



August 28, 2023

Nunavut Impact Review Board  
Ryan Barry, Interim Executive Director

**Re: Agnico Eagle's Comments to Draft Agenda, Submission of Representatives and Subject Matter Expert Resumes for Meliadine Extension Public Hearing**

Dear Mr. Barry,

Agnico Eagle appreciates the opportunity to provide comments to the "Draft Agenda for the Upcoming Public Hearing for the NIRB's Assessment of Agnico Eagle Mines Limited's Meliadine Extension Project Proposal", which we request the NIRB to address in the Final Agenda as follows. Our proposed changes to the agenda, attendee list, and subject matter experts' resumes are provided below.

**1. Agenda Item Day 2, Item 8): Presentations by the Proponent**

Agnico Eagle requests the following changes (bolded to facilitate change) to Item 8. These proposed changes will help facilitate the overall messaging and flow of the technical content. The same amount of time is allocated to Agnico Eagle; however, is now distributed between two presentations instead of three. Based on the outstanding technical comments, the focus for terrestrial is related to terrestrial wildlife.

- i. Ecosystemic Environment: Atmospheric Environment, Terrestrial **Wildlife (which includes cumulative and transboundary effects)**, Freshwater Environment, Marine Environment, **and Accidents and Malfunctions**, Summary of follow-up from the Pre-Hearing Conference on the ecosystemic environment topics **(60 minutes)**
- iii. Removal of this item as Agnico Eagle has integrated within the revision to item i.

**2. Agenda Item Day 2, Item 9): Government of Nunavut Animation**

On August 25, 2023, Agnico Eagle provided a separate communication to the NIRB regarding this agenda item and Agnico Eagle's position on the topic. We refer the NIRB to that submission for further input on the Draft Agenda.

The animations do not prove or disprove any facts in issue. The animations could cause unfair prejudice as they are at high risk of being misunderstood by the community and the Board which will cause confusion. They are provided without context and were not accompanied by any technical report or explanation, and so the information provided is incomplete. The lack of rigor and timeliness followed by the GN in sharing the animations and supporting technical data means they are unreliable, and it would be unfairly prejudicial to Agnico Eagle to allow this information to be presented. Based on the very limited and short-term access to the animations, they duplicate and repeat Commitment 38, which covers similar topics but was developed in collaboration with the Terrestrial Advisory Group following a lengthy technical review on these issues as a group. As a result, the Commitment 38 report provides reliable evidence for the Board.

### 3. Agenda Item Appendix B: Site Visit Agenda

Further details can be added to the site visit orientation agenda item (bolded below to facilitate change) to provide additional clarity to the Site Visit on September 12, 2023.

12:45pm Meet at the Recreation Hall

1:00 pm Start drive to site. **Points of Interest related to Meliadine Extension, and other approved Meliadine Mine areas, will be pointed out by an Agnico Eagle representative providing the site tour overview (Rankin Inlet Laydown Area, Bypass Road, All-Weather Access Road, F Zone Area, Pump Area, and Current Operation Areas)**

**~2:00-4:00 pm** Visit site checkpoints. **Point of Interest near the location of the proposed windfarm where participants will exit the bus**

Health and restroom break

5pm Arrive back at Recreation Hall in Rankin Inlet

### 4. Representative List

Agnico Eagle submits the below list of participants who will be attending in person for the Public Hearing and Community Roundtable, with key speakers identified. In addition, Agnico Eagle has noted those who will be attending virtually through the audio-video feed. Three of Agnico Eagle's subject matter experts will be in attendance as noted in the below table, their resumes are provided in Attachment A.

Participant	Title	Participant	Title
Manon Turmel <sup>(a)</sup>	Permitting and Regulatory Affairs Superintendent	Cesar Fernandes	General Superintendent, Mining Operations
Colleen Prather	Permitting Technical Advisor, Water Management	Dany Rodrigue	General Superintendent
Jennifer Range	Regulatory Specialist	Janice Aggark	Community Liaison Officer, Chesterfield Inlet
Edward Malindzak	Permitting Specialist, Aquatics	Nicholas Allen	Project Manager, Nunavut Decarbonization
Sophie Lacourse	Permitting Specialist, Social and Land	Christine Kowbel	Legal Counsel, Lawson Lundell
David Kritterdlik	Inuit Qaujimajatuqangit and Wildlife Advisor	Brad Armstrong	Legal Counsel, Lawson Lundell
Pujuut Kusugak <sup>(b)</sup>	Director Nunavut Affairs	Daniel Coulton	Consultant with WSP, Senior Wildlife Biologist
Alex Buchan	Director Nunavut Affairs, Stakeholder Engagement	Gregory Sharam	Consultant with ERM, Senior Wildlife Biologist
Lonny Syvret	Director, Shared Services Nunavut	Victor Young	Consultant with WSP, Acoustic Scientist
Luc Chouinard	Project Manager Meliadine Extension	Jamie Quesnel <sup>(c)</sup>	Director, Permitting and Regulatory Affairs
Matt Gillman	Environmental Superintendent	Casey Paradis St-Onge <sup>(c)</sup>	Nunavut Communication Coordinator
Sara Savoie	Environment General Supervisor	Kloee Chenel-Fournier <sup>(c)</sup>	Communication Counselor
Jean-Claude Blais	General Manager, Meliadine Operations		

Note: Email addresses of participants will be provided directly to the NIRB

a) Public Hearing Key Speaker

b) Community Roundtable Key Speaker

c) Audio-video only

## **5. Closure**

If you require any further information, please contact the undersigned.

Sincerely,



Jamie Quesnel  
Director, Permitting & Regulatory Affairs  
Agnico Eagle Mines Limited

**Attachment A: Subject Matter Expert Resumes**

Daneil Coulton	Consultant with WSP, Senior Wildlife Biologist
Gregory Sharam	Consultant with ERM, Senior Wildlife Biologist
Victor Young	Consultant with WSP, Acoustic Scientist

## Education

*PhD Biology, University of Saskatchewan, Saskatchewan, 2009*

*BA Communication, University of Toledo, Ohio, 1992*

## Certifications

*RPBio, July 2018*

## Languages

*English – Fluent*

## WSP – Victoria

### Senior Wildlife Biologist

Dr. Dan Coulton is a senior wildlife biologist with more than 20 years of wildlife monitoring and analysis experience in across Canada. He is a population ecology specialist in Arctic and boreal ecosystems and experience covering a broad array of wildlife fauna with emphasis on caribou. As a practitioner, he leads terrestrial wildlife and wildlife habitat assessments, baseline studies and permitting applications and represents clients during regulatory proceedings and meetings as a subject matter expert. Dan's has authored numerous environmental assessments, wildlife effects mitigation and management plans, monitoring study designs, data collection and analyses and communicated results reports and peer-reviewed publications. Dan has an extensive background in statistics including mark-recapture and occupancy models, univariate and multivariate regression, parametric and non-parametric methods and information theory. He has completed studies on barren-ground and boreal caribou, grizzly bear, wolverine, moose, waterfowl, shorebirds, upland birds, polar bear and freshwater fishes.

## PROJECT

**Snare Hydroelectric Water License Renewal**  
Northwest Territories, Canada

**Fort Providence T-Line Project**  
Northwest Territories, Canada

**Mary River Project**  
Nunavut, Canada

**Meliadine Gold Project, Agnico Eagle Mines**  
Nunavut, Canada

## PROJECT EXPERIENCE

Senior technical advisor supporting the permitting renewal for an existing hydro power facility in the Northwest Territories. 2022 to present.

Senior wildlife technical advisor on project wildlife components and regulatory support for Project permitting applications. 2021 to present.

Marine wildlife team member and lead on Ship-based Observer Program. Trained Inuit Community participants on monitoring techniques and data archiving. Technical support for the Phase 2 Proposal regulatory phase and Icebreaking Assessment. Species included polar bear, ringed and harp seals, narwhal, and seabirds, March 2018 to present.

Senior terrestrial technical advisor. Senior technical lead on the Meliadine Extension terrestrial environmental assessment and subject matter expert witness for the project. Marine wildlife team member providing data analysis design and reporting for seabird monitoring for the Marine Mammal Observer Program reporting. January 2019 to present.

**Pine Point Project,  
Pine Point Mining Ltd.**  
Northwest Territories,  
Canada

Senior terrestrial technical advisor for permitting and Developer's Assessment Report and regulatory engagement. Past role included wildlife technical lead for baseline monitoring and habitat characterization of wildlife species at risk, including boreal caribou, bison, wolverine and birds and amphibians. May 2018 to present.

**Lynx/Jay Projects and  
Ekati Diamond Mine,  
Dominion Diamond  
Mines**  
Northwest Territories,  
Canada

Component lead for environmental effects on wildlife for the Jay Project Developer's Assessment Report. Subject matter expert witness supporting the environmental assessment. Species assessed included barren-ground caribou, grizzly bear, wolverine and migratory bird species at risk. Planned, managed and reported on baseline wildlife monitoring activities caribou, raptors and waterfowl. Developed Caribou Road Mitigation Plan, Caribou Mitigation Plan. Community and regulator engagement. July 2012 to present.

**Tlicho All Season Road  
Project, Government of  
the Northwest  
Territories**  
Northwest Territories,  
Canada

Wildlife technical lead for the Adequacy Statement Response for the Tlicho All Season Road Project Description Report. Subject matter expert witness supporting the environmental assessment. Species assessed included boreal caribou, barren-ground caribou, bison, moose, wolverine and migratory bird species at risk. December 2016 to present.

**East-West Tie Project,  
NextBridge**  
Ontario, Canada

Wildlife team member (moose) for environmental effects on wildlife for the East-West Tie Project Environmental Assessment Report. August 2016 to December 2016.

**Whale Tail Expansion  
Project, Agnico Eagle  
Mines**  
Nunavut, Canada

Senior technical wildlife advisor. Community and regulator engagement and subject matter expert. Technical lead on the permitting amendment for expansion of the approved Whale Tail Project. Assessed barren-ground caribou and upland birds. August 2018 to present.

**Whale Tail Project,  
Agnico Eagle Mines**  
Nunavut, Canada

Completed caribou cumulative effects and zone of influence analyses to support the environmental effects report. June 2017 to August 2017.

**Diavik Diamond Mine**  
Northwest Territories,  
Canada

Senior technical wildlife advisor. Subject matter expert witness supporting the mine on community and regulator engagement. Comprehensive analysis report of environmental effects on wildlife in the Lac De Gras Region. Review and assessment of the wildlife impact predictions for the Diavik Diamond Mine using monitoring results from 1998 to 2008. Prepared wildlife management plans and provided regulatory support. 2011 to present.

**Gahcho Kué Diamond  
Project**  
Northwest Territories,  
Canada

Senior wildlife technical advisor. Subject matter expert witness supporting the mine on community and regulator engagement. Planned and reported on wildlife baseline studies for caribou, grizzly bear, wolverine, raptors, and water birds supporting the Project's Environmental Impact Statement. Prepared wildlife management plans and provided regulatory support. November 2010 to present.

**Snap Lake Mine, De  
Beers Canada**  
Northwest Territories,  
Canada

Senior wildlife technical advisor. Subject matter expert witness supporting the mine on community and regulator engagement. Wildlife technical lead for wildlife monitoring programs including study design, monitoring, data analysis and reporting of environmental effects on wildlife. Planned, managed and reported on wildlife monitoring for caribou, grizzly bear, raptors and wolverine. Prepared wildlife management plans and provided regulatory support. January 2010 to 2015 and present.

**Migratory Bird  
Incidental Take Permit  
Applications**  
Northwest Territories,  
Canada

Project manager and technical lead on study for the Canadian Wildlife Service on the potential number of industry proponents and activities in Canada expected to apply for a migratory bird Incidental Take Permit. June 2010.

## SUPPLEMENTAL SKILLS

**Analytical software**

*R, SAS, JMP, SPSS, Statistica, Programs MARK, PRESENCE and DISTANCE*

## PROFESSIONAL AFFILIATIONS

College of Applied Biologists, Victoria BC

## PEER-REVIEW PUBLICATIONS

Virgl, John A., Jim Rettie, and Daniel W. Coulton. 2017. Spatial and temporal changes in seasonal ranges of a declining barren-ground caribou herd. *Rangifer*, in press. Accepted April 24, 2017.

Coulton, Daniel W., John A. Virgl, and Colleen English. Falcon Nest Occupancy and Hatch Success Near Two Diamond Mines in the Southern Arctic, Northwest Territories. *Avian Conservation and Ecology* 8 (2013), 14.

Coulton, Daniel W., Robert G. Clark, David W. Howerter, Leonard I. Wassenaar and Michael G. Anderson. Costs and benefits of natal dispersal in yearling mallards *Anas platyrhynchos*. *Journal of Avian Biology*, 42 (2011), 123-133.

Coulton, Daniel W., Robert G. Clark, Leonard I. Wassenaar, David W. Howerter and Michael G. Anderson. Social and habitat correlates of immigrant recruitment of yearling female Mallards to breeding locations. *Journal of Ornithology*, 152 (2011), 781-791.

Coulton, Daniel W., Robert G. Clark and Craig E. Hebert. Determining natal origins of birds using stable isotopes ( $\delta^{34}\text{S}$ ,  $\delta\text{D}$ ,  $\delta^{15}\text{N}$ ,  $\delta^{13}\text{C}$ ): Model validation and spatial resolution for mid-continent mallards. *Waterbirds*, 33 (2010), 10-21.

Coulton, D. W. , R. G. Clark, K. A. Hobson, L. I. Wassenaar and C. E. Hebert. Temporal sources of deuterium ( $\delta D$ ) variability in waterfowl feathers across a boreal-to-prairie gradient. *Condor*, 111 (2009), 255-265.

Coulton, Daniel W. and Robert G. Clark. An integrated stable isotope mark-recapture approach to modeling sources of population rescue. *Auk*, 125 (2008), 923-931.



## Gregory Sharam, PhD

### Technical Director, Wildlife and Terrestrial Ecology

Dr. Greg Sharam is the Technical Director with the ERM Canada biodiversity team and is the North America lead for the ERM biodiversity technical community. He and the biodiversity team provide wildlife field studies, environmental assessment, permitting, and compliance monitoring for industrial clients in the mining, power, and oil and gas sectors, with a focus on projects in Arctic Canada. Dr. Sharam has more than 20 years of experience conducting wildlife studies and long-term monitoring studies for industrial sites in the Arctic, with a specialty on large mammals such as caribou. He and his team also conduct studies on migratory birds, raptors, large mammals, bats, small mammals, as well as vegetation and habitat mapping. He has participated in hearings in NWT and Nunavut and leads several research programs on caribou behaviour, movement and habitat use.



**Experience:** 20 years' experience in wildlife biology.

**Email:** greg.sharam@erm.com

**LinkedIn:** <https://ca.linkedin.com/in/greg-sharam-9a5b5216>

#### Education

- PhD. Zoology, University of British Columbia, 2006
- MSc. Botany, University of British Columbia, 1997
- BSc Chemistry & Biology, Dalhousie University, 1994

#### Languages

- English, native speaker

#### Fields of Competence

- Wildlife baseline studies
- Environmental Impact Assessments
- Management and monitoring plans
- Wildlife compliance monitoring
- Consultation with Indigenous Groups
- Training in wildlife ecology

#### Key Industry Sectors

- Mining; Power, Oil and Gas

#### Honors and Awards

- NSERC PGS-A; NSERC PGS-B;
- McLean Fraser Research Fellowship.

## Select Projects in the Arctic

### **Hope Bay, NU, 2009-Present Agnico Eagle Mining Ltd.**

Greg has led the wildlife compliance monitoring program since 2009. He wrote and presented the Phase 2 project for the Nunavut Impact Review Board (NIRB) public hearings. He has worked extensively with local Inuit elders and land users in the field to identify and mitigate potential effects of the project on barrenland caribou, a key issue with northern developments.

### **Meadowbank, NU, 2019-Present Agnico Eagle Mining Ltd.**

Dr. Sharam supports ongoing permitting for the Meadowbank site, as well as compliance monitoring for wildlife. He supports the long-term behaviour monitoring program for caribou and community engagement of Inuit harvesters and community elders.

### **Meliadine, NU, 2019-Present Agnico Eagle Mining Ltd.**

Dr. Sharam supports ongoing permitting for the Meliadine mine, with a focus on field studies of caribou behaviour and movement and analysis of collar data to look at changes in distribution and movement of caribou across the All Weather Access Road (AWAR).

### **Back River, NU, 2008-Present B2 Gold**

Led the baseline field studies, wrote the wildlife sections of Environmental Impact Statement (EIS) and mitigation and monitoring plans. Baseline field studies focused on barrenland caribou, grizzly bear, wolf, migratory birds and raptors.

### **EKATI Diamond Mine, NWT, 2006-Present Burgundy Diamonds**

Dr. Sharam has overseen the annual compliance monitoring and reporting for wildlife program at Ekati for the past 17 years.

## Select Projects in British Columbia

### **KSM, BC, 2007-Present Seabridge Gold**

Dr. Sharam oversaw the baseline field studies and led and defended the wildlife environmental assessment. Leads the ongoing compliance monitoring and construction monitoring programs for wildlife since 2007. Conducted engagement activities with Aboriginal groups, including the Tahltan Nation, Nisga'a, Gitanyow, and Skii km Lax Ha.

### **Eskay Creek, BC, 2019-Present Skeena Resources**

Dr. Sharam oversees the baseline field studies for wildlife, including moose, goats, migratory birds, waterfowl, raptors, small mammals and amphibians. Active in engagement and meetings with the Tahltan Nation.

### **Brucejack Gold, BC, 2008-Present Pretium Resources**

Dr. Sharam oversaw the baseline field studies and led and defended the wildlife environmental assessment. Leads the ongoing monitoring and engagement programs for wildlife since 2007. Conducted engagement activities with Aboriginal groups, including the Tahltan Nation, Nisga'a, Gitanyow, and Skii km Lax Ha.

### **Blackwater, BC, 2015-Present Artemis Gold**

Dr. Sharam and his team assisted New Gold to plan, design and permit an offset for lost caribou habitat within the Blackwater Project footprint. This habitat offset followed both the Provincial and Federal draft offsetting policies with FLNRORD and ECCC. The offset included setting offset targets, calculating land equivalency, negotiating land tenures, and planning long term restoration and monitoring programs.

### **Murray River Coal, BC, 2011-Present HD Mining International**

Dr. Sharam oversaw the wildlife baseline and EA application for the Murray River Project and continues to support the project.

## Publications and Presentations

- Visty, H., Bol L., Sharam G., Ainsworth L.; Poole K.; Curran O. (*in review* Journal of Avian Biology). Long-term analysis of Arctic breeding raptors reveals species-specific extrinsic predictors.
- Sharam G. 2023. A Review of Caribou Habitat Offsets in British Columbia – Opportunities and Challenges. Presentation at Arctic Ungulate Conference, Anchorage Alaska.
- Sharam G., Rettie J., Ainsworth L., Zhao J., Milakovic B., O’Keefe H., Rock C., Pacholski L. Accounting for Habitat Distribution in Caribou Zone of Influence: A New Estimation using Generalized Additive Mixed Modelling Methods. Presentation 2019 Yellowknife Geoscience
- Sharam, G. and L. Bol 2018. Passive Monitoring for Wildlife: Lessons Learned from 10 Years of Camera Monitoring. 2018 YK Geoscience.
- Bol, L., O. Curran, L. Ainsworth, A. Buchan, G. Sharam 2018. Long-Term Monitoring Finds no Effect of an Arctic Mine on Migratory Birds. 2018 YK Geoscience.
- Milakovic, B., H. O’Keefe, S. Sinclair, D. Paetkau, L. Ainsworth, J. Zhao, C. Rock, G. Sharam, 2018. Large Scale Industry Collaboration to Evaluate the Status of Grizzly Bear Populations in the Slave Geological Province. 2018 YK Geoscience.
- McLennan, D., W. Mackenzie, D. Meidinger, S. Ponomarenko, J. Wagner, R. McKillop, H. Robitaille and G. Sharam. The Canadian Arctic-Subarctic Biogeoclimatic Ecosystem Classification (CASBEC): Framework, Mapping and Applications. Aqhalat Journal of the POLAR Research Canada
- Chen, W., S. Leblanc, H. White, C. Prevost, B. Milakovic, C. Rock, G. Sharam, H. O’Keefe, L. Corey, B. Croft, A. Gunn, S. van der Wielen, A. Football, B. Tracz, J. Snortland Pellissey, J. Boulanger, 2017. Does Dust from Arctic Mines Affect Caribou Forage? J. Enviro. P. 8. 258-276
- Sharam, G., Kuker, K., and Milakovic, B. 2015. Camera traps in the Arctic – pros and cons. Arcticnet, Vancouver, BC
- Sharam, G. O’Keefe, H, Rock, C, and Milakovic, B. 2015. Why did the caribou cross the road – monitoring at the Ekati Diamond Mine 2011-2-15. YK Geoscience
- Sharam, G. 2015. Grizzly bear population monitoring in the Canadian central Arctic – an Industry Let Initiative. Cumulative Effects Working Group Conference, Yellowknife, NWT
- Sharam, G. 2015. Vegetation mapping and resource selection functions as tools to monitor and manage caribou herds in the Canadian Arctic. Cumulative Effects Working Group Conference, Yellowknife, NWT
- Milakovic, B, and Sharam, G., 2014. A population estimate for grizzly bears in the Canadian central Arctic. Arcticnet, Halifax, BC.
- Sharam, G. and Milakovic, B, 2014. A Resource Selection Function for the Bathurst Caribou Herd Summer Range. Arcticnet, Halifax, BC.
- Sharam, G., Kuker, K., and Milakovic, B. 2011. The use of Camera Traps for Ungulate Studies in the Arctic. 13th Arctic Ungulate Conference, NT.
- Turkington, R, A.R.E. Sinclair, and Gregory J. Sharam. (2012) Riparian Forests in Serengeti. In Serengeti IV. Edited by A. R. E. Sinclair, Craig Packer, Simon A. R. Mduma, and John M. Fryxel. University of Chicago Press. 489 pp.
- Sharam, G.J., A.R.E. Sinclair and R. Turkington 2009. Serengeti Birds Maintain Forests by Inhibiting Seed Predators. Science. 325:51-51.
- Sharam, G., A.R.E. Sinclair, R. Turkington and A.L. Jacob 2009. The savanna tree *Acacia polyacantha* facilitates the establishment of riparian forests in Serengeti National Park, Tanzania. Journal of Tropical Ecology. 25:31-40.
- Sharam, G.J. and R. Turkington 2009. Growth, camphor concentration, and nitrogen responses of white spruce (*Picea glauca*) leaves to browsing and fertilization. Ecoscience. 16:258-264.
- Sinclair, A.R.E, J. Grant C. Hopcraft, Han Olff, Simon A. R. Mduma, Kathleen A. Galvin, and Gregory J. Sharam. (2008) Historical and Future Changes to the Serengeti Ecosystem. In Serengeti III, Human Impacts on Ecosystem Dynamics Edited by A. R. E. Sinclair, Craig Packer, Simon A. R. Mduma, and John M. Fryxel. University of Chicago Press. 512 pp.

**Education**

*M.Sc. Physics, Dalhousie University, Halifax, NS, 2005*

*B.Sc. (Hons) Physics, University of Guelph, Guelph, ON, 2002*

**WSP Canada Inc. – Calgary*****Acoustic Scientist***

Victor Young is an Acoustic Scientist with WSP Canada. Victor has more than twelve years of experience working on a variety of power, oil & gas, mining, pipeline, and transportation projects throughout western and northern Canada. Victor's experience includes conducting field measurements and data analysis, developing predictive computer models, preparing noise impact assessment reports, preparing shadow flicker and solar glare assessment reports, and providing expert testimony at regulatory hearings. Prior to starting at WSP, Victor worked for five years as a research scientist at the Department of National Defence. Victor's research focused on underwater acoustics and active sonar.

**Employment History*****WSP Canada Inc. – Calgary, AB***

*Acoustic Scientist (2011 to Present)*

Conduct environmental noise and light assessments for major industrial projects throughout western and northern Canada. Conduct shadow flicker studies for wind power projects and glare assessments for solar power projects. Conduct noise and light field measurements, including baseline and compliance monitoring as well as in-plant noise source measurements. Develop computer noise, light, shadow flicker, and glare models of existing and proposed facilities to assess compliance against relevant environmental noise regulations and guidelines. Prepare noise impact assessment and environmental impact assessment technical reports.

***Defence Research and Development Canada – Dartmouth, NS***

*Defence Scientist (2003 to 2008)*

Conducted original scientific research in the fields of ocean acoustics, sonar signal processing, and automatic pattern classification. Designed, conducted, and analyzed field experiments using Canadian, American, and NATO research vessels and equipment. Used the Matlab and IDL programming languages to implement novel algorithms for sonar signal processing and automatic pattern classification. Discovered new, psychologically inspired signal features, which are useful in the automatic classification of active sonar echoes, passive sonar transients, and marine mammal vocalizations.

***NATO Undersea Research Centre – La Spezia, Italy***

*Summer Research Assistant (2002 to 2002)*

Used Matlab programming language to implement a novel geo-acoustic inversion algorithm for ambient ocean noise. Applied geo-acoustic inversion algorithm to large amounts of ambient noise data and successfully identified seafloor layering and composition for a wide range of environments.

## SELECT PROJECT EXPERIENCE

<b>Agnico Eagle Meliadine Mine</b> Nunavut, Canada	Noise modelling, field data analysis, and reporting in support of regulatory requirements and stakeholder consultation efforts for the Meliadine Mine near Rankin Inlet, Nunavut.
<b>Agnico Eagle Meadowbank Mine</b> Nunavut, Canada	Noise modelling, field data analysis, and reporting in support of regulatory requirements and stakeholder consultation efforts for the Meadowbank Mine and Whale Tail Pit near Baker Lake, Nunavut.
<b>Capital Power Halkirk 2 Wind Project</b> Alberta, Canada	Field data analysis, noise modelling, shadow flicker modelling, and reporting in support of regulatory requirements and applications for the proposed Halkirk 2 Wind Power Project near Halkirk, AB.
<b>Imperial Kearl Oil Sands Mine</b> Alberta, Canada	Noise field data analysis, modelling, and reporting in support of regulatory requirements and applications for the Kearl Oil Sands Mine near Fort McMurray, AB.
<b>Suncor Base Plant Millennium Mine</b> Alberta, Canada	Field measurements, noise modelling, and reporting in support of regulatory requirements and applications for the Suncor Base Plant and Millennium Mine near Fort McMurray, AB.
<b>Total E&amp;P Canada Joslyn North Mine</b> Alberta, Canada	Noise modelling and reporting in support of regulatory requirements and applications for the proposed Joslyn North Oil Sands Mine near Fort McKay, AB.
<b>Canadian Natural Horizon Mine</b> Alberta, Canada	Noise field data analysis, modelling, and reporting in support of regulatory requirements and applications for the Horizon Oil Sands Mine near Fort McKay, AB.
<b>Suncor Fort Hills Oil Sands Mine</b> Alberta, Canada	Environmental and occupational noise modelling and reporting in support of regulatory requirements and applications for the Fort Hills Oil Sands Mine near Fort McKay, AB.
<b>TransAlta Sundance Power Plant</b> Alberta, Canada	Field measurements, data analysis, modelling, reporting, and hearing testimony in support of regulatory requirements and applications for the Sundance power plant near Stony Plain, AB.
<b>Capital Power Genesee Generating Station</b> Alberta, Canada	Noise modelling and reporting in support of regulatory requirements and applications for the Genesee power plant in Leduc County, AB.
<b>Capstone Buffalo Atlee Wind Project</b> Alberta, Canada	Noise modelling, shadow flicker modelling, and reporting in support of regulatory requirements and applications for the proposed Buffalo Atlee Wind Power Project near Jenner, AB.
<b>RES Forty Mile Wind Power Project</b> Alberta, Canada	Field data analysis, noise modelling, shadow flicker modelling, and reporting in support of regulatory requirements and applications for the proposed Forty Mile Wind Power Project near Bow Island, AB.
<b>RES Enterprise Solar Power Project</b> Alberta, Canada	Glare modelling, noise modelling, and reporting in support of regulatory requirements and applications for the proposed Enterprise Solar Project near Vulcan, AB.