



Coalspur Mines (Operations) Ltd.

Applications for Coal Mine Permit Amendment, Coal Processing Plant Approval Amendment, Coal Mine Pit Licence, and Coal Mine Dump Licences

McLeod River Coal Field

February 27, 2014

ALBERTA ENERGY REGULATOR

Decision 2014 ABAER 004: Coalspur Mines (Operations) Ltd., Applications for a Mine Permit Amendment, Coal Processing Plant Approval Amendment, Coal Mine Pit Licence, and Coal Mine Dump Licences, McLeod River Coal Field

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ALBERTA ENERGY REGULATOR**Calgary Alberta**

COALSPUR MINES (OPERATIONS) LIMITED**APPLICATIONS FOR COAL MINE PERMIT AMENDMENT, COAL PROCESSING
PLANT APPROVAL AMENDMENT, COAL MINE PIT LICENCE, AND COAL MINE
DUMP LICENCES****2014 ABAER 004****MCLEOD RIVER COAL FIELD****Applications No. 1726915, 1726923, and 1726927**

DECISION

[1] Having carefully considered the social, economic, and environmental effects of the project, as well as the impacts on landowners and land use, the Alberta Energy Regulator (AER) approves Applications No. 1726915, 1726923, and 1726927 subject to the conditions listed in appendix 2. In reaching its decision, the AER considered all materials constituting the record of this proceeding. Accordingly, references in this decision to specific parts of the record are intended to assist the reader in understanding the AER's reasoning on a particular matter and do not mean that the AER did not consider all relevant portions of the record with respect to that matter.

INTRODUCTION

[2] Mine Permit No. C 82-60 and Coal Processing Plant Approval No. C 82-2 were issued on December 2, 1983, to McLeod River Coal Ltd., a fully owned subsidiary of Manalta Coal Ltd., after a public hearing which resulted in Energy Resource Conservation Board (ERCB) *Decision D83-A*.

[3] There was no mining activity conducted under the mine permit or processing plant approval. In 2010, Mancal Coal Inc., the then-current holder of the approvals, applied to the ERCB to split the permit in two and transfer one half of the mine permit as well as the coal processing plant approval to Coalspur Mines (Operations) Ltd. (Coalspur). The resulting Mine Permit No. C 2011-5 and Coal Processing Plant Approval No. C 2011-3 were transferred to Coalspur.

[4] Coalspur applied for approval to construct, operate, and reclaim a surface coal mine known as the Vista Coal Project (the project). The project would be located in portions of the following townships, all West of the 5th Meridian: Township 50, Range 23; Township 51, Range 22; Township 51, Range 23; and Township 51, Range 24. The project would produce 5 million tonnes of clean coal per year and would be located about 10 kilometres (km) east of Hinton, extending away from Hinton to the southeast for about 12 km, up to the McLeod River Valley.

Application No. 1726915

[5] Application No. 1726915 was made under sections 13 and 21 of the *Coal Conservation Act* and section 5 of the *Coal Conservation Rules* to amend Mine Permit No. C 2011-5 to construct, operate, and reclaim a coal mine site and associated infrastructure. The amendment includes an expansion of the project area from 5003 hectares (ha) to 6092 ha to accommodate a larger fines

settling pond, an access road, a conveyor from the coal processing plant to a load-out facility at the rail line on the north side of Highway 16, and a bridge for the conveyor across Highway 16.

Application No. 1726923

[6] Application No. 1726923 was made under section 23 of the *Coal Conservation Act* and section 16 of the *Coal Conservation Rules* to amend Coal Processing Plant Approval No. C 2011-3 to construct and operate a coal processing plant and associated infrastructure. The amendment would revise the location of the plant and the fines settling pond, add a freshwater pond and new processing facilities, and increase production capacity of the plant to 5 million tonnes of clean coal annually.

Application No. 1726927

[7] Application No. 1726927 was made under section 11 of the *Coal Conservation Act* and section 8 of the *Coal Conservation Rules* for new coal mine licences to construct, operate, and reclaim one mine pit and three external waste dumps.

Background

[8] The ERCB registered Coalspur's applications on May 4, 2012. A joint notice of application with Alberta Environment and Sustainable Resource Development (ESRD) was issued from the offices of the ERCB on August 13, 2012.

[9] On June 17, 2013, the *Responsible Energy Development Act (REDA)* came into force in Alberta. *REDA* repealed the *Energy Resources Conservation Act* (which established the ERCB) and created the Alberta Energy Regulator (AER). In accordance with the terms of *REDA*, the AER assumed all of the ERCB's powers, duties, and functions. In addition, the AER has an expanded legislative mandate to ensure the safe, efficient, orderly, and environmentally responsible development of energy resources over their entire life cycle. As part of this transition, the AER has already assumed additional responsibilities under the *Public Lands Act* and the *Mines and Minerals Act*. It is expected that in the near future, the AER will assume responsibility under the *Environmental Protection and Enhancement Act* and the *Water Act* as they relate to energy resource activity.

[10] A notice of hearing was issued from the offices of the AER on August 15, 2013. In response to the notice of hearing, the AER received requests to participate from Tourmaline Oil Corp. (Tourmaline), Joan Murray-Kehr, Alexis Nakota Sioux Nation (ANSN), Foothills Ojibway First Nation (FOFN), Whitefish (Goodfish) Lake First Nation (WLFN), Ermineskin Cree Nation (ECN), and Gunn Metis Local 55.

[11] The panel granted full participation to Tourmaline, ANSN, WLFN, and ECN. The panel denied the requests of FOFN and Gunn Metis Local 55 to participate. Ms. Murray-Kehr was permitted to make a 30 minute presentation at the hearing.

[12] The notice of scheduling of hearing was issued on October 3, 2013, with a scheduled hearing date of November 25, 2013. Requests to reschedule were received from all the participants who had been granted full participation, and the hearing was rescheduled by way of a notice of rescheduling of hearing issued on October 23, 2013. The hearing was scheduled to

commence on December 9, 2013, to consider the evidence of Tourmaline, and reconvene on January 13, 2014, to consider the evidence of the other participants.

[13] Prior to the opening of the hearing, the AER received a letter from WLFN and ECN withdrawing their objections to the applications. Tourmaline withdrew its objection subsequent to the opening of the hearing on December 9, 2013. On January 9, 2014, ANSN withdrew its objection.

Hearing

[14] The AER held a public hearing which commenced in Calgary, Alberta, on December 9, 2013, before Hearing Commissioners A. H. Bolton, P.Geo., (presiding), B. M. McNeil, C.Med., and L. J. Ternes, B.A., LL.B. The hearing reconvened in Hinton, Alberta, on January 13, 2014, and closed the same day. Those who appeared at the hearing are listed in appendix 1.

ISSUE

[15] The issue to be decided by the panel was whether the applications should be approved.

The panel focused its review on the following factors:

- social and economic effects,
- effects on environment, and
- impacts on land use and landowners.

SOCIAL AND ECONOMIC EFFECTS

[16] Ms. Murray-Kehr advised that she is concerned that the development of the project will significantly increase the risk to Hinton's socioeconomic health. She stated that given the nature of commodities, coal prices will drop in the future, resulting in a local recession. As an example of the potential impacts, Ms. Murray-Kehr cited the effects on Grande Cache during the 1980s. She highlighted effects including increases in unemployment, decreases in housing values, decreases in population, closure of local businesses, and the necessity of government intervention. Ms. Murray-Kehr submitted that the same impacts could potentially be seen in Hinton should the applications be approved, thereby undermining Hinton's efforts to diversify its economy. It was suggested that a mitigating measure would be to develop the coal seams in the Hinton area one at a time to spread the impacts of projects over more years, which would provide long-term employment and maintain the relative diversity of Hinton's economy.

[17] Ms. Murray-Kehr submitted that Coalspur should be required to conduct a better socioeconomic analysis of the impacts of its project. She expressed the concern that the applications would be approved without the panel being able to assess the actual risks. She suggested that better analysis should be provided that expressed both positive and negative impacts in dollar values. Specifically, she stated that economic projections should be developed for various scenarios with risk analysis suggesting the likelihood of each projection.

[18] Finally, Ms. Murray-Kehr suggested that Coalspur should be required to provide a reserve fund to cover the socioeconomic costs to the town and its citizens.

[19] The panel recognizes that Ms. Murray-Kehr's concerns relate to the potential negative impacts of the project and whether the panel has sufficient information to consider these risks. The panel also notes that many of Ms. Murray-Kehr's concerns are based on the potential for a local recession.

[20] With respect to the local economy, Coalspur submitted the *Hinton Community Sustainability Plan* and letters of support for the project from the Town of Hinton; Coalspur also provided evidence which considered both the positive and negative potential impacts to the local region should the applications be approved.

[21] With respect to Ms. Murray-Kehr's concerns regarding potential impacts of a downturn in prices, Coalspur stated that it intends to follow a second quartile operating cost structure. Coalspur stated that this is ultimately its best defense in case of a downturn. The panel interprets Coalspur's statement to mean that if Coalspur is able to achieve its targeted operating costs, more than 50 per cent of other coal mining operations would be seriously affected by a downturn in commodity prices before the Vista project itself was similarly affected.

[22] The panel acknowledges that there could be some negative impacts on the region. These include added pressure on social infrastructure including medical service providers, schools, emergency responders, and social support services. However, Coalspur suggested that the only sector that may experience problems with the increase in population are social support service providers. Coalspur stated that it will continue to keep the stakeholders, including local service providers, aware of its plans and update them on any changes. Coalspur also stated that it has in place an internal employee assistance program that will mitigate this impact and that the inflow of tax dollars to the municipality from the project would assist in any additional funding that may be necessary.

[23] Coalspur outlined the economic benefits associated with the project to the local region. Coalspur estimated that the project would create 510 long-term operating positions, 105 person years of engineering employment, and approximately 970 person years of employment relating to construction of the plant, facilities, and infrastructure for the mine. Coalspur estimated that it will pay \$11.3 million dollars in municipal taxes over the life of the project (in 2012 dollars).

[24] The significance of the economic benefits is further amplified when the scope of the benefits is expanded to encompass the entire province. In particular, Coalspur anticipated that for construction, the project's contribution in terms of gross domestic product (GDP) and household income will be approximately \$844 million and \$545 million, respectively. Operating and sustaining capital expenditures contribution to GDP was estimated to be \$350 million. The total labour income effect of the project's operating and sustaining capital was estimated at \$183 million. In addition to these benefits, once fully operational, Coalspur estimated that the project will generate royalties of \$123 million (net present value 2012) over the 20 year operating life of the project.

[25] Coalspur estimated the total initial capital expenditure for the project at \$872.7 million. Construction capital expenditures include wages and salaries paid to construction workers, engineering and environmental services, and the direct purchase of goods and services such as

equipment modules and structural steel elements. Coalspur estimated that the annual operations and sustaining capital expenditure of the project will average \$198.1 million per year.

[26] Given all of the above, the panel is satisfied that the project will result in a significant net benefit to both the local economy and the province. While some negative socioeconomic impacts have been identified, the panel finds that the mitigation measures are sufficient to deal with issues as they arise.

[27] The panel is confident that socioeconomic impacts have been sufficiently assessed, and that the approval of the applications would lead to a net benefit to both the local region and the province. Further, the growth that will result from the project is consistent with the *Hinton Community Sustainability Plan*. This growth could include increased spending at local businesses, increased housing, and increased travel to the area. While the panel acknowledges that such growth could be impacted by uncertain future economic conditions, the panel does not believe that this uncertainty is an appropriate reason to deny the applications.

[28] The panel finds there is merit in the suggestion of Ms. Murray-Kehr that projects of this scope should include a quantitative comparison of impacts. Although there is currently no regulatory requirement for such an analysis, a more quantified (monetized) approach would greatly assist decision-makers in weighing the relative costs and benefits of a proposed project. The panel notes that while Coalspur quantified the economic benefits associated with the project, little was done to quantify the negative impacts identified. For future applicants, such analysis could help expedite the review of the application and decision-making process.

EFFECTS ON ENVIRONMENT

[29] The panel finds that the project, as proposed, will have some adverse effects on the environment. More specifically, and addressed further below, the panel has concerns with some aspects of the mine plan and the size of the end-pit lake, the effect on unique landscape features, the effect on certain segments of wildlife and fish, and the effect on water quality. However, the panel finds that effects can be managed through conditions on the approvals and ongoing monitoring and mitigation plans.

Mine Plan and End-Pit Lake

[30] The panel notes that the end-pit lake as proposed by Coalspur would be significantly larger than other end-pit lakes in the region and would be among the largest and deepest end-pit lake associated with a coal mining operation in Alberta. It would be approximately 5 to 7 km in length and about 150 metres (m) deep at its deepest point. The panel understands that the size of the proposed end-pit lake is a result of the mining methods employed and the sequencing of the mine plan. Sequencing choices impact the amount of out-of-pit waste storage, size and disturbance area of the external rock dumps, size of the end-pit lake, and the volume of water required to fill the lake at closure. Having reviewed the evidence, it is unclear to what extent Coalspur considered alternatives to the proposed mine plan that would decrease environmental disturbances, including the size of the end-pit lake. Coalspur did advise, however, that there may still be opportunities for modifying the sequencing, provided that haul distances are manageable. Further, the panel notes that development of the end-pit lake would occur late in the life cycle of

the mine; thus, there will be future opportunities to develop alternative scenarios for end-pit lake construction (e.g., backfilling of the pit) that may not be achievable in the current mine plan.

[31] Coalspur stated that its conceptual end-pit lake was designed according to principles contained in the (2004) *Guidelines for Lake Development at Coal Mine Operations in Mountain Foothills*, a publication of ESRD. The panel observes that the maximum and mean water depths proposed by Coalspur are greater than the recommended target design factors in the guidelines related to water stratification and mixing. This suggests to the panel that Coalspur's proposed design may have a lower probability of achieving a self-sustaining lake for native fish. The panel is concerned that as a result of its depth and likely development of a chemical gradient, the lake may experience meromictic conditions, with limited mixing between deeper and shallower water strata. The amount of mixing that occurs in the lake has implications for water quality. Further, net benefits of the end-pit lake for native fish predicted by Coalspur have likely been overestimated compared to the low biological productivity and ecosystem limitations that may occur as a result of the proposed design. The panel recognizes that the guidelines contain recommended practices only and are not regulatory requirements. That said, the panel believes that a review of Coalspur's mine design with consideration of maximizing in-pit disposal could produce a lake geometry with fewer limitations to fish habitat by

- decreasing the mean depth,
- decreasing storage volume, and
- increasing the littoral area of the lake.

[32] Given the issues noted above, the panel finds that efforts should be made by Coalspur to maximize in-pit waste disposal with the goal of reducing the size and depth of the end-pit lake. This may be possible through modifying the sequencing and phasing of the mine. The panel recognizes that this would not significantly impact the ultimate pit footprint but could result in a shallower or smaller end-pit lake and reduce the size of the external dumps. While the panel understands that the AER currently does not have a requirement for coal applicants to assess alternative mine designs, it finds that such analysis should have been conducted prior to submitting the application. The evaluation of alternative mine designs would have provided the panel with greater confidence that the proposed mine sequencing has properly considered opportunities to minimize environmental effects.

[33] The panel accepts Coalspur's commitment to conduct water quality monitoring to validate predictions of negligible water quality impacts of mining operations and reclamation, including water quality within the proposed end-pit lake. The panel also notes that Coalspur proposed to submit a final design for the end-pit lake toward the end of mine life. To address the long-term ecological sustainability of the end-pit lake, the panel requires Coalspur to develop an adaptive management strategy in conjunction with the final design of the end-pit lake. An integrated monitoring program should be a component of the adaptive management strategy for ongoing validation of mitigation measures, identifying effects upon receptors, and enhancing best management practices. The adaptive management strategy should include key criteria and thresholds that can be used to evaluate water quality and decide when additional management actions are required and should also include management options or mitigation measures that can be implemented in the event water quality in the lake is not consistent with environmental impact assessment (EIA) predictions. Monitoring should include physical, chemical, and biological

components. Effects-based monitoring is also recommended that would measure the condition or performance of biological indicators attributed to industrial activity. The need for and role of formal adaptive management strategies for the project is discussed more fully in the Conclusions section of this decision.

Geotechnical Investigations and Performance

[34] Although the panel finds the level of geotechnical information provided by Coalspur is sufficient to permit a decision to be made on the applications, additional geotechnical work is required. Coalspur stated that there would be a geotechnical instrumentation program in which it would drill additional holes in the areas of the dumps and fines settling pond dam prior to construction and building the dumps. In addition to this, further stability analysis is required in order to confirm Coalspur's assertion that the change to the maximum height of the north dump does not necessitate a revised stability analysis of the dump and adjacent high wall. This should occur as part of Coalspur's further geotechnical analysis.

Fines Management

[35] The panel recognizes that fines settling and consolidation performance has implications on the footprint, management, and reclamation of the fines settling pond. Coalspur assumed that the fines produced by the project would exhibit conventional settling and consolidation behaviour, similar to fines produced at nearby mine operations. The panel notes that Coalspur's fines characterization test results were inconsistent with this assumption. Therefore, the panel concludes that further fines characterization is required to validate Coalspur's assumptions and reduce the uncertainty associated with fines settling pond trafficability for reclamation.

[36] The panel recognizes that the coal processing plant design, fines settling pond design, and fines settling pond reclamation plans may require revisions following validation of the fines characteristics. The panel notes that modifications to the above designs may require amendment applications. Due to the uncertainty in the final design, the panel finds it necessary to limit the size of the fines settling pond until the fines characterization can be validated. Therefore, the panel requires Coalspur to limit the construction of the fines settling pond to an elevation of 1238 m above sea level which, based on Coalspur's analysis, is about five years of capacity.

Air Emissions

[37] Coalspur proposed a particulate emissions limit of 0.2 grams per kilogram of effluent for its coal dryer. The panel understands that Coalspur's proposed dryer stack technology is capable of achieving significantly lower particulate matter emission levels, in the order of 30 per cent of the level outlined in its application.

[38] The panel notes that the coal dryer is the second largest greenhouse gas (GHG) emission source within the project and that Coalspur did not identify any specific mitigation actions to control its emissions as part of its application. Coalspur did however state that it will develop a GHG management plan in order to comply with the requirements of the *Specified Gas Emitters Regulation*.

[39] Coalspur advised that it was looking at the possibility of eliminating the dryer. Should the final project design include the coal dryer, the panel encourages Coalspur to go beyond the

minimum regulatory requirements and implement best practices with regard to particulate and GHG emissions.

Water Quality

[40] The waters of McPherson Creek, McPherson Creek Tributary 2, and McLeod River Tributary 1 within the mine permit area are notable for the presence of sensitive fish species,¹ including the Athabasca rainbow trout. Coalspur identified those waters as moderate- to high-sensitivity fish habitat. The panel recognizes the importance of maintaining high water quality in those water bodies throughout the life of the project. The panel notes that the following could impact water quality and fish habitat: the size and proximity of the rock dumps to stream channels, use of mine and processing plant affected waters for flow augmentation, selection of flocculants with toxic properties, potential for release of dissolved metals and other contaminants, and reliance upon settling ponds for water treatment.

[41] Coalspur predicted that effects of the project upon surface water quality would be low as a result of the proposed mitigations. One such mitigation included the design and operation of multiple containment structures for water management. These impoundments are to be used with a combination of natural stream channels, engineered ditches and channels, and a water pipeline for the diversion and release of natural and mine affected waters to the environment. Coalspur proposed the use of 30 and 100 m setback distances between infrastructure and selected water bodies.

[42] Coalspur assessed effects of selenium upon water quality as negligible. This was based on lower levels of selenium enrichment from monitoring data of other thermal coal mines and preliminary analytical data of selenium that were below recommended guideline values for soil. Coalspur proposed that mitigations for reducing impacts of leached selenium to surface waters would not be needed in the proposed mine plan based on their assessment.

[43] The panel accepts Coalspur's commitments to conduct water quality monitoring to validate predictions of negligible water quality effects as a result of mining operations and reclamation and to include selenium within its environmental monitoring programs. The panel finds that there are uncertainties regarding the pathways and timing for release of selenium in relation to the project and that this warrants monitoring of surface water resources and aquatic biota receptors for the presence of selenium. Furthermore, given the sensitivity of McPherson Creek, McPherson Creek Tributary 2, and McLeod River Tributary 1, and the importance of avoiding adverse effects to water quality in these creeks, the panel expects Coalspur to use an adaptive management approach to its water management and monitoring programs. The panel believes that additional mitigation measures could be necessary for Coalspur to adequately protect downstream water quality and sensitive fish habitats in the long term, and for this reason the panel requires Coalspur to develop a formal adaptive management strategy for water quality as part of or in conjunction with its proposed water management and monitoring plans.

[44] Coalspur proposed cationic flocculant 8852 and POL-E-Z 83909 flocculant for removal of suspended sediments from mine waters. Coalspur submitted material safety data sheets for those

¹ A sensitive species is (1) those species listed as "endangered" or "threatened" under the provincial *Wildlife Act* or federal *Species at Risk Act (SARA)*; (2) species designated as a "species of special concern" through the provincial detailed status assessment process or *SARA*; or (3) species ranked as "at risk," "may be at risk," or "sensitive in Alberta" by the general status assessment process and have been identified as being sensitive to human disturbance.

products which indicate the potential for toxic and environmentally harmful effects upon aquatic organisms. Coalspur submitted that when product 8852 is applied according to manufacturer specifications, both water quality and sediments would be nontoxic. Coalspur committed to further evaluation of flocculants, coagulants, and other products for their effectiveness and safety for the environment. The panel accepts Coalspur's commitment and requires that Coalspur submit the results of its further evaluation. This evaluation must include consideration of alternative products with lower toxicity to aquatic organisms for use in removing suspended sediments. The panel further requires follow-up testing using representative effluent waters within one year of the commencement of mining operations to verify that the flocculant or coagulant products being used are not toxic to aquatic organisms.

[45] The panel notes that Coalspur provided incomplete baseline information regarding stream embeddedness and substrate concretions. Stream embeddedness and substrate concretions are indicators of water quality changes and effects on fish habitat. Coalspur committed to obtain additional sedimentation data affecting the condition of stream substrates and habitat in McPherson Creek. Recognizing the importance of maintaining water quality and the sensitive aquatic habitats, the panel requires that Coalspur conduct baseline sediment surveys of stream embeddedness and concretion deposition for McPherson Creek, McPherson Creek Tributary 2, and McLeod River Tributary 1 within the mine permit area prior to the commencement of mining operations. Follow-up monitoring is also required during mining operations.

Surface Water Hydrology

[46] Coalspur predicted that effects of the project upon surface water hydrology would be low and localized. Predicted effects upon hydrology were generally less than the measurement accuracy or less than the accuracy of published data for small streams. Coalspur submitted a preliminary water management plan and site water balance that identified design and operational components over the life of the project between 2014 and 2034. Coalspur committed to complete a detailed water management framework upon commencement of project operations. This would include baseline hydrological data and protocols for implementing flow augmentation for the protection of instream flow needs for fisheries.

[47] The panel accepts that more hydrological monitoring data will be needed to define baseline flow conditions and to develop necessary flow duration curves for implementing flow augmentation. As identified by Coalspur, hydrological monitoring is needed for McPherson Creek, McPherson Creek Tributary 2, and McLeod River Tributaries 1 and 1A. The panel requires Coalspur to develop a hydrological monitoring program and also requires that Coalspur develop instream flow needs protocols for flow augmentation to be included in its final water management framework that is submitted to the AER. Coalspur's hydrological monitoring should be integrated with water quality and biological monitoring programs and support Coalspur's adaptive management strategy to validate predicted impacts and mitigation effectiveness.

Sensitive Fish Species and Fish Habitat

[48] Water bodies immediately downstream of the project contain several sensitive fish species. These include Athabasca rainbow trout, bull trout, and Arctic grayling. While it is not clear whether all of these species are currently found within the mine permit area, there is historical evidence of use. Within the mine permit area, Coalspur collected Athabasca rainbow trout from

three water bodies, specifically McPherson Creek, McPherson Creek Tributary 2, and McLeod River Tributary 1. Coalspur recognized that Athabasca rainbow trout have been recommended for “threatened” conservation status in Alberta. Coalspur believed that such a change in conservation status would not alter findings of its impact assessment or proposed mitigations. With implementation of mitigations such as setback distances, construction of a free-span bridge over McPherson Creek, water management practices, and flow augmentation for protection of instream flow needs, Coalspur believed that effects of the project upon fish and fish habitat would be low.

[49] The panel understands that a recovery plan for Athabasca rainbow trout is reasonably foreseeable and for this reason recommends that Coalspur identify opportunities to support and implement the recovery strategies for Athabasca rainbow trout if a recovery plan is released by ESRD. Additionally, given some of the uncertainties associated with the effectiveness of proposed mitigation measures and predicted residual effects with respect to water quality and the implications this has for sensitive fish habitats, the panel requires Coalspur to develop an adaptive management strategy related to water quality, water quantity, and sensitive fish species. The adaptive management strategy should include additional or enhanced mitigation options that could be implemented in the event significant adverse ecological effects are detected by monitoring or if regulatory compliance is not achieved.

Wildlife

[50] The panel accepts that the project will have some effects on wildlife and wildlife habitat in the region. The panel is concerned about potential effects on sensitive species, including grizzly bears, western toads, and the long-toed salamander, which have been found to exist in the project area. The panel is also aware that on a regional basis, moose populations have declined.

[51] Grizzly bears are listed in Alberta’s *Wildlife Regulation* as “threatened.” The panel notes that the largest risk to grizzly bears is from human-caused mortality and access proliferation. Coalspur’s EIA rated these impacts as moderate at both the project and regional scales. Coalspur advised that it would not provide public access to the project area, and mining is not expected to cause direct grizzly bear mortality.

[52] Coalspur has committed to work with ESRD early in the mine planning process in order to minimize grizzly bear mortality associated with land use changes at closure of the project when the land will once again be open to the public. Coalspur indicated that it will monitor the effectiveness of establishing hiding cover for grizzly bears near mine edges and adjacent to mine roads, the effectiveness of road closures, and the human use of linear features in order to inform closure planning. Further, Coalspur advised that reclamation would contribute to grizzly bear habitat, starting by year ten of the project.

[53] The long-toed salamander is also considered a sensitive species in Alberta. Coalspur committed to re-establishing ponds and other wetlands that would be suitable for long-toed salamanders. The panel notes that Coalspur has committed to working with ESRD to transplant long-toed salamanders from the wetlands that will be disturbed into suitable habitat.

[54] Coalspur has provided little information on the occurrence of the western toad in the project area. Given that this species is included in the *Species at Risk Act* (“special concern”), the panel finds that it is important for the closure footprint to provide suitable habitat for this species,

and creation of this habitat should be included as a goal of its conservation and reclamation plan. The panel understands that conditions related to these and other amphibians may be applied to any approvals granted to Coalspur under the *Environmental Protection and Enhancement Act (EPEA)*.

[55] Coalspur indicated that it recognized that McPherson Creek Valley is environmentally sensitive and committed to maintaining a buffer of at least 100 m along each side of the creek. This will create a corridor that will be a minimum of 200 metres wide. A buffer of at least 30 m will be left along other well-developed riparian zones. Coalspur stated that one goal in creating the buffer along McPherson Creek is to provide sufficient width to maintain moose movement along the creek from east to west. In addition, the buffer is to provide for the movement of carnivores and other wildlife species as well as maintaining natural small mammal, amphibian, and bird communities. The panel notes that little information was provided to support the assertion that a 30 or 100 m buffer would be effective at maintaining movement corridors. Due to the presence of sensitive species in the project area, the panel finds that Coalspur should include monitoring of wildlife use and movement along McPherson Creek and McLeod River Tributary 1 prior to and during mining and in the closure landscape as part of its wildlife monitoring program.

[56] The panel is satisfied that the proposed mitigation and ongoing monitoring and adaptive management techniques will mitigate impacts to wildlife. The panel recognizes that there are further approvals yet to be issued to Coalspur that may result in further mitigations.

Wetlands

[57] The panel recognizes that the project will result in the direct loss of approximately 5.8 square kilometres of treed fen wetlands within the project footprint. The panel also acknowledges that there are few mitigation measures available to mitigate such a loss and that the existing *Wetland Management in the Settled Area of Alberta* policy does not apply to the project area. The recently approved *Alberta Wetland Policy* contemplates potential replacement options but will not be implemented until 2015.

[58] Three wetlands, consisting of a patterned fen, a saline fen, and a marsh, are located outside the project footprint but inside the permit area. The panel is concerned about the potential for indirect effects on these sensitive wetlands due to changes in groundwater. Coalspur's modelling of potential dewatering impacts was based on a groundwater model for the project and monitoring data from the Coal Valley mine. Although prediction of changes in groundwater levels was not the direct purpose of the model, the model predicted potential drawdowns of less than 10 m within the mine permit boundary to the south and east, and drawdown extending for several kilometres to the north and northwest that would extend beyond the permit boundary. Coalspur stated that it did not have any plans to monitor the potential indirect effects of drawdown on these sensitive wetlands. The panel finds that ongoing monitoring is necessary to detect and minimize the potential for adverse effects on the hydrology and vegetation in these sensitive water bodies.

Reclamation

[59] Coalspur has committed to achieving equivalent capabilities in the reclaimed landscape. As stated by Coalspur, this means that the reclaimed landscape will not necessarily result in an

identical landscape with the same hills or the same ponds in the same place. The panel recognizes that the project will result in the direct loss of treed fen wetlands within the project footprint, and that the conceptual conservation and reclamation plan does not include these types of wetlands in the closure landscape. The panel also acknowledges there is some uncertainty in reclaiming wetlands. The panel notes that Coalspur has indicated that an adaptive management approach will be used in developing reclamation and closure plans and expects that scientific research into restoration of these wetland types will be considered in those future plans.

[60] The panel notes that the proposed mining plan results in a single large mine pit at the end of mine life and that this has implications for both the degree of progressive reclamation that can occur during active mining operations as well as for financial liability should Coalspur determine during the life of the project that mining is no longer economical. The panel acknowledges that financial liability associated with the project is mitigated by the requirements of the Mine Financial Security Program under *EPEA*.

[61] The panel recognizes that there is some uncertainty associated with the availability and quality of materials available for reclamation of the project. The panel accepts that during the early stages of reclamation planning, some uncertainty about the availability of suitable reclamation materials may exist due to the level of investigation that has been completed to that point in time. The panel also recognizes that soil salvage and placement is regulated through the development and approval of conservation and reclamation plans under *EPEA*, and that potential uncertainties or issues associated with soil salvage and reclamation soil placement can be addressed through that process and in conjunction with Coalspur's annual mine planning process.

[62] The panel accepts that reclamation planning is a long-term process and expects that the plan will evolve over the life of the project. The panel finds that the proposed plan is a reasonable starting point to achieve the end goal of providing equivalent capability.

IMPACTS ON LAND USE AND LANDOWNERS

[63] The project is proposed on Crown land, and while there are no other landowners in the immediate vicinity, current land use in the area may be impacted. Such impacts include the ability for third parties to use the land and the ability for aboriginal groups to carry out traditional land use activities in the area.

[64] The panel notes that the Crown has not yet developed a land use management plan under Alberta's *Land-Use Framework* for the area in which the project is located. The relevant planning documents for the project area include the *Coal Branch Sub-Regional Integrated Resource Plan* (1990) and the *Coal Development Policy for Alberta* (1976). The project is consistent with the land-use planning requirements in those documents.

[65] Approval of the project would result in reduced access to the project area. Coalspur advised that its haul road and entire mine area would be closed to the public. Access may be granted however to inactive portions of the lease area to certain individuals based on criteria such as prior agreement, sufficient advanced notice, safety orientation, escorted access, strict adherence to safety standards, and adherence to specific time limits.

[66] The project would also result in reduced access or interference with existing wells and pipelines within the project area. Prior to Tourmaline withdrawing from the hearing, it advised that the three wells and the pipeline within the mine area would be abandoned to accommodate the project if it were to be approved, with the parties working towards their relocation to other surface locations.

[67] Coalspur further advised that it would provide access to traditional land users and surface disposition holders such as the three registered trappers and Manitok Energy Ltd. (Manitok). In terms of potential impacts on surface disposition holders, Coalspur advised that it had reached agreements with all that may be affected with the exception of Manitok, with which it is in the process of negotiation.

[68] In terms of the effects of the restricted access to the area on traditional use activities, Coalspur acknowledged that within the project area there are at least 86 species or classes of plant/fungi which have been identified as being important to Aboriginal groups. The panel notes that while these resources will be affected, it is unclear as to what extent the area was and is being used by Aboriginal groups. As a result of agreements reached between Coalspur and those Aboriginal groups which were granted participant status, the panel was unable to explore or test their assertions and the extent of any impacts that the project would have.

[69] The panel recognizes that some limits to access are necessary for safety reasons. The panel understands that Coalspur has not yet obtained a mineral surface lease pursuant to the *Public Lands Act* and that should one be granted, it may contain conditions to mitigate some of the impacts associated with reduced access to the area.

[70] In terms of impacts on use other than access, the panel notes that the project may result in additional dust and noise. Coalspur noted that its primary source of particulate matter emissions would be dust from the haul road and has proposed mitigation measures which include road maintenance and the application of water or other dust suppressants.

[71] Coalspur identified that the area north of the north dump may require a noise berm to limit high noise levels produced by mine operation activities. Coalspur has committed to conducting a more detailed assessment of noise impacts and constructing a noise berm if necessary. This would occur in year five or six of development.

CONCLUSION

[72] The panel approves amendment Applications No. 1726915 and 1726923 and Application No. 1726927.

[73] The panel notes that both amendment applications were submitted in response to a condition in Coal Processing Plant Approval No. C 2011-3 which required Coalspur to amend the approved coal processing plant location and design. The amendments applied for in Application No. 1726923 include an increased production capacity, revised fines settling pond design, new processing facilities, and a new freshwater pond. The panel finds that the applied for amendments seek to maximize recovery of the mineable coal through the relocation of the coal processing plant site and increased production capacity of the coal processing plant. The amendments applied for in Application No. 1726915 seek to amend the mine permit approval in

order to expand the project area to support the changes to the coal processing plant location and design, the expanded fines settling pond, and other project-related infrastructure, including an access road and conveyor from the processing plant to the load-out facility at the rail line. The panel is satisfied that the amendments are necessary to satisfy the condition contained in Coal Processing Plant Approval No. C 2011-3 to improve the resource conservation aspects of the project and to ensure all key project activities are within the mine site permit area.

[74] The pit and dump licences applied for in Application No. 1726927 are required in order for more than preoperational activities to occur. Approval of the pit and dump licences is required to fully accomplish the purpose of resource extraction as a new mine in the region. While the panel believes that some further work may be required in terms of the mine design, the panel concludes that the level of design provided in the applications is acceptable to facilitate approval of the proposed project. Recognizing that further work is necessary and that there may be technological or other factors that necessitate changes to the pit and dumps, the panel finds it appropriate to limit the life of the pit and dump licenses to ten years. These licenses may be renewed or amended by application upon demonstration to the AER that mining and reclamation practices throughout the license period have been acceptable.

[75] The project will result in a significant socioeconomic net benefit to both the local region and the province. These benefits include the creation of jobs, migration to the region stimulating local business, and the payment of taxes and royalties. While some negative socioeconomic impacts have been identified, mitigation measures have been put forward to deal with issues that arise.

[76] The panel notes that the project area has already experienced disturbance as a result of industrial activities on the land and that approving the applications will result in further environmental effects. While the project will result in the loss of some landscape features such as wetlands and, at a minimum, the temporary destruction or permanent alteration of wildlife habitats, the proposed project is consistent with existing land-use planning requirements in the region and will meet existing regulatory requirements, including those related to closure and reclamation after mining has ceased. The panel finds that the mitigation measures proposed by Coalspur to address environmental effects are similar to what other coal mining operators in the region have employed and are generally acceptable. Where the panel was not entirely satisfied with the mitigation measures proposed or commitments made by Coalspur, the panel has included conditions to address these issues. Additionally, Coalspur will be required to monitor the effects of the project and implement additional mitigation measures if necessary. Having regard for the positive socioeconomic effects of the project, existing regulatory requirements, Coalspur's proposed mitigation measures, and the conditions imposed by the panel, the panel finds that the residual environmental effects of the project are acceptable.

[77] The panel recognizes that uncertainties exist in the prediction of environmental effects and the effectiveness of mitigation measures. Such uncertainties can significantly affect the environmental performance of a project. Over the life of a project, advances in scientific knowledge and technology also have the potential to reduce some of those uncertainties and contribute improved mitigations to a project. For these reasons, the panel supports the use of an adaptive management strategy as a tool for the continuous improvement of Coalspur's ongoing environmental management of the project. However, while Coalspur made reference to the use of an adaptive management approach in its evidence, particularly with respect to the design and

establishment of the end-pit lake and reclamation, details concerning how Coalspur would employ an adaptive management approach were not provided.

[78] It is the panel's view that adaptive management is more than simply monitoring to ensure that regulatory compliance is achieved and a general commitment to do something when and if it becomes necessary. Adaptive management should be a rigorous process of scientifically valid measurement, evaluation, and modification or adaptation of management practices to achieve the best possible outcomes regardless of regulatory thresholds. Adaptive management requires identifying the desired outcomes of environmental management; examining alternative ways of meeting the outcomes; selecting management actions and mitigations to implement; selecting indicators, criteria, and thresholds for monitoring environmental change and performance; evaluating when outcomes are not being achieved; and adjusting management objectives or actions when necessary.

[79] In previous sections of this decision, the panel identifies areas where the effectiveness of some proposed mitigation measures and the predicted residual effects were sufficiently uncertain that an adaptive management approach was required. This includes the design and establishment of the end-pit lake; project effects on water quantity, quality, and fisheries; and the effects of the project on wildlife use and movement and reclamation and closure planning. The panel has included conditions requiring the development and implementation of formal adaptive management strategies for a number of these areas in appendix 2. Through formal adaptive management strategies, Coalspur will have the opportunity to test and validate proposed environmental mitigations, enhance or change mitigations, improve the project over time, and contribute additional scientific knowledge. This will require careful design of monitoring programs in cooperation with regulatory agencies to generate reliable feedback information and understandings of on-the-ground outcomes. The panel finds that the development and implementation of formal adaptive management strategies is required to reduce uncertainties associated with the residual environmental effects of the project and ensure a high level of environmental performance.

[80] The panel recognizes that additional applications have been made under *EPEA* and the *Water Act* and any approvals may contain additional mitigation measures. The panel recommends that formal adaptive management requirements be integrated into the various authorizations that may be issued for the project. Adaptive management requirements are intended to support and enhance requirements for monitoring and reporting of environmental performance and should not fetter or constrain existing regulations or standards applicable to the project.

[81] The project will impact the use of the project area by restricting access to surface disposition holders and Aboriginal groups; however, the panel finds that the efforts proposed by Coalspur to minimize impacts to access and land use are appropriate and reasonable. In addition, Coalspur must obtain a mineral surface lease pursuant to the *Public Lands Act*, and such lease if granted may contain conditions that mitigate the effects of impacts to land use.

[82] The panel notes that on numerous occasions Coalspur referred to the length of time to obtain disposition of the applications as being excessive, and requested an expedited decision of 14 days at the close of the hearing. The panel agrees that one of the purposes of a regulatory process such as that found in *REDA* is to create an efficient and timely system for decision-

making. Applicants also play an important role in ensuring the timeliness of any approval process. Recognizing that this is the first hearing decision related to a coal application in a number of years, and with the recent enactment of *REDA* and associated *Rules of Practice*, the panel would like to offer the following comments as guidance for future applicants.

[83] In this instance, the panel concludes that the level of information Coalspur provided in the licence application was more appropriate for a permit application than a licence application. The design set out in the licence application contained a number of uncertainties. This resulted in an extensive and drawn out application process and the need for additional conditions in order to ensure that the application contained sufficient mitigation commitments to compensate for the uncertainties in design. It appears that Coalspur applied for its mine site permit and licences simultaneously without the necessary investigations and testing which would have provided more certain information for the licence application. Consequently, considerable time was expended by the AER in ensuring that the applications contained the mitigation commitments necessary to compensate for uncertainties in design.

[84] Much of this additional time is attributable to the supplemental information request process. The AER required three sets of supplemental requests due to inadequate responses from Coalspur. At this juncture, the AER could have closed the applications; however, the AER proceeded with the applications with the expectation that Coalspur would provide the additional information and requested clarification during the hearing process.

[85] The panel thanks Coalspur for making its experts available to answer staff and panel questions during the hearing. This cooperation with the AER process significantly assisted the panel in evaluating the applications in accordance with its legislated mandate and, in the panel's opinion, resulted in a more timely decision than if a fourth written information request had been made. The hearing process provided the panel with the opportunity to explore information gaps which have necessitated the need for more conditions than may have otherwise been necessary if the applicant had provided a more complete licence application. The panel recognizes that the additional monitoring being required by the AER may result in the need for changes to some of the conditions imposed. Therefore, the panel has deemed it appropriate that a formal review of the adequacy of all conditions occur within five years after issuance of the approvals. The panel cautions applicants that in the future, applications received without the required information may be closed and deemed incomplete or denied due to insufficient information.

[86] The panel understands that there are related applications to the project that are currently being reviewed by other decision-makers, including applications under the *Public Lands Act*, *EPEA*, and the *Water Act*. The panel's decision is not intended to fetter or direct other decision-makers with respect to any applications under review or conditions that might be imposed.

Dated in Calgary, Alberta, on February 27, 2014.

ALBERTA ENERGY REGULATOR

<original signed by>

A. H. Bolton, P.Ge.
Presiding Hearing Commissioner

<original signed by>

B. M. McNeil, C.Med.
Hearing Commissioner

<original signed by>

L. J. Ternes, B.A., LL.B.
Hearing Commissioner

APPENDIX 1 HEARING PARTICIPANTS

Principals and Representatives	Witnesses
Coalspur Mines (Operations) Ltd. M. Ignasiak J. Kennedy X. Kritsos	R. Tremblay, P.Eng. C. Brinker, RPF D. McCoy, of Millenium EMS Solutions Ltd. H. N. McLeod, P.Eng, P.Geo., of Klohn Crippen Berger D. Cooper, P.Eng., of Matrix Solutions Inc. K. E. Bresee, PBD, P.Biol., of Intrinsic Environmental Sciences Inc. M. Charlesbois, MFC, P.Biol., of HAB-TECH Environmental Ltd. R. Rudolph, of Millenium EMS Solutions Ltd. P. Shewchuk, of Nichols Applied Management K. Kemball, Ph.D., P.Biol., of Millenium EMS Solutions Ltd. E. Stemo, P.Biol, of Pisces Environmental Consulting Services Ltd. P. J. McNamee, Ph.D., of Hatfield Consultants N. Grainger, P.Geol., of Millenium EMS Solutions Ltd.
J. Murray-Kehr	R. Notnes (in support of J. Murray-Kehr)
Alberta Energy Regulator staff K. Cameron, AER Counsel K. Lilly, AER Counsel J. Koppe C. Evans R. Godwaldt P. Hunt B. Greenfield, P.Biol. S. MacDonald A. Mahmood A. Ahlawat M. Bevan D. South J. Mayall N. Lyubimova A. Shukalkina	

APPENDIX 2 CONDITIONS

Conditions generally are requirements in addition to or otherwise expanding upon existing regulations and guidelines. An applicant must comply with all conditions. Failure to comply with a condition is a breach of its approval and subject to enforcement action by the AER. Sanctions imposed for the breach of such conditions may include the suspension of the approval.

Mine Permit No. 2011-5 and Coal Processing Plant Approval No. C 2011-3 are hereby amended to remove all existing conditions. The conditions imposed by the panel below will be incorporated into the relevant amended and new approval documents along with standard AER conditions.

CONDITIONS²

1. Coalspur shall construct, operate, and reclaim the approved project in accordance with the specifications, standards, commitments, and other information referred to in Applications No. 1726915, 1726923, and 1726927 and its submissions unless the AER directs otherwise.
2. The approvals will expire in five years from the issuance of this decision unless Coalspur has satisfied the AER that construction has begun.
3. Within the first 5 years of operations, the adequacy of all conditions shall be reviewed by the AER and may be amended at the AER's sole discretion.
4. The pit and dump licences expire 10 years from the issuance of this decision. New licences may be issued if Coalspur demonstrates to the satisfaction of the AER that mining and reclamation practices throughout the licence period have been acceptable.

Coal Processing Plant

5. The coal processing plant and ancillary facilities known as Coal Processing Plant No. 8 will be located in Sections 7, 12, 13, 17, 18, and 19, Township 51, Range 23, West of the 5th Meridian and in Sections 24, 26, 27, and 34, Township 51, Range 24, West of the 5th Meridian.
6. Coalspur must operate the coal processing plant to the satisfaction of the AER and in a manner that results in the maximum practical recovery of marketable coal from all raw coal mined and processed.
7. Coalspur must submit in the first quarter of each calendar year for the preceding year, to the satisfaction of the AER, an annual report on coal processing plant operations which includes a site wide mass balance, a description of operations and any modifications, and any other information the AER requests.
8. Six months prior to operation of the coal processing plant, Coalspur must submit, to the satisfaction of the AER, a measurement plan, describing the accuracy of measurement

² The subtitles are for the convenience of the reader. Subject matters addressed by the conditions may fall under several subtitles.

devices and the methodology used to determine coal production, disposition, reject, and storage.

Mine Plan and End-pit lake

9. Within six months of issuance of this decision, Coalspur must submit an analysis evaluating the economic and technical feasibility of increasing in-pit waste disposal, through modifying the sequencing or phasing of the pit, for the purpose of reducing the size and depth of the end-pit lake and size of the external dumps. Following the AER's review of the submitted analysis, the AER may require Coalspur to submit further information, and/or a revised mine plan for approval by the AER.
10. Fifteen years from the commencement of mining operations, the operator must submit, to the satisfaction of the AER, a final design and operations management plan for the end-pit lake.
11. Fifteen years from the commencement of mining operations, Coalspur must submit, to the satisfaction of the AER, an end-pit lake adaptive management strategy. The strategy must include: desired management outcomes related to water quality, water quantity, and aquatic species; details of the integrated monitoring program; indicators, criteria and thresholds for monitoring environmental change and performance; and a description of mitigation options in the event that desired management outcomes are not being achieved. Coalspur must implement the strategy and provide annual progress reports to the AER.

Geotechnical Investigations and Performance

12. Three months prior to the commencement of mining operations, Coalspur shall submit, to the satisfaction of the AER, a detailed geotechnical instrumentation and monitoring plan for the pit highwall, in-pit dump, and external waste rock dumps.
13. Six months prior to construction of the north rock dump Coalspur must submit the results of its additional geotechnical investigation program and any modifications to the design.
14. Six months prior to construction of the fines settling pond Coalspur must submit the results of its additional geotechnical investigation program and any modifications to the fines settling pond design.
15. Coalspur must submit in the first quarter of each calendar year for the preceding year, to the satisfaction of the AER, an annual report on the geotechnical performance of the highwall, in-pit dump, external waste rock dumps, fines settling pond dam, and fresh water pond dams.

Fines Management

16. One year prior to construction of the coal processing plant, Coalspur must submit, to the satisfaction of the AER, a fines management plan that addresses the footprint, management, and reclamation of the fines settling pond, including validation of fines characterization.

17. Coalspur must limit the construction of the fines settling pond to an elevation of 1238 m above sea level until Coalspur has satisfied the AER that the fines settling pond design is consistent with actual fines behavior.
18. Coalspur must submit in the first quarter of each calendar year for the preceding year, to the satisfaction of the AER, an annual performance report on its fines management that includes testing results and any other information the AER requests.

Water

19. Six months prior to the commencement of mining operations, Coalspur must submit, to the satisfaction of the AER, a water management plan that includes details on proposed surface water and groundwater management, monitoring activities, and instream flow needs protocols for flow augmentation.
20. Prior to the commencement of mining operations, Coalspur must submit, to the satisfaction of the AER, baseline sediment surveys of stream embeddedness and concretion deposition for McPherson Creek, McPherson Creek Tributary 2, and McLeod River Tributary 1.
21. Six months prior to the commencement of mining operations, Coalspur must submit, to the satisfaction of the AER, an adaptive management strategy specific to surface waters within the project area. The strategy is to include: desired management outcomes related to water quality, water quantity and sensitive fish species; details of the proposed monitoring program(s); indicators, criteria and thresholds for monitoring environmental change and performance and a description of mitigation options in the event that desired management outcomes are not being achieved. Monitoring and reporting activities must include monitoring for selenium in surface waters and aquatic biota, and stream embeddedness and concretion deposition for McPherson Creek, McPherson Creek Tributary 2, and McLeod River Tributary 1 within the mine permit area. Coalspur must implement the strategy and provide annual progress reports to the AER.
22. Six months prior to the commencement of mining operations, the operator must submit, to the satisfaction of the AER, a further evaluation of flocculants, coagulants and other products for their effectiveness and safety for the environment. The evaluation must include consideration of alternative products with lower toxicity to aquatic organisms for use in removing suspended sediments.
23. Within one year of the commencement of mining operations, Coalspur must submit, to the satisfaction of the AER, follow up toxicity testing results for the flocculant or coagulant products in representative effluent waters.

Wildlife

24. Three months prior to the commencement of mining operations, Coalspur must submit, to the satisfaction of the AER, a wildlife monitoring plan and adaptive management strategy that includes: desired management outcomes related to wildlife use and movement for the area along McPherson Creek and McLeod River Tributary 1 during mining and in the closure landscape; details of the proposed monitoring program(s); indicators, criteria and thresholds for monitoring environmental change and performance and a description of the

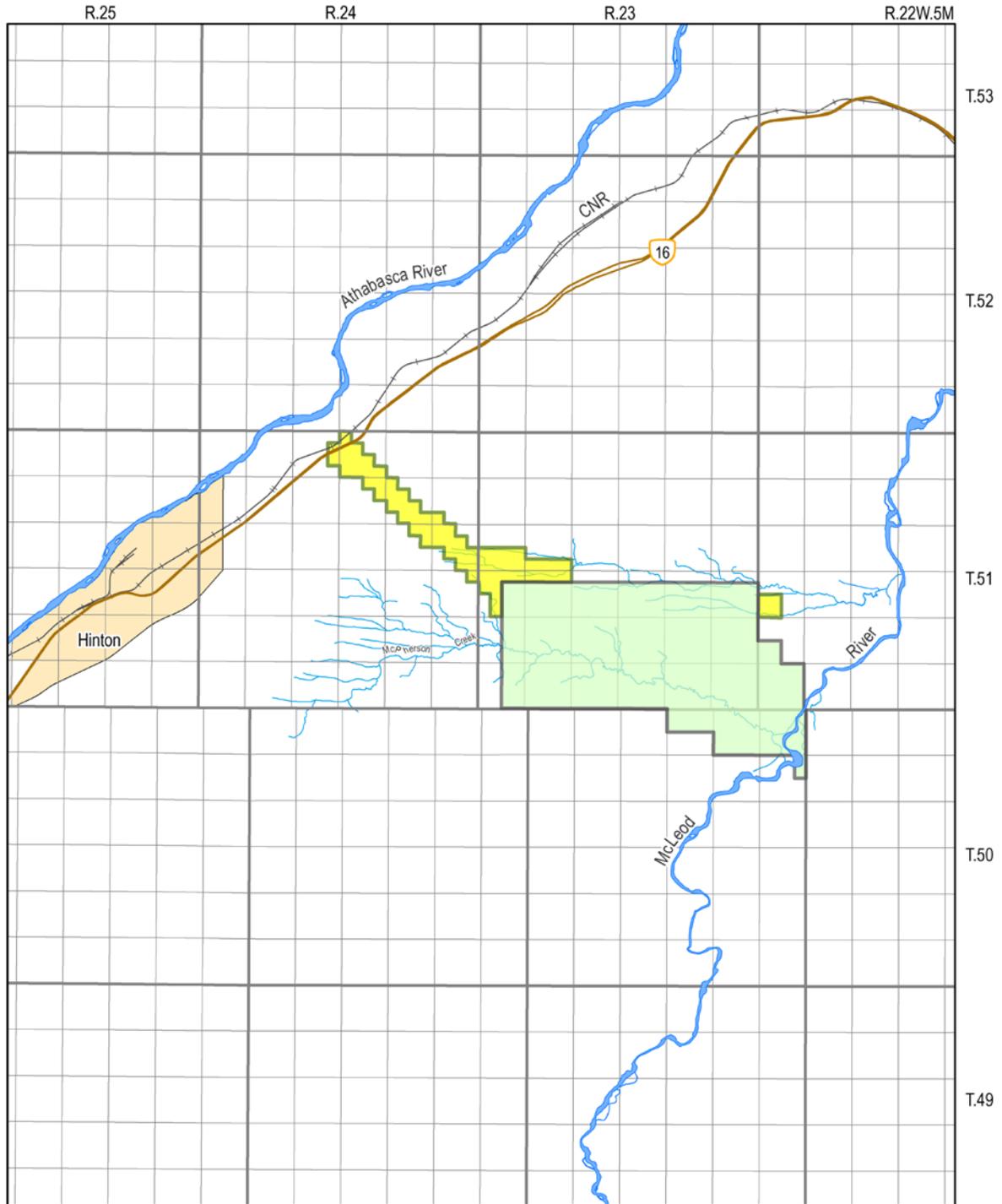
mitigation options in the event that desired management outcomes are not being achieved. Coalspur must implement the plan and provide annual progress reports to the AER.

Wetlands

25. Six months prior to the commencement of mining operations, Coalspur must submit, to the satisfaction of the AER, a monitoring plan that includes methodology to detect hydrologic and vegetation changes in the three sensitive wetlands adjacent to the project footprint, consisting of a patterned fen located in SW12-51-23W5M, a saline fen located in SW5-51-23W5M, and a marsh located in NW15-51-23W5M. Coalspur must implement the plan and provide annual progress reports to the AER.

Noise/Land Use

26. Five years after the commencement of mining operations, Coalspur must submit, to the satisfaction of the AER, a report that summarizes the results of field noise level measurements and includes any additional mitigation measures required for compliance with *Directive 038: Noise Control*.



Legend

- Existing mine permit
- Amendments to mine permit

Figure 1. Regional map of the project area.

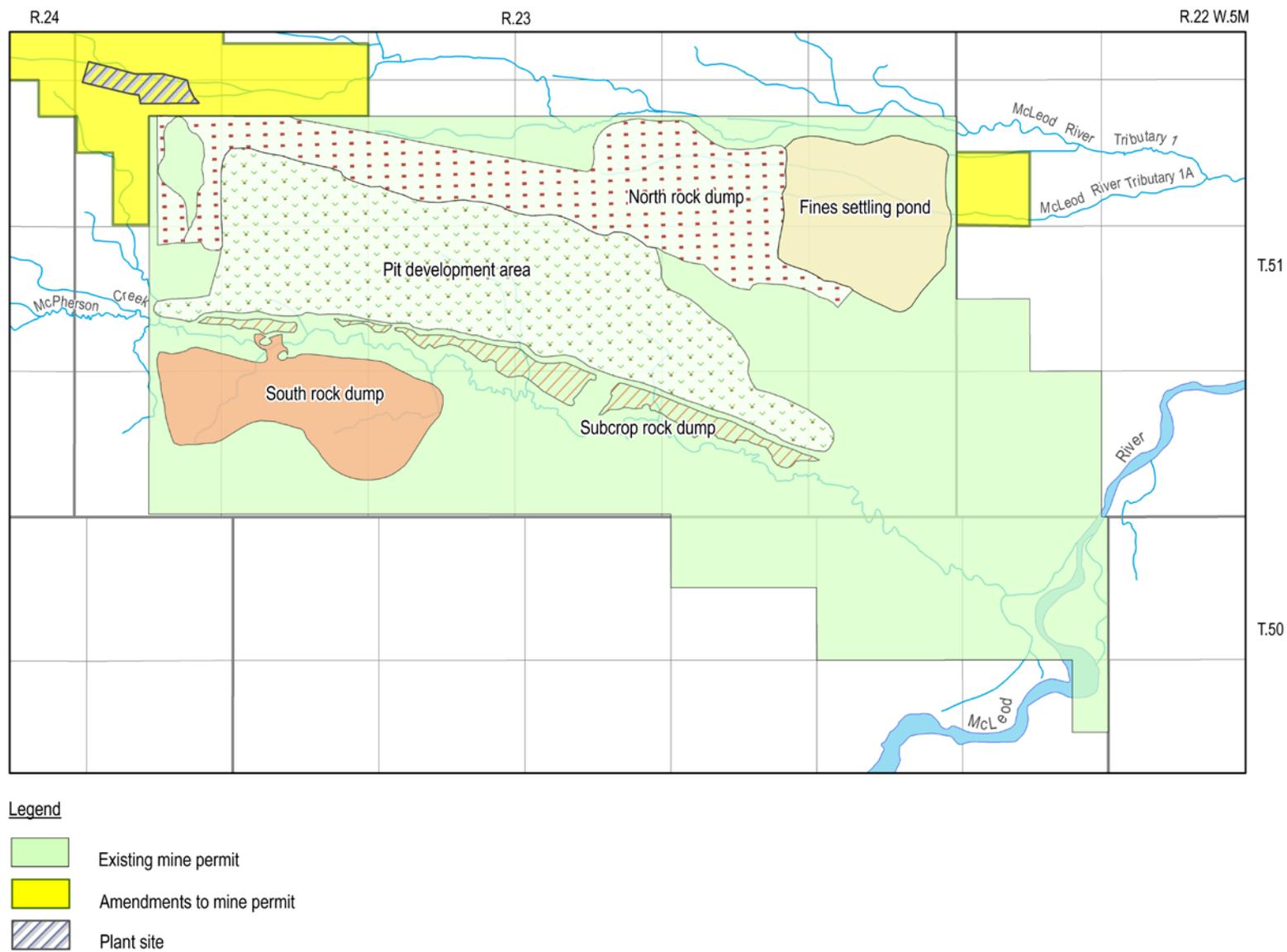


Figure 2. Mine plan.