ATLANTIC GEOSCIENCE SOCIETY

NEWSLETTER

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This grey cliff at St. Martins, NB, is made up of Triassic conglomerate deposited as an alluvial fan at the edge of the Fundy Basin. The red rocks in the foreground were formed in a river system and are probably of Permian age. Photograph: Rob Fensome.

The deadline for submissions to the next issue is , March 27, 2009. Please send articles or feedback to:

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Production of this newsletter is by Nelly Koziel.

PRESIDENT'S FORUM

The following was presented as a luncheon address at the recent Atlantic Universities Geology Conference in Fredericton.

I am a geologist, but I can change, if I have to, I guess

> "I have a Bachelor of Science in geology from the City College of New York and my greatest contribution to the field of geology is that I never entered it upon graduation" — General Colin Powell (retired), former US Secretary of State.

I would contend that Colin Powell made a grave error, becoming Secretary of State rather than a geologist. I think that one of the most important professions of our modern day is to be a geoscientist and I'll explain why. I also believe that being a geoscientist is one of the best of occupations combining all disciplines of science and incorporating a significant artistic element (for some more than for others!), making it a diverse, challenging, and stimulating career. Through tackling tectonic, structural, and stratigraphic problems, we learn to think not only in three dimensions (a few other professions, such as architecture may do the same), but we learn to think in the fourth dimension as well: time. No other profession requires that to the same extent as geology.

> "…with their four dimensional minds and their interdisciplinary ways, geologists can wriggle out of almost anything." — John McPhee, from his book Annals of the Former World which was awarded the Pulitzer Prize.

There are two great issues facing the world today (aside from the current economic crisis which is not our fault!): 1) the looming energy crisis where "Peak Oil" is expected to hit in 2012 and demand is increasing logarithmically, and 2) climate change. I put it to you that geoscientists are in a position to find solutions to these issues better than anyone. I think we are or can be instrumental to the answers — the rest of the world just doesn't know it yet and it is up to us to tell them.

> "We live in a society exquisitely dependent upon science and technology in which hardly anyone knows anything about science and technology."
> — Carl Sagan, astronomer, astrochemist, and author.

How many of those in the lay public truly comprehend the degree to which we are dependent on the natural resources of the Earth? Do they know that the very fabric of our modern lifestyle depends upon the resources that we extract from the Earth? They may know that the gasoline they burn in their car comes from oil in the earth (I once had a junior high school teacher who thought it came from dead and buried whales!), but I guarantee that they don't give a second thought of where the metal came from to make the car, or the rubber for the tires, or the copper for their electricity and cablevision, or the gypsum for the walls of their house, or the silica for the windows….

I met a tourist in Nain this year. I was getting off the Canadian Coast Guard ship Hudson after a few weeks of geophysical surveying on Labrador Sea. The tourist was taking a coastal boat tour down the coast. He asked what we were doing and I explained about offshore geohazards in anticipation of hydrocarbon exploration. "What are we going to do about those oil companies" he asked? I asked him how he got to Nain. "By plane," he explained. I asked how he got to the airport. "By car," he said. Then I asked how he was travelling down the coast. "By boat," he

indicated. "Well," I said, "when you are ready to give all that up, then perhaps you can comment on what oil companies are doing." This is a simple anecdote to indicate the general lack of understanding of geology amongst the lay and even educated public. As the famous American essayist Ralph Waldo Emerson said nearly 150 years ago: "We learn about geology the morning after an earthquake." It is up to geoscientists to educate the public before the earthquake.

Regarding the looming energy crisis, it is up to geoscientists to discover new conventional and unconventional hydrocarbon-based energy resources. Gas hydrates are one such example. Nuclear power generation might also undergo a rebirth, and it will be up to geologists to discover the necessary mineral deposits. These sources of energy will provide a bridging measure while new energy solutions are discovered and implemented. Geoscientists will likely play a significant role in the discovery of these new energy solutions. In addition, increased fuel efficiencies and energy storage will very much depend upon resources extracted from the earth, such as metals for improved conductors and batteries, and minerals for improved insulators, as examples. I think that geosciences will be critical over the next two decades to the survival of our society as we know it.

As for the issue of climate change, geoscientists are in a unique position, like no others, to understand the issues. Few people, even very educated people, grasp how incredibly old and dynamic is the earth — on all timescales. We know the Earth has changed and will continue to change with tsunamis, landslides and earthquakes, shifting rivers and streams and ocean currents, volcanoes, changing sea levels, retreating and advancing coastlines, erosion, waxing and waning of ice ages, mountain building, the appearance of new seas and the disappearance of old ones, and creation and destruction of entire continents. In our eyes, Earth is a living, breathing entity, while most others see Earth as a stagnant place that is solid and constant under foot. And we see the interconnectedness of Earth processes: how climate is affected by tectonics and ocean circulation by geology. We've discovered time intervals in Earth's past, such as the Paleocene-Eocene thermal maximum, when global sea surface temperatures rose by over eight degrees. We've also discovered intervals when ocean circulation ceased, resulting in global ocean anoxia, such as during the Late Cretaceous. We can see episodes of increased global volcanism and even bolide impacts, which resulted in choking of the atmosphere — events that can be and have been subjects for thriller movies. In each of these cases we can document species mass extinction, so we know too the possible dire consequences. I think we, as geoscientists, can contribute to human understanding of climate change — the causes and effects, and its potential consequences.

But we need to tell people before the earthquake happens, and we clearly have not done a great job at that. I encourage everyone to reach out to the public and to talk about what we know. Use this, the International Year of Planet Earth, as an excuse to get out into the schools and public venues to tell people what you know. Get involved in societies to promote the geosciences. If we don't tell them, who will? As the American author Wendell Barry said: "The Earth is what we all have in common."

David Mosher
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GEOLOGY STUDENTS IN ATLANTIC CANADA BENEFIT FROM ANOTHER SUCCESSFUL AUGC EXPERIENCE

The 2008 Atlantic Universities Geologic Conference was hosted by the University of New Brunswick (UNB), Fredericton this year from October 23rd to 25th and was a great success thanks to the over 95 participants. Attendees included six Atlantic universities: Memorial, Acadia, Saint Mary's, St. Francis Xavier, Dalhousie, and the host UNB.

Students and professors had an opportunity to view drill cores at the Adex Mine site. Photograph: Thomas Mumford.

Four field trips were offered on Friday the 24th, hosted by UNB professors and their colleagues. A field trip led by Dr. David Lentz (UNB) and David Shinkle (Adex) to the Mount Pleasant Deposit offered insight on these classic W-Mo-Bi and Sn-Zn-Cu-In deposits. Drs. David Keighley (UNB) and Adrian Park (UNB) ran a trip to the gas fields near Sussex, New Brunswick to view the field characteristics of the famous Albert oil shale gas trapped in sandstone beds, as well as the Norton Fossil forest. Dr. Randy Miller from the New Brunswick Museum led a trip around Saint John from a

Field trip participants pose at the Minto Coal Mine. If yer goin' diggin', take a big scoop! Photograph: Dr. Bruce Broster.

geotourism perspective. The fourth trip, examining the life cycle of the Minto Coal Mine from operations to restoration, was led by Michelle Coleman (New Brunswikc Coal) and Drs. Bruce Broster (UNB) and Nick Susak (UNB).

AUGC'08 co-chairs Kim Klausen (left) and Megan Trites (centre) with keynote speaker Robert Quartermain. Photograph: Dr. Bruce Broster.

On Saturday the 25th, students working on honours theses presented their research results to their peers through a series of high-calibre oral and poster presentations. The Frank Shea Memorial Award for the best presentation in the field of Economic Geology was awarded to April Coombs from Memorial University.. The CSPG Award for the best oral presentation was awarded to Darren Lefort from Saint Mary's University The NSERC-APICS Award for the best paper was presented to Luke Hilchie from Dalhousie University. The CSEG Award for the best geophysical presentation was awarded to Nicole M. Peters from Dalhousie University, and the Imperial Oil Poster Award, was presented to Morgan Quinn from Dalhousie University.

These awards were presented at the well attended closing banquet that featured an intriguing keynote talk by Robert Quartermain, president and CEO of Silver-Standard Resources and we send our regards and thanks to him.

Thank you to AGS and all sponsors for contributing to AUGC'08. It was a great success. The attendees also thank AUGC 2008 co-chairs Kim Klausen and Megan Trites for organizing such a successful conference.

Megan Trites
e2fee@unb.ca

AGS ACTIVITIES

SPONSORSHIP OPPORTUNITY

Does your group require a little extra money to get a project or event on the go?

Does your project fall within the mandate of **Atlantic Geoscience Society** (AGS)?

If so, we may be able to provide you with that extra bit of funding you need!

The Products Committee of the AGS is currently accepting loan or grant applications for projects that communicate ideas about the Earth and earth sciences.

For more information or to download the application, please visit the AGS website:

http://ags.earthsciences.dal.ca/ags.php

Or

You may contact a member of the **Products Committee**

Rob Raeside (rob.raeside@acadiau.ca)
David Keighley (keig@unb.ca)
Kay Thorne (kay.thorne@gnb.ca)

Second Circular and Call for Abstracts
AGS Colloquium
Delta Beauséjour Hotel, Moncton NB
February 6-8, 2009

The 35th annual AGS Colloquium and Annual General Meeting will be held at the Delta Beauséjour Hotel in Moncton, New Brunswick on February 6-8, 2009.

Theme: *"Current Research in the Atlantic Provinces (and Beyond)"*.

Abstracts
Abstracts should not exceed 500 words, including title and author information, and should conform to the Atlantic Geology format (see example below). Abstracts must be submitted by e-mail to: michael.parkhill@gnb.ca.

Deadline
Friday, January 9th, 2009; however, if possible, please submit by the end of December.

All submitted abstracts must indicate
1) whether they are for oral or poster presentation; and
2) whether or not the presenter is a student, and if so, whether at the B.Sc., M.Sc. or Ph.D. level.

Student presenters are eligible for the Rupert MacNeill Award for best undergraduate oral presentation, the Sandra Barr Award for best graduate student oral presentation, and the Graham Williams Award for best poster.

Only one abstract will be accepted from a given principal author, and the organizers also reserve the right to reject abstracts that are received after the abstract deadline; in a worst-case scenario, abstracts will be accepted on a first come-first served basis, and it may not be possible for all to be accommodated.

Your abstract will not be officially accepted until you have registered for the Colloquium; the registration form will be circulated by e-mail to AGS members, and posted on the AGS website (http://ags.earthsciences.dal.ca/ags.php), by mid-December.

Instructions to Presenters
All presentations should be prepared in PowerPoint for an LCD projector; only one screen will be available. Laptops and projectors will be provided at the conference, including a laptop in the speaker ready-room. Posters are encouraged whenever possible; standard poster space is 3' x 6' (velcro-friendly panels, velcro not supplied).

Sussex Mine Tour
Up to 16 people can be accommodated for an underground tour of the PCS New Brunswick Division potash mine near Sussex. Participants will be accepted on a first-come, first-served basis, so if you are interested, get your registration in early. Registration forms will be circulated by e-mail to AGS members and will also be available on the AGS website (http://ags.earthsciences.dal.ca/ags.php) by mid-December.

Participants must provide their own transportation to and from Sussex. The mine is located about 8 km east of Sussex, on the north side of Route 114; the superstructure can be seen from the Trans-Canada Highway. Take exit 211 off the TCH and follow Route 114 north and west. Park in the visitor's area and report to the onsite security office by 11:30 a.m. Friday, February 6th. Participants should wear old clothes (field gear) and work boots. No beards will be permitted underground.

Accommodations

A block of rooms has been reserved at the Hotel Delta Beauséjour, 750 Main Street, Moncton, and attendees should book their reservations by Monday, January 5th, 2009 to take advantage of the conference rate. Room rates are $133 for single or double occupancy, $153 for triple, and $173 for quadruple. For reservations call 506-854-4344 or 1-888-351-7666 and indicate that you are booking for the Atlantic Geoscience Society meeting.

Awards and Entertainment

A highlight of each AGS Colloquium is the annual awards banquet, and presentation of the student awards for best poster (Graham Williams Award), best undergraduate paper (Rupert H. MacNeill Award), best graduate student paper (Sandra Barr Award), the Laing Ferguson Award (Distinguished Service to AGS), and Gesner Medal (Distinguished Scientist Award).

A post-banquet tradition is the annual AGS Ceilidh and Jam-Session. The musically-inclined are invited to bring their instruments and entertain those of us who aren't so musically inclined. All instruments and styles welcome.

(Sample Abstract)

Evolution of Proto-Avalonia: a 1.0 Ga tectonothermal event and geodynamic linkage to the breakup of Rodinia?

J.B. Murphy[1], R.A. Strachan[2], R.D. Nance[3], D.K. Parker[2], and M.B. Fowler[2]

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Avalonia, the largest suspect terrane in the Canadian Appalachians, originated along the Neoproterozoic margin of Gondwana and was accreted to Laurentia by the late Ordovician. The age and character of Avalonian basement is key to identifying the portion of the Gondwanan margin from which the terrane was derived and provides important constraints for Neoproterozoic paleocontinental reconstructions. Since this basement is not exposed, it must be characterized indirectly by isotopic analyses. Nd-Sm data from ca. crustally derived, 630-430 Ma felsic rocks typically record initial e_{Nd} values between 0 and +5.0 and model ages (T_{DM}) between 0.8 to 1.1 Ga, but the origin of this isotopic signature is unclear. Two early Avalonian igneous complexes that were emplaced prior to the main (630-570 Ma) cycle of Neoproterozoic magmatism; the ca. 734 Ma Economy River Gneiss of mainland Nova Scotia and the ca. 675 Ma Malverns Plutonic Complex of the British Isles show non-overlapping e_{Ndt} values of +1.29 to +4.09, and -0.11 to -2.03, respectively. Yet their T_{DM} (998 -1194 Ma and 1043- 1147 Ma) are almost identical and are similar to those of the main 630-570 Ma arc phase and subsequent Paleozoic tectonothermal events. This indicates that the isotopic signature is a characteristic feature of Avalonian basement and that felsic magmatism produced by peak arc activity was predominantly generated by recycling pre-existing crust.

The T_{DM} ages are interpreted to record a ca. 1.0 to 1.2 Ga tectonothermal event that formed much of the basement upon which subsequent Neoproterozoic and Paleozoic tectonothermal activity developed. This interpretation is supported by U-Pb detrital zircon ages of 977-1223 Ma obtained from Avalonian sedimentary rocks in Nova Scotia that are coeval with the main arc phase. This tectonothermal event is interpreted to reflect western-Pacific-type arc-back arc complexes formed coevally with the Tocantins province of central Brazil. The transition to eastern Pacific-type arc activity may be related to the ca. 760 breakup of Rodinia in a manner analogous to effect of the breakup of Pangea on the tectonothermal evolution of western North America.

The Atlantic Geoscience Society
Société Géoscientifique de l'Atlantique

Colloquium and Annual General Meeting

Delta Beauséjour Hotel, Moncton, New Brunswick

February 6 - 8, 2009

Name (first/last) : _____

Street Address: _____

City – Province – Postal Code:_____

Affiliation: _____

Email address (do legibly if printing):_____

Registration Fees

Professional or Part-time student (includes $10.00 AGS membership) ……$50.00.... $ _____
(On-site registration will be $60.00)

Retired Professional……$20.00.... $ _____

Full-time student (includes $5.00 AGS membership) …… ……$15.00.... $
(On-site registration will be $20.00)

Guest ……..... $ 0.00

Workshop:

Professional and student …….. $10.00 ...$

AGS Annual Meeting and Luncheon:

Professional, Part-time student or guest .... $20.00 X no. of tickets = $ _____

Full-time student …….....$10.00 X no. of tickets = $ _____

AGS Annual Awards Banquet

Professional, student and/or guest..... $40.00 X no. of tickets = $ _____

(All taxes and gratuities are included in the prices)

Note: Luncheon and banquet tickets will NOT be available at the registration desk.

The Potash Company of Saskatchewan, New Brunswick Division, will be offering a mine tour *at their site in Penobsquis, near Sussex, just off Route 2 (TCH). There is a limit of 16 participants, on a first-come, first-served basis.* ***Participants must provide their own transportation to and from Sussex, and report to the onsite security office by 11:30 AM on Friday, February 6. No beards!***

Please check here if you wish to attend the PCS mine tour _____

Atlantic Geology (e-subscription)……$25.00…….. $ _____

TOTAL …… $ _____

Make cheques payable to **"Atlantic Geoscience Society"**. Download/print this form, complete and mail with cheque to:

Jim Walker, Colloquium Registration Coordinator
New Brunswick Geological Surveys Branch
PO Box 50, Bathurst, New Brunswick E2A 3Z1
Tel: 506-547-2070; fax: 506-547-7694 ; e-mail: jim.walker@gnb.ca

• Receipts will be available at the registration desk.

• Check if registering now and will pay later at the conference _____

REGIONAL NEWS AND UPDATES

Acadia University

The Department of Earth and Environmental Science sent 8 students to the AUGC in Fredericton this past October. An even larger contingent of students and faculty plans to attend the AGS Colloquium in February. The department was also represented at the New Brunswick Exploration, Mining and Petroleum conference in Fredericton in early November, where Cliff Stanley presented talks at both the conference and UNB in his role as CIM Distinguished Lecturer. Sandra Barr also attended the conference, at which she contributed to three poster presentations.

Following the conclusion of Brendan Murphy's term as the Earth Science Committee chairperson for the Atlantic Provinces Council on the Sciences, Rob Raeside has taken over this role. Rob plans to get the APICS representatives together for a meeting at the AGS colloquium, so be warned!

Alan Macdonald is coming out of retirement for a second time to pinch hit as a sabbatical replacement for David McMullin, who will be sailing the Atlantic with Class Afloat next semester. The department is pleased to have Alan teaching Metamorphic Geology once again. Christa Pufahl is also stepping up to the plate to instruct labs in the Earth History and Sedimentology and Stratigraphy courses.

Don Osburn has never been busier in the rock room making thin and polished sections. He has increased production because of the tremendous demand from outside (government, academia, and industry) and internal users. Don is pleased to accommodate anyone requiring thin or polished sections — contact him directly at Don.Osburn@acadiau.ca.

Peir Pufahl
Peir.Pufahl@acadiau.ca

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Geological Survey of Canada (Atlantic)

Stephen Locke was recently appointed as Director of GSC Atlantic, effective October 7th, 2008. Stephen joins us from Agriculture and Agri-Food Canada (AAFC) where he was the Director of Agricultural Water, based in Regina, Saskatchewan. He was responsible for leading a national center of expertise in the environmental stewardship and sustainable use of agricultural water. He had staff in all regions of Canada and was involved in national, regional and international projects as well as government wide initiatives around water.

Stephen graduated with a B.Sc. in geology from Acadia University in 1985. He worked in the private sector as a geologist and then as a hydrogeologist following graduate courses from the Technical University of Nova Scotia. Stephen joined the Public Service in 1993 as a Senior Hydrogeologist with Public Works and Government Services Canada (PWGSC) where he worked in the Environment Services Sector specializing in environmental assessment, remediation and sustainable development. Most of his time with PWGSC was in the Atlantic Region though he spent two years in Ottawa on assignment, in 1996 and 1999.

Stephen Locke in his new office as Director of GSC Atlantic. Photograph: Patrick Potter.

Following a number of management positions within PWGSC, and an MBA from Saint Mary's University, Stephen became a Director of Client Services for the Atlantic Region in 2002. He joined AAFC and moved to the prairies in 2005.

We would like to thank Sonya Dehler for the outstanding job she has done as Acting Director of GSC Atlantic, since April 1, 2008. Sonya provided strong leadership in the marine geoscience business line while maintaining her involvement in current projects in the offshore.

compiled by *Patrick Potter*
Patrick.Potter@nrcan.gc.ca

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University of New Brunswick

Melissa Marie Battler defended her M.Sc. thesis entitled "Development of an Anorthositic Lunar Regolith Simulant: OB-1"; she was supervised by John Spray. Melissa is presently doing her Ph.D. at the University of Western Ontario. Christopher Baker of UNB SJ defended his M.Sc. thesis on "Design and Application of an Open-Source GIS database for the Vaucluse in Southern France" under Lucy Wilson's supervision. Christian Dupuis very recently defended his Ph.D. thesis on "Field Measurements and Analyses of Electrokinetic Seismoelectric Signals Generated

in Sedimentary Environments"; Christian was co-supervised by Karl Butler and Brent Petersen (UNB Engineering) and came from Perth Australia where he is currently a Research Fellow in the Department of Exploration Geophysics, Curtin University of Technology.

Adrian Park (UNB) and Andy Parmenter (UNB Ph.D. candidate), with DNR funding, continued a collaborative project with Sandra Barr (Acadia) and Chris White (NSDNR) structural mapping in Caledonia this last summer.

Adrian Park led a Graduate Association of Geology Students field trip (15-16 Nov) to the Saint John area, examining the basement-cover relationships around Lepreau and New River Beach, and the Brookville Terrane-Kingston Complex relationships around New River Beach and Pocologan. A very wet Sunday involved an attempt to see Brookville Terrane-Caledonia Terrane relationships around Rothesay and east Saint John, and look at new excavations in the Cambro-Ordovician Saint John Group.

Graduate Association of Geology Students field trip participants managed to enjoy the rocks around Saint John despite very wet weather. Photograph: David Lentz.

The 2008 Canadian Tectonics Group annual meeting was held on a sunny but cool late October weekend in Moncton, N.B. The meeting was organized by Dr. Adrian Park and Andy Parmenter from the University of New Brunswick and included a field trip into the Caledonian Highlands, led by Dr. Sandra Barr (Acadia) and Dr. Park. Participants from across Canada were treated to an excursion across an Early Paleozoic complexly deformed and long-lived high-strain zone. The deformation fabrics and kinematic indicators preserved in these Precambrian to Early Cambrian supracrustal host rocks and associated granitic suites provided ample stimulus for outcrop discussion. A broad selection of papers on all aspects of tectonics and structural geology were presented on the second day of the weekend meeting.

David Lentz and *Andrew Parmenter*
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URBAN GEOLOGY OF THE HALIFAX REGIONAL MUNICIPALITY

With the pressures of growth and development in the Halifax Regional Municipality (HRM), many local construction companies and environmental consultants have contacted the Nova Scotia Department of Natural Resources (DNR) in regard to outlining areas in the city where acid rock drainage (ARD) may be an issue for infrastructure development and construction. To address these concerns, the Geological Mapping and Geochemistry Section initiated a detailed mapping project in the summer of 2007 for NTS map area 11D/12 (Fig. 1), concentrating on the metropolitan Halifax area. The project team soon realized, however, that to ensure effective land-use planning, more detailed geoscience information was required than simply mapping areas of potential ARD would provide.

To meet this requirement, DNR has expanded the project to include compiling existing geological information, conducting new bedrock and surficial mapping, and serving as the main repository for the municipality's geoscience database. Products of the HRM project will include digital geological maps (printed copies on demand) and related databases. The department will not compete with private firms when releasing data, as the information released is meant to serve as regional background information. It does not replace site-specific engineering tests, which carry legal implications.

Although Halifax is at low risk for some hazards, such as major earthquakes, HRM has problems that should be addressed. Being on the Atlantic coast, Halifax has been subjected to high sea levels caused by onshore winds and waves, storm surges from hurricanes, tsunamis, and the effects of sea-level rise related to climate change. Geological hazards related to natural substances in HRM include radon, uranium, arsenic and ARD.

Radon is a colourless, odourless radioactive gas that occurs naturally as a result of the breakdown of uranium minerals in bedrock. In HRM, radon occurs in areas underlain by the South Mountain Batholith or by tills derived from granitic bedrock. The government of Nova Scotia is currently testing for radon, not only in HRM but throughout the province. Arsenopryite is the main natural source of arsenic (As) and is a common mineral in rocks of the Meguma Supergroup. Arsenopyrite occurs with gold, and many gold areas (e.g. Montague Gold District, Figure 1) have elevated As levels. In addition, many of these old mine sites have elevated concentrations of mercury (Hg), which was used in the milling process. Environmental Site Assessments are under way to delineate areas of high risk that are located close to residential properties. It should be noted that there are also physical hazards in these old gold districts, including abandoned mine shafts, pits, trenches and tailings. Acid rock drainage (ARD) is the product of atmospheric oxidation of iron/sulphur-bearing minerals such as pyrrhotite (FeS) and pyrite (FeS2). These

minerals are abundant throughout the Cunard Formation and locally in the Beaverbank Formation. Testing is under way to determine the susceptibility of these units to produce ARD.

Decision makers at the federal, provincial and local levels are finding that they need increasing amounts of geoscientific information in order to make sound decisions regarding the use of land, water and resources. A modern digital geology map and the associated databases often are the best scientific products for providing some of this information. The geology map can be used to establish linkages between human health and the geographic distribution of hazardous geological materials such as radon and arsenic. The map will also provide the geological framework for predicting which rocks and areas are susceptible to ARD and concerns about water quality. In general, the geological map is essential in land-use planning throughout HRM.

Chris White and *Terry Goodwin*
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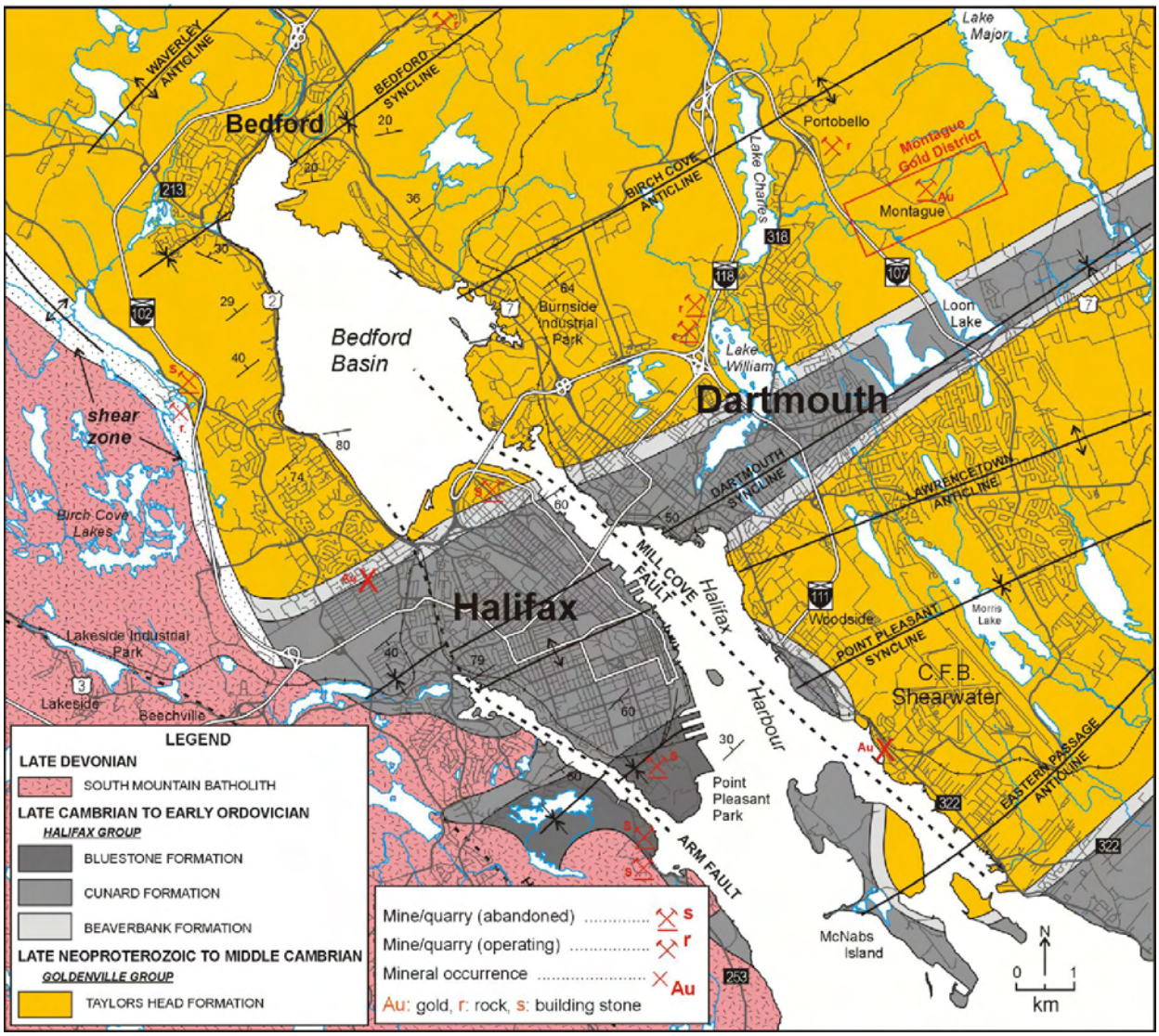

Figure 1. Simplified geological map (this study) of the Halifax-Dartmouth-Bedford area.

UPCOMING EVENTS

Beyond the Last Billion Years 2009 Talk Series

Exposing secrets in your backyard boulders
Wednesday, February 11th, 2009
Dr. John Gosse, Canada Research Chair in Earth Systems, Earth Sciences, Dalhousie University

From Ice age to Climate Change: A Natural history of the Shubenacadie Waterway
Wednesday, April 15th, 2009
Dr. Edward (Ned) King, Geological Survey of Canada

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Geology Art Gala

February 14, 2009
Room 121, Dalhousie Arts Centre

Spend Valentine's Eve at the Dawson Grad Geology Society's Geology Art Gala

Enjoy wine, hors d'oeuvres and live musical performances.

Silent Auction: 18:30 for viewing, auction closes at 20:30.

Anyone wishing to donate art or perform at the show, please contact Dawn.Kellett@dal.ca or fwalsh@dal.ca

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24th International Applied Geochemistry Symposium (IAGS 2009)

June 1-4, 2009
University of New Brunswick, Fredericton
http://www.unb.ca/conferences/IAGS2009/

This biennual Association of Applied Geochemists meeting is co-sponsored by the International Association of GeoChemistry (IAGC) and the International Association of GeoAnalysts (IAG) and will include the North Atlantic Minerals Symposium (NAMS). The meeting will be preceded by 5 professional development workshops to be held on Sunday, May 31st. As well there are 3 pre-meeting field trips (Wednesday May 27 to Saturday May 30th) and 3 post-meeting field trips (Friday June 5 to Monday June 8th) which will be run throughout the Maritimes, leaving from and returning to Fredericton.

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GeoHalifax 2009

September 20-24, 2009
Halifax Marriott Harbourfront Hotel, Halifax
www.geohalifax09.ca

The Canadian Geotechnical Society (CGS), the Nova Scotia Section of the Canadian Geotechnical Society and the Canadian National Chapter of the International Association of Hydrogeologists (IAH-CNC) invite you to the 62nd Canadian Geotechnical Conference and the 10th Joint CGS/IAH-CNC Groundwater Specialty Conference.

The conference theme - Discover Geotechnique - reflects Halifax's history as a point of discovery for many early Canadians. It also refers to this conference's tradition of providing a continuing forum for discovering new research developments and advancements in geotechnical engineering and hydrogeology.

Authors are invited to submit English or French abstracts of a maximum of 250 words through the conference web site by January 16, 2009. Invitations for submission of full papers will be sent by February 27, 2009 to authors whose abstracts are accepted by the conference's Technical Committee. Submitted papers will be due by May 15, 2009 and will be reviewed prior to final acceptance for inclusion in the conference proceedings available on CD-ROM. At least one author of an accepted paper must register for the conference.

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