

**Manitoba
Mineral Resources**

**Ressources minières
Manitoba**

**Annual Report
2014 - 2015**

**Rapport annuel
2014 - 2015**



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

Your Honour:

I am pleased to present the Annual Report for the Department of Mineral Resources for the fiscal year ending March 31, 2015.

Yours sincerely,

Original signed by

Dave Chomiak
Minister

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

Madame la Lieutenant-Gouverneure,

J'ai l'honneur de vous présenter le rapport annuel du ministère des Ressources minières pour l'exercice se terminant le 31 mars 2015.

Je vous prie d'agréer, Madame la Lieutenant-Gouverneure, l'expression de mon profond respect.

Le ministre,

Document original signé par

Dave Chomiak



Mineral Resources

Deputy Minister

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Honourable Dave Chomiak
Minister of Mineral Resources
Room 317, Legislative Building
Winnipeg MB R3C 0V8

Dear Minister Chomiak:

I have the honour of presenting the Annual Report for the Department of Mineral Resources for the period April 1, 2014 to March 31, 2015.

Manitoba's mining and petroleum industries are experiencing continued growth and remain two of the province's key economic drivers. The mission of the department is to facilitate the sustainable development of the province's mineral and petroleum resources.

The department has undertaken many activities in collaboration with our partners and stakeholders. I have profiled below a few accomplishments that are a result of the activities:

- The mining and petroleum industries make up the second-largest primary resource industry of Manitoba's economy. The 2014 value of mining and petroleum production totalled \$3 billion.
- In 2014, capital expenditures on mining and petroleum development totalled an estimated \$1.4 billion, and the industries accounted for approximately 7% of provincial GDP and about 8.7% of total exports. Manitoba's mining and petroleum industries directly employed an average of 6,000 people.
- Two new mines near Snow Lake were officially opened in 2014. Hudbay's Reed and Lalor mines will produce copper, zinc and gold.
- The department doubled funding for the Mineral Exploration Assistance Program (MEAP), with \$3 million available in assistance this year to companies with Manitoba-based exploration projects. Companies can receive up to a 50 per cent rebate in exploration expenses. Funding for the Manitoba Prospectors Assistance Program (MPAP) was increased to \$125,000. This program provides grants to prospectors exploring on either their own properties or open Crown mineral land.
- The department introduced double work assessment credits for all eligible exploration expenses incurred in calendar years 2014 and 2015 to help companies retain their mineral dispositions during these challenging economic times.
- The Minister's Mining Advisory Council (MMAC), which brings leadership from Manitoba, First Nations and the minerals industry together, met three times in 2014/15. MMAC

members signed a Declaration of Priorities outlining the priority work required to advance First Nation participation in Manitoba's mineral resources sector.

- In 2014, Manitoba launched the process to sell the Manitoba Potash Corporation (MPC). Manitoba acquired 100% of MPC in 2013 and consolidated all of the Crown-controlled potash interests in the Russell – McAuley potash deposit. Manitoba has received Expressions of Interest to purchase MPC from a number of parties and those parties are continuing through the divestiture process, which could have the potential for the development of a potash mine in Manitoba.
- In 2014, there were 464 wells drilled in Manitoba, despite a decrease in oil prices from a high of \$107 per barrel in June 2014 to a low of \$47 per barrel in January 2015. Oil production totalled 17.8 million barrels and industry expenditures reached \$1 billion.
- The Petroleum Branch authorized eleven new enhanced oil recovery (EOR) projects during 2014/15. These new EOR projects are projected to increase recovery from the project areas by an estimated 6.27 million barrels.
- In 2014, the Manitoba Geological Survey's geoscience program continued to deliver a broad range of partnered and non-partnered projects to enhance and update the geoscience knowledge base of the province. New mapping focused on the Thompson Nickel belt and northern Superior province east of Thompson, where there is high mineral potential for a variety of commodities; in the exposed and buried portions of the Flin Flon belt, where activities were concentrated in the Reed Lake and Lalor mine areas near Snow Lake; in the Northern Indian Lake area, where evidence for Archean basement may promote diamond prospectivity; and in the Rice Lake and Bird River belts in southeastern Manitoba, with focus on base- and precious-metals.
- The Manitoba Geological Survey partnered with other governments and academia in two federal programs: 1) the final year of the federal-provincial Targeted Geoscience Initiative Phase 4 (TGI-4; 2010-2015) focused on government geoscience in support of deep exploration to ensure the continued viability of mining in established communities; and 2) Phase 2 of the Geo-mapping for Energy and Minerals program (GEM-2; 2014–2020) to evaluate the hydrocarbon potential of onshore sedimentary strata of the Hudson Bay Basin in Manitoba.
- Phanerozoic investigations in southwestern Manitoba focused on upper Cretaceous sedimentary; and the digital three-dimensional (3-D) model of Phanerozoic stratigraphy in Manitoba south of 55°N was advanced.
- Quaternary sediments in the Gillam area were mapped, in part to assess aggregate resource potential for current and future infrastructure development in the region.
- Mineral Resources and Conservation and Water Stewardship agreed to work together to ensure mineral potential assessment of areas proposed for protection and new protocols, guidelines and best practices for developments in parks and protected areas. The newly established Mineral Potential Assessment Committee (MPAC) has already collaborated, together with representatives from industry, on a new Protected Areas Strategy and areas such as the proposed Polar Bear Park and a proposed Seal River protected area.

- The Orphaned and Abandoned Mine Site Rehabilitation Program was introduced in 2009 with a dedicated budget to address the rehabilitation of orphan and abandoned mine sites. To date, over \$200 million has been spent, and 30 high hazard sites have been rehabilitated. Rehabilitation work at the Farley Mine site in Lynn Lake and at Elk Island Mine site at God's Lake has been substantially completed. Rehabilitation work continues at Ruttan and Sherridon as well as at the one remaining high hazard site.
- The 2014 Manitoba Mining and Minerals Convention attracted close to 1000 delegates. A landmark symposium on Hudbay's Lalor deposit followed the Convention.

The department will continue with implementing innovative initiatives and strategic planning that will contribute to Manitoba's economic growth.

Respectfully submitted,

Original signed by

Hugh Eliasson
Deputy Minister of
Mineral Resources



Ressources minières

Sous-ministre
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Monsieur Dave Chomiak
Ministre des Ressources minières
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Winnipeg (Manitoba) R3C 0V8

Monsieur le Ministre,

J'ai l'honneur de vous présenter le rapport annuel du ministère des Ressources minières pour la période du 1^{er} avril 2014 au 31 mars 2015.

Les industries minière et pétrolière du Manitoba continuent de croître et demeurent deux des moteurs économiques clés de la province. Le ministère a pour mission de faciliter le développement durable des ressources minières et pétrolières du Manitoba.

Le ministère a mené de nombreuses activités en collaboration avec ses partenaires et les groupes intéressés. J'ai décrit ci-dessous quelques réalisations qui résultent de ces activités.

- Les industries minière et pétrolière représentent conjointement le deuxième secteur des ressources primaires, en importance, de l'économie du Manitoba. La valeur de la production minière et pétrolière a atteint trois milliards de dollars en 2014.
- En 2014, les dépenses en immobilisations consacrées au développement minier et pétrolier ont atteint un total estimé à 1,4 milliard de dollars, et les produits de ces industries représentaient environ 7 % du PIB provincial et près de 8,7 % de l'ensemble des exportations. Les industries minière et pétrolière du Manitoba ont employé directement 6 000 personnes en moyenne.
- Deux nouvelles mines ont été officiellement ouvertes près de Snow Lake en 2014. Les mines Reed et Lalor de la Hudbay produiront du cuivre, du zinc et de l'or.
- Le ministère a doublé les fonds alloués au Programme d'aide à l'exploration minière, et a mis cette année trois millions de dollars d'aide financière à la disposition des sociétés qui réalisent des projets d'exploration au Manitoba. Les sociétés peuvent bénéficier d'un remboursement représentant jusqu'à 50 % de leurs dépenses d'exploration. Le financement affecté au Programme d'aide à la prospection du Manitoba a été augmenté à 125 000 \$. Ce programme offre des subventions aux prospecteurs qui se livrent à des activités d'exploration sur leurs propres terres ou sur un bien-fonds de minéraux domaniaux.

- Le ministère a mis en place des crédits d'évaluation des travaux d'exploration doublés pour toutes les dépenses d'exploration admissibles engagées au cours des années civiles 2014 et 2015 afin d'aider les sociétés d'exploration à conserver leurs aliénations minières dans le présent contexte économique difficile.
- Le conseil consultatif pour le secteur minier du premier ministre, qui permet au Manitoba, aux Premières Nations et à l'industrie minière de conjuguer leurs efforts de leadership, s'est réuni trois fois en 2014-2015. Les membres du conseil ont signé une déclaration des priorités qui énonce les travaux prioritaires requis pour accroître la participation des Premières Nations dans le secteur des ressources minières au Manitoba.
- En 2014, le Manitoba a entamé le processus de vente de la Manitoba Potash Corporation (MPC). La Province avait acquis 100 % de la MPC en 2013 et a regroupé tous les intérêts dans le gisement de potasse de la région de Russel-McAuley contrôlés par la Couronne. Plusieurs parties ont manifesté leur intérêt à l'égard de l'achat de la MPC et participent maintenant au processus de cession, ce qui permet d'envisager la mise en exploitation d'une usine de potasse au Manitoba.
- En 2014, il y avait 464 puits forés au Manitoba, malgré la diminution des prix du pétrole qui sont passés d'un maximum de 107 \$ le baril en juin 2014 à un minimum de 47 \$ le baril en janvier 2015. La production pétrolière a totalisé 17,8 millions de barils et les dépenses de l'industrie ont atteint un milliard de dollars.
- La Direction des ressources pétrolières a autorisé 11 nouvelles installations de récupération assistée du pétrole au cours de l'exercice 2014-2015. Ces nouvelles installations devraient permettre de récupérer quelque 6,27 millions de barils dans les régions visées.
- En 2014, le programme géoscientifique de la Direction des services géologiques du Manitoba a continué de mettre en œuvre, de façon indépendante ou en partenariat, un large éventail de projets visant à améliorer et à actualiser la base de connaissances en sciences de la Terre de la Province. De nouveaux travaux de cartographie ont été effectués dans la ceinture nickélifère de Thompson et au nord de la province du lac Supérieur, à l'est de Thompson, régions à fort potentiel minier pour toute une gamme de produits; dans les tronçons exposés et enfouis de la ceinture de Flin Flon, en particulier dans les secteurs du lac Reed et de la mine Lalor, près de Snow Lake; dans la région du lac Northern Indian, où les signes d'un socle archéen pourraient favoriser la prospection de diamant; et dans les ceintures du lac Rice et de la rivière Bird, dans le sud-est du Manitoba, où l'on met l'accent sur les métaux communs et précieux.
- La Direction des services géologiques s'est associée à d'autres administrations publiques ainsi qu'au milieu universitaire dans le cadre de deux projets fédéraux : 1) la dernière année de l'Initiative géoscientifique ciblée Phase 4 (IGC-4; 2010-2015), une initiative fédérale-provinciale axée sur l'activité géoscientifique publique de soutien à l'exploration en profondeur visant à garantir que l'exploration minière demeure viable dans les collectivités établies; et 2) la phase 2 du programme de géocartographie de l'énergie et des minéraux (GEM-2; 2014-2020) qui vise à évaluer le potentiel en hydrocarbures des roches sédimentaires terrestres du bassin de la baie d'Hudson au Manitoba.
- Des études géologiques du Phanérozoïque dans le sud-ouest du Manitoba ont porté sur des formations sédimentaires du Crétacé supérieur; et des progrès ont été accomplis en ce

qui concerne le modèle numérique tridimensionnel de stratigraphie du Phanérozoïque au sud du 55^e Nord au Manitoba.

- Les sédiments quaternaires dans la région de Gillam ont été cartographiés, en partie pour évaluer le potentiel de ressources en agrégats utilisables pour le développement d'infrastructure actuel et à venir dans la région.
- Le ministère des Ressources minières et le ministère de la Conservation et de la Gestion des ressources hydriques ont accepté de travailler ensemble pour évaluer le potentiel minier des régions que l'on propose de protéger et établir de nouveaux protocoles et de nouvelles lignes directrices et pratiques exemplaires en ce qui concerne l'aménagement dans les parcs et les régions protégées. Le nouveau Comité d'évaluation du potentiel minier ainsi que des représentants de l'industrie ont déjà apporté leur collaboration à l'égard d'une nouvelle Stratégie relative aux zones protégées et de projets tels que le parc de l'Ours polaire et la zone protégée de la rivière Seal.
- Le Programme de restauration des sites miniers abandonnés et orphelins du Manitoba a été mis sur pied en 2009 avec un budget consacré à la restauration de ce genre de sites. Jusqu'à présent, 200 millions de dollars ont été dépensés et on a procédé à la restauration de 30 sites à risques élevés. Les travaux de restauration du site minier Farley à Lynn Lake et du site de l'île Elk à God's Lake sont en grande partie terminés. Des travaux de restauration se poursuivent à Ruttan et à Sherridon ainsi qu'aux un site à risques élevés restants.
- Le Congrès manitobain sur les mines et les minéraux de 2014 a attiré près de 1 000 délégués. Le Congrès a été suivi d'un symposium majeur consacré au gisement de Lalor de la Hudbay.

Le ministère continuera de mettre en œuvre la planification stratégique et les initiatives innovatrices qui contribueront à la croissance économique du Manitoba.

Le sous-ministre des Ressources minières,

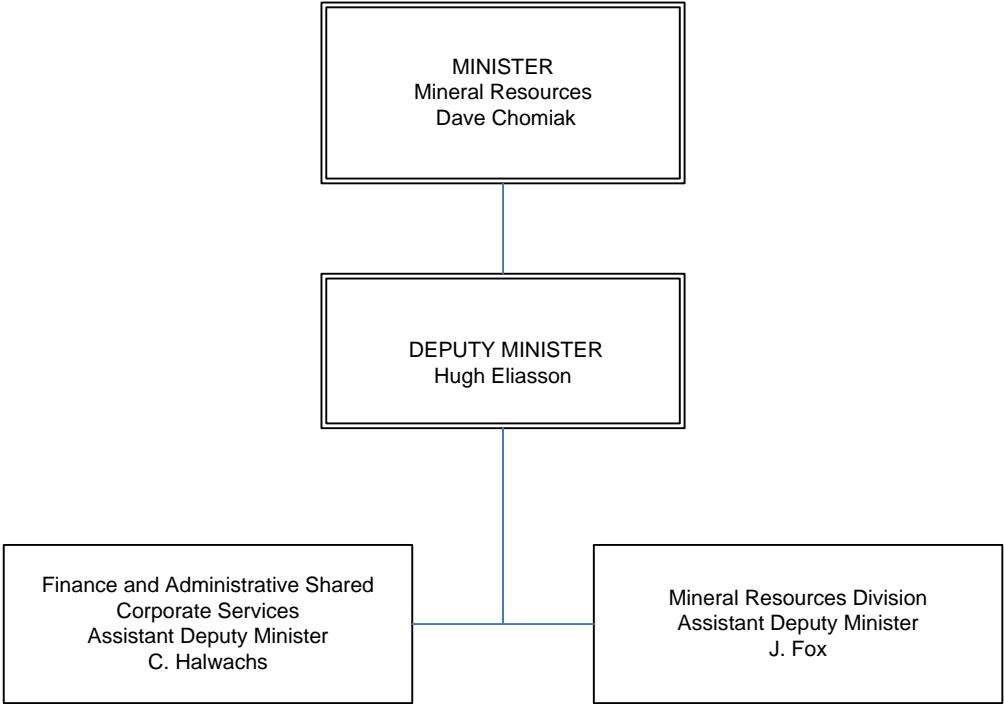
Document original signé par

Hugh Eliasson

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**MINERAL RESOURCES
ORGANIZATION CHART
As of March 31, 2015**



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:

The Liquor and Gaming Control Act	L 153
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
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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

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

ORGANIZATION

The department's 2014/2015 organization structure is illustrated in the Organization Chart, page i. The roles, responsibilities and staffing are outlined in the following information.

ROLE AND RESPONSIBILITIES

MINISTER

HONOURABLE DAVE CHOMIAK

DEPUTY MINISTER

HUGH ELIASSON

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.

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.

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 2014/15 \$(000)	Estimate 2014/15 FTE	Estimate 2014/15 \$(000)	Variance Over (Under)	Expl. No.
Minister's Salary	37	1.00	37	-	
Total Sub-Appropriation	37	1.00	37	-	

18-1(b) Executive Support

Expenditures by Sub-Appropriation	Actual 2014/15 \$(000)	Estimate 2014/15 FTE	Estimate 2014/15 \$(000)	Variance Over (Under)	Expl. No.
Total Salaries & Employee Benefits	356	5.00	485	(129)	
Total Other Expenditures	45		73	(28)	
Total Sub-Appropriation	401	5.00	558	(157)	

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 2014/15 \$(000)	Estimate 2014/15 FTE \$(000)	Variance Over (Under)	Expl. No.
Total Other Expenditures	150	150	-	
Total Sub-Appropriation	150	150	-	

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 Manitoba Geological Survey 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 2014, the Manitoba Geological Survey conducted a broad range of partnered and non-partnered geoscience projects to enhance and update the geoscience knowledge base of the province. Main geoscience priorities included:

- Precambrian mapping projects in the Thompson Nickel belt and northern Superior province east of Thompson, where there is high mineral potential for a variety of commodities; in the exposed and buried portions of the Flin Flon belt, where activities were concentrated in the Reed Lake and Lalor mine areas near Snow Lake; in the Northern Indian Lake area, where evidence for Archean basement may promote diamond prospectivity; and in the Rice Lake and Bird River belts in southeastern Manitoba, with focus on base- and precious-metals.
- Participation in the final year of the federal-provincial Targeted Geoscience Initiative Phase 4 (TGI-4) focused on government geoscience in support of deep exploration to ensure the continued viability of mining in established communities. Collaborative research under this initiative focused on auriferous base-metal systems in the Snow Lake area (Lalor deposit) and magmatic Ni-Cu-Cr systems in the Bird River belt (southeastern Manitoba).
- Evaluation of hydrocarbon potential of onshore sedimentary strata of the Hudson Bay Basin in Manitoba, through collaboration with the Geological Survey of Canada (GSC) under Phase 2 of the Geo-mapping for Energy and Minerals (GEM-2; 2014–2020) program.
- Advanced studies of shallow gas-bearing Cretaceous formations in southwestern Manitoba in partnership with Manitoba Hydro and the University of Calgary. Completion of the digital three-dimensional (3-D) model of Phanerozoic stratigraphy in Manitoba south of 55°N which contributes vital information to diverse fields of study, ranging from hydrogeology to petroleum potential.
- Potash deposits of the Devonian Prairie Evaporite and evaluation of rare-earth–element potential and bentonite studies in the upper Cretaceous sedimentary section for regional stratigraphic correlations.
- Support of drift exploration throughout the province. State-of-the art Quaternary geoscience studies focused on the Gillam area, in part to assess aggregate resource potential for current and future infrastructure development in the region.

In addition to providing geoscience knowledge, the MGS's geoscience programming promotes resource development, wise land management, 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 GSC as well as representatives from the universities of Manitoba and Brandon. Petroleum-related program

discussions are ongoing with industry contacts throughout the year, and at annual conferences in Calgary.

Roles of the Manitoba Geological Survey

In tune with the department of Mineral Resources' vision of "Realizing Manitoba's mineral and petroleum potential, and creating wealth for the benefit of all Manitobans", the primary and long-term role of the MGS is to update, improve and expand Manitoba's geological knowledge base. Geoscience information provided by the MGS supports and facilitates mineral and hydrocarbon exploration in the province. Moreover, geoscience activities conducted by the MGS directly address land-use and environmental issues facing Manitobans.

In today's global economy, a modern, accessible government geoscience knowledge base is widely recognized as one of the important determinants of a jurisdiction's investment climate for exploration and development. Geoscience attracts, stimulates and supports exploration investment by allowing industry to identify areas of favourable mineral potential. Government geoscience enhances the investment climate by reducing the cost and risk of private-sector exploration, and thereby not only improves returns on private investment but also increases revenues accruing to governments as royalties and taxes.

Contributing to the broad range and scope of MGS projects, partnered geoscience programming at the MGS is strongly aligned with government priorities and the needs of the following geoscience stakeholders to facilitate collaborations and promote resource sharing:

- **Industry:** 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 (typically also including university partners) and with Manitoba Hydro.
- **Universities:** The MGS has long been successful in fostering close collaboration with a number of Canadian universities, as well as universities elsewhere. By providing resources and in-kind support for university collaborations, the MGS promotes quality public geoscience research in priority areas of the province. In addition, university collaborations bring access to expertise and analytical techniques that are commonly outside the MGS's mandate or abilities.
- **Protected Areas Initiative:** Up-to-date geoscience information is required to guide decision-making processes regarding the establishment of new protected areas in sustainable balance with resource development across Manitoba.
- **Land-Use Planning:** Many First Nation communities are in the process of preparing traditional land-use documents that will shape development within their 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.

Collaborations and partnerships

The MGS is engaged in many partnered initiatives, including contributions from the Federal Government, the mineral and energy industries, and several universities across Canada and beyond (currently United States, Ireland and New Zealand). These partnerships provide access to expertise and technologies that enhance the ability of the MGS to provide a state-of-the-art geoscience database for Manitoba. In addition, they facilitate the training of future geoscience professionals, which in 2014 included one post-doctoral researcher, four Ph.D. candidates, seven M.Sc. candidates and three B.Sc. (Honours) thesis projects.

Collaborative programming with the Geological Survey of Canada

The federal Geo-mapping for Energy and Minerals (GEM) program is designed to provide geoscience information on Canada's northern regions, to facilitate informed investment decisions and to foster discovery and development of new energy and mineral resources. The program collaborators include the Geological Survey of Canada (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; 2008–2013), the MGS's role in the new Hudson–Ungava Project of the GEM-2 program (2014–2020) is to integrate the Manitoba onshore Paleozoic succession into a regional framework and to advance assessment of its hydrocarbon source-

rock potential. Results from this project directly feed into long-term resource development plans and strategies for Manitoba's far northeastern region. In 2014 the MGS with Federal and university partners conducted core sampling and reconnaissance mapping of the Churchill River and Churchill coastal regions.

Quaternary geology work in northeastern Manitoba (Gillam region) also benefits from a GEM 2 multi-year grant. This grant supports a Post-doctoral and a MSc. student, along with the MGS, in research to determine the effects of multiple glaciations on till deposition in northern Manitoba, in a zone of transition from a multi-till to a single till stratigraphy.

The Targeted Geoscience Initiative Phase 4 (TGI-4) is a five-year (2010–2015), federally funded program that is co-planned and jointly delivered with the provinces and territories, which contribute funding for activities within their jurisdictions under the program. The TGI-4, which focused on deep exploration and exploration-methods development, provides industry with the next generation of geoscience knowledge and innovative techniques, with the ultimate goal of more effective targeting of deeply buried mineral deposits. Projects conducted under the TGI-4 in Manitoba and led by the GSC include alteration and metallogenic studies of the Lalor volcanogenic massive-sulphide (VMS) deposit near Snow Lake, a 3-D seismic survey and ambient-noise imaging of the Lalor deposit, and studies of mafic–ultramafic intrusions and Ni-Cu-Cr-Pt-Pd mineralization in the Bird River belt.

Activities and results for 2014/15 are listed below as they pertain to Manitoba Geological Survey Program Objectives.

1. Increasing Manitoba's minerals geoscience knowledge base

Superior Province

In 2014, the MGS continued bedrock mapping in the Archean Pikwitonei domain, situated at the northwestern margin of the Superior province east of the Thompson Nickel belt. Projects at Armstrong and Partridge Crop lakes provide new insight into the nature of variably retrogressed granulite-facies rocks and their polyphase tectonothermal evolution. Of particular interest are significant volumes of previously unrecognized, or underexplored, high-grade supracrustal rocks, similar to more readily recognizable sequences in adjacent lower grade domains. At Partridge Crop Lake, Archean fabrics and granulite-facies metamorphic assemblages are progressively overprinted by Paleoproterozoic fabrics formed under amphibolite-facies conditions toward the west (Thompson Nickel belt). This transition provides an excellent opportunity to evaluate the effects and extent of the Paleoproterozoic overprint, and to compare rocks common to both the Thompson Nickel belt and the Pikwitonei domain. Ultramafic rocks, interpreted to form part of an Archean volcanic assemblage at both Partridge Crop and Armstrong lakes, are enriched in Cr, Ni and Cu, suggesting potential for magmatic Ni–Cu–platinum-group-element (PGE) mineralization unrelated to the Paleoproterozoic ultramafic intrusions that host magmatic Ni-Cu deposits in the adjacent Thompson Nickel belt.

In southeastern Manitoba, geological mapping was completed in the Mayville and Cat Lake–Euclid Lake areas along the northern arm of the Bird River belt. The project utilizes mineral chemistry of chromite as a geochemically robust petrogenetic indicator to discriminate ca. 2740 Ma mafic–ultramafic intrusions that may be related to the 'Ring of Fire' Ni-Cu-PGE-Cr deposits in northern Ontario.

A new project to systematically characterize the most abundant but commonly least studied rocks in the Precambrian shield — granitoids — was initiated with mapping and sampling of a transect across the western Superior province in southeastern Manitoba. The aim is to identify and catalogue the various types of granitoid rocks 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 mineralization types.

Also in southeastern Manitoba, structural and stratigraphic mapping of shear-related, vein-hosted Au mineralization in the vicinity of the Ross River pluton, Rice Lake belt, was completed in summer 2014 by a University of Waterloo Ph.D. candidate with the support of the MGS. This detailed mapping revealed several generations of folds and shear zones associated with Au-bearing quartz veins identified on the basis of deformation styles and overprinting relations, providing a framework for intrusion-hosted Au exploration in the belt.

Trans-Hudson orogen

In the Flin Flon–Snow Lake belt, a number of geoscience projects took place around Manitoba's newest mines at Lalor and Reed lakes. Inland mapping west and northwest of Reed Lake resulted in the important new finding that the West Reed–North Star shear zone is flanked on both sides by volcanic-arc terranes, and that a boundary between volcanic rocks of arc and oceanic affinities must be situated farther west than previously assumed, which consequently suggests that the area west and north of Reed Lake may have unrecognized potential for VMS and/or gold mineralization.

The GSC and university collaborators completed field studies at the Lalor auriferous Volcanogenic Massive Sulfide (VMS) deposit near Snow Lake as part of the national TGI-4 program. Whole-rock oxygen-isotope analyses were utilized to map the distribution of high-temperature alteration in the laterally extensive, intensely altered footwall of the Lalor deposit. The study demonstrates that oxygen-isotope mapping can be successfully used to vector toward the high-temperature/alteration reaction zones commonly associated with VMS systems, and can thus be a particularly useful exploration tool in complexly deformed and strongly metamorphosed rocks.

Select drillcore from the Gurney mine shear zone in the Brunne Lake area of the Flin Flon belt was examined in detail by a M.Sc. candidate at University College Cork, Ireland in collaboration with the MGS. The aim of the project was to establish a structural framework for shear-hosted Au mineralization through detailed documentation of the relationship between mineralized veins, alteration and deformation fabrics. The results from this study provide an improved understanding of the controls on Au mineralization and will help guide further exploration along the main and subsidiary shear zones.

A geological scoping study of the Sherridon structure at the northern margin of the Flin Flon belt was conducted to evaluate access, extent and quality of outcrop in areas affected by a 2008 forest fire. Despite rapid vegetation re-growth and locally heavy deadfall, exposures in burned areas are generally excellent and warrant new mapping accompanied by extensive sampling for litho-geochemistry and thin-section petrography to provide additional detail to existing maps. Further work may focus largely on alteration features associated with VMS mineralization to assist exploration in this historical base-metal camp.

Geological mapping along the Churchill River at Northern Indian Lake focused on Paleoproterozoic supracrustal rocks of the Southern Indian domain and the adjacent plutonic rocks of the Chipewyan domain. Geochronological and isotopic analyses of samples from Northern Indian Lake were used to further delineate the extent of crustal contamination by older basement, as was documented at Southern Indian Lake. Archean basement windows at Southern Indian Lake, as well as isotopic evidence of buried Archean microcontinental fragments, possibly related to the larger Sask craton, extending beneath part of the Chipewyan batholith, may indicate a favourable foundation for diamondiferous lithosphere in the region, with important implications for diamond exploration.

MGS geologists were also involved in two Collaborative Research and Developments (CRD) projects: 'Volcanological, structural and metamorphic reconstructions of the Snow Lake VMS district', led by Laurentian University (Sudbury ON) and Mount Royal College (Calgary AB) geoscientists, and supported by HudBay Minerals Inc. This integrated project aims to provide new constraints on the metallogeny of juvenile-arc volcanic sequences within the western Trans-Hudson orogen. Under a second CRD project by Laurentian University, supported by QMX Gold Corp., a Ph.D. candidate conducted final field studies on the lithostratigraphy and structures of the McLeod Road–Birch Lake thrust panel at Snow Lake. The MGS provided in-kind and logistical support for both of these initiatives.

Southwestern Manitoba

The Devonian Prairie Evaporite in Manitoba contains thick sequences of salt with interbedded potash deposits. The potash deposits occur east of the Saskatchewan boundary, from around the town of Russell, south to the international border, and have been explored intermittently since the 1960's. The MGS has compiled historical exploration data for these deposits and updated geological mapping for this formation to assist in future potash exploration efforts.

The Cretaceous Gammon Ferruginous Member of the Pierre Shale has been intersected in thousands of oil wells in southwestern Manitoba and locally contains elevated concentrations of rare-earth elements (REE), as indicated by outcrop samples collected in 2012 and 2013. However, follow-up investigations in 2014 indicated that the REE mineralization may be associated with bone beds having high biological apatite content. Consequently, systematic testing of Cretaceous stratigraphic units, using portable X-ray fluorescence (XRF) units to detect anomalous concentrations of REE, might be a useful tool to find bone beds, which might yield significant fossil finds of marine reptiles, such as the mosasaurs and plesiosaurs on 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. In return for the MGS's participation, all geochemistry results from the samples will be shared with the MGS.

Quaternary

The key objective of the Quaternary geoscience program is 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 drift-covered northern regions requires 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 plays an important role in infrastructure development. Development of the province's sand and gravel aggregate inventory is critical for the construction industry and directly supports Manitoba's \$5.5 billion five-year plan to build core infrastructure.

In the summer of 2014, Quaternary geological mapping including detailed stratigraphic studies, sampling of till and measurements of ice-flow indicators focused on a 7,380 km² tract of land in the Gillam area. The interpretation of dispersal patterns by industry has been hindered by a lack of surficial geology knowledge of this region, compounded by the thick interglacial, glacial and postglacial stratigraphy. This ongoing study will re-classify the till stratigraphy, accounting for changes up-section in geochemistry, clast lithology and ice-flow direction. The glacial and post-glacial history of the area is also being reconstructed, with efforts to delimit inundation by both glacial Lake Agassiz and the Tyrrell Sea. Results from the 2014 field season and ongoing analytical studies will provide new and better guidelines to drift exploration in this and similar regions with complex drift cover.

Also in 2014, reconnaissance Quaternary mapping and sampling were conducted along a portion of the Churchill River in northeastern Manitoba. This data contributes to the understanding of ongoing stratigraphic and till composition studies in the north, with the aim of linking various portions of the Hudson Bay Lowlands.

2. Increasing Manitoba's hydrocarbon geoscience knowledge base

The Shallow Unconventional Gas Project is a multi-year investigation of the gas potential of the Late Cretaceous shale strata of southwestern Manitoba. This sequence of rocks was poorly understood prior to this project. The stratigraphic, geochemical and mineralogical information that has been gathered to date has significantly improved our Geoscientific knowledge base. This fundamental information can be used by industry to identify units in the Cretaceous shale sequences that have gas potential. With consistent gas shows, high organic content, and predictable porous units, the Favel and Carlile formations are identified as having the best gas potential, with some potential in the Gammon Ferruginous Member of the Pierre Shale. In 2014, outcrop mapping was conducted to find potential gas reservoir units, and samples were collected for multi-element inorganic and organic geochemistry, and

mineralogical analysis. Some research initiatives of this project, including calculating a gas resource estimate, are being conducted in partnership with the University of Calgary.

The aim of the GEM 2: Hudson Bay – Ungava Project (2013-2020) is to further enhance our understanding of the sedimentological framework and structural complexities of this part of the Hudson Bay Basin to help promote hydrocarbon exploration in this underexplored frontier region. Work in 2014 focused on highly detailed stratigraphic drillcore sampling, including collecting and submitting geochemical and paleontological samples for analysis, and reconnaissance mapping of the Lower Paleozoic carbonate rocks along the Churchill River and Churchill coastal region.

The Devonian Duperow Formation project is in its third and final year, and is done in partnership with the University of Manitoba, with special funding from ARC Resources Ltd. from Calgary, Alberta. The objective of this project is to investigate the stratigraphy, sedimentology and petroleum potential of the Duperow Formation in southwestern Manitoba. This formation was not well understood in Manitoba prior to this study, thus the new information provides a framework to formalize the stratigraphic nomenclature for Manitoba, but most importantly new information on the petroleum potential of this formation previously unknown. The Duperow Formation occurs deeper than any currently producing formation in Manitoba and therefore is rarely drilled or cored; the Duperow Formation, however, is stratigraphically correlative to the lucrative oil producing Leduc Reefs in Alberta and it also produces oil in Saskatchewan and North Dakota. Results to date on this project indicate that the Duperow has good potential as a conventional oil reservoir, but also shows promise as a self-sourcing unconventional oil target in areas where it is at its deepest in southwestern Manitoba. This new geoscientific information will assist industry with exploration strategies to test the true potential of this formation.

The MGS provides year-round technical expertise to energy clients by responding to inquiries made directly to the geologist gained through contacts at meetings and conferences about geoscientific issues, as they pertain to the exploration and development of oil and gas in Manitoba. The MGS participates regularly in regional technical groups to discuss current energy-related issues and helps to 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 such as the proposed Polar Bear Park and a proposed Seal River protected area. 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 2014 the Manitoba Geological Survey reviewed protected areas proposals including expansions of Chitek Lake and Little Limestone Lake, land-use category boundary changes for the Hecla/Grindstone provincial park, amendment of the Whiteshell provincial park boundary and land-use category boundaries, protected areas in conjunction with Inuit land claims in northern Manitoba, the Polar Bear provincial park study area, the Manitoba Parks Strategy, and peatland and caribou draft strategies.

4. Evaluation of environmental impacts and geohazards

Manitoba is continuing to move toward the completion of a three-dimensional (3-D) geological model of the Phanerozoic succession. The model is based upon a series of 134 province-wide 2-D cross-sections between 49°N and 55°N latitudes. The sections are 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. Recent, ongoing changes in the interpreted Phanerozoic unit edges necessitate

a re-thinking and re-evaluation of these 2-D cross-sections which form the basis of the model. Once the unit edge modifications are complete, the 2-D sections will be re-interpreted, then imported, unit by unit, into our 3-D modelling software. Much time and effort will go into preparing the sections and accompanying data for this purpose. 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 has been available on the MGS GIS Map Gallery website since November 2008 and now contains information on 2718 mineral deposits and occurrences. Included in the database is all of the information contained in the reports of the Mineral Deposit Series. Work continued on entry of new data to incorporate recently released work contained in non-confidential assessment files, as well as 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 will be added to the GIS Map Gallery in early November to correspond with the Manitoba Mining and Minerals Convention.

Manitoba Mineral Resources completed redesigning the Map Gallery Internet mapping tool and brought it live on the internet in the fall of 2012. Geoscience Information Services continued to devote resources supporting this new Map Gallery application on the departmental website with additional and updated datasets and continuing refinements of the user interface. One of the key features of the new presentation is the inclusion of the main feature layers of the Mines Branch Map Gallery presentation in the 'Geology of Manitoba' map. This combination of geoscience data and mineral and land tenure information allows the user access to more research information in a single map presentation than in the previous Map Gallery.

Geoscience Information Services continued support for 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 286 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.

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 MGS community liaison program initiates, develops and conducts relationship-building projects to facilitate geological land-use information exchange with First Nation and other mostly remote

communities. The program developed a relationship-building engagement process to proactively bring people together and help improve respectful communication between the Manitoba Mineral Resources and First Nation communities. The reconciling liaison approach encourages mutual sharing of community land-use perspectives and acknowledges the equal value of Indigenous knowledge, community role-models and postsecondary education.

During the program MGS geologists demonstrate how to perform geological field mapping (mineral and rock identification, record keeping, rock sampling, safety and emergency equipment, etc.). Program participants gain a greater awareness of potential careers and jobs available in the mineral resource industry. With input from each community a poster is created that describes the program, displays local geological features and showcases each First Nations' interests. Throughout the liaison program, a staff geologist resides in the community and becomes a contact person with whom community members are familiar with. By proactively developing effective lines of communication, the MGS promotes community participation in the mineral resource industry and minimizes potential impacts to constitutionally protected Treaty and Aboriginal Rights under Section 35.

In 2014, the MGS and the God's Lake First Nation participated in planning and executing the geological mapping of part of their traditional land, located south of Gods Lake Narrows. The program, held over a period of 16 days, engaged Aboriginal youth, integrated Elders traditional knowledge and included the perspectives of land-use managers. When mineral-exploration or mineral-extraction activities occur in their traditional land-use areas, informed First Nation communities are in a better position to proactively participate in resolving potential impacts to hunting, fishing, culturally sacred spaces and the environment, and to become involved in the development of economic opportunities derived from the mineral resources sector.

The MGS liaison program collaborated with the following departments and educational institutions:

- With the Natural Resource Institute, University of Manitoba in the development of a new three-day geological-ecological-cultural camp located on Linklater Island in Island Lake.
- With Frontier School Division, providing geological science and land-use information to students attending Disbrowe School through the 'scientist in the school' program.
- With First Nations in Wasagamack, Bunibonabee, Disbrowe Island and Gods Lake, by providing technical assistance and explaining geological information. Information shared by community members and representatives of the minerals industry assists government and community leaders in finding solutions when mineral potential may impact land-use planning.
- With the Boreal Forest Nature Centre in the Pine Falls area by conducting geological field trips in collaboration with several Hutterite communities of southwestern Manitoba.
- With the MGS outreach program at Career Days in Thompson with an information booth.

7. Providing minerals industry information through outreach activities

In 2014-15, the MGS published the annual Report of Activities, two Open File reports, nine Geoscientific Maps, six Preliminary Maps and four Data Repository Items. Most of the publications continue to be offered in hard copy and on CD-ROM or DVD for purchase through Publication Sales, and in electronic format for free download from the Mineral Resources website. Technical oral and poster presentations were given at various conferences, which targeted working professionals in academia, industry and business sectors.

Building on the success of the Manitoba Rocks! website initiative, ManitobaRocks.info, (launched in 2013), the MGS 'Manitoba Rocks!' mineral-education program in 2014-15 developed a mineral card collection and 'Dig It!' card game for distribution to schools and students around the province, beginning in September 2015. The custom card collection involved geosciences input from MGS senior geologists and features over 48 minerals and rocks of Manitoba. In 2014, Manitoba Rocks! again offered fun free activities and school tours at the Manitoba Mining and Minerals Convention, reaching 300 Grades 4-7 students with 'Rock Doc' presentations, gold panning, professional rock and mineral displays, an end use minerals display, mineral and fossil collecting, gold-panning at Children's Hospital, and partnering with the Mineral Society of Manitoba, Manitoba Prospectors and Developers Association, the Canadian Fossil Discovery Centre, and Mining Matters (Professional Developers Association of Canada).

The Geolocalities/Roadside Geology of Manitoba website was launched by the MGS on YouTube™ in 2012. The project, which involves the compilation of a repository from video, still photography and detailed geological descriptions of Manitoba outcrops and landforms, continued in 2014. The main objective is to provide a legacy of unique, digitally-documented, locality-specific Manitoba geological and geomorphological localities (Geolocalities) that are generally road accessible.

MGS geologists and Client Services staff contributed Manitoba Rocks! awareness and shared information products through geologist's visits to schools, in-class presentations and a career day with Frontier School Division in Norway House, and a career day event with University College of the North in Thompson, reaching some 1,400 students. MGS Outreach also proposed and initiated an important new geoscience project in partnership with Mining Matters and will participate in the development of a Guides-Scouts national geoscience challenge to help introduce the importance and value of Canadian mineral resources to more young people across the country. The new geoscience challenge project is expected to launch in 2016-17.

8. 'ExpLOre Manitoba' – the 2014 Manitoba Mining and Minerals Convention

The annual Manitoba Mining and Minerals Convention was held November 19 to 21, 2014 at the Winnipeg Convention Centre. Despite a continued slow pace in the mineral exploration and mining sectors, the convention attracted close to 1,000 delegates from across Manitoba, Canada and beyond! The convention opened with a well-attended half-day technical short course on the prolific 'Rice Lake and Bird River mineral belts' paralleled by a work shop on 'Business and Benefits'. The following two-day technical program contained:

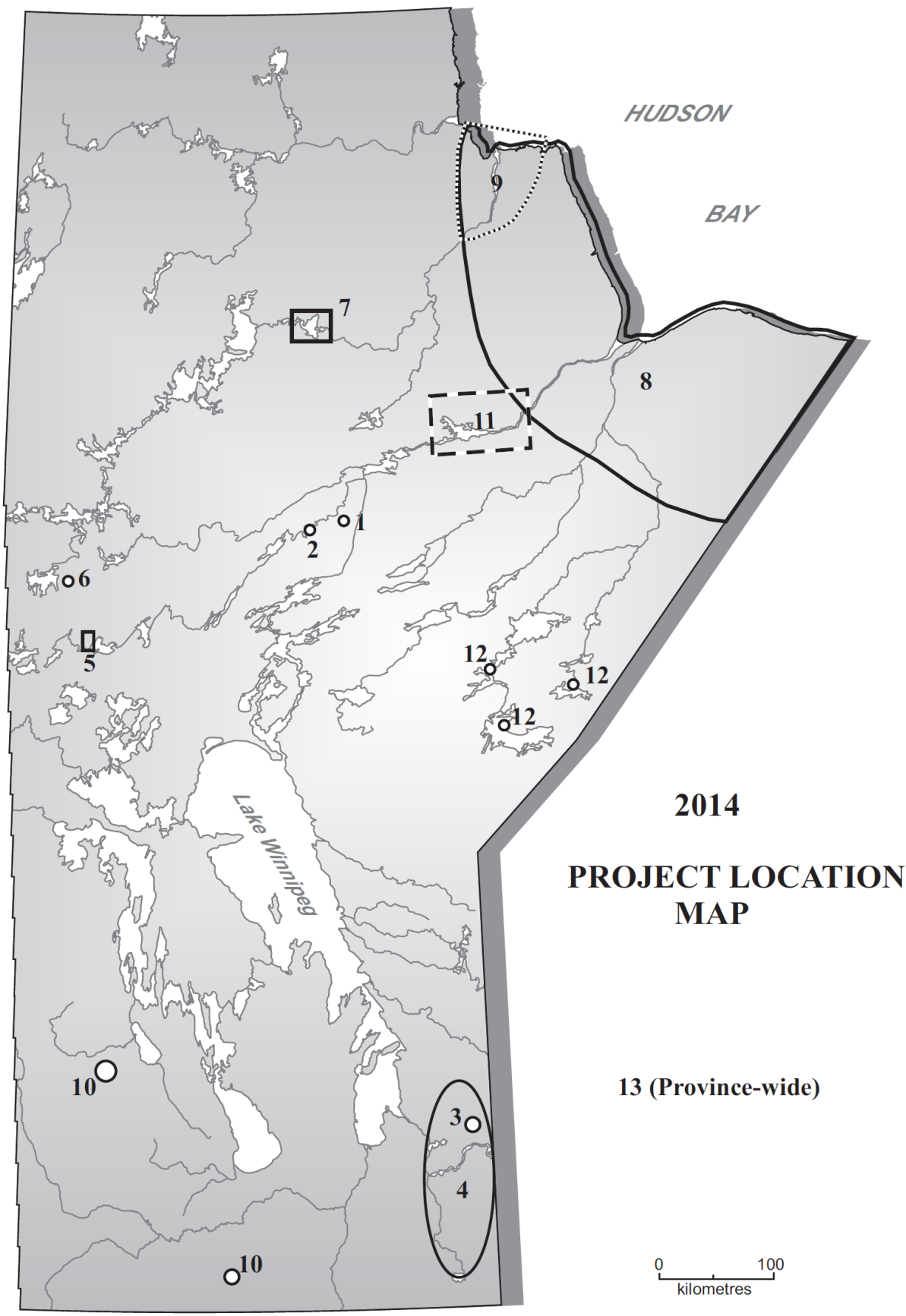
- an 'Opening Session' with keynote remarks by Minister Dave Chomiak, Rod Thomas (President of the Prospectors and Developers Association of Canada), Chief Ron Evans (Norway House Cree Nation), Lovro Paulic (President of the Mining Association of Manitoba Inc.), as well as overviews of the 2014 Manitoba Geological Survey program and minerals industry in Manitoba;
- 'Manitoba Geoscience, Exploration and Mining Highlights' presented by industry executives and MGS staff;
- 'Northern Opportunities' showcasing projects, activities and sector-specific approaches benefitting northern communities; and
- 'Manitoba Geoscience Collaborations' presented by MGS staff, the GSC and academia.

2014 marked a special year in that the Manitoba Mining and Minerals Convention was followed by a symposium on 'Exploration for deep VMS ore bodies: the Hudbay Lalor case study'. Hudbay Minerals Inc. in co-operation with the MGS organized this one-day symposium that consisted of 18 presentations by leading Canadian and international geophysical service providers as well as staff from Hudbay and other prominent Canadian geoscientists who specialize in understanding VMS deposits and exploration. This truly landmark event was attended by over 80 delegates.

Map Legend

Location of Projects 2014/2015

- 1 Preliminary results from bedrock mapping in the Armstrong Lake area, Pikwitonei granulite domain, east-central Manitoba
- 2 Preliminary results from bedrock mapping in the Partridge Crop Lake area, eastern margin of the Thompson nickel belt, east-central Manitoba
- 3 Mineral chemistry of chromite in the Mayville intrusion: evidence for petrogenesis and linkage to the Bird River sill in the Neoproterozoic Bird River belt, southeastern Manitoba
- 4 Granitoid rocks in southeastern Manitoba: preliminary results of reconnaissance mapping and sampling
- 5 Update on the geology and geochemistry of the west Reed Lake area, Flin Flon belt, west-central Manitoba
- 6 Geological scoping study of the Sherridon structure, northern margin of the Flin Flon belt, west-central Manitoba
- 7 Bedrock geology of the Northern Indian Lake area, northern Manitoba
- 8 Introduction to the GEM-2 Hudson-Ungava Project, Hudson Bay Lowland, northeastern Manitoba
- 9 Reconnaissance field mapping of Paleozoic rocks along the Churchill River and Churchill coastal area, northeastern Manitoba
- 10 Update on the rare-earth element potential of the Gammon Ferruginous Member of the Upper Cretaceous Pierre Shale in southwestern Manitoba
- 11 Preliminary Quaternary geology in the Gillam area, northeastern Manitoba
- 12 Preliminary liaison and a collaborative community-based geological mapping project of the Munroe Lake greenstone belt at Gods Lake, east-central Manitoba
- 13 Manitoba Rocks!: mineral education outreach breaking new ground



18-2(a) Manitoba Geological Survey

Expenditures by Sub-Appropriation	Actual 2014/15 \$(000)	Estimate 2014/15 FTE	Estimate 2014/15 \$(000)	Variance Over (Under)	Expl. No.
Total Salaries & Employee Benefits	3,504	54.10	4,003	(499)	
Total Other Expenditures	3,022		2,400	622	
Total Sub-Appropriation	6,526	54.10	6,403	123	

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 2014/15 were \$18.5 million. In 2014, 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 2015/16 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 2014/15 was \$4,629,584.04 and the rehabilitation levy collected on the removal of aggregate material was \$2,842,887.15 for the same period.

During the calendar year 2014, 192 mining claims, 1 mineral lease and 17 mineral exploration licenses were recorded covering a total of 168,505 hectares. Concurrently, 22 quarry mineral leases, 870 casual quarry permits and 772 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 2014 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 include allowing clients to submit and manage their applications in quarrying at the convenience of their own computers.

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 2014/2015:

Number of Work Permit Applications Processed	53
Number of First Nations / Aboriginal communities consulted	15
Average number of days between receiving a Work Permit Application and providing Conservation with notice to issue the permit	12
Applications withdrawn by Company/Individual	0

Table 1: MINERAL DISPOSITIONS ISSUED EACH CALENDAR YEAR 2011 – 2014

	2011		2012		2013		2014	
	No.	Hectares	No.	Hectares			No.	Hectares
Mining								
Mining Claims	410	85,952	493	106,668	456	94,479	192	36,811
Mineral Exploration Licences	20	253,237	11	105,435	20	178,709	17	131,655
Mineral Leases	-	-	3	1,637	-	-	1	39
Quarrying								
Leases	95	6,832	48	2,090	142	7,126	22	523.22
Exploration Permits	15	3,480	-	-	-	-	-	-
Casual Quarry Permits	889	-	933	-	864	-	870	-
Peat*								
Leases	32	5,037	-	-	-	-	-	-
Exploration Permits	-	-	-	-	-	-	-	-
Coal – Exploration Permits	13	3264	-	-	-	-	-	-
Private Aggregate Registration Certificates	786	-	796	-	752	-	772	-

Table 2: MINERAL DISPOSITIONS IN GOOD STANDING AT CALENDAR YEAR END 2011 - 2014

	2011		2012		2013		2014	
	No.	Hectares	No.	Hectares	No.	Hectares	No.	Hectares
Mining								
Mining Claims	5,783	905,218	5,926	932,434	5,536	897,862	5,011	740,887
Order-In-Council Leases	3,653	120,562	3,653	120,562	3,653	120,562	3,653	120,562
Mineral Exploration Licenses	55	797,545	50	791,740	45	541,363	33	413,537
Mineral leases	252	23,532	255	25,169	51	16,642	50	16,443
Potash								
Leases	1	5,787	1	5,787	1	5,787	1	5,787
Exploration Permits	3	127,431	-	-	-	-	-	-
Quarrying								
Leases	1,154	66,130	1,148	68,148	1,249	73,896	1,212	61,654
Exploration Permits	32	59,868	-	-	-	37,618	-	1,067
Peat*								
Leases	202	31,977	-	-	-	-	191	30,060
Exploration Permits	-	-	-	-	-	-	-	-
Coal – Exploration Permits	30	59,660	-	-	-	-	-	4,514
TOTAL	11,165	2,197,710	11,033	1,943,840	10,534	1,693,730	10,151	1,394,511

*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 2014/15 approximately \$2.8 million was contributed to this Quarry Rehabilitation Fund, while 75 rehabilitation projects were completed at a cost of \$2.5 million. The total number of projects completed since 1992 comprise approximately 9,683 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 2014/15 were \$18.5 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 2014/15 with the following work carried out:

- Sherridon Tailings – Flooding of Camp Lake was completed in 2013. In the spring of 2014 lime was placed on the ice to raise the pH and help stabilize Camp Lake. As a result of additional acid loading from external sources, Camp Lake pH did not remain neutral following spring ice melt. Follow up site investigation work was completed by the Engineering Consultant during the summer of 2014. As a result of this work and recommendation by the Consultant further treatment of placing lime on the ice in 2015 took place. Camp Lake basin is full and water discharge into Cold Lake is planned for spring 2016 when water sample analysis confirm water quality of Camp Lake meets federal metal mines effluent regulations. Planning is also underway for de-mobilization of the treatment plant and completion of final construction activities.
- 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 substantially complete and commissioned in July 2014. Capping of the Tailings Management Area commenced in 2013 and work is ongoing with scheduled completion in 2016.
- Snow Lake – An agreement was signed between Manitoba and BacTech to look at the feasibility of reprocessing tailings to treat arsenic and recover gold using the company's proprietary bioleaching technology. BachTech was granted an extension to December 2014 to prove the process. This agreement has expired with no further extension.

- Elk Island - The remediation work at the Elk Island Air Strip was substantially complete during 2013/14. This work was completed by God's Lake First Nation (GLFN) and Arnason Industries joint venture. Remaining contract deficiencies will be completed in 2015.
- Fox Lake - The contract for engineering services and project management was awarded. 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, 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.

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

	2012	2013	2014
Reviews of new Development Plans and by-law amendments to ensure that mineral resources are not sterilized	137	126	46
Municipal Boundary reviews including annexation or expansion	2	4	3
Review of new zoning by-laws and amendments	144	176	187
Review of closure of roads and public reserves	45	43	54
Review of conditional use applications for the establishment of mining operations	17	13	14
Review of proposed live stock operations	2	1	0
Provide land planning services to 46 planning districts and 144 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 1378 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 Crown mineral 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. Twenty-five selection sites were ratified covering a total of 3,642 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 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 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. These reports are indexed, microfilmed and scanned. Clients can view reports in our 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. No projects were reviewed during the past year.

	2011	2012	2013	2014
Reports of work added to assessment library	126	131	95	57
Reports transferred to non-confidential status	119	117	136	110
PRIVATE SECTOR:				
Visits	15	9	4	7
Reports examined	58	104	64	21
Reports duplicated for clients	36	25	50	5
CD'S duplicated for clients	0	1	1	0
DEPARTMENTAL STAFF:				
Reports examined	2	2	1	1

Note: The decline in office visits and other activities in the private sector are due to the fact that all information is now available online.

18-2(b) Mines

Expenditures by Sub-Appropriation	Actual	Estimate		Variance Over (Under)	Expl. No.
	2014/15 \$(000)	FTE	2014/15 \$(000)		
Total Salaries and Employee Benefits	1,193	25.50	1,374	(181)	
Total Other Expenditures	6,169		658	5,511	1
Total Sub-Appropriation	7,362	25.50	2,032	5,330	

1. Environmental Liabilities

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 2014, Manitoba produced 2,831,591 cubic metres or 17.8 million barrels of oil having a total value of approximately \$1.63 billion in spite of falling prices during the close of 2014. 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 US. In 2014, an estimated 882,843.3 m³ (5,555,968 barrels) or 31.2% of Manitoba's oil production was transported by rail to locations in Eastern Canada and the US.

In 2014, the petroleum industry spent \$1 billion in Manitoba to explore for and develop Manitoba's oil and gas resources, drilling 464 new wells and operating 5740 producing and support wells.

In 2014, the Daly-Sinclair, Virden, Manson, Birdtail, Pierson and Waskada Fields continued to expand. As of December 31, 2014, Manitoba's biggest field, the Daly Sinclair field had 2172 producing oil wells and contributed 45% of the total provincial production. Approximately 21% of new wells were drilled outside of existing oil fields.

The Waskada field experienced continued drilling during 2014. Originally developed in the early 1980's using vertical technology, this field is still being redeveloped and expanded using new horizontal technology and currently accounts for 24% of Manitoba's 2014 production.

In 2010, Manitoba produced approximately 5133 m³ per day. Since then, Manitoba's oil production has risen to approximately 7,757 m³ or 48,822 barrels of oil per day, representing 51.1% increase.

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

In 2014/15, royalties, production taxes and revenue from the administration of Crown owned oil and gas rights, fees and sundry added \$21.6 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 \$12.1 million in property taxes to the various municipalities where oil wells and facilities are located. The industry expenditures of \$1.0 billion generated an estimated \$119 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 1-22; Ranges 19-29 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.

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

- The 22nd International Williston Basin Petroleum Conference (April 28-30, 2014) 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, 2014) in Calgary, Alberta.
- Canadian Flare and Venting Regulators Forum Annual meeting on October 21, 2014 by teleconference to review current and future regulatory needs for the handling of flare and vent gasses.
- Participated in Petroleum Services Association of Canada town hall meeting on October 21, 2014, in Brandon providing information on pressure pumping in the oil and gas industry.
- Attended and presented at the Facilities Design Western Canada Summit 2014 on Dec 9 & 10 in Calgary.
- Participated in the Bio-Security workshop with respect to oilfield related activities on February 26, 2015 in Virden, MB hosted by MAFDC.

The following Informational Notices were issued by the Petroleum Branch in 2014:

- Informational Notice 14-01: Annual Submission of Battery & Gas Plant Information
- Informational Notice 14-02: Schedule of Public Offerings of Crown Oil & Gas Rights
- Informational Notice 14-03: Spatial Data Requirements for Flowline 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 2014/2015. Forty-five Crown Leases covering 4,573 hectares were sold for total revenue of \$1,408,627. Revenue collected from Crown oil and gas lease sales was down from the 2013/2014 revenue by \$757,116.

Since 1979, the Province has collected over \$93.4 million from the disposition of Crown Oil and Gas Rights. As of December 31, 2014, 108,818.1 hectares of Crown Oil and Gas Rights were under disposition. Compared to 2013, the total area under disposition has decreased by 9.0%.

In 2014, the section processed 132 lease renewals and 44 lease extensions, 157 lease surrenders, 94 transfers of dispositions and 35 oil and gas lease agent renewals and registrations. The section also issued 62 new leases and conducted 18 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, 2014, there were 6,356 non-abandoned wells in Manitoba. Digital production, logs, technical information and injection histories are available for all wells.

During 2014/15, the section collected \$21.6 million from the petroleum industry. This revenue comprised \$9.62 million in Crown oil royalties, \$9.69million in freehold oil taxes and \$2.3 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 2013/14 was \$19.8 million.

Manitoba Drilling Incentive Program, (1992-2013) - 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 2014, 464 wells earned an average holiday oil volume of 6,884 cubic metres, bringing the total number of wells that earned a holiday oil volume in the program to 4,845 as of December 2014.

Any horizontal well drilled after January 1, 2014 receives a holiday oil volume of 8,000 cubic metres. Three hundred and ninety-five horizontal wells were drilled in 2014.

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 69 vertical wells drilled in 2014.

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 \$75,000.00. 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. No wells were given this incentive during 2014.

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 2014/15, approximately \$3.35 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.

Opening Balance (April 1, 2014)	1,462,260.39
Deposits	
Levies and Penalties	273,250.00
Interest	9,054.42
Penalty of Inactive Well Levy	0
Recovery of Expenditures	0
Total Deposits	283,304.42
	76,181.92
Expenditures and Refunds	
Closing Balance (March 31, 2015)	1,668,382.89

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, 2015, Manitoba had 13 designated oil fields and 186 designated active producing oil pools.

Accomplishments in 2014/2015 include:

- Continued the restructuring of the geological sections procedures and data to enable digital access and submissions. Geology eliminated paper reporting allowing reduced environmental impact, costs and faster turnaround times.
- Assigned producing horizons to 524 wells.
- Interpreted 68 geophysical well logs
- Assigned holiday oil volume to 408 wells.

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 2014/15, a total of 489 drilling licences and 13 geophysical licences were issued. In addition, 66 technical well operations applications were processed.

The Petroleum Branch processed and approved 12 waterflood enhanced oil recovery projects in 2014/15. Tundra Oil & Gas created Sinclair Units No. 12 and 13, Ewart Units No. 6 and 8, Daly Units No. 8, Kola Unit No. 3 and Birdtail Units No. 1 and 3 (expansion). Surge Energy Inc. created East Manson Unit No. 4.

The Petroleum Branch approved Ewart Unit No. 5 to pioneer an enhanced oil recovery in Manitoba that involves alternating nitrogen and salt water brine injection.

The Petroleum Branch also processed and approved 1 new pipeline application totalling approximately 1.7 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*. District offices are located in Virden and Waskada.

Through the 2014/15 year the Petroleum Inspection team inspected 120 oil and gas facilities. All batteries in the province were inspected at least once during the year. Inspection also inspected 46 service rigs and 13 different drilling rigs. A total of 183 non-compliance orders were issued in 2014/15 for wells and oil and gas facilities not in compliance with the Act. A total of 567 flow line applications were processed and 297 excavation permits issued.

Inspectors visited 153 abandoned well and battery sites to ensure that the approved abandonment procedures have been followed. During 2014/15, 90 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 2014/15, 89 new spills were inspected and 26 spill sites were fully rehabilitated and released from the branch's rehabilitation program.

More information on spills is presented in the Petroleum Industry 2014 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 and is applying for funding to continue to the next stage in the Petrinex process.

In 2014/15, 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 2014/15 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 Well Listing (PWL) which will enable industry to submit specific data to the branch (in the future PWL 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.
- 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 2014/15 the Minister made the following orders:

Missing Royalty Owner NW ¼ 1-9-29 W1	Jul. 29, 2014	Tundra Oil & Gas Partnership
Missing Royalty Owner All 15-7-29 W1	Sept. 18, 2014	Red River Oil Inc.
Missing Royalty Owner S 1/2 of SE 1/4 15-9-29 W1	Sept. 18, 2014	Tundra Oil & Gas Partnership
Missing Royalty Owner S 1/2 9-9-28 W1	Feb. 15, 2015	Tundra Oil & Gas Partnership
Pipeline Construction Permit No. 2014-04	Oct. 6, 2014	Enbridge Pipelines (SK) Inc
Pipeline Operation Permit No. 2015-02	Mar. 30, 2015	Enbridge Pipelines (SK) Inc.
Pipeline Operation Permit No. 2014-03	Jun. 20, 2014	Penn West Petroleum Ltd.
Unit Agreement (Sinclair Unit No. 12)	Nov. 1, 2014	Tundra Oil & Gas Partnership
Unit Agreement (Sinclair Unit No.13)	Mar. 1, 2015	Tundra Oil & Gas Partnership

Unit Agreement (Ewart Unit No. 6)	Jan. 1, 2015	Tundra Oil & Gas Partnership
Unit Agreement (Kola Unit No. 3)	May 1, 2014	Tundra Oil & Gas Partnership
Unit Agreement (Ewart Unit No. 8)	Oct. 1, 2014	Tundra Oil & Gas Partnership
Unit Agreement (Daly Unit No. 8)	Oct. 1, 2014	Tundra Oil & Gas Partnership
Unit Agreement (Birdtail Unit No. 1 Expansion)	Feb. 1, 2015	Tundra Oil & Gas Partnership
Unit Agreement (Birdtail Unit No. 3)	Jan. 1, 2015	Tundra Oil & Gas Partnership
Unit Agreement East Manson Unit No. 4	May 1, 2014	Surge Energy Inc.

In 2014/15 the Director of Petroleum made the following orders:

Water Flood Order 33	Jun 1, 2014	Legacy Oil + Gas
Water Flood Order 34	Jul 1, 2014	Tundra Oil & Gas Partnership
Water Flood Order 35	Apr 1, 2014	Tundra Oil & Gas Partnership
Water Flood Order 36	May 1, 2014	Surge Energy Inc.
Water Flood Order 37	Oct. 1, 2014	Tundra Oil & Gas Partnership.
Water Flood Order 38	Nov. 1, 2014	Tundra Oil & Gas Partnership.
Water Flood Order 39	Jan. 1, 2014	Tundra Oil & Gas Partnership
Water Flood Order 40	Jan 1, 2015	Corex Resources Ltd.
Water Flood Order 41	Jan. 1, 2015	Tundra Oil & Gas Partnership
Water Flood Order 42	Feb. 1, 2015	Tundra Oil & Gas Partnership
Water Flood Order 43	Feb. 1, 2015	Tundra Oil & Gas Partnership
Salt Water Disposal No. 254	May 30, 2014	Corex Resources Ltd.
Salt Water Disposal No. 255	Jul. 31, 2014	Tundra Oil & Gas Partnership
Salt Water Disposal No. 256	Sep. 2, 2014	Corex Resources Ltd.
Salt Water Disposal No. 257	Sep. 10, 2014	Tundra Oil & Gas Partnership
Salt Water Disposal No. 258	Oct. 8, 2014	Tundra Oil & Gas Partnership
Salt Water Disposal No. 259	Oct. 29, 2014	Elcano Exploration Inc.
Salt Water Disposal No. 260	Mar. 5, 2015	Corval Energy Ltd.

Petroleum Industry Overview:

	2013	2014
New wells drilled	537	464
Oil Production	3,053,837 m ³ (19.2 million bbls)	2,831,591 m ³ (17.8 million bbls)
Value of oil sales (\$million)	\$1,760	\$1,630
Average selling price	\$577.45 m ³ (\$91.76/bbl)	\$576.28 m ³ (\$91.57/bbl)
Wells producing - December	4,339	4,410
Estimated Industry Expenditures (\$million)	\$1,300	\$1,000

More comprehensive information and historical statistics on Manitoba's petroleum industry are presented in the Oil Activity Review available from the Petroleum Branch.

18-2(c) Petroleum

Expenditures by Sub-Appropriation	Actual 2014/15 \$(000)	Estimate 2014/15 FTE	Estimate 2014/15 \$(000)	Variance Over (Under)	Expl. No.
Total Salaries & Employee Benefits	1,503	22.50	1,591	(88)	
Total Other Expenditures	401		378	23	
Total Sub-Appropriation	1,904	22.50	1,969	(65)	

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 2014 the Mining Board received one request for immediate access and also one request for an adjustment to Annual Work Requirements due on a Mineral Exploration Licence.

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 2014 include the issuance of 33 Board Orders, consisting of 2 Variation of Compensation Orders, 1 Costs for Hearing Order and 30 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, including public consultation and written comments from stakeholders.

	2011	2012	2013	2014
Signed Agreements for Surface Leases (fiscal year)	470	344	317	351
Total Number of Recorded Surface Leases	5,032	5,376	5,693	6,044
Review of Right of Way Applications	3	3	59	5
Review of Compensation Applications	3	5	6	6
Termination of Board Orders	0	0	0	39
Application for Abandonment Orders	0	0	0	1
Board Orders Issued	3	4	42	33
Mediation Reports	0	0	0	0

18-2(d) Boards and Commissions

Expenditures by Sub-Appropriation	Actual 2014/15 \$(000)	Estimate 2014/15 FTE \$(000)	Variance Over (Under)	Expl. No.
Total Salaries and Employee Benefits	23	30	(7)	
Total Other Expenditures	11	16	(5)	
Total Sub-Appropriation	34	46	(12)	

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 2014/2015 at an increased level of support of \$3.0 million. The program provides the \$3.0 million of assistance through a single offering for the 2014/2015 year. The program was designed to increase exploration and stimulate activities that may lead to the development of new mines. The additional funding will allow 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 Northern Superior region 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 \$200,000.00 per recipient, per fiscal year.

Companies with approved projects under the April 2014 offering had until March 31, 2015 to complete their work. Fourteen of the original 22 approved projects were completed.

Reviews, Audits and Inspections

To ensure accountability and integrity of the Program, the Department continued to conduct audits and site inspections following guidelines developed with the Provincial Internal Audit office. In the 2012/2013 fiscal year, Mineral Resources and the Provincial Internal Audit Office decided to forego internal audits of the program due to other priorities within Internal Audit and past history of administration of the program. Site inspections are conducted on a random or as needed basis.

Program Highlights from October 1995 to March 31, 2015

- 192 companies have participated under MEAP of which:
 - 150 companies are considered new to Manitoba.
 - 16 are major exploration companies, and
 - 176 are junior companies (note: a company is considered a major exploration company if its market capitalization is greater than \$100 million).
- \$31.6 million of assistance has been issued to 796 completed projects.
- \$273.9 million in exploration expenses have been reported.
- Reported exploration expenditures under the Program indicate every \$1 million in assistance paid generates \$8.7 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 2014 Status

<i>Offering</i>	<i>Applications Received</i>	<i>Approved Applications</i>	<i>Proposed Exploration \$ in 000's</i>	<i>Assistance \$ Allocated in 000's</i>	<i>Projects Completed</i>	<i>Actual Exploration \$ in 000's</i>	<i>Assistance \$ Paid</i>
140402	23	22	20,832.5	3,000.0	14	5,920.9	1,284
TOTAL	23	22	20,832.5	3,000.0	14	5,920.9	1,284

Note: Projects approved under the April, 2014 offering have until June 14, 2015 to file final reports and make application for final payment

Results of Assistance by General Region of Exploration for 2014/2015

	Projects	Exploration \$ in 000's	Assistance \$ in 000's
Far North	1 (4.5%)	\$ 1,411.7 (23.8%)	\$175.1 (13.6%)
Flin Flon/Snow Lake	7 (31.8%)	\$1056.7 (17.8%)	\$381.5 (29.7%)
Hudson Bay Lowland	0 (0.0%)	\$0.0 (0.0%)	\$0.0 (0.0%)
Lynn Lake/Leaf Rapids	3 (13.6%)	\$2065.1 (34.9%)	\$207.7 (16.2%)
Northern Superior	2 (9.1%)	\$483.1 (8.2%)	\$175.1 (13.6%)
SE Trans-Hudson Orogen	0 (0.0%)	\$ 0.0 (0.0%)	\$0.0 (0.0%)
Southeastern Manitoba	6 (27.3%)	\$178.9 (3.0%)	\$67.5 (5.3%)
South Central Manitoba	0 (0.0%)	\$0.0 (0.0%)	\$0.0 (0.0%)
Thompson Nickel Belt - Superior Boundary Zone	3 (13.6%)	\$725.3 (12.3%)	\$277.1 (21.6%)

Manitoba Prospectors Assistance Program

The Manitoba Prospectors Assistance Program (MPAP) offers grants to prospectors conducting exploration on either their own Manitoba properties or open Crown land. The Program is targeted at increasing mineral exploration in Manitoba to help replenish declining ore reserves. The Program is funded at \$125,000.00 per year and allows individual prospectors to qualify for up to 50% of their prospecting expenditures incurred up to a maximum of \$10,000.00 per prospector per year. The program also provides 80% of the cost of one return charter flight or \$1,500.00 per year, whichever is less, for projects undertaken in more remote areas of the Province. The maximum assistance of \$11,500.00 is available per applicant, per year.

In 2014/15 the program received 8 applications for grants; 8 prospecting projects were approved under the program and 5 were completed. The total amount of Program funds dispersed for 2014/2015 was \$35,968.90.

Bill Hood (2 projects)	\$ 9,827.86
Rashid Mumin	\$ 10,000.00
George Nykulaik	\$ 10,000.00
Harold Westdal	\$ 6,141.04
Total Funds Dispersed:	<u>\$35,968.90</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% K₂O. 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 January and a number of Expressions of Interest were received. The review of the Expressions of Interest is on-going, with the plan to complete the sale of the corporation in the next fiscal year.

18-2(e) Mineral Industry Support Programs

Expenditures by Sub-Appropriation	Actual 2014/15 \$(000)	Estimate 2014/15 FTE	Estimate 2014/15 \$(000)	Variance Over (Under)	Expl. No.
Mineral Industry Support Programs					
- Manitoba Potash Project	85	0.00	97	(12)	
Total Sub-Appropriation	85	0.00	97	(12)	

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

Expenditures by Sub-Appropriation	Actual 2014/15 \$(000)	Estimate 2014/15 FTE	Estimate 2014/15 \$(000)	Variance Over (Under)	Expl. No.
(a) Amortization Expense	383		384	(1)	
(b) Interest Expense	243		256	(13)	
Total Expenditures	626		640	(14)	

MINERAL RESOURCES

Reconciliation Statement

EXPENDITURE DETAILS	
2014/15 MAIN ESTIMATES	10,780
MAIN ESTIMATES AUTHORITY TRANSFERRED FROM: <ul style="list-style-type: none">• Enabling Appropriations<ul style="list-style-type: none">- Internal Services Adjustment	1,152
2014/15 ESTIMATE	11,932

**Mineral Resources
Expenditure Summary
For Fiscal Year Ended March 31, 2015 (with comparative figures for the previous year)**

Estimate 2014/15 \$(000)	Appropriation	Actual 2014/15 \$(000)	Actual 2013/14 \$(000)	Increase (Decrease) \$(000)	Explanation Number
	18-1 Administration and Finance				
37	(a) Minister's Salary	37	37	-	
	(b) Executive Support				
485	(1) Salaries and Employee Benefits	356	445	(89)	
73	(2) Other Expenditures	45	68	(23)	
150	(c) Administration and Finance	150	150	-	
745	Total 18-1	588	700	(112)	
	18-2 Mineral Resources				
	(a) Manitoba Geological Survey				
4,003	(1) Salaries and Employee Benefits	3,504	3,807	(303)	
2,400	(2) Other Expenditures	3,022	2,137	885	1
	(b) Mines				
1,374	(1) Salaries and Employee Benefits	1,193	1,266	(73)	
658	(2) Other Expenditures	6,169	4,307	1,862	2
	(c) Petroleum				
1,591	(1) Salaries and Employee Benefits	1,503	1,627	(124)	
378	(2) Other Expenditures	401	435	(34)	
	(d) Boards and Commissions				
30	(1) Salaries and Employee Benefits	23	25	(2)	
16	(2) Other Expenditures	11	26	(15)	
	(e) Mineral Industry Support Programs				
	(1) Mineral Exploration Assistance Program				
	(2) Prospectors' Assistance Program				
97	(3) Manitoba Potash Project	85	86	(1)	
10,547	Total 18-2	15,911	13,716	2,195	

Expenditure Summary

Estimate 2014/15 \$(000)	Appropriation	Actual 2014/15 \$(000)	Actual 2013/14 \$(000)	Increase (Decrease) \$(000)	Explanation Number
	18-3	Costs Related to Capital Assets			
384	(a) Amortization Expense	383	380	3	
256	(b) Interest Expense	243	259	(16)	
640	Total 18-3	626	639	(13)	
11,932	TOTAL MINERAL RESOURCES	17,125	15,055	2,070	

Explanations:

1. Increase due to expenditures related to Manitoba Potash and Aboriginal Consultations.
2. Increased adjustment to Environmental Liabilities relating to inflation and accretion.

Mineral Resources
Revenue Summary by Source
For Fiscal Year Ended March 31, 2015 with comparative figures for the previous fiscal year
(\$000's)

Actual 2013/14	Actual 2014/15	Increase (Decrease)	Expl. No.	Source	Actual 2014/15	Estimate 2014/15	Variance	Expl. No.
Taxation								
5,592	9,694	4,102	1	Oil and Natural Gas Tax	9,694	9,084	610	
5,592	9,694	4,102		Sub-Total	9,694	9,084	610	
Other Revenue								
13,094	11,873	(1,221)	2	Petroleum Royalties and Fees	11,873	14,411	(2,538)	1
4,630	4,676	46		Minerals Royalties and Fees	4,676	4,450	226	
1	10	9		Sundry	10	3	(7)	
17,725	16,559	(1,166)		Sub-Total	16,559	18,864	(2,305)	
23,317	26,253	2,936		Total	26,253	27,948	(1,695)	

Explanations:

Comparison to Previous Year

1. *New minimum productions tax*
2. *Less land sales and lower production, price and wells drilled in 2014/15 vs. 2013/14*

Comparison Actual to Estimate

1. *Less land sales and lower production, price and wells drilled than estimated*

FIVE YEAR HISTORY

Mineral Resources

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

For Five Years Ended March 31, 2015*

	Actual/* Adjusted Expenditures									
	2010-2011		2011-2012		2012-2013		2013-2014		2014-2015	
	FTE	\$	FTE	\$	FTE	\$	FTE	\$	FTE	\$
Administration and Finance	6.00	664	6.00	669	6.00	682	6.00	700	6.00	588
Mineral Resources	101.60	10,556	103.60	34,483	106.10	10,841	102.10	13,717	102.10	15,911
Amortization and Other Costs Related to Capital Assets		-		337		659		640		626
TOTAL OPERATING	107.60	11,220	109.60	35,489	112.10	12,182	108.10	15,057	108.10	17,125
Expenditures Related to Capital Investment		1,899		867		-		-		-
TOTAL	107.60	13,119	109.60	36,356	112.10	12,182	108.10	15,057	108.10	17,125

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

MINERAL RESOURCES

2014/15 Annual Report Performance Measurements

The following section provides information on key performance measures for the department for the 2014-15 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 www.manitoba.ca/performance.

Your comments on performance measures are valuable to us. You can send comments or questions to mbperformance@gov.mb.ca.

Mineral Resources Performance Measures Document for inclusion in the 2014/15 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 ¹ 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: \$ 27.1 (1.4%)	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 ² 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: 2013: \$1.3 billion 2014: \$1.1 billion 2015: \$0.7 billion* *forecast	Petroleum exploration and development capital expenditures have 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.

The number of reports, maps and other geoscience publications produced each year.	The department tracks the number of publications produced each year.	One of the primary roles of the department is to provide authoritative geoscience information to support and facilitate mineral and petroleum exploration.	2005/06 publications - 6 geoscience reports - 47 maps - 3 new digital products	2014/15 publications - 2 Open File reports - 9 Geoscientific Maps - 6 Preliminary Maps - 4 Data Repository Items - annual Report of Activities	The number and type of publications produced by the department has evolved to meet client needs. The ability to produce publications is a function of staffing levels.
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¹ 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.

² 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)
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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	2014: No. of Projects – 75 Area – 300 hectares Expenditures - \$2,476,528	The cost per hectare of land rehabilitated has increased from \$1393/ha in 1993 to \$8,258/ha in 2014.
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Footnote:

The Department of Mineral Resources, formerly a division of Innovation, Energy and Mines, was established in recognition of the importance of strong mining and petroleum sectors to the growth of Manitoba's economy and the creation of jobs.

Mineral Resources 2014/15 Department Plan was developed in reference to the former IEM plan. Under the 2013/14 IEM Department Plan, the Mineral Resources Division had a single priority and eight (8) objectives. In the 2014/15 Department Plan many of the former department objectives have been elevated to priorities in recognition of their importance in achieving the department's vision and mission.

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.

Information Required Annually (per Section 18 of The Act)	Fiscal Year 2014 – 2015
The number of disclosures received, and the number acted on and not acted on. <i>Subsection 18(2)(a)</i>	NIL
The number of investigations commenced as a result of a disclosure. <i>Subsection 18(2)(b)</i>	NIL
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>	NIL

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.