ANNUAL REVIEW

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INTRODUCTION

The primary role of the Manitoba Geological Survey (MGS) is to provide geoscience information to support and facilitate mineral exploration in the province. Increasingly, however, MGS is conducting a broader range of geoscience activities that address a number of key issues facing Manitobans. Examples in this *Report of Activities* include assessment of past flood events in the Red River valley, construction of three-dimensional models of surficial materials and bedrock in southern Manitoba (with implications for groundwater studies), and the Capital Region Study (providing industrial mineral, aggregate and engineering information for municipalities in the most heavily populated part of the province).

The 2002–2003 geoscience program thus reflects a balance between providing support to traditional mining camps, stimulating new exploration and development opportunities in frontier areas, and supporting land-use, geohazard and development priorities in southern Manitoba. The program is reviewed annually by the Mineral Exploration Liaison Committee (MELC), composed of members of the Mining Association of Manitoba, the Manitoba Prospectors and Developers Association and the Manitoba-Saskatchewan Prospectors and Developers Association, as well as representatives from the University of Manitoba and the Geological Survey of Canada (GSC).

GEOSCIENCE PROGRAM

The MGS geoscience program is designed with a regional emphasis, focusing on those areas most in need of new or updated geological information. In 2002–2003, approximately 20% of the total project-related operating budget was directed toward studies in the northern Superior Province, primarily for programs in support of diamond-related exploration. Approximately 53% of the project-related operating budget was directed toward projects within traditional mining camps: Flin Flon Belt, Lynn Lake Belt, Thompson Nickel Belt and southeastern Manitoba. The remaining 27% supported Quaternary, aggregate, industrial minerals and land-use planning in the south-central part of the province, as well as province-wide projects.

In 2002, the MGS had planned to embark on a multiyear surficial geochemistry and kimberlite indicator-mineral (KIM) survey in the Kasmere-Nueltin lakes area. Budget reductions in the spring forced a deferral of this project and a redirection of effort toward completion of the Quaternary stratigraphy study in the Hudson Bay Lowland.

PARTNERSHIPS AND COLLABORATIVE PROJECTS

Partnerships or collaborative projects with external agencies and organizations form an increasing proportion of the MGS geoscience program. Such partnerships make best use of combined funds and expertise, and result in high-quality, focused, effective programs. The partnered initiatives include contributions from the federal government, the mineral-exploration industry and several Canadian universities (Table 1). These partnerships are expected to add approximately $1.3 million to geoscience programming in Manitoba for 2002–2003, representing significant leverage of the MGS geoscience budget.

The largest partnership is with the Geological Survey of Canada (GSC) and related sections of Natural Resources Canada, which contribute 55% of the total partnership funding. Under the Government of Canada's $15 million, three-year Targeted Geoscience Initiative (TGI), the GSC is involved in two projects located in Manitoba and adjoining portions of Saskatchewan. Funding from GSC through the TGI is matched by funding and in-kind contributions by MGS and the Saskatchewan Geological Survey (SGS). The mapping projects will significantly increase understanding of the geology and mineral deposits in Lynn Lake–Leaf Rapids and Flin Flon regions, where there is significant potential for the discovery of new base- and precious-metal deposits.

The mineral-exploration industry supports a broad range of partnerships ranging from geochronological studies along the Superior Boundary Zone to mineralogical studies in the Flin Flon area. They are also closely tied to both of the TGI programs with the GSC. Manitoba Hydro is sponsoring a major three-year program in the Gull Rapids region in concert with the universities of Alberta, Manitoba and Waterloo.

Table 1: Partnership geoscience projects, 2002–2003.

PROJECT AND PARTNERS	CURRENT STATUS (2002)
Flin Flon–Snow Lake	
Flin Flon TGI (GSC, SGS, HBED, Aur Resources Inc., Laurentian U)	Third year of a three-year project; fieldwork at Flin Flon and Baker Patton; three M.Sc. and two B.Sc. theses in progress; see GS-1, -2, -3 and -4; maps to be released as open files in late 2002 and digital release planned for 2003; seven papers planned for GAC-MAC 2003
Snow Lake gold studies (TVX Gold Inc., U of Manitoba)	Sixth year of ongoing project; two M.Sc. theses completed; see GS-10
Snow Lake base-metal vectors (Callinan Mines Ltd., W. Bruce Dunlop Ltd.)	Third year of ongoing project; data collection dependent upon availability of drill core; see GS-7, -8 and -9
PGE in the Flin Flon Belt (Fort Knox Gold Resources Inc.)	Geological mapping, sampling; geochemical investigations ongoing; see GS-12
Lynn Lake–Leaf Rapids	
Lynn Lake gold studies (U of New Brunswick, Laurentian U, U of Manitoba, NSERC)	Third year of a three-year project; part of Manitoba's contribution to the Lynn Lake–Leaf Rapids TGI; one Ph.D. and two M.Sc. theses in progress; see GS-20 and -19
Lynn Lake isotopic studies (U of Alberta)	Part of Manitoba's contribution to the Lynn Lake–Leaf Rapids TGI; see GS-19
Lynn Lake–Leaf Rapids TGI (GSC, HBED, Aur Resources Inc.)	Second year of a two-year project; fieldwork in the Granville Lake and Southern Indian Lake areas; see GS-18 and Preliminary Map 2002-3
Ruttan REE geochemistry study (HBMS)	First year of a three-year project to study REE profiles as a vector to VMS mineralization; see GS-22
Thompson Nickel Belt	
Thompson Nickel Belt CAMIRO 97E-02 (Inco Ltd., Falconbridge Ltd., HBED, Billiton Metals Canada Inc., Western Mining International Ltd., Laurentian U, U of Manitoba, U du Québec à Montréal, U of Alberta, U of Sask., GSC, NSERC)	Completed; final report being edited at Laurentian University
Gull Rapids Project (Manitoba Hydro, NSERC, U of Manitoba, U of Alberta, U of Waterloo)	New project in the Superior Boundary Zone; two field trips and sampling commenced in the Gull Rapids area; proposals will be forwarded to NSERC in fall of 2002
Fox River belt geology and metallogeny (Falconbridge Ltd., U of Manitoba)	Ph.D. at U. of Manitoba in progress
Isotopic studies, TNB extension (HBED, Inco)	New isotopic studies northeast of Thompson in the TNB northern extension; see GS-14
Northern Superior	
Western Superior NATMAP (OGS, GSC, universities, LITHOPROBE, NSERC)	Final year of project (1996–2002); 1:250 000-scale maps and papers in progress
Operation Superior multimedia and kimberlite indicator-mineral surveys (De Beers Canada Exploration Corp.)	Project complete; 2001 KIM data (OF2002-1) and 2000 geochemistry data (OF 2001-1) released in June 2002
Hudson Bay Lowlands project (De Beers Canada Exploration Corp.)	New project to map and sample tills, this year along the Nelson, Hayes, Gods and Pennycutaway rivers; see GS-24

Table 1: Partnership geoscience projects, 2002–2003. (continued)

PROJECT AND PARTNERS	CURRENT STATUS (2002)
Cross Lake structural studies (U of Maryland, U of Waterloo)	Final year of an M.Sc. on Pipestone Lake area (base map of Pipestone Lake to be released in 2003); second year of a Ph.D. in central Cross Lake; see GS-26
Island Lake supracrustal studies (U of Waterloo)	Third year of a structure-geochronology Ph.D. thesis; see GS-25 and Preliminary Map 2002-2
Southeastern Manitoba	
Western Superior NATMAP (OGS, GSC, universities, LITHOPROBE, NSERC)	Final year of project (1996–2002); 1:250 00-scale maps and journal papers in progress
Isotopic studies in the southeastern Rice Lake belt (U of Alberta)	Sampling for geochronology carried out in the Garner-Gem lakes area, summer 2002; lab work in progress; see GS-27
Precambrian monadnocks apatite fission-track dating (GSC-C; U of Melbourne)	Ongoing Ph.D.
Southern Manitoba	
Hydrogeology (GSC, WRB, U of Manitoba)	Final year of project (1996–2002); four M.Sc., one Ph.D. and two post-doc
Greater Winnipeg NATMAP (GSC, universities)	Final year of project (1997–2002); two M.Sc., two Ph.D. and two post-doc; reports and papers in progress
Paleofloods of the Red River (GSC, IJC, RRFPP)	Program in last year; three journal papers published in 2002 and data posted on the NOAA web site; see GS-33
Prairie-type mineralization (U of Manitoba, U du Québec à Montreal, U of Alberta, U of Brussels, GSC-C)	Ongoing B.Sc. at U of Manitoba
Devonian mapping (U of Manitoba)	New proposal; will result in preliminary reports and maps from M.Sc. student
Reprocessing of LITHOPROBE The Pas moraine line (GSC)	New proposal
Airphoto interpretation of east side of Lake Winnipeg	New proposal for airphoto interpretation of a corridor east of Lake Winnipeg to outline options for laying a cable between Gillam and southern Manitoba (2002–2003)
Aggregate inventory (T&GS)	Ongoing; MGS provides field data to T&GS and T&GS processes aggregate samples; see GS-35
Hydrothermal iron-oxide copper-gold deposit (Olympic Dam–type) scoping study (Brandon University)	New project to study the potential for Olympic Dam–type deposits in Manitoba; see GS-36
3-D geological model of southern Manitoba (GSC)	Ongoing; providing a digital elevation model for southern Manitoba and models of Phanerozoic stratigraphy; see GS-32 and two pages on MGS website

Abbreviations: CAMIRO, Canadian Mining Industry Research Organization; **GAC**, Geological Association of Canada; **GSC**, Geological Survey of Canada (GSC-C, GSC Calgary); **HBED**, Hudson Bay Exploration and Development Co. Ltd.; **HBMS**, Hudson Bay Mining and Smelting Co. Ltd.; **IJC**, International Joint Commission; **LITHOPROBE**, Canada's National Geoscience Program; **MAC**, Mineralogical Association of Canada; **NATMAP**, National Geoscience Mapping Program; **NSERC**, Natural Sciences and Engineering Research Council; **OGS**, Ontario Geological Survey; **PGE**, platinum group elements; **RRFPP**, Red River Flood Protection Program; **SGS**, Saskatchewan Geological Survey; **T&GS**, Manitoba Department of Transportation and Government Services; **TGI**, Targeted Geoscience Initiative; **U**, University; **VMS**, volcanogenic massive sulphide; **WRB**, Water Resources Branch

FLIN FLON–SNOW LAKE

The Flin Flon Belt hosts some of the province's most significant volcanogenic massive sulphide deposits; greenstone belts within the Trans-Hudson Orogen are in fact among the most productive belts in the world. Despite the fact that Flin Flon has superb outcrop exposure of greenschist-grade metavolcanic rocks, the stratigraphic setting of the Flin Flon, Callinan and 777 deposits (totalling almost 100 million tonnes) is poorly known because the host rocks straddle the boundary between Manitoba and Saskatchewan. To address this jurisdictional anomaly and better define the setting of these deposits, the recent Flin Flon TGI called on the combined expertise of MGS, SGS, GSC and university researchers.

The Flin Flon TGI project wrapped up its last field season in 2002, with researchers from Laurentian University conducting 1:500-scale mapping, predominantly in the stratigraphic footwall of the 777 and Callinan deposits, and finalizing thesis project work (GS-1 to -4). Staff from the Saskatchewan and Manitoba geological surveys collaborated on constructing a 1:10 000 cross-border compilation of the Flin Flon area that will place the more detailed studies in their regional context. Staff from the GSC conducted alteration studies in the Bear Lake Block and hanging wall of the Flin Flon–Callinan–777 deposits. These projects have produced important new insights into the setting of volcanogenic massive sulphide deposits in the west-central Flin Flon Belt.

Regional mapping focused on the central and north parts of Alberts Lake and the contiguous area between Alberts Lake and Lac Aimée, completing work that had been conducted in 1996, 1997 and 2002. This regional mapping was undertaken to upgrade outdated (1940s vintage) geological maps in the north part of the Flin Flon Belt, in order to assess the tectonostratigraphic and economic significance of the volcanic rock assemblages (GS-5).

Thematic mineral deposit studies were conducted in Snow Lake on base-metal projects (GS-6 to -8), on the New Britannia gold mine (GS-10), and in the Reed Lake area on volcanogenic massive sulphide deposits (GS-9).

Platinum group element (PGE) studies in the Flin Flon Belt focused on mafic and ultramafic intrusive rocks within the Bear Lake Block, host to the McBratney Lake occurrence (GS-11). The McBratney occurrence is an example of hydrothermal PGE-Au mineralization, hosted by the mafic volcanic rocks and characterized by extensive carbonate-chlorite-sulphide alteration (GS-12).

THOMPSON NICKEL BELT–SUPERIOR BOUNDARY ZONE

The Superior Boundary Zone, including the well-known Thompson Nickel Belt (TNB), is host to world-class nickel deposits and holds much promise in future exploration for base metals, platinum group metals, gold and diamonds. Current work in the TNB and surrounding region builds on outcomes from two major collaborative projects that have been recently completed:

1) The TNB CAMIRO project (1997–2001) had five industry sponsors (Inco Ltd., Falconbridge Ltd., Hudson Bay Exploration and Development Co. Ltd., Billiton Metals Canada Inc. and Western Mining International Ltd.) and included researchers from the GSC, MGS, University of Manitoba, Laurentian University, University of Alberta, Université du Québec à Montréal, and University of Saskatchewan.
2) The TNB compilation project (1995–present) is a collaborative program designed to create new compilation maps for the TNB. Maps are produced by MGS in joint authorship with geological staff of Inco Ltd., Falconbridge Ltd. and Hudson Bay Exploration and Development Co. Ltd. A preliminary version of the TNB compilation was released in June 2001, coinciding with the completion of the TNB CAMIRO project.

Work to clarify the structure, mineral potential and extent of the TNB in north-central Manitoba involved the application of combined remapping, core relogging and isotopic dating techniques (GS-14). Application of Sm-Nd isotope methods and U-Pb dating to these Precambrian medium- to high-grade gneiss units provides a clear distinction between 1) Neoarchean basement, 2) Paleoproterozoic Ospwagan Group cover rocks (hosting nickel deposits), 3) juvenile Paleoproterozoic paragneiss, and 4) a Mesoarchean gneiss complex (the likely host of important precious-metal prospects). This work is being conducted collaboratively with the University of Alberta, Inco Technical Services Ltd., Nuinsco Resources Ltd., Hudson Bay Exploration and Development Co. Ltd., and ProRock Exploration Inc.

In the TNB compilation project, a new topographic map was largely completed for the exposed part of the TNB, utilizing new orthophoto tiles (GS-15). Upon completion, the map will serve as a base for the final geological compilation map. During the summer of 2002, the four-year program of re-examining Bucko diamond-drill core was completed. All retrieved geological information will be incorporated into the final TNB compilation map.

LYNN LAKE–LEAF RAPIDS

Recent mine closures at Lynn Lake and Leaf Rapids have highlighted the need for new geoscience studies in the region, to encourage new exploration and development. At Lynn Lake, regional gold metallogenic studies were begun in 2000. The closure, in June 2002, of the Ruttan mine in Leaf Rapids precipitated a number of studies aimed at collecting as much information about the deposit as possible while the mine infrastructure was still in operation.

During the months of February and March 2002, MGS geologists and a GSC contractor undertook detailed mapping and sample collection underground at Ruttan, to document the geology of the deposit and to collect samples that will be analyzed for their chemical contents and characteristic mineral assemblages. The results of these studies will assist in the development of a geoscientific database that will support mineral exploration in the Rusty Lake greenstone belt.

Drill cores from regional exploration programs in the Ruttan and Lynn Lake areas were examined in 2002 for evidence of stratiform sulphide mineralization (GS-23). Cores containing cherts, barren sulphides and sulphidic sedimentary rocks were sampled, and will be analyzed to determine which ones could be spatially associated with base-metal VMS-type mineralization. Drill cores were also logged in detail to establish the stratigraphic position and setting of 'ore equivalent' strata at the Ruttan and Darrol Lake deposits (GS-22).

The Lynn Lake–Leaf Rapids TGI project entered its second and final year of field studies. The GSC component of the project is directed at upgrading the understanding of the lithological and tectonic framework the Trans-Hudson Orogen's northern flank, with a main objective of providing a regional geological context to mineral deposits (GS-18). The first field season (in 2001) was concentrated on the northern half of the transect, from the central part of the Rusty Lake belt to the Chipewyan Batholith. During the 2002 field season, the transect was completed from the central Rusty Lake belt southwards to the northern flank of the Burntwood Group in the Kisseynew Domain.

The MGS component of the Lynn Lake–Leaf Rapids TGI is aimed at an evaluation the precious- and base-metal mineral potential of the area, in order to facilitate exploration activity. The MGS started a five-year multidisciplinary initiative at Lynn Lake in June 2000, and rolled this project into the TGI in 2001. The range of projects includes deposit-scale studies, structural mapping of mineralized shear zones, and geochronological studies that will provide a temporal context for the development of the greenstone belt and its mineral deposits (GS-19 and -20). These projects have resulted in a much better understanding of the 'Agassiz Metallotect' (host of the past-producing MacLellan mine), the Johnson Shear Zone (host of the past-producing BT gold deposit), and the evolution and deformation of the Lynn Lake greenstone belt.

A preliminary scoping study was undertaken to assess the potential of Manitoba to host hydrothermal iron-oxide copper-gold (IOCG- or Olympic Dam–type) deposits (GS-36). At the outset of this project, there were no known examples of IOCG-type deposits in the province, nor has there been any recorded exploration for these deposits. Preliminary fieldwork was carried out in 2002, including a regional overview and reconnaissance visits to several of the priority targets. Reconnaissance fieldwork confirms the presence of widespread alkali±iron and other related metasomatic effects associated with late intrusive bodies and large structural lineaments. However, the most important finding to date resulting from this initiative is the discovery of a large carbonatite complex, enriched in rare earth elements, near Eden Lake (GS-21).

NORTHERN SUPERIOR PROVINCE

With the Western Superior NATMAP project in its last year of operation, related activities in 2002 concentrated on data compilation and synthesis. A cross-border compilation of the Uchi Belt in southeastern Manitoba and northwestern Ontario has been completed and will be released early in 2003. A similar compilation of greenstone belts in the Sachigo Domain is in progress. These maps integrate new data collected during the NATMAP project and will form the base maps for geochronological and mineral-deposit data served over the Internet.

Field projects partnered with Waterloo University and the University of Maryland provided critical new information for the Island Lake (GS-25) and Cross Lake (GS-26) greenstone belts, respectively. Field mapping and geochemical and geochronological work demonstrate that the Hayes River Group on Island Lake consists of lithologically, geochemically and chronologically distinct panels, and that at least three distinct volcanic episodes are recorded in this greenstone belt.

Field investigations into the Quaternary stratigraphy, ice-flow history, till provenance and kimberlite indicator-mineral (KIM) distribution in the Hudson Bay Lowland continued in 2002, in support of diamond exploration (GS-24). Published results from the 2001 survey suggest that KIM were concentrated in Long Spruce till of northern provenance. During the 2002 field season, 144 till and 3 alluvial sand and gravel samples were collected from 17 sections exposed in river cuts in the Hudson Bay Lowland.

SOUTHEASTERN MANITOBA

The Rice Lake greenstone belt, located in the western portion of the Archean Uchi Subprovince, is the most significant lode-gold district in Manitoba, with more than 1.6 million ounces of past gold production. In 2002, the MGS initiated a multidisciplinary program of targeted 1:20 000-scale bedrock mapping, structural analysis, lithogeochemistry and U-Pb geochronology in the Rice Lake belt (GS-27). The objective of this program is to further refine the stratigraphic, structural and tectonic framework of the belt, with particular emphasis on gold metallogeny. Fieldwork in 2002 focused on detailed mapping and sampling of a roughly 12 km transect across the southeastern portion of the Rice Lake belt, utilizing exposures along the Gem Lake logging road and the shoreline of Garner Lake.

The Bird River Sill, a repository of significant chromite resources, supported two nickel-copper mines and, in the past decade, has been explored for PGE (GS-28). In the southern part of the sill, exploration concentrated on the Chrome property and, to a lesser degree, on the Page property. Significant PGE concentrations discovered in 2001 brought the 'Peterson Block', located between the Chrome and Page properties, to the attention of explorationists. A number of rock samples were collected from mineralized zones in the Peterson Block and will be analyzed for PGE.

A project was initiated in 2000 at the Central Manitoba (Au) mine site in southeastern Manitoba to determine the potential for revegetation, phytoremediation and phytomining of mine tailings through the identification of plant species that can avoid or tolerate the presence of heavy metals (GS-29). The focus of fieldwork and the greenhouse experiments in the coming growing season will be to determine the best combination of different amendments to the tailings surface layer, in order to increase the long-term survival rate of selected plant species.

SOUTH-CENTRAL MANITOBA

Activities of the MGS in south-central Manitoba ranged from an investigation of sulphide mineralization in Phanerozoic bedrock in the Interlake district, to dendrochronology in the Red River valley.

Gravity and magnetic surveys were carried out in the summers of 2000 and 2001 over the southern extension of the Superior Boundary Zone (GS-16). The surveys were carried out to delineate the Thompson Nickel Belt below the Paleozoic cover rocks and to determine the cause of a neighbouring gravity low in the Camperville area. In the latter area, a large (approximately 120 by 60 km), ellipsoidal, 35 mGal gravity low is interpreted to be a granitic intrusion with high magnetite content.

Large solid sulphide slabs, containing breccia clasts of sucrosic Devonian dolomite, were found just below the waterline on Pemmican Island at the north end of Lake Winnipegosis (GS-17). These slabs contain up to 1.18% Ni and 0.76% Zn and, together with other anomalous features in the Phanerozoic, point to the possible role of basement reactivation in the buried Thompson Nickel Belt.

Follow-up investigations of kimberlite indicator minerals (KIM) in the Porcupine Hills of west-central Manitoba confirmed that the northern half of the region contains anomalous quantities of KIM compared to the southern half (GS-34). The KIM are not derived from the Cretaceous Swan River Formation, but may have been eroded from younger Cretaceous beds or from the multiple till sheets that are draped over the Porcupine Hills.

In the Capital Region Study, several municipalities in the Winnipeg region have been mapped and assessed for aggregate and crushed stone, to aid local land-use planning processes (GS-30). Through compilation of quarry, outcrop, water-well and corehole data, new 1:50 000-scale depth to bedrock, bedrock topography, geology and mineral potential maps are being released in final format, accompanying a geological report for NTS map sheets 62H10, 11, 14 and 15, and 62I2, 3, 6 and 7. As a result of this work, six new areas with potential for crushed stone have been identified in and around the Capital Region.

Three-dimensional geological mapping of the Phanerozoic succession in southern Manitoba, south of latitude 55°N and west of longitude 95°W, is being completed as a successor activity to the Prairie NATMAP project (GS-32). The mapping utilizes computer technology and is designed to support activities related to hydrocarbon, groundwater and industrial-mineral development. Much of the input data is in place (topography, bathymetry, offshore geology, soil mapping, surficial geology, Quaternary stratigraphy, bedrock surface, bedrock geology, Phanerozoic stratigraphy, sub-Phanerozoic Precambrian geology, drillhole data). The drillhole data compilation now links to water-well data held by the Water Branch of Manitoba Conservation, the Manitoba Stratigraphic Database, Manitoba Oil and Gas Well Information System, and newly digitized records held by MGS. The key activities during 2001–2002 have been selection of computer hardware and software, and refinement of model construction, verification, and communication procedures.

Research conducted by the joint MGS-GSC dendrochronological laboratory in Winnipeg has provided baseline geoscientific data critical to the understanding of past hydroclimatic change in Manitoba and its impact on flood hazards in the Red River valley and local groundwater supplies (GS-33). The current tree-ring record for the Red River

basin extends back to AD 1286 and has been used to construct a flood history for the Red River at Winnipeg that spans the last 350 years.

AGGREGATE

Aggregate inventories were carried out in the Rural Municipalities of Ste. Anne and Turtle Mountain, in the Buffalo Point area, and on several crown-land parcels in southeastern Manitoba (GS-35). Site inspection and aggregate sampling followed office compilation. Samples were field sieved and a representative portion of the fine fraction sent to Winnipeg for processing. Approximately 350 sites were visited.

LAND USE

The Manitoba Geological Survey conducts a number of activities related to sound land-use management: 1) provision of mineral-resource assessments in candidate sites under the Protected Areas Initiative; 2) identification of potential geological hazards (shoreline erosion, neotectonics, landslides); 3) review of land-use planning submissions; 4) examination of applications for surface use of crown land to ensure that access to mineral occurrences is not adversely affected; and 5) collaborative programs with Manitoba Conservation, Manitoba Hydro and the GSC to evaluate geological hazards and potential impacts on development.

The Prospectors and Developers Association of Canada introduced its 'Claim Tag Awards', which were presented during the annual Energy and Mines Ministers Conference in Winnipeg in September. Manitoba received a second place award "in recognition of the Manitoba government's ongoing facilitation of a technically advanced, methodical and transparent process of multistakeholder involvement in creating protected areas."

PRECAMBRIAN DRILL CORE LIBRARIES

Manitoba's Mineral Resources Division has been storing Precambrian drill core, obtained primarily from exploration drilling, since the early 1970s (GS-39). Since that time, the Manitoba government has created a substantial repository of drill core at five locations throughout the province. Throughout most of the 1990s, the core libraries were run on a care-and-maintenance basis. In 2001, recent drill-core additions were organized and core-library inventories were updated. Working in conjunction with Hudson Bay Exploration and Development Co. Ltd. (HBED) and Ruttan mine geological staff, a summer field program was conducted to retrieve and store Ruttan regional exploration drillholes in the MGS Lynn Lake Core Library.

GEOSCIENCE INFORMATION SERVICES

The Geoscience Information Services section is responsible for all data management, GIS, and CAD production and geological compilation in the MGS. Many of the projects underway are focused on bringing data to the Internet. The MGS policy is that, whenever possible, newly published reports and maps will be placed on the Industry, Trade and Mines website in electronic form for free download. This free download feature, combined with extensive use of the Internet Map Server ('GIS Map Gallery') has enabled the MGS to substantially increase the amount of information on geoscience in Manitoba that is available quickly through the Internet.

The Manitoba Mineral Inventory (MMI) is an indexed group of hard-copy cards and computer files, maintained by the MGS, that contains the majority of known mineral deposits in Manitoba. The MGS is working on the MMI, with the goal of updating the entire inventory and increasing accessibility by bringing it onto the Internet (GS-38).

Two new A-series printed maps (NTS 64O and 63G) were released this year in the 1:250 000 Bedrock Geology Compilation Map Series (BGCMS). The BGCMS maps are being added to the Internet Map Gallery as individual NTS map sheets, providing a more detailed and current geological base for viewing other data sets such as claim and lease maps. Currently, there are 29 BGCMS maps in digital form and 21 will be available shortly in the GIS Map Gallery. These maps, which are currently being edge-matched, will eventually be used in the Map Gallery as a seamless 1:250 000-scale geological base.

Several new features have been added to the Internet Map Server. The look of the GIS Map Gallery has been changed to improve the usability of the site and the live printing of maps. New map services added, in addition to the BGCMS, include the 1:100 000-scale NATMAP Shield Margin Project map of the Flin Flon Belt in Manitoba and Saskatchewan and the 1:250 000-scale 'Geoscience data compilation for southeastern Manitoba' (Open File Report OF2001-8). In addition to new maps, all GIS Map Gallery geoscientific maps now include layers of point data for geochronology and mineral occurrence descriptions. These points are 'hotlinked' to descriptive documents and graphics

that can be accessed by selecting the point with the hotlink tool in the Map Gallery. Both databases are continually being expanded and new records will be added to the website as they become available.

CLIENT SERVICES

Client Services provides communications, outreach and information production and dissemination services for the Mineral Resources Division, to assist in the promotion of exploration and mining investment opportunities and increase public awareness of the benefits and opportunities of sustainable mineral development. Responsibilities include the web publishing of minerals-related content for the departmental web site and the production and distribution of MGS publications and promotional materials. These publications, as well as other minerals-related information resources, are disseminated through library services, publication sales and the Mineral Resources Division web site. Library and publication sales staff worked on major initiatives that will provide web access to the library catalogue, the *Bibliography of Manitoba Geology* and mineral-inventory records, as well as on-line purchasing of MGS reports and maps.

REGIONAL OFFICES

The Flin Flon regional office continues to provide assistance to the mineral-exploration and mining communities in the Flin Flon–Snow Lake region, including recording new mineral claims, maintaining an up-to-date library of provincial claim and land-status maps, dealing with claim-status inquiries and accepting assessment-work submissions. In October–November 2002, a Mining Claims Inspector and a Mining Recorder will augment the staff of two geologists currently in the Flin Flon office. An inventory is in preparation of the core repository at the Centennial mine site and all core piles have been reorganized and stabilized. The mine-documentation project is proceeding with the addition of new ore samples from a number of now-closed mines and the establishment of a database for the core repository at the Stall Lake mine near Snow Lake.

Staff in the Thompson regional office respond to a range of inquiries, including regional geology, potential of mineral properties and mineral identifications. The Thompson office provides Mining Recording services to the community, including data on the status and registration of claims, access to and sales of maps and reports, and access to electronic databases.

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