Environment and Parks and the Alberta Energy Regulator—Systems to Ensure Sufficient Financial Security for Land Disturbances from Mining

SUMMARY

What we examined

We followed up our recommendation, originally made to the former Department of Environment in 1999, to implement a system for obtaining sufficient financial security to ensure that the conservation and reclamation of mine sites is completed. We have repeated the recommendation three times.

Since the time of our last follow-up audit, the Department of Environment and Parks developed and implemented the Mine Financial Security Program (MFSP). The focus of our current audit was on this program, and whether it constitutes an approach that provides for sufficient financial security. Our audit approach included assessing whether the methodology is logical and in agreement with the stated objectives of the MFSP and whether adequate ongoing monitoring of the security being provided is taking place. The design of the MFSP resides with the department and the administration was transferred to the Alberta Energy Regulator, effective March 2014. Therefore, our audit was conducted at both organizations.

As of December 31, 2014, $1.57 billion of security is currently being held in comparison to estimated reclamation liabilities of $20.8 billion. Because the MFSP applies an "asset to liability approach," both the security held and the value of the resource in the ground are considered assets in the program, which is designed to offset liabilities. As the resources are depleted, the security requirements increase to reflect greater liability exposure. The security required is reduced as reclamation takes place and the liability is reduced.

Overall conclusion

Implementing the MFSP was an important step towards a system that obtains sufficient financial security for mining related land disturbances. However, for the design and operation of the MFSP to fully reflect the intended objectives of the program, improvements are needed to both how security is calculated and how security amounts are monitored.

What we found

There is a significant risk that asset values calculated by the department are overstated within the MFSP asset calculation, which could result in security amounts inconsistent with the MFSP objectives. The MFSP asset calculations do not incorporate a discount factor to reflect risk, use a forward price factor that underestimates the impact of future price declines, and treat proven and probable reserves as equally valuable.

The extent of the department's and AER's audit verification activity since 2011 has been limited. There is no documented risk-based plan to outline the extent of activities necessary to provide the necessary assurance that security amounts are appropriate.

What needs to be done

We are assessing the recommendation as implemented because the deployment of the MFSP satisfies the intent of what was originally recommended. However, we are making a new recommendation as the department needs to analyze and decide upon the various factors overstating asset values in the MFSP calculation. Additionally, the department should consider the impact of factors that may inappropriately extend the mine life within MFSP security calculations.

We are also making a new recommendation to the AER as the administrator of the MFSP. The AER needs to develop a plan, informed by external and operator risks, to decide when and how many audits of operator submitted information it will complete. Additionally, the AER could cost-effectively enhance its monitoring activities by keeping a closer eye on current events that may signal risks to the operating and financial condition of mining operators.

Why this is important to Albertans

In the event that a mine operator cannot fulfill its reclamation obligations, and no other private operator assumes the liability, the province may have to pay a potentially substantial cost for this work to be completed. Thus, a robust and responsive system to calculate and collect security from mine operators is essential.

AUDIT OBJECTIVE AND SCOPE

Our audit objective was to determine if the department and the AER implemented our recommendation to implement a system for obtaining sufficient financial security to ensure that conservation and reclamation of mine sites is completed.

We conducted our field work from October 2014 to March 2015. We substantially completed our audit on June 11, 2015. Our audit was conducted in accordance with the *Auditor General Act* and the standards for assurance engagements set by the Chartered Professional Accountants of Canada.

BACKGROUND

By law, coal and oil sands mine operations are responsible for reclaiming land that is disturbed by mining and the operation of related plants. Standards for reclamation are set by the Government of Alberta.

Audit history

In 1998, we performed an audit of the systems used by the Department of Environment to collect financial security for land disturbances in the oil sands and coal mining sectors. We determined that financial security was usually in the form of a letter of credit from a bank, intended to cover the costs related to eventual site reclamation by industry operators. However, we found that the department did not have a consistent process to determine the amount of financial security required from the operators and there were varying practices being followed by different operators and industries. Our original recommendation was reported in our 1998–1999 report, and we repeated the recommendation in our follow-up reports in 2000–2001, 2004–2005 and 2009.

Developments since our 2009 follow-up audit

The government has moved forward with a number of reclamation initiatives to improve clarity, security, and environmental performance within the oil sands and coal mining sectors. These new reclamation initiatives include the MFSP, enhanced reclamation reporting, and a strategy to encourage quicker reclamation.

The Mine Financial Security Program

The fundamental principle of the MFSP is that the *Environmental Protection and Enhancement Act* approval holder is responsible for carrying out suspension, abandonment, remediation and surface reclamation (going forward, referred to as reclamation in this report) work to the standards established by the province and to maintain care and custody of the land until a reclamation certificate has been issued.

The MFSP was initiated by the department in 2011 to ensure that financial resources will be available to reclaim disturbed lands if an operator is unable to complete the reclamation. The MFSP intends to strike a balance between protecting Albertans from incurring costs associated with reclamation work and maximizing opportunities for responsible and sustainable resource development. The amount of security and when it needs to be provided are key elements that factor into that balance.

By June 30, mine operators are required to provide annual reporting for the previous year ended December 31. This annual reporting includes the information necessary to calculate the required security deposit. Responsibility for the administration of the program was transferred from the department to the AER in March 2014. The department continues to be responsible for establishing the overall MFSP policy and design.

The program requires a base amount of security for each mine project, which is intended to provide the funds necessary to safely secure the mine site and place the project in a care and custody state.

The MFSP uses an asset-to-liability approach to managing financial risks relating to reclamation liabilities. This approach recognizes that the resource value associated with an approved project is an asset in terms of its ability to generate cash flow through operations. When a project has MFSP assets at least three times larger than its MFSP liability, is 15 years or more from the end of its reserves and is keeping current with its reclamation plans, additional security above the base amount is not required. When a project has MFSP assets less than three times its MFSP liability, is nearing the end of its productive mine life, or is not meeting its targeted reclamation plans, additional financial security is required. (See appendix for base and other types of security deposits.)

Because the MFSP has been designed using an asset-to-liability approach rather than a full security approach, Albertans bear a degree of risk that reclamation will not be completed by the mine operator. The MFSP attempts to manage this risk by requiring these various deposits.

The MFSP is not designed to respond quickly to sudden fluctuations in the price of oil. This was a deliberate decision made by the department to avoid potentially widely fluctuating security amounts from year to year. If an abrupt financial and operational decline were to occur in the oil sands sector it would likely be difficult for an oil sands mine operator to provide this security even if the need for the security was identified through the program. It is important to recognize that the department has accepted the risk of not protecting against a broad based and rapid structural decline in the oil sands sector, having designed the program with the intent of capturing what they believe are a reasonable range of economic conditions.

FINDINGS AND RECOMMENDATIONS

Improvements needed to the design of the mine financial security program

Background

Asset safety factor deposit

The MFSP incorporates an asset safety factor deposit which is only required if a mine's resource assets are worth less than three times the total anticipated costs for conserving and reclaiming the mine site. The asset safety factor calculation was created to ensure that a mine will have assets of sufficient value in place to ensure that a new operator will be motivated to take over the mine and complete the required reclamation activities if the existing operator is not able to do so.

Under the MFSP, the value of an oil sands mine's resource assets is based on the income that those assets are likely to generate over the life of the mine. The assets are calculated as:

MFSP Assets = N * R * F

Where N = 3-Year Average of Annual Netbacks[1]
R = Gross Proven and Probable Reserves
F = Forward Price[2] Factor

Outstanding reclamation deposit

The outstanding reclamation deposit is intended to encourage the prompt reclamation of disturbed lands. The operator posts security when they do not complete planned reclamation according to the reclamation schedule approved by the department within the operator's mine reclamation plan. The amount of security is $75,000 per hectare of work planned but not performed.

Operating life deposit

An operator is required to start posting financial security when there are less than 15 years of reserves left. Security gradually increases so that all outstanding reclamation costs are fully financially secured by the time there are less than six years of reserves left.

Presently, no oil sands mining operator has posted more than the base amount of security. In other words, no security is currently required under the various other forms of deposit based on data submitted by oil sands mine operators.

1 Netback is a term used in oil and gas extraction that is calculated by taking revenue from oil and gas production and deducting all the costs associated with bringing oil and gas to market. It is typically presented on a "per barrel" basis.

2 A forward price is the predetermined delivery price for an underlying commodity, currency, or financial asset decided upon by the buyer and the seller to be paid at a predetermined date in the future.

RECOMMENDATION 2: IMPROVE PROGRAM DESIGN

We recommend that the Department of Environment and Parks, as part of its regular review of the Mine Financial Security Program:

- analyze and conclude on whether changes to the asset calculation are necessary due to overestimation of asset values in the methodology
- demonstrate that it has appropriately analyzed and concluded on the potential impacts of inappropriately extended mine life in the calculation

Criteria: the standards for our audit

The department should demonstrate that the Mine Financial Security Program:

- is designed consistently with its principles
- is operating as intended
- mitigates the risk of taxpayers having to assume costs of reclamation work in case of operators' possible non-compliance with legislation

Our audit findings

KEY FINDINGS

- The MFSP asset calculation overstates the economic value of mining assets.
- The department needs to review and resolve opportunities it identified within the MFSP to inappropriately extend an oil sands mine's life.
- The department reviews and approves planned yearly reclamations.

Asset calculation methodology results in overstated estimated asset values

We have identified three significant inconsistencies between the MFSP objectives and the approach to the asset calculation that is likely to result in overvaluation of mine assets:

- The reserve estimate used under the program includes both proven and probable reserves. Probable reserves, defined as a 50 per cent likelihood of commercial extraction, are less likely to be productive than proven reserves, defined as a 90 per cent likelihood of commercial extraction. Treating both proven and probable reserves as equally valuable on a per barrel basis increases the risk that the department is overestimating the value of these assets. Furthermore, there is no consideration in the calculation of the development costs necessary to bring undeveloped proven reserves and probable reserves into production.
- The resource asset valuation calculation applies a forward price factor to the average netback for the last three years. This methodology is intended to adjust past earnings to reflect expected future declines in oil prices. Using this approach implies that commodity price declines will have an equally proportional impact on revenues as they do on operating costs, which is not consistent with the reality of oil sands operations. Applying the forward price factor to the average netback instead of applying it only to average revenues and then deducting average operating expenses underestimates the impact of future price declines on the valuation of a mine's resource assets.
- The resource asset valuation calculation does not reflect any risks associated with the future economic value of the reserves. Oil sands mines are long-term operations and it takes many years to completely extract a site's reserves. Over that long time frame, there are numerous risks to the profitability of a mine operation. These include oil price fluctuations, foreign exchange rate changes, technological change and regulatory change. These risks are typically reflected by applying a discount rate to the expected future income stream when valuing a long-term asset. No discount rate, or risk-based adjustment, is applied in determining the asset value under the program, which overstates the value of a mine's resource assets.

While correcting for these overstatements may not immediately result in any change to the security required, it could result in additional required security earlier than presently anticipated or in the event of prolonged oil price weakness.

Possible inappropriate extension of mine life

The department has identified two circumstances that could result in unnecessary deferrals in the collection of security under the program:

- Some oil sands mine operators are using in situ techniques to extract oil reserves and augment their open pit mine reserves. These in situ techniques involve the drilling of wells and the injection of heat into the reservoir to extract bitumen as opposed to extracting it through open pit mining. This technique creates less land disturbance than does an open pit mine. However, the inclusion of the oil reserves made available through this process in the calculations under the program serves to increase the mine's resource assets and extend the life of the mine. This delays the collection of security for the open pit mining operation as it reaches the end of its life.
- Oil sands mine operators may be able to amend the areas covered by their mine approvals or combine multiple mines into one approval. The effect of this may combine an old mine operation with a new one and thus increase the resource assets associated with the approval. This delays the collection of security for the older mining operation as it reaches the end of its life.

We understand that the department is currently analyzing the first of these issues as part of its MFSP review process. The second issue will not be part of the MFSP review process.

Planned yearly reclamation is being reviewed and approved

One of the stated principles that guided the development of the MFSP is that "lands available for reclamation should be reclaimed and returned to the province or landowner as soon as possible."

If operators do not complete their planned yearly reclamation, any shortfall translates into higher security at a rate of $75,000 per hectare. Operator mine reclamation plans are reviewed and approved by the department, and now by the AER, and we were provided evidence of detailed technical questions and challenges to operators' mine reclamation plans. This review is completed outside the context of the MFSP as it has broader implications to other areas within the department. Within this review, we found evidence that the yearly reclamation planned had been assessed for adequacy. This assessment is important as the amount of security posted is impacted if planned reclamation is not completed.

The review of planned reclamation is a key control for the MFSP. The more optimistic an operator's yearly reclamation forecast is, the more likely an operator will have to post security; thus, there is a potential disincentive for operator's to plan to reclaim more disturbances earlier.

Implications and risks if recommendation not implemented

If there isn't an adequate program in place to ensure that financial security is provided by mine operators to fund the conservation and reclamation costs associated with their mine operations, mine sites may either not be reclaimed as intended or Albertans could be forced to pay the reclamation costs.

If incentives are not in place to reclaim lands as soon as reclamation is possible, mine sites may remain disturbed for longer than necessary and Albertans face a larger risk that they will end up having to pay the eventual reclamation costs.

Monitoring of the security provided can be improved

Background

The AER assumed responsibility for monitoring the program in March 2014. The program was previously monitored by the department.

Under the program, operators are required to file a brief annual report that discloses their conservation and reclamation liability, their resource assets and the components of the resource asset calculation, and the amounts required for each security deposit under the program. This report is certified by the operator's chief executive officer or chief financial officer. No supporting documentation is required with the report.

The AER is able to "audit" the information provided in the annual report and there are four levels of audit under the program.

- Level 1 audit—Phone or in-person discussions with the operator seeking clarification of information in the annual report.
- Level 2 audit—Written questions and responses confirming scope and methodology used in preparing the annual report.
- Level 3 audit—Detailed audits performed by AER staff, with possible involvement of the Department of Environment and Parks or Department of Energy staff, on all or a portion of the data and assumptions in the annual report. These audits are typically performed at the operator's offices.
- Level 4 audit—Detailed audits performed by a third party auditor. These audits are typically performed at the operator's offices.

The MFSP guidance document indicates that audits may be conducted; however, it doesn't prescribe the number and type of audits to be completed.

RECOMMENDATION 3: IMPROVE PROGRAM MONITORING

We recommend that the Alberta Energy Regulator, as part of its enterprise risk assessment process, develop and execute on a risk-based plan for its Mine Financial Security Program monitoring activities to ensure it is carrying out the appropriate amount of verification.

Criteria: the standards for our audit

Environment and Parks and the Alberta Energy Regulator should demonstrate that the Mine Financial Security Program is implemented, is being followed and is being monitored adequately.

Our audit findings

KEY FINDINGS

- A risk-based plan has not been developed to direct the nature and extent of monitoring activity.
- The level of audit verification is not sufficient to mitigate risk.
- Monitoring activities to mitigate risk could be enhanced.

Risk-based plan has not been developed

When the MFSP was initiated, the department intended to complete two level 4 audits per year, one in the coal sector and one in the oil sands sector. The department was responsible for conducting audits of submissions prior to AER taking over the monitoring of the program.

The AER has not established an audit plan that identifies the level 3 and level 4 audits that should be completed over a given timeframe. A risk assessment has been recently developed to help identify which operators should be monitored more closely. However, there presently is no evidence that the level of audit activity is commensurate with the risks that exist.

Insufficient level of audit verification

The previous program for collecting security for the reclamation of mine operations required operators to provide detailed support for the calculations used to support the amount of security provided. When the MFSP was developed by the department, this requirement was removed. The MFSP only requires a certified annual report and allows for the AER to request additional information to review, or conduct more detailed audits of the calculations. The self-reporting nature of the MFSP enhances the importance of the level 3 and level 4 audits, which verify the information being submitted by operators.

There are 19 coal mines that provide financial security under the program. Since the inception of the program, only two of these mines have been subject to level 3 audits. One level 4 audit had begun at the time of our audit. There is a high degree of financial risk associated with coal mine operations due to the decline in coal prices. As a result, the entire coal sector elected to provide full financial security for the reclamation of their mines. However, very little audit activity has been undertaken in the coal sector to ensure that the amount of financial security provided by the operators is adequate.

Since the program was implemented in 2011, only two level 4 audits have been completed in the oil sands sector and three level 3 audits have been completed.

Given that $1.57 billion of financial security was provided under the program in 2014 and a significantly greater liability exists in relation to unsecured reclamation costs for existing mine operations, the level of verification activity has been insufficient.

AUDITS COMPLETED

	LEVEL 3		LEVEL 4	
	Oil Sands	Coal	Oil Sands	Coal
2012	1	1	0	0
2013	2	1	1	0
2014	0	0	1	1

Note: There are 8 oil sands mines and 19 coal mines

Since 2011, the department and the AER have completed a total of 32 level 2 audits, which entails requesting additional information based on areas of risk or potential concern with an annual submission. The level 2 audit is an important part of the monitoring process as it can identify potential issues. However, they don't involve verifying supporting information from company records. As such, they provide less assurance on the accuracy of amounts used to calculate security.

Monitoring activities to mitigate risk could be enhanced

The MFSP is designed for an annual review, driven by an annual report that mine operators are required to submit due at the end of June following the reporting year ended December 31. However, significant changes in the intervening period can erode an operator's financial situation. The AER presently does not have a process to monitor information that might identify material changes to an operator's continuing operations and financial condition. For example, keeping apprised of significant corporate press releases, interim financial statements and share prices.

The AER does receive information from its field staff that have a more direct line of sight to the operators. This information may alert the AER to changing circumstances that may warrant further review in the context of the MFSP.

Implications and risks if recommendation not implemented

Without an effective and timely monitoring program, necessary adjustments to security amounts may not be promptly identified, which increases the risk that Albertans will end up having to pay for the conservation and reclamation of mine sites.

Appendix

TYPES OF FINANCIAL SECURITY DEPOSITS UNDER THE MINE FINANCIAL SECURITY PROGRAM

The Mine Financial Security Program includes four types of financial security deposits, focusing on various potential risks during the lifecycle of a mine:

Base Security Deposit—Existing and new projects are required to provide a base amount of security. Among other things, this security will be used for suspension care and custody to maintain security and safety at the site until a new operator takes over or the site is closed. For existing projects, the base security deposit will be the amount of security each project had posted with the government effective December 31, 2010. For existing projects, the security amount as of December 31, 2010 that is being held is:

APPROVAL HOLDER, PROJECT NAME AND EPEA APPROVAL NUMBER	BASE SECURITY DEPOSIT
Canadian Natural, Horizon, 149968	$61,200,000.00
Imperial, Kearl, 46586	$64,655,000.00
Shell Albian, Jackpine, 153125	$72,361,895.00
Shell Albian, Muskeg River, 20809	$111,277,441.29
Suncor, Base Mine, 94	$359,096,654.00
Suncor, Fort Hills, 151469	$38,958,605.00
Syncrude, Mildred Lake and Aurora North, 26	$205,303,024.00

For new projects, the base security will be:

MINE TYPE	BASE SECURITY DEPOSIT
Mine-mouth coal mine	$2,000,000
Export coal mine	$7,000,000
Oil sands mine	$30,000,000
Oil sands mine with upgrader	$60,000,000

Operating Life Deposit—to mitigate the risks at the end of mine life. An operator is required to start posting financial security when there are less than 15 years of reserves left so that all outstanding abandonment, remediation and surface reclamation costs are fully financially secured by the time there are less than six years of reserves left.

Asset Safety Factor Deposit—to mitigate the risks if an operator's cash flow falls below a level deemed adequate to ensure that all MFSP liabilities can be fully funded. The operator posts financial security when the MFSP asset to MFSP liability ratio falls below 3.00. Sufficient financial security must be posted to bring the ratio to 3.00.

Outstanding Reclamation Deposit—to mitigate the risks posed by an operator deferring reclamation. The operator posts security when they do not complete planned reclamation according to the reclamation schedule approved by the government.

Approval holders can elect to place full security at any time in the life of the project based on the MFSP liability calculation. In this case, the approval holder would no longer be subject to the four security deposits described above. The entire coal sector has elected to provide full financial security.