Chapter 31
Managing the Risks and Cleanup of Oil and Gas Wells

1.0 Main Points

Saskatchewan's oil and gas industry is a major contributor to the provincial economy. In 2011, it contributed $12.7 billion in oil and gas sales and employed 33,200 person years in direct and indirect employment.

Oil and gas development does not come without financial and environmental costs. The Ministry of the Economy (Ministry) currently estimates that the overall future environmental cleanup costs of existing oil and gas wells and facilities could total $3.6 billion. The owners of the wells and facilities (licensees) are responsible for the cleanup of their wells and facilities. The Ministry is responsible for ensuring licensees properly handle the clean up. If the licensees fail to clean up their wells and facilities, the costs of the cleanup could potentially fall on Saskatchewan residents. As of July 31, 2012, Saskatchewan had 87,000 oil and gas wells and 5,300 facilities. The Ministry estimates that there are potentially 700 wells and facilities where the licensees have ceased to exist or no longer can be located. As well, over 5,800 wells have been inactive for over 10 years or more.

The Ministry's mandate includes both promoting the development of the oil and gas industry and regulating the industry on environmental matters. Accordingly, there is a potential risk of an imbalance between the Ministry's two roles. For example, there is a risk that the Ministry's efforts to develop the industry may override its efforts to protect the environment. In the 2011-12 year, the Ministry collected $1.7 billion from oil and gas sales and land rights sales.

The objective of our audit was to assess whether the Ministry had effective processes to manage the financial and associated environmental risks related to the future cleanup of oil and gas wells and related facilities. We concluded that, as of September 30, 2012, the Ministry did not have effective processes.

To effectively manage the financial and associated environmental risks related to the future cleanup of oil and gas wells and facilities, the Ministry needs to:

- Assess and allocate the resources and skills needed to manage the future cleanup
- Use current trend analysis and estimates to monitor, assess and report on the financial and associated environmental risks
- Manage the financial and associated environmental risks related to the timely cleanup of inactive wells and facilities
- Estimate and record its liability for cleaning up orphaned wells and facilities in its financial records for inclusion in the Government's financial statements
- Report on its effectiveness to the Legislative Assembly and the public in managing the financial and associated environmental risks

- Assess the need for extending its sample of independent audits on the cleanup of well sites and facilities

- Complete its assessment of the financial and associated environmental risks of legacy well sites, assess its liability, and develop a plan to clean up contaminated legacy well sites

In addition, the Ministry needs to:

- Actively mitigate the risks resulting from the Ministry being responsible for both the promotion of the development of the oil and gas industry and for the protection of the environment, property, and the safety of the public

2.0 Introduction

The Ministry of the Economy (Ministry) works to achieve the sustainable development of Saskatchewan's diverse energy, mineral and forestry resources, including oil, natural gas, potash, and uranium.[1] *The Oil and Gas Conservation Act* and *The Oil and Gas Conservation Regulations, 2012*, require the Ministry to regulate all operations related to the production of oil and gas including the protection of the environment, property, and the safety of the public.

Saskatchewan's oil and gas industry is a major contributor to the provincial economy. In 2011, it contributed $12.7 billion in oil and gas sales and employed 33,200 person years in direct and indirect employment. In the 2011-12 fiscal year, the Ministry collected $1.7 billion from oil and gas royalties and land rights sales.[2]

Oil and gas development does not come without financial and environmental costs. The Ministry currently estimates that the overall future environmental cleanup costs of existing oil and gas wells and their associated facilities[3] (collectively referred to as "wells and facilities") could total $3.6 billion. The owners (referred to as licensees[4]) of the wells and facilities are responsible for their cleanup and therefore are responsible for the potential cost of $3.6 billion. The Ministry is responsible for ensuring licensees properly clean up their wells and facilities.

There is a future risk that a portion of the $3.6 billion may be borne by the Ministry and hence Saskatchewan residents. This is because some licensees may not have sufficient financial means to clean up their wells and facilities or they may not be identifiable or locatable when cleanup is needed. When this is the case, such wells and facilities are referred to as orphaned wells and facilities. The Ministry has established three programs to deal with the risk of orphaned wells and facilities. These programs are: the Licensee Liability Rating Program (LLR program), the Orphan Abandonment Program (OA program), and the Acknowledgement of Reclamation Program (AOR program). These programs are designed to help ensure licensees pay for the future cleanup costs of wells

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[1] Ministry of Energy and Resources. (July 2012). *Saskatchewan Energy and Resources 2011-12 Annual Report*, p. 7.
[2] Ministry of the Economy. (May 2012). *Saskatchewan Resources*, p. 2.
http://www.er.gov.sk.ca/adx/aspx/adxGetMedia.aspx?DocID=10848,10846,5460,2936,Documents&MediaID=40702&Filename=Oil+and+Gas+May+2012.pdf (6 September 2012)
[3] Facilities include oil well batteries, gas well batteries, disposal injection facilities, waste facilities, and gas plants and compressor facilities.
[4] S. 2(1)(h.2) of *The Oil and Gas Conservation Act* defines licensee as a person who holds a license and includes a trustee or receiver-manager of property of a licensee. The Well License application indicates that a person is not eligible to be issued a license unless they are a working-interest participant and are entitled to the right to produce.

and facilities, including orphaned wells and facilities, thereby reducing the financial and associated environmental risks to Saskatchewan residents. The Ministry implemented the LLR program in April 2009 and the OA and AOR programs in 2010. See Section 7.0 for a description of the programs.

In this chapter, we report the results of our audit on whether the Ministry had effective processes to manage the financial and associated environmental risks related to the future cleanup of oil and gas wells and their related facilities. We wanted to know:

- What are the financial risks to Saskatchewan residents?
- What are the environmental risks and costs?
- Is the Ministry effectively managing these risks and costs?
- Does the Ministry have a liability for the cleanup of wells and facilities that should be recorded in the Government's summary financial statements?
- Does the Ministry provide sufficient information in its reports to the Legislative Assembly and the public on its management of these risks and costs?

3.0 Environmental Risks and Well Cleanup

Wells and facilities pose a number of environmental risks that need be addressed by the cleanup process. The environmental risks include:

Contamination of aquifers. The well hole provides a pathway for fluid and gas contaminants (e.g., salts, oil and gas hydrocarbons) contained in geological layers below the ground to migrate to other porous layers such as aquifers. Saskatchewan has extensive aquifers and we rely on them heavily for our water needs. If aquifers become polluted, the water could become unusable and it could be impossible to remove the contaminants in the aquifers.

Pollution of surface water and air. The well hole also provides a pathway for contaminants to escape from the ground polluting our surface water (e.g., lakes and streams) and the air we breathe. These pollutants are a risk to public health and safety and to wildlife.

Contamination of soil. The soil at the well site may become contaminated due to accidental spills or careless operating practices. These contaminants can include high concentrations of toxins such as salt, oil, and sour gas residues. These contaminants need to be removed to prevent ongoing pollution of surface water and to return the land to its original or equivalent use.

In this chapter, well cleanup means **well abandonment** and **well site reclamation**. Well abandonment involves permanently squeezing cement into any perforated intervals in the well hole and filling the hole with cement to prevent any subsurface formation containing gas or fluids from leaking below ground or escaping above the ground. Well site reclamation involves removing all facilities (equipment and structures), remediating contaminated soils and/or groundwater, and returning the site to its original or equivalent condition.

Inactive wells and facilities are wells and facilities that have not reported any production, injection, or disposal activities for a period of 12 consecutive months or longer. Inactive wells and facilities are not the same as orphaned wells and facilities. Inactive wells and facilities are owned by active licensees who are responsible for the associated cleanup costs. **Well suspension** means temporarily plugging inactive wells to prevent leakage.

4.0 Saskatchewan's Oil and Gas Wells and Facilities

As of July 31, 2012, Saskatchewan had 87,000[5] oil and gas wells and 5,300 facilities. Of the 87,000 wells, 58,000 were active wells (i.e., producing oil and gas), 24,000 were non-producing and the remaining 5,000 wells were abandoned (i.e., wells permanently sealed up) but the sites have not yet been reclaimed. Of the 24,000 non-producing wells, 9,700 are wells that have been inactive for five or more years.

These wells and facilities are owned by 447 licensees with the largest 10 licensees owning 65,000 wells and 3,200 facilities.

Licensees must have a license issued by the Ministry before they can drill a well, extract oil and gas, or build a facility. When the well is no longer of economic value, the licensee is responsible for its cleanup.

Saskatchewan's oil and gas industry is growing at a rapid rate. The growth is attributable to advances in technology (e.g., horizontal drilling and fracking[6] in the south east of the province), and royalty incentives. The rapid growth in the number of wells and facilities increases the importance of the Ministry's programs to manage the financial and associated environmental risks related to the future cleanup of wells and facilities.

Based on Ministry data, the number of new wells drilled in Saskatchewan has increased by 10,000 or 15% over the last five years. However, over the same period, the number of non-producing wells has increased at a faster rate, by 31% (7,000 wells).

Ensuring the timely cleanup of wells and facilities is challenging for the Ministry. Only about 13%[7] of the existing oil in Saskatchewan is recoverable using current extraction methods. With 87% of the oil not currently recoverable, the industry hopes to recover more using yet to be developed technologies. As a result, licensees have many inactive wells and facilities that may be inactive for long periods of time. However, there are also inactive wells that have little likelihood of producing oil or gas in the future.

For the Ministry to be successful at limiting financial and associated environmental risks to Saskatchewan residents, it needs to address the risks posed by wells and facilities that need to be cleaned up now or in the future. When oil and gas production eventually declines and the industry is less profitable, licensees may no longer have the money to pay for the cleanup of wells and facilities. The financial burden could then fall on

[5] As of July 31, 2012, 110,000 wells have been drilled in Saskatchewan with 23,000 wells abandoned and cleaned up.
[6] Fracking is a technique used to release petroleum, natural gas (including shale gas, tight gas and coal seam gas), or other substances for extraction using hydraulic pressure and fluids. The fractures are created from the wellbore drilled into the reservoir rock formation.
[7] The Ministry of the Economy. (May 2012). *Saskatchewan Resources*, p. 2. http://www.er.gov.sk.ca/adx/aspx/adxGetMedia.aspx?DocID=10848,10846,5460,2936,Documents&MediaID=40702&Filename=Oil+and+Gas+May+2012.pdf (6 September 2012)

Saskatchewan residents. Therefore, the Ministry's programs must be well managed to help ensure well and facility cleanup is timely.

5.0 Audit Objective, Scope, Criteria, and Conclusion

The objective of our audit was to assess whether the Ministry had effective processes to manage the financial and associated environmental risks related to the future cleanup of oil and gas wells and related facilities for the period of October 1, 2011 to September 30, 2012.

We studied the financial and associated environmental risks related to the cleanup of wells and facilities and assessed their significance to Saskatchewan's oil and gas industry. We examined the Ministry's legislation, its processes for identifying and assessing the risks, and its programs and objectives for managing the risks, including its work plans for carrying out its programs. We also examined the Ministry's reporting to the Legislative Assembly and the public on its performance in managing these risks.

To conduct this audit, we followed the *Standards for Assurance Engagements published in the CICA Handbook - Assurance*. To evaluate the Ministry's processes, we used criteria based on the work of other auditors and current literature listed in the selected references. The Ministry agreed with the criteria in **Figure 1**.

Figure 1—Audit Criteria

To have effective processes to manage the financial and associated environmental risks related to the future cleanup of oil and gas wells and related facilities, the Ministry should:

1. **Set clear objectives and responsibilities**
   - 1.1. Identify and assess financial and environmental risks
   - 1.2. Set objectives
   - 1.3. Define roles and responsibilities
2. **Implement programs to mitigate financial and environmental risks**
   - 2.1. Establish policies and procedures for programs
   - 2.2. Communicate requirements to licensees
   - 2.3. Allocate resources (staff and dollars)
   - 2.4. Set and carry out work plans for the programs
3. **Monitor and report results**
   - 3.1. Set performance measures and targets
   - 3.2. Analyze effectiveness
   - 3.3. Publically report on performance
   - 3.4. Propose revisions to programs based on assessments

We concluded that, as of September 30, 2012, the Ministry of the Economy did not have effective processes to manage the financial and associated environmental risks related to the future cleanup of oil and gas wells and related facilities. The Ministry needs to:

- **Assess and allocate the resources and skills to effectively manage the financial and associated environmental risks related to the future cleanup of oil and gas wells and related facilities**

- **Use current trend analysis and estimates to monitor, assess, and report on the financial and associated environmental risks related to the future cleanup of oil and gas wells and related facilities**

- **Assess the need for extending its independent audits to sample licensees' well sites whose reclamation reports contained no anomalies and/or discrepancies**

- **Report on its effectiveness to the Legislative Assembly and the public in managing the financial and associated environmental risks related to the future cleanup of oil and gas wells and related facilities**

- **Estimate and record its liability for cleaning up orphaned wells and facilities in its financial records for inclusion in the Government's financial statements**

- **Manage the financial and associated environmental risks related to the timely cleanup of inactive wells and facilities**

- **Complete its assessment of the financial and associated environmental risks of legacy well sites, assess its liability, and develop a plan to clean up contaminated legacy well sites**

In addition, we concluded that the Ministry should:

- **Actively mitigate the risks resulting from the Ministry being responsible for both the promotion of the development of the oil and gas industry and for protecting the environment, property, and public safety**

As previously noted, the Ministry has worked closely with the oil and gas industry to establish its three programs to manage some of the key financial and associated environmental risks related to the future cleanup of wells and facilities. We found the three programs had clear objectives and defined policies and procedures, and the Ministry carried the programs out in accordance with the programs' governing legislation. However, as of September 30, 2012, the Ministry has made slow progress in cleaning up orphaned wells and facilities.

6.0 Key Findings and Recommendations

In this section, we set out the criteria (expectations) in italics and our key findings along with related recommendations.

6.1 Clear Objectives and Responsibilities

We expected the Ministry of the Economy to:

- *Identify and assess financial and environmental risks*

- *Set objectives*

- *Define roles and responsibilities*

In 1989, Saskatchewan established the Oil and Gas Environmental Fund (Fund) to provide money for the cleanup of orphaned wells and facilities and to allow government to respond to major spills and environmental problems. A one-time fee of $100 per well was assessed to a maximum of $20,000 per licensee. At March 31, 2007, the Fund had net assets of $3.0 million and none of its funds had been used. From 1989 to 2007, no work was done to identify and clean up orphaned wells[8] even though the Ministry had estimated there were 700 wells throughout the Province that could potentially be orphaned.

From 1999-2007, the Ministry carried out an extensive consultation process with industry representatives. The Ministry wanted to help prevent the growth in the number of orphaned wells and facilities and to mitigate the risks of Saskatchewan residents being left with the cleanup costs. The Ministry also consulted with officials from the governments of Alberta and British Columbia who faced similar risks from orphaned wells and facilities. Alberta had set up similar programs to help address the risks so the Ministry was able to draw on Alberta's experience.

The Ministry and industry representatives set up an Orphan Well and Facility Liability Management Program Advisory Committee in 2005 to identify and assess the risks.

The risks posed by wells and facilities include:

- Licensees going out of business and leaving their wells and facilities as orphaned
- Licensees without sufficient resources to pay for the cleanup of their wells and facilities
- Licensees transferring (selling) their uneconomic wells and facilities to companies or individuals who are unable to pay the costs of cleaning up their wells and facilities
- Licensees walking away from their wells and facilities including their cleanup responsibilities because regulatory programs become too onerous and/or inflexible
- Licensees deferring the costs of cleanup by maintaining their wells and facilities as inactive
- Licensees' cleanup practices not meeting acceptable environment standards

The Committee made a number of recommendations based on its risk assessment. As a result, the Ministry recommended the implementation of a $20,000 first-time licensing fee, new licensing requirements for facilities, and the establishment of three programs: the Licensee Liability Rating Program (LLR program), the Orphan Abandonment Program (OA program) and the Acknowledgement of Reclamation Program (AOR program). The Ministry's legislation was amended on June 19, 2007 implementing the first-time licensing fees, licensing requirements for facilities, and setting out the objectives of the programs. The legislation governing the programs was further amended effective April 1, 2009 and again on April 1, 2012.

The LLR program was implemented in 2009. The OA program and AOR programs followed in 2010. Section 7.0 provides a summary of each program and sets out their objectives.

In 2007, the regulations set up a new Orphan Fund Advisory Committee (Committee) made up of representatives from the Ministry and the industry. It continues to meet regularly to review ongoing risks and the effectiveness of the programs. For example,

[8] *The Oil and Gas Conservation Act* before 2007 did not include the licensing of facilities.

risks posed by inactive wells and facilities. Section 6.3 describes the Ministry's progress on addressing the risks posed by inactive wells and facilities. This ongoing consultation helps the Ministry to identify and make program improvements.

The Ministry has set out its roles and responsibilities and those of the licensees. This is done through the prescriptive nature of the programs' legislation and through program guides and directives developed by the Ministry. The Ministry provides these guides and directives to licensees and makes them available on its website.

The Ministry's mandate includes both promoting the development of the oil and gas industry and regulating the industry regarding environmental matters. The Ministry of Environment is not involved in regulating environmental matters relating to wells and facilities.

There is a potential risk of an imbalance between the Ministry's two roles. For example, there is a risk that the Ministry's efforts to develop the industry may override its efforts to protect the environment. The cleanup of wells and facilities may be an example of an imbalance. The Ministry's royalty programs have contributed to the growth in the number of oil and gas wells and facilities. However, the Ministry is making slow progress cleaning up orphaned wells and facilities.

1. **We recommend the Ministry of the Economy actively mitigate the risks resulting from the Ministry being responsible for both the promotion of the development of the oil and gas industry and for the protection of the environment, property, and the safety of the public.**

6.2 Mitigation of Financial and Environmental Risks Needs Improvement

We expected the Ministry of the Economy to:

- *Establish policies and procedures for programs*
- *Communicate requirements to licensees*
- *Allocate resources (staff and dollars)*
- *Set and carry out work plans for the programs*

The Ministry has policies and procedures for its three programs. It communicates these policies and procedures to licensees in program guides and directives. In addition, the Ministry makes presentations on its programs at industry conferences and events. These presentations are on its website.

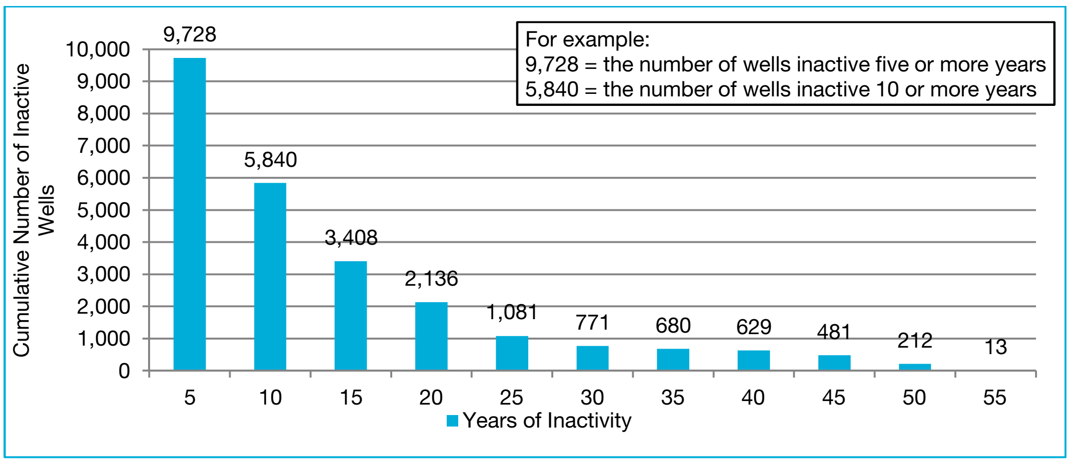
The Ministry's program staff are responsible for managing the risks associated with the cleanup of wells and facilities. They are involved in the development of the programs and their policies and procedures. Consequently, they are familiar with them. Staff job descriptions set out their responsibilities.

The Ministry allocates resources to carry out these programs. However, the Ministry may not be assigning sufficient staff with the proper experience and skills (e.g., engineering, environmental, legal, accounting) to carry out its three programs. For example, the Ministry has assigned only one person to identify and verify orphaned wells and facilities and to contract for the abandonment and reclamation services needed to clean them up. In the past two years, the Ministry has only cleaned up 10 of the 700 wells and facilities that could be potentially orphaned.[9] This rate of progress is inadequate and suggests the Ministry has not assigned sufficient staff with the necessary skills to carry out its programs.

In addition, program staff have not maintained current estimates on cleanup costs and updated key analysis of risk trends. For example, the Ministry's estimate of $26 million for cleaning up the 700 wells and facilities that could potentially be orphaned is more than five years old. Also, the Ministry did not maintain a current analysis of the age of inactive wells. This kind of analysis is critical for monitoring risk trends and identifying wells that should be cleaned up. Incomplete information and inaccurate estimates increase the risk of incorrect decisions and/or missed opportunities.

In 2005, the Ministry performed an analysis of inactive wells. We asked the Ministry to prepare a current analysis showing the years of inactivity for inactive wells. This analysis is shown in **Figure 2**. **Figure 2** shows that there are 9,728 wells that have been inactive (i.e., no production) for five or more years. It also shows that of these 9,728 inactive wells, 5,840 have had no production for 10 or more years. It is likely that wells that have had no production for 10 or more years will not produce again. Consequently, the cleanup costs of these wells are potentially being unnecessarily deferred by the licensees.

Figure 2—Cumulative Number of Inactive Wells and Years of Inactivity



Source: Ministry of the Economy.

2. **We recommend the Ministry of the Economy assess and allocate the resources and skills necessary to effectively carry out the Licensee Liability Rating Program, the Orphan Abandonment Program (including the timely cleanup of orphaned wells and facilities), and the Acknowledgement of Reclamation Program.**

[9] Ministry of Energy and Resources. (July 2012). *Oil and Gas Orphan Fund 2011-12 Annual Report*, p. 5.

> **3. We recommend the Ministry of the Economy use current estimates and trend analysis to monitor, assess, and report on the risks and associated costs of the future cleanup of wells and facilities.**

The Ministry uses annual work plans to help ensure fees, levies, and security deposits are correctly assessed and collected, and its programs are properly carried out.

We tested the effectiveness of its work plans. We noted the following:

First-time Licensing Fees

The Ministry correctly assesses and collects first-time licensing fees. The 2007 increase in the fees helps to deter companies or individuals with insufficient financial means from owning and operating wells and facilities in Saskatchewan.

Liability Licensee Rating Program (LLR program)

The LLR program is designed to mitigate the risk of the cleanup costs for wells and facilities being passed on to Saskatchewan residents. It does this by requiring security deposits from licensees who may not have the financial ability to pay for their future cleanup costs. Also, if a licensee becomes unable to pay its cleanup costs, the OA program can use the security deposits collected from this licensee to help pay the cleanup costs. We note that the security deposits received to date are not sufficient to cover the short-fall between the productive value of a well and its future cleanup costs. This is because of the program's phase-in provision described below.

The Ministry carries out the LLR program in accordance with its governing regulations and guidelines. The Ministry correctly calculates the LLR security deposits monthly. For example, the Ministry determines the production value of each well and facility using verified data from the Ministry's Production and Disposition System. In addition, the Ministry correctly calculates the higher security deposits required when licensees transfer (sell) wells and facilities to other licensees. The higher security deposits are to deter the transfer of wells and facilities to companies or persons who do not have the financial ability to pay for the cleanup.

The Ministry complies with the program's phase-in provisions. The phase-in provisions were designed to make the program more flexible for licensees. For example, licensees are permitted to pay their security deposits over the four year phase-in period (25% each year). In addition, for the phase-in period, the Ministry agreed to use its 2006 abandonment and reclamation cost tables for estimating cleanup liabilities. This phase-in provision helps shield licensees from higher security deposits caused by rising cleanup costs. The phase-in period ends March 31, 2013.

Although the Ministry correctly uses the 2006 cost estimates for calculating security deposits during the phase-in period, the Ministry has not kept cost estimates current for its own management purposes. The cost tables are critical for estimating cleanup liabilities and, therefore, to the Ministry in managing its risks and reporting on its programs. Earlier in this chapter, we recommend that the Ministry use current estimates for managing its risks (see recommendation #3).

The Ministry monitors the security deposit collection rate and follows its established procedures for collecting outstanding amounts. As of September 30, 2012, 21% ($7.5 million) of the security deposits billed to date remain uncollected. Those licensees who have not paid their security deposits may be in financial difficulty and at increased risk of not being able to pay for the future cleanup costs of their wells and facilities. Therefore, these wells and facilities are at increased risk of becoming orphaned.

Orphan Abandonment Program (OA program)

The Ministry complies with the OA program's governing legislation and guidelines in carrying out the program. The money in the Ministry's Oil and Gas Orphan Fund (Orphan Fund) is used only for the purposes set out in the OA program's legislation.

The Ministry correctly calculates the levies charged to licensees. It monitors collection rates and follows its established procedures for collecting outstanding amounts. As of September 30, 2012, only two per cent (or $18,000) of levies due are outstanding.

The Ministry follows its established procedures for procuring services to clean up orphaned wells and facilities. These procedures include tendering for services and selecting winning bids using a grading system.

The OA program is designed to finance the cleanup of orphaned wells and facilities. To date, the Ministry has made little progress in fulfilling this mandate. For example, since the start of the program in April 2010, the Ministry has only cleaned up 10 orphaned wells and facilities and completed the legal process for deeming 21 wells and facilities as orphaned. The Ministry estimates there are 700 wells and facilities that could potentially be orphaned in Saskatchewan. There is a risk that the number of orphaned wells and facilities will increase faster than the Ministry's rate of cleaning them up.

Later in this chapter, we recommend that the Ministry estimate and record its liability for cleaning up orphaned wells and facilities in its financial records. Increasing the OA program's capacity to cleanup orphaned wells and facilities will improve the Ministry's ability to manage its unfunded liability. This is because the financing for cleaning up orphaned wells and facilities primarily comes from levies charged to licensees. The amount of levies the Ministry charges is based on the amount of cleanup work it plans in a year. If little work is planned, the Ministry collects fewer levies from the industry to fund its unfunded liability. Also, the Ministry's unfunded liability will grow if the rate of cleanup does not exceed the rate of growth in orphaned wells and facilities.

Acknowledgement of Reclamation Program (AOR program)

The AOR program is designed to ensure licensees clean up their wells and facilities in accordance with the Ministry's site remediation standards.

When licensees complete site remediation work, the AOR program requires them to hire independent third-party consultants to prepare and submit reclamation reports to the Ministry. The Ministry performs desk reviews of all reclamation reports to determine if licensees have met standards. If errors or anomalies exist in the reports, the Ministry carries out field work and/or audits using its own third-party consultants. Once discrepancies are resolved and/or deficiencies are corrected by licensees, the Ministry issues the AOR certificates. The certificate confirms licensees have met the Ministry's well site remediation standards.

Since 2010, the Ministry reports that it has issued 540 AOR certificates under the program and has carried out 11 audits.

The Ministry's oversight of the cleanup done under the AOR program is primarily limited to reviewing licensees' reclamation reports. The Ministry's onsite inspections and/or independent audits are confined to sites where desk reviews identified anomalies and/or discrepancies. The extent of this oversight may not be sufficient to assure the Ministry that all licensees' are properly restoring their well sites. As an oversight check on reports submitted, good management practices suggest the Ministry should extend its current independent audit practices to include licensees' sites whose reclamation reports contained no anomalies and/or discrepancies.

4. We recommend the Ministry of the Economy assess the need for extending its independent audit practices to sample licensees' well sites whose reclamation reports contained no anomalies and/or discrepancies.

6.3 Monitoring and Reporting Results Needs Improvement

We expected the Ministry of the Economy to:

- *Set performance measures and targets*
- *Analyze effectiveness*
- *Publicly report on performance*
- *Propose revisions to programs based on assessments*

The Ministry reports information to the Legislative Assembly and the public in two annual reports. The Ministry of Energy and Resources' *2011-12 Annual Report* and the Ministry of Energy and Resources – *Oil and Gas Orphan Fund 2011-12 Annual Report* provide the information summarized in **Figure 3.**

Figure 3—Annual Report Information Summary

Ministry of Energy and Resources 2011-12 Annual Report

The Report includes:

- The number of orphaned wells abandoned during the reporting period (seven)
- The total wells and sites decommissioned, abandoned and reclaimed since inception of the program (10)
- The security deposits collected during the reporting period ($18.51 million)
- The total security deposits held under the program since inception of the program ($39.6 million)

This information is reported under the Ministry's key action strategy "Continue to manage the environmental risk and liability associated with oil and gas wells and related facilities through the Orphan Fund Program." This action strategy is a part of the Ministry's strategy for "Ensuring the sustainable development of petroleum and mineral resources."

Ministry of Energy and Resources–Oil and Gas Orphan Fund 2011-12 Annual Report

The Report includes:

- The potential number of orphaned wells and facilities (700)
- The audited financial statements of the Oil and Gas Orphan Fund for the year ended March 31, 2012 (net assets held $7.9 million, revenues of 1.4 million, expenses of $0.4 million, annual surplus of $1.1 million, and deposits held of $36.7 million

This information is not sufficient to inform the Legislative Assembly and the public on the Ministry's progress in managing the financial and associated environmental risks related to the future cleanup of wells and facilities. For example, the reports do not:

- Provide insight into the key risks the Ministry faces in cleaning up wells and facilities, report on its progress in addressing those risks, and explain the impact the risks had on planned results
- Provide comparative information about risk trends (e.g., the number of licensees whose productive value of wells and facilities are declining and reaching the point where security deposits will be required)
- Set out the number of orphaned wells and facilities the Ministry planned to cleanup and explain the variance, if any, between planned and actual results

5. We recommend the Ministry of the Economy report on its effectiveness to the Legislative Assembly and the public in managing the financial and associated environmental risks related to the future cleanup of oil and gas wells and related facilities.

One of the questions we had at the start of this audit was whether the Ministry had a liability for the 700 wells and facilities that could potentially be orphaned and if an amount should be recorded in its financial records. To determine if the Ministry should record the estimated future cleanup costs in its financial records, we referred to the *Canadian Public Sector Accounting Standards*. We concluded that it should.

In 2006, the Ministry's estimate of the cost to clean up the 700 wells and facilities that could potentially be orphaned was $26 million. This amount continues to be its most recently reported estimate. With the implementation of its LLR program, the Ministry continues to refine this estimate. Based on its follow up of unpaid security deposits, the Ministry has identified 260 wells and facilities that will very likely be deemed orphaned. It expects it will identify more orphaned wells and facilities upon completion of the LLR program's phase-in period. Also, the OA program is providing the Ministry with current cleanup cost information. To clean up the 10 orphaned wells and facilities to date, it cost $700,000 for an average cost of $70,000 per well.

Therefore, it may cost $18 million to clean up the 260 orphaned wells and facilities. If it turns out that there are 700 orphaned wells and facilities, it could cost $49 million.[10] We caution that one cannot fully rely on these estimates because the cost projection is based only on 10 wells.

[10] 260 x $700,000/10 = $18 million; 700 x $700,000/10 = $49 million.

As of March 31, 2012 (the date of the most recent audited financial statements), the Orphan Fund had net assets of $8 million. The net assets are for the cleanup of orphaned wells and facilities. Therefore, the Ministry's unfunded liability for cleaning up the 260 orphaned wells and facilities is $10 million ($18 million - $8 million). If there are 700 orphaned wells and facilities, its unfunded liability is $41 million ($49 million - $8 million). In order to better manage its unfunded liability and to record it in its financial records, the Ministry needs to begin updating its cost estimates and its estimate of the number of orphaned wells. Earlier, in this chapter we recommended that the Ministry use current estimates and trend analysis for monitoring, assessing, and reporting on the risks and the associated costs of the future cleanup of wells and facilities.

The Ministry cannot use the Orphan Fund's $37 million in security deposits to offset its unfunded liability. This is because the Orphan Fund holds the security deposits in trust for the licensees who paid them. If a licensee's wells and facilities become orphaned, its security deposit becomes revenue of the Orphan Fund and is then used to help pay for the cleanup of the wells and facilities. If a licensee's security deposit is not used for this purpose or if the rules of the OA program no longer require the licensee to have a security deposit, it is returned to the licensee.

6. We recommend that the Ministry of the Economy estimate and record its liability for cleaning up orphaned wells and facilities in its financial records for inclusion in the Government's financial statements.

The Ministry analyzes the effectiveness of its programs in managing the financial and associated environmental risks of cleaning up wells and facilities. It also proposes and makes revisions to its programs based on these assessments.

In making assessments, the Ministry relies on the expertise and experience of its staff, the advice from industry members of the Orphan Fund Advisory Committee, and the expertise and experience of officials with the Governments of Alberta and British Columbia who manage similar programs. It also tracks and analyzes program data (e.g., number of licensees, collection rates, and LLR program trends such as the declining production value of wells, changes in security deposits required, etc.).

Examples of program assessments and program changes include:

Inactive Wells and Facilities

The number of inactive wells and facilities is increasing with the growth of the oil and gas industry. The Ministry needs to manage the risk of licensees unnecessarily deferring the cleanup costs of inactive wells and facilities. Currently, the Ministry's legislation does not address the timely cleanup of inactive wells and facilities.

The Ministry has provided a draft directive on the suspension of inactive wells to the industry for comment. This draft directive is designed to temporarily address the risks of the metal casing lining the well-hole and the shut-off devices deteriorating and allowing contamination of subsurface layers, land, and air. The suspension standards are temporary because, in most cases, they do not require the well-hole to be permanently sealed up.

Therefore, the Ministry has yet to address the financial risks of inactive wells and it has not fully addressed the environmental risks, including the removal of facilities and surface contaminants at the well site.

7. We recommend the Ministry of the Economy manage the financial and associated environmental risks related to the timely cleanup of inactive wells and facilities.

Outreach Program

The purpose of an Outreach Program is to provide advice to licensees whose productive values of wells and facilities are declining and approaching the costs that will be required to clean up their wells and facilities. The Ministry is planning to identify and track these licensees and provide them with information on strategies to mitigate the risks of them becoming unable to pay for their cleanup costs.

Waste Management Facilities

The Regulations that came into force in June 2007 to implement the LLR program did not include waste management facilities. The amendments to the Regulations proclaimed April 1, 2012 include these facilities.

Legacy Well Sites

Legacy well sites are sites that received a release prior to 2007 from surface owners (e.g., farmers) or certificates issued pursuant to subsection 56(2) of *The Surface Rights Acquisition and Compensation Act.* The Ministry, in accordance with its legislation at the time, accepted the release or the certificate as evidence that the sites were restored to appropriate environmental standards or to the satisfaction of the landowner. The legislation did not require independent reports by environmental specialists before the releases were granted. Consequently, some of these sites may contain contaminants that continue to pose risks to the environment and to public health. The Ministry continues to assess the extent of the risks posed by the approximately 20,000 legacy well sites. Of the 20,000 sites, the Ministry estimates there are 9,000 sites that have a higher risk of contamination.

8. We recommend the Ministry of the Economy complete its assessment of the financial and environmental risks arising from legacy well sites, assess its liability, and develop a plan for cleaning up contaminated legacy well sites.

7.0 Exhibits

Exhibit 1—Program Summaries

Licensee Liability Rating Program (LLR program)

It is designed to help prevent the rapid increase of orphaned well and facility liabilities in the future and to help ensure licensees pay for the future cleanup of their wells and facilities. The Ministry estimates the productive value of each licensee's wells and facilities (measured in the value of oil and/or gas produced from their wells and facilities in Saskatchewan) and their estimated cleanup costs (abandonment and reclamation liabilities). For those licensees who do not have well assets greater than the estimated cleanup costs for their wells and facilities (i.e., higher risk licensees), they are required to pay a security deposit, in the form of an irrevocable line of credit or cash, to the Ministry for the difference.

The security deposit assessment is done monthly and at the time of well and facility transfers. The purpose of the security deposit is to prevent a licensee from transferring (or selling) uneconomic wells and facilities to companies or individuals who do not have economic means to pay for the cleanup costs. Also, if existing licensees become bankrupt or cannot be located in the future, their security deposits are used to help cover the costs of cleaning up their wells and facilities. The Ministry holds the security deposits in trust in the Oil and Gas Orphan Fund (Orphan Fund).

Orphan Abandonment Program (OA program)

Its purpose is to cleanup wells and facilities that are deemed orphaned. Orphaned wells and facilities are ones where the responsible licensees cannot be located or do not have the financial means to pay for the cleanup costs. The program is funded by all well and facility licensees through the collection of levies and the cleanup work is managed by the Ministry. The Ministry deposits the levies into the Orphan Fund. Also, when the Ministry determines a licensee's wells and facilities are orphaned, any security deposits relating to that licensee are forfeited to the Orphan Fund.

Acknowledgement of Reclamation Program (AOR program).
The Ministry issues an AOR certificate to a licensee when it has cleaned up (or reclaimed) a well or facility in accordance with the Ministry's site remediation standards. The AOR does not release a licensee from any unforeseen long-term environmental liabilities arising from its wells and facilities. The certificate reduces a licensee's assessed abandonment and reclamation liabilities under the LLR program and hence the security deposits and levies that they must pay to the Ministry.

Exhibit 2—Program Objectives

- Prevent a licensee from transferring (selling) uneconomic wells and facilities to companies or individuals who do not have economic means to pay for the abandonment and reclamation liabilities, for example offloading liabilities on numbered shell companies
- Ensure all well abandonment and reclamation liabilities a licensee is responsible for or is requesting to transfer are backed up by physical production assets (oil and gas that is produced from their wells and facilities located in Saskatchewan) or are backed by securities such an as irrevocable letter of credit or cash
- Collect levies from licensees to pay for the abandonment and reclamation of orphaned wells and facilities
- Ensure the sites that are reclaimed are remediated and restored to the standards specified by the Ministry

8.0 Glossary

Abandonment – well abandonment involves permanently squeezing cement into any perforated intervals in the well hole and filling the hole with cement to prevent any subsurface formation containing gas or fluids from leaking below ground or escaping above the ground.

Inactive wells and facilities – are wells and facilities that have not reported any production, injection or disposal activities for a period of 12 consecutive months or longer. Inactive wells and facilities are not the same as orphaned wells and facilities. Inactive wells and facilities are owned by active licensees who are responsible for the associated cleanup costs.

Reclamation – well site reclamation involves removing all wells and facilities (equipment and structures), remediating contaminated soils and/or groundwater, and returning the site to its original or equivalent condition.

Suspended wells – well suspension means temporarily plugging inactive wells to prevent leakage.

9.0 Selected References

Auditor General of Alberta. (2005). Energy: Liability management for suspension, abandonment and reclamation activities. In *Annual report of the Auditor General of Alberta*. Edmonton: Author. http://www.oag.ab.ca/?V_DOC_ID=841 (11 Sept 2012)

Cryderman, K. (2011). Restoring the land after wells run dry. *Edmonton Journal*. http://www2.canada.com/edmontonjournal/news/sundayreader/story.html?id=df2fe2d0-368b-4853-a3d9-09551270dc44 (11 Sept 2012)

Office of the Auditor General of British Columbia. (2010) 2009/10: Report 8. *Oil and gas site contamination Risks: Improved oversight needed*. Victoria: Author. http://www.bcauditor.com/pubs/subject/environment-%2526-natural-resources?page=1 (11 Sept 2012)

Robinson, B. (2010). *Well abandonment and reclamation in Alberta: Failure of the licensee liability rating program*. Paper prepared for the Well & Pipeline Abandonment, Suspension and Reclamation Conference, Edmonton: Canadian Institute. http://www.ecojustice.ca/publications/reports/well-abandonment-and-reclamation-in-alberta (11 Sept 2012)

Turcza, A. (2004). *The effectiveness of Alberta's solutions to the orphan well problem*. Edmonton: University of Alberta. http://www.business.ualberta.ca/Centres/CABREE/NaturalResources/~/media/business/Centres/CABREE/Documents/NaturalResources/LandUse/OrphanPaperCorrected.ashx (11 Sept 2012)