footprints for Route 1 MacKay Highway, Route 1 Existing Sections Upgrades, and Route 11. Co-authored Wetland VEC reports and Standard Wetland Delineation and Functional Assessment reports for Route 1 MacKay Highway, Route 1 Existing Sections Upgrades, and Route 11.*

### Subdivision Planning / Processing

Wetland Delineation, New Brunswick

*Conducted wetland delineations for subdivision of land. Authored Standard Wetland Delineation Report.*

\* denotes projects completed with other firms

**Seniors Complex, New Brunswick**

*Conducted wetland delineations for development of a residential seniors complex. Authored letter report.*

**Transmission Line Design**

**ReBuild of Transmission Line 0013, New Brunswick**

*Assisted with wetland delineations, wetland functional assessments, and vegetation surveys for ReBuild of Transmission Line 0013. Completed aerial photo-interpretation of wetlands within 100 m of project footprint. Co-authored Standard Wetland Delineation and Functional Assessment report.*

**Water Distribution and Transmission Pipelines**

**Rothsay Hillside Water Transmission Line and Reservoir Project, New Brunswick**

*Conducted wetland delineations, wetland functional assessments, and vegetation surveys for Rothsay Hillside Water Transmission Line and Reservoir Project. Completed aerial photo-interpretation of wetlands within 100 m of project footprint. Authored Linear Wetland Delineation and Functional Assessment report.*

**Phinney Hill To Lakewood Heights Water Transmission Main Project, New Brunswick**

*Conducted wetland delineations, wetland functional assessments, and vegetation surveys for Phinney Hill To Lakewood Heights Water Transmission Main Project. Completed aerial photo-interpretation of wetlands within 100 m of project footprint. Authored Linear Wetland Delineation and Functional Assessment report.*



Julianne, an aquatic ecologist and project scientist, has several years experience working in both freshwater and marine ecosystems. Her areas of expertise include aquatic ecology, ichthyology/fisheries, habitat studies, and watershed monitoring/inventories. She has worked throughout the Atlantic provinces and Ontario with government and private industry. Julianne's work experience ranges from desk-top studies to field-based assessment and includes public consultation. This experience has been gained through her various roles on both small-scale, specialized projects and large-scale Environmental Assessments. She is technically proficient and focuses on accurate, efficient data collection, presentation and interpretation.

## EDUCATION

Master of Science, Aquatic Ecology, University of Toronto, Toronto, Ontario, 2003

Bachelor of Science (Honours), Biology, Mount Allison University, Sackville, New Brunswick, 2000

Backpack Electrofishing Certificate, University of New Brunswick, College of Extended Learning and Canadian Rivers Institute, Fredericton, New Brunswick, 2007

## REGISTRATIONS

Environmental Consultant, Canadian Environmental Certification Approvals Board

## MEMBERSHIPS

Member 2007-present, Toastmasters International  
Member 2003-present, American Fisheries Society

## PROJECT EXPERIENCE

### Wind Power

Proposed Windfarm, Lameque, New Brunswick (Aquatics)

*Conducted stream assessments (including collection of fish, habitat, and water quality data), data management and report writing for establishment of baseline conditions. Fish presence-absence was determined using backpack electrofishing and all specimens caught were identified to species.*

Proposed Windfarms, Digby and Beaver Mountain, Nova Scotia (Aquatics)

*Conducted stream assessments (fish, habitat, water quality), data management and report writing for establishment of baseline conditions and to support watercourse alteration approval applications. Fish were sampled using backpack electrofishing. Habitat assessments used internal protocols influenced by the CABIN and OBBN methods for stream assessment.*

### Assessments, Permitting, and Compliance

Betty's Cove Brook Fish Salvage for Pipeline Installation, Goldboro, Nova Scotia (Project Coordinator; Electrofishing Specialist)

Environmental Permitting for Municipal Trunk Sewer Update, Halifax, Nova Scotia (Aquatic Ecologist, Co-author)

Petitcodiac River Causeway Project, Moncton, New Brunswick (Co-author; Remote Sensing Support)  
Rehabilitation Plan: Sackville River Restoration Requirements for Fish Habitat (including Atlantic Salmon Habitat), Halifax, Nova Scotia (Aquatic Ecologist; Co-author)

Species-at-Risk Recovery Potential Assessment (RPA) and Socio-Economic Impact Assessments, Halifax, Nova Scotia (Aquatic Ecologist; Co-author)

Halifax Regional Municipality Lake Assessments, Halifax, Nova Scotia (Aquatic Ecologist, Co-Author)

Ecological Constraint Analysis on the Sackville River, Halifax, Nova Scotia (Aquatic Ecologist; Co-author)

Julianne Sullivan MSc, EPT

Environmental Scientist

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Fisheries Resource Study – Five Island Lake Watershed,  
Halifax, Nova Scotia (Aquatic ecologist (Fisheries  
specialist))

Species-at-Risk Fish Study and DFO-ROM  
Collaboration\*, Toronto, Ontario (Fisheries Biologist)

### **Highway and Transportation**

Highway 103 Twinning Environmental Assessment,  
Tantallon/Hubbards, Nova Scotia (Fish and Fish Habitat  
VEC Coordinator; Co-Author)

Bridge Assessments (NB-DOT), Multiple towns/cities  
throughout the province, New Brunswick (Aquatic  
Ecologist)

Route 11 Upgrading, Shediac to Richibucto River, New  
Brunswick (Aquatic Ecologist)

Highway 102 Interchange Environmental Approvals,  
Halifax, Nova Scotia (Aquatic Ecologist)

Highway 101 Twinning Environmental Assessment,  
Halifax/Windsor, Nova Scotia (Aquatic Ecologist)

### **Water Quality Assessment**

Harbour Solutions Project, Halifax, Nova Scotia (Aquatic  
Specialist)

### **Water Supply**

Bennery Lake Source Water Assessment,  
Characterization and Monitoring, Halifax, Nova Scotia  
(Aquatic Ecologist; Co-author)

Source Water Protection Plan Pockwock Lake  
Watershed, Halifax, Nova Scotia (Aquatic Ecologist; Co-  
author)

### **Watershed Planning**

Water Quality Monitoring Functional Plan, Halifax,  
Nova Scotia (Aquatic Ecologist; Co-author)

*\* denotes projects completed with other firms*

Matt is an Environmental Scientist in Stantec's Dartmouth office. Matt graduated from the University of Prince Edward Island majoring in Biology and subsequently from Holland College where he specialized in field sampling techniques and laboratory testing. Currently he is providing technical assistance in the Environmental Management Practice Area of Stantec. He is experienced in the assessment of aquatic habitats, water quality, sediment quality and reporting findings in a way that are meaningful for client, regulatory and public audiences. During his ongoing time with Stantec, Matt has worked on field-based projects related to stream assessments, fish sampling and fish habitat. In addition, he has lead the field work for numerous marine ocean disposal permits and performed both marine and freshwater habitat assessments in relation to both HADD determination and Environmental Assessments.

Recently Matt has been certified in Watercourse Alteration and is a Recognized Individual through Nova Scotia Environment. This certification gives Matt the skills to act as an on-site Environmental Inspector for watercourse crossing structures and to provide support on habitat restoration and mitigation related to fish passage design.

## EDUCATION

Diploma in Environmental Science Technology, Holland College, Charlottetown, Prince Edward Island, 2007

Bachelor of Science, Biology, University of Prince Edward Island, Charlottetown, Prince Edward Island, 2006

Marine Emergency Duties (MED-A1), Survival Systems Limited, Halifax, Nova Scotia, 2010

Watercourse Alteration Certification (Recognized Individual), Maritime College of Forest Technology, Truro, Nova Scotia, 2010

Backpack Electrofishing Certificate (Crew Leader), University of Vancouver, Vancouver, British Columbia, 2008

## PROJECT EXPERIENCE

### Aquatic Ecology

Abitibi Bowater Stream Assessment, Bridgewater, Nova Scotia (Environmental Scientist)

*Conducted stream assessment, related to a sedimentation event and associated field/desktop studies.*

Beaver Mountain Wind Farm Stream Assessment, Antigonish, Nova Scotia (Environmental Scientist)

*Conducted stream assessment, including fish identification and associated field/desktop studies for proposed windfarm.*

Highway 104, Larry Uteck Interchange Stream Assessment, Halifax, Nova Scotia (Aquatic Specialist)

*Conducted stream assessment and associated field/desktop studies for proposed highway.*

Digby Wind Farm Stream Assessment, Digby, Nova Scotia (Environmental Scientist)

*Conducted stream assessment, including fish identification and associated field/desktop studies for proposed windfarm.*

Highway 101 Stream Assessment, Windsor, Nova Scotia (Aquatic Specialist)

*Conducted stream assessment and associated field/desktop studies for highway Environmental Assessment.*

### Assessments, Permitting, and Compliance

Watercourse Alteration Permit – Culvert extension, Bedford, Nova Scotia (Aquatic Scientist)

*Completed an application for a watercourse alteration involving the extension of existing culverts into fish habitat. Involved in the discussion with DFO regarding fish habitat, habitat compensation and modification of the culvert extension to make it suitable for fish passage.*

## Matt Steeves BSc

### Water Resources Management (Environmental Management)

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#### Water Withdrawal Application, Fall River, Nova Scotia (Aquatic Scientist)

*Produced an application for renewal of a water withdrawal permit, analyzing hydrodynamic conditions, fish habitat and recreational use on site as well as ensuring the intake structure was designed to DFO standards.*

#### Betty's Cove Brook Fish Salvage for Pipeline Installation, Goldboro, Nova Scotia (Aquatic Scientist – Watercourse Crossing Specialist)

*Set-up barrier nets, completed fish salvage using backpack electrofishing unit to adhere to regulatory requirements for fish removal prior to pipeline installation, identified all fish caught, enumerated and measured fish prior to live release into the stream. Provided guidance to contractor regarding watercourse crossing techniques.*

#### Fisheries Management

##### Five Island Lake Sampling, Tantallon, Nova Scotia (Environmental Scientist)

*Completed aquatic field work for monitoring of an impacted fisheries, which involved baseline water quality monitoring, fish sampling and analysis of fish tissues.*

#### Freshwater Lakes

##### Bennery Lake Source Water Protection –Aquatic Assessment, Enfield, Nova Scotia (Aquatic Scientist)

*Participated in the field work for assessment of fish habitat within a potable water watershed. The program involved qualitative fish community sampling, water quality sampling and benthic invertebrate analysis.*

##### Surface Water Monitoring Program for Lakes in the Halifax Region, Halifax, Nova Scotia (Aquatic Specialist)

*Participated in the field work for surface water monitoring program for lakes in the Halifax region.*

#### Highway and Transportation

##### Highway 103 Twinning Environmental Assessment, Tantallon/Hubbards, Nova Scotia (Aquatic Scientist; Co-Author)

*Completed aquatic field work including watercourse identification and determination, water quality sampling, habitat surveying, and fish species presence-absence assessment. Managed data, coordinated watercourse mapping and drawings.*

#### Water Quality Assessment

##### Aquatic Field Work for Sydney Harbour Dredging, Sydney, Nova Scotia (Environmental Scientist)

*Completed aquatic field work for the port expansion, which involved baseline water quality monitoring, fish habitat assessments, fish sampling and stream characterisation.*

##### Aquatic Field work for Natural Gas Pipeline Construction, Isaac's Harbour, Nova Scotia (Aquatic Specialist)

*Monitored baseline water quality. Completed fish habitat assessments, electrofishing and stream characterisation.*

##### Aquatic Field Work for a Natural Gas Pipeline, Alton, Nova Scotia (Aquatic Specialist)

*Conducted aquatic field work for the natural gas pipeline, which involved baseline water quality monitoring, fish habitat assessments and stream characterisation.*

#### Water Quality Plans

##### Brunello Estates Water Quality Monitoring Plan, Timberlea, Nova Scotia (Aquatic Scientist)

*Designed and implemented a Water Quality Monitoring Plan in relation to construction of a residential development and golf course. Leading discussion with the local Watershed Advisory Board related to the monitoring plan.*

##### Halifax Regional Municipality Water Quality Functional Plan, Halifax, Nova Scotia (Environmental Scientist)

*Reviewed and compiled technical sampling methods as a component of the municipal water quality monitoring plan.*

##### Halifax Harbour Solutions, Halifax, Nova Scotia (Environmental Scientist)

*Co-ordinated field work, equipment and boathires as well as performed sampling on a repeat basis within Halifax Harbour as part of the mandated Environmental Effects Monitoring Program.*

\* denotes projects completed with other firms

# Christine Jeans

Junior Planner



Christine is a Junior Planner and has been with the Stantec Environmental Management team in the Dartmouth, Nova Scotia office since 2009. Christine has a strong background and understanding in community planning and land-use planning. Christine has a Bachelor of Community Design, Major in Planning from Dalhousie University.

## EDUCATION

Bachelor of Community Design, Dalhousie University,  
Halifax, Nova Scotia, 2009

## PROJECT EXPERIENCE

### Wind Power

Municipality of the District of Shelburne Wind Energy  
Development Plan, Shelburne, Nova Scotia (Junior  
Support)

*Provided assistance to the project manager for project research  
and report preparation.*

Sandy Cove Wind Energy Project, Halifax County, Nova  
Scotia (Project Research Assistant)

*Managed data entry and table formatting related to migratory  
bird surveys(2009-2010).*

### Community Planning

Cumberland County Environmental Master Plan,  
Cumberland County, Nova Scotia (Project Support)

*Provided assistance to the project manager for project research  
and report preparation.*

Integrated Community Sustainability Plan for the County  
of Shelburne, Shelburne, Nova Scotia (Project Research  
Assistant)

*Assisted in creating an integrated community sustainability plan  
for the County of Shelburne (2009-2010).*

Integrated Community Sustainability Plan for the City of  
Corner Brook, Corner Brook, Newfoundland and  
Labrador (Project Research Assistant)

*Assisted in creating an integrated community sustainability plan  
for the City of Corner Brook (2009-2010).*

Integrated Community Sustainability Plan for the City of  
Charlottetown, Charlottetown, Prince Edward Island  
(Project Research Assistant)

*Assisted in creating an integrated community sustainability plan  
for the City of Charlottetown (2009).*

### Ecosystem Restoration

Petitcodiac River Causeway Project, Commercial  
Fisheries Component, Moncton, New Brunswick (Project  
Research Assistant)

*Managed data entry and formatting (tables, spreadsheets,  
graphs and charts) related to satellite imagery, tidal conditions  
and water quality. Supported report writing and compilation  
(2009-2010).*

### Marine & Port Facilities

Richmond Terminals Redevelopment, Halifax, Nova  
Scotia (Junior Support)

*Provided assistance to project managers in developing  
screening level environmental assessments for Pier 9, Shed 9A  
and Shed 9 redevelopment projects at Richmond Terminals,  
Halifax, Nova Scotia (2009-2010).*

### Mining

Donkin Underground Mine Environmental Assessment,  
Cape Breton, Nova Scotia (Junior Support)

*Provided assistance to project managers in all aspects of  
developing an environmental assessment for the Donkin  
Underground Mine in Cape Breton, Nova Scotia (2010).*

### Oil & Gas

Georges Bank Environmental and Socio-Economic Study,  
Nova Scotia (Project Research Assistant)

*Extensive literature review of Georges Bank and environmental  
and socio-economic issues related to petroleum activities.  
Supported report writing and compilation (2009-2010).*

\* denotes projects completed with other firms

# Christine Jeans

Junior Planner

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## **Roads and Highways**

CEAA Screening Level Environmental Impact Assessment  
Report for the Highway 107 Extension to Highway 102,  
Burnside to Bedford, Nova Scotia (Project Coordinator)

*Responsible for coordinating field crew, ensuring proper forms  
are completed, providing assistance to the project manager for  
project research and report preparation.*

CEAA Screening Level Environmental Impact Assessment  
Report for the Highway 103 Twinning, Upper Tantallon  
to Hubbards, Nova Scotia (Junior Support)

*Managed data entry and formatting (tables, spreadsheets and  
charts) related to wetland functional assessments. Supported  
socio-economic research and writing (2009-2010).*

## **Solid Waste Management**

Solid Waste Characterization Study in Nova Scotia for  
Potential to Supply a Plasma Gasification Facility,  
Halifax, Nova Scotia (Project Research Assistant)

*Research solid waste streams available for local electricity  
production (2010).*

\* denotes projects completed with other firms

Chris, Team Leader for GIS/Information Management services in Nova Scotia and Newfoundland and Labrador, is responsible for preparation, interpretation and analysis of satellite and air photo data to support various disciplines in preparing environmental assessments. He performs land cover identification and land use and disturbance classification to identify the impact of disturbances on the landscape. Before coming to Dartmouth in 2007, Chris held the role of senior analyst within Calgary's Geomatics department. As such, he has played a key role in the project planning, spatial analysis and mapping on key projects including Imperial Oil's Mackenzie Gas pipeline, Cold Lake and Kearl Lake SAGD projects and Altalink's Heartland 500kV transmission line project. With over six years of experience working in Alberta's Oil and Gas sector and with his strong background and education in both cartography and remote sensing, Chris has also played a significant role in the development and implementation of the company's cartographic/graphic and quality control standards.

## EDUCATION

Advanced Diploma, Remote Sensing, Centre of Geographic Sciences (COGS), Lawrencetown, Nova Scotia, 2003

Cartography, Digital Mapping, Centre of Geographic Sciences (COGS), Lawrencetown, Nova Scotia, 2001

## PROJECT EXPERIENCE

### Visual Impact Assessments

Digby Wind Project, Digby County, Nova Scotia (GIS Lead/GIS Analyst/Visual Impact Analyst)

*Stantec prepared a baseline and environmental assessment for the proposed development of a 20 turbines wind farm in the Digby, Gulliver's Cove area of Digby Co., Nova Scotia. Chris acted as Geomatics Project Lead, providing data and work flow management along with analytical support to the Project Lead and Client. Also acting as senior analyst, Chris also produced all data and mapping products for multiple disciplines including visual impact analysis, wildlife and vegetation, noise and archaeology.*

### GIS / Remote Sensing

Proposed Heartland 500Kv Transmission Project, Edmonton, Alberta (GIS Analyst/Remote Sensing Analyst/Cartography)

*AXYS provided all geomatics support to Altalink and EPCOR in preparation for baseline and environmental impact studies for the proposed 500kV transmission line servicing Alberta's Heartland (Edmonton and Fort Saskatchewan) area. Preliminary support included constraints, and network analysis to aid in route selection. Chris provided GIS/Remote Sensing support and mapping products for multiple disciplines including vegetation, wildlife and soils. In Addition to this, Chris was involved in data and workflow management in support of the geomatics lead and project team.*

Scotford Upgrader Baseline Study and Environmental Impact Assessment, Fort Saskatchewan, Alberta (GIS Analyst/Cartography)

*AXYS prepared the environmental impact assessment for Shell's proposed debottlenecking and expansion of their Scotford Upgrader facilities. Chris provided GIS/cartographic support to the senior GIS analyst and remote sensing and image analysis support for the project. He also produced mapping products for multiple disciplines including vegetation, wildlife and soils.*

Kearl Oil Sands Project Environmental Impact Assessment, Fort McMurray, Alberta (GIS Lead/GIS Analyst/Cartography)

*AXYS provided the soils, vegetation, wildlife, historical resources, resource use and traditional land use elements for the baseline studies and environmental assessment for Imperial Oil's Kearl Project. Chris provided remote sensing and image analysis support for the project and GIS/cartographic support to the senior GIS analyst. He also produced mapping products for multiple disciplines including vegetation, wildlife and soils.*

\* denotes projects completed with other firms



**GIS and Information Management**

Cumberland County Master Planning Strategy (Environmental Issues and Analysis Report), Cumberland County, Nova Scotia (GIS Lead and Senior Analyst)

*Stantec prepared an Environmental Issues and Analysis report as an initial step in the development of an Environmental Master Plan for Municipality of Cumberland County, Nova Scotia. Stantec identified issues of concern through literature research, public and stakeholder consultation and GIS analysis of existing environmental features within the county. Chris acted as the Geomatics Project Lead, providing data and work flow management along with analytical support for Project Lead and Client. Also acting as senior analyst, Chris produced all data and mapping products as well as developed and maintained data standards, quality and information management practices for the project.*

Lower Churchill HVCD Satellite Based ELC Classification, St. John's, Newfoundland (Remote Sensing Analyst/GIS Analyst)

*Stantec's St. John's office participated in the development of land cover data for a proposed transmission line corridor in support of the Lower Churchill Hydroelectric Project. Chris completed the land cover image classification using Landsat 7 (8 scenes) data for the 1, 1 00 km pipeline corridor. This corridor started in St. John's, Newfoundland, and ran across the mainland of Newfoundland and Labrador, and on to its destination southwest of Happy Valley-Goose Bay, Labrador.*

Bay of Fundy Strategic Environmental Impact Assessment, Bay of Fundy, Nova Scotia (GIS Lead/GIS Analyst)

*Stantec prepared a strategic environmental impact assessment looking at the feasibility of locals within the bay to facilitate tidal energy projects. Chris acted as Geomatics Project Lead, providing data and work flow management along with analytical support to the Project Lead and Client. Also acting as senior analyst, Chris also produced data and mapping products for multiple disciplines including regional and location specific constraint products.*

Highway 101 Twinning Project Environmental Impact Assessment, Hants County, Nova Scotia (GIS Lead/GIS Analyst)

*Stantec prepared a baseline environmental impact assessment for Nova Scotia's Department of Transportation and Infrastructure Renewal for the proposed twinning of provincial highway 101 at Windsor, Nova Scotia. Chris acted as Geomatics Project Lead, providing data and work flow management along with analytical support to the Project Lead and Client. Also acting as senior analyst, Chris also produced data and mapping products for multiple disciplines including vegetation, wildlife, Socio-economic, physical geology and others.*

Noel Major (Sweet and Sour) Gas Project Terrain and EIA Studies, Dawson's Creek, British Columbia (GIS Analyst/ Remote Sensing Analyst/ Cartography)

*AXYS prepared baseline, terrain and environmental impact assessments for BP Canada's planned expansion of the Noel Major Gas (Sweet and Sour) Project in northern British Columbia. Chris acted as Geomatics Project Lead, providing data and work flow management along with analytical support to the Project Lead and Client. Also acting as senior analyst, Chris also produced data and mapping products for multiple disciplines including vegetation, wildlife, Socio-economic and soils.*

Mackenzie Gas Project Biophysical Baseline and Environmental Impact Assessment, Inuvik, North West Territories (GIS Analyst/ Remote Sensing Analyst/ Cartography)

*AXYS participated in the development of the environmental impact assessment for the Mackenzie Gas pipeline. As a key member of the Mackenzie Project Environment Group (MPEG), AXYS was contracted by Imperial Oil to participate in various components of the baseline study and environmental impact assessment for the proposed Mackenzie Valley Pipeline. The Mackenzie Gas Project is a proposed 1220-kilometre natural gas pipeline system that will run through the Mackenzie Valley of Canada's Northwest Territories. Chris completed the land cover image classification using Landsat 7/5 data for the 1,500 km pipeline corridor from northern Alberta to Inuvik, NWT. He was also responsible for wildlife and vegetation field data analysis and mapping for the pipeline corridor, as well as map production for all discipline report sections.*

# Jeffrey A Benjamin

GIS Specialist



Mr. Benjamin is a GIS Specialist with Stantec Consulting Ltd. in Saint John, New Brunswick, working in the Environmental Sciences Group. He has a background in Biology and Geographic Information Systems (GIS). Mr. Benjamin has provided GIS support for various developments in New Brunswick including road, bridge, and transmission line construction, wind power developments, water pipeline updates, and industrial facility and subdivision developments. Mr. Benjamin has experience in the development of specialized tools for efficient and consistent field data collection and the data integrity of geodatabases. GIS support has included spatial database design, compilation, and management, spatial analysis, and the development of visual products for reporting and other purposes.

## EDUCATION

Bachelor of Science in Biology, Dalhousie University,  
Halifax, Nova Scotia, 2007

Geographic Information Systems Technology Diploma,  
New Brunswick Community College, Moncton, New  
Brunswick, 2009

## MEMBERSHIPS

Member, Canadian Institute of Geomatics

## AWARDS

2008 Environmental Systems Research Institute (ESRI)  
Canada Scholarship Award

## PROJECT EXPERIENCE

### **Environmental Management**

Petitcodiac, New Brunswick (GIS Specialist)  
*Provided data collection and management, spatial analysis, and  
cartographic support.*

Culvert Maintenance, New Brunswick (GIS Specialist)  
*Provided data management, spatial analysis, and cartographic  
support.*

Phinney Hill to Lakewood Heights Water Transmission  
Main Project, Saint John, New Brunswick (GIS Specialist)  
*Provided data management, spatial analysis, and cartographic  
support.*

### **Bridge Upgrades, New Brunswick (GIS Specialist)**

*Provided data management, spatial analysis, and cartographic  
support.*

### **Route 11 Upgrades, New Brunswick (GIS Specialist)**

*Provided data management, spatial analysis, and cartographic  
support.*

### **Tidal Power Development, New Brunswick (GIS Specialist)**

*Provided data management, spatial analysis, and cartographic  
support. Prepared 3D animations depicting current velocities of  
potential tidal sites.*

### **Wind Power Development, New Brunswick (GIS Specialist)**

*Provided data management, spatial analysis, and cartographic  
support. Prepared reports on environmental, radar and  
communication constraints.*

### **Route 1 Gliman's Corner, New Brunswick (GIS Specialist)**

*Provided data management, spatial analysis, and cartographic  
support.*

### **Route 1 Gateway, New Brunswick (GIS Specialist)**

*Provided data management, spatial analysis, and cartographic  
support.*

### **Eider Rock, Saint John, New Brunswick (GIS Specialist)**

*Provided data management, spatial analysis, and cartographic  
support for Standard Wetland Delineation and Functional  
Assessment report.*

\* denotes projects completed with other firms

# Jeffrey A Benjamin

GIS Specialist

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## Project Re-Build of Transmission Line 0013, New Brunswick (GIS Specialist)

*Provided data management, spatial analysis, and cartographic support for Standard Wetland Delineation and Functional Assessment report.*

## Environmental Site Remediation

### Grandview Avenue Diesel Spill, Saint John, New Brunswick (GIS Specialist)

*Provided data management, spatial analysis, and cartographic support.*

## GIS and Information Management

### Watershed Vulnerability Mapping, Saint John, New Brunswick (GIS Analyst)

*Project involved using GIS database, spatial analysis, and mapping tools to analyze six land use stressors for the Gulf and Maritime regions watersheds.*