

## ANGELA SWAINE – Project Manager

### EDUCATION

B.Sc. (Biology), Acadia University, 1992  
 Environmental Technology Certificate, Holland College, 1996  
 ACUC Open Water Scuba Diving, 1999  
 PADI Advanced Open Water Diver, 2002  
 Marine Emergency Duties (MED A1) Training, 2000  
 Current (2003) first aid and WHMIS (2004) certificates  
 Management Training, 2005

### SUMMARY OF QUALIFICATIONS

Angela Swaine is an environmental assessment practitioner at Jacques Whitford. Throughout her eight years with Jacques Whitford, Ms. Swaine has been responsible for a variety of duties ranging from field sampling and report writing to project, budget and personnel management. Angela served as manager of the Environmental Sciences Division (PEI) prior to assuming the role of Practice Lead for Environmental Planning and Permitting in 2003. Typical activities include conducting field surveys, compilation of environmental assessments, environmental management plans, environmental protection plans, monitoring programs, permit applications, technical data reports and public and stakeholder consultation. Angela has participated in the preparation of numerous environmental impact statements to facilitate environmental assessment pursuant to the Canadian Environmental Assessment Act. Most recently Angela has been part of the team that successfully prepared an environmental assessment for a proposed liquefied natural gas marine terminal in Bear Head, Nova Scotia. The project was recently approved by both federal and provincial regulators through a joint environmental assessment review.

### Primary Areas of Expertise

- Environmental Assessment
- Environmental Permitting

**Experience: 10 years**  
**With JW: 8 years**  
**Office: Dartmouth, NS**

### RELEVANT PROJECT EXPERIENCE

- Prepared an environmental impact assessment document and assisted with public consultation for a proposed compost facility in Brookfield, PEI.
- Implemented an air monitoring program for the Island Waste Management Corporation.
- Developed and implemented an environmental protection plan and environmental effects monitoring programs for both Charlottetown and Summerside Harbour dredge programs.
- Developed a generic Environmental Protection Plan for Prince Edward Island Department of Transportation and Public Works, including consultation with representatives from each division within the Department.
- Served as project manager and assisted in the preparation of environmental screening documents for numerous bridge/sluiceway projects conducted by PEI Transportation and Public Works.
- Coordinated and conducted regulator consultation during the review of the environmental impact assessment process in Prince Edward Island.
- Participated in the preparation of a Comprehensive Study and Screening Document (for separate portions) of the proposed New Brunswick Highway Twinning Project.
- Managed and reviewed CEAA Screenings and Ocean Disposal Permit Applications for a number of harbours in Prince Edward Island and New Brunswick, for Public Works and Government Services Canada.
- Prepared a federal screening assessment for replacement of a marine railway in Georgetown, PEI.
- Conducted marine benthic habitat surveys for a number of PEI harbours in support of Ocean Disposal Permit Applications for Public Works and Government Services Canada.
- Conducted a Waste Disposal Monitoring Program for McCain Foods.
- Complied an Environmental Management Plan for Agra West Foods potato processing facility.
- Served as project manager and participated in the preparation of an environmental impact statement for a proposed Mushroom Log Manufacturing facility.



## ROBERT FEDERICO – Principal

### EDUCATION

M.P.A. Graduate Program in Public Policy and Administration, Columbia University, School of International and Public Affairs, New York, N.Y., 1986

B.A. Philosophy, State University of New York, College at Purchase, Purchase, N.Y., 1978

Environmental Management Training: ISO 14001 Certified Lead Auditor, 1997

### SUMMARY OF QUALIFICATIONS

Robert Federico is a senior project manager who has been with Jacques Whitford for 14 years and has 17 years experience managing numerous environmental studies in Canada and the U.S. including environmental management systems, environmental assessments, waste management studies, public and stakeholder consultations and policy studies. He is a trained lead auditor for ISO 14001 and has played a leading role at Jacques Whitford in developing environmental management services including ISO 14000 for industry and government. He has managed environmental assessments or environmental and regulatory reviews for major environmental projects including: the Bear Head LNG Project; Sydney Tar Ponds Clean-up; Deep Panuke Project; the Blue Atlantic Project; Hudson Energy; Rockingham Container Terminal; the Halifax Harbour Solutions Project; development of numerous highways in Nova Scotia; Halifax Lateral Pipeline Project; the Point Tupper Lateral Project; and the Sheet Harbour gypsum loading facility. He has managed or participated in a number of studies for the DND in Halifax including: Jetty NJ Reconstruct; the HMCS Montreal Solid Waste Management Study; the Environmental Management System for MARLANT Formation Construction Engineering and the EMS for DND/CF; the Waste Reduction Management Plan for CFB Halifax; the Assessment of Military Training Exercises at the Canadian Forces Maritime Ranges in the Halifax Area; the Comprehensive Study Environmental Assessment of the Closure of CFS Debert; as well as senior review of numerous screenings for DND.

### Primary Areas of Expertise

- Environmental Assessments
- Environmental Management Systems
- Waste Management Specialist

**Experience: 17 years**

**With JW: 14 years**

**Office: Dartmouth, NS**

### RELEVANT PROJECT EXPERIENCE

- Project Manager, Environmental Assessment for Bear Head LNG project, NS (2003-2005)
- Co- Lead, EIA for Sydney Tar Ponds Clean-Up (2005)
- Project Manager, Environmental Assessment for Jetty NJ Reconstruct, Formation Construction Engineering (2002)
- Project Manager HMCS MONTREAL Solid Waste Study (2000)
- Senior Analyst, Environmental Management System for MARLANT Formation Construction Engineering (1999)
- Project Manager, Develop ISO 14001 EMS for Halifax Regional Water Commission (2002)
- Project Manager, Development of EMS for Halifax Port Authority (2003-2004)
- Task Leader, Environmental Assessment, offshore oil and gas exploration project, NS (2001-2002)
- Task Leader, Environmental Assessment, Blue Atlantic Project, (2001-2002)
- Project Manager, Environmental Screening Report for the development of the Rockingham Container Terminal, Halifax, NS (2000-2002)
- Project Manager, Sheet Harbour Marine Loading Terminal Environmental Screening (2000-2002)
- Project Manager, Various highway environmental assessments for Nova Scotia Department of Transportation and Public Works (1993-2004)
- Project Coordinator, Point Tupper Lateral Pipeline Project Environmental Assessment, Maritimes & Northeast Pipeline (1999)
- Senior Analyst, Halifax Harbour Solutions Project (1998-2002)
- Project Coordinator, Halifax Lateral Pipeline Project Environmental Assessment, pipeline company client (1998-1999)



## KELLEY FRASER – Project Coordinator

### EDUCATION

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

B.Sc Honours Environmental Science, Acadia University, Wolfville, NS, 2001

Certified Environmental Practitioner in Training (CEPIT)

Jacques Whitford Project Management Training Courses, 2006, 2007

Jacques Whitford Risk Assessment Training Courses, Ottawa, 2005; Burlington, 2007

*Canadian Environmental Assessment Act* Course, 2006

Wind Energy Conference, 2005

Pollution Prevention (P2) Workshop, 2004

First Aid and CPR; WHMIS safety training

### SUMMARY OF QUALIFICATIONS

Ms. Kelley Fraser, B.Sc.H, M.E.S., is a Project Coordinator and Project Manager-in-Training (PMIT) with Jacques Whitford's Dartmouth office. She was the Project Coordinator for the Amherst Wind Power Project. Ms. Fraser has also assisted with several other environmental assessment projects, at the provincial and federal levels, where she has been responsible for project coordination, background research, aquatic and terrestrial field surveys, report writing and production, and public consultation. In addition, she has worked on several large ecological risk assessments, including the Sydney Tar Ponds. Ms. Fraser has also worked on natural resource management plans and several sustainability projects.

### Primary Areas of Expertise

- Environmental Assessments
- Ecological Risk Assessments
- Ecological Assessment and Habitat Studies

**Experience: 5 years**

**With JW: 4 years**

**Office: Dartmouth, NS**

### RELEVANT PROJECT EXPERIENCE

#### *Environmental Assessment*

- Environmental Assessment, Amherst Wind Energy Project, Amherst, Nova Scotia, CEAA screening assessment, 2006-7.
- Issues identification Reports for several proposed wind farm locations in Nova Scotia and New Brunswick, Confidential Clients, 2006-7
- Environmental Assessment for the proposed Alton Natural Gas Storage Project, 2006-7
- Environmental Assessment, Kent Hills Wind Energy Project, Kent Hills, New Brunswick, CEAA screening assessment, 2007.
- Environmental Assessment, Highway 104, New Glasgow to Sutherlands River, NS, Nova Scotia Department of Transportation and Public Works. CEAA screening assessment, 2004-5
- Environmental Assessment, Bear Head Liquefied Natural Gas (LNG) Terminal, Access Northeast Energy Inc. Joint federal/provincial assessment according to CEAA and Nova Scotia Environment Act, 2004

#### *Risk Assessment and Toxicology*

- Data analysis and preparation of a quantitative ecological risk assessment for Defence Construction Canada (DCC), Bedford Rifle Range, NS, 2006-7
- Conducted large-scale ecological risk assessment including scoping, modelling, and writing for the Remediation of the Sydney Tar Ponds and Coke Ovens Sites, Sydney Tar Ponds Agency, Sydney, NS, 2005-2006
- Data analysis and preparation of a quantitative ecological risk assessment for Public Works Government Services Canada (PWGSC), Former East Pine Island Pumpouse, NS, 2005
- Data analysis and preparation of a quantitative ecological risk assessment for Defence Construction Canada (DCC), Aldershot, NS, 2005
- Assisting in the research and development of an ecological risk assessment model for Jacques Whitford, 2004-ongoing
- Participated in the research, data collection, data analysis and preparation of a risk assessment for Bermuda's near-shore environment, 2002
- Marine Ecotoxicology Field Course, Bermuda, Summer 2002

#### *Ecological Assessment and Habitat Studies*

- Desktop studies for site selection purposes for several sites in Nova Scotia and New Brunswick, 2006-7
- Training Area Management Plans for several MARLANT properties, 2006-7



## CHAD AMIRAUT – GIS Specialist

### EDUCATION

Cartography: Digital Mapping 2, Centre of Geographic Sciences, Lawrencetown, Nova Scotia, 1998-2000

### ACCREDITATIONS

Canadian Cartographic Association (CCA)  
 Geomatics Association of Nova Scotia (GANS)  
 Geomatics Industry Association of Canada (GIAC)

### SUMMARY OF QUALIFICATIONS

Chad Amirault has been with Jacques Whitford for over six years and has seven years experience in the GIS industry. Mr. Amirault is currently the GIS and data management service director for Jacques Whitford. Mr. Amirault also worked with the Department of Natural Resources, Halifax, NS as a GIS Analyst/Cartographer.

### RELEVANT PROJECT EXPERIENCE

*GIS Data Management/ Application Development*

- **Data conversion and GIS design for CFB Willow Park, NS (2002-2003).** The project was to convert all available Site CAD drawings into a central GIS. After all data conversions, a custom GIS was built to allow client to efficiently managed the databases.
- **CFB Greenwood Environmental Management Plan (2003).** Historical and current data sets were collected to build a GIS database for data analyses and environmental modeling. The project also included a groundwater resource assessment and both human health and ecological risk assessments.
- **GIS Design and Development for MARLANT Properties (2004-2005).** GIS database collection and creation for nearly fifty DND/DCC Sites located across the Maritime Provinces.

### Primary Areas of Expertise

- GIS Service Director
- GIS Team Leader
- GIS Specialist
- 3D Env. Modelling
- Cartographer
- Graphic Designer

**Experience: 7 years**  
**With JW: 6 years**  
**Office: Dartmouth, NS**

*Site Assessments/Environmental Analysis*

- **GIS Data Manager and Cartography for the Phase II/III Muggah Creek Environmental Assessment.** Mapping included borehole locations, cross sections, groundwater equipotential contouring, contamination and impacted sediment modeling, analyte distribution modeling and infrastructure plans (2000-2002)
- **Port Colborne Natural Environment and Human Health Risk Assessments.** GIS mapping and environmental modeling was done for the Natural Environment and Human Health Risk Assessments. Project also included Lead and crop studies reports for the Inco refinery.
- **Blue Atlantic Transmission System Project (2002-2003).** Developing environmental databases for constraint mapping for a proposed offshore oil & gas pipeline that would transport liquids from Sable Island to New York.
- **Phase I/II for Bedford Rifle Range, MARLANT (2005-2006).** Environmental monitoring and contamination distribution modeling.
- **Construction and Inspection Services for CFAD, Bedford (2006-2007).** GPS collection and map production of sampling and monitoring.

*GIS Solutions*

- **NS & PEI Salt Management Plans (2004-2005).** Collection of all data layers that would affect salt mobilization to generate a salt vulnerability model. The model was used to rank all salt storage areas in NS and P.E.I.
- **High Consequence Areas Mapping Model (2005-2006).** Automated GIS designed to model potential overland and over water transport scenarios from any location along the Sarnia to Montréal pipeline. This model is used with emergency response procedures as well as routine maintenance plans.
- **HRM Wind Suitability Master Plan (2005).** Collection of all data layers that would affect Wind Power projects in HRM then design a customized GIS model to rank/score the suitability of all properties within the county.



## TRICIA BEAZLEY – Project Engineer

### EDUCATION

Master of Engineering Science (M.E.Sc.) Chemical and Biochemical Engineering, The University of Western Ontario, 2003-2005

Environmental Science Graduate Program, The University of Western Ontario, 2004-2005

Bachelor of Engineering Science (B.E.Sc.) Chemical and Biochemical Engineering, The University of Western Ontario, 1998-2002

CALPUFF Training Course, Calgary, 2006

Noise Control Course for Buildings, Manufacturing Plants, Equipment and Products, Orlando, 2006

### SUMMARY OF QUALIFICATIONS

Tricia Beazley, M.E.Sc., E.I.T, is a Project Engineer in the Environmental Permitting and Planning Group with Jacques Whitford's Dartmouth office. With her background in chemical and biochemical engineering, her academic training includes chemical and biochemical plant design, bioseparation processes, environmental science and site remediation (wastewater treatment, solid waste management, air pollution), and both research and laboratory skills. Since joining the Jacques Whitford team in 2005, Ms. Beazley has participated in a number of environmental assessments, including large-scale assessments such as the remediation of the Sydney Tar Ponds and Coke Ovens and the Deep Panuke Offshore Oil and Gas Project. In addition, she has also assisted in several environmental assessments at the provincial level, where she has conducted background research, air dispersion modelling, noise modelling, development of emissions inventories, preparation of mitigation strategies, report writing and production.

### RELEVANT PROJECT EXPERIENCE

#### *Environmental Assessment and Regulatory Approvals*

- Sustainable Management Plan Project Valued Component Assessment and Establishment of Range and Training Area Sustainability Indicators and Performance Targets, CFB Gagetown, New Brunswick. Department of National Defence. 2007.
- Environmental Assessment for the Deep Panuke Offshore Oil and Gas Project, Nova Scotia. Encana Corporation. Air quality assessment and air dispersion modelling for normal project operations and malfunction and accidental event scenarios. 2006-2007.
- Environmental Assessment for Whites Point Quarry, Digby, Nova Scotia. Bilcon of Nova Scotia. Noise and air quality study performed as a supporting assessment document. 2006-2007.
- Application to Amend the Industrial Approval for the Quarry Expansion at Sovereign Resources Quarry, Bedford, Nova Scotia. Sovereign Resources Inc. 2005-2006.
- Environmental Assessment for the Remediation of the Sydney Tar Ponds and Coke Ovens Sites, Sydney, Nova Scotia. Sydney Tar Ponds Agency. Literature review, gathering data, and air dispersion modelling. 2005-2006
- Environmental Assessment for the Proposed Silver Mine Project, Silver Mine, Nova Scotia. Yava Technologies Inc. Preparation of the air quality valued environmental component (VEC) assessment. 2006.
- Environmental Assessment for the Bear Head Pipeline Project, Halifax, Nova Scotia. Maritimes & Northeast Pipeline Management Ltd. (M&NP). Preparation of the air quality VEC for project construction and operation. 2005.

#### *Air Quality Analysis and Reporting*

- Clean Air Strategy Development, Halifax, Nova Scotia. Halifax Regional Municipality. Comprehensive review of factors contributing to air quality as a part of a larger strategy to promote and support improvement in air quality in the community. 2006.
- Contaminant Ingestion Analysis for Citadel High, Halifax, Nova Scotia. Nova Scotia Department of Transportation and Public Works. Exhaust ingestion analysis for emissions sources at school and local emissions sources using ASHRAE and SCREEN3 models. 2006.
- Biosolids Plant Biofilter Trimethylamine Emissions Analysis, Halifax, Nova Scotia. SGE Acres Limited. 2006.
- Compliance Source Emissions Testing Report, New Glasgow, Nova Scotia. Maritime Steel and Foundries Limited. Analysis and reporting from source emissions testing data was performed for rooftop exhaust fans and related to applicable odour detection threshold data. 2005.

#### *Noise Analysis and Reporting*

- Noise Impact Assessment for the Sturgeon Upgrader, Fort Saskatchewan, Alberta. Petro-Canada Oil Sands Inc. Assessing project noise impacts and noise modelling using CadnaA. 2006.
- Noise Impact Assessment for the Sullivan Field Development Project, Calgary, Alberta. Petro-Canada. 2006-2007.
- Noise Impact Assessment for the Rowley Compressor Station, Calgary, Alberta. Centrica Direct Energy. 2005.

### Primary Areas of Expertise

- Environmental Assessments
- Air Quality
- Noise

**With JW: 1.5 years**

**Office: Dartmouth, NS**



## SANDRA ELVIN – Project Scientist

### EDUCATION

Masters of Marine Management (MMMM), Marine Affairs Programme, Halifax, NS, 2005  
 B.Sc Biology (major), Environment (minor), McGill University, Montreal, QC, 2002  
 PADI Rescue Diver Certification, 2004  
 All-Terrain-Vehicle Certification, 2004  
 Canadian Firearms Possession and Acquisition License, 2004  
 Wilderness Safety Ice Training, 2004  
 Civil Air Search and Rescue Association Spotter Training, 2004  
 Current (2004) First Aid and CPR; WHMIS (2005) safety training

### SUMMARY OF QUALIFICATIONS

Ms. Sandra Elvin, MMM, BSc., is a project scientist for Jacques Whitford with the Biological and Ecological Sciences group in Dartmouth, NS. Ms. Elvin has wide-spread experiences in aquatic and terrestrial ecology, analysing and assessing freshwater and marine ecosystems in various biomes including tropical, sub-tropical and boreal areas. At Jacques Whitford, Ms. Elvin has assisted with several environmental assessments, where her primary role included background research, aquatic and terrestrial field surveys, report writing and production.

### RELEVANT PROJECT EXPERIENCE

#### Primary Areas of Expertise

- Ecological Assessment and Habitat Studies
- Environmental Assessments

**Experience: 3 years**

**Office: Dartmouth, NS**

- Environmental and Socio-economic Assessment for the Proposed Bear Head Pipeline Project, Maritimes Northeast Pipeline Management Limited, NS, 2005
- Aquatic habitat assessment for Amherst Wind Farm Environmental Assessment, EHN Windpower Canada Inc., NS, 2005
- Environmental assessment of Lighthouse Beach Restoration, Nova Scotia Transportation and Public Works, Nova Scotia, 2005
- Aquatic habitat assessment for Quarry Expansion Project, Alva Construction Limited, NS, 2005
- Aquatic habitat assessment for Quarry Expansion Project, Zutphen Contractors Pit Development, NS, 2005
- Alton Gas Storage Project, Preliminary Scoping Study, Landis Mining Corporation, NS, 2005
- Halifax Harbour Water Quality Monitoring, Halifax Regional Municipality, NS, 2005
- Managing interactions between North Atlantic right whales (*Eubalaena glacialis*) and commercial vessels in Canadian waters: review and recommendations, Masters of Marine Management, Dalhousie University, 2005
- Coordinator of data management system for Bear Wise Nuisance Bear Provincial Program, Ontario Ministry of Natural Resources, ON, 2004
- Coordinator of Class B Environmental Assessment of Fish Stocking in New Waters, Ontario Ministry of Natural Resources, ON, 2004
- Lead investigator and coordinator for bathymetry GIS, Ontario Ministry of Natural Resources and Kirkland Lake Game and Fish Protective Association, 2003-2004
- Moose aerial survey and sticknest aerial evaluation for forest management practices, Ontario Ministry of Natural Resources, 2004
- Lead investigator and coordinator for freshwater habitat and fish population assessments, Kirkland Lake Game and Fish Protective Association, ON, 2003
- Marine habitat, benthic survey, and seahorse and other fish diversity and abundance population assessments, Project Seahorse, Philippines, 2003



## DAVID FUDGE –Project Scientist

### EDUCATION

B.Sc. (Honours) Biology, Dalhousie University, Halifax, NS, 2005.  
 Workplace Hazardous Materials Information System (WHMIS)  
 ACUC Advanced SCUBA Diver  
 Level A1 Scientific Diver  
 Current (2005-2007) First Aid and CPR certificates (St. John's Ambulance)

### SUMMARY OF QUALIFICATIONS

Mr. Fudge is a Project Marine Biologist in Jacques Whitford's Dartmouth office. His academic training was focused on biostatistical analysis and interpretation, marine ecology, experimental design in marine ecosystems and scientific diving. During his four years with Jacques Whitford, Mr. Fudge has worked on international and Canadian based projects related to the marine environment, including environmental impact assessments, environmental protection plans, compliance monitoring and biological inventories. Mr. Fudge has been involved in marine research programs, working within Jacques Whitford and academia, in the Caribbean, East Africa, Canada and the Arabian Gulf. He has worked on complex projects requiring the analysis of large datasets, and reporting findings in a way that are meaningful for client, regulatory and public audiences.

### RELEVANT PROJECT EXPERIENCE

- Lead scientific diver for environmental compliance monitoring in southern Madagascar for a coastal mining Project. Transects were assessed to describe coral cover and diversity, algal biomass, diversity of benthic invertebrates and marine fishes.
- Marine Biologist for the environmental impact assessment in support of the proposed the Ras Laffan Port Expansion Project for QP in Qatar, authoring multiple sections including marine turtles, hydrodynamics and sediment quality.
- Field team member for multiple fish and fish habitat sampling programs in Nova Scotia, including the sampling of fish for toxicological analysis.

### Primary Areas of Expertise

- Marine Ecology
- Experimental Design

**Experience: 4 years**  
**With JW: 4 years**  
**Office: Dartmouth, NS**

- Study team member for marine ecology studies using SCUBA in Nova Scotia, including feeding experiments with urchins, algae diversity studies, and the distribution of invasive marine species.
- Participated in an expedition to the Bonaire Marine Park in the Caribbean to conduct a project examining the percent live cover of corals at different depths and relating live cover to diver traffic.
- Study Team member on an expedition/field course to the outer Bay of Fundy, New Brunswick to examine the relationship between zooplankton density and right whale distribution.
- Contributing author of environmental impact assessment and environmental protection plans for Maritimes& Northeast Pipeline Project for the Bear Head Lateral including description of fish and fish habitat and related fieldwork, erosion and sediment control plans, acid drainage, and analysis of sedimentation risks.
- Lead author for an environmental scoping document of a proposed salt-dome storage facility in Nova Scotia. Included an issues scoping section related to marine and freshwater resources.
- Marine Biologist for the environmental impact assessment of exploration drilling on the Scotian Shelf for BebCo Canada Inc. Roles included public consultation with fisheries representatives and authoring chapters on marine fish, benthic habitat and marine mammals.
- Responsible for the marine mammal assessment of the proposed LNG Marine Terminal Facility and Multi-purpose Pier EIA, Bear Head, Nova Scotia.
- Marine biologist and field party member for environmental effects monitoring on the Scotian Shelf for Sable Offshore Energy Inc. Included water, biota and chemistry sampling as well as photo-documentation of drill cutting piles and marine habitat.
- Lead author for an environmental and health and safety impact assessment in the Arabian Gulf for ADMA-OPCO. Organized field surveys, authored environmental sections and conducted in-country (UAE) consultation with stakeholders.



## CANDACE HARDING – Project Scientist

### EDUCATION

Bachelor of Science (BSc), Honours

Research: Characterizing Acadian Old-Growth Forest in Southwest Nova Scotia  
Dalhousie University, Halifax, Nova Scotia, 2007

### SUMMARY OF QUALIFICATIONS

Candace Harding is a junior scientist with Jacques Whitford's Environmental Permitting and Planning Group in Dartmouth, NS. With her background in Environmental Science and Chemistry, her academic training includes environmental site assessment, environmental impact assessment, environmental problem solving and environmental chemistry. Since joining JW in September of 2007, Ms. Harding has been involved in various provincial environmental assessment reports and studies. Prior to joining JW, Ms. Harding completed a 4 month contract with the Environmental Assessment branch of Nova Scotia Department of Environment and Labour.

### RELEVANT PROJECT EXPERIENCE

- *Environmental Assessment and Regulatory Approvals (JW)*
- Municipal Enterprises Limited, Panuke Quarry Expansion, Environmental Assessment, Windsor, NS
- Confidential Client, Quarry Expansion, Approval to Operate Application, NB
- Gallant Aggregates, Elmsdale Quarry Expansion, Industrial Approval Application, Elmsdale, NS
- Halifax Port Authority, HADD Compensation Study to fulfill Environmental Assessment Approval Conditions, Sackville River, NS
- Highway 101 Twinning, Environmental Assessment, Windsor, NS
- Department of National Defense, LFA Sonar Study, "Due-Diligence" Environmental Assessment, NS
- Confidential Client, Environmental Issues Identification and Regulatory Approvals Roadmap, NFLD and NS

### Primary Areas of Expertise

- Environmental Assessments

**Experience:** 1 year

**Joined:** 5 months

**Office:** Dartmouth, NS

- Confidential Client, Benthic Assessment and Sediment Sampling Program Proposal, Component of Environmental Assessment, NS

### RELEVANT PROJECT EXPERIENCE

- *Environmental Assessment (NSEL)*
- Gallant Aggregates, Elmsdale Quarry Expansion, Environmental Assessment, Elmsdale, NS
- Alton Natural Gas Storage LP, Underground Storage Facility, Environmental Assessment, Alton, NS
- Zutphen Contractors Pit Development, MacLeods Settlement Pit, Environmental Assessment, Cape Breton, NS





## MICHAEL MacDONALD - Biologist

### EDUCATION

Bachelor of Science (B.Sc.), Saint Mary's University, Halifax, Nova Scotia, 1984

Bachelor of Education (B.Ed.) Science, Saint Mary's University, Halifax, Nova Scotia, 1985

### SUMMARY OF QUALIFICATIONS

Michael MacDonald, B.Sc.,B.Ed. has been an associate for over seven years with Jacques Whitford. He is an accomplished herpetologist with over 15 years of experience. Mr. MacDonald is also a highly skilled botanist, horticulturist, and entomologist with considerable experience in invertebrate taxonomy. Given his extensive natural history background Mr. MacDonald is a valuable asset to the study team.

### RELEVANT PROJECT EXPERIENCE

#### ***Integrated Biophysical Surveys (herpetile ,vegetation, and \*wetland surveys)***

- Blood fractionation plant, Halifax, Nova Scotia
- M&NP Halifax natural gas pipeline lateral, Nova Scotia
- Point Tupper natural gas liquids processing plant at Port Hawkesbury, Nova Scotia
- Aggregate mine site at Porcupine Mountain, Nova Scotia
- Gypsum bulk plant at Sheet Harbour, Nova Scotia
- Aggregate quarry expansion at Lapland, Troy and Beaverbank, Nova Scotia
- Highway bypass between Pokiok and Short's Creek, New Brunswick \*
- Survey of wetland and environs affected by fence construction, CFAD Bedford (2002)
- Highway construction projects at New Minas, Beaverbank\*, Digby, and Antigonish\*, Nova Scotia (1999, 2000, 2001, and 2002)
- Highway construction projects between the River de Chute and Perth-Andover\*, Aroostook River to Grand Falls\*, and south of the River de Chute to near Florenceville, New Brunswick (2002 and 2003, 2003)

#### ***Herpetological Surveys***

- Study of the breeding biology of the four-toed salamander (*Hemidactylum scutatum*) in Nova Scotia
- Wood turtle distribution study for M&NP in New Brunswick
- Amphibian surveys in Shiselweni District, Swaziland.

#### **Primary Areas of Expertise:**

- Biophysical Surveys
- Specialist Vegetation, Reptile and Amphibian Surveys

Experience: 16 years

Joined JW: 1998

Office: Dartmouth, NS

- Biological inventory of the Kakamega forest in western Kenya
- Herpetofaunal survey along Highway 102 and western alignment of Highway 104, Nova Scotia
- Four-toed salamander distribution study along SOEI natural gas liquids pipeline in Nova Scotia
- Survey for fur-toed salamander and N. Ribbon snake (*Thamnophis sauritis septentrionalis*) along a portion of the Roseway river, Nova Scotia
- Stream salamander survey for N. Dusky salamander (*Desmognanthus fuscus*) at select sites in Victoria and Carleton Counties, New Brunswick

#### ***Rare Plant Surveys***

- Gypsum quarry in western Newfoundland
- Rare plant recovery program at Upper Burnside, Nova Scotia
- Rare plant surveys of riparian sites along the St. John River, Tobique First Nation, New Brunswick
- Determination of extent of populations of Canada Violet (*Viola canadensis*) and other rare plants at sites in Victoria and Carleton Counties, New Brunswick

#### ***Plant Community Monitoring***

- Rare plant and plant community monitoring at the SOEI gas plant in Goldboro, Nova Scotia
- Wetland plant community monitoring at the Boat Harbour effluent treatment facility in Nova Scotia



## GREG MESHEAU – GIS Specialist

### EDUCATION

Planning: Land Information Technology, Centre of Geographic Sciences, Lawrencetown, NS, 2000  
 Marine Geomatics Advanced Diploma, Centre of Geographic Sciences, Lawrencetown, NS, 2001

### SUMMARY OF QUALIFICATIONS

Greg Mesheau has been with Jacques Whitford for over four years and has seven years experience as a Geomatics Specialist. Mr. Mesheau also worked with various Government Organizations including: City of Moncton NB, Engineering Department as a GIS Technician; Town of Truro, Town Planning Department as a Planning Technician; and the Department of Natural Resources, Halifax, NS as a GIS Analyst/Technician.

### RELEVANT PROJECT EXPERIENCE

#### *GIS Data Mapping and Management*

- AMEC – EIA of Petitcodiac Causeway Options: Aerial Photo Geo-Rectification and Mosaic & Vector Data Integration for historic analysis. (2003 – Ongoing)
- Gordon Ratcliffe Landscape – Cape Breton Trails Strategy: Collection and preparation of GIS Trail Data for Cape Breton, Nova Scotia. (2003)
- CFB 12 Wing Shearwater & 14 Wing Greenwood Bird Hazard Risk Assessment: Collection and preparation of GIS digital data for mapping purposes.(2002)
- EnCana Corporation Deep Panuke Project: Preparation of GIS based maps and figures for several volumes of project report including Environmental Impact Statement.(2001)
- New Brunswick Water Availability Assessment Study for AAFC: GIS Data Collection & analysis for water availability assessment. (2003)
- Blue Atlantic Transmission System Project, El-Paso Corporation: Data preparation & potential site location constraint analysis (2002-2003)
- Maritimes and Northeast Pipeline: Linear corridor route and potential onshore facility mapping (2001)
- Bert Flinn Park - Port Moody, BC: Existing & conceptual park design mapping (2001)

#### Primary Areas of Expertise

- GIS Specialist
- Aquatic Assessments
- Natural Resource Management

#### *GIS Application Development*

- Maine Yankee Atomic Power Station Decommissioning Project: Design and Creation of Internet based Data Query System. Ongoing Project Application Support.(2001)
- Creation of several Internet Mapping Applications to demonstrate the functionality of Internet Based Mapping Applications to potential clients interested in this technology. Sample applications have been prepared for several sectors including, Municipal Government, Offshore Energy, Private Infrastructure Management. (Ongoing)
- Cape Breton Trails Outdoor Recreation Viewer.

**Experience: 10 years**

**Joined JW: 2001**

**Office: Dartmouth, NS**



## LAIRD NIVEN – Archaeologist & Cultural Resource Specialist

### EDUCATION

B.A. (Anthropology), Dalhousie University, Halifax, NS, 1981

Archaeology upgrading, Saint Mary's University, Halifax, NS, 1984

### SUMMARY OF QUALIFICATIONS

Mr. Niven's role on the current RFP is the lead archaeologist. Laird Niven has been working as a professional archaeologist in Nova Scotia since 1984 and has worked with Jacques Whitford 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.

### RELEVANT PROJECT EXPERIENCE

- NS Department of Transportation and Public Works (2007). Environmental assessment of Highway 101 twinning Three Mile Plains to Falmouth, NS. The work included development of methodology, background research, and field studies.
- NS Department of Transportation and Public Works (2004). 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.
- NS Department of Transportation and Public Works (2004). This project involved the assessment of two proposed school projects in Barrington and Hubble. An Acadian-Planter archaeological site was discovered on the Barrington site, the first of its kind on the South Shore.
- Public Works and Government Services Canada (2003). This project was the assessment of a proposed new wharf at Dennis Point, Lower West Pubnico, Yarmouth County.
- Public Works and Government Services Canada (2003). This project looked at potential impacts on archaeological resources within the project area of a proposed new wharf in Tignish, Prince Edward Island.
- Access Northeast Energy (2003). 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.
- Yava Technologies Inc. (2003). This project was the assessment of a proposed mine project at Silver Mine, Cape Breton County, including background research and field studies.

### Primary Areas of Expertise

- Archaeology

### Proposed Role(s):

- Archaeologist & Cultural Resource Specialist

**Experience: 22 years**

**Associated with JW: 2000**

**Office: Dartmouth, NS**

- NS Department of Transportation and Public Works (2003). This project assessed the archaeological impact of a proposed new highway bridge at Elmsdale, Hants County, which was located near several significant Aboriginal archaeological sites.
- El Paso Corporation (2002). 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.
- NS Department of Transportation and Public Works (2002). This assessment involved the proposed twinning of Highway 104 at Antigonish and incorporated background research, predictive modeling, and fieldwork.
- Halifax Regional Municipality (2002). 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.
- EnCana Corporation (2001). This project involved detailed background research on the archaeological potential Deep Panuke Project at Goldboro, Guysborough County as well as ground-truthing through fieldwork.
- Georgia Pacific (2000). 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.
- Field Director, Maritimes and Northeast Pipeline (1999). 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.



## PATRICK PEARCE- Social Analyst

### EDUCATION

Masters of Arts, Sociology and Social Anthropology - Dalhousie University, Halifax, NS, September 2005 to August 2007

Bachelor of Arts, Combined Honours Degree in Sociology and English - Dalhousie University, Halifax, NS, January 2002 to April 2005

### SUMMARY OF QUALIFICATIONS

Patrick Pearce is a social analyst at the Jacques Whitford Dartmouth office. He has broad academic training in social theory, research methodology, and statistical analysis. His academic research was focused on social interaction, specifically, the ways in which social capital affects individuals' sense of community belonging. He has a strong background in social and environmental sustainability and has worked extensively on the idea of social capital and its implications for various projects. His work has focused on socio-economic assessments and environmental sustainability projects, and he has worked extensively on the idea of social capital and its implications for various projects. Currently, he is involved in assessing the socio-economic impacts of a large-scale oil and gas development in Saint John, New Brunswick.

### RELEVANT PROJECT EXPERIENCE

#### Eider Rock Oil and Gas Environmental Impact Assessment. Saint John, New Brunswick.

Irving Oil Ltd., Ongoing

Explored the concept of social capital in the context of oil and gas development in relation to community well-being. Analyzed the socio-economic aspects of proposed development through site visits and stakeholder interviews.

#### Socio-economic Analysis for Atlantic Walrus. Northern Canada.

Department of Fisheries and Oceans, 2007.

Conducted quantitative and qualitative research, including data analysis and interpretation, and prepared interview guide. Developed policy decision support tools and information for governments to support the management of marine and freshwater environments.

#### Substitution Values for Subsistence Use of Marine Mammals. Northern Canada.

Department of Fisheries and Oceans, 2007.

Prepared interview guide and conducted interviews with relevant stakeholders to validate existing economic model with respect to subsistence use of marine mammals in the Canadian Arctic.

#### Comparative Analysis of Federal Department Sustainable Development Strategies. National.

Public Works and Government Services Canada, 2007.

Reviewed the Sustainable Development Strategies of 30 government departments and synthesized the findings into one database.

#### Issues Identification of Two Proposed Wind Projects in Nova Scotia. Nova Scotia, Canada.

TransAlta Wind, 2007; Skypower 2007.

Analyzed proposals for wind farms at two strategic locations in Nova Scotia. Identified relevant regulatory, land-use, and socio-economic issues at each site to determine the location with the best opportunities for development.

#### Upgrade Existing Environmental Assessment (EA) Procedure of CFB Gagetown. Gagetown, New Brunswick.

Public Works and Government Services Canada, 2007

Reviewed CFB Gagetown Environmental Assessment procedures, including instruction manuals, training practices, organizational accountability, and mitigation and follow-up programs. Provided detailed recommendations for upgrading and improving the Base EA procedures to meet requirements pursuant to CEAA and DND internal requirements.

#### Environmental Impact Assessment Project Registration for Lamèque Wind Farm. Lamèque, New Brunswick.

Acciona Energy Canada, 2007.

Reviewed baseline studies, regulatory framework, and other literature in relation to socio-economic conditions in the area. Assessed the potential socio-economic impacts of proposed project.

#### Newfoundland and Labrador Mining Regulation Review. Newfoundland and Labrador.

Government of Nunavut, 2007.

Researched and reviewed mining legislation and regulation in Newfoundland and Labrador and authored a report section outlining the regulatory process of mine development in the province.

### Primary Areas of Expertise

- Social and Environmental Sustainability
- Socio-Economic Impact Analysis
- Quantitative and Qualitative Research Methodologies

#### Experience:

3 years

With JW: < 1 year

Office: Dartmouth, NS



## CHRIS SHUPE – Geomatics/Remote Sensing Analyst

### EDUCATION

Centre of Geographic Sciences (COGS), Lawrencetown, NS, Adv Diploma, Remote Sensing, 2003  
 Centre of Geographic Sciences (COGS), Lawrencetown, NS, Cartography, Digital Mapping, 2001  
 Algonquin College of Science and Technology, Ottawa, ON, Technical Photography, 1995

### SUMMARY OF QUALIFICATIONS

Chris Shupe, Geomatics/Remote Sensing Analyst with Jacques Whitford Limited in Dartmouth, NS, 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, 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 6 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.

### RELEVANT PROJECT EXPERIENCE

*GIS Analyst/Data Management (Environmental, Energy, Traditional Knowledge)*

- **Mackenzie Gas Project Biophysical Baseline and Environmental Impact Assessment.** Imperial Oil Resources Ventures Limited, Northwest Territories, Port Colborne Natural Environment and Human Health Risk Assessments, 2001-Present.
- **Noel Major (Sweet and Sour) Gas Project Terrain and EIA Studies.** BP Canada, Dawson Creek, British Columbia, 2006-2007

- **Kearl Oil Sands Project Environmental Impact Assessment.** Imperial Oil Resources Ventures Limited, Fort McMurray, Alberta, 2004-2007

### Primary Areas of Expertise

- GIS Analysis
- Remote Sensing
- Image Analyst
- 3D/Spatial Analysis
- Cartography Design

**Experience: 8 years**  
**With JW: 7 years**  
**Office: Dartmouth, NS**

- **Scotford Upgrader Baseline Study and Environmental Impact Assessment.** Shell Canada Limited, Fort Saskatchewan, Alberta, 2005-2007
- **Proposed Heartland 500Kv Transmission Project.** Altalink/EPCOR, Edmonton, Alberta, 2007
- **Heartland Upgrader Baseline Study and Environmental Impact Assessment.** Value Creation, BA Energy Inc., Fort Saskatchewan, Alberta, 2004
- **Shell Caroline Wildlife Survey and Environmental Management Plan.** Shell Canada Limited, Caroline, Alberta, 2004
- **Shell Caroline Wildlife Survey and Environmental Management Plan.** Shell Canada Limited, Caroline, Alberta, 2004
- **Annapolis Valley Remote Sensing Aquisition Project.** Nova Scotia Provincial Government (Nova Scotia Community College), Middleton, Nova Scotia, 2000



## JOHN WALKER - Principal

### EDUCATION

Ph.D. Air Pollution Meteorology, University of Guelph, Guelph, ON, 1980

M.Sc. Geography (Climatology), Queen's University at Kingston, Kingston, ON, 1975

B.Sc. (Hons., Geog.), Queens's University at Kingston, Kingston, ON, 1973

### ACCREDITATIONS

Air and Waste Management Association (Chair, Atlantic Section)

### SUMMARY OF QUALIFICATIONS

Dr. Walker is a Principal Scientist and Manager of air quality and noise projects. He has over 24 years' experience in the environmental consulting industry, ten of which has been in the Dartmouth office of Jacques Whitford. Dr. Walker held NATO security clearance with a former employer. His work includes a broad range of challenging projects both domestically and internationally.

### Primary Areas of Expertise

- Dispersion Analysis/Risk Assessment
- Senior Air Quality Specialist
- Noise and Acoustic Assessment

**Experience: 25 years**

**With JW: 11 years**

**Office: Dartmouth, NS**

### RELEVANT PROJECT EXPERIENCE

#### *Department of National Defence Projects*

- Air quality and noise component of Environmental Baseline Study, CFB Trenton (1992).
- Air quality and noise component of Environmental Baseline Study, CFB Kingston (1993).
- Development of audit protocol, DRE Ottawa (1989).
- Manager for implementation of audit protocol, DRE Suffield (1991).
- Design of real time air quality monitoring/modelling/alert system, Project Swiftsure (1992).
- Air quality and noise components, Environmental Assessment of Offshore Range Exercises (1994).
- Manager of wind tunnel studies for US Coast Guard Icebreaker studies (1993).
- Manager of ventilation study, US Navy Materials test facility, Bethesda (1993).

#### *Air Quality and Risk Assessment*

- Environmental Assessment of the air quality impacts of the Sydney Tar Ponds Clean-Up hazardous waste incinerator, and direction of the compliance testing program (1990).
- Environmental Assessment of the proposed sewage treatment plants for the Halifax Harbour Solutions Project (2000).
- Air quality component of the Environmental Assessments of the Voisey's Bay mine in Labrador and the Voisey's Bay smelter in Argentina (1996-1999).
- Development of pilot treatment protocols for Five Island Lake PCB contamination (1998).
- Expert witness: Ontario Provincial Court, Ontario Energy Board, various hearings (1985-2001).

#### *Indoor Environment/Building Ventilation Studies*

- Investigation of building air complaints and wind tunnel study, Camp Hill (1993).
- Assessment of air quality problems, several Nova Scotia "P3" Schools (2001).
- Solution of air quality problems, L'Anse aux Meadows, Newfoundland (1996).
- Solution of air quality problems, Municipal Building, North West River, Labrador (2001).

#### *Noise and Acoustic Environment Studies*

- Assessment of noise impacts, Third Lane Project, MacDonald Bridge, Halifax (1999).
- Design of noise attenuation program, Atlantic Shopping Centres, Stellarton (2000).
- Participation in twenty missions of the World Bank to China to assist in the reduction of traffic noise in Chinese cities (1995-2000).



## SKILLS

### **Program / Project Management**

- Prepare provincial and federal Environmental Impact proposals for wetland restoration projects
- Plan, design, promote, deliver and evaluate wildlife habitat projects
- Customize mutually beneficial conservation programs to specific resource sectors
- Control project costs through accurate estimates and budget management
- Working member on technical committees bringing together government, NGOs and industry to deliver nearly one million dollars in program annually.

### **Human Resources Management**

- Experience both as supervisor and co-worker (team player) on a variety of conservation projects
- Write and manage contracts to deliver specific components of the program
- Active on internal committees and task forces such as strategic planning groups
- Communicate with volunteers and landowners to maintain their support

### **Communications**

- Prepare proposals and manage grants from various sources
- Create text and obtain images used in publicity and newsletter publications
- Conduct presentations at trade fairs, schools, clubs, volunteer associations and other professional groups
- Translate scientific documents into informal communications pieces
- Act as spokesperson for newspapers, radio and television interviews

## SELECTED ACCOMPLISHMENTS AND CURRENT PROJECTS

- Co-authored the *“Managing Small Wetlands for Waterfowl”* booklet
- Member of national and regional visioning and strategic planning task forces
- Designed successful eco-tourism projects by restoring degraded urban wetlands in Sackville, NB, Annapolis Royal, N.S. and Baie Verte N.B.
- Project leader in the biological control of purple loosestrife in Atlantic Canada
- Designed and promoted an integrated approach to wildlife conservation and sustainable agricultural practices
- Developed an ongoing alternate watering program for livestock on the Bay of Fundy lowland pastures
- Created a beaver management program on the Trans Canada Trail in N.S.
- Assisted in the development of wetland conservation component provincial environmental farm plan
- Reviewed and commented on drafts of the biodiversity section of the federal government’s Agricultural Policy Framework
- Assisted in developing a proposal to evaluate a late maturing hay cultivar that has the potential to reduce wildlife mortality in hay fields