

Topic: Regulatory Recommendations		
Q #	Question	Response
1	<p>It is the position of Fort McKay that renewing the approval for JPM1 at this time would be contrary to the intent of the EPEA legislation. Fort McKay therefore expects that, should the Jackpine Mine Expansion be approved, only an amendment to the JPM1 approval be provided to allow for advancement of the JPME project and that the 10-year EPEA renewal process be maintained for 2014.</p>	<p>Shell believes that renewing the JPME EPEA operating approval at this time is consistent with the intent of the EPEA legislation. Seeking a renewal in addition to an amendment for the JPM1 operating approval is aligned with the stated purpose of the EPEA, which includes the need to integrate environmental protection and economic decisions in the earliest stages of planning.</p> <p>The changes to the Jackpine mine plan including, air and water disturbances, represent modifications that require AENV approval which has a default term of 10 years. This renewal provides the level of regulatory certainty that proponents require in order to make large, long term investment decisions.</p>
2	<p>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.</p>	<p>The terms and conditions of Shell's JPM 1 approval requires Shell to construct and operate the project as described in its applications, and requires notification and possible amendment to its AENV operating approval in the event that Shell cannot comply with these terms and conditions.</p> <p>In addition, the EPEA operating approvals also set out monitoring and operating protocols and emission limits which are based on Shell's conservative EIA. These conditions are set by AENV to ensure that the project does not result in significant adverse environmental impacts. Further, Shell is under an obligation pursuant to the EPEA to submit to the Director any new and relevant information with respect to any actual or potential adverse effects that result from the project activity to which the approval relates or comes to the approval holder's attention after issuance of the approval.</p> <p>Based on the above, Shell believes that there are already sufficient mechanisms in place to ensure that AENV is kept apprised of new information on environmental impacts due to operations as well as Shell's ability to comply with its approval conditions.</p>

Topic: Noise		
Q #	Question	Response
3	It is in Fort McKay's position that an ambient monitoring adjustment be required by the ERCB and/or Alberta Utilities Commission (AUC) when developments are proposed on the Community of Fort McKay's Traditional Lands in currently pristine areas.	<ul style="list-style-type: none"> • This is a regulatory issue, therefore Shell will defer to the Energy Resources Conservation Board (ERCB)/AUC in this matter. • To date, ERCB has not accepted any applications to use the A2 ambient adjustment. An A2 ambient adjustment was considered in Canadian Natural Resources Limited (CNRL) Primrose East noise assessment (CNRL 2006) based on the measured baseline conditions at a noise receptor; however, the EUB disallowed the adjustment, returning the permissible sound level to (PSL) 40 dBA. • Reference: CNRL Primrose East EIA (January 2006) and EUB Supplemental Information Request 45 (July 2006). <p>Note: Please see the response to the next item (Question 4) for more information.</p>
4	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 measurements at cabin NR3 indicated a background nighttime level of 25 dBA.	<ul style="list-style-type: none"> • JPME and PRM baseline program included one day of measurement at 7 cabins. Night-time period (9 hr) noise levels at these cabins ranged from 25 dBA to 40 dBA with the median being approximately 38 dBA. This is comparable to the ERCB rural night-time ambient of 35 dBA and no adjustment was required. • One night of monitoring at 25 dBA does not indicate that this would be the case on a seasonal basis, and ambient noise levels depend on the level of natural sources such as wind-generated noise and wildlife. • Environmental noise is naturally variable. The baseline program measurements were intended to be a short program to verify that the range of noise levels in the study area were comparable to the ERCB rural ambient of 35 dBA (defined in Section 2.1.1 of Directive 038).
5	Fort McKay requests that Shell commit to undertaking noise surveys (measurement and discussion with community/cabin owners) at the Community of Fort McKay and the three 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.	<ul style="list-style-type: none"> • The control of noise effects from the PRM and JPME is focussed on determining compliance at the 1.5 km criteria boundary. • Compliance at the 1.5 km boundary indicates that noise contributions from Shell operations at the receptors outside that boundary will be compliant. • Shell will be developing a noise management plan to mitigate noise to minimize the potential effects identified in the EIA. • The noise management plan will outline how noise will be considered during detailed design, the need for monitoring, and the type of monitoring that would best achieve the needs. • Should a complaint be received during Project construction or operation, Shell will investigate, and consider a monitoring program as outlined in Directive 038.

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6	Fort McKay requests that Shell provides additional details on its noise mitigation plans for the PRM project and review these plans with Fort McKay.	<ul style="list-style-type: none">• The noise management plan will follow the requirements of Section 5.1 of Directive 038. The program will incorporate commitments made in the EIA, plans for assessment updates or monitoring, as appropriate, and ERCB requirements for stakeholder involvement in the plan development. (PRM SIR 253a).• Shell will review the noise management plan with Fort McKay, as outlined in Section 5.1 of Directive 038. The noise management plan will consider:<ul style="list-style-type: none">– Identification of noise sources;– Assessment of current mitigation plans/programs;– Performance effectiveness of noise control devices;– Methods of noise measurement;– Best practises programs; and– Continuous improvement programs (Directive 038, Section 5.1).

Topic: Air		
Q #	Question	Response
7	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.	<ul style="list-style-type: none"> • Shell understands FMFN's concern that industry compliance with provincial air quality criteria will result in deteriorated air quality from pre-development conditions, even if these objectives are consistently achieved. • Shell's approach to assess impacts due to air emissions is to first assess anticipated ambient concentrations against relevant objectives (i.e. AAAQO) where available. However, Shell also conducts assessment of impacts to human and wildlife health, as well as Air Emission Effects (AEE). • Negligible to low incremental air quality impacts, negligible AEE impacts and no incremental human health impacts were predicted due to the Project. • The effect of the change in air quality on environmental health was assessed using inhalation exposure limits as discussed in EIA Volume 3, Sections 5.3 and 5.4. Selection of each exposure limit required that the limit be: <ul style="list-style-type: none"> – protective of the health of the general public based on the current scientific understanding of the health effects known to be associated with exposures to the chemicals of potential concern; – protective of sensitive individuals, including children and the elderly, through the use of safety or uncertainty factors; – established or recommended by reputable scientific authorities; and – supported by adequate documentation.
8	Fort McKay requests that Shell be required to participate in and support the development of 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.	<ul style="list-style-type: none"> • Shell is an active participant in Wood Buffalo Environmental Association (WBEA) and Cumulative Environmental Management Association (CEMA), which have existing mechanisms to track and develop management plans related to ambient air quality.
9	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, in consultation with Fort McKay, since impact criteria can vary significantly between EIAs.	<ul style="list-style-type: none"> • This may be best raised at a multi-stakeholder forum. • Air Assessment approach is appropriate. <ul style="list-style-type: none"> – Magnitude classification was based on criteria that were established to protect human and environmental health. – Changing the "moderate" and "high" magnitude classification does not affect the impact assessment since all magnitudes were "negligible" or "low".

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Q #	Question	Response
10	Fort McKay requests that the criteria and basis for selection of the odour thresholds used in the EIA be provided by Shell.	<ul style="list-style-type: none">• Odour thresholds for each compound determined from various literature sources as discussed in EIA Volume 3, Section 3.4.7.• The typical odour threshold used in the EIA was calculated using the geometric mean of the minimum and maximum of reported values.• Further analysis of odour provided in Pierre River Mine (PRM) Round 2 Supplemental Information Requests (SIRs), Alberta Environment (AENV) Question 82:<ul style="list-style-type: none">– Each compound compared to minimum and mean odour thresholds.– There were some predicted exceedances of the minimum and mean odour thresholds; however, the predictions must be viewed in light of the conservative assumptions incorporated in the assessment and with full consideration of the complexity of the sense of smell which is influenced by individual, environmental, and substance-based factors. In addition, potential odours associated with these compounds are likely to be sporadic, rather than continuous.

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Q #	Question	Response
11a	<p>Fort McKay recommends that a regional odour management strategy be developed prior to the approval of any more projects.</p> <p>Fort McKay recommends that a regional odour management strategy be developed, in consultation with Fort McKay, prior to the approval of any more projects.</p> <p>Fort McKay recommends that this strategy consist of:</p> <p>Odourous Emissions Characterization</p> <p>To better characterize and quantify odourous emissions, which has not been done on a focused basis in the region to date, that companies be required to:</p> <p>i. undertake a detailed and ongoing emission characterization and quantification monitoring program from the tailings ponds and that these characterization programs be reviewed and/or developed in conjunction with Fort McKay with the results of the monitoring reported to the Fort McKay IRC at regular intervals;</p> <p>ii. develop a comprehensive plant site fugitive emissions detection, monitoring and characterization program and associated repair and reduction program that includes periodic DIAL (Differential Absorption Lidar) or equivalent monitoring and that this program be developed in conjunction with the Fort McKay IRC with the results of the monitoring reported to the Fort McKay IRC at regular intervals; and</p> <p>iii. To improve the availability of information and related understanding on odour sources that, the Regulators, in co-operation with industry, collect, collate and publish all the hydrocarbon and reduced sulphur monitoring data that has been generated to date related to mine faces, tailings pond and fugitive bitumen processing and upgrading facility emissions.</p>	<ul style="list-style-type: none"> • This might be best addressed in a multi-stakeholder forum. However, Shell has already undertaken efforts to better quantify and manage its fugitive emissions, which aligns with the intent of the reviewer's recommendation. <ul style="list-style-type: none"> – Shell has committed substantial resources to quantify fugitive emissions at Muskeg River Mine (MRM) in order to determine site specific emission factors that can be used to validate the current monitoring program and forecast future fugitive emissions. – Shell has contracted the University of Calgary to perform a review of MRM's Fugitive Emissions Research Program, which has included flux chamber and DIAL monitoring and core sampling. – Shell has committed to plant-wide fugitive emissions identification and control using the protocol recommended by the Canadian Association of Petroleum Producers (CAPP) Management of Fugitive Emissions at Upstream Oil and Gas Facilities, as well as other relevant guidelines and codes of practice aimed at minimizing fugitive emissions (EIA Volume 3, Section 3.2.2.2). – Shell has programs in place to respond to external odour complaints. – Shell is an active participant in WBEA and CEMA. • Further discussions on Shell participation in the odour-related initiatives suggested by the reviewer will inform development of a negotiated agreement.

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Q #	Question	Response
11b	<p>Odour Modeling and Characterization Studies</p> <p>To better understand and relate odourous emissions to actual odour responses and to improve odour modeling and predictions it is recommended that companies be required to:</p> <ul style="list-style-type: none"> i. participate (through funding and oversight) in the development and implementation of a regional odour study that would include: ii. real time, high volume and low detection limit monitoring of the hydrocarbons and reduced sulphur compounds in the vicinity of existing oil sands operations, at key areas within Fort McKay's Traditional Lands (to be identified by Fort McKay), and within the Community of Fort McKay, and iii. using odour panels to relate the data collected in i) above to the human characterization and response to air quality at the time of sampling, and iv. be required to participate (through funding and oversight) in the development and testing of odour modeling and/or other predictive tools that can be used to assess the potential odour impacts of future oil sands projects. 	<ul style="list-style-type: none"> • See response to 11a.
11c	<p>Odour Management in the Community of Fort McKay</p> <p>To address odour issues within the Community of Fort McKay it is recommended that:</p> <ul style="list-style-type: none"> i. companies and the Regulators continue to work with Fort McKay on addressing odour issues in the Community and support the notification protocol that Fort McKay is developing with industry to address episodic air quality issues including odours, and ii. companies and the Regulators support (through funding and oversight) the development of an ongoing Community odour monitoring program including human response-based odour monitoring and recording and also a supporting, within Community, odour-based air sampling program. 	<ul style="list-style-type: none"> • See response to 11a.
12	<p>It is recommended that air quality criteria for assessing vegetation impacts in Fort McKay's Traditional Lands the RMWB region be established and standardized, in consultation with 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 Fort McKay's Treaty Land Entitlement land and on its Traditional Lands.</p>	<ul style="list-style-type: none"> • Guidance from CEMA and AENV related to air quality criteria and assessment approach was applied in EIA where available (see the response to Question 30). • Shell is an active participant in WBEA and CEMA and will participate in regional initiatives that are relevant to Shell's projects. • Shell is in agreement that regional air quality criteria and approaches should be developed with participation of stakeholders including Fort McKay and Shell.

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Q #	Question	Response
13	<p>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 and that Shell should be basing its assessment on the appropriate impact criteria and consider the 2005/2006 ozone monitoring work conducted by Environment Canada (2007), all regional monitoring data as well as all key nitrogen species when assessing nitrogen deposition related impacts.</p>	<ul style="list-style-type: none"> • Nitrogen related impacts associated with nutrient enrichment (eutrophication) were assessed in the EIA based on nitrogen deposition for all key nitrogen species, consistent with the CEMA Eutrophication Management Framework. • Inclusion of ammonia emissions from the Project would not appreciably change total nitrogen emissions from the Project (less than 10% increase relative to the estimates used in the EIA). • CEMA's Interim Nitrogen (Eutrophication) Management Recommendations and Work Plan was released in 2008 and not available until after submission of the EIA. The United Nations Economic Commissions for Europe (UNECE) critical loads identified in the CEMA Nitrogen document were applied for the Syncrude Aurora South Project 2009 Environmental Update, which includes the Shell JPME and PRM in the Planned Development Case. • The results were consistent with those presented in the Fort McKay Specific Assessment; however, because the area of treed bog and poor fen that is potentially affected represents less than 5% of the regional area of treed bog and poor fen, this should be considered a Green Condition. • The World Health Organization (WHO) 2000 nitrogen dioxide (NO₂) guideline of 30 µg/m³ is based on a threshold for increased plant growth. Shell does not agree with the approach to assess eutrophication based on ambient NO₂ concentrations or use of NO₂ thresholds based on increases in plant growth rates, as was done in the Fort McKay Specific Assessment. The framework is based on assessment using nitrogen deposition and not ambient NO₂ concentrations. • The EIA included an assessment of potential direct toxic effects of NO₂ on vegetation. The increase in area potentially affected by NO₂ (annual and 24-h) under the Application Case was less than 15 ha, representing a negligible effect. • The EIA included an assessment of ozone based on the management threshold from the CEMA Ozone Framework. • The predicted change in ozone concentrations associated with the Project was 1 ppb and the Project is not expected to result in exceedance of the 65 ppb exceedance threshold. • The CEMA framework does not include assessment of SUM60 values that were used in the Fort McKay specific assessment or the ozone monitoring work conducted by Environment Canada in 2007. If thresholds based on SUM60 values are developed by CEMA through consultation with stakeholders, they will be incorporated into future assessments completed by Shell. • Potential effects of the Project associated with ozone are considered negligible, independent of effects levels considered, because the predicted change in ozone concentration due to the Project is so small.

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Q #	Question	Response
14	Fort McKay recommends that the Government lead and Shell participate in the development of standardized approaches for estimating air emissions that would be refined through an ongoing verification process with periodic updating and revision of these approaches. This process should be done in consultation with Fort McKay.	<ul style="list-style-type: none"> • Shell is in support of AENV's development of the Regional Municipality of Wood Buffalo regional emissions database, which is currently underway. This initiative will provide air emissions information that would be consistent for all assessments in the oil sands region. • Expected release date is unknown.
15	Fort McKay recommends that, should an approval be issued for these projects, that it requires a specific evaluation of predicted versus in operation measured VOC emissions from tailing ponds (quantity and quality).	<ul style="list-style-type: none"> • Shell is conducting DIAL and flux monitoring at MRM plant and tailings pond. • Current approvals for Muskeg River Mine Expansion (MRME) and Jackpine Mine – Phase 1 (JPM1) include requirements for monitoring of VOC and Total Reduced Sulphur (TRS) emissions from point and fugitive sources, including tailings ponds.
16	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.	<ul style="list-style-type: none"> • Mine fleet emissions were recalculated using the U.S. EPA NONROAD model as part of SIRs. • The NONROAD emissions were lower than those calculated in the EIA for all compounds except PM_{2.5}. • The NONROAD PM_{2.5} emissions were slightly higher than the EIA emissions (3% higher for JPME and 10% higher for PRM); however, the model predictions did not change (see Round 1 SIRs - JPME SIR 229 and PRM SIR 246). • Jackpine Mine – Phase 1 approval requires annual mine fleet nitrous oxide (NO_x) emissions remain below a certain level. Progress to reduce mine fleet emissions further below that level must also be reported annually.
17	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 JPME 2009 supplemental information submission from Shell (Shell 2009).	<ul style="list-style-type: none"> • Asphaltene-fired cogeneration is a relatively new concept and Shell's work to date has been completed at a conceptual design level. Detailed design work would commence if the Project is approved. • Shell will consider this request as part of potential mitigation agreement negotiations.
18	Fort McKay requests that the Regulators consider the potential of a shift to the use of alternative fuel sources in place of natural gas by oil sands projects in establishing source control limits and regional emission management strategies.	<ul style="list-style-type: none"> • Shell acknowledges the concern of potential for rising SO₂ emissions if this shift were to occur. • Alberta Environment has issued Policy 1B which provides emissions standards for steam generators burning non-gaseous fossil fuel for in-situ projects. It may be expanded in the future to include other industrial activities using non-gaseous fuels. • Shell will meet applicable emission limits.
19	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.	<ul style="list-style-type: none"> • Jackpine Mine Expansion is an update to JPM-1. • JPM-1, as described in the application, will not exist on its own. • Therefore, presenting the emissions as recommended is not a realistic scenario.

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Q #	Question	Response
20	<p>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.</p>	<ul style="list-style-type: none"> • Based on its EIA findings, Shell does not believe controls beyond those already proposed in the EIA are required to adequately manage nitrogen deposition related impacts. • Nitrogen related impacts associated with nutrient enrichment (eutrophication) were assessed in the EIA based on nitrogen deposition for all key nitrogen species, consistent with the CEMA Eutrophication Management Framework. • CEMA's Interim Nitrogen (Eutrophication) Management Recommendations and Work Plan was released in 2008; i.e., after submission of the EIA. This report suggested different thresholds (i.e. critical loads) based on those developed for the United Nations Economic Commissions for Europe (UNECE). These critical loads were different from those used in the EIA to assess nitrogen deposition-related impacts. • While the Shell EIA was not re-assessed using these new critical loads, the UNECE critical loads were applied in the Syncrude Aurora South Project 2009 Environmental Update. The update includes the Shell JPME and PRM in the Planned Development Case. <ul style="list-style-type: none"> – The areas exceeding the UNECE critical loads were consistent with those presented in the Fort McKay Specific Assessment; however, because the area of treed bog and poor fen that is potentially affected represents less than 5% of the regional area of treed bog and poor fen, Shell would argue that this result would suggest a Green Condition, not a Red Condition as suggested by FMFN. This is consistent with the Shell EIA findings.
21	<p>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, NO₂ and NH₃ based on potential impacts on vegetation relevant to the RMWB.</p>	<ul style="list-style-type: none"> • Shell is currently reviewing how it participates in regional multi-stakeholder groups in order to determine the level of our participation. However, Shell does have representatives on both NO_x/SO₂ Management Working Group (NSMWG) and WBEA.
22	<p>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. Scope of the study would include monitoring both point and area emission sources in the region for ammonia using low detection ammonia monitors.</p>	<ul style="list-style-type: none"> • While Shell would contribute only 13% of regional emissions (see Question 23), Shell is an active participant in WBEA and CEMA and will cooperate with any regional initiatives regarding ammonia emissions. • Ammonia is being addressed through the CEMA NO_x-SO₂ Management Working Group.

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23	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.	<ul style="list-style-type: none"> • The only sources of ammonia from the Project are the emissions control equipment (wet flue gas desulphurization and selective catalytic reduction) on the asphaltene cogeneration units. Ammonia releases, based on conceptual designs are anticipated to be ~ 0.4 t/d total. • As stated in the reviewer's report, the regional annual ammonia emissions in 2003 were 1,097 t/yr = 3 t/d. • The Project ammonia emissions would be ~13% of regional emissions (based on 2003 emissions).
24	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 regional models be validated and updated to improve model predictions of the impacts of future NO _x emissions. We recommend that Shell participate in this process.	<ul style="list-style-type: none"> • Planned Development Case (PDC) predictions differ between EIAs due to differences in the number of projects included, information available (i.e., applications, public disclosures, project specific info provided by clients) and modelling methodology (i.e., meteorological data, NO_x/NO₂ conversion, etc.). • Evaluation of the air dispersion model in the Oil Sands Region was provided in EIA Volume 3, Appendix 3-8, Section 2.5. • Shell is an active participant in WBEA and CEMA and will cooperate with any regional initiatives regarding air dispersion modelling. • CEMA is currently conducting a study to investigate model sensitivity for acid deposition predictions in the Oil Sands Region as part of the second phase of the Acid Deposition Management Framework.
25	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 needs to be considered by the Regulators when establishing emission limits for the project for NO _x and VOCs – the two precursors for ground-level ozone formation.	<ul style="list-style-type: none"> • Ozone Management Framework for the RMWB Area was established by NSMWG in 2006 to address the ozone issue. • Project contribution to regional NO_x and VOCs emissions is 2.5% for JPME and 3.7% for PRM. • The predicted change in ozone concentrations associated with the Project was 1 ppb and the Project is not expected to result in exceedance of the Framework management threshold of 65 ppb. • Shell has included a number of design features (e.g., low NO_x heaters) that will minimize the emissions of ozone precursors such as NO_x and VOCs, from the Project.
26	Fort McKay requests that additional emission controls be required by the Regulators on Shell's gas-fired co-generation units to reduce the NO _x emission intensities and to partially offset the significant increase in SO ₂ emission intensities.	<ul style="list-style-type: none"> • Based on its EIA findings, Shell does not believe controls beyond those already proposed in the EIA are required to adequately manage NO_x emissions from its cogeneration units. • The EIA showed that the Project NO_x emissions are predicted to have a negligible incremental effect on the 1-hour, 24-hour and annual NO₂ predictions excluding developed areas. The maximum 1-hour, 24-hour and annual NO₂ levels predicted in the LSA are below the AAAQO levels. The residual impacts for NO₂ were rated as "negligible" or "low". • In fact, overall site emission intensity for JPME is anticipated to be less than that for JPM1 given Shell's commitment to purchase mobile equipment with Tier IV compliant engines, once available. (EIA Volume 3, Section 3.4, Table 3.4-2). See table at the end of this section.

Topic: Air		
Q #	Question	Response
27	<p>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.</p>	<ul style="list-style-type: none"> • Timing of Policy 2 versus application submission: <ul style="list-style-type: none"> – The draft NO_x emission guideline was first introduced in 2007. The air assessment was already in progress and boiler emissions were based on Canadian Council of Ministers of the Environment (CCME) guidelines (40 GJ/hr). – The auxiliary boilers will have low-NO_x burners so emissions will be reduced by 50%. This is equivalent to 20 GJ/hr, which is lower than the compliance limit of 26 GJ/hr. • Project complies with Policy 2 compliance limits. • Shell will comply with regulations and will look at appropriate emissions controls during future detailed design to achieve performance targets.
28	<p>Fort McKay expects best practices to be adopted in all aspects of production and processing and requests that Shell assess possible options for additional reductions.</p> <p>Fort McKay expects the following additional emission control measures:</p> <ul style="list-style-type: none"> i. To reduce the regional precursor concentrations of ozone forming compounds that Shell be required to reduce solvent losses to its Jackpine Mine expansion and Pierre River Mine tailings pond to less than 3 bbl per 1000 bbl of bitumen within five years of commencing bitumen production at these mines; ii. To reduce the regional precursor concentrations of ozone forming compounds that Shell be required to reduce the NO_x emissions from all gas-fired boilers, heaters and gas turbines that emit more than 100t/yr of NO_x and that these reductions be based on the use of post combustion selective catalytic reduction technology, or equivalent, which Shell is proposing for its asphaltene-fired co-generation units. iii. To minimize regional PM_{2.5} emissions through continuous improvement measures, that Shell implement mine fleet PM_{2.5} emission control retrofit devices that become commercially available; iv. To better manage NO_x emissions from one of the major regional NO_x emission source types, i.e., heavy haulers, that Low NO_x emission heavy hauler vehicles with NO_x emissions similar to the USEPA Tier 4 limits for non-road vehicles in the 600-750 hp size range be developed and mandated; and v. To minimize regional NO_x emissions through continuous improvement measures, that Shell implement mine fleet NO_x emission control retrofit devices that become commercially available. 	<ul style="list-style-type: none"> • Shell will work toward continuous improvement; however, Shell must also be competitive. The environmental impacts were assessed given the mitigations Shell has proposed and they are considered acceptable.

Topic: Air		
Q #	Question	Response
29	<p>Companies and the Regulators ensure that regional multi-stakeholder committees are open and transparent and not run indirectly by industry groups through budget controls.</p>	<ul style="list-style-type: none"> • Shell agrees that regional committees need to be open and transparent and supports efforts within those committees to achieve that end. Shell will share relevant information with the committees assuming it is not commercially sensitive or would contradict public disclosure laws. Shell respects the right of every member to provide input into the annual committee budgets. Shell will continue to evaluate the budgets for multi-stakeholder committees on an annual basis to determine how much of that budget it is prepared to support.
30	<p>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.</p> <p>The regional monitoring and air emissions effects management activities that should be part of Shell's proposed projects should, at a minimum, include:</p> <ol style="list-style-type: none"> i. Implementation of the recommendations and work plan work as outlined in CEMA's Interim Nitrogen (Eutrophication) Management Recommendations and Work Plan which includes the development of nitrogen critical loads for sensitive regional ecosystems, ii. Implementation of CEMA's Acid Deposition Management Framework including full development and deployment of the time-to-effect dynamic acidification model for the entire region, iii. Implementation of CEMA's Ozone Management Framework and using the results of Framework ozone model predictions in emissions management planning, iv. Sensitive and spatially representative vegetation effects and exposure monitoring programs be developed that can be used to accurately determine if, when and where adverse air-related vegetation effects are occurring and to validate and/or calibrate model predictions, and v. Development of ambient air quality critical levels for NO, NO₂ and NH₃ based on potential impacts on vegetation relevant to Fort McKay and its Traditional Lands. 	<ul style="list-style-type: none"> • Shell is an active participant in WBEA and CEMA and will continue to participate in regional initiatives that are relevant to Shell's projects. • Guidance from CEMA and AENV related to air quality criteria and assessment approach was applied in the EIA where available. <ul style="list-style-type: none"> – CEMA's Interim Nitrogen (Eutrophication) Management Recommendations and Work Plan was released in 2008 and not available until after submission of EIA. – CEMA's Acid Deposition Management Framework approach was applied to the extent possible, recognizing that the purpose of the EIA is to assess potential effects whereas the thresholds identified in the framework were developed to support management decisions on a regional scale. – The EIA included an assessment of ozone based on the management threshold from the CEMA Ozone Framework. • Shell will comply with CEMA frameworks endorsed by AENV.

Topic: Air		
Q #	Question	Response
31	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.	<ul style="list-style-type: none"> • The WBEA CNRL Horizon air quality monitoring station was installed in 2008. <ul style="list-style-type: none"> – Continuous measurements of SO₂, TRS, THC, NO, NO₂, NO_x, PM_{2.5}, wind speed, wind direction and temperature. – Non-continuous measurements of VOCs and PM₁₀. – Approval requirement. – The CNRL Horizon station may be considered an "attribution" station for Pierre River Mine. Shell will work with regulators, as required, to define a suitable location for a station.

Table referred to in response to Question 26

	SO ₂	NO _x	CO	PM _{2.5}	VOC	TRS
JPM1	0.33	18.33	12.29	0.87	18.14	0.14
JPME	4.11	18.07	18.44	0.81	26.16	0.21

Topic: Groundwater

Q #	Question	Response
32	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.	<ul style="list-style-type: none">• At JPME, no groundwater sources were noted in the TLU study or in the trapper interviews. However, indirect use was noted in the Fort McKay Specific Assessment, and two cabins in the JPME project area were noted.• The above points would suggest that the project is not likely to impact direct groundwater usage by community members (as cabins in JPME project areas will be relocated). However, Shell understands that there may be temporary effects to wetlands due to partial dewatering.• Shell welcomes continued discussions with FMFN on impacts to traditional use due to project dewatering activities and on mitigation and monitoring options specific to identified impacts.

Topic: Groundwater

Q #	Question	Response
33	<p>Shell consult with Fort McKay (potentially through the Shell Elders Advisory Group) regarding locations of 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"> i. confirm that the proponent is aware of where they exist; and ii. plan mitigative measures to protect the groundwater sources and the growing environments 	<ul style="list-style-type: none"> i. Shell welcomes continued discussions with FMFN on impacts to traditional use due to project dewatering activities. To date, TLU information collected by Shell is as follows: <ul style="list-style-type: none"> - Two cabins within and two cabins in the immediate vicinity of the mine area were identified. No information was provided on locations of springs traditionally used. - Muskeg (Kearl) Lake was noted as a very important medicinal plant harvesting area (FMA 2008). - Important berry collecting areas were noted near the approved Jackpine Mine “behind the truck stop”; and near a cabin within the Fort Hills Oil Sands Project lease, on the east bank of the Athabasca River near the “Old Fort Hills”, and near McClelland Lake (FMA 2008). - Groundwater use was noted indirectly, as water is used from wetlands (fens and muskeg). - The Fort McKay Specific Assessment suggested that groundwater levels at two cabin locations outside the JPME development area may be affected by groundwater drawdown related to the JPME development area. - Kearl (Moose) Lake and the Muskeg River were also identified as important water bodies (FMA 2008). ii. While Shell welcomes continued discussions with FMFN on impacts to traditional use, EIA findings suggest drawdown mitigation is not required as groundwater levels are expected to recover following dewatering activities. <ul style="list-style-type: none"> - There may be temporary periods during Operations when select groundwater sources may not be available or may be reduced – wetlands are expected to be most affected, but impacts are not expected to be significant. - Shell will work with affected trapline holders outside of our development area if Shell is responsible for them not having access to groundwater sources because of our Project. <p>Shell has proposed a number of measures to mitigate groundwater seepage to areas adjacent to the Projects including:</p> <ul style="list-style-type: none"> - Interception, capture and recycling of seepage from the External Tailings Disposal Areas (ETDAs) and backfilled mine pit cells. - Isolation of non-segregating tailings (NST) backfill from Quaternary deposits by low permeability overburden material. - Routing of groundwater from the Project area through treatment wetlands and pit lakes following mine closure. <p>Reference: FMA Heritage Resources Consultants Inc. (FMA). 2008. Fort McKay First Nation Traditional Knowledge Report for Jackpine Mine Expansion & Pierre River Mine Environmental Impact Assessment, June 2008. Calgary, AB.</p>

Topic: Groundwater

Q #	Question	Response
34	Shell be required, at its expense, to collect and test for potability groundwater, from any source on traditional lands at the request of Fort McKay, prior to its use.	<ul style="list-style-type: none"> • Shell has committed to monitoring potential changes to groundwater quality, levels and flow patterns due to Project activities (EIA, Appendix 4-9). Monitoring will be conducted Pre-Project, during Operations, and following Closure. • Routine potability will be tested on an ongoing basis for monitoring locations included in the Groundwater Monitoring Program. These locations will be selected to be protective of groundwater outside the project boundary, in consultation with regulators and key stakeholders.
35	Shell should advise the Community of any groundwater incidents reported to the authorities and 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.	<ul style="list-style-type: none"> • Shell agrees that the community must be notified if they could be at risk; however, a groundwater incident may not put the community at risk (e.g. a spill well within the mine boundaries with no risk of transport offsite to the receiving environment). • Shell suggests that all incidents be reviewed annually with Fort McKay and that Shell notify Fort McKay of any incidents that might put community members at risk.
36	The following be developed in consultation with Fort McKay: <ol style="list-style-type: none"> i. 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. ii. development and implementation of a ground water monitoring program to detect process-affected seepage that bypasses the collection system, after closure and reclamation. iii. 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. 	<ul style="list-style-type: none"> • Shell will develop its detailed groundwater monitoring plans in consultation with Fort McKay.

Topic: Groundwater

Q #	Question	Response
37	<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"> i. prepare a table summarizing computer-predicted and professional judgment impacts; ii. outline the groundwater level and/or quality monitoring to be undertaken to verify the predictions; iii. the table should be designed to simplify the comparison of previous and new data, so changes are easily detected; iv. monitoring data should be added to the table as it becomes available and the updated table provided to Fort McKay; v. 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 vi. 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 	<ul style="list-style-type: none"> • Shell will develop its detailed groundwater monitoring plans in consultation with Fort McKay.
38	<p>We recommend that a regional groundwater management framework be developed, in consultation with Fort McKay.</p>	<ul style="list-style-type: none"> • Shell's understanding is that development of AENV's Groundwater Management Framework is progressing.

Topic: Surface Water		
Q #	Question	Response
39	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.	<ul style="list-style-type: none"> • Shell actively participated in the development of the Phase 2 recommendation and supported the same recommendation that the Fort McKay representative supported. The plan sets water withdrawal limits that were based on impact predictions.
40	<p>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.</p> <p>We recommend that Shell either provide three to four months of water storage to ensure continued operations during periods of water withdrawal limitations or present contingency plans for there operations that show how they would meet limits on water withdrawals.</p>	<ul style="list-style-type: none"> • Shell will comply with the Phase 2 regulation when it comes into place. Currently, we have committed to 30 days of storage, but will modify our water management plans as necessary to comply with the Phase 2 framework and maintain ongoing operations.
41	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 JPME, and what additional water is needed from the Athabasca River for Jackpine Mine Expansion.	<ul style="list-style-type: none"> • JPM1 Licence: <ul style="list-style-type: none"> – Stage 1 – 63.5 Mm³/yr; – Stage 2 – 35.3 Mm³/yr • JPM1 + JPME: <ul style="list-style-type: none"> – Stage 1 – 63. 5 Mm³/yr; – Stage 2 – 53.3 Mm³/yr • No change to Stage 1 given timing of JPME. • Stage 2 – roughly one third of water need is related to JPME (18 Mm³/yr).
42	Shell should indicate what other contingencies, if any, are provided for in their request for an additional 18 Mm ³ of water.	<ul style="list-style-type: none"> • As discussed in Volume 1, Shell has based its proposed Athabasca River water withdrawal numbers on the following: <ul style="list-style-type: none"> – 1:100 year dry climatic conditions. – Lower than anticipated groundwater availability. – Lower than anticipated connate water. – Higher than anticipated porosity in tailings deposits.
43	Shell should comment on the reason for the large change in in-pit pore water storage between 2038 and 2040 and suggest ways of reducing this variation.	<ul style="list-style-type: none"> • Two factors result in the spike: <ul style="list-style-type: none"> – Higher than average ore to extraction given nature of mine plan (lower grade results in more tonnes). – Plans require sand capping of in-pit cells throughout the whole year. Sand capping is placed hydraulically and it has higher pore space than non-segregating tails.
44	Shell should comment on the inconsistencies in the Pierre River Mine Project annual water need and their Water Act application.	<ul style="list-style-type: none"> • Shell made a conscious decision to accept some risk with the understanding of the conservative assumptions it uses in assessing the Project water needs. Accordingly, there are some years where the water need may be greater than the proposed allocation. • The PRM water licence requirements were developed using the same methodology as Shell's other mines. One key difference for Pierre River is that there is no Pleistocene Channel and therefore less groundwater is expected.

Topic: Surface Water		
Q #	Question	Response
45	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.	<ul style="list-style-type: none"> • The reason for the large change is related to final water capping near end of the ETDA active life. Geometry of the ETDA and geotechnical constraints also play a role. • During detailed design, Shell will be optimizing its conceptual tailings staging plan to reduce peak water demand.
46	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 a 11.3 km pipeline and mining through the river.	<ul style="list-style-type: none"> • For the Kearl Project, the Muskeg River was on the edge of their lease boundary. For JPME, the Muskeg River runs through the Shell lease. • The lateral extent of mineable oil sands within the Shell leases coupled with the relative location of the Muskeg River result in a situation where leaving the river in place sterilizes a significant quantity of ore (i.e. ore under the river and its offset). • Shell believes the plans we have proposed adequately manage environmental effects of the Project.
47	Shell should discuss any changes that could be made to the configuration of their end-pits to reduce the size of the lakes.	<ul style="list-style-type: none"> • Larger pit lakes are more effective in the passive treatment of reclamation waters, as longer residence times facilitate greater decay and bioremediation of organics. • Shell is investigating ways of reducing Mature Fine Tailings (MFT) volumes, which could potentially reduce pit lake size requirements (e.g. freeze drying, evaporative drying, NST, CT, centrifuging).
48	Given the slowdown in the oil sands development, Shell should comment on the representativeness of their Application Case flow predictions for the Muskeg River.	<ul style="list-style-type: none"> • Since the completion of the EIA, there has not been new available data and information on the oil sands developments in the Muskeg River watershed that would substantially change the Application Case flow predictions for the Muskeg River.

Topic: JPME Water Quality and Aquatic Health		
Q #	Question	Response
49	<p>i. For future assessment 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</p> <p>ii. provide a discussion of the potential additive impact of mixtures of contaminants on aquatic health.</p>	<ul style="list-style-type: none"> • Benchmark derivation is detailed in App. 4-2. • Surface water quality guidelines (e.g., AENV, CCME, U.S. EPA) were included in the first level of screening to identify substances of potential concern (SOPCs). • Toxicity data used are from peer reviewed publications. • The SSD approach has been critically reviewed and has recently been adopted by CCME for deriving guidelines. • Where the SSD approach could not be applied due to insufficient data, chronic effects benchmarks were based on the lowest applicable chronic toxicity test result (not a single test result as mentioned in the preamble). • There are many studies which discuss the lack of research in the toxicity of mixtures. <ul style="list-style-type: none"> – Xie et. al. (2006) and Millward et. al. (2004) discuss the current status. – More is known about individual groups (i.e. Polycyclic Aromatic Hydrocarbons (PAHs), metals) with little research being conducted regarding the effects of metals and PAHs together. • We combine chemicals into mixtures based on mode of toxic action (e.g. PAH Groups). • The aquatic health assessment considers chronic and acute Whole Effluent Toxicity (WET) tests for process-affected waters. <p>References:</p> <p>F. Xie, S.A. LKoziar, M.A. Lampi, G.D. Dixon, W.P. Norwood, U. Borgann, X.D. Huag and B.M. Greenberg. 2006. Assessment of the toxicity of mixtures of copper 9,10 - Penanthrenequinone, and Phenanthrene to Daphnia magna: Evidence for a reactive oxygen mechanism. Environmental Toxicology and Chemistry Vol 25(2) 613-622.</p> <p>R.N. Millward, K.R. Carman, J.W. Fleeger, P.P. Gambrell, R. Portier. 2004. Mixtures of metals and hydrocarbons elicit complex responses by a benthic invertebrate community. Journal of Experimental Marine Biology and Ecology Vol 310(1) 15, 115-130.</p>

Topic: JPME Water Quality and Aquatic Health		
Q #	Question	Response
50	<p>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</p> <p>ii. Apply a more realistic model that considers bioconcentration factors (BCFs; diet uptake) and/or re-calculate methylmercury (for JPME and PRM) and other organometallic concentrations in fish tissue.</p>	<p>i. Regional Aquatic Monitoring Program (RAMP) data from 1997 to 2004 were used in the assessment.</p> <ul style="list-style-type: none"> • We predict the mercury concentrations to be similar to historical ranges. <ul style="list-style-type: none"> – The maximum concentration from the RAMP data set is 0.72 mg/kg. We computed mercury concentrations for fish from the Muskeg River to be 0.82 mg/kg. <p>ii. Bioconcentration Factors (BCFs) used in the EIA are the most appropriate for the available dataset.</p> <ul style="list-style-type: none"> – Dietary models require a much larger data set than we currently have. • EPA guidance documents suggest site-specific BCFs. If this is not possible they suggest using either of the two EPA columns in Table 1. • The two suggested sources are different by orders of magnitude and do not have values for many substances. • The two EPA sources are different by orders of magnitude. • See Table 1 at end of section.
51	<p>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;</p> <p>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.</p>	<ul style="list-style-type: none"> • A weight of evidence approach was used to assess the impacts to aquatic health. Chronic effects benchmarks and water quality guidelines were a line of evidence. • Other lines of evidence included WET tests, predicted changes to sediment chemical concentrations, chemical concentrations in fish tissue and research conducted in the oil sands region. • See tables at end of section.
52	<p>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 EIA or Supplemental Information where the design of the wetlands is described</p> <p>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).</p>	<ul style="list-style-type: none"> • Wetlands will be constructed along closure drainage channels and around pit lakes. • Locations of constructed wetlands are shown in EIA Volume 4B, Appendix 4-3, Figure 2 for the JPME closure landscape and in EIA Volume 4B, Appendix 4-4, Figure 3 for the PRM closure landscape. • The design of wetlands is described in EIA Volume 4B, Appendix 4-3, Section 4.4 for the JPME closure landscape and in EIA Volume 4B, Appendix 4-4, Section 4.3 for the PRM closure landscape. • Summary tables containing surface water quality, including total and dissolved metals, are presented in Appendix F of the Aquatics Environmental Setting Report. • Predicted metal concentrations in the EIA are based on total metals, whereas benchmarks are derived based on the dissolved fraction. The assumption of total metals being completely bioavailable results in conservative predictions of potential effects on aquatic health.

Topic: JPME Water Quality and Aquatic Health		
Q #	Question	Response
53	<p>i. Describe the higher diverted flows' effect on augmenting the deposition of particulates and associated contaminants in Kearl Lake; and</p> <p>ii. Provide information about how the berm around the lake may be adjusted to expose more natural shoreline and permit traditional uses to continue.</p>	<p>i. The higher flows into Kearl Lake due to operational diversions are comprised of runoff from undisturbed areas.</p> <ul style="list-style-type: none"> - The closure scenario in the application does not change that already proposed by Syncrude for release of its Aurora South pit lake water to Kearl Lake. - As diverted inflows will pass through the Aurora South pit lake prior to entering Kearl Lake, Shell would expect a reduction, rather than an increase in particulate loading to Kearl Lake. <p>ii. The location of the levee in the Application is conceptual. Within physical and economic constraints, Shell will have some capacity to adjust its location. Shell will seek input from FMFN on areas that should be avoided prior to detailed design of the levee.</p>
54	<p>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.</p>	<ul style="list-style-type: none"> • Concern was expressed over sediment Polycyclic Aromatic Hydrocarbons (PAH) concentrations and biomagnification in upper trophic levels. • While sediment PAH concentrations are predicted to be greater than local waterbodies, upper aquatic trophic levels are not likely to be impacted. • Many studies show that PAHs do not accumulate in fish. • Research conducted to date indicates that pit lakes will support fish populations. • Pit lakes will be accessible to fish only after monitoring confirms water and sediment quality are acceptable for aquatic health. • Shell will continue to develop appropriate monitoring programs to confirm pit lakes are viable and there are no unforeseen impacts to aquatic ecosystem.
55	<p>The acceptance and reliance on end pit lakes for treatment of MFT and process affected waters be stopped until such time as this method of treatment is proven to be viable in a scientifically defensible (peer reviewed) manner.</p>	<ul style="list-style-type: none"> • Peer-reviewed research indicates that pit lakes will develop into viable ecosystems capable of supporting aquatic life. • Shell supports continuing research into pit lake design and performance. • Monitoring will be conducted while pit lakes are filling to confirm water quality predictions and guide mitigative measures, if needed. • Shell believes that pit lakes will work, but acknowledge more study is required to prove their viability. Shell continues to work through CEMA's Aquatics Subgroup to research key issues and ultimately put in a test case. • Pit lakes will not discharge to receiving waters until water quality is proven to be acceptable for aquatic health.

Topic: JPME Water Quality and Aquatic Health		
Q #	Question	Response
56	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.	<ul style="list-style-type: none"> • The ETDAs and other dams will be designed to comply with relevant Canadian Dam Association (CDA) Dam Safety Guidelines. • Construction procedures will also comply with CDA and Alberta Dam Safety Guidelines. • Fluid retaining structures will have a current Operations Maintenance and Surveillance Plan and Emergency Preparedness Plan in accordance with CDA Dam Safety Guidelines.
57	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.	<ul style="list-style-type: none"> • Shell understands FMFN's concerns with Shell's proposed plans for the upper reaches of the Muskeg River. • While we understand these concerns, Shell still believes it should be approved to mine through the upper reaches given the: <ul style="list-style-type: none"> – Low value fish habitat of those reaches. – Low value sport fish habitat and seemingly low fishing activity in those reaches. – Low impacts to lower reaches of Muskeg River that have more fish habitat. – The NNLP we have proposed.

JPME WATER QUALITY AND AQUATIC HEALTH

Table 1: comparison of site-specific to literature BAF values.

(Table referred to in response to Q50ii.)

Chemical	EIA BAF Value [L/kg-WW]	EPA recommended [L/kg-WW]	EPA RAIS [L/kg-WW]
Aluminum (Al)	32	3	500
Antimony (Sb)	25	40	100
Arsenic (As)	103	114	300
Barium (Ba)	5	633	4
Boron (B)	15	NA	NA
Cadmium (Cd)	95	907	NA
Calcium (Ca)	13	NA	NA
Chromium (Cr)	53	19	200
Cobalt (Co)	110	NA	NA
Copper (Cu)	734	710	NA
Iron (Fe)	13	NA	200
Lead (Pb)	57	0	300
Magnesium (Mg)	26	NA	NA
Manganese (Mn)	7	NA	400
Mercury (Hg)	226,509	11,168	1,000
Molybdenum (Mo)	116	NA	10
Nickel (Ni)	92	78	100
Potassium (K)	4,125	NA	NA
Selenium (Se)	225	128	200
Silver (Ag)	6,452	88	5
Sodium (Na)	46	NA	NA
Strontium (Sr)	6	NA	60
Vanadium (V)	74	NA	NA
Zinc (Zn)	747	2,059	1,000

Example: M0 Application Case

JPME WATER QUALITY AND AQUATIC HEALTH

(First of two tables referred to in response to Q51.)

Parameters	Chronic Effect Benchmark	Exceeds CEB	Exceeds tissue benchmark
aluminum	0.68	No	No
barium	5.8	No	No
beryllium	0.0053	No	No
boron	8.157	No	No
chromium	0.00248	Yes	No
cobalt	0.0093	No	No
copper	0.042	No	No
iron	0.57	Yes	No
nickel	0.07	No	Yes
molybdenum	0.703	No	No
PAH group 5	0.12	No	No
PAH group 6	29	No	No
strontium	0.2	Yes	No
vanadium	0.16	No	No
Total Phosphorus	NA	NA	NA
Total Nitrogen	NA	NA	NA
Naphthenic Acids (Labile, Refractory, Total), TDS, Tainting Potential, Acute and Chronic Toxicity	NA	NA	NA

(Second of two tables referred to in response to Q51.)

Parameter	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Environmental Consequence
chromium	negative	low	local	long-term	high	reversible	low
iron	negative	low	local	long-term	high	reversible	low
strontium	negative	low	local	long-term	high	reversible	low
all other substances	negative	negligible	n/a	n/a	n/a	n/a	n/a
toxic units	negative	negligible	n/a	n/a	n/a	n/a	n/a
sediment quality	negative	negligible	n/a	n/a	n/a	n/a	n/a
tissue quality - nickel	negative	negligible	n/a	n/a	n/a	n/a	n/a

Topic: PRM Water Quality

Q #	Question	Response
58	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	i. Offsets from the sink holes would have major impact on Project economics (i.e. size of mining resource decreased significantly). Analysis showed no unique or rare species, habitat, and no unique contribution to biodiversity. Accordingly, no mitigation is proposed. ii. Waterbodies within the Project footprint will be removed or diverted. <ul style="list-style-type: none"> - All waterbodies determined to be fish bearing through the NNLP consultation process were included in the compensation plan. - 21.6 ha of waterbodies include portions of Eymundson Cr., Asphalt Cr., unnamed tributaries and connected waterbodies. iii. No response given posed directly to regulators.
59	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 inputs to the fish tissue predictions) so that Fort McKay may readily evaluate the significance.	i. Shell uses accredited laboratories that achieve the best available detection limits using proven and accredited analytical methods. ii. Summaries of predicted frequency of compliance with guidelines and/or CEBs and fish tissue benchmarks are provided in tables in EIA Volume 4A, Section 6.6.

Topic: JPME Fisheries		
Q #	Question	Response
60	<p>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</p> <p>ii. Clarify whether the loss of Muskeg Creek was a component of compensation calculations.</p>	<p>i. The connection between Kearl Lake and the Muskeg River will be located within an active mining area and there is no feasible alternative to maintain connectivity with functional fish habitat during the mining phase of the Project. Shell has committed to maintaining natural levels of fish passage to Kearl Lake by transporting fish; studies are already underway to establish natural fish passage levels.</p> <p>ii. Habitat losses to the entire length of Muskeg Creek were fully accounted for in the Jackpine Mine – Phase I compensation plan and are included in the Fisheries Act Authorization for that project.</p>
61	<p>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</p> <p>ii. Fort McKay requests that methylmercury be treated as a substance of concern because of its historical importance in the region.</p>	<p>i. Mercury, trace metals, PAHs, and phenolics were examined in fish tissues:</p> <ul style="list-style-type: none"> – During operation of the mines, they will be closed-circuit; i.e., no external drainage to the environment. The mines will also have extensive groundwater and surface water monitoring programs, on-site and in the surrounding natural environment. – RAMP is monitoring fish tissues [PAHs – CCME list, mercury, trace metals, tainting compounds – Thiophene, Toluene, m+p xylenes, 1,3,5 – Trimethylbenzene, naphthalene]. These data will be used as a line of evidence in conjunction with Shell's monitoring programs to assess if there are effects. <p>ii. Methyl mercury is included in RAMP (Athabasca River and others) and Shell (compensation habitat) fish tissue monitoring programs.</p>
62	<p>i. Address the potential contamination and sublethal effects to fish exposed to contaminated sediments and food web diet sources;</p> <p>ii. Given the stated paucity of chronic toxicity data for oil sands-source naphthenic acids, will Shell commit to funding the necessary research to fill these data gaps?</p>	<p>The reviewer's concern is for contamination (naphthenic acids, PAHs and metals) of end pit lake sediment on chronic exposure and food web implications.</p> <ul style="list-style-type: none"> • Table 6.5-15, page 427 of the EIA reports metals and PAH concentrations for the MFT. • No chemicals were identified which biomagnify. Foodweb impacts are limited to bioaccumulation. Therefore, sub-lethal effects were examined based on sediment and water column studies from the region. • Studies on sub-lethal effects of PAHs and naphthenic acids have been conducted on larval fish and fish reproduction at Suncor and Syncrude facilities. The studies concluded facilities show a similar effect to natural regional waterbodies. <p>Shell contributes to the ongoing research on Naphthenic Acids (NA). [Current research has identified the low molecular weight as being the most toxic of the NA mixture. On going research is examining the effects of NA on chronic exposure and sub-lethal effects. Previous studies have demonstrated that biomarkers have exhibited evidence of exposure but no signs of sub-lethal effects for individuals or populations.]</p>

Topic: JPME Fisheries		
Q #	Question	Response
63	<p>Mitigation and accommodation measures should be developed in consultation with Fort McKay with respect to lost fishing opportunities caused by the JPME and PRM including but not limited to the development of a Fishing Opportunities Management Plan. This could include a number of potential strategies (e.g., offsets, additional access/opportunities for fishing).</p> <p>Fort McKay recommends that Shell participate in the development of this plan. Fort McKay may want to work with Shell to identify fishing opportunities that could be located near to the Community and/or accessible from the Community.</p> <p>Note that the Department of Fisheries and Oceans authorized habitat compensation is not compensation or mitigation from the perspective of Fort McKay's lost fishing and other traditional use opportunities due to unknowns about contamination of fish remaining in the system, concerns regarding potential mercury levels in fish in the compensation habitat, the loss of culturally-significant areas and the conversion of river habitat to artificial lakes.</p>	<ul style="list-style-type: none"> • Shell understands the concern and is something that can be discussed further during future benefit agreement negotiations. However, these discussions must consider the following: <ul style="list-style-type: none"> – In the EIA, the impacts to fishing opportunities for large bodied fish species as a result of the Project are low based on the location of the Project and the species found in the affected habitats. – TLU collected for JPME suggests limited use of the upper reaches of the Muskeg River. One community member suggested that he fished the Muskeg River for suckers to feed dogs. Baseline field studies suggest no suckers in the Project area. – TLU collected for PRM suggests no locations at PRM were used as traditional fishing locations. – Mitigation measures will be used and fish tissue monitored to ensure consumption of fish does not pose a health risk. – While Shell acknowledges there is time delay from time of lake construction to the time when Fort McKay can fish on the lake, this is accounted for in the No Net Loss Plan compensation ratios which requires greater than 1:1 replacement. – The compensation lake will provide improved fishing opportunities for food fish species such as northern pike, walleye and lake whitefish relative to the fishing opportunities for these species currently present in the habitats affected by the Project.
64	<p>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</p> <p>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.</p>	<p>i. While approvals are the responsibility of the Regulators, Shell has already included Fort McKay in discussions on development of the projects' No Net Loss Plan (NNLP) and fish monitoring plans. Additional consultation is planned prior to finalizing the draft NNLP for DFO review; Shell will include Fort McKay.</p> <p>ii. While Shell cannot commit on behalf of the Province, Shell can acknowledge that the Province has been part of the No Net Loss Plan discussion. In those discussions, Shell has consulted with Fort McKay on compensation habitat design – i.e. target species. Compensation habitat can be designed to benefit grayling.</p>

Topic: JPME Fisheries		
Q #	Question	Response
65	<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. 	<ul style="list-style-type: none"> i. Shell has already committed to 100 m setbacks for Jackpine Creek and Muskeg River (adjacent to the project area) as part of the Jackpine Mine – Phase 1 (JPM1) Project. For JPM1, Shell was also approved to divert Muskeg Creek (thus no setback). • For JPME, Shell is seeking approval to divert the upper reaches of the Muskeg River and Wapasu Creek that are located within the proposed Project area. For PRM, Shell is seeking approval to divert Pierre River, Eymundson Creek, Asphalt Creek, First Creek and some unnamed tributaries around the project development area. Shell will provide 100 m setbacks for the diverted PRM watercourses. • In the EIA, Shell has assessed the impacts of these diversions and believes the impacts to be acceptable given the mitigations and compensation habitat proposed. ii. Shell has proposed a 250 m setback from the Athabasca River, except at the location of the proposed access bridge and the proposed water intake facility.

Topic: PRM Fisheries and Aquatics

Q #	Question	Response
66	<p>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</p> <p>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.</p>	<ul style="list-style-type: none"> • Re-colonization by benthic invertebrates within operational and closure channels that connect to the Athabasca River is expected to occur rapidly based on the scientific literature. • The total drift in the lower Athabasca River is much higher than the contributions from small tributaries, so the temporary reduction in available drift would have a negligible impact on available food resources in the Athabasca River (e.g. tribs average 0.5 – 3.4 bugs/m³). • Any reduction to benthic invertebrate populations or invertebrate drift is anticipated to be short-term and localized, and therefore the impact is negligible. • Streams that are diverted are assumed 100% lost in the compensation calculations. Outflow drift is considered negligible as a food source to the Athabasca River and was not part of the compensation calculations. <p>References:</p> <ul style="list-style-type: none"> • Brittain, J. E. and T. J. Eikeland. 1988. Invertebrate Drift – a Review. <i>Hydrobiologia</i>. 166:77-93. • Canadian Natural (Canadian Natural Resources Limited). 2002. Horizon Oil Sands Project - Application for Approval. Volume 1 Prepared by Canadian Natural Resources Limited. Volumes 2, 3, 4, 5, 6, 7 and 8 Prepared by Golder Associates Ltd. for Canadian Natural Resources Limited. Submitted to Alberta Energy and Utilities Board and Alberta Environment. June 2002. Calgary, AB. • Golder (Golder Associates Ltd.). 1999. Benthic Invertebrate Drift in McLean and Wood Creeks. Prepared for Suncor Energy Inc., Oil Sands Group. Fort McMurray, AB. 23 pp. – Couldn't find the one on the list, this is the closest one to that title. • Golder. 2000. Benthic Invertebrate Drift in McLean Creek, June 2000. Prepared for Suncor Energy Inc., Oil Sands Group. Fort McMurray, AB. • Golder. 2002. Invertebrate Drift Surveys in Muskeg and Shelley Creeks for Jackpine Mine – Phase 1. Prepared for Shell Canada Limited. 25 pp. • Noton, L. R. and N. R. Chymko. 1978. Water Quality and Aquatic Resources of the Beaver Creek Diversion System, 1977. Chemical and Geological Laboratories Ltd. (ed.). Prepared for Syncrude Canada Ltd. Environmental Research Monograph 1978-3. • Resh, V. H. and D. M. Rosenberg. 1984. The Ecology of Aquatic Insects. Praeger. New York, NY. 625 pp. • Shell Canada Limited (Shell). 2002. Jackpine Mine – Phase 1 Supplemental Information. Submitted to Alberta Energy and Utilities Board and Alberta Environment. December 2002. Calgary, AB. • Tripp, D. B. and P. T. P. Tsui. 1980. Fisheries and Habitat Investigations of Tributary Streams in the Southern Portion of the AOSERP Study Area. Volume I: Summary and Conclusions. AOSERP Report No. 92. • Tsui, P., D. Tripp and W. Grant. 1978. A Study of Biological Colonization of the West Interceptor Ditch and Lower Beaver Creek. Prepared for Syncrude Canada Ltd. and Aquatic Environments Limited. Calgary, AB. • Wiederholm, T. 1984. Responses of aquatic insects to environmental pollution. In Resh, V. H. and D. M. Rosenberg. 1984. The Ecology of Aquatic Insects. Praeger. New York, NY. 625 pp.

Topic: Soil and Terrain		
Q #	Question	Response
67	Fort McKay may wish to consider requesting 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. This research should include ways of creating more gently sloping topography and the hydrological conditions suited to peatland formation, as well as specialized soil salvage and revegetation techniques for peatland reclamation.	<ul style="list-style-type: none"> • Shell is considering field trials for peat accumulating wetlands as part of its ongoing reclamation research. Regional research through CONRAD is also underway on establishment of peat-accumulating wetlands. Shell also participates in the work of the CEMA RWG. • At this time, Shell has yet to start any site wetland reclamation trials; however, Shell is willing to continue discussions on appropriate reclamation trials as part of ongoing discussions at the FMFN/Shell Reclamation Focus Group meetings. • Shell currently salvages organic/peat soils focussing on direct placement wherever possible. Shell has most recently placed organic soils on reclaimed areas surrounding the Jackpine Mine – Phase 1 Compensation Lake.
68	There is additional potential that the permanent loss of soils to pit lakes can be minimized by alternative strategies in tailings management. Fort McKay requests to review Shell's revised tailings strategies which will undoubtedly be required as a result of the ERCB Tailings Directive 074.	<ul style="list-style-type: none"> • Shell's Directive 074 plans for the approved Muskeg River and Jackpine Mines are already public and available upon request. Once approved by the ERCB, Shell would be willing to discuss the implications of these plans for minimizing MFT to end pit lakes with Fort McKay at a regularly scheduled IRC Meeting.
69	Fort McKay recommends that Shell increase the pace of reclamation on all of their mines, in order to realize opportunities for direct placement of surface soil materials.	<ul style="list-style-type: none"> • Shell also supports early reclamation. The pace of reclamation is determined by the time at which landforms are completed and ready to receive reclamation contouring and material placement, as shown in closure and reclamation (C&R) plans. Opportunities to increase the pace of reclamation and use direct placement methods are assessed at each updated mine plan, and operational C&R plan.

Topic: Vegetation

Q #	Question	Response
70	<p>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.</p> <p>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.</p> <p>Fort McKay may wish to ask Shell to dedicate land to a long-term wetland research project.</p>	<ul style="list-style-type: none"> • Please see the response to Question 67.
71	<p>Fort McKay may wish to ask for clarification on the methods used to determine forest productivity categories.</p>	<ul style="list-style-type: none"> • Forest productivity categories are derived from the Alberta Vegetation Inventory Interpretation Standards (ARSD 2005). <ul style="list-style-type: none"> – Estimate tree growth response based on environmental factors such as soil, topography, climate, elevation and moisture. – Estimate of forest productivity based on dominant and co-dominant trees species in a stand (i.e. mapped polygon). – Includes Good, Medium, Fair and Unproductive classes. <p>Reference: ASRD (Alberta Sustainable Resource Development). 2005. Alberta Vegetation Inventory Version 2.1.1. Resource Information Management Branch. Alberta Sustainable Resource Development. Edmonton, AB.</p>
72	<p>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.</p>	<ul style="list-style-type: none"> • While extensive literature reviews have been conducted, there are very few good examples of successful relocation trials for rare plants. • However, Shell expects rare species to be accommodated in reclaimed landscape, given the natural variability that should occur through heterogeneity of the reclaimed landscape and evolving ecosite development through successional revegetation. . • Shell is interested in Traditional Ecological Knowledge that may assist in finding relocation sites and methods of handling these rare species, and looks forward to further discussion about this in the FMFN/Shell Reclamation Focus Group.
73	<p>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.</p>	<ul style="list-style-type: none"> • Shell agrees with this approach and while some of this is currently underway through the efforts of CEMA and CONRAD, Shell is willing to discuss this more as part of ongoing discussions at the FMFN/Shell Reclamation Focus Group. .

Topic: Vegetation

Q #	Question	Response
74	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.	<ul style="list-style-type: none"> Proposed monitoring of overburden dewatering is outlined in EIA, Volume 4B, Appendix 4-9, Section 2.1.4.2. Groundwater levels will be monitored semi-annually before mine development begins and then until the mine pit is backfilled. The wetlands monitoring program committed to in the EIA (Appendix 5-6) will expand on the Albian Sands Wetlands Monitoring Program, which has been ongoing since 2000. This program monitors species abundance, richness, diversity and vigour and quality (i.e. nutrients).
75	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.	<ul style="list-style-type: none"> Shell's normal operations are to track and mitigate encroachment under the Alberta Weed Control Act for restricted, noxious and nuisance species. These processes will be expanded to be inclusive of the new project areas.
76	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.	<ul style="list-style-type: none"> Shell is an active participant in WBEA (i.e. TEEM) and will participate in regional initiatives that are relevant to Shell's projects.
77	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.	<ul style="list-style-type: none"> This is a typical EPEA approval condition, and a conceptual plan is presented in the EIA. Shell also understood that a regional biodiversity program is being developed through the Alberta Biodiversity Monitoring Institute, and is engaged in the process of determining how this regional program will be applied.
78	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 	<ul style="list-style-type: none"> This approach is already underway for existing facilities for annual environmental reports and soil salvage planning. Revised mapping information was supplied by Shell in the 2009 annual environmental reports for Muskeg River Mine and Jackpine Mine – Phase 1, and further geodatabase and map formatting is currently being piloted by Shell by request from AENV.
79	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.	<ul style="list-style-type: none"> Shell has been working diligently in Sustainable Ecosystems Working Group (SEWG) to develop a terrestrial ecosystem management framework – Shell has provided conditional support. Currently it is unclear how SEWG work will be included (or not) in Lower Athabasca Regional Plan/Land Use Framework.

Topic: Wildlife

Q #	Question	Response
80	<p>A RFMA holder reported that there was a decline in moose abundance. Shell predicts moose populations will increase. Fort McKay is concerned that the observations of traditional land users were not used appropriately. How specifically was traditional knowledge incorporated into the Wildlife Assessment (e.g., ESR surveys)?</p>	<ul style="list-style-type: none"> • Shell has tried to improve incorporation of traditional knowledge into its EIA by citing it for every environmental component. In doing so, Shell has hoped to provide a broader perspective on potential project impacts. Shell will continue to work with Fort McKay to refine its approach to better integrate traditional knowledge into its EIAs. • Due to uncertainty in parameters (i.e., survival and fecundity rates) in the PVA, relative results between scenarios are more reliable for assessing effects than absolute results or population trends. • The EIA and traditional knowledge align as the EIA predicts that the carrying capacity of the RSA for moose will be reduced during construction and operations relative to baseline conditions. However, high suitability habitat is estimated to increase following reclamation, and moose populations should recover. • Traditional knowledge was included in the wildlife assessment as follows: <ul style="list-style-type: none"> – Information on wildlife habitat associations, seasonal movement, hunting pressure, importance to First Nations communities, distribution and relative abundance within the RSA was provided by Fort McKay participants in a CEMA-sponsored Wildlife Movement Traditional Environmental Knowledge workshop (Wildlife ESR, Section 5.3.1.1, p. 5-47 – 5-48). – A criterion for the choice of Key Indicator Resource species, traditional knowledge directed the choice of many species including moose, black bear, and beaver. – Aboriginal assistants employed during wildlife baseline field work were an additional information source. – See EIA Table 7.3-1 and the table at end of section for more information.
81	<p>Fort McKay believes that Shell has implemented the best water bird deterrent system in the oil sands region.</p> <ol style="list-style-type: none"> i. Shell's water bird deterrent should be considered the industry standard. ii. Shell should share their experiences through participation of a bird/wildlife protection committee for the oil sands region. iii. Fort McKay wants to be a member of any regional bird/wildlife protection committee formed in the oil sands region. Fort McKay would like Shell's support for in this endeavour. 	<ul style="list-style-type: none"> • Shell considers its bird deterrent system to be an industry standard, but acknowledges that its radar system may not necessarily be applicable to other operators with their own unique circumstances. • Shell participates in the Industry Bird Deterrent Committee. The committee meets twice a year; Shell will be pleased to discuss what it might be able to do to allow Fort McKay's participation on the committee (or another mechanism) as part of mitigation agreement discussions.

Topic: Wildlife

Q #	Question	Response
82	<p>The collection of 68 dead birds is not a measure of impact and the manufacturer's bird deterrent performance claims are inappropriate for an EIA. Therefore, Fort McKay believes that the conclusion of low magnitude impact is invalid. Until shown otherwise, a local negative impact should be assumed. Shell needs to determine the site-specific effectiveness of their bird deterrent system.</p>	<ul style="list-style-type: none"> • Shell does acknowledge a local negative impact of low magnitude. • Shell has two staff monitoring bird activity and mortalities seven days a week during the open water season. • Shell would be interested in discussing feasible mechanisms FMFN believes could be employed to better monitor the effectiveness of our bird deterrent system.
83	<p>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 landing on ponds?</p>	<ul style="list-style-type: none"> • Shell considers its current bird deterrent system effective and remains committed to deploying and maintaining the system on new tailings ponds as indicated in the EIA (Vol. 5 Section 7.1.3 page 7-10). • Shell will design tailings ponds with steep banks to minimize shorebird mortality due to black beach • Shell has no plans for additional mitigations for shorebirds.
84	<p>The regulators should require a regional scale cumulative impact assessment, which would include participation by all mine operators.</p>	<ul style="list-style-type: none"> • A cumulative effects assessment was conducted. Each case (i.e. Base Case, Application Case and Planned Development Case [PDC]) is a cumulative effects case. • The current assessment adequately describes the effects of the Project and reasonably foreseeable future development. • A regional scale Cumulative Environment Association is currently being pursued within the Land Use Framework (LUF) in the Lower Athabasca Regional Plan.
85	<p>A regional monitoring program to assess tailings pond impacts on water birds needs to be designed and implemented by impartial scientists. A regional scale cumulative impact assessment and monitoring should be a joint effort funded by all oil sands operators.</p>	<ul style="list-style-type: none"> • See Response to Question 84.

Topic: Wildlife

Q #	Question	Response
86	<p>Moose populations may be declining in parts of the oil sands region. Surveys to determine moose and wildlife populations are required throughout the oil sands region. We recommend that:</p> <ul style="list-style-type: none"> i. ASRD immediately reduce harvest levels for moose in the region, until additional population information is available ii. ASRD conduct moose surveys for all oil sands region Wildlife Management Units within the next two years; iii. Shell contribute to these surveys; and v. Once moose surveys are completed that ASRD takes appropriate management action, in consultation with Fort McKay 	<ul style="list-style-type: none"> • Population Viability Analysis (PVA) predicted that there was no significant difference between Base Case and PDC for projected population growth for moose, good density of moose (0.22 moose/km²) in JPME, less in PRM likely due to habitat quality. • Shell acknowledges that the decline in moose populations may be occurring in more accessible areas, but not necessarily over the RSA. • ASRD has responsibility for managing moose populations and Shell agrees that additional surveys would inform ASRD management decisions. • Shell has funded, in part, a previous survey by ASRD and would be willing to discuss funding additional surveys as part of future benefits agreements discussions.
87	<p>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.</p>	<ul style="list-style-type: none"> • Shell agrees that ASRD should implement these actions, but suggests this is an issue for ASRD. • The current assessment adequately describes the effects of the Project and reasonably foreseeable future development. • Pre-mitigation environmental consequences of the PDC on fisher/marten were predicted to be moderate, on beaver low, and on Canada lynx low (movement) and moderate (habitat). • Reclamation is predicted to return wildlife habitat to an equivalent capability over time, with the exception of peatlands.
88	<p>We recommend:</p> <ul style="list-style-type: none"> i. 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 ii. 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. For example, approval of further development be contingent on the amount of moose habitat re-established in reclaimed areas or wildlife habitat protected with conservation offsets. iii. Shell support a conservation offsets plan 	<ul style="list-style-type: none"> i. Shell acknowledges FMFN concerns over proximity/access to wildlife. • FMFN will be able to practice traditional pursuits related to wildlife within its traditional areas given the PDC development scenario. • Shell provided support of the intent of SEWG's Terrestrial Ecosystem Management Framework, which included provisions for protected areas. • AENV has not adopted conservation offsets, but these issues are being managing through LUF. • This approach is being discussed for woodland caribou by the Athabasca Landscape Team Management Options Report. That approach would benefit other species. ii. Shell acknowledges the concern, but mining process takes time. Shell projects are still in their infancy, but reclamation will occur when areas become available for reclamation. Shell does not support further development contingent on re-establishment of moose habitat as the timelines to this are too long. Shell will reclaim moose habitat when areas become available for reclamation. • Re-establishment of effective wildlife habitat is occurring (e.g. Suncor) and wildlife use of water course corridors (Shell Jackpine Mine – Phase 1 monitoring to date) provide support for the prediction that effective wildlife habitat will be re-established in the closure landscape. iii. Shell supports a conservation offset plan, but exactly what that should look like and what it should include needs to be determined.

Topic: Wildlife

Q #	Question	Response
89	<p>Shell has indicated that impacts to wildlife are “negligible or low” because of the reclamation of habitat. Therefore, Shell’s Approval should state that reclamation certification is based on habitat suitability for wildlife, rather than forest capability.</p>	<ul style="list-style-type: none"> • FMFN suggests “it is unreasonable to consider that the removal of wildlife habitat for between 25 and 50 years as negligible”. The EIA does not do this; the EIA acknowledges that during operations the impacts to wildlife habitat are high (Vol.5, p.111). • The current benchmark for ‘equivalent capability’ includes wildlife habitat and traditional use. • Requirements for certification are currently being negotiated.
90	<p>Shell has not provided enough data to make conclusions about removal of nuisance black bears on their populations. Additional data are required to assess impacts on black bears. Regionally, population data are needed on black bears to assess the impacts to this wildlife species (e.g. % lost or removed within a year). We recommend that a monitoring program to determine black bear populations is developed and that Shell contribute to this monitoring program.</p>	<ul style="list-style-type: none"> • Shell believes that the loss of nuisance black bears is small relative to licenced and First Nations harvest. • The current assessment adequately describes the effects of the Project and reasonably foreseeable future development on black bears. • Shell has an effective program in place to reduce the incidence of nuisance wildlife. • Regional black bear monitoring is best discussed with ASRD given their mandate.
91	<p>Shell has not provided enough data to make conclusions about vehicle-wildlife collisions impacts on wildlife populations. Additional data are required to assess impacts on wildlife.</p>	<ul style="list-style-type: none"> • The current assessment adequately describes the effects of the wildlife-vehicle collisions on regional wildlife populations. • Increased mortality associated with increased traffic is not predicted to have a substantive measureable effect on regional wildlife populations. Accordingly, this would not inform the EIA or the mitigation plan. • Shell believes that hunting, licenced and traditional, has a much larger impact on regional wildlife and collecting more data in this area would provide little value.
92	<p>Shell has not provided enough data to make conclusions about sensory disturbances on wildlife populations. Additional data are required to assess impacts on wildlife. Shell should be required to monitor effects of sensory disturbance on their existing facilities to determine the effects of noise and light.</p>	<ul style="list-style-type: none"> • Sensory disturbance was included in the assessment of habitat loss in the EIA, either in the form of Zone of Influence (ZOI) and Disturbance Coefficient (DC) or as input variables in the RSF models. • Shell’s past and current wildlife monitoring program takes into account sensory disturbance; i.e., distance from disturbance, use of different width corridors. • The regional wildlife program currently being conducted by University of Alberta (UofA) in conjunction with CONRAD is also examining this on a regional scale. • Habib et al (2007) showed that ovenbird nesting success is lower near industrial noise, but acknowledged that the effects to population dynamics may be negligible if enough high quality habitat is available elsewhere. • Canadian toads are commonly found within disturbed habitat in the LSAs (Wildlife ESR Section 5.5.1.2) and in the general oil sands region (Wildlife ESR Appendix V). • The tolerance of beaver for disturbed areas is generally accepted.

Topic: Wildlife

Q #	Question	Response
93	Shell appears to have based their conclusions on anecdotal information. This is inappropriate for an environmental impact assessment. Shell should provide the source for their conclusions.	<ul style="list-style-type: none"> • Conclusions are based on available information, including anecdotal information. Quantitative data were used in the assessment where possible. Quantitative data were material in determining the overall assessment predictions (e.g., effects on habitat) and are documented throughout the wildlife section of the EIA. • Years of data were used in the Environmental Setting Report (ESR) for habitat assessments. • Years of data were used in the construction of the RSF models, all collected in the region.
94	The model verification results (i.e., Spearman-rank correlations) are not sufficiently strong to allow the wildlife assessment conclusions (i.e., negligible or low impacts). Wildlife abundance needs to be determined and monitored on a regional scale to assess cumulative effects from all oil sands operations.	<ul style="list-style-type: none"> • Shell used the best available data to inform the models. The models used represent the best available models and Shell would assert that these models are better than those used in previous assessments because those only relied on expert-based Habitat Suitability Index (HSI) models. • Shell is monitoring wildlife use in the immediate vicinity of their operations and is contributing to regional monitoring.
95	Based on available research and observed data. 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 Pierre River Mine and Jackpine Mine Expansion?	<ul style="list-style-type: none"> • Shell's approach to population modelling estimates changes from the current and approved landscape (i.e. Base Case) to all reasonably foreseeable developments (i.e. Planned Development Case). CEMA modelling estimates changes from a pre-development landscape to a hypothetical future that may not come to pass. Results from the two approaches cannot be compared. • Moose will move away from land cleared for the Project (as stated in the preamble to the question). Current low population densities in the RSA are likely the result of a combination of human harvest and predation. • Shell does not predict that moose densities will double for any length of time after their initial displacement from the development footprint. • The timeframe in which an elevated moose population density may be maintained will depend more on the regulation of human harvest and potentially, regional predator management.
96	Provide documentation of a situation that shows that higher moose density is sustained adjacent to a major industrial project such as a mine.	<ul style="list-style-type: none"> • Shell does not say that higher moose densities will be sustained in habitat immediately adjacent to a mine. Shell maintains that the habitat within the RSA is likely well below a food-limited carrying capacity for moose. Therefore, habitat loss for moose will not necessarily result in population decline in the RSA. • Again, the timeframe in which an elevated moose population density may be maintained will depend more on the regulation of human harvest and potentially, regional predator management.
97	High quality moose habitat needs to preserve adjacent to the projects. Does Shell plan on preserving high quality moose habitat adjacent to their mine projects by acquiring and setting aside land with high quality moose habitat? Shell needs to support a conservation offset plan.	<ul style="list-style-type: none"> • Shell does not plan on preserving high quality moose habitat adjacent to their mine projects by acquiring and setting aside land with high quality moose habitat. • However, Shell does support protected areas as evidenced by our work on and conditional support of the SEWG Terrestrial Ecosystem Management Framework.

Topic: Wildlife

Q #	Question	Response
98	Shell indicated that the carrying capacity used in modelling was appropriate for an EIA level of assessment. How was an appropriate level was determined (statistical power, statistical significance)? What is an appropriate level?	<ul style="list-style-type: none"> • “Appropriate for an EIA” reflects that the best available information was used to determine the value for carrying capacity in the PVA modelling for this EIA. • As indicated in the response to the Round 1 PRM SIR 492a, the sensitivity analysis indicated that carrying capacity was not a primary driver in the outcome of the PVAs.
99	Fort McKay requests that Shell provide the values, calculation methods, and references for the data used to calculate the moose fecundity and survival parameters used in the PVA model.	<ul style="list-style-type: none"> • PVA model inputs are based on values from the peer-reviewed literature. • Shell is willing to go over the PVA modelling approach and outcomes with Fort McKay to explain the calculation methods and the values and the references used in the modelling.
100	Fort McKay does not have full confidence in Shell’s population viability models. Model predictions need to be tested with moose (and other wildlife) survey data to determine and monitor populations. Fort McKay requests that Shell use regional population data (e.g., as requested by Fort McKay in Recommendations 73, 74, and 77) to update their models.	<ul style="list-style-type: none"> • Models used in the EIA were the best available models at the time of submission of the EIA. Regional stage-specific survival and fecundity rates have not been available for moose and black bear, and so had to be estimated from available data. • Survey data were used to develop RSF models. • RSF models (and other models) were validated, where possible, Appendix 5-4 of the EIA describes validation. • Future monitoring data can be used to update the models, an on-going regional process that Shell and Golder is actively involved in (i.e. CONRAD’s regional corridor study).
101	How will Shell ensure the protection and maintenance of riparian habitats, interconnectivity, and the unimpeded movement of wildlife species using the habitat through the mine projects, as per the Alberta Environment Terms of Reference?	<ul style="list-style-type: none"> • Setbacks from watercourses as described in EIA are: <ul style="list-style-type: none"> – 100 m for small watercourses (not diverted), – 100 m for the Muskeg River (where not diverted), – 250 m setback from the Athabasca River, except at proposed bridge crossing and at water intake.
102	Fort McKay is concerned about the Muskeg River corridor and its importance for the maintenance of moose and other wildlife populations in Fort McKay’s Traditional Lands. Wildlife use of the Muskeg River corridor is not well understood according to Shell. Shell should agree to maintain the Muskeg River corridor through the Jackpine Mine Expansion area until the wildlife corridor research program is complete (i.e., with statistically defensible results) and then use the results to develop a mine plan.	<ul style="list-style-type: none"> • Shell recognizes the importance of corridors and has committed to corridors to maintain genetic connectivity in the regional landscape. • A corridor along the full length of the Muskeg River is not required to maintain wildlife connectivity in the regional landscape; the current plan has the northeast end of Muskeg River corridor opening onto the Fort Hills. The Fort Hills are contiguous with lands in the far eastern portion of the RSA.
103	Shell states that it will retain treed buffers around or near watercourses. Does this include the Muskeg River through the Jackpine Mine Expansion?	<ul style="list-style-type: none"> • No, treed riparian areas will not be maintained along the Muskeg River through the Jackpine Mine Expansion as Shell proposes to divert the river so this area can be mined. However, the Muskeg River corridor opens out onto the Fort Hills adjacent to the Project area thus east-west connectivity in the region is maintained.

Topic: Wildlife

Topic: Wildlife		
Q #	Question	Response
104	Shell states that it will retain treed buffers around or near watercourses. What width of corridor will be maintained?	<ul style="list-style-type: none"> • Setbacks from watercourses as described in EIA are: <ul style="list-style-type: none"> – 100 m setback for small watercourses (not diverted), – 100 m for the Muskeg River (where not diverted), – 250 m setback from the Athabasca River, except at proposed bridge crossing and at water intake. • Shell has committed to continued monitoring of the wildlife corridors in and around their leases to document effectiveness; evidence to date suggests that the corridors should maintain genetic connectivity.
105	Shell states that it will reclaim the landscape to an equivalent capability, optimizing the value of watershed, forest productivity, fish and wildlife habitat and traditional use, in consultation with key stakeholders. Fort McKay expects to be consulted by Shell and the Regulators regarding equivalent capability for traditional use.	<ul style="list-style-type: none"> • Shell's reclamation approach aligns with FMFN's desire to reclaim land for traditional purposes. Shell's intent is that FMFN will be able to undertake the same types of traditional pursuits as they do today; albeit in different locations because the reclaimed landscape will be different. • The FMFN/Shell Reclamation Focus Group is a good mechanism for communicating regarding reclamation progress and ensuring traditional activities are part of the closure landscape.
106	Shell will provide wildlife passage under the Athabasca River bridge. Provide details of passage area and supporting documentation that passage is suitable for wildlife movement.	<ul style="list-style-type: none"> • Preliminary work has been completed on the design of the wildlife passageways under the Athabasca River bridge on both sides of the river, and minimum requirements have been discussed with design engineers. However, detailed engineering specifications will not be developed until the Project has been approved. • Most recent information regarding the use of similar scale wildlife passageways indicate that the passageways are being used (i.e. Suncor North Steepbank).
107	How do bait stations and photographs contribute to the understanding of wildlife abundance and movement?	<ul style="list-style-type: none"> • Remote cameras (bait and trail sets) provide information on wildlife distribution and relative abundance throughout the year (4 seasons), as well as information on species that are not monitored by other surveys (e.g. black bears). • Remote cameras (trail sets) provide information on wildlife presence and relative abundance within corridors.
108	Fort McKay would like Shell to provide updates on the progress of this regional wildlife movement study.	<ul style="list-style-type: none"> • Regional moose survey data from March 2008 indicate that moose densities in townships distant from mines was 0.15 moose/km² (SE=0.0369) while moose density townships in proximity to the mining areas were 0.18 moose/km² (SE=0.0319); 15 townships per treatment, total 30 townships, sampling was ten 10 km long transects per township with 800 m spacing between transects. • Next phase of the Project that involves the radio collaring of up to 50 moose including some in and around the development areas is currently being completed.

Topic: Wildlife

Q #	Question	Response
109	<p>Chemicals of concern to wildlife are accumulating in the environment. The impacts of these chemicals to wildlife and wildlife users need to be studied and understood on a regional scale.</p>	<ul style="list-style-type: none"> • The ecological risk assessment and human health risk assessment (Volume 3, Section 5) evaluated the potential impacts of chemical emissions on both wildlife and wildlife users on a regional scale. • The study team conducted a comprehensive sampling program in support of the environmental risk assessment. • Measured environmental data from the Project study areas along with data collected as part of regional sampling programs were used to characterize existing risks to wildlife and wildlife users. • TMAC is charged, in part, “with assessing the risks posed by trace metals and air contaminants to human health and ecosystems under existing management systems”. • The recommendations made in the ENVIRON report are best addressed through regional initiatives, such as TEEM (terrestrial monitoring such as soil and vegetation), WBEA (air monitoring) and RAMP (water quality and fish tissue monitoring). • Alberta Environment is currently compiling all the available soil and vegetation data for the Athabasca Region. Alberta Environment plans to use this information to characterize the chemical risks on a regional scale.
110	<p>Shell provided data for the studies mentioned above. How much of the chemical data from the above studies (e.g., from RAMP and other EIAs) was incorporated into the Wildlife Health Assessment?</p>	<ul style="list-style-type: none"> • Shell completed a comprehensive sampling program that included the collection and analysis of vegetation (i.e. blueberries, Labrador tea leaves, cattail root and alder), soil, surface water, sediment and fish. These data were used in the Wildlife Health Assessment to characterize background PAH and metal concentrations whenever possible. • Existing metal concentrations in game were based on data previously collected by Shell for its Jackpine Mine – Phase 1 application, with the exception of background arsenic concentrations in moose which were based on the 2007 AHW study of arsenic concentrations in the Wood Buffalo Region. • RAMP fish data were used to supplement metal concentrations measured in fish collected from the JPME and PR mining areas. These data, in combination with predicted pre-development water quality, were used to calculate the site-specific fish bioaccumulation factors.
111	<p>TRV for masked shrews were developed from mouse data. Shrews are very small and have a high metabolic rate. Provide scientific literature that supports using mouse data to assess impacts on shrews.</p>	<ul style="list-style-type: none"> • Allard et al. (2010) report that extrapolating between species is acceptable (Hull 2010). Due to the near absence of toxicity data for most wildlife species, development of TRVs commonly relies upon toxicity data for laboratory test species. Allard et al. (2010) recommends that the uncertainty in extrapolation between species be minimized by selecting a test species that is as taxonomically or physiologically related to the wildlife species of interest as possible. Although shrews are not taxonomically related to mice, they are physiologically related (Hull 2010). On this basis, use of mouse toxicity data to assess potential risks to shrews is supported. • In addition, a number of regulatory agencies, including the United States Environmental Protection Agency (US EPA 2005) and United States Department of Energy (Sample et al. 1996) rely upon toxicological information for laboratory rodents, such as the mouse, for the development of the wildlife toxicity reference values. <p>References:</p> <ul style="list-style-type: none"> • Allard, P., A. Fairbrother, B.K. Hope, R.N. Hull, M.S. Johnson, L. Kapustka, G. Mann, B. McDonald, and B.E. Sample. 2010. Recommendations for the development and application of wildlife toxicity reference values. <i>Integrated Environmental Assessment and Management</i>. 6(1):28-37.

Topic: Wildlife

Q #	Question	Response
		<p>http://www.epa.gov/ecotox/ecossl/pdf/ecossl_guidance_chapters.pdf</p> <ul style="list-style-type: none"> • Hull, R.N. 2010. Personal communication with Ruth Hull via email on February 24, 2010. • Sample, B.E., D.M. Opresko, and G.W. Suter II. 1996. Toxicological Benchmarks for Wildlife: 1996 Revision. Prepared by the Risk Assessment Program, Health Sciences Research Division. Prepared for the United States Department of Energy, Office of Environmental Management. June 2996. • US EPA (United States Environmental Protection Agency). 2005. Guidance for Developing Ecological Soil Screening Levels. US EPA, Office of Solid Waste and Emergency Response. November 2003, Revised February 2005. <p>http://www.epa.gov/ecotox/ecossl/pdf/ecossl_guidance_chapters.pdf</p>
112	Provide the sources and values used as ingestion rates and body masses for the wildlife species assessed in the Wildlife Health Assessment.	<ul style="list-style-type: none"> • The ingestion rates and body masses were taken from the following sources: <ul style="list-style-type: none"> – ASRD (Alberta Sustainable Resource Development). 2002. Game Species. Living with Fish and Wildlife. Fish and Wildlife Division, Alberta Sustainable Resource Development. Last Reviewed/Updated August 12, 2002. Available at: http://srd.alberta.ca/fishwildlife/default.aspx. – BC Ministry of Environment (MOE). 2001. Animal Weights and their Food and Water Requirements. Resources Document 1996 (minor updates 2001). Environmental Protection Branch. – Hinterland Who's Who 2007. Mammal Fact Sheets: Beaver. http://www.hww.ca – Nagy, KA, IA Girard and TK Brown. 1999. Energetics of free-ranging mammals, reptiles and birds. Annu. Rev. Nutr. 19: 247-277 – Pattie, D. and Fisher, C. 1999. Mammals of Alberta. Lone Pine Publishing. Edmonton, AB – US EPA (United States Environmental Protection Agency). 1993. Wildlife Exposure Factors Handbook. Volumes I and II. Office of Research and Development. ORD. EPA-600-R-93-187. December 1993. – Western Bird Banding Association (WBBA). 1984. Body Weights of 686 Species of North American Birds. John B. Dunning, Jr. Monograph No.1 May 1984.

Topic: Wildlife

Q #	Question	Response
113	Shell states that TRVs were not available for amphibians and reptiles. Shell uses a reference from 1999. Have any TRVs for amphibians and reptiles been developed since 1999?	<ul style="list-style-type: none"> • There is a lack of toxicity data for amphibians (for the terrestrial stage) and reptiles, thereby restricting the ability to quantitatively assess chemical risks. • For amphibians, available toxicity data generally are limited to concentrations in water to coincide with the most sensitive life stage (i.e. metamorphosis). • Potential impacts on amphibians were indirectly assessed in the water quality assessment (by comparing measured and predicted water concentrations to water quality guidelines for the protection of aquatic life) and in the wildlife assessment (by considering the effects to high-quality amphibian habitat). • The wildlife assessment concluded that the environmental consequence of potential changes in amphibian habitat was negligible (see Table 7.5-37, Volume 5). • Agencies such as the CCME and US EPA consider amphibian toxicity data when developing their water quality guidelines/criteria for the protection of aquatic life. References: <ul style="list-style-type: none"> • CCME 2007. A Protocol for the Derivation of Water Quality Guidelines for the Protection of Aquatic Life 2007. Canadian Council of Ministers of the Environment. • Ecotoxicology of Amphibians and Reptiles [2000]. Edited by Donald W. Sparling, Greg Linder and Christine A. Bishop. SETAC press. Chapter 14A and 14B. ISBN 1-8880611-28-7.

Topic: Wildlife

Q #	Question	Response
114	<p>The methods used in the Wildlife Health Assessment have been used for many years. 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 user health (e.g., hunters) and wildlife populations.</p>	<p><u>Case Study for Wildlife Health Risk Assessment:</u></p> <ul style="list-style-type: none"> • A wide-area terrestrial ecological risk assessment (ERA) was conducted for Teck Cominco's Trail, BC smelting operations (Intrinsik 2007). Using methods similar to those employed in the Shell Wildlife Health Risk Assessment, potential risks were predicted to the American robin based on estimated exposures to cadmium and lead. However, a Sequential Analysis of Lines of Evidence (SALE) evaluation was completed for the American robin which examined physical effects on habitat, soil invertebrate abundance and density, and incorporated the results of field surveys for robins and for the avian community (Intrinsik et al. 2008). • The SALE evaluation concluded that populations of the American robin persist in the area, the abundance and density of robins are similar to other areas of BC, and any adverse effects on American robin populations due to the smelter emissions are minimal (Intrinsik et al. 2008). <p>References:</p> <ul style="list-style-type: none"> • Intrinsik Environmental Sciences Inc. 2007. FINAL Ecological Risk Assessment for Teck Cominco Operations at Trail, British Columbia – Terrestrial Risk Modeling Level of Refinement #3. Prepared for Teck Cominco Metals Ltd. August 2007. • Intrinsik Environmental Sciences Inc., Swanson Environmental Strategies Ltd., Delphinium Holdings Inc. and Teck Cominco Metals Ltd. 2008. Terrestrial Ecological Risk Assessment for the Teck Cominco Smelter at Trail, BC – MAIN REPORT Draft for Discussion. January 2008. • WBEA (Wood Buffalo Environmental Association). 2006. Human Exposure Monitoring Program" Part I – Background and Design Documentation. Wood Buffalo Environmental Association, Fort McMurray, Alberta. March 31, 2006. <p><u>Case Studies for HHRA:</u></p> <ol style="list-style-type: none"> 1. Exposure Assessment and Health Risk Characterization for Arsenic and Other Metals for Residents of Deloro Village located in the Vicinity of a Former Gold Mine. 2. Human Health Risk Assessment for the City of Greater Sudbury and Surrounding Area [due to exposure to smelter emissions]. <ul style="list-style-type: none"> • These projects used biomonitoring information to indicate that predicted health risks overstated the actual health risks posed to the community members.
115	<p>Fort McKay is concerned that Shell's health model are not detecting potential health impacts to wildlife and requests that Wildlife Health Assessment results are verified.</p>	<ul style="list-style-type: none"> • Over time, the findings of the Wildlife Health Risk Assessment will be verified through monitoring at Shell's development areas and through Shell's continued participation in the TEEM program. • In addition, Shell will continue to participate in RAMP in order to monitor water quality in receiving watercourses and waterbodies. • Shell will be pleased to discuss FMFN input into monitoring programs development as part of future benefits agreement discussions. Such programs will be designed, in part, to verify the findings of the environmental impact assessment (including the Wildlife Health Risk Assessment).

(Table referred to in response to Q80)

Topic: Wildlife	
Traditional Ecological Knowledge	Cross-Reference
consumptive use of plants	Terrestrial Vegetation, Wetlands and Forest Resources (Section 7.3.3) and Human Health (Volume 3, Section 5.3)
medicinal use of plants	Terrestrial Vegetation, Wetlands and Forest Resources (Section 7.3.3) and Human Health (Volume 3, Section 5.3)
spiritual use of plants	Terrestrial Vegetation, Wetlands and Forest Resources (Section 7.3.3) Socio-Economics (Volume 5, Section 8.7)
contamination of traditionally used plants	Air Quality (Volume 3, Section 3.3) and Human Health (Volume 3, Section 5.3)
wildlife and wildlife habitat	Wildlife and Wildlife Habitat (Section 7.3.4)
consumptive use of wildlife (hunting and trapping)	Wildlife and Wildlife Habitat (Section 7.3.4)

Topic: Human Health Risk Assessment		
Q #	Question	Response
116	Shell should justify how the widespread use of surrogates and chemical groupings supports conservatism in their HHRA.	<ul style="list-style-type: none"> The study team chose to assess those chemicals for which little to no toxicity data are available by placing them in chemical groups and applying a “chemical surrogate” or “chemical analogue” approach. The likely alternative would have been to exclude these chemicals from the HHRA, which is a less conservative approach. The study team acknowledges that there is uncertainty associated with grouping the chemicals. The approach taken by the study team is consistent with guidance on chemical grouping (“Guidance on Grouping of Chemicals”, Economic Co-Operations and Development (OECD) Environment Health and Safety Publications, Series on Testing and Assessment, No. 80, 2007).
117	Shell should present clear justification for not including potential synergism in their JPME and PRM HHRA.	<ul style="list-style-type: none"> Toxicological interactions among chemicals depend on the chemicals present, their mode of action, and their concentrations. Of the potential chemical interactions, additivity is the most plausible, particularly at environmentally relevant concentrations and doses (Health Canada 2009). It requires that chemicals act through similar mechanisms and affect the same target tissue. As per Health Canada’s guidance (2004 and 2009), chemical interactions were assumed to be additive in nature. <p>Reference:</p> <ul style="list-style-type: none"> Health Canada 2004. Federal Contaminated Site Risk Assessment in Canada. Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment. ISBN 0-662-38244-7. September 2004. Health Canada 2009. Federal Contaminated Site Risk Assessment in Canada. Part V: Guidance on Complex Human Health Detailed Quantitative Risk Assessment for Chemicals. Version 1.0. February 2009.
118	We recommend that Shell revisits the need to undertake HHRA to mixtures for transient receptor.	<ul style="list-style-type: none"> Consistent with standard health risk assessment practice, the HHRA for the Shell Project was based on a “reasonable worst-case” scenario. The study team assumed that maximum concentrations for different chemicals could be occurring at the exact same time for all locations other than the Maximum Point of Impingement (MPOI) (e.g., cabins, communities). Although the likelihood of this occurring is improbable, it could still be viewed as presenting a “reasonable worst-case” exposure scenario. For the transient scenario, maximum air concentrations of chemicals will occur at different times and at different locations. Assuming that they occur at the same time and at the exact same location along the fence-line presents an “unreasonable worst-case” scenario. As such, it was not considered in the Human Health Risk Assessment (HHRA).

Topic: Human Health Risk Assessment

Q #	Question	Response
119	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.	<ul style="list-style-type: none"> • The study team correctly calculated the minimum detection limits (in units of $\mu\text{g}/\text{m}^3$) but inadvertently left out the “measurements” taken at the Suncor Steepbank Mine. One of these samples equates to the referenced MDL of $20.4 \mu\text{g}/\text{m}^3$. • MDLs ranged from 0.04 to $20.4 \mu\text{g}/\text{m}^3$ for all samples, with a geometric mean of $0.3 \mu\text{g}/\text{m}^3$. • Measurements taken at Fort McKay between June and July, 2005 indicated that acrolein concentrations were below 0.05 to $0.65 \mu\text{g}/\text{m}^3$. • As discussed in the HHRA, predicted acrolein concentrations are not atypical of ambient air concentrations measured in Canada. • Since filing the original HHRA, exposure limits for acrolein have changed: <ul style="list-style-type: none"> – Acute: <ul style="list-style-type: none"> • Original = $0.29 \mu\text{g}/\text{m}^3$ • Current = $2.5 \mu\text{g}/\text{m}^3$ – Chronic: <ul style="list-style-type: none"> • Original = $0.02 \mu\text{g}/\text{m}^3$ • Current = $0.35 \mu\text{g}/\text{m}^3$ • Predicted acrolein concentrations and MDLs are below levels at which health effects have been observed.

Topic: Human Health Risk Assessment

Q #	Question	Response
120	<p>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.</p>	<ul style="list-style-type: none"> • Health risks associated with exposure to acrolein, PM_{2.5} and methyl mercury are due to a combination of “baseline” conditions in the region and conservative assumptions that were applied to the human health risk assessment. The Shell Project is not expected to appreciably increase the health risks related to these substances, as evident by the negligible to minimal increases between the Baseline and Application Case risks. Molybdenum risks are predicted to increase due to the Project, but these risks are not predicted to result in adverse health effects. • The primary sources of PM_{2.5} are the mine fleet and cogeneration. • Shell has committed to the following mitigation measures for mine fleet and cogeneration emissions from the Project: <ul style="list-style-type: none"> – Vehicles in the mine fleet will meet applicable emission standards at the time of purchase. – Mine maintenance procedures will ensure fleet vehicles are regularly maintained. – A PM_{2.5} control efficiency of 99.97% will be implemented on the asphaltene-fired cogeneration units. – The cogeneration units will meet the CCME emissions criteria for stationary combustion turbines and the Alberta Air Emission Standards for Electricity Generation. – Slash burning will be managed according to Shell’s Environment Management Systems (EMS) procedure and by continuing to coordinate with other operators in the area. • Shell is committed to mitigating potential impacts to water quality, (EIA Table 1.7-1), including: <ul style="list-style-type: none"> – Tailings will be placed below the top of the McMurray formation or behind low-permeability barriers such as dykes. – Shell will manage External Tailings Disposal Area (ETDA) seepage to ensure groundwater discharge quality to the Athabasca River is acceptable and will not result in any significant adverse impacts. – At closure, wetlands and/or pit lakes will be built at the downstream end to provide treatment for the tailings pore space water releases before they are discharged to the Muskeg or Athabasca Rivers. – Implementing a closed-circuit water management and recycling system for process-affected waters during operation. – Directing muskeg and overburden drainage waters to polishing ponds prior to release into receiving waters. – Directing tailings pond seepages that are not captured by perimeter ditches to wetlands with sufficient residence time for natural treatment of organic constituents and to reduce associated tainting potential and whole effluent toxicity.

Topic: Human Health Risk Assessment		
Q #	Question	Response
121	We recommend that Shell continues to conduct air quality monitoring and support the monitoring station at Fort McKay. An appropriate health monitoring program be developed in consultation with Fort McKay.	<ul style="list-style-type: none"> • Shell will continue to actively participate in the Wood Buffalo Environmental Association (WBEA) and the Terrestrial Environmental Effects Monitoring (TEEM) program, both of which are related to the monitoring and assessment of air emissions in the Athabasca oil sands. Shell will continue to work with Alberta Environment, WBEA and all its neighbours to understand regional monitoring requirements. • Shell will continue to participate in the Human Exposure Monitoring Committee (which oversees the Human Exposure Monitoring Program or HEMP).
122	We recommend that Shell revise the concluding HHRA summary statement to recognize that emissions from JPME and PRM are expected to lead to increased risk human health.	<ul style="list-style-type: none"> • The study team stands by its conclusions of the HHRA, and any potential increase in health risks is not expected to result in measurable health effects in the area residents. • In general, changes between the Base Case and Application Case health risks are very small, suggesting that the Project is not predicted to contribute appreciably to overall health risks.
123	Shell constructively discuss with Fort McKay IRC strategies to effectively communicate health risks associated with JPME and PRM.	<ul style="list-style-type: none"> • Shell is open to discussing with Fort McKay IRC strategies to effectively communicate health risks associated with JPME and PRM.
124	Shell consider 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 JPME and PRM.	<ul style="list-style-type: none"> • The HHRA presented in the EIA was designed, in part, to meet the regulatory terms of reference. Shell does not have plans to expand on it; however: <ul style="list-style-type: none"> – The study team acknowledges that the HHRA did not address broader issues of community health and well-being as these relate to such health determinants as social support networks, health services, stress, culture, changes in traditional land use etc. – Through ongoing, open communication, Shell hopes to address the health-related concerns of the Fort McKay First Nation. – Shell is open to discussing how a community health assessment could be effectively applied to the oil sands region.
125	We recommend that 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 JPME and PRM. This would include support for Fort McKay's Community Health Strategy.	<ul style="list-style-type: none"> • Shell is open to discussing possible options for its support of community programs in Fort McKay.

Topic: Mine Plan and Closure, Conservation and Reclamation Plan		
Q #	Question	Response
126	<p>i. Fort McKay would like to review revised tailings strategies, which will undoubtedly be required as a result of the ERCB Tailings Directive 074.</p> <p>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>	<ul style="list-style-type: none"> • Shell's Directive 074 plans for the Muskeg River Mine and Jackpine Mine – Phase 1 are already public and available upon request. Specific Directive 074 plans related to the Jackpine Mine Expansion and Pierre River Mine projects will be designed once the projects and footprints of the mine area are approved, as per Directive 074 requirements. • The average depth of coarse sand tails (CST) capping over NST is 10 m, and ranges between 5 and 15 m for overall drainage slopes. Drainage channels are typically created by differential placement of Coarse Sand Tailings (CST) materials and overburden capping layers placed on top of the CST. Creating the drainage channels within the overburden layer contributes to the stability of the channels and provides a drainage connection between the sand and overburden layers.
127	<p>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.</p>	<ul style="list-style-type: none"> • Opportunities to change topography and hydrological conditions are assessed throughout the life of the mine, and shown within operational closure and reclamation plans. • Shell has proposed areas of gently sloping topography on the closure landscape. These areas have the potential to create the hydrological conditions suited to peatland formation. • For Jackpine Mine Expansion, Shell is planning for approximately 65% of the closure landscape (13,360 ha) to have slopes between 0 and 2%. • For Pierre River Mine, Shell is planning for approximately 52% of the closure landscape (5,430 ha) to have slopes between 0 and 2%.
128	<p>i. Fort McKay requests that Shell increase the pace of reclamation on all their mines.</p> <p>ii. Fort McKay would like to discuss alternative tailings management strategies, which will conform to ERCB Tailings Directive 074, and improve the pace of reclamation.</p>	<p>i. Please see the response to Question 69.</p> <p>ii. A discussion on alternative tailings options is addressed in our D074 submissions. At this time Shell has planned on the basis of CT and NST as commercially proven tailings products, and Atmospheric Fines Drying as an augmented fines capture process (currently being piloted at Muskeg River Mine).</p>
129	<p>Shell should confirm that agreements are in place between Shell and Imperial Oil Ltd. (Kearl Oil Sands Project) and Syncrude Canada Ltd. (Aurora South Project) for coordinated long-term drainage control.</p>	<ul style="list-style-type: none"> • Shell has cooperation agreements in place with both Imperial Oil and Syncrude to address a number of integration issues including landforms and drainage. Shell has an unapproved footprint (Jackpine Mine Expansion) adjacent to Imperial Oil. • Shell continues discussions with Imperial and Syncrude to align on integrated drainage plans. While technical feasibility has been discussed to date, commercial discussions are still in progress, • For the purposes of the regulatory hearing, Shell is looking for general agreement in principle. This will form the basis for integrating plans in the event that time delays or plan changes result in a reworking of the integrated drainage plans.

Topic: Mine Plan and Closure, Conservation and Reclamation Plan		
Q #	Question	Response
130	<p>i. Fort McKay opposes the deposition of tailings into end pit lakes as a method of long-term tailings storage.</p> <p>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.</p>	<p>i. Shell is investigating ways of reducing MFT volumes, which could potentially reduce pit lake volume requirements. Details are provided in the response to PRM Round 1 SIR 312.</p> <p>ii. Shell supports regional initiatives to develop criteria in consultation with regulators and stakeholders, and works with such frameworks.</p>
131	<p>i. Shell should look at ways of creating more gently sloping topography in order to encourage wetland formation in the final landscape.</p> <p>ii. Shell should monitor productivity on reclaimed landscapes to verify that equivalent capability for forestry, as predicted by the LCCS, has been achieved.</p>	<p>i. Please refer to the response to Question 127.</p> <p>ii. Shell agrees that monitoring of forest productivity is key to verifying forest productivity, Shell is engaged in the CEMA Alternative Regeneration Task Group, which is drafting monitoring and growth standards for forest tree species within reclamation ecosite types. Shell is also engaged in work through CEMA committees to develop monitoring protocols and reclamation benchmarks and targets, and will comply with CEMA frameworks endorsed by AENV.</p>
132	<p>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.</p>	<ul style="list-style-type: none"> • Shell acknowledges FMFN's concerns about legacy issues and making sure that security is provided for reclamation activities. • The reclamation security process is confidential at this stage, and FMFN needs to contact AENV directly to discuss access to cost data. Shell also notes that the new Mine Financial Security Plan will make the reclamation security process more transparent as AENV will have a public reporting mechanism as part of the plan. • The present reclamation security calculation is based on current disturbance only, and therefore does not yet include pit lakes for either Muskeg River Mine or Jackpine Mine – Phase 1.
133	<p>i. Fort McKay asks that the proponent look seriously at creating the landforms necessary for re-establishing peat accumulating wetland types.</p> <p>ii. Fort McKay also asks that Shell undertake field-scale trials to establish peat accumulating wetlands.</p> <p>iii. Fort McKay would like Shell to look at re-establishing other plant species of importance to traditional use including rat root.</p>	<p>i. As noted in the response to Question 127, Shell has focused on providing gently sloping or no slope areas over large portions of the closure landforms, and anticipates that these will support peatland development.</p> <p>ii. Shell supports including peatland re-establishment trials within operational closure and reclamation plans. Shell is also engaged in supporting the CONRAD peatland reclamation research, and will be applying this information to reclamation on Shell sites. Shell looks forward to discussing how plants of importance to traditional use can be re-established in the reclamation landscape in the FMFN/Shell Reclamation Focus Group meetings currently in negotiation with FMFN. Shell has just completed planting of ratroot at the Jackpine Compensation Lake in lentic and lotic habitats. The planting method was discussed with the FM/Shell Elders Advisory Group before the plants arrived, and has been followed for ratroot communities planted around the lake and at the inlet and outlet areas.</p>

Topic: Mine Plan and Closure, Conservation and Reclamation Plan		
Q #	Question	Response
134	<p>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.</p> <p>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.</p> <p>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.</p>	<p>i. Shell provides detailed annual scheduling of salvage, stockpiling and direct placement of all types of reclamation soils (upland and peat-mineral mix) in the annual soil salvage plan submissions to AENV.</p> <p>ii. Shell is committed to accurate planning and monitoring of all work related to reclamation soils, and already has professional soil scientists (Paragon Soil and Environmental Consulting) on site during testing, salvage, stockpiling and soil placement activities.</p> <p>iii. Shell will investigate the potential as indicated in the responses to Questions 67 and 70.</p>
135	<p>Shell should continue to work with Fort McKay during the development and implementation of reclamation programs in support of traditional use.</p>	<ul style="list-style-type: none"> • Shell looks forward to working with FMFN in the FMFN/Shell Reclamation Focus Group.
136	<p>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.</p>	<ul style="list-style-type: none"> • Shell notes that unsuitable materials within the mine areas include Clearwater clays and tar balls. These materials have been and will be managed on site so that they are sequestered away from reclamation areas. • Shell looks forward to working on the reclamation plans (including the management of unsuitable materials) with FMFN in the FMFN/Shell Reclamation Focus Group.
137	<p>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.</p>	<ul style="list-style-type: none"> • The FMFN/Shell Reclamation Focus Group is a good mechanism for communicating on reclamation progress including wildlife species re-colonization and any habitat enhancements required. • Shell's reclamation goal is to achieve maintenance-free self-sustaining ecosystems with a capability equivalent to predevelopment conditions. Equivalent capability includes the reclamation of wildlife habitat. Moose and beaver are cultural keystone species for the Fort McKay First Nation. The conceptual reclamation plan includes a drainage plan and vegetation planting prescriptions that are predicted to result in high quality beaver and moose habitat, such as: <ol style="list-style-type: none"> d1, d2 – aspen sh2, sh3 – willow littoral zones – aquatic plants drainages which can be dammed by beavers, creating ponds, and ultimately more moose habitat. • Shell looks forward to working with FMFN/Shell Reclamation Focus Group on the draft 2011 closure and reclamation (C&R) plans, and the further C&R operational plans that will be filed during the life of the mine. FMFN has made reference to the Healing The Earth Strategy, and information that will be useful in closure and reclamation planning considerations, including supporting wildlife movement and providing appropriate habitat.

Topic: Mine Plan and Closure, Conservation and Reclamation Plan		
Q #	Question	Response
138	<p>i. Shell should be asked to provide updates to Fort McKay on their plans to increase biodiversity.</p> <p>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.</p>	<p>i. Local loss of high biodiversity potential has been anticipated in the EIA, mostly due to loss of peatlands, and fine detail on the diversity of the reclaimed surface has to be at a conceptual level in the C&R plans in the application. Shell's focus has been on providing reclaimed ecosites and wetlands in the C&R plan that provide an appropriately conservative level of biodiversity as predicted in the EIA.</p> <ul style="list-style-type: none"> • Shell understands the concerns of FMFN related to diversity of reclamation practices and biodiversity in reclaimed areas. Shell is looking forward to the work of the FMFN/Shell Reclamation Focus Group in providing advice and good practice for operational closure and reclamation plans, and expects this focus group to be a good mechanism for communicating on reclamation progress including results of biodiversity monitoring of reclaimed areas. <p>ii. Shell has started annual environmental reporting consultations with FMFN and other stakeholders in addition to the reclamation focus group, so that information from monitoring and tracking can be fed back into the planning process. Details of soil placement and ecosite distribution are provided annually in the environmental report and in the soil salvage plan submissions as noted in the response to Question 134.</p>
139	<p>i. Fort McKay may wish to see a progressive and proposed schedule of when Shell intends to apply for certification.</p> <p>ii. Fort McKay would like to have the opportunity to comment on any future applications for certification, and to participate in any field inquiry.</p>	<p>i. Shell's understanding is that stakeholders are already part of this review process through AENV's consultation process.</p> <ul style="list-style-type: none"> • The FMFN/Shell Reclamation Focus Group is a good mechanism for communicating reclamation progress on Shell sites. Certification requires achievement of a number of targets and benchmarks for end land use in the reclaimed landscape. The focus group will allow discussion of a common understanding of how Shell is advancing in its reclamation efforts toward certification, and the land use benchmarks that have been set for each reclamation area. <p>ii. Shell appreciates FMFN's offer to participate in the certification process, and looks forward to determining how this will be done in the FMFN/Shell Reclamation Focus Group.</p>

Topic: Resource Use		
Q #	Question	Response
140	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.	<ul style="list-style-type: none"> • Shell supported the intent of the Terrestrial Ecosystems Management Framework including no sale of further leases on designated areas until 2011(05/06/08). • Shell concerns included: <ul style="list-style-type: none"> • Restrictions of rights for existing lease holders. • Lack of agreement on portion of lands to be designated as protected. • Speed of reclamation requirements – Shell is working diligently but cannot commit to faster rates. • Conceptual nature of plan – Shell would suggest that a more detailed plan is required. • AENV has not adopted this proposed framework, but is reported to be managing this through its pending Land Use Framework. • Shell supports the development of protected areas in the RMWB that is consistent with Shell’s Biodiversity Standards and Strategy.
141	<p>Fort McKay may want to request that Shell:</p> <p>i. 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)</p> <p>Fort McKay may want to request that Shell:</p> <p>ii. evaluate and discuss the Planned Development Case (PDC) 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))</p> <p>Fort McKay may want to request that Shell:</p> <p>iii. Discuss the regional impacts on ESAs as a whole due to the Planned Development Case.</p>	<p>i. Impact ratings on page 8-97 describe impacts to ESAs before mitigation as well as following mitigation – including reclamation (i.e. residual impacts). The residual impact classification presented in Table 8.4-13 (page 8-100) show impacts to ESAs following mitigation.</p> <p>ii. The PDC assessment for an ESA is completed only when the residual impacts predicted for the Application Case are rated greater than negligible (see page 1-13).</p> <ul style="list-style-type: none"> • The Eymundson Sinkholes was the only ESA with residual impacts rated above negligible and was carried through to the PDC assessment. The effect of population changes on all Environmentally Important Areas in the RSA was also carried through to the PDC. <p>iii. A discussion of the regional impacts on the other ESAs due to the PDC is not within the scope of the assessment methodology.</p> <ul style="list-style-type: none"> • The residual impacts of changes in regional population leading to increased land or resource use of environmentally important areas under the PDC is summarized in text (page 8-116) and in Table 8.4-21 (page 8-117). • Planned projects, including the Project, will result in a higher RSA population by an average of 18% above the Application Case for the period between 2007 and 2021 (Section 8.7, Socio-Economic assessment). The population is expected to result in an increased use of ESAs and public use resources, including hunting, berry picking, fishing and recreation. The impact is moderate in magnitude, regional in geographic extent, long-term in duration and high in frequency due to the high frequency of the population’s engagement in resource use activities. The impact is reversible. The environmental consequence due to the change in population is moderate.

Topic: Resource Use		
Q #	Question	Response
142	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.	<ul style="list-style-type: none"> • See response to Question 86.
143	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).	<ul style="list-style-type: none"> • Shell recognizes this is an issue for Fort McKay. For PRM, Shell has proposed to limit access across the proposed bridge. • Shell's believes that the responsibility for providing regional and local infrastructure is with Government, both for funding and timely implementation of infrastructure requirements. Shell will work closely with regional and provincial government departments and agencies as well as industry groups to provide information with respect to Shell's current and future projects in a timely manner so as to assist infrastructure planning.
144	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).	<ul style="list-style-type: none"> • See response to Question 143.
145	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 (See Recommendation [154] in the TEK/TLU review).	<ul style="list-style-type: none"> • TLU Findings: <ul style="list-style-type: none"> – Muskeg (Kearl) Lake is a very important medicinal plant harvesting area (FMA 2008). – Important berry collecting areas are near the approved Jackpine Mine "behind the truck stop"; and near a cabin within the Fort Hills Oil Sands Project lease, on the east bank of the Athabasca River near the "Old Fort Hills", and near McClelland Lake (FMA 2008). • Shell's EIA assesses the impacts associated with loss of berry picking habitat based on mitigation provided in the EIA. • However, Shell welcomes more discussions at IRC meetings on berry picking locations and potential ways that operationally Shell might adjust its plans to provide longer access to these sites (pre-development), avoid them or adjust our reclamation plans to replace them as soon as feasible. <p>Reference: FMA (FMA Heritage Inc.). 2008. Fort McKay Traditional Knowledge Report: Jackpine Mine Expansion and Pierre River Mine Environmental Impact Assessment. Prepared for Fort McKay Industry Relations Corporation. June 2, 2008.</p>

Topic: Resource Use		
Q #	Question	Response
146	Fort McKay may want to request that the Government of Alberta consult with them regarding suitable offsets and accommodation for impacts to traditional resources (e.g., berry habitat, declining regional moose populations) and traditional land use opportunities.	<ul style="list-style-type: none">• Shell believes it has been supportive of this through funding and providing data for the Fort McKay Specific Assessment.

HISTORICAL RESOURCES ISSUES

Topic: Historical Resources Issues		
Q #	Question	Response
147	Fort McKay might wish to ask Shell to provide development schedules to archaeological consultants within an adequate time frame to effectively carry out studies prior to disturbance.	<ul style="list-style-type: none"> • Standard practice by Shell is to provide development schedules to archaeological consultants within an adequate timeframe to carry out studies prior to development. Following a Historical Resources Impact Assessment, where avoidance is not deemed possible, Shell identifies new and existing archaeological sites recommending mitigation to regulators. • All activities conform to the Historical Resources Act and Alberta Culture and Community Spirit provides guidance throughout the process.
148	Fort McKay might 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 temporarily avoided prior to resource recovery	<ul style="list-style-type: none"> • Shell includes a brief introduction to historical resources in its mine orientation. • Shell has an archaeological liaison (Ainslie Campbell) who works with Alberta Culture and Community Spirit (ACCS), First Nations and archaeological consultants to coordinate the timing and requirements of historical resources study prior to development. • All mine employees are required to stop work when coming across historical resources and notify their supervisor who in turn will notify the Shell archaeological liaison.
149	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.	<ul style="list-style-type: none"> • Listing of gravesites is conducted by the Government of Alberta (GoA) through ACCS. These sites can be listed but do not receive an identifying Borden number as they are not archaeological sites. • Shell can facilitate the process of providing geographic positioning system (GPS) data to ACCS and Fort McKay for use by ACCS who then place a buffer around the gravesite area and follow-up with the FN on how best to keep the details confidential. <p>Note: Also see TLU 162. Sites are depicted in figure at end of section.</p>
150	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.	<ul style="list-style-type: none"> • Shell will conduct the mitigation of sites HjOv 10 (PRM ETDA) and HiOt 3 (west side of JPM) as required by ACCS when the development schedule for those areas is finalized with sufficient lead time for mitigation to Historical Resource Act standards.

Topic: Traditional Knowledge and Land Use Issues

Q #	Question	Response
151	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.	<ul style="list-style-type: none"> • In order to protect the confidentiality of trapline holder information, Fort McKay First Nation Industry Relations Corporation (IRC) will need to provide Shell with written confirmation that each of the trapline holders consents to their information being released to the IRC. Alternatively, Shell can seek this consent. • Upon receiving permission from the trapline holders, Shell will provide copies of the following types of documents to the IRC: <ul style="list-style-type: none"> – Copies of audio files made during the interviews. – Annotated maps from trapper interviews. – Copies of field notes from the interviews.
152	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.	<ul style="list-style-type: none"> • FMFN notes moose, beaver, ratroot, bog cranberry, lowbush cranberry and blueberry as key species for reclamation planning. • Shell's reclamation approach does not preclude reclamation of habitat for any of these species. Moreover, Shell expects them to be part of reclamation landscape. • The FMFN/Shell Reclamation Focus Group for Shell projects is a good mechanism for communicating on reclamation progress in ensuring these species will be part of the closure landscape.
153	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.	<ul style="list-style-type: none"> • Shell's reclamation approach aligns with FMFN's desire to reclaim land for traditional purposes. Shell's intent is that FMFN will be able to undertake the same types of traditional pursuits as they do today, albeit in different locations because the reclaimed landscape will be different. • The FMFN/Shell Reclamation Focus Group for Shell projects is a good mechanism for communicating on reclamation progress in ensuring traditional activities are part of the closure landscape.
154	Fort McKay would like to collaborate with Shell to develop a mitigation and offset plan in relation to the adverse effects and loss of key cultural and traditional use areas that would be affected by the JPME and PRM.	<ul style="list-style-type: none"> • Shell welcomes ongoing discussion with Fort McKay to better understand its specific intentions and to understand what role, if any, Shell can play in assisting Fort McKay with this plan.
155	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.	Shell welcomes ongoing discussion with Fort McKay to better understand its specific intentions and to understand what role, if any, Shell can play in assisting Fort McKay with programs or strategies aimed at strengthening individual and community health.
156	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.	<ul style="list-style-type: none"> • Shell will continue ongoing consultation with affected trappers.
157	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 mines.	<ul style="list-style-type: none"> • See response to Question 143.
158	Fort McKay would like the Government of Alberta to support and include the current and	<ul style="list-style-type: none"> • Shell acknowledges Fort McKay's concern.

Topic: Traditional Knowledge and Land Use Issues		
Q #	Question	Response
	future submissions by the Community of Fort McKay in the Lower Athabasca Regional Plan.	
159	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.	<ul style="list-style-type: none"> Regional scale population and habitat monitoring studies for species of interest to the Fort McKay community should be an initiative led by Alberta Sustainable Resource Development and should fall within LUF in the LARP. Within LARP thresholds are proposed for a number of indicators which will likely include at least some species of interest to Fort McKay and monitoring programs will be set up to track those indicators relative to the thresholds. Moose surveys are being conducted by ASRD. Shell has provided support to initiatives like this in the past; e.g., moose surveys. The financial burden for regional studies must be split amongst all parties involved and not born solely by one company or industry.
160	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.	<ul style="list-style-type: none"> Shell has previously identified the Fort McKay community member gravesite at PRM and arranged a visit in 2008 to the site accompanied by a family member and the Shell archaeological consultant to determine the status of the grave. Several additional areas of the PRM were assessed based on similar stories of graves in similar locations, without result. According to trapline holder Arne Hermansen (sic) no other visible graves exist in the area. It is thought that all the stories of graves which were located in areas of similar topographic features on a map may have referred to the same burial location. It was also thought that as the burial is close to the bank of the Athabasca River that flooding events may have eroded the burial area; leaving only one grave visible.
161	Fort McKay may want to request that graves identified within the Project lease boundaries have protective fencing erected.	<ul style="list-style-type: none"> Shell is prepared to assist with the clean-up and preparation of protective fencing for those gravesites that are currently visible. Another priority is to not draw undue attention to gravesites that may then be subject to unwanted public attention. Shell will work with Fort McKay and ACCS to determine the proper protective measures.
162	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.	<ul style="list-style-type: none"> See response to Question 149.
163	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.	<ul style="list-style-type: none"> Shell values its relationship with Fort McKay and understands the importance of transparency in building and maintaining trust. Shell kicked-off its initiative to communicate monitoring results in 2010 holding sessions with Fort McKay and other key stakeholders to discuss results of 2009 monitoring and seek their input. Shell is evaluating the value of the sessions and will advise Fort McKay if the initiative will continue in 2011 and onward.
164	Fort McKay requests that the Governments of Canada and Alberta continue to support the FMSA process in future regional development applications.	<ul style="list-style-type: none"> Shell acknowledges Fort McKay's request to regulators.

Topic: Visual Aesthetics Issues		
Q #	Question	Response
165	Fort McKay may want to request that Shell comment specifically as to whether any of the proposed 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.	<ul style="list-style-type: none">• The information provided to Shell for the Fort McKay Community Assessment included visualization of JPME from a location within Fort McKay (Figure 3.3-2 and 3.3-3). Plumes will be slightly visible but no other aspects of JPME will be visible.• PRM was not assessed due to its distance from Fort McKay.• Several trappers' cabins are present in the vicinity of the Project. Due to the limited views offered by the flat landscape with forest obstructing viewpoints, they are not expected to have views of the Project. (EIA, Volume 5, Section 8.5.4.1).

Topic: Socio-Economic Impact Assessment		
Q #	Question	Response
3.2.a	<p>We recommend that Shell:</p> <ul style="list-style-type: none"> provide information to address community concerns regarding the fly-in fly-out program, air traffic volume, noise, management and safety and questions about transporting workers from the airstrip to the camp 	<p>The decision to use a fly-in/fly-out approach was based on two key considerations:</p> <ul style="list-style-type: none"> the distance of the PRM project area from Fort McMurray; and construction and operations workforce recruitment and retention challenges. <p>By providing workers with a fly-in/fly-out option, Shell is facilitating the choice workers have in residing in or outside the region. As an ancillary benefit it serves to reduce the demands on regional services and infrastructure which are currently stressed. Shell is committed to ongoing monitoring of its decision to offer fly-in/fly-out services and is open to reconsidering offering these services should they no longer be required.</p> <p>The Aerodrome has been handling, on average, 5 to 6 flights per day or 20 to 25 flights per month since it began operations in 2007. Peak utilization of the Aerodrome during the recent Jackpine expansion project, saw the Aerodrome handle 8 to 10 flights per day. Peak utilization of the Aerodrome by the JPME project is expected to be in a similar range. For the PRM project, peak utilization is expected to be slightly higher at 10 to 12 flights per day.</p> <p>The Albian Sands Aerodrome meets the regulatory requirements of the International Civil Aviation Organization (ICAO) Annex 14 and Transport Canada Canadian Aviation Regulations Part III for Airports.</p> <p>Albian has nationally certified Emergency Response Team (ERT) / Aircraft Rescue Fire Fighting (ARFF) personnel on site and manning two dedicated ARFF vehicles for all aircraft operations. The level of safety coverage is equivalent to the Calgary and Edmonton International Airports for similar aircraft.</p> <p>Construction and operations workers arriving at the Albian Sands Aerodrome will be bused to their respective camps. This reduces traffic along Highway 63, limits workers access to private vehicles and thus their impact on communities in the region, and improves safety by taking drivers off the road.</p>

Topic: Socio-Economic Impact Assessment		
Q #	Question	Response
3.2.a	Continued	<p>Re. noise management: Noise impact from the additional flights is predicted to be minimal. The additional peaks of 55 dBA is not expected to result in noise level fluctuations of sufficient magnitude to change existing noises experienced or cause sleep disturbance effects.</p> <p>Shell will be using the existing airstrip located adjacent to Jackpine Mine – Phase 1 on the Shell Albion Sands Muskeg River Mine site. Timing for these flights will be scheduled around shift changes to minimize any sleep disturbance from the flights. Approximate timing of flights will be either each morning (7:00 a.m. to 9:00 a.m.) or evening (6:00 p.m. to 8:00 p.m.), and will result in a total of 6 noise disturbances.</p> <p>In addition, during detailed design and before construction, a noise management plan will be developed for the project. The plan will follow the requirements under Section 5.1 of ERCB Directive 038. The program will incorporate commitments made in the EIA, plans for assessment updates or monitoring, as appropriate, and ERCB requirements for stakeholder involvement in the plan development.</p>
4.1.b and c	<p>We recommend that Shell:</p> <ul style="list-style-type: none"> • state how it plans to assist and work with other developers in mitigating the cumulative social and economic impacts of the project on Fort McKay; and • describe how it will work with Fort McKay so that the community benefits in an ongoing way from the projects 	<p>Shell is committed to addressing the socio-economic impacts of its projects and strengthening its relationship with the Fort McKay community by:</p> <ol style="list-style-type: none"> 1.) directly engaging the local community through various consultation initiatives; 2.) using and encouraging local business, where they are competitive and can meet Shell's requirements; 3.) providing financial and in-kind contributions to local community programs and services; 4.) participating in regional cooperation initiatives, such as the Oil Sands Developers Group (OSDG); and 5.) paying taxes and royalties that contribute to the ability of the RMWB and the province to respond to socio-economic challenges in the region.

Topic: Socio-Economic Impact Assessment		
Q #	Question	Response
4.2.d	Fort McKay may want to request that Shell express a concrete commitment to the cultural preservation of the community.	<p>Shell recognizes that oil sands development has brought cultural changes to Aboriginal peoples living in the region. Two main pathways stand out:</p> <ul style="list-style-type: none"> • Oil sands projects alter land and waterways, thus changing the places where aboriginal people can pursue traditional activities; and • Oil sands projects can play a role in a cultural shift from participation in traditional economy to a wage economy <p>These changes to the pursuit of traditional activities also affect the transmission of traditional culture, which tends to rely on cross-generation contact while on the land.</p> <p>Shell works through the OSDG Aboriginal Affairs committee and with the IRCs to determine how best to accommodate and mitigate the adverse social and cultural effects of development. Shell also supports a number of cultural retention and other initiatives, which aim at helping Aboriginal communities maintain their social cohesion and unique characteristics.</p> <p>Among these initiatives are:</p> <ul style="list-style-type: none"> • Supporting the collection of traditional ecological knowledge on medicinal plants, wildlife and spiritual and cultural sites on the traditional lands of Fort McKay First Nation, ACFN, MCFN and Shell leases prior to their development. • Supporting cultural retention programs, including Dene gatherings, Elder/Youth programs through the Fort McKay Elders Centre, language retention initiatives, traditional video documentation. • Supporting historical preservation initiatives such as the Fort Chipewyan Museum and the Cree Burn Lake Education Project. • Promoting the Quarry of Ancestors. <p>As community initiatives come forward, Shell will assist and contribute where appropriate.</p>

Topic: Socio-Economic Impact Assessment		
Q #	Question	Response
4.3.e, f and g	<p>Shell should:</p> <p>I.present a plan to address the degree of uncertainty experienced by the community in relation to future expansions, cumulative effects and reclamation;</p> <p>II.present its emergency response plan to the community and its technical advisors regarding the management of tailings and dykes, and potential breaches; and</p> <p>III.Shell and/or Alberta Environment should be required to notify or forward all Environmental Protection Order notifications to Fort McKay IRC or its designated technical representative.</p>	<p>i. Shell understands that the community is concerned about the uncertainty of future expansions, cumulative effects and reclamation. At this time, the plans presented in the EIA encompass all that Shell contemplates. While Shell occupies other leases in the area, its future expansion plans and the associated cumulative impacts and reclamation plans are fully explored in the EIA as known to date.</p> <p>ii. Shell is willing to discuss its Emergency Response Plans with the community. The management of tailings and dykes are in accordance with Alberta Environment legislation.</p> <p>iii. Shell is currently reviewing FMFN's request to share Environmental non-compliance incidents outside of the annual Environmental Monitoring reports. FMFN should contact Alberta Environment if it wants the GoA to forward Environmental Protection Order notifications to FMFN.</p>
4.4.h and i	<p>Fort McKay may want to request that Shell identify strategies to:</p> <p>I.develop programs for increased employment and advancement of Fort McKay residents; and</p> <p>II.provide information on the success of its education, training, and career development and promotion initiatives as they relate to Fort McKay residents on a regular basis.</p>	<p>i. Shell welcomes ongoing discussion with Fort McKay to better understand its intentions with respect to the employment of Fort McKay residents.</p> <p>ii. Diversity and inclusion in the workforce is important to Shell and currently an area of focus. Shell has a Diveristy Recruiter in Calgary and an Aboriginal Recruiter at Albion Sands. Shell is willing to meet with Ft McKay to discuss initiatives and opportunities in these areas.</p>

Topic: Socio-Economic Impact Assessment		
Q #	Question	Response
4.5 j,k,l,m,n and o	<p>Fort McKay may want to request that Shell articulate plans to:</p> <p>I. retain within their industrial development protected land that may still be accessible to the community;</p> <p>II. reclaim disturbed land to a diversity and capability commensurate with its pre-disturbed state and with an equivalent capability to support all of the resources that existed on the land prior to disturbance including the re-establishment of productive and healthy plant and animal environment, both on the land and in the water at a faster pace;</p> <p>III. provide conditions that allow resources stressed by industrial development to recover to their previous health and productivity through planning and protection of wildlife populations (e.g. access management; improved technology to minimize impacts on plant and animal communities) and human health;</p> <p>IV. provide alternate and equivalent hunting, fishing, trapping and cultural resources and opportunities when traditionally used resources are lost due to development; and</p> <p>V. present to the community and its technical advisors results and plans for reclamation.</p>	<p>i. Shell supports the development of protected areas in the RMWB that is consistent with Shell's Biodiversity Standards and Strategy. Shell supported the intent of the Terrestrial Ecosystems Management Framework including no sale of further leases on designated areas until 2011(05/06/08). Shell concerns included:</p> <ul style="list-style-type: none"> • Restrictions of rights for existing lease holders. • Lack of agreement on portion of lands to be designated as protected. • Speed of reclamation requirements – Shell is working diligently but cannot commit to faster rates. • Conceptual nature of plan – Shell would suggest that a more detailed plan is required. <p>AENV has not adopted this proposed framework, but is reported to be managing this through its pending Land Use Framework.</p> <p>ii. Shell is committed to achieving equivalent capability in reclaimed areas, but this may not result in identical end land uses and therefore may not be the same as pre-disturbance conditions. Shell supports pace of reclamation activities as described in the responses to 69, 128 and 138</p> <p>iii. See answer to Q 137.</p> <p>iv. Shell welcomes ongoing discussion with Fort McKay with respect to the potential loss of traditionally used resources resulting from industrial development and what role, if any, Shell might play in assisting Fort McKay in identifying alternate and equivalent hunting, fishing, trapping and cultural resources and opportunities.</p> <p>v. Closure and reclamation committees are already in negotiation with Ft McKay to discuss reclamation plans, environmental reporting results and monitoring.</p>

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	<p>The Government of Alberta should:</p> <ul style="list-style-type: none"> implement with Fort McKay a protected areas strategy. 	<p>Shell provided support of the intent of the Terrestrial Ecosystems Management Framework including no sale of further leases on designated areas until 2011(05/06/08)</p> <p>Concerns:</p> <ul style="list-style-type: none"> - Don't want restrictions for rights of existing lease holders - Want more agreement on % of lands to be designated as protected - Speed of reclamation is difficult – Shell is working diligently but cannot commit to faster rates - Want more detailed plan – submission is conceptual <p>AENV has not adopted this, but is managing through Land Use Framework (LUF)</p> <p>Shell supports the development of protected areas in the RMWB that is consistent with Shell's Biodiversity Standards and Strategy</p>
4.6 p	<p>Fort McKay may want to request that Shell:</p> <ul style="list-style-type: none"> provide operational funding for the Elders/Day Care Centre for the next 10 years. 	<p>Shell welcomes ongoing discussion with Fort McKay to better understand its intentions with respect to operational funding for the Elders/Day Care Centre and what role, if any, Shell can play in assisting Fort McKay with their plans.</p>
4.7 q	<p>Fort McKay may want to request that Shell:</p> <ul style="list-style-type: none"> contribute to the continuation of Fort McKay's cultural heritage assessment and monitoring. 	<p>Shell welcomes ongoing discussion with Fort McKay to better understand its intentions with respect to the continuation of Fort McKay's cultural heritage assessment and monitoring and what role, if any, Shell can play in assisting Fort McKay with their plans.</p>
4.8 r	<p>Fort McKay may want to request that Shell:</p> <ul style="list-style-type: none"> contribute sufficient resources (financial, manpower and political) to assist Fort McKay in addressing longstanding issues such as Métis housing, access management plans, and strengthening community resilience. 	<p>Shell welcomes ongoing discussion with Fort McKay to better understand its intentions with respect to addressing longstanding issues such as Métis housing, access management plans, and strengthening community resilience and what role, if any, Shell can play in assisting Fort McKay with their plans.</p>

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4.9 s,t,u	<p>Fort McKay may want to request that Shell:</p> <ul style="list-style-type: none"> • continue to support community educational programs such E-Learning; • contribute to funding toward ongoing development and monitoring of cultural indicators and a program for cultural retention; and • provide additional funding to educational and social skills programs 	<p>Shell welcomes ongoing discussion with Fort McKay to better understand its intentions with respect to educational programs such E-Learning, social skills programs , ongoing development and monitoring of cultural indicators and a program for cultural retention, and what role, if any, Shell can play in assisting Fort McKay with their plans.</p>
4.10 v,w	<p>Shell should:</p> <ol style="list-style-type: none"> I. proceed with development of mutual aid agreements and provide the community with information regarding eligibility, access and provision of such services to the community. II. renew their commitment to enhanced policing in Fort McKay for an additional three year period 	<ol style="list-style-type: none"> I. Shell has an existing Mutual Aid Agreement in place with the Regional Municipality of Wood Buffalo providing: <ul style="list-style-type: none"> – advanced life support and ambulance support to Fort McKay, including transfers to Fort McMurray Hospital. – response to motor vehicle accidents on Highway 63 and – response to forest fire threats to Fort McKay. <p>The Fort McMurray Fire Dept is responsible for responding in keeping with the Mutual Aid agreement. Over the past several years they have successfully responded to several incidents. The Fort McMurray Fire Dept has a mobile training facility which is used to train firefighters in rural communities. Shell's contribution to the Mutual Aid Agreement supports this cause.</p> II. Shell recognizes the enhanced policing service as beneficial to industry and to the community and supports the programs continuance.
4.11 x	<p>Fort McKay may want to request that Shell:</p> <ul style="list-style-type: none"> • maintain its current commitments to the community and support identified emerging issues and needs. 	<p>Shell welcomes ongoing discussion with Fort McKay to better understand its intentions with respect to maintaining its current commitments with Shell to the community and supporting identified emerging issues and needs, and what role, if any, Shell can play in assisting Fort McKay with their plans.</p>
4.12 y	<p>Fort McKay may want to request that Shell:</p> <ul style="list-style-type: none"> • provide support to strengthen the administrative capacity of the Fort McKay First Nation and the Métis Local #63 	<p>Shell welcomes ongoing discussion with Fort McKay to better understand its intentions with respect to strengthening the administrative capacity of the Fort McKay First Nation and the Métis Local #63, and what role, if any, Shell can play in assisting Fort McKay with their plans.</p>