

## Fort McKay Technical Review – Day 1

Date: March 23, 2010  
Location: Calgary Place

### Attendance

<u>Name</u>	<u>Organization</u>
Ron Bothe	Fort McKay
John Dennis	Fort McKay IRC
Lisa Schaldemose	Fort McKay IRC
David Spink	Fort McKay IRC (Air & Noise)
Marie Lagimodiere	Fort McKay IRC (Regulatory)
Doug Geller	Fort McKay/Summit (GW)
Brenda Miskimmin	Fort McKay/Summit
Femi Ade	Golder
Jerry Vandenberg	Golder
Jody Berry	Golder
Kasey Clipperton	Golder
Michelle Barrett	Golder
Tammy Rosner	Golder
Wayne Speller	Golder
Greg Unrau	Golder (Air & Noise)
Candace Bell	Golder (Air)
Bart Koppe	Intrinsic (Health)
Bill Kovach	Shell
Don Crowe	Shell
Heather Taylor	Shell
Janet Noble	Shell
Jason Plamondon	Shell
Jeremy Hrdlicka	Shell
Linda Jefferson	Shell
Linda McNabb	Shell
Margwyn Zacaruk	Shell
Rick Courtney	Shell
Vivienne Wilson	Shell
João Küpper	Worley Parsons

### Topic: Noise (Questions 3 – 6)

#### Shell Presenters:

Bill Kovach, EIA Coordinator, Shell Canada  
Wayne Speller, EIA Project Director, Golder Associates Ltd.

## Key FMFN Concerns and Shell's Response:

- Development of Permissible Sound Levels (PSLs) used in the assessment.
  - Compliance at the 1.5 km boundary indicates that noise contributions from Shell operations at the receptors outside that boundary will be compliant.
- Shell commit to conducting noise surveys in Fort McKay and three cabins during project construction and operation
  - The baseline program monitored noise levels at the cabins ranging 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 Shell believes no adjustment was required.
- Shell provide additional details on noise mitigation plans for Pierre River Mine
  - 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:
    - 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).

## Discussion Summary

FMFN advised Shell that community members frequently raise noise as an issue. Much of the development occurs in high use areas of FMFN traditional lands (i.e. their backyard). FMFN understands that when you have development, you get noise. However, the idea is to minimize the amount of noise. AUC Rule 12 deals with this relatively well. PRM however is a pristine area (i.e. there are no other noise sources). FMFN believes 40 dBA is probably too high in this type of area even though it is following the ERCB directive. Lower permissible sound levels will drive companies to mitigate impacts. FMFN would like to see best practices employed, not just the regulatory requirement.

Shell suggested this was good clarification. Shell does not want noise to be an issue. Shell will continue to follow the directive and manage to 1.5 km. Shell will work with those affected to ensure that no harm is done. Community buy-in is something Shell will take under consideration.

FMFN noted that with increasing activity in the traditional lands that there has been incremental increase in base sound levels over time FMFN suggested that while Shell spends a lot of time assessing noise impacts prior to development of a project, Shell should go out after the mine is operational to periodically test actual sound levels confirming they are as good or better than those suggested in the assessment. FMFN suggested a little community involvement goes a long way and recommended that Shell

take people out on the land and demonstrate that Shell is within limits and that all is good.

Shell noted that FMFN is reasonable in this request. Shell believes D38 makes sure that the community will be a part of the plan.

FMFN advised they have raised this issue with the AUC and both projects would apply because of the co-generation units. Rule 12 has not been finalized yet.

### **Key Issues Identified**

1. Allowable noise limits
2. Need to test assumptions made in assessments post development

### **Actions / Follow up**

- None
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### **Topic: Air (Questions 7 – 31)**

#### **Shell Presenters:**

Bill Kovach, EIA Coordinator, Shell Canada  
Greg Unrau, Senior Meteorologist, Golder Associates Ltd.  
Candace Bell, Air Quality Meteorologist, Golder Associates Ltd.

#### **Key FMFN Concerns and Shell's Response:**

- Fort McKay suggests their air quality criteria be adopted and considered in future oil sands project EIAs for the assessment of air quality impacts on the Community of Fort McKay
  - Shell is an active participant in regional air quality management initiatives:
    - AENV Regional Sustainable Development Strategy.
    - Cumulative Environmental Management Association (CEMA).
    - Wood Buffalo Environmental Association (WBEA).
- Fort McKay recommends that a regional odour management strategy be developed prior to the approval of any more projects
  - Shell has programs in place to respond to external odour complaints
- It is recommended that air quality criteria for assessing vegetation impacts in Fort McKay's Traditional Lands in the RMWB region be established and standardized, in consultation with Fort McKay
  - Shell will meet requirements of the Acidification Management Framework and the Trace Metals Management Framework, both of CEMA, as well as the Clean Air Strategic Alliance's (CASA) PM<sub>2.5</sub> management framework

- Fort McKay recommends that the regulators require, and Shell commit to, more stringent NO<sub>x</sub> emission control measures to minimize project emissions that would contribute to nitrogen deposition in the region
  - Shell has proposed a number of management systems and mitigation measures as part of the project to reduce air emissions

## **Discussion Summary**

FMFN and Shell started with a general discussion of air quality and its importance to FMFN.

FMFN noted that Regional Groups that look at air-related issues exist and, in general, do a good job. Regarding groups and group participation, FMFN felt that Shell's commitment and effort to date is appreciated and trusted Shell will continue to be a leader in these regional groups.

FMFN noted the importance of continuing efforts aimed at better understanding of potential eutrophication effects. FMFN asked for Shell's ongoing support of key air quality related initiatives, like that for eutrophication, in regional groups.

Shell acknowledged the importance of regional groups to address cumulative effects in the region. Shell confirmed its support of these regional processes, but advised that it is currently evaluating its participation in these groups to ensure its participation is appropriate and provides value.

### ***Air Quality Criteria***

FMFN urged Shell to review its Healing the Earth Strategy (HTES) to understand how FMFN would like to manage the resources in its traditional lands. With regard to air quality, they noted that the HTES suggests what they believe to be the appropriate level of air quality in the region.

FMFN continued with a discussion of the importance of managing regional odour levels. FMFN noted this as a key community concern and a quality of life issue. FMFN urged Shell and other operators to provide better information to the community and to develop an odour management strategy.

#7. Parties agreed that this was addressed earlier in the discussion.

### ***Air Quality Monitoring***

#8. FMFN noted the importance of tracking of regional air quality against meaningful thresholds, suggesting that WBEA would be a logical forum to address this issue. FMFN advised that this would be also captured in their Healing the Earth Strategy in the Air Quality section (criteria / thresholds). FMFN advised Shell that it would be interested

in discussions with industry regarding the trajectory of predicted emissions and the intersection with threshold criteria defined by the community strategy.

### ***Impact Classification***

#9. Parties discussed specific impact criteria. FMFN argued that the 'negligible magnitude' of a near exceedance of the AAAQO makes no sense (e.g. if levels increased to maximum concentration but still within AAAQO, air quality similar to that of Mexico City).

Shell advised FMFN that this was reviewed and the approach used in the EIA is appropriate. However, if the results of the impact classification were changed as Fort McKay suggested, it would make no difference to the EIA results. Shell also explained the margin of safety built into the AAAQO criteria.

FMFN suggested that it was important that criteria are aligned with community need, which is why the Community Specific Assessment was initiated. FMFN suggest that collective agreement is needed on the magnitude of criteria.

Shell reassured FMFN that they were aware of the issue regarding different guidelines and that there is a concerted effort to focus on the most supported guideline and that Shell focuses specifically on human health as a priority.

### ***Odour***

#10. FMFN noted that it would prefer that Shell utilize World Health Organization (WHO) odour thresholds, which are much lower than Shell used in its EIA. The high odour thresholds used by Shell in the EIA result in under prediction of occurrences of observable odour in the community and this conflicts with community observations.

FMFN noted that it wants to ensure design changes are implemented across the board to reduce the potential for odours (e.g., FMFN canister program seeks to obtain the information necessary), but they require also full support and disclosure from all operators to make it successful. (Currently FMFN is working with Shell's at site on this initiative.)

Shell advised that the EIA predicts impacts are based on normal operation, therefore changing odour thresholds would have little effect on predicted results since under normal operating conditions, the change in odour due to Shell's project would be minimal.

FMFN is looking for realism in EIA results in order to focus efforts and build community trust. This will allow for the identification of appropriate mitigation (e.g. Selective Catalytic Converters vs. Vapour Recovery Units). FMFN community support is difficult to obtain if proponents are saying things that don't reflect community experience (i.e. air quality models predict no odours but the community is often complaining about odours).

The community will be more accepting of realistic outcomes and more willing to work with industry if predictions are not contrary to what they are experiencing.

#11/12. Parties agreed that these questions were addressed earlier in the discussion.

### ***Ozone***

#13. FMFN noted that the EIA underpredicts ozone related impacts and suggested Shell should look at most recent information (e.g. the Environment Canada Ozone monitoring in 2005/2006).

### ***Standardized Approaches to Air Emission Estimation***

#14. FMFN believes emissions inventories are the biggest headache in modeling. Area sources are seen as a big issue (e.g. Using 12 year old data). There is a need for new monitoring data. FMFN would like cooperation from industry in providing new data sources on emissions. While not all companies would have to provide all their data, at least something would be good (e.g. tailings ponds, mine faces etc). This information could be given to modellers.

### ***Emission Verification***

#15/16. Parties agreed that this was addressed earlier in the discussion (acknowledged Shell involved in WBEA).

### ***Alternative Fuel Source***

#17. FMFN asked for clarification on an aspect of the asphaltene-fired cogeneration emissions basis, acknowledging there is no larger concern.

#18. FMFN advised it is directing its concerns related to a potential shift to alternative fuels at the regulator to ensure companies are using best methods.

### ***Treatment of JPM1 in Air Assessment***

#19. FMFN acknowledged it was making a point and recognized that while they can say to companies that they should do 'X' companies will continue to say they will not do 'X'.

### ***NO<sub>x</sub> Controls***

#20. There was a general discussion concerning cogeneration.

### ***Multi-stakeholder Group Support***

#21. Parties agreed that this was addressed earlier in the discussion.

## ***Ammonia***

#22/23. FMFN raised a potential emerging issue related to ambient ammonia concentrations (due either to natural or industrial sources) noting that monitoring is finding higher ammonia levels than would be assumed and that these levels may be a yet-to-be quantified significant source of nitrogen deposition in the region. Trent University study was cited as suggesting deposition rates as high as 5-10 tonnes/day.

Shell acknowledged the FMFN concern but noted that ammonia is very small for the Shell project. Shell confirmed that it would continue to cooperate in relevant regional activities through participation in CEMA and WBEA.

All parties agree there is a need to get to the bottom of the issue to accurately assess nitrogen deposition. It was noted that this is being addressed through CEMA's NO<sub>x</sub>-SO<sub>2</sub> Management Working Group.

It was also noted that the biggest point sources of ammonia emissions are anticipated to be related to emissions controls on some units.

## ***Model Accuracy***

#24. FMFN noted it would like to see efforts to determine what would improve models and get that information to do so (i.e. what 2 or 3 things could we do to better inform models?). FMFN recognize that steps have been taken, however, they feel Shell needs to continue.

Shell agreed noting its support through participation in multi-stakeholder groups.

## ***Emission Control***

#25/26. Parties agreed that this was addressed earlier in the discussion.

#27. FMFN noted concern Shell compliance with AENV's Policy 2 and work towards its performance targets.

Shell noted that while there is a timing issue regarding the EIA submission and the release of Policy 2, Shell still believes that it complies. Regardless, Shell will adjust its plans, as necessary, to comply with Policy 2.

#28. FMFN believes there is a need for Shell to be a leader in managing air emissions noting that this is in keeping with Shell policy. Understanding the business competitive issue, FMFN feel Shell should continue to lead where it can.

Shell reiterated the need to remain competitive and the need to ensure a level playing field for all industry.

## ***Multi-stakeholder Groups***

#29. FMFN is concerned with Oil Sands Developers Group (OSDG) making budget decisions for various multi-stakeholder groups (e.g. CEMA, WBEA), through industry collaboration at the OSDG forums. FMFN feels that programs and budgets should be supported by companies individually and don't want specific program or budget decisions to lie with OSDG, rather the companies should voice support for key projects.

Shell advised that budgets have to be prioritized on a regional scale but that specific project support decisions needs to come from regional groups rather than individual companies.

FMFN wants improved transparency respecting the specific programs or projects individual companies support.

Shell inquired regarding the current budgeting and planning process.

FMFN advised work plans are made by each regional group and then sent up to OSDG for board decisions on budget funding.

#30. Parties agreed that this was addressed earlier in the discussion.

## ***Air Monitoring Station***

#31. FMFN suggested Shell provide a continuous air quality monitoring station between PRM and the community of Fort McKay

Shell suggested that CNRL's station could be considered an "attribution" station for PRM, but suggested it would work with regulators, as required, to define a suitable location for a station.

## **Key Issues Identified**

1. A need for critical levels criteria on some air quality components for effects on vegetation
  - There is a need for a critical mass of stakeholders to agree and progress this need (e.g. Shell commitment to support through this project)
  - Opportunity for Shell to utilize WHO standards rather than AAAQOs
    - Difference between a prediction of little effect vs. significant effect
2. FMFN want Shell support for their Healing The Earth Strategy
  - e.g. Support what FMFN defines as acceptable air quality levels
  - FMFN wants Shell commitment
3. FMFN is supportive of Shell's high standard of pollution control on proposed asphaltene co-generation units
  - FMFN will push hard for selective catalytic conversion technology on all large emissions sources.
4. FMFN is very concerned about odours in the community

- FMFN recognizes that Shell is likely not a big contributor, however a collective strategy to address the issue is required.
  - FMFN feels its recommendations on odour mitigation are appropriate.
5. Regarding FMFN's Healing The Earth Strategy, Shell advised that they are willing to do what they can, however Shell requires help and cannot always be on the front line as it impacts competitiveness.
- Shell advised FMFN that they appreciate hearing that FMFN intends to pressure the regulator on issues since this will allow Shell to remain competitive when all operators are held to the same standard.

### **Actions / Follow up**

- None
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## **Topic: Water Quality and Aquatic Health (Questions 49 – 59)**

### **Shell Presenters:**

Bill Kovach – EIA Coordinator, Shell Canada Energy  
 Jerry Vandenberg – Water Quality Specialist, Golder Associates Ltd.  
 Jody Berry – Environmental Risk Assessor, Golder Associates Ltd.

### **Key FMFN Concerns and Shell's Response:**

- Rather than using Species Sensitivity Distribution (SSD) -derived benchmarks that have not been critically reviewed, use Canadian Council of Ministers of the Environment (CCME) or AENV guidelines where they exist and/or consider utilizing aquatic toxicity reference values (TRVs) that are used by U.S. Environmental Protection Agency (USEPA) for ecological risk assessments
  - Surface water quality guidelines (e.g., AENV, CCME, USEPA) were included in the first level of screening to identify substances of potential concern (SOPCs)
  - The SSD approach has been critically reviewed and adopted by the CCME for deriving guidelines.
- Describe how Kearl Lake's particulate deposition will be augmented with increased flows
  - The higher flows into Kearl Lake due to operational diversions are comprised of runoff from undisturbed areas. At closure, the upstream pit lake is likely to reduce, rather than increase, sediment loading to Kearl Lake.
- Describe how the Kearl Lake berm may be adjusted to expose more natural shoreline and permit traditional uses to continue.
  - Adjustments to Kearl Lake levee placement may be possible to improve protection of traditional use areas

- 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.
  - Peer-reviewed research indicates that pit lakes will develop into viable ecosystems capable of supporting aquatic life and Shell supports continuing research into pit lake design and performance

## **Discussion Summary**

### ***Appropriateness of Approach***

#49. FMFN noted its concern with Shell's approach to aquatic health assessment suggesting critically reviewed guidelines should have been used. FMFN acknowledged that the use of Species Sensitivity Distribution (SSD) is better than chronic effects benchmarks (CEBs) and they understand their value, but would like to see Shell's approach to using SSD, suggesting SSD approach should include factor of safety.

Shell confirmed that where there are published guidelines, they are used. Where published guidelines are not available, Shell employs SSD, which uses species found in the oil sands area. Shell pointed to Appendix 4-2 for its approach.

FMFN asked why Shell used CEBs when guidelines were available.

Shell responded that it was because CEBs are specific to species in the region and that for many substances, guidelines are not available.

FMFN noted that they felt guidelines are better as they encompass many northern Alberta species. They further asked about the potential additive impact of mixtures of contaminants on aquatic health.

Shell suggested the problem with measuring toxicity of mixtures is that no guidelines exist. Shell questioned how this could be measured.

Shell suggested that where mixtures can be grouped by a common mode of action, we assess them.

FMFN suggested Shell just write about mixtures and acknowledge it instead of writing it off as negligible. FMFN asked Shell if they did a whole effluent toxicity test.

Shell confirmed a whole effluent toxicity test was done.

FMFN requested to see it.

# 50. FMFN noted concern with mercury levels in fish.

Shell noted it reviewed mercury concentrations from Regional Aquatic Monitoring Program (RAMP) samples over a 10 year duration. The RAMP data indicate that mercury concentrations will be different based on trophic levels (i.e. walleye [0.359 mg/kg ww] have greater concentrations compared to whitefish [0.089 mg/kg ww]). Shell explained that the previous 10 years of data have not shown an increase in mercury in the currently monitored trophic levels.

FMFN advised walleye came in lower. Methyl mercury is accumulated through the food chain. FMFN suggested the bioaccumulation factor (BAF) did not take into account fish eating fish. Results should be at least about what they are now. FMFN questioned if Shell expects mercury in tissue to increase?

Shell advised that some increase of mercury in fish tissues is expected. However, a BAF (fish to fish) which predicts methyl mercury by trophic level would require a more robust WQ and tissue database than currently exists in the region. Therefore, a BCF (water to fish) was developed for the greatest trophic level (i.e. walleye). The BCF approach predicts that mercury concentrations in fish could increase very slightly in the future.

FMFN suggested they were not sure where this is addressed in the EIA.

Shell advised that the effects of mercury in fish on humans was assessed as part of the human health risk assessment. The effects of mercury concentrations to fish health were assessed as part of the aquatic health assessment.

FMFN requested Shell send the location as to where. FMFN suggest that if you don't have information to do with bioconcentration factors (BCFs) versus BAFs, it is not worth it.

Shell questioned why a BAF is appropriate for a single proponent to complete? Mercury is not emitted by the project and is a regional, not project-specific, problem. Shell suggested that a methodology has to be adopted to collect more regional information to inform predictions. Multiple proponents need to support/develop a BAF model to assess methyl mercury in the aquatic food chain.

FMFN questioned if we know the models are lacking and everyone needs to do these assessments, why is the Regional Aquatics Monitoring Program (RAMP) not addressing this? How should we go ahead after an application is approved with comfort that assumptions are validated?

Shell suggested this is done through monitoring. This is where the loop has to be tighter.

FMFN suggested that there is not a lot of confidence with the models in the community.

Shell acknowledged the need to be very clear where there are shortcomings in a model. These need to be validated to see how accurate they are.

#51. FMFN questioned the notion of negligible impacts to aquatic biota given predicted increases of some substances, noting a number of predicted guideline exceedences.

Shell suggested this goes back to the argument of guidelines versus CEBs for mixtures and further suggested each one is just one piece of the larger weight of evidence approach that Shell used. Shell advised it identifies compounds that exceed background but not guidelines.

FMFN asked what would it take to make an effect more than negligible? FMFN noted its concerns that it always sees EIAs where everything is negligible.

Shell advised that there is mitigation in place and that EIAs assess effects based on mitigation in place, which is why it is usually negligible.

FMFN asked what if the effect is something which cannot be easily assessed like abnormalities in fish? Abnormalities in fish are a cumulative health effects issue that industry and the government have to address. FMFN suggested that community members would not hand in an abnormal fish, so that is not a good proxy for what is really going on.

Shell suggested they believe that the EIA gives a conservative view of what could happen and Shell does not believe that there are health effects. Shell and Golder have taken a very conservative approach to the EIA assessment. Shell advised that management frameworks are really about cumulative effects. (6-5.18) Shell asked FMFN if when they read our assessment, do they believe that Shell is going to do harm?

FMFN answered that it looks as though Shell/Golder has adjusted the information to get a different result. FMFN feels the summary statements made are too sweeping and too cheery. In order to gain some confidence in them, Shell/Golder need to show some humility in the statements. FMFN suggested they are concerned that if you don't see something as a concern it won't be a trigger for future monitoring.

Shell advised that when monitoring is recommended, a monitoring program is recommended that covers the suite of what was modelled.

### ***Constructed Wetlands***

#52. FMFN asked if there was any new information on mapped areas for constructed wetlands.

Shell advised that it was in the Closure section of the Application. Specifically, figures are in Appendices 4-3 (Figure 2) and 4-4 (Figure 3), and designs are in Appendices 4-3 (Section 4.4) and 4-4 (Section 4.3) .

FMFN asked if Shell plans to measure total and dissolved metals.

Shell responded they will send reference on where information exists (Water Quality Environmental Setting Report)

### ***Kearl Lake***

#53. FMFN advised that Kearl Lake is an issue for the community but the bigger issue is access to the lake. FMFN advised that they have asked companies on the east side of Fort McKay for an eastside corridor agreement.

### ***Pit Lakes***

#54/55. FMFN suggested that with regard to pit lakes, there seems to be little research on sediment interactions. FMFN do not see these as being very healthy ecosystems and think that it would be a stretch to say otherwise. FMFN feel there is a need to address the ecosystem as a whole.

FMFN does not want to see any legacy MFT and prefer not to see any tailings ponds. FMFN feel pit lakes are not a viable lake that they can fish and practice traditional activities in. FMFN expect Shell will keep working on how to get rid of tailings.

### ***Catastrophic Failure***

#56. Nothing recorded.

### ***Muskeg River Watershed***

#57. Nothing recorded.

### ***Eymundson Sinkholes***

#58. FMFN questioned why Shell did not offer mitigation for loss of the Eymundson Sinkholes

Shell noted that it did not find anything environmentally or geologically significant about the sinkholes suggesting mitigation beyond that noted in the Closure, Conservation and Reclamation Plan for the whole of Pierre River Mine.

FMFN asked if when there is an environmental sensitive area, is there no protection?

Shell suggested that It depends on the type and zone. Shell asked if FMFN believe that we are missing something with the sinkholes?

FMFN suggested they were not certain as to whether or not there are a lot of them. FMFN suggested the sinkholes are in clusters and they aren't common (karst lakes). FMFN is not sure of the traditional use of them. FMFN picked up on them because they are found in environmentally sensitive areas.

### ***Laboratory Selection – Sample Analysis***

#59. Nothing recorded.

### **Key Issues Identified**

1. Toxicity impacts of mixtures
2. Inappropriate modeling
3. Health of pit lakes as an ecosystem

### **Actions / Follow up**

- Shell to provide whole effluent toxicity test results to FMFN
  - Shell to provide to FMFN the location within the Health Risk Assessment where reference to increases in mercury levels in fish tissue can be found.
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## **Topic: Fish and Fish Habitat (Questions 60 - 66)**

### **Shell Presenters:**

Bill Kovach, EIA Coordinator, Shell Canada  
Rick Courtney – Environmental Specialist, Shell Canada  
Kasey Clipperton, Golder Associates Ltd.

### **Key FMFN Concerns and Shell's Response:**

- Fort McKay has concerns about Muskeg River, Muskeg Creek and Kearn Lake:
  - In the Jackpine Mine – Phase 1 (JPM1) Application, Muskeg Creek was completely realigned and the HADD for the impact was assigned to JPM1 and habitat compensation was required.
  - In the new application, Muskeg Creek on Ft. McKay land is left in place to support the high quality habitat on the Ft. McKay land and to support the Compensation Lake just downstream of Ft. McKay land.
  - Natural levels of fish passage to Kearn Lake will be maintained. Studies to evaluate fish natural passage in Muskeg Creek began in 2009.

- Shell has proposed mining upper reaches of Muskeg River for decision at the Joint Panel.
- Fort McKay has concerns about suitability of fish for consumption:
  - There are extensive monitoring programs in place by RAMP, AENV and Shell.
  - Shell is proposing methyl mercury monitoring in its compensation lake.
- Fort McKay has concerns about lost fishing opportunities:
  - Compensation habitat will provide better fishing opportunities than the habitat it replaces.
  - Compensation habitat provided would produce more fish suitable for fishing than the habitat it replaces. The delay in compensation is considered by DFO and additional permanent compensation is required to make up for the temporary delay.
  - Fish habitat, including small streams will be created on the reclaimed landscape as well, but Shell receives no credit for that habitat.
- Fort McKay would like involvement in monitoring, planning, approvals:
  - Are routinely involved in Shell's No Net Loss Plan, Monitoring Plan
  - Approvals are the responsibility of the Regulators

## **Discussion Summary**

### **Fish Passage**

#60. FMFN noted concern with the proposed pipeline connecting Muskeg River to Kearl Lake.

Shell stated that the natural level of fish passage would be maintained to Kearl Lake. Shell advised that the current monitoring program will define the baseline fish passage. That data will be used to set management objectives for transporting fish to Kearl Lake. By 2017, Shell should have a good idea of the kinds of species that use Muskeg Creek in various conditions as well as the kinds of fish that are in Kearl Lake. As for Muskeg Creek, habitat losses were accounted for in the Jackpine Mine – Phase I compensation plan.

FMFN noted its general concern with lost fishing opportunities for community members.

Shell acknowledged that this concern was raised before in past No Net Loss Plan (NNLP) meetings, and suggested that fish will be present in the river and streams on the reclaimed landscape. Shell further acknowledged FMFN's repeatedly voiced concerns regarding release of methyl-mercury and potential contaminants from the compensation lake. Shell advised that it will be conducting monitoring and that that methyl-mercury will be included in Shell's (and RAMP's) fish tissue monitoring programs.

### ***Use of Toxicological Benchmarks & Sublethal Effects***

#61/62. Nothing recorded.

### ***Lost Fishing Opportunities***

#63. FMFN asked Shell about the loss of fishing opportunities and how Shell would account for this. FMFN advised that, from their perspective, they are looking for Shell to develop a fishing opportunity plan that would allow the first nations group to continue to use the river to fish and also allow the traditional people to remain connected to their way of life. FMFN asked how community members could continue to fish at Muskeg River, Ells River and Moose Lake while mining and development is going on. FMFN stated that DFO doesn't compensate for the loss of this traditional activity. The proposed Fishing Opportunities Management Plan would include input from Shell, traditional people and other first nation groups. FMFN continued this discussion by stating that FMFN's Healing The Earth Strategy discusses this topic further with the goal to retain, navigate and strengthen the traditional life style.

Shell acknowledged FMFN's comment noting that compensation habitat requirements have ratios greater than 1 unit of compensation habitat to 1 unit of disturbed habitat, in part, to accommodate temporary loss of fishing opportunities between the time a compensation lake is first constructed and when it is ready to be fished. However, Shell noted it understands the concern and is something that can be discussed further during future benefit agreement negotiations.

### ***Role of FMFN in Habitat Compensation Planning***

#64. FMFN requested that they be included in the fish and fish habitat discussion, especially, when looking at the Arctic grayling, due to the increased habitat losses and increased fishing.

Shell stated that there is an opportunity to put in Habitat Units for grayling habitat lost to the project. Shell suggested that FMFN has been consulted on the compensation habitat design and also routinely involved in Shell's No Net Loss and monitoring plans. Shell suggested that further discussion could take place to see if input can be added to Shell's NNLP.

### ***River Setbacks***

#65. FMFN asked what Shell's options for river offsets looked like.

Shell responded that there is a 100 m setback for Muskeg River and Jackpine Creek, except for where Shell had linear disturbances across (i.e. perpendicular to) the streams. Setback distance of 250 m was also established for the Athabasca River.

### ***Benthic Invertebrates***

#66. FMFN noted concern about Shell's assessment of negligible impact for benthic invertebrate drift.

Shell stated that the temporary reduction in available drift would have negligible impact on the available food resources in the Athabasca River because the total drift in the lower Athabasca River is much higher than the contributions from the smaller tributaries. The drift tributaries on average are between 0.5-3.4 bugs/m<sup>3</sup>. In addition, any reduction to benthic invertebrate populations or invertebrate drift is anticipated to be short-term and localized. Benthic invertebrate populations have been documented to recover to pre-disturbance conditions in as little as 1.5 years.

FMFN replied that during these durations, there must be some sort of cumulative effects on the tributaries moving, because there are multiple projects affecting invertebrates at times.

Shell replied that the flow reconnects with the Athabasca River and the diversion channels will colonize with the invertebrates. The closure channel will be designed to be a natural habitat and will support natural communities of benthic invertebrates.

### **Key Issues Identified**

1. Maintenance of natural levels of fish passage to Kearn Lake.
2. Methyl mercury monitoring
3. Fishing opportunities losses - development of a Fishing Opportunities Management Plan
4. More involvement in fish and fish habitat discussions - Arctic grayling
5. Production of benthic invertebrate drift from tributaries to the Athabasca River

### **Actions / Follow up**

- None
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### **Topic: Surface Water (Questions 39 - 48)**

#### **Shell Presenters:**

Bill Kovach – EIA Coordinator, Shell Canada  
Femi Ade – Senior Water Resources Engineer, Golder Associates Ltd.

#### **Key FMFN Concerns and Shell's Response:**

- Shell should provide an annual breakdown of their existing Athabasca River *Water Act* license per mine site and comment on the adequacy of their proposed water storage capacities
  - Shell has assessed its water needs based on anticipated water balances
  - Shell will comply with the Phase 2 Athabasca River Water Management Framework
- Shell should comment on why they cannot maintain the Muskeg River channel in its natural state rather than piping the water through a pipeline and mining through the river
  - Shell believes its plans to divert the Muskeg River balance resource extraction and environmental/social considerations.
- Given the slowdown in the oil sands development, Shell should comment on the representativeness of their Application Case flow predictions for the Muskeg River
  - Since the completion of the EIA, there has been no 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

## Discussion

### ***Athabasca River Integrity***

#39. FMFN asked if Shell supported the Phase 2 Framework Committee (P2FC) recommendations?

Shell advised that they supported the recommendation.

#40. FMFN asked for clarification on Shell's raw water storage commitment.

Shell advised that it would comply with the Phase 2 framework and that it had sufficient storage options; recognizing it is Shell's risk if it does not have enough storage. Shell acknowledged that it does not yet know the details of the Phase 2 recommendation.

FMFN advised that the P2FC recommendation was 100 days of storage.

Shell explained that it is exploring a variety of options to comply with the Phase 2 framework (e.g. raw and process-affected water storage, maximizing groundwater dewatering during low flow river conditions, etc.). Shell stressed it would not be in a position to comment on its specific management approach until the Phase 2 framework recommendations were endorsed by the regulators.

FMFN noted there was a 5-year transition in place.

Shell agreed there was 5 years to meet the 87 m<sup>3</sup>/s cut-off.

FMFN expressed it was good to hear that there are other options being considered.

### ***Shell's Water Need***

#41. FMFN requested clarification on Shell's water demand for the project.

Shell acknowledged the complexity of its *Water Act* Licence application for Jackpine Mine. Shell explained that the approved water allocation from the Athabasca River under Jackpine Mine – Phase 1 (JPM1) was split into two stages. The approved Stage 1 licence allocation is 63.5 million m<sup>3</sup> per year and the approved Stage 2 licence allocation is 35.3 million m<sup>3</sup> per year. For the Jackpine Mine Expansion (JPME), Shell does not request any additional water allocation for Stage 1. However, for Stage 2, Shell is requesting an additional 18 million m<sup>3</sup> per year (for a total Stage 2 allocation of 53.3 million m<sup>3</sup> per year for the expanded Jackpine Mine).

FMFN suggested the water balance table should show Athabasca River water requirement components for the JPM1 and JPME

Shell advised that the JPM1 processing capacity of 200,000 barrels/day (two processing trains) is increased another 100,000 barrels/day (one processing train) with JPME. Shell suggested the water needed per barrel is the same per train for all projects. The JPME water balance was developed using the same assumptions for consumption rates as for JPM1. The differences are primarily related to availability of sources of water other than the Athabasca River (e.g. surface water runoff, basal water).

FMFN suggested Shell needs to provide more information so FMFN can better validate its water need calculations (e.g. the water needs in a dry year, wet year, etc. Any additional needs FMFN is not able to trace).

Shell advised that multiple water balances were developed for different climatic scenarios (i.e. 100 year dry, 10 year dry, average conditions, 10 year wet and 100 year wet). Beyond that, Shell employed design factors to account for uncertainty in the predicted water need. Shell agreed to send these tables to FMFN for their consideration.

FMFN asked how Shell planned to transition between the existing approved water balance and a new water balance for JPME.

Shell advised that the water balance for the JPME application was constructed based on the total water demand for the expanded Jackpine Mine (i.e. JPM1 and JPME combined). This was possible because the JPME application suggests a new mining sequence for the whole expanded Jackpine Mine area.

FMFN advised that the numbers are set by the license requirements and that they had trouble distinguishing them.

Shell explained that the 100-year dry scenario was used to determine the required Athabasca River water withdrawal. Shell added that design factors were also considered (e.g. lower groundwater availability, lower connate water availability, additional pore space in tailings) in determining the proposed licence water withdrawal amount.

#43. FMFN asked about the reason for the large change in Athabasca River water demand between the years 2038 and 2040.

Shell suggested that 1) lower grade ore anticipated for that period (i.e. more ore put through plant/ more tails generated in order to keep bitumen production rates steady regardless of lower grade ore) and 2) sand capping of in-pit cells throughout that same period result in a spike in water needs.

FMFN suggested that water needs vary from 45-59-74-53-45-24 (million m<sup>3</sup>/year)...and that 74 is a big spike. FMFN asked if Shell planned on taking the 74 million cubic metres that year? FMFN suggested if Shell spread it around, then that is all they wanted to hear.

Shell explained that it is not proposing a water allocation of 74 for that period – the proposed licence allocation would remain at 53.3 million m<sup>3</sup>/yr. While this demand exceeds the proposed allocation, Shell suggested it made a conscious decision to take the risk on water need over that period in order to keep its proposed water allocation reasonable. As detailed mine plans are further developed, Shell will look for opportunities to level off water demand spikes to reduce its risk.

#44. FMFN acknowledged that this question on Pierre River Mine (PRM) water need was similar to previous question for JPME.

#45. FMFN again advised this was a similar question on water demand spikes but at PRM over period of 2027-2028.

Shell suggested that the spike was related to water capping the external tailings facility near the end of its active life. Shell also volunteered that PRM uses slightly more Athabasca River water than Jackpine Mine on a per barrel basis as there is lower grade ore, less groundwater and a lower ratio of non-segregating tails to sand demand .

FMFN suggested it was great that Shell was assuming risk to level out the peaks.

***Muskeg River Integrity***

#46. FMFN suggested the feedback received when they looked at the review was hesitation. FMFN do not understand why Shell has to divert the river as proposed. FMFN Chief and Council were noted as wanting to protect the Muskeg river. Imperial Kearn was mentioned, citing that they will not mine through the river. FMFN asked why Shell cannot mine around the Muskeg River?

Shell acknowledged the concern explaining that unlike Imperial Kearn, where the Muskeg River is on the edge of their oil sands lease, the Muskeg River runs through the JPME lease. Shell explained that it looked at options including diverting the river in a channel along the north and west sides of the project area, diverting the river in a channel south into Kearn Lake, and leaving the natural river channel in place. The north and west diversion channel would require a large excavation (70 m wide) to ensure water could continue to flow because the excavation would have to go into the Fort Hills. The diversion to Kearn Lake had incremental impacts to the proposed alternative. Leaving the river in place sterilized a significant quantity of mineable oil sands. The chosen alternative minimized ore sterilization, maintained river flows and quality through the project area, and maintained viability of the reaches of the river downstream of the project area.

FMFN suggested that if you put the river in a pipe, you change the river quality. If you put it through the muskeg, people can still use the river. FMFN asked why not build a natural stream?

Shell explained that diverting the river in a channel would require that the channel run through the active mine area (because diversion around to the north and west would require a major excavation due to topography). In a pipeline, the water quality and flows are maintained through the project area.

FMFN suggested that Shell divert the Muskeg River to the south of the mine, extract the ore, then divert to the north.

Shell advised that they had considered this explaining that the ability to do this is predicated on non-segregating tails placed in the formerly mined out pits to be trafficable by the time the diversion is required. The backfilled route would have to be solid enough to withstand the weight of the river and seepage from the consolidating tails would have to be isolated from the river to protect water quality,

Shell asked if it would help if they walked through the whole process step by step.

FMFN suggested the whole idea of the pipe is not sitting well.

Shell assured FMFN that they understand the concern. Shell suggested the fishing would still be good downstream of the project area. Shell further

suggested that fishing in the reaches to be diverted is currently not good. Shell advised that all the sampling in the last 30 years had caught only 3 small pike in that area of the river. While there were other forage fish and suckers, there were no sport fish. The sport fish distribution primarily ends at the Muskeg Creek. Shell did look at options. The Shell approach will maintain the Jackpine Creek and Muskeg River as far upstream as possible and will maintain the highest quality portions of the Muskeg River and Jackpine Creek where almost all sport fish live.

FMFN suggested that from a science perspective, they agree, but as a community representative, there is a cultural and spiritual value to the river and this idea is not sitting well. They want Ft McKay Chief and Council and Shell to meet with Shell on this as putting the Muskeg River in a pipeline is a showstopper.

Shell asked if FMFN recommended a meeting with community members to help them understand both sides.

FMFN advised that the leadership will make the decision. They understand that this can cost the community future revenue. FMFN acknowledged that things could change; however, right now they suggested that maintenance of the natural Muskeg River is very important to the community. The environment is a very sensitive subject. The thought is they are already dealing with 22 companies and projects and that perhaps they do not need 23. The input from the community, the feedback is clearly to protect that river. FMFN described the stream like the veins of a living organism. FMFN do not support the idea, and they see that Shell plans to divert the river for a significant period of time. FMFN suggests Shell meet with leadership on this issue.

Shell advised they would bring John Broadhurst to meet with the Chief and Council

FMFN suggested that Shell needs to think of other scenarios. FMFN suggested leadership will need to see maps to illustrate where it is, etc.

Shell advised the area is only accessible via helicopter (deep muskeg).

FMFN advised that the community was not happy with the Imperial diversion (smaller scale), and that putting it in that context may help to compare the two diversion.

FMFN suggested the concept is to protect the river from the mine. If you put it in the pipe you will save the river. FMFN asked if the river would be put back the same way at the end of the project?

Shell advised it would not be put back in the same way. At closure, the river would be diverted through the Jackpine North Pit Lake.

FMFN suggested that Imperial did not move an inch of river and that they were preserving sections for as long as possible. Chief and Council are looking for mutually-acceptable solutions, asking if Shell “can they move it (river) and then move it back”. If not, FMFN suggested that JPME is not a viable project. FMFN urged Shell to take a second look at the diversion considering FMFN’s desire to keep the look and feel of the natural river. The concept of the pipe and where the river will flow later is a major stumbling block.

Shell suggested that the reason for not diverting to Jackpine Creek is out of respect for the community’s wishes. Shell asked if the community would buy into that more than the pipe recognizing that diversion to Jackpine Creek would have a major impact to Jackpine Creek (basically making a portion of the Jackpine Creek into the Muskeg River). Shell also asked if one diversion alternative would be more palatable than the other? Shell suggested they would like more consultation with the community.

FMFN suggested Shell needed to work through this with the Chief and Council before meeting with the community members. A meeting with the following participants was suggested: Phil Peddie, Ron B., Lisa S. with Shell (not too many) Rick C., Bill K., and Linda J. This issue was identified by the IRC and we want to walk through it. They are looking at a compromise. Take them through all of the options, bring maps and explain how it is similar (or not) to Imperial Kearl.

FMFN asked Shell if they were open to tweaking this plan.

Shell responded that if they missed something or if they misunderstood FMFN, they would respond to it.

#47/#48. Nothing recorded.

### **Key Issues Identified**

1. Water usage
2. Diversion of Muskeg River

### **Actions / Follow up**

- Shell to provide FMFN information on water needs per project
- Shell to arrange a meeting to discuss the Muskeg River diversion with FMFN Chief and Council and IRC Director. Arrangements to be made with Phil Peddie.

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## Topic: Groundwater (Questions 32 – 38)

### Shell Presenters:

Bill Kovach – EIA Coordinator, Shell Canada Energy  
João Küpper – Principal Hydrogeologist, WorleyParsons Canada

### Key FMFN Concerns & Shell's Response:

- Offsets be developed to mitigate the loss of existing and potential future groundwater-sources and ground-water resource dependent traditional activities (e.g. loss of fens), in consultation with Fort McKay
  - Shell has focussed its mitigation to address potential impacts on receptors
- Loss of traditionally-used plants and groundwater sources that may be in the areas adjacent to the Project and potential mitigative measures to protect the groundwater sources and the growing environments
  - Drawdown mitigation is not planned, as groundwater levels are temporary and expected to recover following dewatering activities
- Development of groundwater monitoring programs and reporting of monitoring results and incidents
  - Shell will develop groundwater monitoring programs
- Verification of groundwater modelling predictions through groundwater monitoring
  - Groundwater monitoring will provide input into groundwater model validation

### Discussion Summary

#### ***Dewatering Impacts to Traditional Activities***

#32/33. FMFN expressed concern that dewatering impacts beyond Project area boundary would affect groundwater resource dependent traditional activities.

Shell asked if FMFN was aware of any kind of traditionally used springs in the area.

FMFN advised they would have to check with a community member specifically.

FMFN further advised that groundwater use is indirect, as they use water from muskeg and fens (wetlands).

Shell suggested the idea of temporary drawdown effects. Shell described temporary as being a couple of years and asked what FMFN envision as mitigation.

FMFN suggested the fen might die due to the drawdown

Shell suggested that key areas are identified and best practices are used. Shell advised they do not predict more drawdown in the patterned fen than originally predicted. Shell is proposing no mitigation there (i.e. north of Jackpine).

FMFN suggested that monitoring of drawdown was very important to Fort McKay.

Shell advised that they were continuing their wetlands monitoring in addition to the regional monitoring.

### ***Groundwater Potability***

#34. FMFN asserted that Shell should be required to perform groundwater potability testing for FMFN.

Shell suggested this was a tough one to understand at face value.

FMFN suggested it was a little vague and that if ground water sources were down gradient of talings, etc. it might be easier.

Shells advised it would be putting in ground water monitoring and that they would assess drawdown, routine potability, and provide baseline data (pre-project, operations & post closure) focusing on key indicators of groundwater quality. Shell inquired as to which areas are of concern to FMFN that they would like to see monitored?

FMFN advised they are looking for an agreement in principle around monitoring. FMFN advised that they would like some comfort that the water on the land is okay.

Shell suggested that the monitoring needs to be right sized for the activity.

FMFN suggested it was a case-by-case basis. A few cabins are close to the site and may want the water tested. It would be a reasonable request given that they are near to Shell's project. FMFN advised they are just looking for some reassurance.

Shell suggested that the key will be to put some parameters around it.

FMFN suggested that all requests would go through the IRC and assessed on a case-by-case basis. It would be specific to someone who is using an area.

#35. FMFN asked Shell to advise them of any groundwater incidents reported to the regulators.

Shell suggested that in principle they agree that the community must understand if they could be at risk. If there are risks to the community, appropriate monitoring will be conducted but reporting to the community might not be

required. Shell suggested it is a question of right-sizing. Shell asked if what was done at the annual monitoring meeting feeds into this?

FMFN suggested they could review annual monitoring plans and report out to the community; however, if the community had an issue, Shell needs to be able to respond.

### ***Groundwater Monitoring***

#36. FMFN asked for input to groundwater monitoring program

Shell advised that they would have a groundwater plan in place and Shell's understanding is that FMFN wanted to be a part of it.

FMFN noted that it would like to review the groundwater monitoring plan and look for proposed monitoring at specific areas.

#37. FMFN suggested that with regard to annual monitoring reports, it wouldn't be too much work to put in predicted vs. actual drawdowns & operational water quality.

Shell requested clarification on why FMFN wanted this information. Shell asked if FMFN wanted to feed it back in to the models to make it more robust. Shell wanted to know if there were concerns with Shell's models.

FMFN advised it was not so much that there isn't confidence in the model but it is data, which increases comfort level.

FMFN would like models verified. FMFN pointed out that similar discussions went on when parties negotiated the Fort McKay Specific Assessment. FMFN advised they have a little more comfort that these are true now.

### ***Regional Groundwater Management***

#38. With respect to a regional groundwater management framework, FMFN advised this recommendation for Fort McKay input was directed to the regulator. FMFN advised that the first draft is out and the second draft is expected to be out in April. FMFN advised they had provided comments on the first draft.

### **Key Issues Identified**

1. Groundwater related effects to traditional pursuits (dewatering/water quality)
2. Adequacy of Groundwater Monitoring Plans

### **Actions / Follow up**

- None
-

## **Topic: Human Health Risk (Questions 116 – 125)**

### **Shell Presenters:**

Bill Kovach - EIA Coordinator, Shell Canada  
Bart Koppe – Senior Risk Assessor, Intrinsik

### **Key FMFN Concerns & Shell's Response:**

- Shell should justify how the widespread use of surrogates and chemical groupings supports conservatism in their human health risk assessment (HHRA)
  - 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, consistent with guidance on chemical grouping
- Shell should present clear justification for not including potential synergism in their JME and PRM HHRA
  - Additivity is the most plausible chemical interaction and chemical interactions were assumed to be additive in nature as per Health Canada's guidance
- We recommend that Shell revise the concluding HHRA summary statement to recognize that emissions from JME and PRM are expected to lead to increased risk to human health
  - The study team stands by its conclusions of the HHRA, but does acknowledge that the project emissions will increase health risks in the region. However, this increase in health risks is not expected to result in measurable health effects in the area residents
- 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 JME and PRM, including support for Fort McKay's Community Health Strategy.
  - Community health programs would be topic for benefits agreement discussions

### **Discussion Summary**

FMFN agreed that Shell had clearly identified FMFN's key concerns and recommendations. FMFN suggested that rather than going through each question asked by FMFN in the Technical Review, it would be more beneficial to focus the discussion on a few main concerns. The group agreed.

FMFN inquired about Shell's use of surrogates and the number of chemicals used in their HHRA. It was FMFN's opinion that Shell used too many surrogates and chemical groupings in their HHRA to allow their results to be viewed as conservative. FMFN suggested that the EIA should clearly state what Shell's conservatism is.

Shell acknowledged the fact that there is an uncertainty associated with grouping chemicals. During their study, approximately 300 chemicals were looked at, but a much smaller group was looked at individually. Surrogate grouping was used on chemicals where there was little to no toxicity data available. It was felt that these chemicals should be included in the HHRA to add to the conservatism of the study.

FMFN commented on the HHRA summary statement printed in the EIA. FMFN felt that the statement created a “spin” on what was presented in the HHRA by stating that there is no increased risk to human health. The statement should really read, “...there are increased health risks.”

Shell acknowledged that the Project emissions will increase health risks in the region. However, this increase in health risks is not expected to result in measurable health effects in the area residents. Shell concluded by stating that there are small differences in the health risks when comparing the Base Case to the Application Case, but generally, these findings are almost identical, and will not noticeably contribute to the overall health risk in the area. Shell acknowledged FMFN’s concern with the summary statement. Shell concluded that all Shell could state is what the risks are: low/moderate/high. These findings are presented to the community and Regulators and they will use this information to base their decision on.

FMFN stated that the Fort McKay Community Assessment was done because when talking with the nation members they did not like the comparison of the Base Case and PDC. The community wants to be presented a story that informs them of what the amount of environmental impact is since the beginning, “before industry”. In addition, the community needs to be presented with a clear message to allow them to weigh the pros and cons.

Shell acknowledged FMFN’s need to be given proper context regarding the project. Shell reminded the group that the Human health assessment is quite complex. Shell asked if there was a better way or mechanism to get this information to the community.

FMFN suggested that there are two ways better inform the community, which was not in the EIA:

- 1) Risk communication
- 2) Holistic health promotion

FMFN explained that there is an indirect impact from industrial presence, which has increased the community’s fear of pollution in the fish, the land and cultural erosion. The community members may have to leave the land and move to somewhere else to fulfill their need, which creates more stress in the community. Secondly, Shell needs to take a more holistic approach to human health and promote holistic health, fitness and

nutrition. This would include Shell working with Fort McKay to devise a program that would support community health and cultural promotion. The best way is to take a holistic approach and encourage education, which will directly increase health.

Shell stressed that Shell's health assessment was in line with the terms of reference, but asked FMFN to suggest ways that Shell could better communicate risks and meaningful information to the community.

FMFN replied that Fort McKay would come up with a process and structure for a potential health strategy for the Community to present to Shell in the future.

Shell acknowledged the possible option of supporting such a program, upon further discussion and agreement.

### **Key Issues Identified**

1. Too many surrogates and chemical groupings in HHRA
2. Summary statement should read 'increased risk' as opposed to 'no risk' to human health
3. There are better ways to inform communities of health risk not used in EIA
4. There is a need for a community health strategy

### **Actions / Follow up**

- FMFN would come up with a process and structure for a potential community health strategy for the community to present to Shell in the future.

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**Fort McKay Technical Review  
Day 2**

<b><u>Name</u></b>	<b><u>Organization</u></b>
Dan Stuckless	Fort McKay IRC
Marie Lagimodiere	Fort McKay IRC
Lorne Gould	Fort McKay/Gould Environmental
Bob Fuller	Fort McKay/Stantec
Carol Jones	Fort McKay/Stantec
Jennifer Barker	Golder
Martin Jalkotzy	Golder
Michelle Barrett	Golder
Ryan Ancelin	Golder
Bill Kovach	Shell
Don Crowe	Shell
Heather Taylor	Shell
Jason Plamondon	Shell
Jeremy Hrdlicka	Shell
Linda McNabb	Shell
Vivienne Wilson	Shell

**Topic: Mine Plan and Closure, Conservation & Reclamation Plan  
(Questions 126 – 139)**

**Shell Presenters:**

Vivienne Wilson – Reclamation Coordinator, Shell Upstream Americas

**Key FMFN Concerns & Shell's Response:**

- 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
  - Shell has proposed areas of gently sloping topography (0 to 2%) on the closure landscape, which have the potential to create the hydrological conditions suited to peatland formation. Opportunities to to change topography and hydrology are assessed throughout the life of the mine.
- Fort McKay requests that Shell increase the pace of reclamation on all their mines, and would like to discuss alternative tailings management strategies which will conform to ERCB Directive 074
  - Shell supports early and progressive reclamation. Alternative tailings options that support early reclamation are discussed within Directive 074 plans for 2009 submitted to ERCB, and are available for public review

- Fort McKay opposes the deposition of tailings into end pit lakes as a method of long-term tailings storage
  - Shell is investigating ways of reducing mature fine tailings volumes, which could potentially reduce pit lake storage requirements
- Fort McKay asks that Shell undertake field-scale trials to establish peat-accumulating wetlands and re-establishing other plant species of importance to traditional use including rat root
  - Shell is investigating ways to create landforms necessary to establish peat-accumulating wetlands types. Suncor is conducting rat root transplantation trials this year – Shell will track progress and transfer the research knowledge to reclamation activities
- Shell should continue to work with Fort McKay during the development and implementation of reclamation programs in support of traditional use
  - Shell looks forward to the work of the joint reclamation committee with Fort McKay, and the guidance that will be provided for supporting traditional use of reclamation areas
- 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
  - Shell understands the concerns around direct placement of soils and landscape diversification of ecosite types in the reclamation landscape. Environmental reporting consultations have started to discuss the details of soil placement and ecosite distribution
- Fort McKay may wish to see a progressive and proposed schedule of when Shell intends to apply for certification, and have the opportunity to comment on any future applications for certification
  - Shell's understanding is that stakeholders are already part of the certification application review process.

## **Discussion Summary**

FMFN suggested that they appreciate the comments and are on the same page with many of them. FMFN is aware that requirements are shifting as time goes on and that it is essential that mine planning be integrated with reclamation. FMFN advised of an issue with the reclamation that is going on now.

### ***Tailings Directive Compliance***

#126. FMFN advised that the only tailings plans that are available on the website currently are for existing plans.

Shell confirmed that this was correct and that plans for unapproved mine applications were not available. Shell advised that the tailings management plan tenets will flow over to the expansion projects. Shell advised that alternative

tailings technology is currently being explored and that Shell wants to stay nimble on tailings management technologies.

FMFN inquired about the component on fine tailings, asking if that part would be directive compliant?

Shell confirmed this was the case.

FMFN advised of a false assumption that Shell would be making a revision to the tailings directive plans. FMFN suggested they are not satisfied at this point and would have to re-review the current tailings plans with this in mind. FMFN suggested they are uncertain as to how it evolves and that they see it changing with timing, volume, etc.

Shell suggested they have a good idea. Shell suggested reclamation timing was related to landforms. The external tailings facility (ETF) can be the first landform to be reclaimed. Timing of overburden disposal area (OBDA) reclamation is highly variable depending on how construction progresses (e.g. experience at operating mines suggests circumstances arise that require material formerly slated for placement onto the overburden dumps being used for construction activities). Shell is investigating how reclamation can stay ahead of operations, advising that 2011 would see changes to Muskeg River Mine (MRM) & JPM1 mine closure plans.

FMFN inquired if any change would be due to the Directive's requirements with respect to the handling of mature fine tails (MFT).

Shell advised that options for disposal of MFT will change over the next few years. Shell suggested that for the purpose of this application, Shell was going to go in with what it knows. Shell suggested they had to be careful that they do not over commit. FMFN inquired how the new directive and the amended mine plan would impact the presence of pit lakes.

Shell replied that the volumes, types and locations of the different materials will be impacted by the change.

With respect to Question 126 (ii) regarding sand capping over non-segregated tails (NST):

Shell suggested that coarse sand tails (CST) is not a good construction material for cutting drainage channels and that potentially operations would be able to differentially place those sands to create channel areas. Shell advised that the drainage channels may connect to sand layers but are not likely to cut into them.

### ***Peatlands Reclamation***

#127. FMFN questioned the ability to recreate peatlands on site. Peatlands are not shown on the closure plan even in these low-lying areas designated as the 0 to 2 % slopes.

Shell advised that they had a predominance of gently sloping terrain and that they have shown that they were confident they could create transitional ecosites and wetlands in the reclamation landscape. Shell anticipates more diversity at closure. Shell took a conservative approach to peatlands reclamation in the EIA. Peatlands research is underway, and will be applied.

### ***Pace of Reclamation***

#128. FMFN advised that they would like to see the pace of reclamation increased at all mines. FMFN also wondered about the plan and if new tailings plans are expected to increase the pace of reclamation.

Shell agrees with the concept of increasing the pace of reclamation. Shell's speculation is that drier tailings have the potential to increase the pace of reclamation. Many of the technologies are not commercially proven and need to be worked out. There are many options for dry tailings, however, Shell is only presenting commercially proven technologies in the EIA and the hearing.

FMFN suggested by meeting the new directive, one could speculate that Shell could speed up tailings reclamation.

Shell suggested that there is the potential to speed up reclamation due to the dry tailings initiative. Shell suggests the ability to separate tailings streams has the opportunity to speed up reclamation and would be unlikely to delay it.

### ***Reclamation Plan Integration with Neighbours***

# 129. FMFN inquired about the closure drainage plan and if it had been integrated between proponents.

Shell advised that cooperation agreements are in place with Imperial Oil and Syncrude. With Imperial Oil, Shell has an adjacent unapproved footprint.

FMFN noted that the last guy through the approval process seems to control the drainage plan.

Shell advised there is an agreed upon drainage plan to date but does not mean that it will not change. Shell clarified that an agreement in principle was in place stating that what Shell proposes makes sense. Shell advised that still to come is agreement on who pays for what part as this is an ongoing discussion.

### ***End Pit Lakes***

#130. FMFN expressed concern about having tailings in the end pit lake.

Shell noted it supports regional initiatives to develop parameters for pit lake water quality.

### ***Reclamation Success***

#131. FMFN suggested that what they see as the range of what currently exists is their idea of equivalent capability, not just forest productivity. FMFN noted that its perspective on equivalent capability at closure includes suitable topography for peatlands. Noting that this had been discussed earlier in the discussion, FMFN asserted that it anticipates reclamation monitoring to provide results that will inform peatlands creation.

Shell acknowledged that it will also be involved in the development of targets and benchmarks for reclamation.

### ***Reclamation Security***

#132. FMFN advised that they worry about reclamation security. FMFN advised they would like to see a breakdown of how that security is calculated.

Shell assured FMFN that they hear the FMFN concerns about legacy issues. Shell advised that the reclamation security process is confidential and that FMFN would need to talk to the regulators to get that information.

FMFN inquired if the costs included alternative water treatment for end pit lakes that don't work.

Shell advised it was based on current disturbance only, and therefore doesn't yet consider end pit lakes.

### ***Reclaimed Peatland Research***

#133. FMFN requested that Shell develop trials for peat accumulating wetlands and reclaiming with other species of interest to FMFN.

Shell indicated that trials will be included in operational plans and the opportunities for other species will be identified during reclamation committee meetings.

### ***Soil Management***

#134. FMFN suggested that it would like to see more detailed scheduling for direct placement of soils such as the placement of peat soils on low lying areas for potential

peatland development. They would like to see Shell incorporate learnings and begin peatland trials like other operators.

Shell assured FMFN that soils professionals are always on site during soils salvage, placement and testing procedures.

### ***FMFN Input into Reclamation Planning***

#135. FMFN expressed a desire to be included in the project's ongoing reclamation planning.

Shell expressed that it sees the reclamation committee as the proper avenue for FMFN to share desires and concerns regarding traditional use species of interest.

### ***Unsuitable Material Sequestration***

#136. FMFN indicated that it would like further details on the locations of unsuitable materials.

Shell described that unsuitable materials include Clearwater clays and tar balls, for example and the material will be managed on site so that it is sequestered. FMFN will have a chance to review the reclamation plans through the reclamation committee.

### ***Development of Wildlife Habitat***

#137. FMFN requested additional information (i.e. details) on measures Shell will undertake to provide wildlife habitat be provided.

Shell explained that wildlife habitat can be interpreted through the closure plans (i.e. d2/d3 aspen communities are good bear habitat, littoral zones are good moose habitat). Shell advised that by 2011 it would be able to provide more context and will consult with FMFN when creating the updated closure plans.

FMFN advised that in terms of a coarse filter, they support it and that community landforms support wildlife movement in a positive way. FMFN mentioned seven plans that feed into this.

### ***Biodiversity in Closure Landscape***

#138. FMFN noted its concern with what appears to be a lack of diversity on the reclaimed landscape. There are large areas with only one ecosite planned. FMFN requires a higher level of detail (smaller scale). FMFN has a concern with the continuous blocks of one ecosite. FMFN would like a commitment from Shell that more

detailed plans will be developed. FMFN acknowledges that diversity will be achieved on the reclaimed surface on an operational level.

Shell indicated that operational plans will provide more detail. Shell cannot provide a higher level of detail with the current conceptual mine plan. Shell also requested that FMFN be clear about having specific issues with the EIA in this regard at this time.

### ***Reclamation Certification***

#139. FMFN requested a schedule for certification and participation in field studies, certification review process and inspections.

Shell discussed that the certification schedule will be highly variable over time depending on reclamation methods required to establish certain ecosites. For example, if peatland creation is feasible, it may take longer than Shell can anticipate. Also, the necessity for staged reclamation may delay certification if benchmarks have not been met. FMFN's participation in the reclamation committee will be essential.

### **Key Issues Identified**

1. Equivalent capability
2. Pace of reclamation
3. Disposal of tailings into end pit lakes

### **Actions / Follow up**

- None
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### **Topic: Soils and Terrain (Questions 67 – 69)**

#### **Shell Presenters:**

Vivienne Wilson – Reclamation Coordinator, Shell Upstream Americas

#### **Key FMFN Concerns and Shell Response:**

- 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
  - Shell currently participates in regional research underway on establishment of peat-accumulating wetlands. Organic/peat soils are already reclaimed as part

of soil salvage activities, including direct placement of peat materials where possible (e.g. Jackpine Compensation Lake)

- 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
  - Shell's tailings management and dedicated disposal area plans for 2009 have been submitted to the ERCB, and are publicly available for review on the ERCB website
- 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.
  - A commitment to optimizing the pace of reclamation is stated in EIA. Opportunities to complete early/progressive reclamation are assessed throughout planning activities for the life of the mine

### **Discussion Summary**

FMFN and Shell agreed that the specific questions asked for Soils and Terrain were addressed earlier in the discussion

### **Key Issues Identified**

1. Soils for peatland reclamation
2. Permanent soil losses
3. Pace of reclamation

### **Actions / Follow up**

- None

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## **Topic : Terrestrial Vegetation, Wetlands and Forest Resources (Questions 70 – 79)**

### **Shell Presenters:**

Vivienne Wilson – Reclamation Coordinator, Shell Upstream Americas  
Ryan Ancelin – Terrestrial Ecologist, Golder Associates Ltd.

### **Key FMFN Concerns and Shell Response:**

- Fort McKay may wish to request that Shell continue its involvement with CEMA's Reclamation Working Group (Wetlands and Aquatics Subgroup), develop on-site

plans for experimental peatland reclamation and dedicate land to a long-term wetland research project

- Shell anticipates supporting the development of wetlands reclamation technology through research, progressive reclamation and ongoing participation in committee work informing wetlands reclamation practices
- Fort McKay may wish to ask Shell to develop reclamation practices that utilize a broad range of traditional use plants and reintroduce rare species in their reclamation programs
  - Shell plans to provide the conditions to support traditional use and rare plant species within reclamation areas. Further guidance on how to achieve this is anticipated through the joint Shell/Fort McKay reclamation committee.
- Fort McKay may wish to request that Shell develop measures to monitor and mitigate the potential effects of surface water disturbance on off-site wetlands
  - A wetlands monitoring program has been underway since 2000 at the Muskeg River Mine – conceptual plans presented in the EIA for wetlands drawdown monitoring will build on this. Monitoring for drawdown not anticipated by the EIA is expected to be part of a potential EPEA approval.
- Fort McKay may want to ask the regulators to develop meaningful criteria to assess disturbance of ecosystems and landscapes and establish thresholds for disturbance.
  - Shell is engaged in CEMA committees, and LUF/LARP consultation guiding the development criteria for assessing the disturbance of ecosystems and landscapes.

## **Discussion Summary**

Both parties agreed to focus on specific questions.

### ***Peatland Reclamation***

#70. FMFN noted its concern with industry's ability to reclaim wetlands.

Shell acknowledged the concern of FMFN and advised it looks forward to discussing these and other things through the Focus Groups and Reclamation Committee.

### ***Forest Productivity***

#71. FMFN enquired on Shell's approach to forest productivity categorization.

Shell provided a description of the mapping process and explained how field visits fit together to provide the underlying Alberta Vegetation Inventory (AVI) information. This is considered well aligned with the predictions (accurate characterizations).

Shell confirmed the use of site index information.

FMFN noted that it would like to take the opportunity to go back and review this section again given the new information provided by Shell.

### ***Rare Species Transplanting***

#72. FMFN suggested Shell consider transplanting of rare plant species.

Shell suggested it would work to accommodate rare species and asked FMFN if they would be willing to share traditional knowledge that may assist in the successful relocation of such species.

FMFN advised Shell that this was a difficult issue and that research would be required.

Shell advised that while extensive literature reviews had been conducted, there were very few good examples of successful relocation trials. Shell reiterated the desire for any available traditional knowledge that would facilitate relocation of various species.

FMFN advised that there was limited knowledge that they were aware of regarding transplanting and relocation of plants, rather more information was available surrounding use of plant species. However, because of the importance of the issue, FMFN supports Shell's continued investigation.

Shell asked if FMFN would be willing to help identify potential relocation sites based on traditional knowledge.

FMFN advised that they had done some of that type of thing with the help of an elder (e.g. rat root). FMFN believe that the key to success is to establish trials. The issue at hand is that a lot of rare species exist in wetlands; therefore, it would be a tough battle and a lot of work needs to be done.

Shell agreed

### ***Traditional Plants***

#73. FMFN suggested that Shell use a broad range of traditional plants in its reclamation practices.

Shell agreed with FMFN's approach. Shell advised that some of this is currently under way with CEMA and CONRAD. Shell also looks forward to addressing in the Focus Groups and Reclamation Committee. Shell asked FMFN if there were any issues with impact predictions in the EIA.

FMFN advised that they would like to see less common species rated higher.

Shell advised that these species are rated high in the model and that this was not missed.

FMFN agreed

### ***Hydrologic Effects to Wetlands***

#74. FMFN suggested Shell develop measures to monitor and mitigate the potential effects of surface water disturbance on off-site wetlands

Shell reiterated that a wetlands monitoring program has been underway since 2000 at the Muskeg River Mine – conceptual plans presented in the EIA for wetlands drawdown monitoring will build on this. Monitoring for drawdown that was not anticipated by the EIA is expected to be part of a potential EPEA approval.

FMFN asked for clarification of monitoring to measure effects.

Shell provided an explanation of monitoring activity and use of information.

FMFN noted that wetland monitoring and reclamation planning were very important to FMFN

Parties had a general discussion regarding JPME Project Update and the associated changes anticipated for fen/wetland drawdown. FMFN noted their concern with the incremental drawdown.

Shell noted the drawdown effect was previously unanticipated. Shell sees an impact locally but on a regional scale considers the impact negligible. Shell made the decision that rather than potentially over commit and attempt to protect the fen, it would rather note the impact.

FMFN inquired about the timing of the drawdown.

Shell noted that drawdown effects would occur as the mine advanced northward acknowledging that exact dates have not been determined.

FMFN suggested a need to review the errata. They suggested also that they may disagree with Shell's assessment of the acceptability of the impact.

**ACTION** – FMFN to review Jackpine Mine Expansion Project Supplemental Information Volume 1 regarding groundwater drawdown and potential impacts to wetlands, and advise Shell if a follow up meeting is required.

FMFN advised that they were more interested in the location of the impact (i.e. proximity to TLU, community, overlap w/ high use areas), thus FMFN suggestion of a higher impact than Shell.

Shell suggested that there was little available information regarding the traditional use of fens. While the environmental impact is clear, it remains unclear as to the value of the fen from a traditional use perspective. Shell requested additional data to understand impact to traditional use.

FMFN advised that it comes down to opportunities for use and that they require more internal information about current and future use because when large developments are introduced in proximity to high use areas it changes that use, potentially shifting it to other areas. The importance of certain areas may become greater as other use areas become impacted. While any loss of use is important, of particular importance are wetlands.

Shell realizes that there may be some disagreement on impact but would like to understand FMFN's position.

FMFN suggested that offset discussions would be important.

### ***Non-native Plant Encroachment***

#75. FMFN suggested Shell monitor encroachment of non-native species and eradicate invasive/weedy species.

Shell agreed and suggested this was normal practice. Shell advised that annual reports would illustrate what it is doing.

### ***Air Emission Effects & Biodiversity***

#76. FMFN suggested Shell participate in regional monitoring (i.e. Terrestrial Environmental Effects Monitoring program, Alberta Biodiversity Monitoring Institute). FMFN acknowledged this was addressed earlier in the discussion.

Shell agreed this was discussed earlier.

#77. FMFN requested Shell develop a biodiversity monitoring program.

Shell advised that a regional biodiversity-monitoring plan would be developed. Shell asked if there were any specific items that FMFN would like to see.

FMFN advised that these things were thought to be evolving. FMFN agreed to continue its participation to assist in moving it forward. FMFN reiterated the importance of Shell's continued participation and leadership.

### **Reclamation Standardization**

#78. FMFN noted its desire for regulators to require standardized closure maps.

Shell advised that this initiative is underway. Shell provided an explanation of the formats and categories being discussed.

### **Community Specific Impacts**

#79. FMFN offered that development of meaningful criteria to assess impacts to the community is a question for regulators.

Shell advised that it was involved in Sustainable Ecosystems Framework and suggested its interest in seeing where the regulator lands on this issue.

### **Key Issues Identified**

1. Pleistocene drawdown and acceptability of impact

### **Actions / Follow up**

- FMFN to review Jackpine Mine Expansion Project Supplemental Information Volume 1 regarding groundwater drawdown and potential impacts to wetlands, and advise Shell if a follow up meeting is required.

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### **Topic – Wildlife Health (Questions 109 – 115)**

#### **Shell Presenters:**

Bill Kovach, EIA Coordinator, Shell Canada  
Bart Koppe, Senior Risk Assessor, Intrinsik

#### **Key FMFN Concerns & Shell's Response:**

- 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
  - The environmental risk assessment evaluated the potential impacts of chemical emissions on both wildlife and wildlife users on a regional scale, including a comprehensive sampling program
- Fort McKay is concerned that Shell's health model is not detecting potential health impacts to wildlife and requests that the Wildlife Health Assessment results are verified

- 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 Terrestrial Environmental Effects Monitoring (TEEM) program.
- In addition, Shell will continue to participate in RAMP in order to monitor water quality in receiving watercourses and Waterbodies.

## **Discussion Summary**

### ***Regional Effects to Wildlife Health***

#109. FMFN stated that the Fort McKay issues were correctly identified; however, there is continued concern that the potential chemical impacts on wildlife and wildlife users are not understood on a Regional scale. Impacts are looked at on a local scale, but if there is no impact identified then the regional scale is not looked at. Confidence needs to be built into the models to give a more informed representation.

Shell noted that the Ecological Risk Assessment looked at chemical emissions on wildlife at a regional scale. The data from the project study areas, along with data collected as part of the regional program, were used to characterize existing risks to wildlife. Maximum air concentrations were used to produce a reasonable worst-case scenario to see if this would have an impact on terrestrial wildlife.

Shell also mentioned Intrinsic's current involvement with Alberta Environment to aid in the compilations of all soil and vegetation data to help characterize the chemical risks on a regional scale for the Athabasca Region. Once the information is available, it will be up to Alberta Environment's discretion on how they will use the data.

### ***Use of Available Data***

#110. FMFN asked how much chemical data from RAMP and other EIAs were incorporated into the Wildlife Health assessment.

Shell stated RAMP data, along with soil data and vegetation data from Shell and other applications in the area were used. The EIA risk assessment looked at potential impacts of chemical emissions on both wildlife and wildlife users on a regional scale.

### ***Toxicity Reference Value Use***

#111. FMFN inquired about the toxicity reference values (TRVs) developed from mouse data for the shrew suggesting it was hard to get a strong sense of how the data was used to say that the toxicity of a "mouse is the same as a shrew". FMFN asked if any scientific literature was available to support using mouse data to assess impacts on shrews.

Shell explained that there was literature available and would provide FMFN with a copy of the reference. In addition, at times it may look like a stretch to extrapolate between species but this is acceptable because there is a near absence of toxicity data for most wildlife species and therefore TRV normally relies on toxicity data used for laboratory test species. Shell concluded by stating that its intent was to adhere to the US EPA guideline as well as use the best information available.

FMFN agreed and pointed out that it's also about building trust in the community by presenting them with this information.

### ***Ingestion Rates & Body Mass Usage***

#112. FMFN inquired about the values and literature sources used as the ingestion rate and body mass for the wildlife species assessed in Shell's Wildlife Health Assessment.

Shell stated that the ingestion rates and body masses were taken from a few sources, which would be provided to FMFN (ASRD, US EPA, to name a few).

### ***TRVs for Amphibians and Reptiles***

#113. FMFN asked if any TRVs for amphibian and reptiles had been developed since 1999. They noted their intent of this question was to see if the science is advancing, because all the references used in the EIA were from 1999.

Shell agreed with FMFN's assessment and suggested there hasn't been much science advancement since 1999. As well, Shell noted that this was a terrestrial impact assessment and the amphibians were covered in the aquatics section of the EIA. Shell explained that there is also a restrictive ability to assess the chemical risks of amphibian and reptiles because there is a lack of toxicity data for these species in the terrestrial stage. Shell also explained that there is a large focus on the sensitive life stages of amphibians and potential impacts on amphibians were indirectly assessed in the water quality assessment and in the wildlife assessment.

### ***Case Study as Evidence***

#114. FMFN asked if Shell had any case studies, which proved that Shell's approach and modeling accurately predicts wildlife health impacts. FMFN explained that these examples don't necessarily need to be Oil Sands related, but it would be a good to be able to go back to the community and inform them that Shell's models do work because of their conservatism. If these models do not work, FMFN suggested it would be beneficial to know sooner than later.

Shell advised it was unsure there were any specific Oil Sands case studies on Wildlife Health Assessment and advised there was ongoing monitoring that could

supply Shell with good information. One good example Shell noted would be the ecological risk assessment that was conducted for Teck Cominco's Trail, BC smelting operations. Shell explained that they used methods similar to those employed in the Shell's Wildlife Health Risk Assessment. Potential risks to the American robin were looked at based on their estimated exposure to cadmium and lead. Shell suggested that they would provide FMFN with a copy of this report to review.

### ***Traditional Species Information & Model Verification***

#115. FMFN inquired about traditional food (i.e. moose) and if any information is collected.

Shell replied that Alberta Health and Wellness does not collect a lot of information on food type, but in 1998, small mammal tissue was collected and in 2002 Golder Associates did some work. Additional Human Health Risk Assessment for the City of Greater Sudbury and Surrounding Area was done due to exposure to smelter emissions. Shell suggested that they could provide FMFN with some background information on this for review. This project used bio-monitoring information to indicate that predicted health risks overstated the actual health risks posed to the community members.

FMFN expressed concern that Shell's health models were not detecting potential health impacts to wildlife asked that the Wildlife Health Risk Assessment results be verified.

Shell stated that with time, the findings of the assessment would be verified by monitoring and by Shell's continued participation in the Terrestrial Environmental Effects Monitoring program and Regional Aquatics Monitoring Program (RAMP) water quality monitoring program.

### **Key Issues Identified**

1. Validity of Modelled Results

### **Actions / Follow up**

1. Shell to provide FMFN scientific literature that supports using mouse data to assess impacts on shrews.
  2. Shell to provide FMFN the sources and values used as ingestion rates and body masses for the wildlife species assessed in the Wildlife Health Assessment.
  3. Shell to provide FMFN background information on the the Terrestrial Ecological risk assessment (ERA) conducted for Teck Cominco's Trail, BC smelting operations.
  4. Shell to provide FMFN background information on the of the Human Health Risk Assessment for the City of Greater Sudbury and Surrounding Area for review
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## **Topic: Wildlife (Questions 80 – 108)**

### **Shell Presenters:**

Bill Kovach, EIA Coordinator, Shell Canada  
Martin Jalkotzy, Senior Wildlife Ecologist, Golder Associates

### **Key MCFN Concerns & Shell Responses:**

- 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 does acknowledge a local negative impact of low magnitude and has two staff conducting monitoring (and collecting mortality data) seven days a week during the open water season
- Shell has not provided enough data to make conclusions about removal of nuisance black bears, vehicle-wildlife collisions impacts and sensory disturbances on wildlife populations
  - Shell believes the current assessment adequately describes the effects of the Project on the noted species
- 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 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
- Shell should agree to maintain the Muskeg River corridor through the Jackpine Mine Expansion area until the wildlife corridor research program is complete and then use the results to develop a mine plan
  - 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
  - In addition to the wildlife monitoring Shell is doing on-site, Shell is also working with regional monitoring programs (i.e. ABMI, CONRAD) to assess wildlife resources in the region.

## **Discussion**

### ***Moose Abundance***

#80. FMFN expressed concern with wildlife populations in the region for traditional use. FMFN explained that not all Wildlife questions were aimed at Shell; some were aimed at the regulators.

FMFN noted that their first concern is TEK and how Shell did their assessment suggesting that the community is always looking for a tight link between Traditional Knowledge and it is very rare to see it in an EIA. FMFN cited, for example, that there has been a decline in the number of moose resulting in community members needing to go further to hunt, moose being harder to catch, etc. FMFN asked how are these concerns being addressed? FMFN stated it would like acknowledgement that they are being listened to.

Shell agreed that this is an understandable concern explaining that, in the EIA, Shell tried to show what they heard in the TEK statements. Shell explained that it did not want to sound anecdotal and further suggested that FMFN could give Shell some ideas on how to address this issue better.

Shell suggested that the way they did the EIA might not have come through clearly as the EIA notes that there will be high impact during operations. For wildlife, Shell advised that it is confident that the moose population is not declining but it doesn't change the fact that people may need to go further to hunt. Shell agreed that its project area is in close proximity to the community of Fort McKay and FMFN may need to travel further to practice traditional pursuits they currently practice in the project area.

Shell continued explaining that it tries to incorporate TEK by choosing Key Indicator Resources (KIRs) such as moose and beaver as indicators. Shell explained that its understanding is that moose is important to the First Nations and this understanding has resulted from ongoing dialogue with Aboriginal land users.

FMFN suggested it is amazing how western science can be communicated, but TEK is not as easy to determine.

Shell suggested that if one trapline holder says there's no moose, this may be due to accessibility issues. Shell advocated that it is more valuable to look at how much longer it takes to hunt moose versus the time it took 10 years ago.

FMFN suggested that linking these two objects is incredibly valuable as the data you get from looking at this issue are important.

### ***Community Involvement - Flyovers***

FMFN inquired whether there have been opportunities for First nations to participate on flyovers.

Shell suggested they were not sure and would have to go back and take a look. In the past, Shell noted it has worked with the IRC.

FMFN suggested that normally elders go on these aerial surveys and carry the information back to the community, building a more trusting relationship between the community and industry. FMFN advised that “trust” issues begin to decrease when you involve First Nation members because they see the issue and can confirm our conclusions.

Shell acknowledged that this adds value to the community, which is good.

### ***Bird Deterrents***

#81/82. FMFN suggested this was a bird deterrent question and that they were interested in the amount of impact on the birds, and not the number of birds impacted. FMFN noted that it doesn't agree with the interpretation that it is a low impact, but there seems to be a lack of concrete impact evidence.

Shell advised that in the past, John Gulley conducted very detailed monitoring and these results have been compiled and more effective monitoring has been done. Shell explained that its results show that a small number of birds are getting caught.

FMFN expressed that Shell has the most advanced bird deterrent system right now and that they would like to see Shell promote its system better. FMFN suggest Suncor is close behind, but Shell's bird deterrent should be considered the industry standard. Moreover, FMFN suggested that Shell should be involved in the bird protection system committee, to promote bird protection as there is a need to come up with a method of monitoring so comparisons can be made between different operators. When issues come up, Shell could then talk to the companies and apply their monitoring methods to their sites.

Shell inquired as to what information Shell could provide to the community to become more transparent. Shell assured FMFN that they heard the recommendations and will take them away from the discussion. Shell reiterated that the point was understood. Shell advised that they were currently using a radar system set up at JPM1 to measure number of birds flying over.

Shell suggested it understands FMFN's desire for information on system effectiveness but suggested that they needed to be cautious when comparing operations (i.e. Shell and Suncor) because each operator has their own unique situation. As an example, Shell noted while not saying radar wouldn't be good at Suncor, one has to consider that Suncor's situation has its own unique challenges (i.e. larger ponds) and what works for Shell may not necessarily be the best solution for Suncor.

FMFN agreed but suggested Shell needed to be able to measure effectiveness to be more transparent.

#83. FMFN suggested that this question dealt with the effectiveness of cannons on shorebirds in ponds that are less than 400 m across.

Shell asked where did the distance of 400 m come from and asked for the source of the data.

FMFN agreed to provide the reference to the 400 m.

Shell suggested that they believed that their system was effective and Shell is committed on maintaining and establishing this system on new tailing ponds.

### ***Cumulative Assessment of Regional Wildlife Impacts***

#84. FMFN advised this question on regional cumulative effects assessment for wildlife was directed at the regulators.

### ***Regional Monitoring Program***

#85. FMFN advised again, this question on regional monitoring efforts was directed at the regulators to develop an impartial assessment. However, FMFN encouraged Shell to help provide suggestions to the regulators on how to bring information back to the community.

### ***Moose Population Surveys***

#86. FMFN advised this was another question, on moose abundance surveys, directed at the regulators. FMFN explained that moose surveys are being undertaken by ASRD, but would like a commitment from Shell to participate in this task.

Shell suggested consultation with FMFN could be funded through IRC Core budget. Shell suggested, however, that they would need to figure out what the priority is and manage expectations.

### ***Regional Wildlife Surveys (beyond moose)***

#87. FMFN suggested this question on regional surveys for a number of wildlife species was also directed at the regulators noting their main concern is data showing a decline in moose species. FMFN explained that they believe that ASRD needs to show how they are going to manage the species population better.

Shell suggested that this was a fair assessment.

### ***Conservation Offsets***

#88. FMFN suggested this question on conservation offsets was also directed at the regulators. FMFN noted it is looking to conservative offsets to preserve wildlife habitat

and populations so as to maintain opportunities to practice traditional pursuits near the community. FMFN suggested it would like Shell's support on the proposed approach discussed in the Athabasca Landscape Team Management Option report.

FMFN advised it would like to link reclamation performance and future approvals together suggesting that local opportunities have declined due to inability to reclaim habitat for 40-50 years. FMFN explained that it wants to ensure that the reclaimed landscape will support wildlife.

Shell agreed with the principle of what FMFN is trying to do, but suggested it would take a long time to complete something like this. Shell noted it supports a conservative offset plan, but what it looks like and what it requires needs to be worked out.

### ***Requirements for Reclamation Certification***

#89. FMFN suggested this is a comment on the importance of tying reclamation certification to wildlife habitat suitability (amongst other things) because Shell's EIA impacts are predicated on reclamation providing this suitable habitat.

Shell suggested they will support viable ecosystems and advised they already have commitments around this.

### ***Black Bear Monitoring***

#90. FMFN suggested that black bear population decline is a fundamental community issue and it is difficult to see how the data were used to come up with a conclusion. FMFN suggested Shell has not provided enough data to make these conclusions about removal of nuisance black bears on their population. FMFN suggested little is commonly known about black bear populations.

Shell suggested that even though it is not known how many black bears are out there, it is hard not to be able to draw conclusions using the regulated and First Nation harvesting. Shell believes that the loss of nuisance black bears is small relative to regulated and First Nation harvesting.

FMFN suggested they understand Shell is drawing a conclusion from sparse data and they understand the challenges.

Shell suggested that long term monitoring may be able to give more details to see how well the predictions in the impact assessment were met and if there are any problems, they can be discussed along with mitigation options.

Shell asked if there is a regional initiative that is trying to drive this.

FMFN advised they were not aware of one at this time.

### ***Vehicle Collisions***

#91. FMFN suggested there is very limited data on mortality due to vehicle collisions, asking Shell to acknowledge this by stating there is limited data available, instead of stating the impact is negligible. FMFN suggested this was more of a comment.

### ***Sensory Disturbance***

#92/93. FMFN suggested this is a regulatory issue to ensure that enough data is used to assess the impacts on wildlife.

### ***Model Appropriateness***

#94. FMFN requested Shell acknowledge that the correlation of the wildlife models is weak and further monitoring needs to be completed

Shell advised that the best available data were used to help inform the model, but agree that continued monitoring of wildlife use in the immediate vicinity of the Shell operations is required to add certainty.

### ***Moose Density***

#95/96. FMFN suggested they were looking for more of what goes into the model. FMFN asked if there is something that can be done to the model to make it more realistic. FMFN asked how Shell can predict that moose density will at least double in the areas adjacent to PRM and JPME?

Shell suggested they would be happy to sit down with FMFN and go over the model. Shell explained that the population viability analysis (PVA) looks at direct impact of the project on a species. Shell continued to explain that the big issue is that the PVA model parameters associated with birth, recruitment and death rates may not reflect what is currently going on north of Fort McMurray. Shell instructed that this is commented on in the sensitivity analyses in the Modelling Appendix. Shell continued explaining that the PVA model doesn't take harvesting into account, but is rather based on habitat suitability. **NOTE: this last statement was incorrect – the PVA model does account for harvesting.** However, Shell suggested that the PVA is an improvement from a sole habitat suitability modelling exercise.

FMFN suggested it seems that there is a slight disconnect regarding the data. FMFN suggest Shell's message and ASRD's messages are different.

Shell is confident that there will not be a negative environmental consequence for moose population in the RSA as a result of the project. Regarding the statement that we are suggesting that the moose population will double in areas adjacent to the proposed developments, Shell clarified that they do not say that a higher

moose density will be sustained, but that by clearing the land, moose will move away and go to adjacent areas, thus, increasing or doubling the amount of moose in these adjacent areas. What happens over time in these areas depends on access and harvesting, as well as wolf predation.

### ***Preserving High Quality Moose Habitat***

#97. FMFN requested Shell preserve high quality moose habitat adjacent to its proposed projects.

Shell advised it does not plan on preserving high quality moose habitat adjacent to its mine projects by acquiring and setting aside land with high quality moose habitat. Shell suggested there is a larger offset issue, which we discussed previously.

### ***Statistical Power***

#98. FMFN asked what “appropriate for an EIA level of assessment” means.

Shell advised that it means that Shell is using the best available information to inform the EIA.

FMFN suggested that in Shell’s SIR questions, there were a lot of references and asked if Shell would provide these.

Shell agreed to show FMFN the data and how to use it.

### ***Population Viability Model Transparency***

#99/100. FMFN suggested that there is a lack of confidence in the data used to calculate parameters in the PVA model. FMFN believe that there is a lot of limitation in the model and Shell has overstated its confidence.

Shell advised that they are using empirical data from the area. Shell acknowledged that it is not perfect, but Shell is continually improving its techniques.

FMFN suggested that they have seen some ASRD data and the EIA results do not align with the data collected by ASRD for WMU 531.

Shell suggested the models used in the EIA were the best available models at the time of submission of the EIA.

### ***Watercourse Offsets***

#101. FMFN asked how Shell was going to maintain the protection and maintenance of riparian habitat interconnectivity and the movement of wildlife species.

Shell answered stating it would do so by using setbacks. Shell explained that there is a 100 m setback distance on diverted watercourses and a 250 m setback for the Athabasca River. Shell added that this is a DFO and ASRD requirement.

#102. FMFN stated that the Muskeg River corridor is part of the corridor study. FMFN asked if it is determined to be important, could Shell do anything to preserve it?

Shell responded that they were not sure. Shell do not know the answer at this time. Shell added that at the upper reaches of the Muskeg River, the valley is made up of wide flat willows along with a fen. Shell suggested that the corridor is quite difficult to identify and the current plan has the northeast end of the Muskeg River corridor opening up onto the Fort Hills. Shell suggested that regional connectivity is pretty good.

FMFN stated that Shell uses monitoring data to help inform the location of corridors and the maintenance of connectivity. FMFN advised they are looking for Shell to review the degree of connectivity needed to maintain the moose population.

Shell replied that they have documented moose living in and by these corridors. This can be said for almost all species, except for wolverines.

FMFN asked about Corey De La Mare's [CONRAD] data? Does he use GPS collars?

Shell replied stating that Corey has been gathering movement and connectivity data and has about 50 moose GPS collared (via) adjacent to and away from the mine. Since this is his M.Sc. study under the auspices of CONRAD, further monitoring would be carried on for 2-3 more years afterwards.

Shell suggested that with CONRAD, perhaps they could have Corey come out and give a discussion on what he's doing and what he has found thus far.

FMFN advised that they had already met with Corey and that they are now trying to get him to come out and talk to the community.

#103. FMFN agreed that this question asks about buffers, which was already covered.

#104. FMFN agreed this question was about corridors, which were already covered.

### ***Participation in Reclamation Planning***

#105. FMFN suggested this question on its participation in Shell's reclamation planning was more of a comment regarding the declining traditional use of wildlife habitat, and this was covered earlier in the discussion.

#106/107/108. Nothing recorded.

### **Key Issues Identified**

1. None

### **Actions / Follow up**

1. Shell agreed to provide the references in the SIRs and how to read the data.

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## Wrap up

Shell thanked everyone for their participation, noting that the last 2 days were helpful and that Shell appreciated the honesty and the respect that everyone showed. Shell further noted that they will continue to discuss the issues and concerns and that they would follow up on the action items. Shell mentioned that they would continue to discuss things with FMFN to clarify. Shell noted that they understood the challenges and that there was room to work together and that things were positive moving forward through the agreements and negotiations and that Shell was very happy with where things were.

Shell noted that this was a good process and that Shell appreciated the open dialogue. Shell noted that FMFN pushed Shell and that Shell sometimes pushed back, which shows a relationship that is comfortable and transparent. This is effective.

Shell added that the traditional use of the land and the traditional knowledge is very important to technical experts and further that Shell looked forward to working with everyone in the future.

FMFN thanked everyone for their input and on behalf of the IRC, they were pleased with the meeting and how FMFN fundamental issues were dealt with.

Shell noted that there would be draft notes from the meeting; however, they would not be available right away as there were a lot of notes taken. Shell would however, circulate them once they were compiled but Shell did not have a time frame for this. Shell also mentioned that once the side meetings were completed and that the side issues were mitigated that Shell would continue to move forward. Shell appreciated the time and noted it felt like a successful meeting and that it was helpful to Shell.

FMFN noted that if anyone wanted to book a meeting with IRC they should copy Marie and Dan on the request. FMFN further noted that Jeremy and Jason would work with Marie going forward.

Meeting Adjourned