Nova Scotia
Minerals Update
Department of Natural Resources, Minerals and Energy Branch

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In This Issue

If you have any comments or questions about the *Minerals Update* please call or write:

Doug MacDonald
Editor, *Nova Scotia Minerals Update*

Nova Scotia
Department of Natural Resources

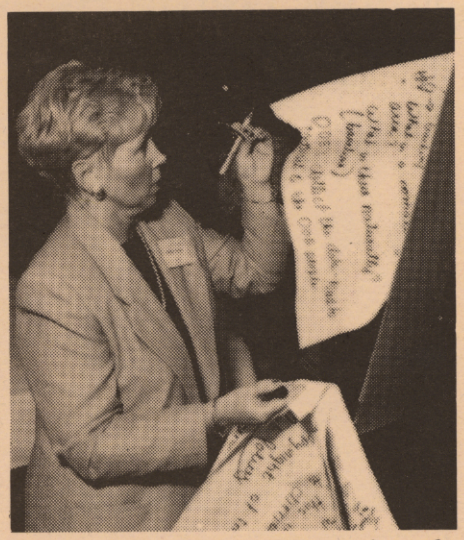
Minerals and Energy Branch
P.O. Box 698, Halifax
Nova Scotia, Canada B3J 2T9
Phone 902-424-2510
FAX 902-424-7735
E-mail drmacdon@gov.ns.ca

Workshop Addresses Geoscience Needs in Nova Scotia

The Nova Scotia Department of Natural Resources (DNR) and the Geological Survey of Canada (GSC) held a workshop at the Citadel Inn in Halifax on May 13 and 14 to discuss geoscience needs in Nova Scotia. More than 100 geoscience providers and geoscience users took part in the two days of intense discussions. The workshop was a requirement of the bilateral Memorandum of Agreement signed by DNR and GSC last fall (see *Nova Scotia Minerals Update* vol. 7) and its results will be used by the two agencies to set geoscience program priorities for the next five years.

Participants in the workshop represented a wide range of geoscience user groups. In addition to government geoscientists, there were members of the local and national mineral exploration community, and representatives from metallic and non-metallic mineral producers, geotechnical firms, land-use planners, geomatics groups, universities, and other government organizations including Environment Canada and the provincial departments of agriculture, fisheries, transportation and environment. This was the first workshop of its kind in Nova Scotia (and perhaps in Canada) where such a wide range of geoscience interests were represented and where the discussions focused strictly on the needs of the users rather than the details of past or present programs. Perhaps most important was the informal network of communication fostered among all the participants during the workshop. We hope that many of these people will stay in touch for years to come.

Discussions took place in a series of focus groups, followed by plenary sessions where the principal results of the focus groups were presented for discussion by the whole group. Topics discussed ranged



Scenes from the workshop: (L) Janet Sponagle and Peter Oram take a few moments to discuss issues of mutual concern. (R) Facilitator Debbie Thomas tries to keep pace with the flow of ideas.

from the types and scales of geological maps needed and the nature of environmental hazards that can be addressed by geoscientific information, to the coming revolution in digital data capture and delivery. The eclectic mix of interests represented among the participants produced some interesting and lively discussion about the types of geoscientific information needed by different users, and how that information can be most effectively delivered.

Common themes emerging from many of the discussions are presented in the adjacent box. These highlights are not completely representative of the range of issues discussed; however, they serve to convey a flavour of what transpired. A final report has been prepared and circulated to the participants and other interested parties for comment.

We at DNR would like to take this opportunity to thank all those who contributed their time and energy to the workshop. We look forward to working with you again to maximize the impact of geoscience programs in Nova Scotia in the coming years.

Scott Swinden and Mike MacDonald

Highlights from the Geoscience Needs Workshop

Geological Maps: Virtually all users need geological maps and 1:50 000 is still the most desired scale for most purposes. The need for bedrock maps is universal while the need for surficial maps is slightly more specific (e.g. exploration, land use, engineering, environment). Paper maps are still needed, but digital map products are increasingly desirable and provide opportunities to convey larger amounts of data.

Mineral Deposit Studies: There is a need for continuous revision of mineral deposit models and for regional thematic studies of mineralized environments, particularly for those seeking new resources.

Geochemistry: Geochemistry is a priority in diverse sectors: mineral exploration, environmental studies and land-use planning. Different users may need different types of data, but information collected for one purpose can often be applied to others.

Groundwater: There is a need for province-wide hydrostratigraphic information and collection of data on rock properties relevant to groundwater flow and quality.

Offshore/Marine: The geoscientific database for the marine environment is still very limited relative to onshore Nova Scotia and a very large job remains of basic information gathering. Careful planning will be required to set priorities against available resources. The need for onshore-offshore correlations was identified a number of times.

Information Sharing: There is a widespread need for access to information that may already be available but not widely disseminated. Centralization of diverse public and private geoscience data sets is needed, as is resident geoscientific expertise to help non-technical users make the most of the data.

Public/Private Collaboration: There was a continuing emphasis on the need for all geoscientific groups, both public and private, to seek opportunities for information sharing, needs assessment and partnerships, especially in these times of diminishing resources but increasing need for geoscience data over a wide spectrum of society.

Eleanor Norrie Appointed Minister of Natural Resources

The Honourable Eleanor Norrie examines a specimen of halite from the Pugwash salt mine.

Not very often do government departments gain a minister with awareness and experience in their new portfolio. When the Honourable Eleanor Norrie was appointed Minister of Natural Resources on April 1, 1996, she brought with her a family background in mining, forestry and small business. J. P. Norrie, her husband's father, worked with the former Department of Mines as Deputy Inspector of Mines after his graduation from Nova Scotia Technical College. Mrs. Norrie's grandfather managed a sugar bush and forestry operation in his woodlot near Truro. Her mother ran a successful clothing business in Truro.

Mrs. Norrie is a graduate of the provincial Normal College (now the Nova Scotia Teachers' College). She taught school for many years and also operated the family business. She has served on boards of directors for a number of volunteer organizations.

Since her election to the Legislature in May 1993, Mrs. Norrie has been Minister of the departments of Human Resources and Housing and Consumer Affairs. Her current duties also include responsibility for the Women's Directorate, the Advisory Council on the Status of Women, and the Nova Scotia Tidal Power Corporation.

Howard Donohoe

From the Mineral Inventory Files

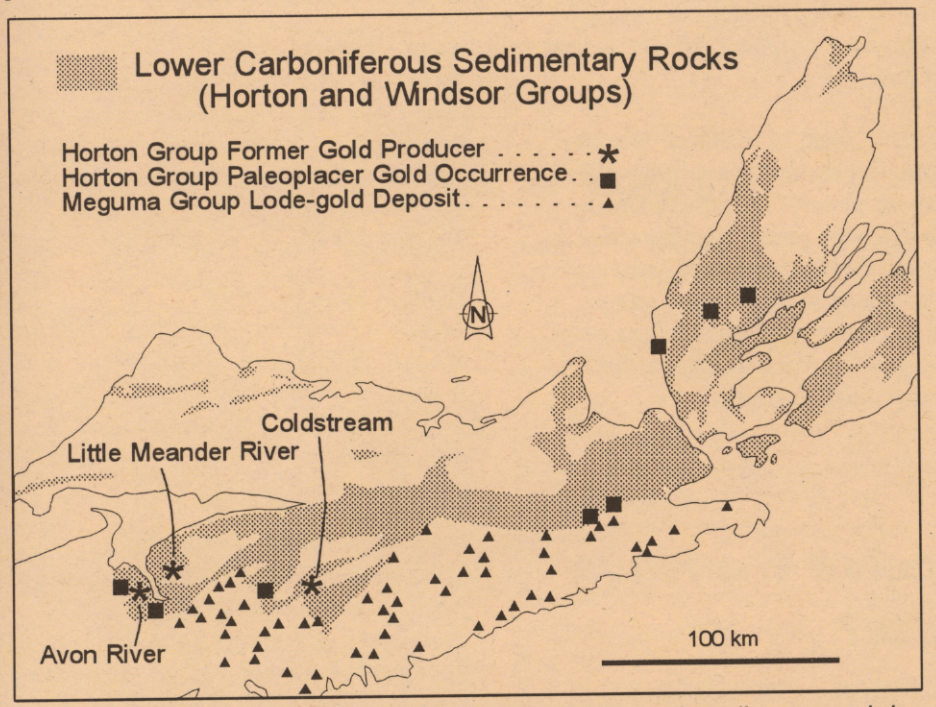
Paleoplacer Gold Deposits in Nova Scotia: Pipe-dream or Reality?

Placer deposits are formed by mechanical concentration of heavy minerals from rock debris. Placer gold deposits are a major contributor to the world's total gold production. In this issue I would like to add to the debate on whether or not Nova Scotia has the potential for paleoplacer gold deposits (ancient, preserved placer deposits) of mineable size.

The map below shows the locations of paleoplacer gold occurrences in Carboniferous sedimentary rocks of the Horton Group. Three of these occurrences were sites of small-scale mining operations during the 19th century. This combination of documented occurrences and mining history goes well beyond what could be considered 'smoke' or 'promotional hype'. One can only imagine what might have happened if these sites had been the subject of modern exploration and mining techniques.

Perhaps the best way to examine this topic is by first setting out the necessary features for a paleoplacer gold deposit. The two prime ingredients are simple but elusive: (1) the presence of a suitable host rock deposited by sedimentary processes conducive to concentration of gold placers, and (2) a source of the gold to be concentrated.

Nova Scotia has an abundance of potential host rock. Much of central and northern Nova Scotia is underlain by the Early Carboniferous Horton Group, which consists of thick sequences of terrestrial conglomerate, sandstone, siltstone and wacke. Portions of the Horton Group qualify as excellent host rocks for placers. Its sediments are predominantly subaqueous in origin, deposited by ancient rivers and streams that drained the surrounding crystalline basement highlands. Particularly noteworthy are quartz-pebble conglomerate units that are up to 6 m thick. These conglomerates are not restricted to the base of the Horton Group, in fact several of the known paleoplacers occur in conglomerates well above the Carboniferous unconformity at the base of the Horton. At our Review of Activities in November 1995, Ron Mills compared a quartz-pebble conglomerate from the Horton Group with the famous gold-bearing quartz reefs of the Witwatersrand Basin in South Africa. Ron's comparison showed that the Horton Group unit was deposited under similar sedimentary processes to the South African counterparts and that both units have an impressive proportion of clasts derived from quartz veins.



Distribution of Early Carboniferous Horton and Windsor group sediments, and the locations of paleoplacer gold deposits. Also shown are numerous metasediment-hosted, lode-gold deposits of the Cambro-Ordovician Meguma Group.

Does Nova Scotia have a source of gold to be concentrated as paleoplacers? Literally dozens of lode-gold deposits in the Cambro-Ordovician metasedimentary rocks of the Meguma Group throughout eastern Nova Scotia provide the answer. Paleocurrent indicators show that much of the Horton Group sediment was derived from these Meguma Group rocks. It is interesting to compare our situation to the Klondike placer deposits in the Yukon, probably the richest placer field in the world. The >11 million ounces of gold extracted from the Klondike gravels originated from numerous, but small, quartz vein deposits hosted in the nearby Klondike schist. The key word here is small, as vein deposits in the Klondike schist do not compare in size or in abundance to the lode-gold deposits of the Meguma Group. In short, our gold source is superior to the Klondike's.

It seems that we have all the necessary ingredients for paleoplacer gold deposits in the Horton Group of Nova Scotia. All we need now is for someone to find them.

George O'Reilly

Investing in the Americas

The fifth annual Investing in the Americas conference was held in Miami from April 22 to 24, 1996. For the second consecutive year the Honourable Anne MacLellan, federal Minister of Natural Resources, led a 'Team Canada' delegation consisting of officials from the federal government, six provinces and two territories, and representatives from the Canadian mining industry. DNR geologist Mike MacDonald represented Nova Scotia and had the opportunity to promote the mineral potential of this province to an international audience.

Minister MacLellan delivered a strong presentation that highlighted the continued potential for new mineral deposits in Canada, such as the Voisey's Bay Ni-Cu-Co deposit in Labrador and the Kudz ze Kayah Cu-Pb-Zn deposit in southern Yukon. She also underscored Canada's key role in the international mining scene and noted the increased exploration levels in this country.

Promotion of our mineral potential has been given a high priority at DNR and is considered essential to increasing the levels of exploration and development in Nova Scotia. A recent federal-provincial survey of mining and exploration companies noted projected exploration expenditures of $2.250 million in Nova Scotia for 1996, up from $1.714 million in 1994 (an increase of >30%). This suggests that our promotional activities are starting to pay off.

Mike MacDonald

Collecting Rocks and Minerals in Nova Scotia

Collecting rock and mineral specimens is a familiar part of mineral exploration, or even sight-seeing, for many of us. By encouraging visitors and residents to discover Nova Scotia through collecting rocks and minerals we develop educational, environmental and economic opportunities. However, every collector must be aware that there are limitations.

Almost all minerals in Nova Scotia belong to the Crown (i.e. the Government of Nova Scotia) and are regulated under the *Mineral Resources Act*. To safeguard the beauty and environmental health of beaches, DNR also enforces the *Beaches Act*. Under these acts, collection of minerals and panning for gold are considered exploration techniques which require either a prospector's card or a valid exploration licence. Recreational collecting requires the permission of the licence holder. Collecting beach rocks is prohibited, except as ballast for lobster pots or boats.

Here is how the department recommends working within these limitations. Having the permission of the land owner is essential. If the area is Crown land, call the local DNR office for permission (see *Minerals Update v. 8* for regional office locations). If the land is held under an exploration licence, permission of the mineral rights holder is essential. Information about current mineral rights can be obtained by calling DNR's Registry of Mineral and Petroleum Titles in Halifax at 902-424-4068.

The department allows small-scale collecting of rocks and minerals from beaches. A general guide is to remove only what you can hold in your hands. The department does not allow mineral and rock collecting in provincial parks. Specific sites, such as the fossil exposures at Joggins, have been protected by the Department of Education and Culture under the *Special Places Protection Act*. No casual collecting is allowed from the bedrock at these sites, with the exception of permits for scientific research.

Howard Donohoe

Mining Week 1996

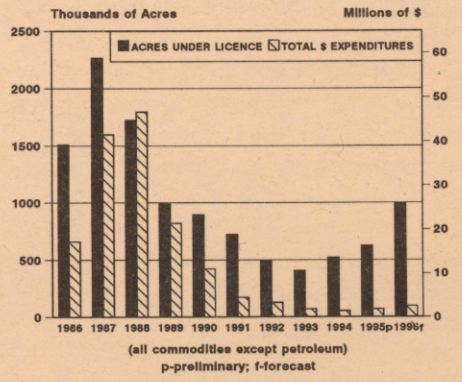
Mining Week 1996, May 11 to 18, was a celebration of the mineral industry in Nova Scotia. The Mining Week partners, the Chamber of Mineral Resources of Nova Scotia, the Mining Society of Nova Scotia, and the Nova Scotia Department of Natural Resources, planned and implemented a wide range of activities during the week. Response to these activities showed how successful this event has become in raising public awareness of mining and minerals.

All over the province open houses, an education day, mall displays, and school talks highlighted the importance of the mineral industry. Mall displays in Truro, Sydney, Amherst, Dartmouth and Halifax were prepared and staffed by either the Chamber, Mining Society or DNR. The Museum of Industry in Stellarton hosted a one-day open house for school groups in central mainland Nova Scotia and Cape Breton Island. More than 350 students and teachers attended the open house. Open houses at Little Narrows Gypsum, Fundy Gypsum and the Middle Musquodoboit Education Centre allowed many people to learn about mineral resources first hand. The Mining Department at the Technical University of Nova Scotia also held an open house to acquaint people with the mineral industry and educational opportunities in mining engineering.

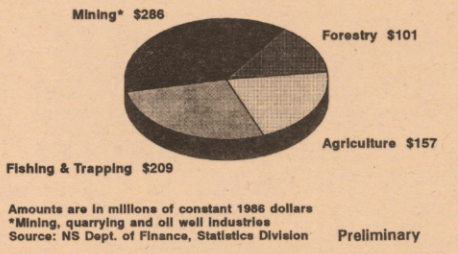
Mining Week 1996 closed with an open house at the department's Middle Musquodoboit Education Centre. Many people from the Musquodoboit Valley attended to learn more about recent discoveries of kaolinite in the area. The Honourable Eleanor Norrie, Minister of Natural Resources, and Mr. Kim Conrad, President of the Chamber of Mineral Resources, both addressed the group and stressed the benefits and opportunities offered by the mineral industry in Nova Scotia.

Howard Donohoe

Mineral Exploration on the Rise



Graph of area under licence and total exploration expenditures for 1986-1996. Note the steady increase in area under licence since 1993.



Pie chart showing 1995 contribution to the provincial GDP by primary resource sectors. Mining makes the largest contribution of primary resource sectors.

Ian MacLellan

April - June Open Assessment Reports

Report No.	NTS	Licensee
94-021	011F/06C	Boddy, D
94-022	011E/03B	Forgeron, D
94-023	011D/14A	Myers, G B
94-024	011E/02A	Melanson, L
94-025	011E/02A	Melanson, L
94-026	011E/10C	Patterson, J M
94-027	011K/03A	Noranda Exploration Company Limited
94-028	011D/13D	MacDonald, A
94-029	011F/14B	Kelly Rock Limited
94-030	011E/04C	Metall Mining Corporation
	011E/05B	
94-031	021H/07A	Boddy, D
	021H/07B	
94-032	011F/14A	The Shaw Group Limited
94-033	011E/04A	Horne, E N
94-034	011D/10C	Eisan, B D
94-035	011D/10C	Eisan, B D
94-036	021B/01A	Boudreau, R
	021B/01D	
94-037	021A/10A	Gold Bank Resources Incorporated
94-039	011K/02C	Johnson, C G
94-054	011E/04C	Metall Mining Corporation
	011E/05B	
95-030	011E/04C	Metall Mining Corporation
	011E/05B	
95-033	021H/02D	Booth, I
95-036	011D/13C	Leitch, J L
95-043	011K/02B	Burnt Point Resources Incorporated
95-047	021A/10C	D and D Metal Detectors Limited
	021A/10D	
95-058	021A/10B	Tri-Explorations Limited

Susan Saunders

Digital Geoscience Data Services in the Minerals and Energy Branch

The Minerals and Energy Branch geographic information system (GIS) and digital geoscience data have only been in regular use since early 1996, but already Digital Data Services staff Janette Vavra and Brian Fisher have been busy using the GIS to produce thematic maps and other products, both for clients and for branch staff involved in integrated resource management, mineral potential modelling, geological mapping, and land-use planning.

Development of the Minerals and Energy Branch GIS was made possible by funds from the Canada-Nova Scotia Co-operation Agreement on Mineral Development (1992-96). A GIS User Needs Analysis for the branch was delivered by the Earth Information Technology consortium in July 1993. In June 1994, ESRI Canada Limited supplied ARC/INFO® and ArcView® software, a Sun Sparc 20® workstation, personal computers and GIS consulting services. In January 1995, a GIS Implementation Plan was delivered by ESRI Canada Limited. This plan defined the system architecture and identified the primary GIS applications and data sets required for staff and clients. Synmap Information Technologies delivered the specified geoscience data sets in ARC/INFO® format by December 1995.

Of primary interest to our clients is the development of a public access GIS that will allow them to use the digital geoscience data sets and to create and plot derived geoscience thematic maps without having to become experts in ARC/INFO® software. The public access GIS is expected to be available for clients in a new work area, with computer and map printer, in the department's Halifax Library by the fall of 1996.

For more information on digital geoscience data services contact Janette Vavra, 3rd Floor, Founders Square (phone 424-8139, fax 424-7735, e-mail jmvavra@gov.ns.ca).

Norman Lyttle

DNR Geologists on the Move

"Nothing endures but change". For four geologists in the Minerals and Energy Branch, change will play a big part in their lives this summer.

In May, Mike Corey began a one year leave-of-absence to work in Indonesia. Mike's experience with granite-related mineral deposits in Nova Scotia made him the perfect candidate to take over a drilling project on Belitung Island in the Java Sea. Mike will be trying to define a tin deposit on the island, which is 400 km north of Jakarta and 650 km southeast of Singapore. He will be working for Bre-X, a very newsworthy company these days as a result of their mammoth Busang gold deposit in Indonesia.

Bob Ryan was recently awarded a research grant from the Australian Bicentennial Gold Foundation which will give him the opportunity to visit the University of Ballarat in the State of Victoria, Australia, in June and July. Bob will examine correlations between the geological setting of gold deposits in the Meguma Group of Nova Scotia and those of central Victoria. He will visit 14 gold mines in Australia, where modern methods have been successfully applied to the problems of profitably mining gold from narrow vein deposits, similar to many deposits in Nova Scotia.

In July, Ron Mills will also begin a one year leave-of-absence to work for a private contractor in Venezuela. Ron will start work in the 'Kilometre 88' district of Venezuela, currently one of the world's hottest areas for gold exploration. The area is known to host large placer gold deposits, which have been Ron's field of study with DNR for several years. 'Kilometre 88' is accessible only by air and is a dangerous workplace where occupational health and safety includes a multitude of immunization shots, total body coverage with heavy field clothing despite crushing heat and humidity, and an armed bodyguard to prevent kidnapping. When you hear the expression: "Some like it hot.", just think of Ron.

Dan Kontak will explore another geographic extreme when he leaves on July 3 to spend a month as visiting scientist with the Danish Geological Survey. Dan will join a field team in Copenhagen, then fly via Danish air force to northern Greenland (82nd parallel). He will apply his expertise in a wide variety of mineral deposit types to the examination of Silurian-Devonian shelf sediments in Greenland. These rocks host sedimentary exhalative deposits similar to those in the Selwyn Basin of the Canadian Cordillera. The sites will be remote and Dan will have only one other person to share the work in each of his two, 10-day field camps. But the reward will be to explore some of the world's most promising frontier.

Doug MacDonald

Would you like to receive the *Nova Scotia Minerals Update*?

The *Nova Scotia Minerals Update* is distributed by mail to 1200 individuals, businesses and institutions around the world. There is no charge for this newsletter, all you have to do is contact the editor at the address given on page 1.

Special Notes

EdGeo Workshop for Teachers
For the third consecutive year, the Department of Natural Resources is supporting the Atlantic Geoscience Society in planning and implementing a workshop for teachers. This year's workshop will be held at Acadia University, August 19 and 20, 1996. At present, more than 30 teachers have registered to learn about earth science resources, mining and minerals in Nova Scotia.

Prospecting Courses
In September 1996, a Basic Prospecting Course will be given in Halifax, and Advanced Prospecting Courses will be given in Halifax and Sydney. Call 902-424-8633 for more details.

Dates to Remember

July 22 to 28, 1996
South Shore Exhibition, Bridgewater. For more information contact Roland O'Brien, 902-543-3341 (Fax 902-527-1890).

August 16 to 18, 1996
Nova Scotia Gem and Mineral Show (formerly known as the Rockhound Roundup), Fundy Geological Museum, Parrsboro. For more information contact Rose MacAloney, 902-254-3814 (Fax 902-254-3666).

October 24 to 26, 1996
Atlantic Universities Geological Conference (AUGC), University of New Brunswick, Fredericton, New Brunswick. Activities include field trips, student papers, and the annual banquet. For more information call 506-453-4804.

November 5 and 6, 1996
Minerals and Energy Branch, Twentieth Annual Review of Activities. World Trade and Convention Centre, Halifax. For more information contact Mike MacDonald, 902-424-2523 (Fax 902-424-7735). Look for more details in the Fall edition of the *Minerals Update*.