

Appendix 1 – EIA Technical Review Summary Table

Number	Fort McKay Key Concerns	Recommendation	Category ¹
Regulatory Recommendations			
1	Environmental Protection and Enhancement Act (EPEA) Approval Amendments and Renewals	It is the position of Fort McKay that renewing the approval for JPM1 at this time would be contrary to the intent of the <i>EPEA</i> legislation. Fort McKay therefore expects that, should the Jackpine Mine Expansion be approved, that only an amendment to the JPM1 approval be provided to allow for advancement of the JPME project and that the scheduled 2014 approval renewal process be maintained.	Regulatory
2	Environmental Protection and Enhancement Act (EPEA) Approval Amendments and Renewals	It is the position of Fort McKay that any JPM Project approval should be general in nature and subject to an approval amendment that would require submitting project design details closer to actual construction commencement date so that these details can be reviewed in the context of the knowledge and possibly new requirements existing at that time.	Regulatory
Noise			
3	Noise	It is in Fort McKay’s position that an ambient monitoring adjustment be required by the ERCB and/or AUC when developments are proposed on the Community of Fort McKay’s traditional lands in currently pristine areas.	Regulatory
4	Noise	Fort McKay requests that Shell outline the rationale for using the rural background noise level of 35 dBA to obtain a PSL of 40 dBA without an ambient monitoring adjustment when measurement at cabin NR3 indicated a background nighttime level of 25 dBA.	Response
5	Noise	Fort McKay requests that Shell commits to undertaking noise surveys (measurement and discussion with community/cabin owners) at the Community of Fort McKay and the 3 receptor cabins identified in this assessment during project construction and project operation to verify the predictions in this assessment and identify and mitigate any noise issues.	Agreement

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6	Noise	Fort McKay requests that Shell provides additional details on its noise mitigation plans for the PRM project and review these plans with Fort McKay.	Response
Air			
7	Relevant Objectives and Criteria	It recommended Fort McKay’s health and odour-based air quality criteria as well as the Keeping Clean Areas Clean criteria be adopted and considered in future oil sands project EIAs for the assessment of air quality impacts on the Community of Fort McKay.	Agreement Regulatory
8	Relevant Objectives and Criteria	Fort McKay requests that Shell be required to participate in and support regional initiatives to develop specific procedures for assessing, measuring and tracking air quality changes in the region and in Fort McKay. This would include a process for formally reviewing air quality changes above certain levels to ensure that significant deterioration of air quality in the region and in the Community of Fort McKay does not occur.	Agreement Regulatory
9	Impact Criteria and Classification	Fort McKay suggests that a standardized impact classification system that is specifically applicable to Fort McKay’s Traditional Lands and the Regional Municipality of Wood Buffalo be established through joint efforts of the regulators, companies and regional communities since impact criteria can vary significantly between EIAs.	Agreement Regulatory
10	Odour Thresholds and Impacts	Fort McKay requests that the criteria and basis for selection of the odour thresholds used in the EIA be provided by Shell.	Response
11	Odour Thresholds and Impacts	Fort McKay recommends that a regional odour management strategy be developed prior to the approval of any more projects.	Agreement Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category¹
12	Impacts of Emissions to Vegetation	It is recommended that air quality criteria for assessing vegetation impacts in Fort McKay’s Traditional Lands and RMWB region be established and standardized through collaboration between the Regulators and industries with input from stakeholders such as Fort McKay. Consistency in the application of assessment criteria would allow Fort McKay to evaluate and compare results from different project EIAs to better understand the true impacts that projects in the region are expected to have on vegetation on the Band’s reserve land and on its traditional lands.	Agreement Regulatory
13	NO ₂ Impact on Vegetation	It is the position of Fort McKay that the possible vegetation related impacts associated with the proposed JPME and PRM projects cannot be considered negligible without basing the assessment on the appropriate impact criteria and without considering the 2005/2006 ozone monitoring work conducted by Environment Canada, all regional monitoring data as well as all key nitrogen species when assessing nitrogen deposition related impacts.	Regulatory Response
14	Regional Emission Estimates	Fort McKay recommends that the government lead and Shell participate in the development of standardized approaches for estimating air emissions which would be refined through an ongoing verification process with periodic updating and revision of these approaches.	Regulatory Response Agreement
15	Regional Emission Estimates	Fort McKay recommends that the approval require a specific evaluation of predicted versus in operation measured VOC emissions from tailing ponds (quantity and quality).	Regulatory
16	Regional Emission Estimates	Fort McKay recommends that Shell be required to conduct or participate in actual emission testing on representative mine fleet units during typical use conditions to confirm actual mine fleet emissions which is a major area of uncertainty in terms of regional emission estimates.	Agreement Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category¹
17	Asphaltene-Fired Cogeneration	Fort McKay requests that the characteristics of the asphaltene in terms of quality and energy content be provided by Shell. Shell should also provide additional details on the design specifications/basis for the emission control systems for the asphaltene-fired co-gen units and outline the basis for using 0.256 kmoles of flue gas per kg of fuel estimate as specified in the JPM 2009 supplemental information submission from Shell.	Regulatory Response
18	Fuel Source	Fort McKay requests that the potential of a shift to the use of alternative fuel source in place of natural gas by oil sands projects in the region be considered by the Regulators in establishing source control limits and regional emission management strategies.	Regulatory
19	Jackpine Mine Phase 1 Emission Estimate Adjustment	It is recommended that Shell present the adjusted emission estimates from JPM1 and emission estimates from JPME independently.- i.e., emission reductions for JPM1 related to revised calculation methods should be applied to create a new baseline case and then the JPME and PRM impacts (the application cases) be assessed against this new baseline.	Regulatory Response
20	Nitrogen Deposition	Fort McKay recommends that the regulators require, and Shell commit to, more stringent NO _x emission control measures to minimize project emissions that would contribute to nitrogen deposition in the region.	Regulatory Agreement

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Number	Fort McKay Key Concerns	Recommendation	Category ¹
21	Nitrogen Deposition	Fort McKay requests that actions be taken by the Regulators and Shell as well as other companies to continue to support WBEA and CEMA in activities related to monitoring and management of potential impacts of air emissions on vegetation. Fort McKay would expect such actions to include support of recommendations and work plan work as outlined in CEMA’s Interim Nitrogen (Eutrophication) Management Recommendations and Work Plan which includes developing nitrogen critical loads for sensitive regional ecosystems. Fort McKay would also expect participation in the development of ambient air quality critical levels for NO, NO ₂ and NH ₃ based on potential impacts on vegetation relevant to the RMWB.	Agreement Regulatory
22	Ammonia Emissions	In order to gain better understanding in the sources and possible environmental effects of regional ammonia releases, Fort McKay requests that Shell be required to participate, through both funding and oversight, in the development and implementation of a regional ammonia monitoring study through WBEA. Scope of the study would include monitoring both point and area emission sources in the region for ammonia using low detection ammonia monitors.	Agreement Regulatory
23	Ammonia Emissions	Fort McKay also requests that Shell be required to undertake studies to determine if there is the potential for ammonia releases from its proposed projects and, if so, indicate how these can be minimized.	Agreement Regulatory
24	Air Quality Modeling Performance	In order to gain more accurate predictions of NO ₂ , NO, PM _{2.5} , and SO ₂ concentrations and depositions in the Community and on Fort McKay’s traditional lands, it is recommended that regional model validation and continual improvement program to improve model predictions of the impacts of future NO _x emissions be developed and that Shell participate in this program.	Agreement Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category¹
25	Ambient Ozone Predictions	It is recommended that the potential impact of Shell’s proposed projects on future regional ozone levels and vegetation impacts should not be considered as negligible and need to be considered when establishing emission limits for the project for NO _x and VOCs – the two precursors for ground-level ozone formation.	Regulatory Response
26	Steam and Power Generation Facilities Integration	Fort McKay requests that additional emission controls be required on the gas-fired co-generation units to reduce the NO _x emission intensities to partially offset the significant increase in SO ₂ emission intensities.	Agreement Regulatory
27	Cogeneration Emission Control Technology	Fort McKay has a number of issues with the proposed NO _x emission rates from the proposed projects and requests additional details on emission controls from the gas-fired co-generation units and boilers so it can fully assess and comment on the air emission rates and controls.	Regulatory Response
28	Emissions Reduction and Management Strategies	Fort McKay expects best practices to be adopted in all aspects of production and processing and possible options for additional reductions should be assessed as part of the EIA. (See detailed list within the text of Recommendation 28)	Agreement Response
29	Collaborative Initiatives in Emissions and Air Quality Monitoring	Companies and the Regulators ensure that regional multi-stakeholder committees are open and transparent and not run indirectly by industry groups through budget controls.	Agreement Regulatory
30	Collaborative Initiatives in Emissions and Air Quality Monitoring	To better understand current and potential future regional air-related environmental effects and impacts, and the factors contributing to these effects, it is recommended that Shell, other companies and the Regulators fully support WBEA and CEMA in activities related to monitoring and managing the potential impacts of air emissions on vegetation (see detailed list within the text of Recommendation 30).	Agreement Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category ¹
31	Collaborative Initiatives in Emissions and Air Quality Monitoring	To determine the frequency and magnitude of the impact of the proposed Pierre River Mine project on air quality in Fort McKay it is recommended that Shell be required to provide an “attribution” continuous air quality monitoring station between the Community and the proposed Pierre River mine that would monitor for NO _x , TRS, SO ₂ , PM _{2.5} and PM ₁₀ , O ₃ , THC, VOCs and basic meteorological parameters, and that this station be incorporated into the WBEA ambient monitoring network.	Agreement; Regulatory
Groundwater			
32	Fort McKay will not have access to any part of the traditional lands which are located within the active mining area for the proposed Jackpine Mine Expansion and Pierre River Mine projects.	Offsets be developed to mitigate the loss of existing and potential future groundwater-sources and ground-water resource dependant traditional activities (e.g., loss of fens), in consultation with Fort McKay.	Agreement Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category ¹
33	The Jackpine Mine Expansion and Pierre River Mine projects may affect the ability of the Fort McKay to use groundwater sources and to harvest traditionally-used plants on traditional lands located around the active mining area, which are dependent on groundwater flow for survival.	<p>Shell consult with Fort McKay (potentially through the Shell Elders Advisory Group) regarding locations of groundwater sources and traditionally-used plants and groundwater sources that may be in the areas adjacent to the Jackpine Mine Expansion and Pierre River Mine Project mining projects (e.g. within potential drawdown or seepage areas) to:</p> <ul style="list-style-type: none"> • confirm that the proponent is aware of where they exist; and • plan mitigative measures to protect the groundwater sources and the growing environments 	Agreement
34	The Jackpine Mine Expansion and Pierre River Mine projects may affect the ability of the Fort McKay to access traditionally used groundwater sources.	Shell be required, at its expense, to collect and test for potability ground water, from any source on traditional lands at the request of Fort McKay, prior to its use.	Agreement Regulatory
35	Groundwater incidents (unexpected groundwater quantity and/or quality changes) are reported to the authorities.	It is recommended that the Fort McKay require the proponent to advise the community of any groundwater incidents reported to the authorities and to meet with the community to discuss the incident, the subsequent investigation, any follow-up action to be taken and the results of the follow-up actions.	Agreement Regulatory

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36	Seepage and 'natural' treatment system monitoring	<p>The following be developed in consultation with Fort McKay:</p> <ul style="list-style-type: none"> • a groundwater-monitoring program designed to detect process-affected seepage that bypasses the interception and/or containment system for external and internal tailings disposal areas. • development and implementation of a ground water monitoring program to detect process-affected seepage that bypasses the collection system, after closure and reclamation. • Monitoring to confirm that natural treatment systems, through which process-affected groundwater is directed, work effectively and if they do not, implement changes or mitigation measures to address the problems. 	Agreement Regulatory
37	Computer-predicted impacts, or lack of impacts, are subject to some uncertainty.	<p>We recommend the development of a groundwater-monitoring program to determine the validity of computer and professional-judgement predictions that have the potential to impact ground water resources and the ability of the Community to utilize their Traditional Lands. Shell should be required to:</p> <ul style="list-style-type: none"> • prepare a table summarizing computer-predicted and professional judgment impacts; • outline the groundwater level and/or quality monitoring to be undertaken to verify the predictions; • the table should be designed to simplify the comparison of previous and new data, so changes are easily detected; • monitoring data should be added to the table as it becomes available; • and the updated table provided to Fort McKay; • deviations from the predicted impacts which indicate that impacts have been underestimated shall result in a reassessment of impacts, updating of the table and reassessment of mitigation measures; and • the measurement of impacts shall be provided to Fort McKay with the results of any reassessment of impacts and mitigation measures developed in consultation with Fort McKay 	Agreement Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category¹
38	Regional groundwater management	We recommend that a regional groundwater management framework be developed, in consultation with Fort McKay.	Regulatory
Surface Water			
39	Water management	That the regulators ensure that the Phase 2 Athabasca River Water Management Plan is completed on an expedited basis and that this plan includes water withdrawal and impact limits.	Regulatory
40	Water use by industry	Shell should comment on the degree that existing raw water storage meets Jackpine Mine Expansion needs and what options are being considered if more water storage is needed to meet the Phase 2 Water Management Framework. We recommend that Shell provide three to four months of water storage to ensure continued operations during periods of water withdrawal restrictions or present contingency plans for their operations to show how they would meet limits on water withdrawals	Response Agreement Regulatory
41	Water use by industry	Shell should provide an annual breakdown of their existing Athabasca River Water Act license showing what water would be destined for use in Jackpine Mine – Phase 1, what would be available for JMPEP, and what additional water is needed from the Athabasca River for Jackpine Mine Expansion.	Response
42	Water use by industry	Shell should indicate what other contingencies, if any, are provided for in their request for an additional 18 Mm ³ of water.	Response
43	Water use by industry	Shell should comment on the large change in in-pit porewater storage between 2027 and 2028 and suggest ways of reducing this variation	Response
44	Water use by industry	Shell should comment on the inconsistencies in the Pierre River Mine Project annual water need and their Water Act application.	Response
45	Water use by industry	Shell should comment on the reason for the large change in free water storage at ETDA between 2027 and 2028 and suggest ways of reducing this variation.	Response

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Number	Fort McKay Key Concerns	Recommendation	Category¹
46	The Muskeg River watershed is protected	Shell should comment on why they cannot maintain the Muskeg River channel in its natural state as was done just upstream in the Imperial Oil Kearl Project, rather than piping the water through an 11.3 km pipeline and mining through the river.	Response
47	The Muskeg River watershed is protected	Shell should discuss any changes that could be made to the configuration of these end-pits to reduce the size of the lakes.	Response
48	The Muskeg River watershed is protected	Given the slowdown in the oil sands development, Shell should comment on the representativeness of their current flow predictions for the Muskeg River.	Response
JME Water Quality and Aquatic Health			
49	Use of Chronic Effects Benchmarks (CEBs) for those substances where water quality guidelines exist. ¹	<ul style="list-style-type: none"> i) For future assessments rather than using SSD-derived benchmarks that have not been critically reviewed, use CCME or AENV guidelines where they exist (i.e. arsenic, boron and copper) and/or consider utilizing aquatic toxicity reference values (TRVs) that are used by USEPA for ecological risk assessments; and ii) provide a discussion of the potential additive impact of mixtures of contaminants on aquatic health. 	Response
50	Use of bioaccumulation factors (BAFs) that consider the uptake of contaminants to fish from the water (i.e., through gills) but not through the food web (i.e., diet) ¹	<ul style="list-style-type: none"> i) Explain how it is likely for future scenarios to result in lower mercury concentrations in fish than have occurred for the past few decades in the region (including the Athabasca River) given environmental concentrations are not likely to decrease in disturbed systems; and ii) Apply a more realistic model that considers bioconcentration factors (BCFs; diet uptake) and/or re-calculate methylmercury (for JME and PRM) and other organometallic concentrations in fish tissue. 	Response Agreement

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Number	Fort McKay Key Concerns	Recommendation	Category ¹
51	Water quality guideline exceedances are expected for many substances concurrently ¹	i) Explain the assessed impact of negligible for aquatic biota in view of the increases of some substances beyond guidelines or even the less conservative CEBS; ii) Fort McKay must be involved in developing the sediment and water quality monitoring program for this project to ensure that the frequency, timing and types of analyses will capture all runoff events and scenarios of concern to Fort McKay.	Response Agreement
52	Shell plans to replace many natural wetlands and muskeg areas with pipelines and drainage ditches that will not remove DOC-bound contaminants. ¹	i) Explain and/or map where constructed wetlands will be used to replace natural wetlands related to drainage from and around project areas, and provide the location in the report where the design of the wetlands is described; Fort McKay requests the opportunity to review the new information; and ii) Provide measurements of the dissolved forms of metals and organic contaminants (including DOC-bound, not particulate) rather than just totals (does not separate dissolved and particulate-bound forms).	Response or Agreement
53	Increased water levels in Kearn Lake	i) Describe the higher diverted flows' effect on augmenting the deposition of particulates and associated contaminants in Kearn Lake; and ii) Provide information about how the berm around the lake may be adjusted to expose more natural shoreline and permit traditional uses to continue.	Response or Agreement
54	Pit lakes may not function as anticipated, and will support contaminated biota. ¹	Describe plans to monitor aquatic biota in pit lakes for metals and other contaminants, and plans to prevent biota from escaping from the lakes if they remain contaminated.	Response Agreement
55	Pit lakes may not function as anticipated, and will support contaminated biota. ¹	We recommend that the acceptance and reliance on end pit lakes for storage of MFT and treatment of process waters be stopped until such time as this method of treatment is proven to be viable in a scientifically defensible (peer reviewed) manner.	Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category ¹
56	Potential catastrophic failure of tailings holding areas. ¹	Describe plans for the prevention of, detection of, and response to the potential catastrophic failure of any of the reservoirs of contaminated fluids and sediments.	Response
57	Lack of watershed management plan for the Muskeg River watershed.	Fort McKay recommends finalizing the watershed management planning for the Muskeg River watershed prior to final decisions about the mainstem and expects to be involved in the development and finalization of any such plan.	Regulatory
PRM Water Quality			
58	Impacts to environmentally significant waterbodies: Eymundson Sinkhole lakes	<ul style="list-style-type: none"> i) Shell should comment on why it did not offer any mitigation options for loss the Eymundson Sinkhole ESA and what some mitigation options might be (e.g. offsets) ii) Shell should describe potential impacts to other local waterbodies, notably those that support fish, and provide a brief characterization of the 21.6 ha of waterbodies that will be lost in the Eymundson watershed (including sinkholes). iii) The government should clarify how an interagency review will take place and what approval process that would be required for this particular ESA. Fort McKay expects to be consulted on this issue. 	Response Regulatory
59	Inaccuracies of toxicity predictions due to lack of detection	<ul style="list-style-type: none"> i) Will Shell commit to using an analytical laboratory that is able to detect substances at least to guideline levels for metals and organic contaminants, and for substances where calculations predict that a chronic effect benchmark is exceeded for fish or other biota? ii) Tabulate each instance where a guideline or CEB is exceeded (in relation to the fish tissue prediction input information) so that Fort McKay may readily evaluate the significance. 	Response

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Number	Fort McKay Key Concerns	Recommendation	Category ¹
JME Fisheries			
60	Lost realistic connectivity for fish of Kearl Lake to the Muskeg River	i) Fort McKay requests that an effort be made to provide appropriate protective and functional fish habitat in the 9.3 km connector channel between the Muskeg River and Kearl Lake; and ii) clarify whether the loss of Muskeg Creek was a component of compensation calculations	Agreement
61	Toxicity of mixtures of contaminants ¹	i) Fort McKay requests that since Shell is basing its toxicological benchmarks on predicted tissue concentrations in fish, the company should validate their models by measuring these SOPCs in fish tissue; and ii) Fort McKay requests that methylmercury be treated as a substance of concern because of its historical importance in the region.	Response/ Agreement
62	Sub-lethal impacts to aquatic biota from contaminated pit lake sediments ¹	i) Address the potential contamination and sublethal effects to fish exposed to contaminated sediments and food web diet sources; ii) Given the stated paucity of chronic toxicity data for oilsands-source naphthenic acids, will Shell commit to funding the necessary research to fill these data gaps?	Response
63	Lost fishing opportunities and mercury-contaminated fish in the compensation lake ¹	A mitigation and compensation plan with respect to lost fishing opportunities needs to be developed, including but not limited to a Fishing Opportunities Management Plan . Fort McKay recommends that Shell participate in the development of a Fishing Opportunities Management Plan for the Community. This may include identifying or creating fishing opportunities near the Community.	Agreement Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category¹
64	Loss of habitat for the Species of Special concern , Arctic grayling ¹	<ul style="list-style-type: none"> i) Fort McKay must be included in all discussions and reviews concerning fish and fish habitat compensation, including habitat design, review of mitigation and monitoring plans, Fisheries Act Authorization, and other approvals emanating from the compensation plans; and ii) Fort McKay requests that provincial regulators become involved in consultations about the expanding threat to Arctic grayling due to incremental habitat losses and increased fishing pressure. 	Agreement Regulatory
65	Setbacks from fish bearing watercourses	<p>Fort McKay recommends that a minimum setback be established and mandated:</p> <ul style="list-style-type: none"> i) 100 m from all fish bearing watercourses including the Muskeg River, Jackpine Creek, Muskeg Creek, and other fish bearing watercourse within the Muskeg River and Pierre River watersheds as well as from all diversion channels that drain into fish bearing waters. ii) 250 m from the Pierre River Mine project to the Athabasca River 	Agreement Regulatory
PRM Fisheries and Aquatics			
66	Loss of benthic invertebrate drift to local fish in the Athabasca River	<ul style="list-style-type: none"> i) Re-evaluate the assessment of negligible impact for benthic invertebrate drift from tributaries to the Athabasca River, because streams that are diverted or interrupted from direct flow to the river will not produce benthic drift in the same way as they currently do; and ii) describe potential impacts to local invertebrate-consuming fish from lost benthic drift at the outflow of streams flowing to the Athabasca River in compensation calculations. 	Response/ Agreement
Soil and Terrain			
67	Peatland Reclamation	We recommend that Shell to commit to research towards the reclamation of organic soils and the establishment of peat-accumulating wetlands, to help sustain the capability, diversity, and distribution of soil types.	Agreement

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68	Tailings Management	Fort McKay would like to review revised tailings strategies which will undoubtedly be required as a result of the ERCB Tailings Directive 074.	Agreement
69	Pace of Reclamation	Fort McKay recommends that Shell increase the pace of reclamation on all their mines, in order to realize opportunities for direct placement of surface soil materials.	Agreement
Vegetation			
70	Irreversible Wetland Impacts	Fort McKay may wish to request that Shell continue its involvement with CEMA’s Reclamation Working Group (Wetlands and Aquatics Subgroup) and facilitate the development wetland reclamation technology. Fort McKay may wish to ask that Shell develop on-site plans for experimental peatland reclamation and the possible creation of fens and/or bogs during reclamation. Fort McKay may wish to ask Shell to dedicate land to a long-term wetland research project.	Agreement/ Regulatory
71	Economic Forests	Fort McKay may wish to ask for clarification on the methods used to determine forest productivity categories.	Clarification
72	Rare plants	Fort McKay may wish to request that Shell develop and implement a program to salvage and relocate known occurrence of rare species to areas located outside the project footprint before development occurs. This program should also evaluate the potential to reintroduce rare species into reclaimed areas.	Agreement
73	Traditional Plant Potential	Fort McKay may wish to ask Shell to develop reclamation practices that utilize a broad range of traditional use plants in their reclamation programs and to develop a list of which TU plants are available for reclamation, in consultation with Fort McKay.	Regulatory/ Agreement/ Clarification

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Number	Fort McKay Key Concerns	Recommendation	Category¹
74	Hydrological Changes	Fort McKay may wish to request that Shell develop measures to monitor and mitigate the potential effects of surface water disturbance, including changes to water quantity and quality, on off-site wetlands.	Regulatory/ Agreement
75	Introduction of Invasive Species	Fort McKay may wish to request that Shell monitor encroachment of non-native plant species as part of their normal environmental activities, ensure that they do not introduce these species as part of the reclamation activities and, if necessary, take steps to eradicate invasive and weedy species.	Regulatory
76	Air Emissions	Fort McKay may wish to request that Shell continue to support and participate in regional monitoring (i.e., Terrestrial Environment Effects Monitoring Program and biodiversity monitoring) to monitor potential effects of air emissions on vegetation resources.	Regulatory/ Agreement
77	Biodiversity	Fort McKay may wish to request that Shell develop a biodiversity monitoring program in order to measure and evaluate the success of on-site reclamation in both terrestrial and wetland habitats.	Regulatory/ Agreement
78	Integration of post closure plans	Fort McKay may want to ask the regulator to establish a standard format in which closure maps are submitted including the following criteria: <ul style="list-style-type: none"> • Submitted digitally, in a common GIS format • Submitted geo-referenced • Submitted on a common scale • Submitted with a common legend for all features and ecosites (to be developed and provided by the regulator) • To be updated and resubmitted with any changes as they occur 	Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category¹
79	Establishment of meaningful thresholds	Fort McKay may want to ask the regulators to develop meaningful criteria to assess disturbance of ecosystems and landscapes and establish thresholds for disturbance that consider long term effects on biodiversity, traditional land use, economic forests, rare plants and rare plant communities and wetland destruction / degradation in the Fort McKay Traditional Lands, in consultation with Fort McKay.	Regulatory
Wildlife			
80	Incorporation of Traditional Knowledge	Explain how it was specifically incorporated into the Wildlife Assessment.	Regulatory, Response, Agreement
81	Water bird deterrent systems	We recommend that: <ul style="list-style-type: none"> • Shell’s water bird deterrent should be considered the industry standard. • Shell participate in regional bird/wildlife protection committees • Fort McKay would like to be a member in a regional bird/wildlife protection committee. Fort McKay would like Shell’s support of this endeavor. 	Regulatory Agreement
82	Water bird deterrent systems	Collection of 68 dead birds and a manufactures claim are not appropriate to assess the impacts of tailings ponds. Fort McKay’s view is that the conclusion of low magnitude impact is invalid for tailings ponds; Shell needs to determine the site specific effectiveness of their bird deterrent system through site-specific monitoring.	Regulatory, Response Agreement
83	Water bird deterrent system	Shorebirds may not be effectively deterred from ponds less than 400 m across. Will Shell use additional methods (e.g., pond construction) to prevent shorebirds from being landing on ponds?	Regulatory, Response
84	Water bird deterrent system	A regional scale cumulative impact assessment should be a joint effort funded by all oil sands operators.	Regulatory

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85	Water bird deterrent system	A regional monitoring program to assess tailings pond impacts on water birds needs to be designed and implemented by impartial scientists.	Regulatory
86	Moose populations	<p>Moose populations may be declining in parts of the oil sands region. We recommend:</p> <ul style="list-style-type: none"> • ASRD immediately reduced harvest levels for moose in the region until additional population information is available • Surveys to determine moose and wildlife populations are required in the oil sands region within the next 2 years. • Shell should contribute to these surveys. • Once surveys are completed, ASRD needs to consult with Fort McKay and implement appropriate management 	Regulatory Agreement
87	Wildlife populations	We recommend that ASRD determine the remaining population of Canada Lynx, Marten, Fisher, Beaver and other wildlife populations. The population levels for these species are currently poorly understood. Once populations are determined, ASRD should develop management methods in consultation with Fort McKay.	Regulatory
88	Loss of wildlife habitat in Fort McKay's Traditional Lands	<p>We recommend:</p> <ul style="list-style-type: none"> • Conservation offsets including protected areas are established, in consultation with Fort McKay, to preserve wildlife habitat, wildlife populations and provide opportunities for traditional land use in proximity to the Community of Fort McKay • Reclamation of disturbed areas in the mineable oil sands area be accelerated; that additional new development approval be based upon reclamation performance and re-establishment of effective wildlife habitat. 	Regulatory

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89	Reclamation	Shell has indicated that impacts to wildlife are “negligible or low” because of the reclamation of habitat. An Approval should state that reclamation certification is based on habitat suitability for wildlife, rather than forest capability.	Regulatory
90	Impacts to black bears	Shell has not provided enough data to make conclusions about removal of nuisance black bears on their populations. Additional data is required to assess impacts on black bears. A regional monitoring program to determine black bear populations is needed. Shell should contribute to a program to assess black bear populations.	Regulatory Agreement
91	Vehicle/wildlife collisions	Additional data is required to assess impacts on wildlife from vehicles.	Regulatory
92	Sensory disturbances	Additional data is required to assess impacts on wildlife from sensory disturbances. Shell should be required to monitor effects of sensory disturbance on their existing facilities to determine the effects of noise and light.	Regulatory
93	Sensory disturbance	Shell appears to have based their conclusions on anecdotal information. This is inappropriate for an environmental impact assessment. Additional work is required.	Regulatory, Response
94	Model verification and conclusions	The model verification results (i.e., Spearman-rank correlations) are not sufficiently strong to allow the wildlife assessment conclusions. Wildlife abundance needs to be determined and monitored.	Regulatory, Response
95	Moose populations	What data does Shell have that supports the prediction that moose densities will at least double (i.e., 0.44 moose/km ²) in the areas adjacent to the projects?	Regulatory, Response
96	Moose populations	Provide documentation of a situation that shows that higher moose density is sustained adjacent to a major industrial project such as a mine.	Regulatory, Response

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Number	Fort McKay Key Concerns	Recommendation	Category¹
97	Habitat preservation	High quality moose habitat needs to be preserved adjacent to the projects. Does Shell plan on preserving high quality moose habitat adjacent to their mine projects by acquiring and setting land with high quality moose habitat? Shell needs to support a conservation offset plan.	Regulatory, Response, Agreement
98	Level of assessment	Shell indicated that the carrying capacity used in modelling was appropriate for an EIA level of assessment. Explain.	Regulatory, Response
99	Population viability assessment	Provide the values, calculation methods and references for the data used to calculate the moose fecundity and survival parameters	Regulatory, Response
100	Population viability assessment	Model predictions need to be tested with moose (and other wildlife) survey data to determine and monitor populations.	Regulatory, Agreement
101	Wildlife corridors	How will Shell ensure the protection and maintenance of riparian habitats, interconnectivity, and the unimpeded movement of wildlife species using the habitat?	Regulatory, Response
102	Wildlife corridor	Prior to disturbance of the Muskeg River, the importance of corridors for the maintenance of wildlife populations needs to be determined. Shell should agree to maintain the Muskeg River corridor through the Jackpine Mine Expansion area until the wildlife corridor research program is complete and then use the result to development a mine plan.	Regulatory, Response, Agreement
103	Wildlife corridors	Will treed riparian areas include the Muskeg River through the Jackpine Mine Expansion?	Regulatory, Response
104	Wildlife corridors	Discuss the width of wildlife corridors adjacent to watercourses	Regulatory, Response
105	Reclamation claims	Shell state that it will reclaim the landscape to an equivalent capability, optimizing the value of watershed, forest productivity, fish and wildlife habitat or traditional use. Fort McKay expects to be consulted by Shell and the Regulators regarding equivalent capability for traditional use	Regulatory, Response

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Number	Fort McKay Key Concerns	Recommendation	Category¹
106	Wildlife passages beneath bridge	Provide details of passage area and supporting documentation that passage is suitable for wildlife movement.	Regulatory, Response
107	Usefulness of wildlife photographs	Explain how bait stations and photographs contribute to the understanding of wildlife abundance and movement.	Regulatory, Response
108	Regional corridor study	Fort McKay would Shell to keep Fort McKay apprised of the progress of the regional wildlife corridor study.	Regulatory, Response, Agreement
109	Accumulation of Chemicals of Concern in the Environment	The impacts of these chemicals to wildlife and wildlife users need to be studied and understood on a regional scale.	Regulatory
110	All available data was used in Wildlife Health Assessment	How much of the chemical data from the above studies (e.g., from RAMP and other EIAs) was incorporated into the Wildlife Health Assessment?	Response, Regulatory
111	Appropriateness of Toxicity Reference Values (TRVs)	Provide scientific literature that supports using mouse data to assess impacts on shrews.	Response, Regulatory
112	Appropriateness of Ingestion Rates and Body Masses	Provide the sources and values used as ingestion rates and body masses for the wildlife species.	Response, Regulatory
113	No Wildlife Health Assessment on Amphibians	Have any TRVs for amphibians and reptiles?	Response, Regulatory
114	Wildlife Health Assessment	Fort McKay requests that Shell provide documentation (i.e., a case study) that provides evidence that Shell's approach accurately predicts impacts to wildlife and has provided adequate protection of wildlife health, wildlife consumers' health, and wildlife populations.	Response, Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category¹
115	Wildlife Health Assessment	Fort McKay requests that Shell provide verification of the Wildlife Health Assessment results	Response, Regulatory, Agreement
Human Health			
116	The HHRA relies on mainly on indirect risk assessment.	Shell justifies how the widespread use of surrogates and chemical groupings supports conservatism in their HHRA.	
117	The HHRA does not include potential synergistic interactions within the HHRA	Shell present clear justification for not including potential synergism in their JME & PRM HHRA.	
118	The does not include transient receptor in risk assessment of mixtures	Shell revisits the need to undertake HHRA to mixtures for transient receptor.	
119	Shell relies on a seriously flawed 2005 Golder report to inform support the HHRA for acrolein	Shell re-evaluate the integrity of the measurements contained in the 2005 Golder report, and validity of its conclusions, and respond as appropriate in the HHRA for acrolein.	
120	The HHRA concludes that a range of chemicals and chemical mixtures are expected to present increased acute and chronic health risk	In order to reduce the impact on the health of community members of Fort McKay, Shell should pursue best available technology to reduce emissions in general, and specifically to the following substances: Acrolein, PM _{2.5} , methyl mercury, molybdenum; and further pursue best available technology to reduce emissions to chemicals contained within the mixtures: Eye irritants, Respiratory tract irritants, Neurotoxicants, Reproductive and developmental toxicants.	

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Number	Fort McKay Key Concerns	Recommendation	Category ¹
121	HHRA demonstrates increased health risks from industrial emissions.	Shell participates and supports existing environmental and health monitoring programs within WBEA and CEMA.	
122	The concluding statement in the HHRA section contradicts the findings of the HHRA.	Shell revises the concluding HHRA summary statement to recognize that emissions from JME & PRM are expected to lead to increased risk human health.	
123	There is no effective risk communication plan within the EIA.	Shell constructively discusses with Fort McKay IRC strategies to effectively communicate health risks associated with JME and PRM.	
124	There is no HHRA relating to the wider impacts on determinants of health.	Shell considers the value of more holistic approach to human health risk assessment using an Ecosystem Health approach and adopts an Ecosystem Health component in its HHRA of the JME and PRM.	
125	Negative impacts on wider determinants of health are expected	Shell explore with Fort McKay what programs could be supported or devised to promote health so as to offset potential negative health impacts of the JME and PRM. This would include support for Fort McKay’s Community Health Strategy.	
Mine Plan and Closure, Conservation and Reclamation Plan			
126	Tailings Management	<ul style="list-style-type: none"> i) Fort McKay would like to review revised tailings strategies which will undoubtedly be required as a result of the ERCB Tailings Directive 074. ii) Fort McKay requests a clarification of the level of sand capping over NST as well as an explanation of how this sand capping and modification of the landscape to incorporate drainage channels will be operationally achieved. 	<p>Agreement</p> <p>Response</p>

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Number	Fort McKay Key Concerns	Recommendation	Category¹
127	Reclamation Goals and Principles	In order to achieve true equivalent capability Shell should look at ways of creating more gently sloping topography and the hydrological conditions suited to peatland formation in order to achieve equivalent capability on the final reclaimed landscape.	Agreement, Regulatory
128	Pace of Reclamation	<ul style="list-style-type: none"> i) Fort McKay clearly wishes that Shell increase the pace of reclamation on all their mines. ii) Fort McKay would like to discuss alternative tailings management strategies which will conform to ERCB Tailings Directive 074, improve the pace of reclamation. 	Agreement, Regulatory
129	Closure Drainage Plan	Shell should confirm that agreements are in place between Shell and Imperial Oil (Kearl Oil Sands Project) and Syncrude Canada Ltd. (Aurora South Project) for co-ordinated long term drainage control.	Agreement, Regulatory
130	End Pit Lakes	<ul style="list-style-type: none"> i) Fort McKay opposes the deposition of tailings into end pit lakes as a method of long term tailings storage. ii) In addition, Shell should determine the levels of water quality parameters that will be necessary to achieve reclamation certification for fish habitat, estimate the time required to achieve these levels and design their material placement and drainage systems accordingly. 	Agreement, Regulatory
131	Equivalent Capability	<ul style="list-style-type: none"> i) Shell should look at ways of creating more gently sloping topography in order to encourage wetland formation in the final landscape. ii) Shell should monitor productivity on reclaimed landscapes to verify that equivalent capability for forestry, as predicted by the LCCS, has been achieved. 	Agreement, Regulatory
132	Reclamation Security	Fort McKay may want to see a breakdown of reclamation cost predictions to satisfy itself that the reclamation security will be sufficient. Costs must address the likelihood of long term treatment of pit lake water should this be required.	Agreement, Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category¹
133	Revegetation	<ul style="list-style-type: none"> i) Fort McKay asks that the proponent look seriously at creating the landforms necessary for re-establishing peat accumulating wetland types. ii) Fort McKay also asks that Shell undertake field scale trials to establish peat accumulating wetlands. iii) Fort McKay would like Shell to look at re-establishing other plant species of importance to traditional use including rat root. 	Agreement, Regulatory
134	Soil Salvage and Replacement	<ul style="list-style-type: none"> i) Fort McKay may wish to include in its agreement with Shell, that it prepares a more detailed scheduling and direct placement of upland soils. ii) Fort McKay may want to request a further commitment from Shell to ensure that a professional soil scientist will be on staff to schedule topsoil salvage and direct placement activity and closely plan and monitor work as soil salvage and replacement occurs. iii) Fort McKay would like to see Shell investigate the potential for direct placement of organic soils in locations with high potential for peatland development. 	Agreement, Regulatory
135	Traditional Use	Shell should continue to work with Fort McKay during the development and implementation of reclamation programs in support of traditional use.	Agreement
136	Unsuitable Materials	Fort McKay strongly agrees with this goal of sequestering unsuitable materials and may want to see further details on the locations of unsuitable materials and the plans for management of these materials.	Agreement, Regulatory
137	Wildlife	Fort McKay may want to see further details provided on the specific measures that Shell will be taking to develop wildlife habitat, especially for species of importance to Fort McKay.	Agreement, Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category ¹
138	Biodiversity	i) Shell should be asked to provide updates to Fort McKay on their plans to increase biodiversity. ii) Fort McKay should ask Shell to ensure that it maximizes the direct placement of soils, and diversifies the landscape to ensure that a wide variety of ecosites will be established.	Agreement
139	Certification of Reclaimed Lands	i) Fort McKay may wish to see a progressive and proposed schedule of when Shell intends to apply for certification. ii) Fort McKay would like have the opportunity to comment on any future applications for certification, and to participate in any field inquiry.	Agreement, Regulatory
Resource Use			
140	Impacts to ESAs and lack of protected areas	The regulators should establish, in consultation with Fort McKay, protected areas within Fort McKay Traditional Lands that protect a range of ecological values and traditional uses.	Regulatory
141	PDC for ESAs	Fort McKay may want to request that Shell iii) comment on the discrepancy between the impact ratings in the text (page 8-97) and the impact classification table ratings for ESAs (page 8-100) iv) evaluate and discuss the Planned Development Case effects for ESAs that were rated by Shell as having low to moderate magnitude long-term impacts (Muskeg River (North) ESA (moderate), Athabasca River – Tar Sands Reach (low), Kearl Lake Moose Area (low) and Pierre River ESA (low) v) discuss the regional impacts on ESAs as a whole due to the Planned Development Case.	Response

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Number	Fort McKay Key Concerns	Recommendation	Category ¹
142	Impacts on regional wildlife populations and hunting	Fort McKay may want to request that in light of recent moose population study results (ASRD 2009), and the observations of both traditional users and local (non-aboriginal) hunters that wildlife populations have declined, that Shell comment on the validity of its population viability results that predict no decline wildlife populations.	Response
143	Access management	Fort McKay may want to request that the regulators consult with them in developing access management plans within Fort McKay’s Traditional Lands that include limits to motorized access, designated use areas and limits on the density of linear features. Density limits would require successful implementation of Integrated Landscape Management (coordination of access features between users).	Regulatory
144	Access management	Fort McKay may want to request Shell commit to participating in the development of regional access corridors and management plans that are relevant to their existing and proposed Projects. This may include an east side corridor access management plan and/or an access management plan for the west side of the Athabasca River (to complement or expand on the Moose Lake Access Management Plan).	Agreement, Regulatory
145	Loss of berry-producing habitat	Fort McKay may want to request that Shell collaborate with Fort McKay on a mitigation and offset plan regarding lost berry habitat and berry picking sites (Also, see Recommendation [***] in the TEK/TLU review).	Agreement
146	Impacts to traditional resources and land use opportunities	Fort McKay may want to request that the Government of Alberta consult with them regarding suitable offsets and accommodation for lost traditional resources (e.g., berry habitat, declining regional moose populations) and traditional land use opportunities.	Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category¹
Historical Resources Uses			
147	Resource Recovery and Employee Education	Fort McKay may wish to ask Shell to provide development schedules to archaeological consultants within an adequate time frame to carry out studies prior to disturbance.	Agreement
148	Resource Recovery and Employee Education	Fort McKay may wish to request that Shell provide training and education to Project personnel regarding known locations of archaeological locations, and identification of new historic resources, so that these resources can be temporary avoided prior to resource recovery.	Agreement
149	Graves	Fort McKay would like to have grave sites identified during the TLU studies listed under the <i>Historical Resources Act</i> with the intent of guaranteeing their protection from current and future development.	Response, Agreement, Regulatory
150	Mitigation	Fort McKay would like to ensure that Shell will complete Stage I mitigation for HjOv 10 and HiOt3 and provide the findings to the Fort McKay IRC.	Agreement, Regulatory
Traditional Knowledge and Land Use Issues			
151	Intellectual Property Rights	Fort McKay would requests that Shell provide copies of all interview notes, audio recordings and spatial data (in a shape file format) gathered during this current application and past Shell projects to the Fort McKay IRC.	Response, Agreement
152	Reclamation Planning	Fort McKay would like Shell to support reclamation research for Fort McKay’s cultural keystone species and ensure that these species are considered in reclamation planning. In addition, Shell should provide regular updates on reclamation research and reclamation progress for these and other species.	Agreement
153	Reclamation Planning	Fort McKay would like Shell to describe how they will reclaim land for traditional purposes, including which plant species and animal habitat will be targeted. As reclamation research and practices evolve, Fort McKay would like to Shell to provide updates and opportunities for discussion regarding the status of reclaiming land for traditional use.	Agreement, Regulatory

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Number	Fort McKay Key Concerns	Recommendation	Category¹
154	Disturbance	Fort McKay would like to collaborate with Shell to develop a mitigation and an offset plan in relation to the adverse effects and loss of key cultural and traditional use areas that would be affected by the JME and PRM.	Agreement, Regulatory
155	Cultural Retention and Trapper Consultation	Fort McKay would like Shell to contribute to further development of Fort McKay’s Cultural Heritage Strategy and other programs aimed at strengthening individual and Community health.	Agreement
156	Cultural Retention and Trapper Consultation	Fort McKay would like to confirm that Shell will continue ongoing consultation with affected trappers regarding project development and provide compensation or implement mitigation measures as needed following the Fort McKay Trapper Compensation Guidelines.	Agreement
157	Access Management	Fort McKay would like Shell to establish access management plans, in collaboration with the Fort McKay IRC, to facilitate Fort McKay Community member access to traplines and other traditional use areas throughout the life of the mine.	Agreement
158	Access Management	Fort McKay would like the Government of Alberta to support and include the current and future submissions by the Community of Fort McKay in the Lower Athabasca Regional Plan. This includes potential financial support to continue their current level of involvement.	Regulatory
159	Wildlife	Fort McKay would like to discuss with Shell and ASRD conducting population and habitat studies with species that are important to the Fort McKay Community members. Fort McKay may wish to be involved with the resulting research and monitoring.	Agreement, Regulatory
160	Graves and Spiritual Sites	Fort McKay may want to request a trip to the gravesites for the elder who has family buried on the PRM lease site prior to lease development.	Agreement
161	Graves and Spiritual Sites	Fort McKay may want to request that graves identified within the Project lease boundaries have protective fencing erected.	Agreement

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Number	Fort McKay Key Concerns	Recommendation	Category ¹
162	Graves and Spiritual Sites	Fort McKay would like to have grave sites identified during the TLU studies listed under the Historical Resources Act with the intent of guaranteeing their protection from current and future development.	Response, Agreement, Regulatory
163	Monitoring	Fort McKay may want to request that Shell discuss their environmental monitoring efforts, as both an individual operator and as part of a multi-stakeholder organization member, and identify opportunities for Community involvement.	Agreement, Regulatory
164	Cultural Heritage Assessment	Fort McKay requests that the Governments of Canada and Alberta continue to support the FMSA process in future regional development applications.	Regulatory
165	Visual Aesthetics	Fort McKay may want to request that Shell comment specifically as to whether any of the proposed new Project's features (plumes, plant sites and mine landforms) will be visible from Fort McKay. Fort McKay may also want to request that Shell consult with them regarding aesthetic changes to the landscape.	Response

Recommendation categories:

Agreement – A suggested activity (mitigation, monitoring etc.) that Fort McKay may want to consider in their Agreement negotiations with Shell.

Regulatory – A suggestion that Fort McKay may want to recommend to the regulators (e.g., potential approval or licence condition, assessment approach).

Response – A deficiency or question that Fort McKay may want to request a response from Shell.

¹Key Concerns and Recommendations that apply to both Jackpine Mine Expansion and Pierre River Mine

²Recommendation Categories:

Agreement - recommendation that Fort McKay consider this as an item to negotiate with the company in their Agreement

Regulatory - recommendation that Fort McKay consider this as an item to recommend to Alberta Environment (e.g. potential approval or licence condition, assessment approach)

Response - recommendation that Fort McKay request a response from the company providing clarification or more information as outlined.

Note: See also recommendations 2, 3, 4, 5, which apply to both JME and PRM