

**Manitoba  
Mineral Resources**

**Ressources minières  
Manitoba**

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**Annual Report  
2015 - 2016**

**Rapport annuel  
2015 - 2016**

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**MINISTER  
OF GROWTH, ENTERPRISE AND TRADE**

Legislative Building  
Winnipeg, Manitoba CANADA  
R3C 0V8

Her Honour the Honourable Janice C. Filmon, C.M., O.M.  
Lieutenant Governor of Manitoba  
Room 235 Legislative Building  
Winnipeg MB R3C 0V8

May it please Your Honour:

As the Minister of the new department of Growth, Enterprise and Trade, I have the privilege of presenting for the information of Your Honour the Annual Report of the Department of Mineral Resources for the fiscal year ending March 31, 2016.

Respectfully submitted,

A handwritten signature in black ink that reads 'Cliff Cullen'.

Cliff Cullen  
Minister







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**MINISTRE  
DE LA CROISSANCE, DE L'ENTREPRISE ET DU COMMERCE**

Bureau 358  
Palais législatif  
Winnipeg (Manitoba) R3C 0V8  
CANADA

Son Honneur l'honorable Janice C. Filmon, C.M., O.M.  
Lieutenant-gouverneure du Manitoba  
Palais législatif, bureau 235  
Winnipeg (Manitoba) R3C 0V8

Votre Honneur,

À titre de ministre du nouveau ministère de la Croissance, de l'Entreprise et du Commerce, j'ai l'honneur de vous présenter le rapport annuel du ministère des Ressources minières pour l'exercice terminé le 31 mars 2016.

Le tout respectueusement soumis,

Le ministre,

A handwritten signature in black ink that reads "Cliff Cullen".

Cliff Cullen







**Deputy Minister Growth, Enterprise and Trade**  
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The Honourable Cliff Cullen  
Minister of Growth, Enterprise and Trade  
Room 358, Legislative Building  
Winnipeg MB R3C 0V8

Minister:

As the Deputy Minister of the new department of Growth, Enterprise and Trade, I am pleased to present for your approval the 2015/16 Annual Report for the Department of Mineral Resources for the fiscal year ending March 31, 2016.

Respectfully submitted,

James Wilson

Deputy Minister of  
Growth, Enterprise and Trade







# Manitoba



Sous-ministre de la Croissance, de l'Entreprise et du Commerce

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M. Cliff Cullen

Ministre de la Croissance, de l'Entreprise et du Commerce

Palais législatif, bureau 358

Winnipeg (Manitoba) R3C 0V8

Monsieur le Ministre,

À titre de sous-ministre du nouveau ministère de la Croissance, de l'Entreprise et du Commerce, j'ai l'honneur de vous présenter le rapport annuel 2015-2016 du ministère des Ressources minières pour l'exercice terminé le 31 mars 2016.

Le tout respectueusement soumis,

Le sous-ministre de la Croissance, de l'Entreprise et du Commerce,

James Wilson



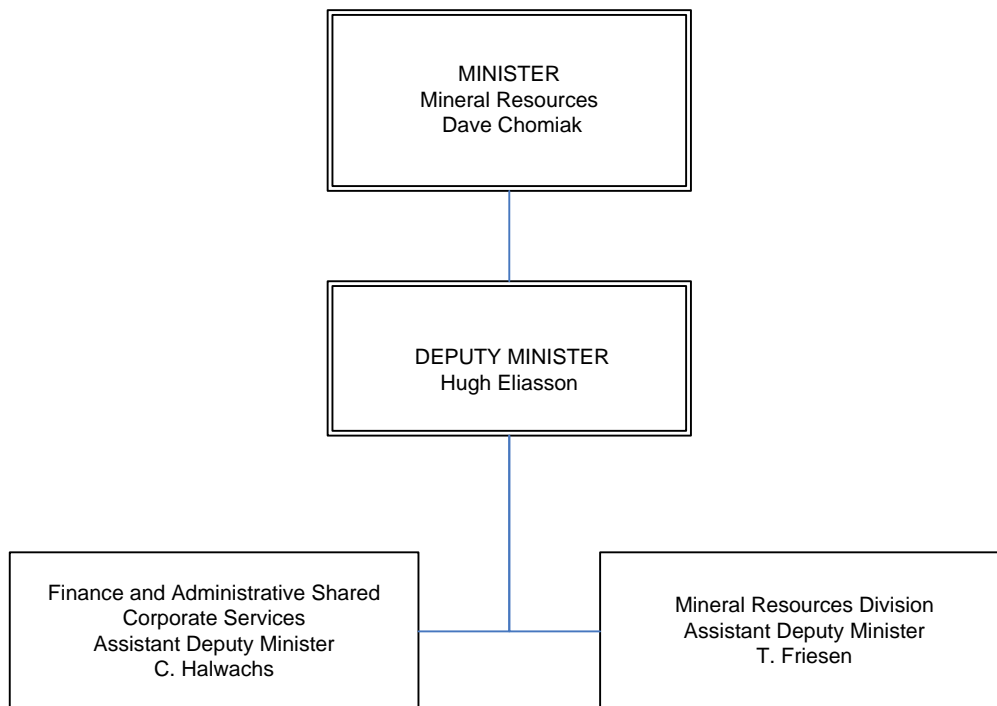


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**MINERAL RESOURCES  
ORGANIZATION CHART  
As of March 31, 2016**





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## **PREFACE**

### **REPORT STRUCTURE**

The Annual Report is organized in accordance with the department's appropriation structure and the Main Estimates of Expenditure for the Province. The Report includes financial performance and variance information at the main and sub-appropriation levels and information relating to the department's objectives and results at the sub-appropriation level. The Report also includes information about associated agencies, revenue and expenditures, a five-year comparison of expenditures and a staffing analysis.

### **STATUTORY RESPONSIBILITIES**

The Minister of Mineral Resources is responsible for the following:

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The Gaming Control Act.....	G 5
The Gaming Control Local Option (VLT) Act .....	G 7
The Mines and Minerals Act.....	M 162
The Mining and Metallurgy Compensation Act .....	M 190
The Oil and Gas Act.....	O 34
The Oil and Gas Production Tax Act .....	O 37
The Surface Rights Act .....	S 235
The Thompson Nickel Belt Sustainability Act.....	T 58

As per Schedule "P" referred to in OIC #388/2013  
As per Schedule "T" referred to in OIC #458/2014  
Amended per Order-In-Council No. 142/2014

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## **SUSTAINABLE DEVELOPMENT**

The department is committed to the Principles and Guidelines set out in The Sustainable Development Act and works to incorporate them in department activities, programs and business practices.

The Principles and Guidelines of Sustainable Development are:

1. Integration of Environmental and Economic Decisions
2. Stewardship
3. Shared Responsibility and Understanding
4. Prevention
5. Conservation and Enhancement
6. Rehabilitation and Reclamation
7. Global Responsibility
8. Efficient uses of Resources
9. Public Participation
10. Access to Information
11. Integrated Decision Making and Planning
12. Waste Minimization and Substitution
13. Research and Innovation

The Sustainable Development Procurement Goals:

1. Education, Training and Awareness
2. Pollution Prevention and Human Health Protection
3. Reduction of Fossil Fuel Emissions
4. Resource Conservation
5. Community Economic Development



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## **ORGANIZATION**

The department's 2015/2016 organization structure is illustrated in the Organization Chart, page i. The roles, responsibilities and staffing are outlined in the following information.

### **VISION STATEMENT**

*Realizing Manitoba's mineral and petroleum potential, creating wealth for the benefit of all Manitobans.*

### **ROLE AND MISSION**

Facilitating sustainable development of the province's mineral and petroleum resources by:

- Encouraging investment;
- Enhancing geoscience knowledge;
- Promoting wise land-management and access to resources;
- Ensuring rehabilitation of lands affected by resource development;
- Creating strategic partnerships;
- Working with local and Aboriginal communities;
- Championing critical policy development; and
- Advancing opportunities for Aboriginal involvement in resource development.

### **FOCUS**

The Department will:

- Maintain an effective and efficient fiscal, legislative and regulatory framework for exploration and development of Manitoba's mineral and petroleum resources;
- Promote development of Manitoba's mineral and petroleum resources;
- Address human resources skills and capacity issues in mineral sector;
- Provide timely access to information on Manitoba's mineral and petroleum resources;
- Provide geoscience programming to support and advance mineral and petroleum exploration and development in the province;
- Partner with internal and external agencies and organizations to leverage geoscience funding;
- Work to increase Aboriginal participation in Manitoba's mineral sector;
- Promote reconciliation and ongoing relationship building with Aboriginal communities;
- Promote access to lands with medium/high mineral and petroleum resource potential; and
- Ensure mineral and petroleum resource development is carried out in an environmentally responsible manner.

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To achieve its mission, the department is organized in two divisions:

**ADMINISTRATION AND FINANCE DIVISION** provides for the executive management, planning and control of departmental policies and programs. Administrative support is provided through the Department of Jobs and the Economy in the areas of finance and administration and management information systems.

**THE MINERAL RESOURCES DIVISION** promotes wise land management and environmentally sustainable economic development in the province based on Manitoba's mineral and petroleum resources; provides authoritative documentation of the province's mineral and petroleum endowment and development potential; delivers mineral incentive programs; administration of legislation governing the disposition of mineral and petroleum rights, exploration, development and production of Manitoba's mineral and petroleum resources and, the rehabilitation of mines, quarries and abandoned petroleum sites; provides for the resolution of disputes between surface and/or mineral rights holders with respect to accessing minerals including oil and gas.

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## ADMINISTRATION AND FINANCE

The Administration and Finance Division comprises the Executive Support Offices and the shared Financial and Administrative Services section of Jobs and the Economy.

### MINISTER'S SALARY AND EXECUTIVE SUPPORT

Executive Support includes the Offices of the Minister and Deputy Minister. The Minister provides leadership and direction to ensure the goals and objectives of the department are accomplished. The Office of the Deputy Minister provides the Minister with advice and information regarding issues and matters of concern to the department. Executive Support is responsible for providing the department with policy direction and the overall planning and co-ordination of departmental activities.

#### 18-1(a) Minister's Salary

Expenditures by Sub-Appropriation	Actual 2015/16 \$(000)	Estimate 2015/16 FTE	Estimate 2015/16 \$(000)	Variance Over (Under)	Expl. No.
Minister's Salary	37	1.00	37	-	
<b>Total Sub-Appropriation</b>	<b>37</b>	<b>1.00</b>	<b>37</b>	<b>-</b>	

#### 18-1(b) Executive Support

Expenditures by Sub-Appropriation	Actual 2015/16 \$(000)	Estimate 2015/16 FTE	Estimate 2015/16 \$(000)	Variance Over (Under)	Expl. No.
Total Salaries & Employee Benefits	274	5.00	268	6	
Total Other Expenditures	39	-	73	(34)	
<b>Total Sub-Appropriation</b>	<b>313</b>	<b>5.00</b>	<b>341</b>	<b>(28)</b>	

# ADMINISTRATION AND FINANCE

## FINANCIAL AND ADMINISTRATIVE SERVICES

Financial and Administrative Services is comprised of two primary components: Finance and Administration and Computer Services. The branch provides shared Financial, Administrative and Computer Services to the departments of Jobs and the Economy, Mineral Resources and Labour and Immigration.

### OBJECTIVES

The objectives of Financial and Administrative Services are to: provide leadership, program direction and operational coordination to support department activities; to provide high quality, timely and customer responsive administrative, financial management and information technology, develop and administer appropriate administrative and financial standards, policies and procedures; and to develop and maintain appropriate reporting systems to provide timely and accurate decision-making information to senior management in the departments and in central agencies through a centralized support service.

### ACTIVITIES/RESULTS

Finance and Administration supports the mission and goals of the Department by:

- Processing payments and receipts;
- Providing computer business application development and support services;
- Administering and coordinating the Department's parking and pool vehicle programs;
- Providing for physical accommodations;
- Providing advisory and specialized accounting and financial management services to departmental personnel and related entities;
- Coordinating French Language services;
- Coordinating the departmental administration of the *Freedom of Information and Protection of Privacy Act* and *The Public Sector Disclosure (Whistleblower Protection) Act*;
- Managing the department's records management program; and
- Providing timely, accurate and relevant information to departmental and central agency decision-makers including budgetary, cash flow and year end reporting.

#### 18-1(c) Financial and Administrative Services

Expenditures by Sub-Appropriation	Actual 2015/16 \$(000)	Estimate 2015/16 FTE	Estimate 2015/16 \$(000)	Variance Over (Under)	Expl. No.
Total Other Expenditures	150	-	150	-	
<b>Total Sub-Appropriation</b>	<b>150</b>	<b>-</b>	<b>150</b>	<b>-</b>	

# **MINERAL RESOURCES**

## **MANITOBA GEOLOGICAL SURVEY**

### **OBJECTIVES**

The **Manitoba Geological Survey** (MGS) provides authoritative geoscience information to support and facilitate mineral and petroleum exploration in the province, and also conducts a broad range of geoscience activities that address land-use and environmental issues facing Manitobans.

The MGS is responsible for monitoring industry and commodity information used in formulating Manitoba's minerals policies, promoting mining and exploration investment opportunities, administration of Manitoba's mineral exploration incentive programs and organizing and staging of the annual Mining and Minerals Convention. The branch also helps facilitate the provision of community adjustment services to communities facing mine closure. To achieve these goals, the MGS works closely with the Mines Branch, as well as all affected government departments.

### **ACTIVITIES/RESULTS**

#### ***GEOSCIENCE PROGRAM***

In 2015, the MGS conducted a broad range of partnered and collaborative geoscience projects to enhance and update the geoscience knowledge base of the province. Main geoscience priorities included:

- Precambrian mapping projects in the northern Superior province east of Thompson, where there is high mineral potential for a variety of commodities; in the Flin Flon and Lynn Lake belts, currently the main focus areas of mineral exploration; and in the Southern Indian Lake area, to expand bedrock mapping into a frontier area with conceptual volcanogenic massive sulphide (VMS), gold and diamond prospectively.
- Remote-sensing mapping of lineaments in support of hydrocarbon-potential studies in the Hudson Bay Lowland, as part of Phase 2 of the Geological Survey of Canada's Geo-mapping for Energy and minerals program (GEM-2: 2014-2020).
- Potash and gypsum studies in southwestern Manitoba, along with continuing studies of shallow gas-bearing Cretaceous formations.
- Advancement of the digital three-dimensional (3-D) model of Phanerozoic stratigraphy in Manitoba south of 55°N—a key geoscience framework for hydrogeological, petroleum and socio-economic assessments
- Quaternary geoscience studies in southwestern and north-central Manitoba, in support of drift-exploration and aggregate-resource assessments

In addition to providing geoscience knowledge, MGS's geoscience programming promotes resource development, informed land-management planning, Aboriginal engagement and mineral education to the public.

MGS' geoscience 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, the Geological Survey of Canada (GSC) as well as representatives from the universities of Manitoba, Brandon, and Winnipeg. Petroleum-related program discussions are ongoing with industry contacts throughout the year, and at annual conferences in Calgary.

#### **Roles of the Manitoba Geological Survey**

Through its broad-based geoscience program, the MGS strives to provide authoritative geoscientific information to clients in industry, government, First Nations and the general public. Public geoscience provided by governments is widely recognized as one of the key determinants of a favourable investment climate for exploration and development. Geoscience provides fundamental information to attract

exploration investment by identifying areas of favourable mineral and hydrocarbon potential, and enhances the investment climate by improving both the efficiency (reduced cost) and effectiveness (reduced risk) of exploration. By reducing costs and risk, public geoscience not only improves returns on private investment but also increases revenues accruing to governments in the form of royalties and taxes.

As has been the case since 2008, benefits from public geoscience, which typically accrue in the medium to long term, can be adversely affected by global commodity cycles and related low natural-resource prices. Additional factors that continue to negatively affect mineral exploration and development in Manitoba and elsewhere in Canada are uncertainties concerning environmental regulations, protected areas, disputed land claims and community-development agreements. Despite these challenges, Manitoba returned in 2014 to the top 10 of ranked mining jurisdictions worldwide, mainly due to excellence in its investment attractiveness, minerals policy and mineral potential. Importantly, Manitoba was ranked 7<sup>th</sup> worldwide in 2014 for its geological database by the Fraser Institute Annual Survey of Mining Companies 2014, based on criteria such as the quality and scale of maps, and ease of access to information. Manitoba's geological database, constructed during the past several decades and readily accessible through our online GIS Map Gallery, represents the principal, living product of the MGS's core program.

Mining is the primary driver of northern Manitoba's economy and, along with hydroelectric developments, represents the most viable option for sustainable economic development in the future. In order to meet the challenge of the next upswing in the global economy, the MGS is continuing to invest in knowledge infrastructure for the future of Manitoba's resource industries. Of particular importance in 2015 was the hiring of four new field geologists (two Precambrian, one sedimentary, one Quaternary), representing an instrumental step toward maintaining a modern geological survey that combines strengths in traditional fields with new expertise and vision.

Manitoba's vast frontier areas with limited infrastructure, and underexplored mineral and hydrocarbon resource potential, are where basic geoscience information can be particularly vital in stimulating exploration and development activities. Particularly in the north, public geoscience should be viewed as a direct investment toward future economic sustainability. Readily accessible government geoscience has become increasingly important for communities; First Nations, in particular, seek geoscience information relevant for land-use planning and understanding resource potential of traditional lands. The MGS continues to provide geoscience information to First Nations through compilation of existing maps and data, or new geological mapping in their traditional territories.

Government geoscience has additional relevance to the public through such aspects as the environment, health and safety (e.g., water, radon), natural-hazard identification, infrastructure development and education. The MGS's new Manitoba Rocks! mineral-education program is second to none and ever expanding.

Resource-potential assessments and evaluations of protected-areas proposals have increasingly become an integral part of the MGS program. In 2014, Manitoba Mineral Resources and Manitoba Conservation and Water Stewardship established the Mineral Potential Assessment Committee (MPAC), with a mandate to assess the mineral potential of areas proposed for protection and to make recommendations for new protocols, guidelines and best practices for developments in parks and protected areas. Mineral-potential assessments are done by the MGS through compilation and evaluation of existing geoscience data. In areas where such data are inadequate, MPAC may recommend MGS geoscience projects involving additional mapping and/or analytical surveys.

### **Collaborations and partnerships**

The primary and long-term role of the MGS is to update, improve and expand Manitoba's geological knowledge base. The broad range and scope of the MGS geoscience program benefits greatly from collaborations with industry, university and government partners. The minerals and petroleum industries are the principal users of geoscience information generated by the MGS, and programs are therefore developed and designed to have maximum impact for these sectors. The MGS currently has research partnerships with a number of mineral-exploration companies and with Manitoba Hydro. University collaborations bring access to expertise and analytical techniques that complement those of the MGS and facilitate the training of future geoscience professionals, which in 2015 included three postdoctoral

researchers, five Ph.D. candidates, two M.Sc. candidates and three B.Sc. thesis projects from across Canada and the United States.

The MGS has been collaborating with the GSC since the inception of two current, federal collaborative geoscience programs: Geo-mapping for Energy and Minerals (GEM) and the Targeted Geoscience Initiative (TGI). These programs have provided high-level opportunities for Manitoba to bring not only federal funding and geoscience activities into Manitoba, but also to maintain the integrity of the Canadian geoscience network.

The federal GEM program, designed to unlock the mineral and energy potential of, and promote responsible land development in, Canada's North, was launched as a five-year (2008–2013) geological mapping program administered by Natural Resources Canada and in collaboration with provinces and territories, and has been renewed for seven additional years (GEM-2; 2013–2020). Manitoba program collaborators include the GSC, Ontario Geological Survey, Canada-Nunavut Geoscience Office, University of Manitoba, The Manitoba Museum, and Laurentian University. Building on results of the first GEM Energy program (Hudson Bay and Foxe Basins Project), the role of MGS in the current Hudson-Ungava Project under GEM-2 is to integrate the onshore Paleozoic succession in Manitoba into a regional framework and to advance assessment of its hydrocarbon source-rock potential. Results from this project feed directly into long-term resource-development plans and strategies for Manitoba's far northeastern region.

Phase 4 of TGI, designed to improve capabilities of exploring for mineral deposits at depth in Canada, ended in March 2015. Partnered TGI-4 projects in Manitoba comprised several highly successful projects in the Flin Flon–Snow Lake and Bird River areas. In May 2015, the federal government announced a continuation of the TGI program (TGI-5; 2015–2020), with project and activity negotiations between the federal and provincial governments following until spring 2016.

**Activities and results for 2015/16 are listed below as they pertain to Manitoba Geological Survey Program Objectives.**

## **1. Increasing Manitoba's minerals geoscience knowledge base**

### ***Superior Province***

In 2015, the MGS renewed bedrock mapping at Knee Lake, which lies in the centre of the largest contiguous greenstone belt in the northwestern Superior province. Together with recent MGS mapping of Oxford Lake, the new mapping at Knee Lake is building toward a more complete understanding of the stratigraphy, tectonic evolution and economic potential of a large and geologically diverse region that includes some of the most prospective yet underexplored greenstone belts in the Superior province.

Bedrock mapping in the Archean Pikwitonei domain, situated at the northwestern margin of the Superior province, focused on Cauchon Lake in 2015, where high-grade metamorphic rocks were remapped with emphasis on interpretation of protoliths and better understanding the polyphase tectonothermal evolution of the region. The new mapping at Cauchon Lake reveals the presence of significant volumes of volcanic and sedimentary rocks, similar to those in adjacent lower grade domains. High-grade metamorphic terranes have traditionally been underexplored, in part due to the challenge of recognizing volcanic and sedimentary rocks, which tend to hold the greatest economic potential. The fact that several world-class mineral deposits are hosted in high-grade rocks, together with evidence that high-grade metamorphism can be responsible for the localized concentration of metals to form economic mineral deposits, warrants a new assessment of the mineral potential of the Pikwitonei domain.

### ***Trans-Hudson orogen***

In the Flin Flon–Snow Lake belt, the MGS examined recent and historical drillcore of Paleoproterozoic bedrock from the southern portion of the Reed Lake area and the area immediately to the south, which is covered by Phanerozoic sedimentary rocks. This project builds on current bedrock mapping to update the geology of the Reed Lake area. With the recent discovery of the Reed volcanogenic massive sulphide (VMS) deposit, industry is showing growing interest in gaining more detailed knowledge of the sub-Phanerozoic geology south of Reed Lake, which requires data acquired from drillcore and geophysical surveys. Results to date from this project indicate a greater complexity and diversity than previously

identified in volcanic rocks hosting VMS deposits in the Reed Lake area (Reed, Spruce Point, Fourmile Island and Dickstone deposits). Moreover, the widespread presence of moderate to intense alteration and sulphide mineralization appears to characterize most volcanic assemblages in the sub-Phanerozoic basement of the Reed Lake area, emphasizing both the prospectivity of this area and the need for more robust exploration methodologies to identify key favourable horizons.

The MGS also renewed bedrock mapping in the Lynn Lake belt to further define its geological and geodynamic evolution, and to identify the controlling factors that produced its wide variety of mineral deposits. A new belt-wide compilation map produced by the MGS provides a critical foundation to identify areas for new mapping and sampling. Collaborative field investigations between the MGS and the Geological Survey of Canada, with cooperation from Alamos Gold Inc., are focussed on areas most relevant for current mineral exploration in the belt. The focus in 2015 was on detailed mapping in the Keewatin River area, which includes the MacLellan Au-Ag and Lynn Lake Ni-Cu-Co deposits.

As part of an ongoing MGS initiative to systematically characterize granitoid rocks, the most abundant but commonly least-studied rocks in the Precambrian shield, Paleoproterozoic granitoid rocks in the Lynn Lake region were mapped and sampled in 2015 at reconnaissance scale. The aim of this work is to identify and catalogue the various types of granitoid rocks and to investigate their petrogenesis, geodynamic settings and mineralization potential. The project is designed around a GIS-based database to capture the field relationships, petrography, litho-geochemistry and geochronology of granitoid rocks throughout Manitoba, and their relationships to various types of mineralization. Preliminary results on granitoid intrusions in the Lynn Lake region indicate that peraluminous S-type (muscovite±garnet) granite plutons, with potential for rare-metal and/or Sn-W mineralization, are emplaced predominantly along major tectonic boundaries, whereas I-type (amphibole±biotite) granitoid rocks, with potential for porphyry Cu, Au and Mo mineralization, occur across the region.

Bedrock mapping in the northern part of Southern Indian Lake in 2015 builds on previous MGS mapping that was focused on Paleoproterozoic volcanic and sedimentary rocks in the Southern Indian domain. New geochronological and isotopic analyses of samples collected in 2015 will be used to further delineate the extent of crustal contamination by older (late Archean to early Paleoproterozoic) basement, as was documented in the southern and central parts of Southern Indian Lake. Together with isotopic evidence of buried Archean microcontinental fragments extending beneath part of the Chipewyan/Wathaman batholith, results to date indicate the possibility of a favourable foundation for diamondiferous lithosphere in the region. In addition to diamonds, the region has good potential for VMS deposits similar to those in the Lynn Lake–Leaf Rapids domain. Moreover, fieldwork in 2015 identified a second occurrence of Au mineralization associated with granitic pegmatite intrusions at Southern Indian Lake, suggesting there may be previously unrecognized potential for intrusion-related Au deposits.

In addition to the Precambrian geoscience projects reported in this volume, MGS geologists are involved in a number of collaborative research projects: volcanological, structural and metamorphic reconstructions of the Snow Lake VMS district (Laurentian University and Mount Royal College); stratigraphy and structural geology of the New Britannia mine horizon at Snow Lake (Laurentian University); structural geology and geochronology of intrusion-hosted Au deposits in the Rice Lake belt (University of Waterloo); and metamorphism and tectonothermal evolution of the Flin Flon belt (University of Calgary) and the Pikwitonei granulite domain (Virginia Tech). The MGS is providing in-kind and logistical support for each of these initiatives.

Several geoscience pages of the Manitoba Mineral Resources website are being updated or replaced with new ones, including pages focused on rare metals and industrial minerals. Already available is a new 'Mineral Commodities in Manitoba' page with up-to-date commodity brochures on Cu-Zn, Au, Ni and rare metals in Manitoba (<http://www.gov.mb.ca/iem/geo/commodity/index.html>).

### ***Southwestern Manitoba***

In southwestern Manitoba, the MGS, in partnership with the Manitoba Potash Corporation, conducted research on potash deposits in the Devonian Prairie Evaporite. Stratigraphic studies and resource estimates indicate that the potash deposits in Manitoba are less extensive than most deposits in Saskatchewan but may be of sufficient size and grade to be economically extracted using conventional underground-mining methods.



Gypsum has been mined and quarried in Manitoba since the beginning of the 19th century and remains an important industrial mineral. The most recent MGS report on gypsum in Manitoba was published more than 50 years ago. In 2015 the MGS initiated a project to review past gypsum production and provide a comprehensive, modern update on the geology of Manitoba gypsum. In 2015, the focus has been on the composition, stratigraphy and thickness of gypsum in the Upper Amaranth Member of the Amaranth Formation in the Harcus area west of Lake Manitoba, the only locality in Manitoba where gypsum is actively quarried today.

MGS geologists provided technical expertise in the area of industrial and specialty minerals to inquiring industry clients throughout the year, through in-house meetings and field outings.

### **Quaternary**

The MGS Quaternary geoscience program is designed to provide the surficial geology framework to inform mineral exploration, resource development of glacial deposits (e.g., aggregate) and land-use management in the province. Successful mineral exploration and prospecting in Manitoba's northern regions require a thorough understanding of surficial geology. Geochemical and indicator-mineral analysis of till, combined with analysis of the orientation, timing and nature of ice-flow phases, can provide tools to more accurately locate exploration targets. In addition, Quaternary geological information continues to play an important role in infrastructure development, through mapping of sand-and-gravel aggregate deposits.

In 2015, the MGS undertook surficial-geology mapping, stratigraphic logging of Quaternary sections and till sampling for geochemical, lithological and indicator-mineral analyses in the Arden area of southwestern Manitoba, where no detailed surficial-geology information is available. In addition to supporting drift prospecting, the new surficial-geology map and analytical results will aid infrastructure and agricultural planning, highlight prospective aggregate resources and contribute to the hydrogeology framework—all critical parameters for future resource development in the area.

Taking advantage of logistical synergies with an ongoing MGS bedrock-mapping project, surficial geology studies in the northern part of Southern Indian Lake focused on mapping of paleo-ice-flow indicators, logging of Quaternary sections and collection of till samples. As the Southern Indian Lake area has a complex ice-flow history, with influence from both the Keewatin and Labrador sectors of the Laurentide Ice Sheet, the new paleo-ice-flow indicator data are critical for effective drift prospecting in this region. Combined with till-geochemical results used to identify anomalous till compositions, the data on glacial-transport direction provide a necessary drift-exploration framework.

A multiyear program of Quaternary geological mapping in the Gillam area, initiated in 2013, continued in 2015 in collaboration with the University of Waterloo. The team conducted Quaternary geology studies in the Stephens Lake area and along the Nelson River, downstream from Gillam, to further detail the type and distribution of surficial materials in the region, with emphasis on aggregate-resource assessment in support of local hydro and infrastructure projects. Of particular interest for drift prospecting and from a glacial-history point of view is the collection of till property, stratigraphy and clast-fabric data from ten new stratigraphic sections along the Nelson River.

Regionally, the Quaternary stratigraphy and ice-flow history along the Hayes, Pennycutaway, Nelson and Gods rivers is being compiled and reinterpreted from previously unpublished, archived MGS field notes to assemble the glacial history in the Hudson Bay Lowland in Manitoba.

## **2. Increasing Manitoba's hydrocarbon geoscience knowledge base**

Results from the collaborative, multiyear, GEM-2 Hudson-Ungava Project provide the foundation for hydrocarbon exploration and land-use planning of the Hudson Bay Lowland region between Churchill and Ontario. In 2015, the MGS contributed to the program by mapping lineaments in the area covered by Paleozoic rocks in the Hudson Bay Lowland using remote-sensing methods. The objective of the project is to demarcate preglacial linear features, such as fractures, faults or arches, in the Precambrian and/or Phanerozoic bedrock. Identification of regional-scale bedrock structures contributes to understanding the paleostresses that may have affected fluid and hydrocarbon migration during basin evolution. The MGS also lead a field trip along the Churchill River and the Churchill coastal region for all GEM-2 project participants to help build knowledge and understanding on the correlation of these rocks across the basin.

MGS geologists in the Sedimentary Geoscience Section are actively involved in several other projects: geochronology of bentonite beds in the Manitoba escarpment to assist in constraining stratigraphic correlations; collaborations with the University of Manitoba on the stratigraphy of the Favel Formation in the Riding Mountain area and stratigraphy and petroleum potential the Devonian Duperow Formation in southwestern Manitoba; geochemistry and gas potential of the Upper Cretaceous strata in southwestern Manitoba (University of Calgary); and onshore correlation of the Ordovician carbonate sequences in the Manitoba and Ontario portions of the Hudson Bay Basin (Laurentian University).

Samples continue to be collected under the multiyear Shallow Unconventional Shale Gas Project from new sites along the Manitoba escarpment and from drillcore of the Cretaceous section in the Russell area. Excellent recovery of drillcore through this section is unique in Manitoba, and samples from the core will be used in geochemical profiling of the Cretaceous sequence in Manitoba. During this year's fieldwork, the MGS discovered an exquisitely preserved *Cimolichthys* fish fossil from the Late Cretaceous Favel Formation, which was on temporary display at the Canadian Fossil Discovery Centre in Morden.

The MGS is participating with the GSC and the Canada-Israel Research and Development Foundation of the Government of Canada in a study of in situ extraction of hydrocarbons from oil shale, by providing outcrop samples of Cretaceous oil shale from different parts of the Manitoba escarpment, with all geochemistry results being shared with the MGS.

The MGS has continued to provide year-round technical expertise to energy clients by responding to inquiries made directly to the geologist and through contact at meetings and geoscientific conferences in relation to the exploration and development of oil and gas in Manitoba. The MGS has participated regularly in regional technical groups to discuss current energy-related issues (e.g., shale gas, hydraulic fracturing) and has helped develop strategies to better educate the public on the energy industry and its practices.

The MGS collaborates continuously with neighbouring jurisdictions and organizations with similar goals, such as the National Energy Board, GSC, Canada-Nunavut Geoscience Office, Alberta Geological Survey, Saskatchewan Geological Survey and Ontario Geological Survey, on issues of similar interest, such as stratigraphy and resources investigations.

### **3. Promoting effective land use and resource management**

In November 2014 the Deputies of Mineral Resources and Conservation signed a memorandum of understanding (MOU) agreeing that both Departments will work together to achieve best balance between resource development and environmental protection of newly identified areas proposed to be protected. Based on this MOU the Departments, together with representatives from industry, established the Mineral Potential Assessment Committee (MPAC) to replace the former Manitoba Protected Areas Mining Sector Consultation process (1998-2009). MPAC's mandate is to assess areas proposed for protection for their mineral potential, and to establish new protocols, guidelines and best practices for developments in parks and protected areas.

In 2015 MPAC assessed the Polar Bear provincial park public proposal, the Seal River watershed internal proposal, a draft of the new Protected Areas Strategy, and the Rank 1 Areas of Special Interest (ASIs). In addition to these large proposals the MGS reviewed a number of smaller protected areas proposals including Park Reserves in the Interlake area (e.g. Pemmican Island), Ecological Reserves in southeast Manitoba, amendment of the Whiteshell provincial park boundary and land-use category boundaries, and protected areas in conjunction with Inuit land claims in northern Manitoba..

### **4. Evaluation of environmental impacts and geohazards**

In order to broaden our knowledge of the subsurface geological and hydrogeological systems, the MGS has been working toward a three-dimensional (3-D) geological model of the Phanerozoic succession in the province. Although work has been delayed due to software and hardware limitations, the MGS is committed to this endeavor. To this end, 134 cross-province 2-D sections between 49°N and 55°N have been digitized and imported into our 3-D modelling software. These sections were hand interpreted utilizing data compiled over a decade and include Manitoba's water-well, oil-well and stratigraphic-drillhole databases, large lake bathymetry, Lake Winnipeg seismic surveys and surface datasets such as the provincial surficial geology compilation map series. Ongoing changes in the interpreted Phanerozoic

unit edges necessitate slight modifications in the 2-D cross-sections which form the basis of the model. These changes will be handled on a formation by formation basis; modified sections will be re-imported into our 3-D modelling software. The 3-D geological model and its accompanying 2-D cross-sections unite disparate datasets and put them into a single standardized nomenclature. This work significantly contributes to a variety of geoscience knowledge bases relevant to Phanerozoic stratigraphy, hydrocarbon, groundwater and industrial-mineral resource development, and geological education.

## **5. Development of products that respond to clients' increasing needs for digital information**

The digital mineral deposits and occurrence database for Manitoba now contains information over 2700 mineral deposits and occurrences. Included in the database is all of the information contained in the reports of the Mineral Deposit Series as well as new data incorporated from recently released work contained in non-confidential assessment files and public information available on the SEDAR website. Existing records are revised as new data becomes available and, in some cases, records have been deleted where value of the information was in question. Annual updates for each year are added to the GIS Map Gallery in early November to correspond with the Manitoba Mining and Minerals Convention.

Manitoba Mineral Resources continued with updating and upgrading of the Map Gallery Internet mapping tool. Geoscience Information Services continued to devote resources supporting this Map Gallery application on the departmental website with additional and updated datasets and continuing refinements of the user interface. Considerable work was devoted to issues concerning software vitality and maintenance of the application in a secure manner. This will necessitate moving the Map Gallery program to a new technology platform that will increase functionality and ensure a stable and secure future for the program.

Geoscience Information Services supported compilation programs, including geology at 1:250 000 and 1:1 000 000 scales, and geophysical data. These compilations are an important component of a project to redesign and publish a new version of the Geological Highway Map of Manitoba. Geochemical, geochronological and mineral-deposit databases are maintained by this section of the MGS. Geographic-information-system support is a critical component of these projects because of the large volumes of descriptive and analytical data available for the compilations. Geoscience Information Services continued to support the surficial geology mapping programs publishing compilation maps and more detailed maps at 1:50 000 scale.

The geophysical-dataset compilation project involves a collection of the non-confidential geophysical datasets that were filed for assessment purposes. This ongoing project focuses on expanding the number of datasets and converting the data presentations to standard format, with particular emphasis on converting data to a standard map projection and datum. The compilation now includes 375 geophysical datasets that can be viewed in the Map Gallery 'Geology of Manitoba' project and are available for free download.

Previously, the MGS had successfully compiled and released seamless query-able digital surficial-material maps, but these compilations do not include point and line features. The Manitoba Surficial Digital Data Capture project has digitized all Quaternary line and point data. This data was then updated through mapping that utilized recently-released remotely-sensed imagery. The development of a comprehensive spatial geoscientific database across Manitoba will be of great assistance to the successful interpretation of ice flow and glacial history in Manitoba, as well as to the agriculture, land-use, aggregate, groundwater, environment, hazard and exploration industries, which require current knowledge to make effective decisions. MGS incorporated a new software system to help geologists visualize the land surface in 3D from digital orthophotos. This system is currently being used for Quaternary mapping.

The MGS continues to be an active member of the Provincial Spatial Data Infrastructure (SDI) initiative to produce a single province-wide portal to access all digital data produced by Manitoba agencies.

## **6. Community liaison program**

The Community Liaison Program works primarily with First Nations and other communities to provide a culturally respectful stage for geoscience and mineral-resource information sharing/exchange. MGS staff has provided a respectful, balanced, communicative approach to engagement and collaboration.

The program focuses on ascertaining indigenous concerns related to land use, and is structured to link with future community land use planning, a resolution of concerns and highlight potential economic development in the minerals industry. Land use information with community members (youth to Elder) are shared equally with postsecondary geological science information. Participants also learn about the benefits of obtaining employment via a university education (e.g. water management, conservation, biology and/or geology) as well, participate in instrument use, data collection, and record keeping. Since 2009, the program has developed transformative methodologies to promote collaboration and bridge the perspectives of Manitoba's First Nations, government and the mineral-resource sector.

## **7. Providing minerals industry information through outreach activities**

Investing in the future of all Manitobans, the MGS Manitoba Rocks! outreach and mineral education/awareness program aims to inspire new generations to think 'geosciences' and to consider the wealth of learning opportunities as well as the tremendous untapped resource potential of Manitoba's vital minerals sector. The MGS community-based outreach program took geoscience to a new level and reached more young Manitobans, educators and the public with the exciting development of a new DIG IT! mineral-card collection in 2015-16, featuring over 40 minerals and rocks found in Manitoba. DIG IT! is being actively distributed to science teachers, schools, museums, libraries, and beyond.

In 2015-16, Manitoba Rocks!, in co-operation with the Canadian Geoscience Educators Network (CGEN) and Mining Matters (Prospectors and Developers Association of Canada; PDAC), has been developing a pilot 'Geoscience Literacy and Learning Challenge' aimed at engaging all levels of Girl Guides program attendees, from Sparks, Brownies and Pathfinders to Rangers and adults. The program will incorporate Manitoba geology and history and the supporting Earth science concepts of EarthScienceLiteracy.org; Manitoba Rocks! is targeting a spring 2017 launch with Girl Guides Canada–Manitoba Chapter.

The Manitoba Rocks! website has received a steady stream of visitors and traffic since its launch in October 2013, leading to numerous ongoing requests from schools around the province for mineral-education information and presentations. The program connects in the classroom and through an information display at northern-community school events, reaching more than 2000 elementary and high-school students annually at Frontier School Division's Norway House Career Day, the University College of the North's Thompson/The Pas Try-a-Trade & Career Expo, and at Leaf Rapids and South Indian Lake career events (Spring 2016). The program has also supported activities at the Snow Lake Mining Museum, and has networked with new community organizations, such as the Northern Association of Community Councils, at their general meeting and trade show.

Teachers' information kits and geoscience and Manitoba Rocks! information have been distributed to the Science Teachers Association of Manitoba professional development workshops since 2013, as well as to the Northern Manitoba Mining Academy's teacher tours. Geo-backpacks for kids were also provided for mineral-related activities at the Canadian Fossil Discovery Centre, Stonewall Quarry Park and Oak Hammock Marsh's annual Archaeology, Rocks & Minerals weekend in September 2015 and Spring 2016, and in support of Vale's 60<sup>th</sup> Anniversary Celebration in Thompson in June 2016.

A Manitoba Rocks! school tour program was held at the 2015 Manitoba Mining and Minerals Convention, in partnership with the Mineral Society of Manitoba, Mining Matters (PDAC) and the Canadian Fossil Discovery Centre, engaging some 250 Grades 4 to 7 students in hands-on learning about our province's valuable mineral resources.

The Roadside Geology of Manitoba project, a collection of virtual 'GeoTour' videos on YouTube™, continued in 2015 with the addition of 15 site videos. The main objective of the videos is to provide a descriptive legacy of unique geological and geomorphological localities (geolocalities) that are generally road accessible.

## **8. 'ExplOre Manitoba' – the 2014 Manitoba Mining and Minerals Convention**

The annual Manitoba Mining and Minerals Convention were held November 18 to 20, 2015 at the RBC Convention Centre. Despite the continued slow pace in the mineral exploration and mining sectors close to 800 delegates attended from Manitoba and Canada. The convention opened with a well-attended half-

day technical short course on the Thompson Nickel Belt paralleled by a workshop on Aboriginal Engagement. The following two-day technical program contained:

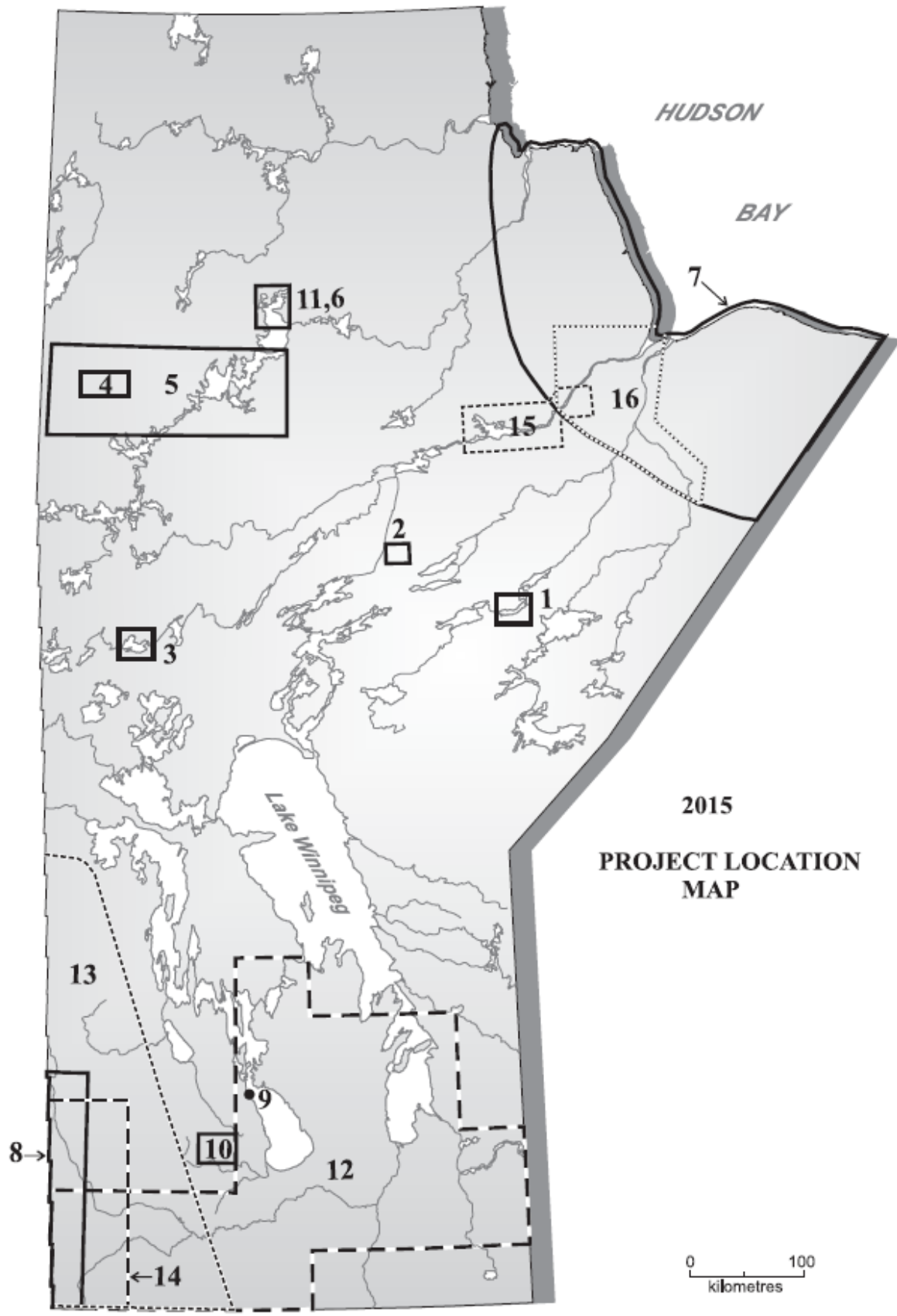
- an 'Opening Session' with keynote remarks by Chief Michael Constant (First Nation Mining Economic Development Inc.), as well as overviews of the 2015 Manitoba Geological Survey program and minerals industry in Manitoba;
- 'Manitoba Geoscience, Exploration and Mining Highlights' presented by industry executives and MGS staff;
- 'Aboriginal Engagement' session which showcased how First Nations, the minerals industry and government can collaborate to build stronger relationships and develop a sustainable model that benefits all Manitobans; and
- presentations of ongoing major Manitoba mining projects, and major issues facing the mining sector in Manitoba.

## **9. Drill Core Storage and Viewing Facilities**

The Midland Sample and Core Library, administered by the MGS, provides a wide range of services to Manitoba Mineral Resources staff, the petroleum and mining industries, other branches of government and academia. For the MGS, the Midland facilities directly support geoscience projects through sample preparation, processing, storage and archiving, and preparing core for viewing. Core storage and viewing have become invaluable services for industry; the core-viewing area at Midland continues to be booked almost year round, with most users being from the petroleum industry. The staff at Midland are continually reorganizing and optimizing the storage and viewing areas, as well as identifying lower priority materials for storage at offsite facilities. Outside of Winnipeg, MGS drillcore-storage facilities are located in The Pas, Flin Flon, Thompson and Lynn Lake.

**Map Legend****Location of Projects 2015/2016**

- 1** Preliminary results from bedrock mapping in the Knee Lake, northwestern Superior province, Manitoba
- 2** Preliminary results from bedrock mapping in the southern and central Cauchon Lake area, eastern margin of the Pikwitonei granulite domain, central Manitoba
- 3** Examination of exploration drillcore from the Reed Lake area, Flin Flon belt, west-central Manitoba: implications for the stratigraphy of the Fourmile Island assemblage and setting of VMS deposits
- 4** Geological investigations of the Keewatin River area, Lynn Lake greenstone belt, northwestern Manitoba
- 5** Granitoid rocks in the Lynn Lake region, northwestern Manitoba; preliminary results of reconnaissance mapping and sampling
- 6** Geological mapping in the northern basin of Southern Indian Lake, north-central Manitoba
- 7** Lineament mapping of the Hudson Bay Lowland using remote-sensing methods, northeastern Manitoba
- 8** Potash deposits in the Devonian Prairie Evaporite, southwestern Manitoba
- 9** Preliminary results from geological investigations into gypsum, Harcus area, southwestern Manitoba
- 10** Quaternary geology of the Arden area, southwestern Manitoba
- 11** Ice-flow mapping and till sampling in the northern area of Southern Indian Lake, north-central Manitoba
- 12** Roadside geology of southern Manitoba
- 13** Shallow Unconventional Shale Gas project, southwestern Manitoba; and geochronology of bentonite beds, southwestern Manitoba
- 14** Stratigraphy and hydrocarbon potential of the Duperow Formation, southwestern Manitoba
- 15** Quaternary mapping in the Gillam area, northeastern Manitoba
- 16** Quaternary stratigraphy and ice-flow history along the Hayes, Pennycutaway, Nelson and Gods rivers



**18-2(a) Manitoba Geological Survey**

<b>Expenditures by Sub-Appropriation</b>	<b>Actual 2015/16 \$(000)</b>	<b>Estimate 2015/16 FTE</b>	<b>Estimate 2015/16 \$(000)</b>	<b>Variance Over (Under)</b>	<b>Expl. No.</b>
Total Salaries & Employee Benefits	3,531	52.10	3,801	(270)	
Total Other Expenditures	2,634	-	2,302	332	
<b>Total Sub-Appropriation</b>	<b>6,165</b>	<b>52.10</b>	<b>6,103</b>	<b>62</b>	



# **MINES**

## **OBJECTIVES**

The Mines Branch administers legislation governing the disposition of mineral rights (permits, claims and leases), exploration, development, production of the province's non-fuel mineral resources and rehabilitation of mines and quarries. The Branch comprises three sections; Mining Recording, Mining Engineering and Inspection, and Assessment.

## **ACTIVITIES/RESULTS**

Other activities performed by the Mines Branch staff included the continuing compilation of an inventory of the province's aggregate resources and administration of provincial land-use policies that deal with the conservation of mineral resources. The Branch continues its representation on the sub-committee of IGWG on Mine Environment Neutral Drainage (MEND) Committee, the Green Mining Initiative (GMI), the Federal/Provincial Technical Committee on Mineral Statistics, the Provincial/Territorial Mining Rights Committee and National Orphaned and Abandoned Mines Initiative (NOAMI). Branch staff participated in a number of technical seminars, conferences and a mine rescue competition. Staff are also involved in supporting Aboriginal Consultation for issuance of mineral dispositions and work permits.

Under the Orphan and Abandoned Mine Site Program, total expenditures for FY 2015/16 were \$10.0 million. In 2015, rehabilitation work was focused on large projects in Sherridon, Lynn Lake, God's Lake and Ruttan. A total of 30 of 31 high hazard sites have been rehabilitated. Tender document preparation is underway with construction scheduled for 2016/17 on the final site.

### **Mining Recording Section**

The Mining Recording office is located in Winnipeg with a Claims Inspector in Flin Flon.

The Mining Recording Office maintains up-to-date records of mineral dispositions and leases and all legal transactions that relate to mineral dispositions and leases as required by legislation. Computer terminals are available for the general public to access disposition information on mining claims and permits, quarry leases, quarry surface leases, quarry exploration permits and potash dispositions.

The Mining Recording Section processes applications for mineral dispositions, leases, monitors and inspects the activities of disposition and lease holders for compliance with requirements of *The Mines and Minerals Act* and Regulations, and collects fees, rentals, royalties, rehabilitation levies, taxes and cash security deposits payable under the Regulations. The total revenue collected by the Section during the fiscal year 2015/16 was \$3.9 million and the rehabilitation levy collected on the removal of aggregate material was \$2.8 million for the same period.

During the calendar year 2015, 179 mining claims, zero mineral leases and 5 mineral exploration licenses were recorded covering a total of 76,163 hectares. Concurrently, 56 quarry mineral leases, 904 casual quarry permits and 759 registration certificates for private pits and quarries were also issued during the same period. Details of the types of mineral dispositions and leases issued and in good standing in 2015 are shown on Tables 1 and 2.

Since its introduction in 2012, Integrated Mining and Quarrying System (iMaQs) has enabled registered clients to submit applications and manage their dispositions online. iMaQs has allowed the public to gather more information through maps and search functions. Users of the system can view disposition data including their status as well as open assessment reports. Currently, iMaQs is capable of accepting applications for mining claims, mineral leases, surface leases, mineral exploration licences and private pit registrations from external client users. Users also have the ability to submit reports of work, allocate work credits, and apply for relief from forfeiture, notice for airborne survey and borehole licence. iMaQs is continually being improved to allow quarry clients to submit their application and manage their dispositions at their convenience.

In addition to the implementation of the iMaQs system, the Mining Recording Section has begun a process to streamlining the quarry disposition system with the goal of decreasing the time required to issue permits. This process is managed through the government's Lean Management Initiative. Lean

management is an approach based on delivering services and programs to the customer with the least amount of waste.

### **Crown - Aboriginal Consultation**

Mineral Resources is responsible for Crown-Aboriginal consultation on mineral exploration licences and on work permits which are issued by Manitoba Conservation and Water Stewardship for mineral exploration and development activities. The department is also the lead agency for Crown-Aboriginal consultation on Environment Act licences for mine developments. The department has established Crown-Aboriginal consultation procedures to guide the consultation processes.

Before a company can carry out exploration activities on a mineral disposition or lease, they have to obtain a work permit issued by the local regional office of Conservation. The majority of work permits are approved for issue by Conservation within 60 days. Once an application for a work permit is received, it is forwarded to the Mines Branch who is responsible for carrying out Crown-Aboriginal consultation with Aboriginal communities whose treaty and Aboriginal rights may be adversely affected by the activities.

Mineral Resources has developed an online "Approvals Tracker" which allows applicants to follow their applications for work permits and mineral tenure through the government approvals process.

Work Permit Applications Processed by Mineral Resource Division in 2015/2016:

Number of Work Permit Applications Processed	44
Number of First Nations / Aboriginal communities consulted	9
Average number of days between receiving a Work Permit Application and providing Conservation with notice to issue the permit	16.9
Applications withdrawn by Company/Individual	1

| ~~1 application pending.~~

**Table 1: MINERAL DISPOSITIONS ISSUED EACH CALENDAR YEAR 2012 – 2015**

	2012		2013		2014		2015	
	No.	Hectares	No.	Hectares	No.	Hectares	No.	Hectares
<b>Mining</b>								
Mining Claims	493	106,668	456	94,479	192	36,811	179	32,794
Mineral Exploration Licences	11	105,435	20	178,709	17	131,655	5	43,369
Mineral Leases	3	1,637	-	-	1	39	-	-
<b>Quarrying</b>								
Leases	48	2,090	142	7,126	22	523.22	56	2,438
Exploration Permits	-	-	-	-	-	-	-	-
Casual Quarry Permits	933	-	864	-	870	-	904	-
Private Aggregate Registration Certificates	796	-	752	-	772	-	759	-

**Table 2: MINERAL DISPOSITIONS IN GOOD STANDING AT CALENDAR YEAR END 2012 - 2015**

	2012		2013		2014		2015	
	No.	Hectares	No.	Hectares	No.	Hectares	No.	Hectares
<b>Mining</b>								
Mining Claims	5,926	932,434	5,536	897,862	5,011	740,887	4,805	702,099
Order-In-Council Leases	3,653	120,562	3,653	120,562	3,653	120,562	3,653	120,562
Mineral Exploration Licenses	50	791,740	45	541,363	33	413,537	38	478,018
Mineral leases	255	25,169	51	16,642	50	16,443	51	16,642
<b>Potash</b>								
Leases	1	5,787	1	5,787	1	5,787	1	5,787
Exploration Permits	-	-	-	-	-	-	-	-
<b>Quarrying</b>								
Leases	1,148	68,148	1,249	73,896	1,212	61,654	1,229	31,221
Exploration Permits	-	-	-	37,618	-	1,067	-	1,440
<b>Peat*</b>								
Leases	-	-	-	-	191	30,060	NA	NA
Exploration Permits	-	-	-	-	-	-	NA	NA
Coal – Exploration Permits	-	-	-	-	-	4,514	NA	NA
<b>TOTAL</b>	11,033	1,943,840	10,534	1,693,730	10,151	1,394,511		43,272

\*A two year moratorium on new peat leases was enacted in June of 2011 and extended to June 15, 2015. Responsibility for the management of Peat has been transferred from The Mines and Minerals Act to The Peatlands Stewardship Act.

## **Mining Engineering and Inspection**

The primary purpose of the Mining Engineering and Inspection Section is to facilitate and encourage sound exploration, mining and rehabilitation practices in the province consistent with the principles of sustainable development and in compliance with *The Mines and Minerals Act*. It also provides land management and advisory services in support of provincial legislative and regulatory land use and resource management initiatives.

Staff monitor mining activity in Manitoba to ensure compliance with requirements under *The Mines and Minerals Act* including licenses, registrations, permits, leases, closure plan submissions, royalty/levy charges on production, and environmental operation standards. Inspection staff conducted field inspections to ensure mining compliance at quarry lease and casual quarry permit locations, private pit/quarry operations and site rehabilitation projects.

*The Mines and Minerals Act*, proclaimed in 1992, introduced a program to address the rehabilitation of pits and aggregate quarries in the province. Aggregate producers pay an annual levy based on the number of tonnes they have produced and this money is held in a fund to be used for pit and quarry rehabilitation. On the basis of aggregate production from private and Crown lands in fiscal year 2015/16 approximately \$2.9 million was contributed to this Quarry Rehabilitation Fund, and 84 rehabilitation projects were completed at a cost of \$3.6 million. The total number of projects completed since 1992 comprise approximately 10,051 hectares of land rehabilitated. All the work has been undertaken through private equipment rental agreements or tendered contracts with private operators, administered and monitored by branch inspection staff.

## **Orphaned and Abandoned Mine Site Program**

Under the Orphaned and Abandoned (O/A) Mine Site Rehabilitation Program, total expenditures for FY 2015/16 were \$10.0 million. The rehabilitation work focused on large projects in Sherridon, Ruttan, and God's Lake. To date 30 of 31 high hazard sites have been rehabilitated with the last (Central West) to be completed in 2015/16. Work was also completed on 10 low/moderate exploration sites in Whiteshell Provincial Park.

Progress was made under the O/A Mine Site Rehabilitation Program in 2015/16 with the following work carried out:

- Sherridon Tailings – Tailings relocation and the flooding at Camp Lake was completed in 2013 to provide water cover on the tailings and prevent generation of acidic water. Neutralization of Camp Lake water is still in progress as several sources of acid loading is preventing stabilization. Investigations were undertaken to locate and stop the acid loading sources. Demobilization of the temporary water treatment plant and completion of final construction activities are ongoing. Lime batch treatment of Camp Lake in 2014, 2015 and 2016 successfully provided neutralization in advance of construction finalization in FY 2016/17
- Ruttan Mine Site - Engineering work and concepts were completed in 2011. A total of 9 tender packages were developed for the rehabilitation work and all were awarded. Tender documents required 15-25% First Nation and local involvement in the work. Construction work of the Water Treatment Plant in the old hoist house building was completed and commissioned in April 2016. Capping of the Tailings Management Area commenced in 2013. The work is ongoing with scheduled completion in August 2018.
- Snow Lake – An agreement with Bactech to reprocess tailings to treat arsenic and recover gold using bacterial leaching technology has expired. Manitoba plans to seek proposals to reprocess the tailings using other technologies.
- Elk Island - The remediation work at the Elk Island Air Strip was completed during 2014/15. This work was completed by God's Lake First Nation (GLFN) and Arnason Industries joint venture.
- Fox Lake - Site assessment was completed in 2014/15 and engineering design and construction will take place over the next two years with project completion planned for 2017.

- Planning is ongoing to complete rehabilitation work at three additional low/moderate sites located at Oxford House – Knee Lake, Gods Lake, and Whiteshell Provincial Park.

### **Sustainable Land Planning Services**

Manitoba has enacted several land use, environmental and resource management acts targeted at managing land and natural resources, creating economic development opportunities and protecting critical habitat and large sustainable ecosystems. The provincial outcome is responsible mining activity that significantly contributes to Manitoban's economic and social prosperity. The mineral resource/land management program facilitates mineral resource and land stewardship in the various federal, provincial and municipal land and resource use management planning and permitting processes. Program objectives are to help facilitate the provincial interest in natural resources, manage surface and Crown mineral land, and facilitate responsible mineral extraction that does not impair ecosystems and damage threatened habitat. Manitoba has a dual system of land tenure and significant effort is placed upon minimizing land access and use conflicts and also provide high quality advisory services to industry, (Manitoba Mining Association and Manitoba Heavy Construction Association) planning authorities, municipalities, and land management stakeholders.

#### Crown Land Planning

The management, classifying and land use policy development in Agro-Manitoba is the responsibility of the Bloc Planning Committees. Major activities of the Crown land management process include developing and implementing multi-resource land use plans, developing Crown land use codes and supervising land use on Crown lands through an integrated management process. Other significant initiatives include assessing Crown land sales and use proposals, providing technical advice and information on resource management activities. Highlights include developing a model for aggregate extraction and processing within Forestry areas, Wildlife Management Areas and other designated Crown land. Land access to aggregate deposits on Crown surface and mineral land is becoming more challenging and needs to be effectively resolved in response to the infrastructure deficit. The challenge is to facilitate integrated management as required under Section 2(2)(a) of the *Mines and Minerals Act*.

A pre-cleared list of aggregate extraction areas for casual quarry permits has been created in response to the infrastructure deficit. Land management provides planning services related to:

- Crown land sales
- Crown land exchanges
- Crown land planning and development
- allocation of use
- integration of use
- protection, conservation and stewardship of provincial natural resources
- designation of Crown land for provincial parks, ecological resources, wildlife management areas, etc.

All land sales, exchanges, land use codes and other administrative requirements for Crown land planning and management are reviewed and technical advice is provided.

In addition to the above, Manitoba has initiated support and a new process for provincial Crown land management which includes the Assistant Deputy Ministers and Deputy Ministers land use committees. Land Management also provides technical and policy support to these ongoing land management processes.

A review of the *Crown Lands Act* has been initiated.

#### Municipal Planning

The Planning Act governs land use planning and development in Manitoba. The legislation provides municipalities and planning districts with the authority to create and adopt a Development Plan and Zoning By-law. Land management is actively involved in providing the legislatively based land planning processes and stakeholders with technical products, advice and technical positions on land planning matters within the context of facilitating the public interest. Support services include reviewing policy and development proposals and ensuring that the province's non-renewable mineral resources are not sterilized by development, preparing technical reports and maps that help facilitate mineral resource management, and providing professional planning advisory assistance to the subdivision review and conditional use processes. Staff participated in one Municipal Board Hearing representing the provincial interest in planning matters.

Other significant planning services include policy reviews of plans and zoning by-laws, public consultation and supporting planning appeal Boards. Land Management is responsible for the interpretation and application of Provincial Land Use Policy #8, MR 81/2011. The Provincial Land Use Policy for minerals has been revised to strengthen its intent and provide clarity concerning protecting mineral resources and facilitating responsible development. The regulation has recently been vetted through Interdepartmental Review Committee and was proclaimed in June 2011. Aggregate resources are becoming increasingly scarce in the Capital Region and special emphasis has been placed on designating critical resources for future mining activity, and ensuring that the resources are viable for infrastructure renewal. Lands containing moderate to high quality mineral deposits are designated for mining activity and protected for future extraction. Development pressure from residential development has created a serious land use conflict due to the transition from rural and agriculture to a semi-urban environment. Permitting for new sources of aggregate has become a serious land use issue and the challenge is to find viable sources in support of the infrastructure deficit. Urbanization within capital regions municipalities has sterilized many of the high quality deposits and as permitted aggregate sites are depleted new sources are becoming difficult to open up and may have been sterilized.

#### Sustainable Land Planning Services

	<b>2013</b>	<b>2014</b>	<b>2015</b>
Reviews of new Development Plans and by-law amendments to ensure that mineral resources are not sterilized	126	46	36
Municipal Boundary reviews including annexation or expansion	4	3	4
Review of new zoning by-laws and amendments	176	187	159
Review of closure of roads and public reserves	43	54	40
Review of conditional use applications for the establishment of mining operations	13	14	19
Review of proposed live stock operations	1	0	3
Provide land planning services to 46 planning districts and 47 municipalities			

#### Land Use Assessment

Land Management provides technical support and advice to many land use resource reviews and assessment processes. Land use proposals are assessed to ensure that the province's mineral resources are not sterilized by surface development and to ensure that land use conflicts are identified and mitigated. Land use proposals that are assessed are subdivision applications, Crown land sales, zoning and policy memorandum as well as Crown surface encumbrances with the view of documenting land use, tenure and environmental conflicts. This activity directly supports interdepartmental and intergovernmental planning and resource management activities within an integrated management process. A total of 1674 land use proposals were assessed for potential land use conflicts to ensure that the Province's mineral resources were not sterilized by surface development. A policy and procedure and related process was created and implemented for mineral access rights. In addition, Land Management has partnered with development proponents in large complex surface, mineral and sand and gravel rights ownership to document and interpret various tenures and to help resolve ownership concerns. A new process was initiated to streamline the subdivision review process in partnership with Manitoba municipalities and other stakeholders. The intent is to find efficiencies in the administrative process and be more responsive to public needs. The improvements were codified in the subdivision regulations and a Service Excellence Award was given to this initiative.

## Sustainability

The Sustainable Development Act was proclaimed on July 1, 1998. The Act creates a legal framework through which sustainable development will be implemented in the public sector and encouraged in private industry and society. In addition, the principles of sustainable development have been codified in *The Mines and Minerals Act* and provide the legal framework for implementing sustainability on all mining land. An implementation process has been recently initiated and approved by Manitoba, and land management is currently providing technical support to many different provincial working groups and processes. Technical support is provided to COSDI, sustainability reporting, and recently adopted "Green Plan". Other important initiatives include sector based strategies under the provincial land and water initiative. Land Management also provides technical support to the Sustainable Development Innovations Fund by reviewing technical reports and participating in the approving committee. The principles of sustainable development are being codified into Municipal Plans, Crown Land plans and Zoning By-laws. Technical support for the Green Mining Initiative was also facilitated. The main priority is to demonstrate that new technology can be used to minimize mining sector ecological footprint. New program development is being developed in response to the Green Plan, Endangered Species Act and Crown Lands Act.

## Treaty Land Entitlement

Progress was made towards meeting provincial obligations for Treaty Land Entitlement, Northern Flood Agreement and Grand Rapids Forebay Agreement in accordance with these legal agreement requirements. Land selections containing valid mineral dispositions in good standing were documented and technical support to the selection process was provided. Staff participated in resolving tenure conflicts associated with land selections and also provided procedural and policy advice. Thirteen selection sites were ratified covering a total of 3,819 acres.

## Public Outreach

Land Management also provide educational and outreach services facilitating sustainability, mineral resource management to various land management boards, municipal councils, industry and the public. Public outreach services include presentations, workshops, and internet access to land management issues, policies, practices to ensure that there is an opportunity for public involvement and discussion regarding resource management issues. Activities include oral and poster presentations at conferences, workshops, public meetings and direct stakeholder consultations concerning mineral resource management. This activity helps facilitate informed decision making by land management boards, industry, and the public. Highlights for [2014/2015/16](#) include providing public outreach to the mining sector on forging constructive relationships with First Nation communities, Manitoba's cottage lot program, assisting Manitoba explorers and First Nation groups on land tenure and permitting issues, and providing technical support to Watershed and Resource Management Boards. Continued emphasis has been placed on conducting workshops on land planning and mineral tenure with stakeholders at the Manitoba Planning Conference. In addition, a new strategic partnership has been created to improve mineral extraction within forestry areas leading to an improved integrated management framework where all values are considered and addressed. Staff also participated in the off-road vehicle trail selection process including Snoman and the Trans Canada Trail route selection process.

## **Assessment Section**

The Section receives and evaluates reports of required work submitted under *The Mines and Minerals Act* to ensure compliance with legislation and acceptable industry standards. At first confidential, these reports are eventually transferred to the non-confidential assessment library open to the public. Clients can view reports in office or on the website.

Copies can be obtained by printing them directly from the website or ordering them from the Assessment Library. These reports are available online, on paper, microfilm or compact disc.

The Section also provides advice to the Review Panel and Administrator of the Mineral Exploration Assistance Program on the merits and validity of the projects, acceptance of final reports and recommendations on payment or non-payment of grants.

The Section monitors mining exploration activities in the province and contributes to the preparation of reports on industry activity. It also acts as liaison between Natural Resources Canada and the mining industry for the gathering of statistics on exploration and production.

At the request of the Manitoba Securities Commission, the section reviews technical submissions on mining projects to ensure that they conform to the reporting standards set out in National Instrument 43-101 - Standards of Disclosure for Mineral Projects. One project was reviewed during the past year.

	2012	2013	2014	2015
Reports of work added to assessment library	131	95	57	62
Reports transferred to non-confidential status	117	136	110	133

### **18-2(b) Mines**

<b>Expenditures by Sub-Appropriation</b>	<b>Actual 2015/16 \$(000)</b>	<b>Estimate 2015/16 FTE</b>	<b>Estimate 2015/16 \$(000)</b>	<b>Variance Over (Under)</b>	<b>Expl. No.</b>
Total Salaries and Employee Benefits	1,297	25.50	1,341	(44)	
Total Other Expenditures	19,694	-	519	19,175	1
<b>Total Sub-Appropriation</b>	<b>20,991</b>	<b>25.50</b>	<b>1,860</b>	<b>19,131</b>	

*1. Increased adjustment to Liabilities to Contaminated Sites for Orphaned and Abandoned Mines*



# **PETROLEUM**

## **OBJECTIVE**

To provide for and encourage the safe and efficient development of Manitoba's oil and gas resources in accordance with the principles of sustainable development.

## **ACTIVITIES / RESULTS**

Manitoba's oil and gas sector, though small by national or international standards, is a significant component of the provincial economy particularly in the southwestern part of the province.

In 2015, Manitoba produced 2,666,603 cubic metres or 16.0 million barrels of oil having a total value of approximately \$891 million which was \$700.0 million lower than 2014. The drop was due to continued low commodity prices during 2015. Since there are no refineries in Manitoba, the majority of the province's production is exported through the Enbridge pipeline system to refiners in Ontario and the United States. In 2015, an estimated 1,568,477.6m<sup>3</sup> (9,870,847 barrels) of oil production was transported by rail to locations in Eastern Canada and the US.

In 2015, the petroleum industry spent \$400.0 million in Manitoba to explore for and develop Manitoba's oil and gas resources, drilling 205 new wells and operating 6049 producing and support wells.

In 2015, the Daly-Sinclair, Virden, Manson, and Pierson Fields continued to expand. As of December 31, 2015, Manitoba's biggest field, the Daly Sinclair field had 2079 producing oil wells and contributed 52.6% of the total provincial production. Approximately 18% of new wells were drilled outside of existing oil fields.

The Manson field experienced continued drilling during 2015. In 1965 the first well was drilled within the boundary of the present day Manson Field. This well this area and was abandoned dry. The first producing well was drilled in 2009 and put on production on February 16, 2010. The Field now had 196 producing wells and accounted for 11% of Manitoba's 2015 production.

In 2010, Manitoba produced approximately 5133 m<sup>3</sup> per day. Since then, Manitoba's oil production has risen to approximately 7,289 m<sup>3</sup> or 45,874 barrels of oil per day, representing 42% increase.

It is estimated that the petroleum industry in Manitoba provides direct and indirect employment for approximately 5000 Manitobans.

In 2015/16, royalties, production taxes and revenue from the administration of Crown owned oil and gas rights, fees and sundry added \$16.1 million to the provincial revenues. Significant revenues were also collected by the province through income taxes, retail sales tax, corporation capital tax, payroll tax and fuel taxes. In addition, the industry paid approximately \$12.0 million in property taxes to the various municipalities where oil wells and facilities are located. The industry expenditures of \$400.0 million generated an estimated \$47.0 million in direct and indirect tax revenue for the province.

The Petroleum Branch administers *The Oil and Gas Act* and related regulations governing the exploration, development, production, transportation and storage of crude oil and natural gas. The branch is also responsible for *The Oil and Gas Production Tax Act*. Additionally, officers and inspectors of the branch are designated as Workplace Safety and Health Officers under *The Workplace Safety and Health Act* with respect to oilfield operations. The inspectors also act as industry's first point of contact with regard to oil field related environmental issues.

The branch continued maintenance of the GIS Petroleum Map Gallery. The map covers southwestern Manitoba including Townships 1 to 45; Ranges 1 E1 to 29 W1 and shows provincial Crown oil and gas rights mineral ownership, Crown oil and gas dispositions, wells, oil and gas facilities, field boundaries, topography orthophotos and allows for download of the branch's technical well files which provides information on work performed on a well during its lifetime. The map is available on the Petroleum

website at [www.gov.mb.ca/petroleum](http://www.gov.mb.ca/petroleum) and has available for download: well, crown lands, unit boundary, field and pool files.

The branch participated in the following consultation and outreach activities during 2014/15:

- The 22<sup>nd</sup> International Williston Basin Petroleum Conference (April 28-30, 2015) in Regina, Saskatchewan. The Mineral Resources Division presented an update of Manitoba oil and gas exploration and development activity at this forum and met with industry clients.
- The Canadian Association of Petroleum Geologists Annual Convention (May 4-7, 2015) in Calgary, Alberta.
- Presented an outreach session with MAFRD regarding the oil and gas industry on November 26, 2015
- A bio-security workshop for the oil and gas industry on February 26, 2015.

The following Informational Notices were issued by the Petroleum Branch in 2015:

- Informational Notice 15-01: Schedule of Public Offerings of Crown Oil & Gas Rights
- Informational Notice 15-02: Spatial Data Requirements for Pipeline Submissions

## **ADMINISTRATION AND GEOLOGY SECTION**

### **Administration:**

Administration is responsible for collection of petroleum revenues and administration of Crown owned oil and gas rights. The section collects annual lease rentals, Crown oil royalties and freehold oil taxes, conducts sales of Crown oil and gas leases and exploration reservations and processes lease renewals and extensions. The section is responsible for administering provisions of the Crown Disposition Regulation, the Crown Royalty and Incentives Regulation, the Oil and Gas Lease Agents Regulation and portions of the Drilling and Production Regulation under *The Oil and Gas Act*. The section also administers *The Oil and Gas Production Tax Act* and Regulation.

*Crown Oil and Gas Rights* - Four Crown oil and gas lease sales were held in 2015/2016. Forty-seven Crown Leases covering 3,224 hectares were sold for total revenue of \$1.7 million. Revenue collected from Crown oil and gas lease sales was up from the 2014/2015 revenue by \$289,000.

Since 1979, the Province has collected over \$95.2 million from the disposition of Crown Oil and Gas Rights. As of December 31, 2015, 92,836.226 hectares of Crown Oil and Gas Rights were under disposition. Compared to 2014, the total area under disposition has decreased by 14.7%.

In 2015, the section processed 91 lease renewals and 35 lease extensions, 162 lease surrenders, 200 transfers of dispositions and 36 oil and gas lease agent renewals and registrations. The section also issued 42 new leases and conducted 3 private sales.

*Data Collection* - The section collects monthly oil production data and data on the disposal and injection of salt water for all active wells in the province. As of December 31, 2015, there were 6,121 non-abandoned wells in Manitoba. Digital production, logs, technical information and injection histories are available for all wells.

During 2015/16, the section collected \$16.1 million from the petroleum industry. This revenue comprised \$5.8 million in Crown oil royalties, \$7.8 million in freehold oil taxes and \$2.6 million from administration of Crown Oil and Gas Rights, fees for well licences, battery operating permits, geophysical licences and oil and gas lease agent registration and publication sales. The revenue collected in 2014/15 was \$21.6 million.

Manitoba Drilling Incentive Program, (1992-2018) - The Manitoba Drilling Incentive Program has been revised and extended for the period January 1, 2014 to December 31, 2018. The revised program continues to provide licensees of wells drilled after January 1, 2014 with a holiday oil volume on production and introduces a new maximum crown royalty rate of 3.0% and a maximum production tax rate of 1.0% payable during the production of holiday oil volumes. With the revised Manitoba Drilling

Incentive Program, holiday oil volume Accounts were phased out by January 1, 2015. Companies were allowed to assign a one-time maximum of 2,000 cubic metres of holiday oil volume from their holiday oil volume accounts to vertical or horizontal wells drilled between January 1, 2014 and December 31, 2014.

In 2015, 255 wells earned an average holiday oil volume of 6,500 cubic metres, bringing the total number of wells that earned a holiday oil volume in the program to 5,100 as of December 2015.

Any horizontal well drilled after January 1, 2014 receives a holiday oil volume of 8,000 cubic metres. One hundred and fifty three horizontal wells were drilled in 2015.

Under the Vertical Well Incentive a newly drilled vertical development well, or an exploratory well drilled less than 1.6 kilometres from a well drilled to the same or deeper zone will earn a holiday oil volume of 500 cubic metres. There were 57 vertical wells drilled in 2015.

Under the Exploration and Deep Well Incentive a non-deep exploratory well that is drilled more than 1.6 kilometres from a well drilled to the same or deeper zone will earn a holiday oil volume of 4,000 cubic metres. A deep exploratory well drilled below the Birdbear Formation, or a deep development well completed for production in the Birdbear or deeper formation would earn a holiday oil volume of 8,000 cubic metres.

A marginal well where a work-over is completed after January 1, 2014 earns a 500 cubic metre holiday oil volume. A marginal well is defined as a well that, over the previous 12 months, has been shut-in or has an average production rate of less than 3 cubic metres per operating day. The qualifying minimum investment level for work-overs has been raised to \$75,000. Major work-overs include the re-entry of abandoned wells, deepening or recompletion of existing wells from one pool to another, horizontal well work-overs and the repair of the casing in a well. Four wells were given this incentive during 2015.

The Manitoba Drilling Incentive Program recognizes the higher investments, operating costs and the risks that are associated with a project of enhanced oil recovery (EOR) other than waterflood projects, and now companies may apply under subsection 189(2) of *The Oil and Gas Act* and subsection 2(2) of the *Oil and The Gas Production Tax Act* for a variation or waiver of Crown royalty and/or production tax for EOR projects.

The Pressure Maintenance Project Initiative replaced the existing Injection Well Incentive. The Pressure Maintenance Project Initiative provides a twelve month exemption from the payment of Crown royalty or production tax on production allocated to a unit tract in which a well has been drilled or converted to injection within an approved new or modified pressure maintenance project. If a well is placed on injection before it has produced its holiday oil volume and within five years of the finished drilling date, the exemption period will be extended to eighteen months.

A new Solution Gas Conservation Incentive was introduced whereby no Crown royalties or production tax is payable on captured gas from new solution gas conservation projects which were initiated and approved after December 31, 2013. The exemption from payments of Crown royalties or production tax would apply from the project implementation date to December 31, 2018. No project applications for eligible projects have been received.

*Performance Deposits and the Abandonment Fund Reserve Account* – The section administers trust accounts for performance deposits and the Abandonment Fund Reserve Account. Applicants for licences or permits issued under *The Oil and Gas Act* are required to submit a performance deposit to ensure operations comply with the Act and regulations. These deposits are held in trust until required rehabilitation work has been completed. In 2015/16, approximately \$3.4 million in cash, term deposits and letters of credit were administered.

The Abandonment Fund Reserve Account is established under *The Oil and Gas Act*. Non-refundable levies on geophysical and well transfer of well licenses, battery operating permits and inactive wells are deposited in the account. The account is used as a source of funds to operate or abandon a well or facility that is in non-compliance with the Act, where the licensee of the well or facility fails to do so. The account can also be used to rehabilitate the site of an abandoned well or facility or to address any adverse effect on property caused by a well or facility. Any expenditure from the account on behalf of a licensee automatically creates a debt of the licensee to the Crown, recoverable in court.

<b>Opening Balance (April 1, 2015)</b>	<b>\$1,668,382.89</b>
<b>Deposits</b>	
Levies and Penalties	80,950.00
Interest	13,394.24
Penalty of Inactive Well Levy	192,125.00
Recovery of Expenditures	4000.00
<b>Total Deposits</b>	<b>290,469.24</b>
<b>Expenditures and Refunds</b>	<b>(206,399.14)</b>
<b>Closing Balance (March 31, 2016)</b>	<b>\$1,752,452.99</b>

### **Geology:**

Geology provides geological support to government, public and industry on items requiring geological interpretations and considerations. This includes the assessment of areas for protected status, pipeline, unit and salt water disposal applications, the calculation of holiday oil volume, updating the Manitoba Tops database, determining producing zones, managing and supervising the input of geophysical and geological information into our database and managing requests for core sampling, analysis and geological information.

Geology prepares reports on Manitoba's petroleum geology and hydrocarbon potential to encourage and assist in the exploration and development of the province's oil and gas resources. Geology maintains and updates a system for the designation of field and pool boundaries annually. As of January 1, 2016, Manitoba had 14 designated oil fields and 186 designated active producing oil pools.

Accomplishments in 2015/2016 include:

- Assigned producing horizons to 423 wells;
- Assigned holiday oil volume to 550 wells;
- Participated in Churchill geogocial field trip;
- Participated in Ministers Mining Advisory Workshop;
- Presentation on hydraulic fracturing to the University of Manitoba Petroleum course;
- Attended Grand Challenge Forum on responsible development of low permeability hydrocarbon resources; and
- Review of Groundwater and Water Well Act and Environmental Rights legislation.

## **ENGINEERING AND INSPECTION SECTION**

### **Engineering:**

Under the authority of the Drilling and Production Regulation and the Geophysical Regulation, Engineering processes drilling licences, geophysical licences and applications to re-complete, suspend, or abandon wells. It also issues permits for all oil and gas facilities. In 2015/16, a total of 193 drilling licences and 10 geophysical licences were issued. In addition, 275 technical well operations applications were processed.

The Petroleum Branch processed and approved 13 waterflood enhanced oil recovery projects in 2015/16. Tundra Oil & Gas created Sinclair Units No. 14 and 17, Ewart Units No. 7 and 9, Daly Units No. 9-12. Red River Oil Inc. created Sinclair Units No. 15 and 16. Crescent Point Resources Partnership created East Manson Units No. 2 and 5. TORC Oil & Gas Ltd. created East Manson Unit No. 6.

The Petroleum Branch also processed and approved 2 new pipeline applications totalling approximately 21.2 km of new pipeline infrastructure in Manitoba.

Information and advice are provided to the petroleum industry and the public at the Winnipeg, Virden and Waskada offices.

### **Inspection:**

Inspection enforces regulations under *The Oil and Gas Act* related to geophysical, drilling, production, and pipeline operations. Specifically, the inspectors license and inspect field facilities, investigate complaints, witness specific operations, and interpret and communicate departmental or regulatory requirements to industry personnel. Inspectors are also responsible for carrying out safety and health inspections of petroleum industry operations under *The Workplace Safety and Health Act*. The Petroleum Branch has a memorandum of agreement with Labour designating the inspectors as Workplace, Safety and Health officers. District offices are located in Virden and Waskada.

Throughout the 2015/16 fiscal year the activity in the oil industry was slower. During this period of time the Petroleum Inspection team inspected 121 oil and gas facilities. All batteries in the province were inspected at least once during the year. Inspection also inspected 41 service rigs and 4 different drilling rigs. A total of 118 non-compliance orders were issued in 2015/16 for wells and oil and gas facilities not in compliance with the Act. A total of 437 flow line applications were processed and 404 excavation permits issued.

Inspectors visited 113 abandoned well and battery sites to ensure that the approved abandonment procedures have been followed. During 2015/16, 81 Certificates of Abandonment were issued, allowing for the release of wells from performance deposit requirements. The unit also manages a program of environmental protection involving the rehabilitation of all oil or salt water spill sites. During 2015/16, 46 new spills were inspected and 29 spill sites were fully rehabilitated and released from the branch's rehabilitation program.

More information on spills is presented in the Petroleum Industry 2015 Spill Statistics and Report available from the branch or on the Petroleum Branch's website.

## **DIGITAL INFORMATION SERVICES SECTION**

Digital Information Services is responsible for development and maintenance of computer systems within the branch. These systems include a diverse collection of activities such as web services, GIS, distribution of data to brokers, application development, document images and mapping services.

Digital Information Services has acted as the lead on conducting an opportunity assessment with Petrinex. Petrinex allows producers to digitally submit all information related to the tracking of volumetric oil and gas production data. Petrinex has been used in Alberta since 2002 and went interprovincial when Saskatchewan joined Petrinex and went live with the program on April 1, 2012. The petroleum industry sponsored and partially funded the Opportunity Assessment for Manitoba as it is believed there would be

operational benefits to have 3 provinces utilizing the same software system. Digital Information Services has met with Business Transformation and Technology (BTT) and Information Protection Centre (IPC) clearing the way for any data issues. Petroleum has completed phase 5 of the Petrinex Opportunity Assessment.

In 2015/16, the section continued to expand the offering of information available on the internet. The section provided ongoing support and development for GIS map products, Petroleum website enhancements and the Manitoba Oil and Gas Well Information System (MOGWIS).

Accomplishments in 2015/16 include:

- Providing business logic and technical knowledge to support transition to updated version of software and tools that support MOGWIS.
- Working with BTT on the continuing development of the Petroleum Application Data (PAD) which will enable industry to submit specific data to the branch (in the future, PAD is expected to allow industry to view and submit logs).
- Continued development of digital document management structure.
- Continued research into data standardization with other jurisdictions and development of a business case for the adoption of Petrinex by the branch.
- Continued support for the MOGWIS.
- Incorporated the WAG (Water Alternating Gas) Incentive into the Tax and Royalty Audit Program.
- Entered into an agreement with BC to use FracFocus for disclosure of hydraulic fracturing fluids information in Manitoba. Modifications are underway to integrate FracFocus into the branch's website.
- Testing and documentation of applications prior to upgrade to a supported database (BTT project)
- Commencement of coding for web based Well Licensing Application
- Continued updating of Petroleum datasets for outside use.
- Continuing support and expansion of online Map gallery, GIS and website.
- Commencement of coding of Tax and Royalty Audit program for Manitoba Drilling Incentive Program Changes (2014).
- Flowline/Pipeline GIS project initiated.

## **MINISTER'S AND DIRECTOR'S APPROVALS**

Under *The Oil and Gas Act*, the Minister and the Director of Petroleum have authority to issue orders relating to drilling, production, storage and transportation of oil and gas. The Minister has authority to make orders relating to well spacing, enhanced recovery, maximum production rates, seizure of wells and facilities and to enter into Unit Agreements on behalf of the Crown. The Lieutenant Governor in Council has delegated parts of this authority, under Order in Council 384/2001, to the Director where the circumstances are considered routine. The Director has authority to issue orders relating to salt water disposal, designation of field and pools, designation of new oil status and to affect the seizure of wells and facilities of a non-compliant operator pursuant to a Ministerial Seizure Order.

### **In 2015/16 the Minister made the following orders:**

Pipeline Operating Licence No. 2011-2A	August 4, 2015	Enbridge Pipeline (V) Inc.
Pipeline Operating Licence No. 2012-10A	August 4, 2015	Enbridge Pipeline (V) Inc.
Pipeline Operating Licence No. 2012-2A	August 4, 2015	Enbridge Pipeline (V) Inc.
Pipeline Operating Licence No. 2015-03	August 4, 2015	Enbridge Pipeline (V) Inc.
Enhanced Oil Recovery Order 35A	December 23, 2015	Ewart Unit No. 5
Pipeline Construction Permit 2016-01	January 18, 2016	Two Creeks Pipeline
Pipeline Construction Permit 2016-02	February 22, 2016	Tundra Oil & Gas Partnership
Pipeline Operating Licence No. 2013-07A	March 4, 2016	Crescent Point Energy Corp.

**In 2015/16 the Director of Petroleum made the following orders:**

Unit Agreement (Ewart Unit No. 7)	April 9, 2015	Tundra Oil & Gas Partnership
Salt Water Disposal Permit No. 261	April 16, 2015	Tundra Oil & Gas Partnership
Water flood Order No. 45	May 7, 2015	Birdtail Unit No. 3
Amend Water flood Order No. 40A	May 5, 2015	Routledge Unit No. 1
Unit Agreement	June 1, 2015	Sinclair Unit No. 15
Unit Agreement	June 1, 2015	Sinclair Unit No. 16
Water flood Order No. 46	July 8, 2015	Sinclair Unit No. 16
Water flood Order No. 47	July 15, 2015	Sinclair Unit No. 11
Salt Water Disposal Permit No. 262	July 30, 2015	Highmark Exploration Inc.
Salt Water Disposal Permit No. 257A	June 18, 2015	Tundra Oil & Gas Partnership
Unit Agreement	August 27, 2015	Daly Unit No. 9
Unit Agreement	August 27, 2015	Daly Unit No. 10
Unit Agreement	August 27, 2015	Daly Unit No. 11
Unit Agreement	August 27, 2015	Ewart Unit No. 9
Unit Agreement	Sept 30, 2015	East Manson Unit No. 2
Unit Agreement	October 7, 2015	East Manson Unit No. 6
Water flood Order No. 49	October 2, 2015	Daly Unit No. 11
Water flood Order No. 50	October 9, 2015	East Manson Unit No. 2
Unit Agreement	November 5, 2015	Sinclair Unit No. 14
Unit Agreement	November 30, 2015	East Manson Unit No. 5
Water flood Order No. 51	December 6, 2015	Ewart Unit No. 9
Unit Agreement	January 7, 2016	Daly Unit No. 12
Water flood Order No. 52	January 6, 2016	East Manson Unit No. 5
Salt Water Disposal Permit No. 263	March 3, 2016	Corex Resources Ltd.
Unit Agreement	March 8, 2016	Sinclair Unit No. 17

**Petroleum Industry Overview:**

	<b>2015</b>	<b>2014</b>
New wells drilled	205	464
Oil Production	2,666,603 m <sup>3</sup> (16.8 million bbls)	2,831,591 m <sup>3</sup> (17.8 million bbls)
Value of oil sales (\$million)	\$891	\$1,630
Average selling price	\$335.45 m <sup>3</sup> (\$53.30/bbl)	\$576.28 m <sup>3</sup> (\$91.57/bbl)
Wells producing - December	4,198	4,410
Estimated Industry Expenditures (\$million)	\$441	\$1,000

**18-2(c) Petroleum**

<b>Expenditures by Sub-Appropriation</b>	<b>Actual 2015/16 \$(000)</b>	<b>Estimate 2015/16 FTE</b>	<b>Estimate 2015/16 \$(000)</b>	<b>Variance Over (Under)</b>	<b>Expl. No.</b>
Total Salaries & Employee Benefits	1,740	23.50	1,725	15	
Total Other Expenditures	244	-	259	(15)	
<b>Total Sub-Appropriation</b>	<b>1,984</b>	<b>23.50</b>	<b>1,984</b>	<b>0</b>	



## BOARDS AND COMMISSIONS

### OBJECTIVES

To provide for the resolution of disputes between surface rights holders, mineral rights, and oil and gas rights holders with respect to accessing minerals, oil and gas.

#### Mining Board

The Mining Board is established under *The Mines and Minerals Act*. The primary function of the Board is the arbitration of disputes between surface rights holders and mineral rights holders with respect to accessing of minerals other than oil and gas. The Board can also hear and resolve disputes between holders of mineral dispositions and between holders and officers of the Department.

In 2015 the Mining Board received one Request for Immediate Access, two Mining Disputes and the Board also reached a Decision on an Adjustment to Annual Work Requirements.

#### Surface Rights Board

*The Surface Rights Act* establishes a quasi-judicial process for resolving land access and development disputes between oil and gas development proponents and surface rights holders. The Act also establishes a Board to arbitrate and mediate disputes and establishes appropriate compensation for petroleum development activities. Land Management provides administrative support to the process and the Board.

Due to its quasi-judicial nature, the Board operates independently and is attached to the Department for administrative reasons only.

Highlights for 2015 include the issuance of 11 Board Orders, consisting of 2 Variation of Compensation Orders, and 9 Termination of Right of Entry for Pipeline Orders. Other significant activities for the fiscal year include improving the administrative process and procedures for the Board activities.

	2012	2013	2014	2015
Signed Agreements for Surface Leases (fiscal year)	344	317	351	151
Total Number of Recorded Surface Leases	5,376	5,693	6,044	6,195
Review of Right of Way Applications	3	59	5	2
Review of Compensation Applications	5	6	6	3
Termination of Board Orders	0	0	39	0
Application for Abandonment Orders	0	0	1	1
Board Orders Issued	4	42	33	11
Mediation Reports	0	0	0	0

#### 18-2(d) Boards and Commissions

Expenditures by Sub-Appropriation	Actual 2015/16 \$(000)	Estimate 2015/16 FTE	Estimate 2015/16 \$(000)	Variance Over (Under)	Expl. No.
Total Salaries and Employee Benefits	30	-	30	0	
Total Other Expenditures	23	-	19	4	
<b>Total Sub-Appropriation</b>	<b>53</b>		<b>49</b>	<b>4</b>	

## MINERAL INDUSTRY SUPPORT PROGRAMS

The Mineral Industry Support Programs are delivered under Manitoba Geological Survey.

### Mineral Exploration Assistance Program

The Mineral Exploration Assistance Program (MEAP) provides financial assistance to eligible companies or individuals who undertake mineral exploration in Manitoba. Established in the fall of 1995, Mineral Resources successfully secured renewed funding for the MEAP program for fiscal year 2015/2016 at an increased level of support of \$3.0 million. The program provides the \$3.0 million of assistance through a single June offering for the 2015/2016 year. The program is designed to increase exploration and stimulate activities that may lead to the development of new mines. The additional funding allowed MEAP to provide 40% of eligible exploration expenditures per recipient for non-remote regions of the province and 50% of eligible exploration expenditures for projects undertaken in the Far North/Northern Superior regions of the province, due to remoteness and limited infrastructure. MEAP has extended the higher percentage of assistance on eligible expenditures to include the Lynn Lake/Leaf Rapids areas. MEAP offers a maximum of \$200,000 per recipient, per fiscal year.

Companies with approved projects under the June 2015 offering had until March 31, 2016 to complete their work. Fourteen of the original twenty-three approved projects were completed.

### Program Highlights from October 1995 to March 31, 2016

- 193 companies have participated under MEAP of which:
  - 151 companies are considered new to Manitoba;
  - 16 are major exploration companies; and
  - 177 are junior companies (note: a company is considered a major exploration company if its market capitalization is greater than \$100 million).
- \$33.4 million of assistance has been issued to 810 completed projects.
- \$284.8 million in exploration expenses have been reported.
- Reported exploration expenditures under the Program indicate every \$1 million in assistance paid generates \$8.5 million in exploration expenditures.
- For every dollar of MEAP assistance, the Manitoba Bureau of Statistics estimates that there is \$1.85 in taxes collected in Manitoba.

### Mineral Exploration Assistance Program 2015 Status

Offering	Applications Received	Approved Applications	Proposed Exploration \$ in 000's	Assistance \$ Allocated in 000's	Projects Completed	Actual Exploration \$ in 000's	Assistance \$ Paid
150601	25	23	18,007.4	3,000.0	14	10,973.2	1,746
<b>TOTAL</b>	<b>25</b>	<b>23</b>	<b>18,007.4</b>	<b>3,000.0</b>	<b>14</b>	<b>10,973.2</b>	<b>1,746</b>

**Note:** Projects approved under the June, 2015 offering have until June 14, 2016 to file final reports and make application for final payment.

### Results of Assistance by General Region of Exploration for 2015/2016

	Projects		Exploration \$ in 000's		Assistance \$ in 000's	
Far North	1	(4.3%)	\$ 2,928.2	(26.7%)	\$159.5	(9.1%)
Flin Flon/Snow Lake	8	(34.8%)	\$5,132.3	(46.8%)	\$757.2	(43.4%)
Hudson Bay Lowland	0	(0.0%)	\$0.0	(0.0%)	\$0.0	(0.0%)
Lynn Lake/Leaf Rapids	1	(4.3%)	\$0.0	(0.0%)	\$0.0	(0.0%)
Northern Superior	4	(17.4%)	\$1,461.7	(13.3%)	\$319.1	(18.3%)
SE Trans-Hudson Orogen	0	(0.0%)	\$0.0	(0.0%)	\$0.0	(0.0%)

Southeastern Manitoba	6	(26.1%)	\$435.2	(4.0%)	\$170.6	(9.8%)
South Central Manitoba	0	(0.0%)	\$0.0	(0.0%)	\$0.0	(0.0%)
Thompson Nickel Belt - Superior Boundary Zone	3	(13.0%)	\$1,016.0	(9.3%)	\$339.7	(19.5%)

### **Manitoba Prospectors Assistance Program**

The Manitoba Prospectors Assistance Program (MPAP) offers grants to prospectors conducting exploration either on their own Manitoba properties or on open Crown land. The Program is targeted at increasing mineral exploration in Manitoba to help replenish declining ore reserves. The Program is funded at \$125,000 per year and allows individual prospectors to qualify for up to 50% of their prospecting expenditures incurred up to a maximum of \$10,000 per prospector per year. The program also provides 80% of the cost of one return charter flight or \$1,500 per year, whichever is less, for projects undertaken in more remote areas of the Province. The maximum assistance of \$11,500 is available per applicant, per year.

In 2015/16 the program received 13 applications for grants; 13 prospecting projects were approved under the program and 13 were completed. The total amount of Program funds dispersed for 2014/2015 was \$35,968.90.

Sedley Turner	10,000.00
Garry Thorne	10,000.00
Svetlana Bashaev	9,185.00
Ken Klyne	4,500.00
Ken Klyne	4,840.00
Richard Mason	10,000.00
Rashid Mumin	10,000.00
George Nykulaik	10,000.00
Dave Meek	8,607.50
Les Barclay	10,000.00
Bill Hood	11,500.00
William Dusessoy	10,000.00
Chris Lytwyn	10,000.00
Total Funds Dispersed:	<u>\$125,000.00</u>

### **Manitoba Potash Project**

Manitoba Mineral Resources has consolidated the potash resource amendable to conventional mining on the Russell McAuley deposit in an effort to facilitate the future development of a conventional potash mine. The resource consolidation was achieved through the acquisition of the 51% share of the Manitoba Potash Corp owned by joint venture partner BHP-Billiton, which controls the northern block in the Russell area, and the withdrawal of the Crown potash rights in the contiguous southern block in the St. Lazare area following the termination of a potash exploration permit held by Agrium Corp. The consolidation of the resource in the Russell McAuley deposit represents a critical step towards attracting credible developers.

Manitoba Potash Corporation contracted Micon International to develop and execute a marketing strategy designed to identify and engage potential potash developers. Micon also provided analysis of the potash market in advance of the launch of the marketing strategy and has prepared the necessary technical information required to successfully market the Russell-McAuley deposit which contains an estimated 1.0 billion tonnes grading 20.9% K<sub>2</sub>O. The marketing strategy developed by Micon solicited Expressions of Interest from a prioritized list of international potash and fertilizer industry companies with the intent of selecting a developer with the experience and resources to develop a conventional potash mine and provide the region with economic and social development opportunities. The marketing program was launched in 2015 and a number of Expressions of Interest were received. A phased process of selecting

a successful proponent is currently underway and the sale of the corporation is anticipated during the 2016/17 fiscal year.

**18-2(e) Mineral Industry Support Programs**

<b>Expenditures by Sub-Appropriation</b>	<b>Actual 2015/16 \$(000)</b>	<b>Estimate 2015/16 FTE</b>	<b>Estimate 2015/16 \$(000)</b>	<b>Variance Over (Under)</b>	<b>Expl. No.</b>
Mineral Industry Support Programs	-	-	-	-	
- Manitoba Potash Project	75	-	97	(22)	
<b>Total Sub-Appropriation</b>	<b>75</b>	<b>-</b>	<b>97</b>	<b>(22)</b>	

*Mineral Exploration Assistance Program and Manitoba Prospectors Assistance Program are paid directly from Mining Community Reserve Fund (MCR).*

## **COSTS RELATED TO CAPITAL ASSETS**

Commencing in 1999/2000, it is the policy of the Province of Manitoba to record in the accounts of the Province, the tangible capital assets owned and used by the Province along with appropriate amortization costs. The Provincial Comptroller has established standard asset classes, along with capitalization thresholds and corresponding amortization rates.

### **18-6 Amortization and Other Costs Related to Capital Assets**

<b>Expenditures by Sub-Appropriation</b>	<b>Actual 2015/16 \$(000)</b>	<b>Estimate 2015/16 FTE</b>	<b>Estimate 2015/16 \$(000)</b>	<b>Variance Over (Under)</b>	<b>Expl. No.</b>
(a) Amortization Expense	386	-	384	2	
(b) Interest Expense	226	-	256	(30)	
<b>Total Expenditures</b>	<b>612</b>	<b>-</b>	<b>640</b>	<b>(28)</b>	



## **MINERAL RESOURCES**

### **Reconciliation Statement**

<b>EXPENDITURE DETAILS</b>	
<b>2015/16 MAIN ESTIMATES</b>	9,835
<b>MAIN ESTIMATES AUTHORITY TRANSFERRED FROM:</b> <ul style="list-style-type: none"><li>• <b>Enabling Appropriations</b><ul style="list-style-type: none"><li>- Internal Services Adjustment</li></ul></li></ul>	1,426
<b>2015/16 ESTIMATE</b>	11,261





**Mineral Resources  
Expenditure Summary  
For Fiscal Year Ended March 31, 2016 (with comparative figures for the previous year)**

Estimate 2015/16 \$(000)	Appropriation	Actual 2015/16 \$(000)	Actual 2014/15 \$(000)	Increase (Decrease) \$(000)	Explanation Number
<b>18-1 Administration and Finance</b>					
37	(a) Minister's Salary	37	37	-	
	(b) Executive Support				
268	(1) Salaries and Employee Benefits	274	355	(81)	
53	(2) Other Expenditures	39	45	(6)	
150	(c) Administration and Finance	150	150	-	
528	Total 18-1	500	587	(87)	
<b>18-2 Mineral Resources</b>					
	(a) Manitoba Geological Survey				
3,801	(1) Salaries and Employee Benefits	3,531	3,504	27	
2,302	(2) Other Expenditures	2,634	2,500	134	1
	(b) Mines				
1,341	(1) Salaries and Employee Benefits	1,297	1,193	104	
519	(2) Other Expenditures	19,694	6,049	13,645	2
	(c) Petroleum				
1,725	(1) Salaries and Employee Benefits	1,740	1,503	237	
256	(2) Other Expenditures	244	284	(40)	
	(d) Boards and Commissions				
30	(1) Salaries and Employee Benefits	30	23	7	
19	(2) Other Expenditures	23	11	12	
	(e) Mineral Industry Support Programs				
	(1) Mineral Exploration Assistance Program	-	-	-	
	(2) Prospectors' Assistance Program	-	-	-	
97	(3) Manitoba Potash Project	75	85	(10)	
10,093	Total 18-2	29,268	15,152	14,116	

## Expenditure Summary

Estimate 2015/16 \$(000)	Appropriation	Actual 2015/16 \$(000)	Actual 2014/15 \$(000)	Increase (Decrease) \$(000)	Explanation Number
	<b>18-3</b>	<b>Costs Related to Capital Assets</b>			
384	(a) Amortization Expense	386	383	3	
256	(b) Interest Expense	226	242	(16)	
640	Total 18-3	612	625	(13)	
11,261	<b>TOTAL MINERAL RESOURCES</b>	30,380	16,364	14,016	

Explanations:

1. Increase due to expenditures related to Manitoba Potash Corporation and Crown Aboriginal Consultations.
2. Increased adjustment to Liabilities to Contaminated Sites for Orphaned and Abandoned Mines.

**Mineral Resources**  
**Revenue Summary by Source**  
**For Fiscal Year Ended March 31, 2016 with comparative figures for the previous fiscal year**  
**(\$000's)**

<b>Actual 2014/15</b>	<b>Actual 2015/16</b>	<b>Increase (Decrease)</b>	<b>Expl. No.</b>	<b>Source</b>	<b>Actual 2015/16</b>	<b>Estimate 2015/16</b>	<b>Variance</b>	<b>Expl. No.</b>
<b>Taxation</b>								
9,694	7,834	(1,860)	1	Oil and Natural Gas Tax	7,834	12,982	(5,148)	1
9,694	7,834	(1,860)		Sub-Total	7,834	12,982	(5,148)	
<b>Other Revenue</b>								
4,676	3,939	(737)	1	Minerals Royalties and Fees	3,939	4,450	(511)	
11,873	8,312	(3,561)	2	Petroleum Royalties and Fees	8,312	13,636	(5,324)	2
11	17	6		Sundry	17	3	14	
16,560	12,268	(4,292)		Sub-Total	12,268	18,089	(5,821)	
<b>26,254</b>	<b>20,102</b>	<b>(6,152)</b>		<b>Total</b>	<b>20,102</b>	<b>31,071</b>	<b>(10,969)</b>	

**Explanations:**

**Comparison to Previous Year**

1. *Decrease in revenue due to low oil prices and decreased production*
2. *Peat memorandum passed resulting in not collecting any rental or royalties on any peat quarry leases*

**Comparison Actual to Estimate**

1. *Drop in oil prices*
2. *Difference in price and production levels*

**FIVE YEAR HISTORY**

**Mineral Resources**

**Five-Year Expenditure and Staffing Summary by Main Appropriation (\$000s)**

**For Five Years Ended March 31, 2016\***

	Actual/*Adjusted Expenditures									
	2011-2012		2012-2013		2013-2014		2014-2015		2015-2016	
	FTE	\$	FTE	\$	FTE	\$	FTE	\$	FTE	\$
<b>Administration and Finance</b>	6.00	669	6.00	682	6.00	700	6.00	587	6.00	500
<b>Mineral Resources</b>	103.60	33,692	106.10	10,042	102.10	12,931	102.10	15,159	102.10	29,268
<b>Amortization and Other Costs Related to Capital Assets</b>		337		659		640		625		612
<b>TOTAL OPERATING</b>	109.60	34,698	112.10	11,383	108.10	14,271	108.10	16,371	108.10	30,380
<b>Expenditures Related to Capital Investment</b>		867		-		-		149		
<b>TOTAL</b>	109.60	35,565	112.10	11,383	108.10	14,271	108.10	16,520	108.10	30,380

\* - Adjusted figures reflect historical data on a comparable basis in those appropriations affected by reorganizations during the five years

## **MINERAL RESOURCES**

### **2015/16 Annual Report Performance Measurements**

The following section provides information on key performance measures for the department for the 2015-16 reporting year.

Performance indicators in departmental Annual Reports are intended to complement financial results and provide Manitobans with meaningful and useful information about government activities, and their impact on the province and its citizens.

For more information on performance reporting and the Manitoba government, visit

<http://www.gov.mb.ca/finance/publications/performance.html>

Your comments on performance measures are valuable to us. You can send comments or questions to [mbperformance@gov.mb.ca](mailto:mbperformance@gov.mb.ca).

## Mineral Resources Performance Measures Document for inclusion in the 2015/16 Annual Report

**Priority:** Encourage, promote and facilitate investment in the sustainable development of Manitoba's mineral and petroleum resources.

What is being measured? (A)	How is it being measured (name of indicator)? (B)	Why is it important to measure this? (C)	What is the starting point? (baseline data and year) (D)	What is the most recent available data? (E)	What is the trend over time? (F)
Annual mineral exploration expenditures	Annual mineral exploration expenditures are the most direct indicator <sup>1</sup> of the level of mineral exploration in the Province.	One of the primary roles of the department is to promote investment in Manitoba mineral and petroleum resources.	2002 Mineral exploration : \$29.8 million	Mineral exploration and deposit appraisal (\$ million) and percentage of Canadian expenditures  2014: \$ 28.0 (1.4%)  2015: \$35.2 (2.1%) (forecast) *	Manitoba's mineral exploration expenditures fluctuate with commodity prices and global economic conditions.  Manitoba's share of Canadian exploration expenditures has declined from a high of 5.0% in 2009.
Annual petroleum industry exploration and development capital expenditures	Annual petroleum industry expenditures are the most direct indicator <sup>2</sup> of the level of investment in Manitoba's petroleum resources.	One of the primary roles of the department is to promote investment in Manitoba mineral and petroleum resources.	2002 Petroleum exploration and development capital expenditures:  \$65.6 million	Petroleum exploration and development capital expenditures:  2014: \$828.1 million  2015: \$500 million (forecast) *	Until the last two years, Petroleum exploration and development capital expenditures increased dramatically with high oil prices and the successful application of new horizontal well completion technology in Manitoba's tight oil reservoirs. Low oil prices will negatively affect investment this year.

**Priority:** Expand Manitoba's geological knowledge base.

<sup>1</sup> Mineral exploration expenditure statistics are public (compiled by Natural Resources Canada) unbiased, accurate, and available going back many years. They can be translated into jobs and tax revenue using information supplied by the Manitoba Bureau of Statistics. These numbers are a roll-up type indicator that reflects not only the impacts of government policy and programs, but also external factors. They are strongly influenced by commodity prices, projected worldwide supply and demand, and even weather conditions. Accordingly, such indicators cannot be viewed in isolation of worldwide trends or local developments. They are not influenced solely by government policy.

<sup>2</sup> Petroleum industry exploration and development capital expenditures are public (compiled Canadian Association of Petroleum Producers), unbiased, accurate, and available going back many years. They can be translated into jobs and tax revenue using information supplied by the Manitoba Bureau of Statistics. These numbers are a roll-up type indicator that reflects not only the impacts of government policy and programs, but also external factors. They are strongly influenced by commodity prices, projected worldwide supply and demand, and even weather. Accordingly, such indicators cannot be viewed in isolation of worldwide trends or local developments. They are not influenced solely by government policy.

What is being measured? (A)	How is it being measured (name of indicator)? (B)	Why is it important to measure this? (C)	What is the starting point? (baseline data and year) (D)	What is the most recent available data? (E)	What is the trend over time? (F)
The number of reports, maps and other geoscience publications produced each year.	The division tracks the number of publications produced each year.	One of the primary roles of the division is to provide authoritative geoscience information to support and facilitate mineral and petroleum exploration.	2012/13 publications: - 4 Geoscientific Reports - 4 Geoscientific Maps - 7 Preliminary Maps - Annual Report of Activities - 4 Open Files - 6 Data Repository Items - 1 Stratigraphic Map	2015/16 publications: - 3 Geoscientific Papers - 1 Geoscientific Report - 4 Geoscientific Maps - 4 Preliminary Maps - Annual Report of Activities - 1 Geoscience Educational Series item - 4 Manitoba Mineral Commodities brochures	The number and type of publications produced by the division has evolved to meet client needs.  The ability to produce publications is a function of staffing levels.
Website visitation and digital file download statistics.	The division tracks the number of visitors of our websites and the number of digital downloads from our websites.	One of the primary roles of the division is to provide authoritative geoscience information to support and facilitate mineral and petroleum exploration.	2012/13 Minerals website statistics (including petroleum): - Page views: 850,332  - Digital downloads: 93,816	2015/16 Minerals website statistics (including petroleum): - Page views: 790,205  - Digital downloads: 365,198	The number and type of websites and web products produced by the division has evolved to meet client needs.

**Priority:** Protect the environment and ensure rehabilitation of lands impacted by resource development.

Annual pit and quarry rehabilitation expenditures.	Number of projects completed by the department; amount of land rehabilitated; and annual expenditures.	A key determinant of the effectiveness of the department's Pits and Quarry Rehabilitation Program.	1993: No. of Projects – 75 Area – 360 hectares Expenditures - \$490,777	2015: No. of Projects – 84 Area – 366 hectares Expenditures – \$3,597,506.18	The number of hectares of land rehabilitated has increased from 360 in 1993 to a total of 10,051 by 2015.
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## ***The Public Interest Disclosure (Whistleblower Protection) Act***

*The Public Interest Disclosure (Whistleblower Protection) Act* came into effect in April 2007. This law gives employees a clear process for disclosing concerns about significant and serious matters (wrongdoing) in the Manitoba public service, and strengthens protection from reprisal. The Act builds on protections already in place under other statutes, as well as collective bargaining rights, policies, practices and processes in the Manitoba public service.

Wrongdoing under the Act may be: contravention of federal or provincial legislation; an act or omission that endangers public safety, public health or the environment; gross mismanagement; or, knowingly directing or counselling a person to commit a wrongdoing. The Act is not intended to deal with routine operational or administrative matters.

A disclosure made by an employee in good faith, in accordance with the Act, and with a reasonable belief that wrongdoing has been or is about to be committed is considered to be a disclosure under the Act, whether or not the subject matter constitutes wrongdoing. All disclosures receive careful and thorough review to determine if action is required under the Act, and must be reported in a department's annual report in accordance with Section 18 of the Act.

<b>Information Required Annually (per Section 18 of The Act)</b>	<b>Fiscal Year 2015 – 2016</b>
The number of disclosures received, and the number acted on and not acted on. <i>Subsection 18(2)(a)</i>	<b>NIL</b>
The number of investigations commenced as a result of a disclosure. <i>Subsection 18(2)(b)</i>	<b>NIL</b>
In the case of an investigation that results in a finding of wrongdoing, a description of the wrongdoing and any recommendations or corrective actions taken in relation to the wrongdoing, or the reasons why no corrective action was taken. <i>Subsection 18(2)(c)</i>	<b>NIL</b>



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## **APPENDIX A**

### **ASSOCIATED AGENCIES, BOARDS, COMMISSIONS and COUNCILS**

#### **MANITOBA GAMING CONTROL COMMISSION**

The Manitoba Gaming Control Commission is the primary regulatory body responsible to ensure that gaming activities are conducted with honesty, integrity and in the public interest. The Manitoba Gaming Control Commission tables its annual report under separate cover with the Manitoba Legislature.

#### **MINING BOARD**

The board arbitrates disputes with respect to accessing of minerals other than oil and gas. The board can hear and resolve dispute between holders of mineral dispositions and between holders and officers of the Departments. The board can also advise on matters relating to the pooling of mineral operations and to the designation of land as limited use land.

#### **SURFACE RIGHTS BOARD**

The Surface Rights Act establishes a Quasi-judicial board to administer and enforce the Surface Rights Act. Responsible for resolving land access and development disputes between oil and gas development proponents and surface rights holders. The Board also arbitrates and mediates disputes and establishes appropriate compensation for petroleum activities.