

**Cameron Ells, P.Eng.**

B.Sc. Eng. (Civil) - University of New Brunswick, 1987

Project Engineer / Manager

Nova Scotia Environmental Site Professional

2000 - Date Cameron Consulting Incorporated, Halifax NS, Project Engineer / Manager

- Atlantic Climate Change Conference 2008 - Steering Committee Chair
- Project Manager of Placentia NL Case Study Application of the (PIEVC) Climate Change - Infrastructure Vulnerability Protocol for the Government of Newfoundland and Labrador
- Project Manager and developer of Evaluation Methodology Document for Climate Change - Infrastructure Vulnerability as Project Manager for the Government of Canada's Public Infrastructure Engineering Vulnerability Committee (PIEVC)
- Environmental policy documents for Environment Canada, Health Canada, and Province of Nova Scotia, and for private sector industry
- United Nations Climate Change Conference, COP11 - Montreal, 2005
- Bench scale laboratory testing of soil wash and stabilization / solidification remediation methods for Sydney Tar Ponds and Sydney Steel soils
- Nova Scotia Environmental Site Professional, for 60,000 tonne soil remediation project (2004 - 2005), Point Tupper Nova Scotia (BTEX, TPH, PAH's)
- Environmental Risk Assessment, NSPI Generating Plant expansion, Halifax
- Coordinator, Incorporating Climate Change Adaptation into Design, Development and Management Decision Making (Atlantic Climate Change Conference 2008 Workshop)
- Coordinator, Atlantic RBCA (Version 2.1) Applications course, Dalhousie University Continuing Education

1992 - 2000 Dillon Consulting Limited, Halifax NS, Project Engineer

- Project Manager, soil and groundwater remediation, major service station / bulk plant / coffee - donut shop location, Halifax Nova Scotia (BTEX, TPH, PAH's)
- Project Engineer, prepare risk assessment and remediation plan, 1996 for redevelopment of former railway property, Halifax (BTEX, TPH, PAH, metals)

1990 - 1992 Groundwater Technology Incorporated, Halifax NS, Territory Engineer

- Design, construction and operation of above ground soil remediation pile at former oil bulk plant, 1991, Bridgewater, Nova Scotia (BTEX and TPH)
- Design and construction contributions for above ground soil remediation piles at petroleum facilities in Atlantic Canada, Montreal, Vancouver, and United States

1990 Vaughan Engineering Limited, Halifax NS, (Project Contract) Design Engineer

- Structural design of all concrete, Cape Breton Regional Hospital, Sydney NS

1989 - 1990 Horner and Associates, Truro NS, (Project Contract) Field Engineer

- Field Inspector, municipal water supply project, Dingwall NS

1987 - 1989 Structural design, construction estimating, applied materials science research projects

Cameron Ells has a civil engineering background and over 20 years of consulting experience, 17 years of these on environmental projects, and 12 years of those on risk assessment projects. Initially this was applied to structural design, municipal infrastructure and construction projects and, since 1990, primarily on projects involving petroleum, chemical, metals, and herbicide impacted sites. His contribution to regulatory, guidelines and technical documents has been through groups that cooperatively bring together the public and private sectors – regulatory, legal, financial, and technical parties. An example is the Atlantic PIRI Committee, which brought together the four provincial Atlantic Canadian environmental regulators, regional laboratories, regional consultants, and industry. Another example is ClimAdapt and Climate Canada Atlantic which brings together local public and private sector representatives to develop Climate Change Adaptation decision making frameworks for environmental impact assessment, municipal planning and infrastructure design projects. Platform technical presentations have been made to international environmental conferences in Canada, the United States, and Europe.

Cameron Consulting Incorporated provides independent support on a per project basis to over twenty five engineering and environmental firms across Canada, and in the United States, as well as to legal and financial institutions, the Province of Nova Scotia, the Province of Newfoundland and Labrador, Health Canada, Natural Resources Canada, Environment Canada, and the Canadian Council of Ministers of the Environment (CCME).

### **PROFESSIONAL DESIGNATION AND ASSOCIATIONS**

Association of Professional Engineers of Nova Scotia (P.Eng. received in 1989)

### **EDUCATION, PROFESSIONAL DEVELOPMENT AND PRESENTATIONS**

#### Formal Education

B.Sc. (Civil Engineering), University of New Brunswick, 1987

#### Course Coordinator and Lecturer

Incorporating Climate Change Adaptation into Design, Development and Management Decision Making (first offered in March 2008 as part of Atlantic Climate Change Conference)

Atlantic RBCA (Risk Based Corrective Action Version 2.1) Applications - Dalhousie University Continuing Education (first offered in May 2004, last offered in May 2007)

Atlantic RBCA (Version 1) - presented through the Atlantic PIRI Committee (Partnership In RBCA Implementation October 1999 and October 2000)

#### Professional Development

Treatment Technologies for Removal of MTBE in Drinking Water, Halifax 2001

Environmental Mediation, Technical University of Nova Scotia, Halifax, 1996

Confined Space Entry Course, Halifax, 1996

Air Sparging, Soil Venting, and Bioventing Workshops, Florida, 1995

Bioremediation Workshop, Quebec, 1993

WHMIS Trainer Course, NS Labour 1993 and repeated First Aid and CPR courses, 1997

Safety training courses at oil refinery type facilities on the east and west coasts, 1991-92, 2004

Corporate regional engineering and remediation specialist courses, 1991, 1992

OSHA 40 Hour Hazardous Materials Training Course, New Hampshire 1990, and Halifax 2002

OSHA 8 Hour Refresher on Hazardous Materials Course, Halifax 1995 and 2003  
Attended an electrical safety in hazardous locations seminar, 1990

Presentations

*Placentia NL Case Study Example of Incorporating Climate Change Adaptation into Infrastructure Decision Making* - Ontario Society of professional Engineers (OSPE) International Symposium on Engineering in a Climate of Change, Toronto October 16, 2008

*Incorporating Climate Change Adaptation into Design, Development and Management Decision Making* - Environmental Services Association of Nova Scotia (ESANS) and Dalhousie University, Atlantic Climate Change Conference, Halifax NS, March 2008

*Applying Public Sector Resources to Climate Change Adaptation in Canada* - Environmental Services Association of Nova Scotia (ESANS) and Dalhousie University, Atlantic Climate Change Conference, Halifax NS, March 2008

*Atlantic RBCA Applications in "Contaminated Site" Decision Making: Ten years of experiences, trends and lessons from a variety of perspectives* - Canadian Land Reclamation Association (CLRA) Annual Meeting, Halifax NS, August 2007

*Guideline Application Suggestions Regarding Solidification / Stabilization Technical Activities* - Nova Scotia Environmental Industry Association / Cement Association of Canada / Sydney Tar Ponds Agency / Cape Breton University, Solidification Stabilization Technical Conference, Sydney NS, September 2006

*Incorporating Climate Change Adaptation into Municipal Infrastructure Type Decision Making* - Engineering Institute of Canada Climate Change Conference, Ottawa, May 2006

*Atlantic RBCA 2 at 2 Years Old - A Happy Birthday?* - Presentation to APEA / NSEIA Joint Technical Meeting "Looking Forward to 2005: What to Expect in the Atlantic Canadian Environmental Industry," Halifax NS, January 2005

*Applying RBCA Outside America - The Atlantic Canadian Experience (Version 2)* - Poster presentation to the Fourteenth Annual West Coast Conference on Soils, Sediments and Water, (www.AEHS.com) San Diego California, USA, March 2004

*Addressing Trace Metals and Petroleum Hydrocarbon Contamination on Brownfield Properties* - co-wrote presentation made by Dr. Scott MacKnight, OCL Group to the Nova Scotia Environmental Industry Association (NSEIA) and Atlantic PIRI's (Partnership in RBCA Implementation) Contaminated Properties Conference 2003: Issues, Solutions & Partnerships in Urban Redevelopment - Halifax NS October 2003.

*A Demonstrated Methodology Justifying a Mass Transfer Limit in RBCA Hydrocarbon Inhalation Calculations* - Platform presentation to the 38<sup>th</sup> Annual Meeting, Northeastern Section of The Geological Society of America - Halifax NS, March 2003

*Your First (and Only?) Environmental Response* - Platform presentation to the New Brunswick Environmental Industry Association (NBEIA) conference: Contaminated Properties - Issues,

Risks & Actions, Moncton NB, October 2002

*Atlantic RBCA: Risks, Rewards, and Renaissance* - Presentation to Environment Canada technical meeting, Halifax, NS, April 2002

*Atlantic RBCA: Risks, Rewards, and Renaissance* - Presentation to an International Association of Hydrogeologists (IAH) meeting at Dalhousie University, Halifax, NS, February 2002

*Applying RBCA Outside America - The Atlantic Canadian Experience* - Platform presentation to the First International Congress on Petroleum Contaminated Soils, Sediments and Water, at Imperial College, London UK, 2001

*New Management Practices for Petroleum Contaminated Sites* - Presentation to the Atlantic Canada Environmental Business and Municipal Expo, by the Nova Scotia Environmental Industry Association, Halifax, NS, 2000

*Applying RBCA in Atlantic Canada - Development Work of the Atlantic PIRI Committee* - Platform Presentation to the Fifteenth International Conference on Contaminated Soils, Sediments, and Water, at the University of Massachusetts, Amherst, MA, 1999

## **WORK EXPERIENCE**

### Environmental Site Audit, Assessment and Remediation

- Project Engineer providing technical support for project review, site visit, meetings and discussions for an NSDTPW garage location at Kenzieville, Pictou County, Nova Scotia.
- Project Engineer providing technical support for an audit of a potential school location in Pictou County, Nova Scotia.
- Project Engineer providing technical support in the rapid response to vapour intrusions in a school in Halifax Regional Municipality, NS.
- Project Engineer providing a Tier II Atlantic RBCA style, human health and ecological risk assessment for a rural maintenance garage site in HRM, and draft remediation activity proposals to achieve the site-specific goals.
- Project Engineer providing draft input and reviewing a Tier II Atlantic RBCA style, human health and ecological risk assessment for a rural public sector garage site in Cumberland County, NS, as well as the draft remediation activity proposals to achieve the site-specific goals.

### Civil Engineering

- Structural design of concrete foundations for Grace Maternity Hospital, Halifax, NS
- Structural design of concrete components of Acadia University arena, Wolfville, NS
- Construction of extension to Queen's County Hospital, Shelburne, NS
- Field Engineer for new municipal drinking water system, Cape Breton NS
- Structural design of RCMP station, Sackville NS
- Structural design aspects in Boiler Plant renovations, CFB Stadacona, HRM NS
- Structural design for connecting two Dal Tech buildings, Halifax, NS
- Structural design of all concrete for Cape Breton Regional Hospital, Sydney, NS
- Preliminary Semptra natural gas piping location selection, Colchester County, NS

Environmental Site Professional

- Site Professional for private laboratory testing programs for soil washing and solidification / stabilization methods of remediation of industrially impacted materials from Sydney, NS
- Site Professional for a 60,000 tonne soil remediation project at former oil refinery in NS
- Site Professional for the site and risk assessments, and management plan for a fifty acre industrial park in HRM
- Site Professional for a real estate development on herbicide impacted former explosives manufacturing site in HRM
- Site Professional for an urban, downtown, and now subsequently redeveloped site in Moncton NB
- Site Professional for a rural mixed commercial (gas bar) / residential site in Zealand, NB

Human Health and Ecological Risk Assessment Projects

- Project Engineer and primary technical person in human health risk assessment at decommissioned site of Ontario electrical utility, London Ontario.
- Peer Reviewer of human health and ecological risk assessment for two active electrical utility distribution sites in residential areas, Southern Ontario.
- Project Engineer and primary technical person for human health and ecological risk assessment at commercial property adjacent to public school, Cape Breton NS.
- Technical contributions and peer review of human health risk assessment at rural DND property, Colchester County, NS.
- Technical contributions and peer review of human health risk assessment in rural residential type area of DND property, CFB Gagetown NB.
- Project Engineer and primary technical person in human health and ecological risk assessment in a residential marine setting of a DND property, Halifax, NS.
- Project Engineer and primary technical person in human health and ecological risk assessment on commercial land redeveloped for residential use, Halifax NS.
- Project Engineer and primary technical person in developing site specific human health risk assessment based environmental goals for redevelopment of former railway lands for commercial grocery store purposes, Halifax NS.
- Project Engineer and primary technical person in developing site specific human health risk assessment based environmental goals for redevelopment of former petroleum distribution facility into a gas bar, convenience store, car wash, and donut emporium, Halifax NS.
- Project Engineer and primary technical person in developing site specific human health risk assessment based environmental goals for redevelopment of municipal construction debris site into a recreational parkland setting.

Detailed Remediation System Design

- Project Engineer for gas station remediation project involving soil vapour extraction, free product recovery and removal, and groundwater in bedrock capture and control, Halifax, NS.
- Project Engineer and detailed remediation system designer for temporary partial building demolition, soil removal, and reinstatement, at active food processing facility, Montreal PQ.
- Detailed remediation system designer for soil vapor extraction and groundwater recovery and treatment systems at active gas bar facility, Chicago, IL.
- Project Engineer and detailed remediation system designer for land farm type treatment pad and its operation at former petroleum facility, Moncton NB.

- Project Engineer and detailed remediation system designer for above ground bioremediation cell at former petroleum distribution site, Bridgewater NS.
- Project Engineer and detailed remediation system designer for oil refinery project in marine setting involving bioremediation, passive barriers, free product recovery, groundwater control and capture, and soil vapour extraction systems, Montreal PQ.
- Project Engineer for field implementation of bioremediation cell construction, liner testing, equipment installation, and start up operations, Vancouver BC.

### Atlantic PIRI Committee, Provincial / Federal Guidelines, and other Contributions

- Prepared Response to Call for Public Comments on Consultation Paper: *Nova Scotia's Renewed Energy Strategy and Climate Change Action Plan* to NS Energy, December 2007
- Conceived and prepared the document "Atlantic RBCA 3.X - Applications for Government of Canada Contaminated Sites" for Health Canada (March 2006)
- Contributor of suggestions for improvements to Atlantic RBCA Version 2 (2003 - 2006)
- Reviewer of NS Guidelines for the Management of Contaminated Sites (2002)
- Instructor at the Nova Scotia series of two day Atlantic RBCA information sessions
- Technical subcommittee writer for portions of Atlantic RBCA Process Documentation Version 1.0 April 1999
- Founding member of Atlantic PIRI Committee (1998 – 2000)
- Member NSDOE Contaminated Sites Guidelines Implementation Committee (1996-1998)
- Contributor to development of March 1996 NSDOEL Guidelines for the Management of Contaminated Sites
- Contributor to development of 1995 NS Environment Act

### Climate Change Adaptation

- Member of ClimAdapt - Nova Scotia Climate Change Adaptation Initiative (2002 - present)
- Member of Climate Canada Atlantic for COP 11 Montreal UN Conference (2005 - present)
- Conceived and prepared "*A Practitioner's Guide to Incorporating Climate Change Adaptation into Design, Development, and Management Decision Making*" with revisions (2002 - present)
- Document review contributions for the lead writers of "*A Practitioner's Guide to Incorporating Climate Change Adaptation into the Environmental Impact Assessment Process*" (2003)
- Technical contributions to "Adapting to a Changing Climate in Nova Scotia: Issues Paper" for the Province of Nova Scotia (2005)
- Conceived and prepared the document "*Applying Public Sector Resources to Climate Change Adaptation in Atlantic Canada*" for Environment Canada (2005)
- Conceived and prepared the document "*Applying Public Sector Resources to Climate Change Adaptation in Canada*" for Environment Canada (2006)
- *Incorporating Climate Change Adaptation into InfraGuide (Municipal Infrastructure) Type Decision Making* - Engineering Institute of Canada Climate Change Conference, Ottawa, May 2006
- Project Manager for multi-disciplinary PIEVC Phase I Scoping Study (Stormwater and Wastewater Infrastructure Assessment) for National Engineering Assessment of the Vulnerability of Public Infrastructure to Climate Change (November 2006 - March 2007)
- Project Manager for multi-disciplinary PIEVC Phase I Scoping Study (Water Resources Infrastructure Assessment) for National Engineering Assessment of the Vulnerability of Public Infrastructure to Climate Change (November 2006 - March 2007)

- Project Manager for multi-disciplinary PIEVC Phase I Scoping Study (Buildings Infrastructure Assessment) for National Engineering Assessment of the Vulnerability of Public Infrastructure to Climate Change (November 2006 - March 2007)
- Project Manager for multi-disciplinary PIEVC Phase I Scoping Study (Roads and Associated Structures Infrastructure Assessment) for National Engineering Assessment of the Vulnerability of Public Infrastructure to Climate Change (November 2006 - March 2007)
- Technical contribution to AMEC project Canada Wide Sampling Strategy (Climate Change - Infrastructure Vulnerability) for Public Infrastructure Engineering Vulnerability Committee (PIEVC) 2007
- Technical contribution to AMEC project Audit and Assessment of Climate Change Relative to Current CCME Activities and Documents for the Canadian Council of Ministers of the Environment (CCME) 2008
- Project Manager of Placentia NL Case Study Application of the (PIEVC) Climate Change - Infrastructure Vulnerability Protocol for the Government of Newfoundland & Labrador 2008
- Atlantic Climate Change Conference 2008 - Steering Committee Chair (Environmental Services Association of Nova Scotia (ESANS), Dalhousie University RBC Risk Management Centre, Nova Scotia Department of Energy, and Environment Canada)

PIEVC is the Public Infrastructure Engineering Vulnerability Committee. It has several stakeholders including assistant Deputy Minister / Director General type people from Environment Canada, Natural Resources Canada, Public Works and Government Services Canada, Transport Canada, Infrastructure Canada, National Research Council and others. It is being administered through the Canadian Council of Professional Engineers.