# **DEATH BY A THOUSAND DAMS**

# A CROSS-CULTURAL CRITIQUE OF THE SOCIO-ENVIRONMENTAL DIMENSIONS OF THE MANITOBA MINNESOTA TRANSMISSION PROJECT

A report prepared for the Wa Ni Ska Tan Alliance of Hydro-Impacted Communities

by

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#### DECLARATION

I understand that my duty in providing written and oral evidence is to help the National Energy Board and that this duty overrides any obligation to the party by who I am retained or the persons who have paid or are liable to pay me. I confirm that I have complied with and will comply with my duty.

I have not entered into any arrangement where the amount or payment of my fees is in any way dependent on the outcome of the case.

I acknowledge that it is my duty to provide:

- evidence that is fair, objective and non-partisan
- evidence that relates only to matters within my expertise or specialization
- such additional assistance to the National Energy Board as it may reasonably require to determine relevant issues.

"I remember my grandparents saying there would come a time when the sky would be covered with spider webs. I thought they were talking about the jet streams but it was hydro lines they talked about – hydro lines cover the land scape."

(Sagkeeng First Nation ATK report, 2015: p4)

"I was warned about it. [speaks in Ojibway]. Be careful my grandson. The one you see who says he knows who thinks he knows everything doesn't know anything. The one who's smart does not know anything. The one who knows everything. I always keep that in mind." (Elder Interview, April 24 2018).

#### 1.0 Preamble

1. Manitoba Hydro (MH) is proposing to construct and operate a 500 kilovolt alternating international power line in southeastern Manitoba. It will include additions and upgrades to three associated transmission stations and modifications to two existing international power lines. If it proceeds, the projected in-service date is 2020 and the budget as estimated in spring 2017 is \$453 million. The work planning for the project began in 2010 and public engagement activities began in 2013, concluding two years later (MH 2015).

2. The total length of the Manitoba Minnesota Transmission Project (MMTP) is 213 km, of which 92km already exists. Of the additional 121 km of line that are required, 36km will be located on crown lands and 85km on private lands. Most of the region is dominated by intensive human use in the form of agriculture (47%) and development (15%), although much (38%) natural habitat (i.e. forest, grassland, wetland) remains (MH 2015). Most of the latter occurs on crown land and is critical for maintaining the ecological integrity of the fragmented ecosystem.

3. This natural habitat houses a number of plant species of conservation concern, including golden-winged warbler (*Vermivora chrysoptera*) and western jewelweed (*Impatiens noli-tangere*), and important traditional use species including moose, muskrat, Saskatoon berries, and sweet grass as well as the Vita elk herd. The landscape is dominated by intensive human use, mostly in the form of agriculture and residences. Importantly, the Crown land is used for hunting, fishing and gathering as well ceremonial purposes by First Nations and Métis whose traditional territories extend into the region.

4. Manitoba Hydro has documented the impacts of the proposed MMTP over the last four years. This activity has mostly focused on assessing any environmental and socio-economic impacts of the project, but also engaging with the various publics, including affected rural and Indigenous communities.

5. At the provincial level, the economic implications of the MMTP were part of a larger Needs for and Alternatives To (NFAT) review in 2014, and its environmental implications were vetted by the Clean Environment Commission (CEC) in 2017. Because the MMTP is an international

project that extends into the US, the environmental implications of the project will now be evaluated by the federal National Energy Board (NEB) in 2018. The latter is building on rather than repeating the CEC process, although there are additional opportunities for stakeholders to intervene in the process.

6. I am a Full Professor in the Clayton H Riddell Faculty of Environment, Earth, and Resources at the University of Manitoba and my research programme over the last 20 years has focused on the socio-environmental implications of industrial activity across western Canada, notably on hydroelectric projects, oil and gas, and agriculture. This work has been conducted in close and sustained collaboration with many Anishinaabe, Cree, Oji-Cree, Nakota, Dene, and Métis communities in these same provinces and territories. Our approach is cross-cultural in nature as it explicitly bridges the western sciences and Indigenous Knowledge when evaluating impacts and responses to these industrial projects.

7. I am currently the Executive Director of the SSHRC-funded Wa Ni Ska Tan Alliance of Hydro-Impacted Communities, this an Alliance of Indigenous leaders and harvesters, university researchers, lawyers, and NGOs who are collaborating to evaluate the implications of hydroelectric power for environments and Indigenous communities alike. Wa Ni Ska Tan is Cree for "rise up and become aware" as reflected in our mandate through the wide diversity of research, educational and outreach activities we undertake as a cross-cultural Alliance. This mandate underlies our involvement in the MMTP NEB as an intervener, and my writing of this evidence report as an expert in the socio-environmental science and studies

8. My overall goal in this report is to evaluate the MMTP Environmental Impact Statement (EIS) as presented by MH, through a cross-cultural and critical socio-environmental lens. In so doing, I will argue that many components of the EIS are inadequate, focusing here on their treatment of their approach to valued components, cumulative effects assessment, and adaptive management. I will also show how and why their environmental protection, monitoring and mitigation plans are inadequate and how their engagement with the public and most notably affected First Nations and Métis communities and their experiences and knowledge regarding any project effects are highly problematic.

9. Indeed, the latter represents a step backwards compared to other recent MH projects, notably Keeyask, and arguably amounts to a "worst-practices" approach to public engagement. The socio-environmental implications are actually far more devastating than reflected in the MMTP EIS, which I substantiate with ATK reports and public comments, as well as interviews I conducted with Elders and environmental monitors from one of the impacted First Nations, all of which are included and integrated here. Manitoba Hydro has systematically isolated and understated the impacts for the environment and affected communities alike, when it acknowledges them at all. These impacts are even harder to justify if one questions whether this project is even needed.

10. To that end, I conclude by recommending:

• That more inclusive, culturally appropriate and effective approaches to identifying any and all VCs should be adopted

- That the many gaps in scientific understanding be addressed through a more thorough and far-reaching evaluation of the literature, expert elicitation with scientists, and inclusion of local and Indigenous Knowledge, and that this be conducted at a whole-system level which enables communities from outside the current RRA to engage meaningfully in the process. This will result in the better understanding and management of all impacts, including those that emerge from an integrated hydro system.
- That a sustained and formal approach be taken to assess what kinds of adaptive management and associated learning can result from other MH projects as well as the MMTP, and what kinds of opportunities for adaptive management and learning might be proactively built in to this Project, and meaningfully shared with stakeholders and impacted Indigenous communities.
- That a more collaborative or transformative approach be taken with respect to monitoring that includes sustained Indigenous involvement that will be more sensitive to adverse impacts, especially those experienced by other stakeholders and Indigenous groups.
- That there be independent evaluation of both impacts and mitigation activities, involving scientists and Indigenous communities, which will ultimately generate better understanding about the nature of the residual effects, adequate compliance, and more effective mitigation in future projects.
- That much more impactful and less self-serving models of engagement be explored by MH that enable a wider diversity of concerns and priorities to be voiced early on in the process and that genuine and respectful cross-cultural forms of engagement be developed in collaboration with affected First Nations and Métis communities.
- That more democratic and culturally appropriate approaches be used to include impacted Indigenous communities as equal decision-making partners at all stages of the process from scoping to post-construction monitoring and mitigation.
- That the Project be halted until these concerns can be addressed in a substantiative, inclusive, culturally appropriate way, if it continues at all.

11. It is important to note that these recommendations are presented by the author. The Wa Ni Ska Tan Alliance of Hydro-Impacted Communities does not necessarily endorse any particular recommendation, nor does it endorse the suite of recommendations as a whole. While each and every recommendation listed here is designed to mitigate any impacts that the MMTP has on the environment and communities alike , the list should not be considered exhaustive.

# 2.0 Valued Components

12. Environmental impact assessment (EIA) has come to play a key role in evaluating the implications of proposed industrial projects world over. First arising to reflect increased environmental awareness and concern on the part of the public in the 1970s, it has evolved over the last 30 years to become increasingly comprehensive, predictive, and inclusive. In our country, the steps and protocols are defined by and undertaken through Canadian Environmental Assessment Act (CEAA). The assessment family represents a number of complementary and sometimes overlapping approaches beyond the Environmental Impact Assessment, these including Social Impact Assessment; Health Impact Assessment; an approach that is more targeted in the form of Strategic Impact Assessment; another approach that assesses cumulative impacts of all relevant projects in the form of Cumulative Effects Assessment; and a final

approach that is conducted at larger scales in the form of Regional Cumulative Effects Assessment.

13. All these types of assessment make use of Valued Components (VCs), which refer to the main and thus more easily understood elements of a project as identified by the proponent, government, Indigenous groups, or the public as being of concern. Importantly, "*the value of the component not only relates to its role in the ecosystem, but also to the value that people place in it*" (CEAA, 2012a).

14. Their selection may reflect biophysical, social, cultural, economic, historical, health, archaeological, or aesthetic criteria; something that MH ostensibly respects and accommodates,

"biophysical and socio-economic elements that could be adversely affected by the Project and are of particular value or interest to regulators or other stakeholder groups" (Environmental Assessment Methods, p1)

and

"Valued components are components of the natural and human environment that are considered by the proponent, public, First Nations, Metis, scientists and other technical specialists and government agencies involved in the assessment process to have scientific, ecological, economic, social, cultural, archaeological, historical, or other importance."

(First Nations and Métis Engagement Process, p4.xii).

15. In so doing, VCs were identified by MMTP using a number of criteria including: being a "broad environmental, ecological or human environmental component"; being part of the "heritage of or current usage by First Nations and Metis"; being "of scientific, historical, archaeological importance", and/or being "identified as importance issues or concerns by stakeholders or by other assessments in the region" (Environmental Assessment Methods, p6). Other important functional elements are identified, again according to technical criteria, as being key "pathway components", which are ambiguously defined in the EIA as being "an intermediate component in a network of potential effect" (Environmental Assessment Methods, pix), but which ostensibly act as functional intermediaries through which any influence takes place.

16. Each VC is then explored in greater detail in the subsequent corresponding chapter of the MMTP Environmental Impacts Statement or EIS (e.g. wildlife and wildlife habitat VC in Chapter 9, human health risk VC in Chapter 18). Individual species of special note are given additional attention as so called "environmental indicators" rather than as VCs. Thus, plant and animal species of conservation and regulatory importance, invasive species, and traditional use species are all highlighted as environmental indicators as opposed to VCs in the 2017 Draft Environmental Monitoring Plan (Table 4.1, p12).

17. Rather than focusing on familiar plant or animal species, which may be of cultural and utilitarian importance to Indigenous and rural communities, the VCs that have been

generated for the MMTP are "higher level" in approach, and thus much coarser and and ultimately selected using a techno-scientific rationale. These VCs and the corresponding chapters include: fish and fish habitat (C8), wildlife and wildlife habitat (C9), vegetation and wetlands (C10), traditional land and resource use (C11), heritage resources (C12), infrastructure and services (C13), employment and economy (C14), agriculture (C15), land and resource use (C16), visual quality (C17), human health risk (C18), and finally community health and wellbeing (C19).

18. No real rationale is given for this change in approach regarding VCs in the EIS compared to past practice by MH and no citations regarding either the academic or gray literature are given to ground this change.

19. In their response to an "information request" and then subsequent "motion to compel" by Sagkeeng First Nation regarding moose, Manitoba Hydro responded by claiming that this change in approach to VCs was actually done to be more inclusive and holistic in approach,

"Manitoba Hydro chose to take an approach to effects assessment that included assessing higher-level VCs, such as 'Wildlife and Wildlife Habitat' rather than individual species. This was done in part to be inclusive of all views and communities, and integrate different kinds of knowledge, rather than fragmenting information into species specific silos." (NEB SFN-IR-001.19(a), p6).

20. In its final submission to CEC, MH actually explicitly attributed these changes to better including First Nation and Métis groups,

"In light of learnings and feedback from previous Manitoba Hydro assessments, as well as prior CEC recommendations, the VCs selected were chosen to be broader than in previous assessments to better accommodate an ecosystem approach and better align with the world views of First Nations, Metis and others."

(MH, 2017; p7).

21. Although it might be technically argued that higher level phenomena, by definition, are more inclusive in that they include a larger diversity of individual species, communities ecosystems, landscapes etc, to then argue that these were adopted to be more inclusive and to "*better align with the world views of First Nations, Metis and others*" is misinformed at best. As I will show throughout this report, exactly the opposite is taking place, especially with respect to local concerns, to Indigenous or local knowledge, and to Indigenous worldviews.

22. The CEAA does allow for flexibility in this regard, as VCs can be defined either broadly or narrowly, such that a VC, for example, might be defined as "*terrestrial vegetation*", or as "*on-site forests*" or even as "*a species of particular ecological importance due to its rarity, ecological or social value, or vulnerability*" to the anticipated project impacts (CEAA 2012a). Yet, this report (*Technical Guidance for Assessing Cumulative Environmental Effects under the* 

*Canadian Environmental Assessment Act, 2012*) further specified that species-level approaches may be and are often seen as appropriate if these species are known to be vulnerable to project-related perturbation and physical activities (CEAA 2012a).

23. The implications of this decision regarding VCs by MH are important. Firstly, they are so high level or coarse in approach that that are largely defined in techno-scientific ways and thus becomes far less intuitive and less likely to resonate with participants than, say, charismatic species such as black bear, elk, or wolves; species of conservation concern such as the golden-winged warbler or Great Plains ladies'-tresses (*Spiranthes magnicamporum*), widely hunted species such as sharp-tailed grouse or white-tailed deer; or the many species having traditional values with Indigenous people including moose or sweet grass (*Hierochloe odorata*). Someone concerned about moose or sweet grass, for example, would need locate their concerns within the larger and less tractable chapter on wildlife or vegetation, respectively rather than focus on these familiar and high-value species themselves.

24. Moreover, any challenges regarding more familiar species-level VCs become easier for proponents such as MH to refute, as exemplified by the lack of any focused and sustained monitoring of black bear and elk or the following exchange regarding moose. It is immediately clear from their motion to compel that Sagkeeng First Nation strongly values moose according to their Anishinaabe worldview, and that their concern would be best served through the EIA by identifying it as VC, upon which any project effects would need to be better examined, predicted, and, if need be, mitigated.

"Each of these [context and VC related] cases applies in this case as: (1) moose is a unique value critical to cultural rights and practices for Sagkeeng citizens; (2) the ecological distribution of moose in preferred harvesting areas is important to the Sagkeeng community and (3) Sagkeeng First Nations require adequate quality and quantity of moose to sustain the practice of traditional rights (a management target required to protect constitutional rights)."

(NEB\_SFN-IR-001.19(a), p4).

25. In contrast, as part of the MH-defined larger wildlife and wildlife habitat VC, moose are only one of many animal species and while its recent decline in population is clear, as will be documented below, these changes according to MH and the government biologists are because of stressors that are apparently unrelated to the Project,

"Key pressures on the population cited by Provincial biologists are increased harvesting, human development and disease. The mechanism of effect or the pressures on the population over time were considered during analysis. Based on this understanding, the change in habitat that would occur as a result of the Project will not have an effect on the population as habitat is not the limiting factor on moose population in the Project RAA." (NEB SFN-IR-001.19(a), p4).

26. Manitoba Hydro thus argues, again solely according to scientific criteria, that that it should not be viewed as a VC. Yet, the accuracy of any claims that the MMTP would have

little is any impact on moose populations is questionable from both a scientific view and Indigenous worldview.

27. The declines in moose population observed across southern Manitoba are not simply a function of corresponding changes in habitat as indicated above, incidentally without any data or references to the literature, but also increased pressure on the part of outsider (licensed) hunters, who will likely use the corridors to better harvest moose and other wildlife as well as the likely impacts of increased recreational activity (e.g. ATV and snowmobile use) and associated noise as indicated by these Métis residents of the RM of Tache,

"One of the main reasons we bought the property was the deer and wildlife, as I practice my traditional metis harvesting rights. Now the giant lines will open up a corridor for atvs and ski doos (noise, disruption) and especially hunters who will take advantage of my wetland areas bed to poach on my land."

(Mikel Rondeau and Ashley Poiron, 2015, Public Comments 2 of 3, p14).

28. Although apparently seen as irrelevant by MH in the above information requests and motions to compel, these indirect threats associated with human use were widely recognized by both rural and Indigenous residents as increasing in occurrence with the MMTP,

"Hunting and trapping remains an important sustenance and cultural activity for our people. Community members are concerned that the Project will create new roads and access points that will render traditional hunting areas more easily accessible to sports hunters and animal predation." (BRLPSLFN 2015, p16).

29. This broader and techno-scientific approach to VCs arguably also acts to distance and protect the proponent from any specific and contentious species of environmental concern or cultural value. And it ultimately allows MH to choose which components to value, according to their own criteria rather than those that would be widely recognized in the peer-review literature or as valued by rural or Indigenous communities.

30. One way of mitigating the adverse implications of using "high-level" VCs, would have been to identify more narrow and resonant VCs in collaboration with impacted Indigenous communities. These would then complement the high-level VCs rather than being seen as mutually exclusive on one another. Such an approach characterizes many EIAs that have implications for Indigenous communities. Thus, five of the seven EIAs evaluated with respect to projects done in the James Bay included land use by Cree as (e.g. hunting, fishing, trapping) as well as single species as VCs (Nobel et al. 2016)

31. But these "higher-level" approaches may have other implications as well. Unlike the current MMTP EIS, species-level VCs were used in the Bipole III EIS and the Keeyask EIS. But much concern, and controversy, arose regarding these species-level VCs, notably the Lake Sturgeon and Woodland Caribou regarding Keeyask (McLachlan 2014b). Manitoba Hydro subsequently sought to distance themselves from this

controversy through other means, i.e. the untested construction of spawning shoals that would apparently result in actual population increases of Lake Sturgeon or the reclassification of the protected woodland caribou as "summer residents", despite Indigenous claims to the contrary (McLachlan 2014a).

32. In retrospect, this controversy might arguably have been avoided if MH had sidestepped the issue by using higher level VCs, instead defining Lake Sturgeon and Woodland Caribou as indicators species in the corresponding fish and fish habitat and the wildlife and wildlife habitat. And then argued, as MH does here with moose, that Keeyask would not play any significant role in their further decline and thus not require any further study, monitoring or mitigation.

33. The definition of VCs in such unintuitive and technical ways thus arguably allows for greater proponent flexibility in refuting any project related concerns and associated adverse impacts since individual species are no longer the focus of management or regulatory, attention. These new categories are also much more complex and any changes harder to measure, which also creates ambiguity and provides proponents with more flexibility.

34. Water, as another example, is obviously of considerable importance to the public as a whole and is of special spiritual significance for Indigenous people in many traditional cultures. However, water, and more specifically, water quality, is now defined as a pathway component rather than a VC. And thus, is not the focus of any specific attention in the MMTP EIS.

35. As with moose above, this contradicts the concerns expressed by many of the affected Indigenous groups such as Peguis First Nation, who conducted a survey and shows that there was widespread community concern regarding waterways, as well as land and wildlife,

"4.2) Do you think the land, can be affected by transmission line and their corridors after construction?

288 - YES / 40 - NO / 6 - No Answer 4.3) Do you think the waterways are affected by building transmission corridors and lines? 280 - YES / 42 - NO / 12 - No Answer

4.4) Do you think the building of corridors and transmission lines affects wildlife?

270 - YES / 43 - NO / 20 - No Answer" (PFN, 2015, p24).

36. Dakota Plains Wahpeton Nation also spoke in greater detail about their concerns as related to water,

"Concerns were also raised related to potential Project effects to the Assiniboine River and aquifer, and to water in general, which may

negatively affect fishing opportunities. Dakota Plains Wahpeton Nation members recommended that Project activities do not compromise water and soil quality, and that mitigation measures included to "purify" the water and soil."

(DPWN, 2017, p16).

37. Finally, the Anishinaabeg of Naongashiing (AoN) also raised this issue in their information request (NEB\_AON-IR-001), indicating that effects regarding surface water (quantity and quality) were only addressed in the context of fish and fish habitat and in ways that only focused on crossings of fish-bearing habitat.

"Surface water resources were only assessed on the merits of fish and fish habitat presence, as there is no separate Water Resources chapter. However, AoN members are concerned with all surface water resources in the Project Development Area, Local, Assessment Area and Regional Assessment Area and the effects of construction, operation and maintenance of the MMTP will have on these surface water resources." (NEB AON-IR-001, p1).

38. The Anishinaabeg of Naongashiing continued by requesting a "*dedicated chapter on Surface water resources, including water quantity and water quality assessments.*" (NEB\_AON-IR-001, p1), and asked that impacts on all water bodies be assessed, regardless of whether or not they contained fish. Finally, they requested that monitoring be conducted with respect to any changes to quantity or quality of all water bodies up to 1km downstream from and within the watershed of all converter stations (NEB\_AON-IR-001).

39. Manitoba Hydro responded by claiming that information on water quality was contained in supplemental technical report, although it is clear in that same report that all 23 sites that had been examined did represent watercourse crossings and that they had also been assessed for fish habitat, which just reinforced the concern expressed by AoN (Stantec 2015a). Manitoba Hydro then proceeded to indicate that water quantity was not assessed as there was no apparent interaction between the Project and water quantity that arose during the scoping stages of the EIA.

40. In responding to this information request, MH effectively sidesteps community concerns regarding water quality and the reasonable request for downstream monitoring near to the converter stations. This was enabled by identifying fish and fish habitat as the VC and water quality as a pathway, and then claiming without any evidence or specifics and in a circular self fulfilling manner that any concerns would be addressed by mitigation

"The pathways assessed include vegetation clearing, leading to changes in water quality (e.g. sediment, contaminants and nutrients) therefore the assessment focused on the analysis of riparian habitat and the associated effects on water quality. Mitigation was designed to protect water quality aspects of surface water bodies."

(NEB\_AON-IR-001, p3).

41. It is also notable that many (six or 26%) of the 23 sites were not actually tested for water quality, and that when tests were conducted, that only broad and biological parameters of water quality (e.g. turbidity, temperature, dissolved oxygen, and conductivity) were examined (Stantec 2015a). This approach failed to test for any contaminants that would have health implications for wildlife and humans (e.g. inorganic contaminants such as heavy metals or organic contaminants such as E *coli*.).

42. Thus, as demonstrated with respect to moose and water, these high-level approaches to VCs ultimately undermine and help MH avoid addressing any community concerns. Such an approach contradicts the notion of VCs as reflecting past or present use by Indigenous communities or being of local concern as described in the CEAA and even in the MMTP selection criteria above.

43. Other indicators ostensibly receive special attention because they meet science-based and regulatory criteria. Thus, the golden-winged warbler, as a Species at Risk, is then dealt with in greater detail in the larger wildlife and wildlife habitat VC chapter, and indeed are the focus of a 17-page supplemental report (albeit without any field data or references to peer-review studies) (MH undated). But traditional use species, say whitetail deer, sage or blueberries are afforded no such consideration, since the criteria that MH actually uses, claims of inclusion aside, are not able to address Indigenous concerns, values or knowledge.

44. Although concerns about traditional use plants and medicines such as sage, weekay (*Acrorus calamus*), and sweet grass were raised in most of the ATK reports and also in meetings with Indigenous communities as paraphrased in Chapter 11 (Assessment of of Potential Environmental Effects on Traditional Land and Resource Use), they do not receive any subsequent attention. A list of over 300 traditional use plants and animals was taken from the Black River, Long Plain and Swan Lake First Nation (BRLPSWFN) ATK report and then used to inform the chapter on vegetation and wetlands and to a lesser degree, monitored as part of Environmental Protection (as presence/absence) But if they are mentioned at all, it is only in the context of science-defined, "count-them-and-know-them" transects and surveys for traditional use plants and vegetation and habitat as a whole.

45. Yet, many of the concerns regarding these traditional use plants are related to the application of herbicides on rights of way. Rural landowners and Indigenous People alike were gravely concerned about the direct impacts of herbicides used for vegetation management and of EMF for wildlife and humans, and more generally adverse health impacts associated with the Project.

46. Indeed, when the concerns as identified in comment sheets were summarized for the open houses in Phase One, health and safety was identified as the third highest concern (66%) after the location of the related issues of line location (75%), and proximity to residences (74%) (Summary of Public Engagement in Round One, p28),







47. Although not identified explicitly by MH within the EIS, public concerns were also reflected in the many emails that were submitted by rural and Indigenous residents after public meetings in 2015. Many of these occurred after a meeting in La Broquerie, where about 14% of the population and many of those emailing MH are Métis. As with the outcomes of the public meetings (Fig 1), there were many concerns regarding the environment, notably natural habitat wildlife and waterways, and regarding socio-economics, notably those related to losses in livelihood and property value (Table 1). However, unlike the outcomes of public meetings seen above, the most frequently communicated concern in the emails was related to the lack of consultation, as will be discussed below (Table 1).

48. Thus, one resident indicated that they were worried about declines in property value, which were seen to increase with proximity and the initial value of the residence,

"We have the same concerns as most, with the potential health concerns and the most likely decrease in property value...We have neighbours that are selling, we have neighbours that are cancelling renovations that were already in the works and again, we are closer to the line than they are." (Doug and Meredith Quark, Oct 20, 2015, Public Comments 1 of 3, p1). **Table 1**. Summary of individual public comments, most of which were emailed in November, 2015, according to environmental, socioeconomic, and health and safety, and socio-legal themes. Indicated are the number of individuals and the number of mentions. (Source Public Comments 1 of 3, 2 of 3 and 3 of 3).

Concerns	total number	Sub-concerns	#	Comments
Environmental	65			
		Wildlife general	12	
		Animals	8	
		birds	9	
		Habitat	18	
		waterways	10	
		Landscape	4	
		General	3	
		noise	1	
Socio-Economic	51			
		decrease in property value	7	
		demographic	3	
		Land out of production	5	
		Impact on local	6	
		agriculture		
		Local development	19	
		Loss of revenue	3	
		Project unviability	8	
Health	21			
		General concern (EMF)	17	
		Children	4	1 – risk of leukemia, 2 – general, 1 – melatonin decrease
Safety	18			
Socio-legal, ethical	52			
		Ethical/misinformation	6	
		Lack of consultation	37	
		Infringement of Metis	8	
		right		
		Lack of local engagement	1	

49. Threats to wildlife and the natural habitat on their property was also identified by many. Another email correspondent indicated that they were concerned about the health of their family and notably their children. And as these Métis landowners indicated,

> "There is just TOO much information on the internet for my fiancé and I to believe that it is safe to live, get pregnant and raise a family near these giant towers. How is she supposed to feel like a responsible person when we raise a baby this close (less than 200m) to power lines? I just can't see it." (Mikel Rondeau and Ashley Poiron, Feb 23 2015, 2 of 3 Public Comments).

50. A rancher indicated that the health of their livestock would be adversely affected, and thus their livelihoods,

"We have a 300 head beef cattle farm. We harvest our own feed and have cattle grazing I the field where the line is supposed to pass. My two sons have always worked on the farm and will eventually take over and I am concerned that this Transmission line will affect the health of the cattle as well as the conception rate of the cattle...If this Transmission line goes through, I am afraid that the heritage that I worked so hard to preserve and pass down to my sons will no longer be." (Bernard, Marge, Renald and Gilles Fournier, 2015, 2 of 3 Public Comments).

51. These widespread concerns about the health implications of EMF were reflected in many of the public comments,

"Our concerns about EMFs should not be taken likely, as it effects everyone who will be FORCED to live near this line if it is allowed to precede! STRESS is high for everyone not knowing if EMFs will effects our children and grandchildren, this is the reason why we live where we live, away for all the stressors and pollution in the city. Hydro's answer is they are within Canadian standards."

(Jim and Donna Teleglow, Nov 20, 2015, Public Comments 2 or 3, p10).

52. However, the response of MH was as techno-rationalistic in approach as it was with respect to declines in water and moose. Although health related concerns about EMF and herbicides are reflected in the VC on human health risk (C18) and on community health and wellbeing (C19), as with community concerns regarding moose and water, there is no willingness or ability on the part of MH to accommodate these concerns. By insisting throughout that any impacts are "*within Canadian standards*" (Jim and Donna Teleglow 2015), simply enables MH to divert the narrative and to sidestep any responsibility

53. Regarding community health and wellbeing, there are also other important albeit indirect health implications that are at play. It is well-known that Indigenous people show substantially poorer health than the larger population, and are are at heightened risk of

mortality, diabetes, and heart disease, and other health ailments as was indicated in Chapter 19, although with an over reliance on the First Nations Food, Nutrition and Environment Study for Manitoba (Chan et al. 2010).

54. An important contributor to these health impacts has been the transition from traditional foods to processed and nutrient-dense, store-bought foods across the country (McLachlan accepted). Although many studies assume that this shift in diet is an inevitable and almost evolutionary process, McLachlan (accepted) recently argued that these changes were better characterized as diet coercion than diet transition, as an essential driver was the contamination of these foods and the environment in traditional territories due to nearby industrial activity. The decline in wildlife in the RAA as described in the Sagkeeng First Nation and Roseau Anishinabe First Nation ATK reports plays an important role in this shift in diet and in all the attendant health risks. These declines will continue in the future as described in the CEA subsection below and will only be further aggravated by an erosion in confidence in the safety of any remaining plants and animals associated with industry and more specifically as it relates to the Project, herbicide use and EMF

55. Yet, MH is completely deaf to widespread concerns regarding these issues and a substantial literature that reinforces them, insisting instead, and wrongly that these concerns are not supported by either science or regulators,

"There are no anticipated effects associated with country food quality since all herbicides used are approved by Health Canada and Manitoba Hydro will follow label requirements for right-of-way application..."

(Exec Vol, 2015: p34).

56. Using simple and descriptive equivalent to those listed below for assessing project-level and cumulative effects on vegetation and wetlands, it was decided that the impacts on "Aboriginal health" during and post –construction would be adverse, permanent, continuous, irreversible, low in resilience, and operate at the level of the RAA (Table 19.20, p56, Fig2). Indeed, the only residual effect that is not at its greatest and most threatening level is magnitude, which was assessed as low. Importantly, MH presents identical results for cumulative residual effects regarding Aboriginal Health. Thus, residual cumulative effects were again seen as being adverse, permanent, continuous, low in resilience and operating at the RAA, and again as being low in magnitude (Table 19.22, p67).

57. Ultimately, it was decided by MH that any project effects would not be significant as they related to Aboriginal health,

"Project effects on Aboriginal health related to the availability of traditionally harvested foods will be not significant because changes in harvested foods availability will not result in a deterioration of food security that results in chronic or acute physical or mental health outcomes detectable at the population."

(C19, p68).

#### 19.5.7 Summary of Residual Social Effects on Community Health and Well-being

Table 19-20 summarizes residual effects on community health and well-being.

Table 19-20	Summary of Residual Social Effects on Community Health and Well-being
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	Residual Social Effects Characterization								
Project Phase	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Socio-economic Context		
Health Effects Associated with Socio-economic Change									
Construction	P-A	Ν	LAA	ST	С	R	MR		
Health Effects Associated with the Mobile Workforce									
Construction	Α	Ν	LAA	ST	С	R	MR		
Stress and Annoyance									
Pre- Construction	Α	L	LAA	ST	С	R	MR		
Construction	Α	L	LAA	ST	IR	R	MR		
Operation and Maintenance	A	М	LAA	Р	С	R	MR		
Aboriginal Health									
Construction	Α	L	LAA	Р	С	1	LR		
Operation and Maintenance	A	L	LAA	Р	С	I	LR		

**Fig 2**. Summary of residual effects on community health and wellbeing, notably Aboriginal Health (A: adverse; L: low, P: permanent; C: continuous; and LR: low resilience)

58. This lack of significance, is cited as reflecting the large extent of remaining Crown land; lack of effects on either wildlife and wildlife habitat and then vegetation and wetlands; continued access to crown lands within the Project easement; and the higher proportion of harvested sites outside the LAA (C 19, p68). Again, I would call these descriptive matrices as "convenience data" as they are almost entirely subjective and thus open to bias and manipulation.

59. Ironically, the Indigenous Knowledge reflected in the ATK reports, public meetings, emails, information requests, and the interview data presented here represent the only data that can actually inform effects assessment. MH assumptions aside, it is clear from these data that the magnitude of these project and cumulative residual effects are sure to be high. And to be clear, these insights reflect actual data that arise from the impacted Indigenous communities themselves, not simplistic and convenient descriptive narratives that MH has generated in isolation from these affected communities. It is at best unclear and at worst highly problematic why MH would conclude that there would be no significant project-level or cumulative residual effects on Aboriginal health, given that even their simple matrices seem to indicate exactly the opposite.

60. Thus, without substantiating these claims other than a reliance on references to the findings of mainstream regulatory bodies like Health Canada and international health bodies like the World Health Organization, they are fully confident in claiming that,

"Both Project and cumulative environmental effects on community health and well being are considered not significant." 61. Ultimately, a much more appropriate approach would have been to use outcomes from the community and public meetings and the community-submitted ATK reports to identify plant and animal species and other components (e.g. water) that were of cultural importance and to create VCs that explicitly reflected these values. To identify mutually acceptable ways that these same communities could have meaningful and sustained input into this data collection, evaluation and implementation. And thus to ensure that at substantial portion of the VCs addressed in the EIS reflected these same Indigenous Valued Components.

62. Moreover, regardless of whether or not these worldviews are reflected by the technoscience world view that dominates MMTP project design and management and society as a whole, their inclusion would also help reduce distrust, facilitate community involvement and support and ultimately work to help ensure the success of the Project. as will be discussed below.

## 3.0 Cumulative Effects Assessment

63. Cumulative effects assessment (CEA) has become an increasingly important concept in EIA over the last 30 years, as it is evermore evident that projects can no longer be viewed in isolation from one another. Yet, despite their widespread use around the world, and in many cases being legislated, there is still no universally accepted working definition of what is meant by cumulative effects (Gunn and Noble, 2011). A working definition used here was recently suggested by the Canadian Council of Ministers of the Environment (2014), who define cumulative effects as *"change in the environment caused by multiple interactions among human activities and natural processes that accumulate across space and time"*. Although CEAs have now been implemented in over 100 countries, they remain at best an imperfect science and, as some would say, art (Loomis and Dziedzic 2018). Understanding remains weak, practice is wanting, and any improvement of these practices is halting at best (Duinker et al. 2012, Sinclair et al. 2017).

64. Yet project effects that might otherwise be of minor importance on an individual basis can in contrast accumulate over time and in space in ways that can be predicted, although not always, and that can have substantial social, economic or environmental implications (Kryzanowski and McIntyre 2011). Ultimately, the effects of these interactions can be seen as either additive (where the total effect is equivalent to the sum of the individual effects), synergistic (where the total effect is greater than the sum of the individual effects), or antagonistic (where the total effect is less than the sum of the individual effects) (Ross and McGee 2006, Harriman and Noble 2008).

65. Because many of these effects are synergistic and non-linear in nature, restricting the evaluation of any effects to single projects often underestimates their potential impacts. This has been referred to as "progressive nibbling" (Gunn and Noble 2012), as exemplified by the ongoing the fragmentation of rural landscapes in southern Manitoba and the combined impacts of agricultural, residential, and hydro infrastructure development, and of special relevance here, the associated but unexpected decline of moose across the region despite the presence of much

high quality natural habitat. Others have characterized the emergent nature of these impacts as "death by a thousand cuts" or the "tyranny" of otherwise innocuous decisions (Noble 2010).

66. The multiple and cumulative nature of these impacts was highlighted in the Roseau River Anishinabe First Nation ATK regarding the wildlife, which have declined dramatically,

"...today the wildlife game is scarce and hard to hunt, because of man-made destruction and natural disasters of harsh winters, floods, drought have an impact on the traditional lands. The clear cutting for farming, gas lines, oil pipelines, railways, highways and power lines/wind farms have destroyed most of the habitat for the wildlife which has diminished the population and species. Today there are still a handful of people who still hunt wild game such as moose, deer, fox and beavers for food, for the hides and for sport. Farming and Farmers have made it difficult for our people to hunt by closing access to hunting areas by digging out roads or putting up fences and/or threatening to charge them for trespassing."

(Roseau River Anishinabe First Nation 2015, p8).

67. But these effects are also highlighted with respect to plant gathering, despite still being much more common and widespread,

"Plant Gathering – this tradition is alive and well, it is practiced with both the young and older generations, there are many areas in the community as well as far to the east to the Ontario border and as far north to the Sandilands that people go and pick plants, berries and nuts. Plants used for medicines, such as sweet grass, sage, Seneca, cedar, and wild berries such as plums, chook cherries, raspberries, blue berries, black berries and hazel nuts were plentiful right in our back yards, but due to clear cutting to make way for residential and commercial buildings the plants and berries slowly disappeared. Flooding also threatened the cycle of many plants and berries. Bark was also used for making baskets, tools, shelter and heat. Wild rice is harvested annually by the Manitoba/Ontario border."

(Roseau River Anishinabe First Nation 2015, p9).

68. Manitoba Hydro was still seen by some communities as treating these impacts in isolation of one another,

"With each new development undertaken, whether it's a road, a dam or transmission line, there is considerable concern expressed by members of Sagkeeng about how d evelopments impact the health of, not only individuals but also on the earth as a whol e."

(Sagkeeng First Nation 2015, p13).

69. Although cumulative impacts or "ripple effects" will be observed for larger systems, they are also evident, perhaps even more so, for single, traditional use species,

Development is encroaching on lands where harvesting of medicines has traditionall y been undertaken. In regard to the proposed transmission line, members advise that clearing of the route and removing particular trees and other species of plants has a ripple effect. From their perspective, there is a natural interdependence among all th ings. Members find they have to seek other places for harvesting because when you r emove one species in an area others also disappear. Harvesting medicines is an activ ity that members advise is getting increasingly difficult to do.

(Sagkeeng First Nation 2015, p13).

70. Rather than examining the complex system as a whole, key elements of these systems are evaluated, so called valued components that are ideally defined in inclusive ways with the participation of many stakeholders (Sinclair et al, 2017, see section 2.0 above). As we will discuss below, the MMTP EIS is far from ideal in this regard. Indeed, when the public engagement that MH used is critically examined, it arguably represents an example of worst-practices – lots of busy work, lots of aversion, and very little of substance as meaningful outcomes. Most of this public engagement had to do with getting public feedback regarding alternate routes, which although important does not reflect the wide diversity of concerns regarding the project. This was also true for assessing any cumulative effects.

71. A wide diversity of frameworks are used to provide guidance on how to better understand and respond to multiple and cumulative effects, Typically, these consist of series of sequential and iterative steps that revolve around the initial determination or scoping of spatial and temporal boundaries and valued components, the assessment of baseline conditions; the monitoring, analysis and prediction of any cumulative effects, an evaluation of the significance of these effects, and finally the mitigation that is required to ameliorate any residual impacts (Tricker 2007, Gunn and Noble 2009, Cooper 2011, Seitz et al. 2011). In so doing, many difficulties are often encountered. One of the first decisions that needs to be made is what dimensions of the system at hand need to be evaluated with respect to any given project. Thus, the bounds of the system at hand need to be set in space and time.

#### 3.1 Spatial Boundaries

72. For the MMTP, MH used three spatial scales: that of the project itself (the Project Development Area or PDA), a local boundary that extends 1km on either side of the project (the Local Assessment Area or LAA) and then a sub-regional scale that extends 15km on either side of the transmission line (the Regional Assessment Area or RAA) with respect to which any cumulative effects are then assessed. These bounds, especially the latter two, are arbitrary in nature. Indeed, it is unclear how and why these bounds were set in this way.

73. Arguably it benefits the proponent in any CEA to use scales that are as small as can be defended, since less data will be required, fewer effects will need to be documented, and fewer stakeholders will need to be involved. Originally, only nine First Nations and the MMF were recognized as being impacted by MH. Some of these, had reserves that were at least 100km away from the PDA (e.g. Swan Lake First Nation), in part because their traditional territories are already affected by existing transmission lines and would be further affected by the Project. The spatial bounds of these traditional territories are often much more expansive than would be

otherwise be recognized by MH. As Chief Orville Smoke from Dakota Plains Wahpeton Nation indicated,

"In Manitoba, as of recently, we hunted, harvested, picked berries, worked in all of Southern Manitoba including in Winnipeg, out of Winnipeg and all the way to the Saskatchewan border into Saskatchewan. We harvested our food until private lands came up and reservation parks and so on." (DPWO 2016, p14 as cited in DPWN 2017).

74. In addition to those 10 Indigenous communities that were initially been recognized by MH, the NEB found in favour of six additional First Nations as being affected by the MMTP, although their reserves were located in northwestern Ontario. That said, many other "downstream" and especially "upstream" communities are already directly affected by the existing transmission lines and would be further affected by the MMTP, as we will discuss below.

75. Although spatial bounds ultimately will need to be be manageable, such small scale approaches are only defensible if they are the outcome of credible and inclusive outreach, where the full diversity of stakeholders and affected Indigenous communities play a key and meaningful role in defining the bounds of the project. Communities further to the North will be regularly and adversely affected by decisions made with respect to the MMTP and whether and to what degree these products are exported to the US, and that their concerns and any effects that they experience should have been involved at all stages of the EIA, this accomplished by evaluating the regional implications of the MMTP at a fourth and largest system-level scale.

76. Such whole system-level effects can be seen in regard to the Churchill River Diversion (CRD). The original interim license, as approved in 1977, allowed MH to increase water levels 3m (this down from an originally planned and hugely destructive 10m increase) and to divert 850 m<sup>3</sup>/s of water from the Churchill to the Nelson River. As of 1986, MH has operated the so-called CRD Augmented Flow Programme that is approved each year by the Minister of Water Stewardship, which allow MH to deviate from water levels initially specified in the original license in order to "optimize" CRD operation (MB 2018a). This programme results in substantially higher water levels (ones that exceeded 3.25m in 2017 for example) that flood and that create distress for communities such as O-Pipon-Na-Piwin Cree Nation (OPCN) on South Indian Lake, and which arguably contribute to the flooding of the Churchill rail line that runs from Winnipeg to Churchill. The need for augmented flow will only be aggravated by the existence of the MMTP and the (perceived) need to export electric power during peak use in February each year.

77. These kinds of experiences are shared by Indigenous communities across the province. An approach to scoping that invited participation by any community or group that felt it would be adversely affected by the MMTP would have resulted in a larger, but more credible and far less arbitrary spatial bound for the EIS as indicated in the Black River, Long Plain and Swan Lake First Nation ATK report,

"A video was played that showed a huge piece of land floating away due

to Manitoba Hydro manipulating water levels contrary to nature. o Other reserves need to be at the table. o Compensation must be addressed. o Hydro needs to first straighten out damages from the past." (BRLPSLFN, 2015; p55).

78. The dams, generating stations, transmission lines and indeed Lake Winnipeg, which is used as an effective reservoir to store water until needed, function and importantly are already managed by MH as an integrated system to generate hydropower for domestic use and increasingly for export to other provinces and the US. The larger fourth "system-level" boundary is thus essential for understanding how and to what degree each additional MH project will affect the system as a whole. Emergent phenomena like the link between export sales as facilitated by MMTP and the augmented flow in South Indian Lake or the associated flooding of the Churchill rail line in spring 2017 can ultimately only be predicted by such system-level understanding and management. Moreover, the cumulative effects that are added by each of the new projecst now and into the future can similarly only be understood and managed at this larger system level.

79. Even MH recognizes that it manages the as one integrated system,

"Hydro operates an integrated electricity system in the province of Manitoba consisting of generation, transmission, and distribution facilities. The corporation's generating resources include fifteen hydroelectric generating stations and two thermal plants, with a total system capacity of 5675 MW [megawatts]."

(cited in IR: NEB\_WNST-IR-001.4, p7).

80. It is, thus, unfortunate that the NEB opted to exclude these system-level effects, in that "*the Board does not intend to assess the environmental and socioeconomic effects associated with upstream or downstream facilities associated with electricity production*" (Board Ruling 4, February 14, 2018). While a Regional Cumulative Effects Assessment (RCEA) has just now included that purports to understand these system-level effects, it has been criticized as inadequate (Blakley and Olagunju, 2017) and is at best a singular, snapshot view of any impacts rather than a sustained and iterative approach to CEA that will continues into the future. Ultimately, the additional impacts of any proposed project should be evaluated in this larger context and in an ongoing way, rather than restricting these to a one-of RCEA.

81. The need to select scales of analysis that were larger than those directly related to any given project when evaluating CEA has been explicitly recognized,

"The assessment area for cumulative effects may be larger than required for the assessment of the project-related environmental effects to capture the greater extent of overlapping cumulative effects of other physical activities. The type of data required may change as the scale of the assessment changes."

(CEAA, 2014, p40).

82. Many large-scale spatial data (satellite imagery for vegetation and water cover, water levels, roads, etc. as well as modelled data regarding water water levels and flow that MH regularly generates) already exist that could be incorporated into assessing cumulative impacts at this whole-system level. Moreover, an approach that meaningfully involved affected communities not only in boundary setting but at every stage of the CEA at these four scales of organization would enable effects to be anticipated and managed using Indigenous and local knowledge, thereby complementing existing and addressing gaps and errors in scientific data, and thus resulting in a more effective and credible CEA,

"I have noticed on the map that Manitoba Hydro submitted that the fields that I work are classified as range or grassland, perennial cropland and pasture. For your information this land has not been in range or pasture for decades. It has been cropped annually with corn, soya beans, or cut for alfalfa hay. A century farm on the north side of La Broquerie is on the route and is not marked on their map. I would question the information being submitted to Manitoba Conservation. Local knowledge is the best at the end of the day. I wonder what else is not accurate."

(Albert Wolfe, Nov 24, 2015, Public Comments 3 of 3, p29).

83. Another rationale for a larger system-level CEA, is that it would facilitate learning and adaptive management that could be generalized from one project, say Bipole III to MMTP, or another, or even facilitate multi-site learning and active adaptive management. Currently, these projects are seemingly only managed in isolation of one another, and while the MMTP EIS is ostensibly a proponent of adaptive management, very little is reflected therein as will be discussed below (Section 4.0)

84. As indicated below with respect to Public Engagement (Section 7.0), the sustained and meaningful involvement of Indigenous people in cumulative effects assessment has simply not occurred, not because it is difficult and not because it compromises high quality CEA (as the literature shows, exactly the opposite it true), but rather because it arguably undermines the hegemony and control that MH has over any data that are used to design and manage its projects, and ultimately its operations as a whole.

85. Importantly, communities from the North which would also be part of this whole-system CEA, but who are excluded by MH as affected communities, have also made use of the currently defined RAA, whether directly through hunting, trapping and gathering, through ceremony, or through trade. As one Elder from Black River indicated,

"We would not think in the sense of boundaries - MB & US borders along to Ontario, as there were people who would come from the Lake of the Woods area – Buffalo Point and Shoal Lake - hunters and wild rice harvesters. There was a gathering place where the Cree people came from the north to trade goods in the area (no name referenced)."

(BRLPSLFN, p18).

86. In that same ATK report, am Elder also stated he hoped these whole-system interactions and

dialogue continue whether the sites are located in the east, west, north or south,

"we are all emotionally connected to these sites no matter where they are" (BRLPSLFN, p54).

### 3.2 Temporal Boundaries

87. The temporal bounds of the MMTP system being examined are also of importance here. Throughout the EIS, the landscape was viewed as highly compromised by past and present agriculture, And, thus, the impacts, or in this case any residual effects of agriculture, are effectively ignored with respect to the MMTP,

"The extensive loss of native species over the past 200 years has created SAR and SOCC (Koper 2009). Rare plant species are now restricted largely to undisturbed areas in native vegetation cover classes. Therefore, agricultural land is not addressed in this assessment."

(C10: p89).

88. Yet, the cumulative effects of these past activities, including those related to agriculture are recognized in the Black River, Long Plain and Swan Lake First Nation ATK report,

In talking about Bi-pole and other hydro transmission lines, the mandate needs to be expanded not only on Hydro but on what everyone is doing to Mother Earth such as water, air and other aspects of environment. There are planes spraying pesticides. What are the results on plants, water, humans (breathing)?"

#### (BRLPSLFN, p54).

89. Using this already compromised state as the baseline for comparison is problematic underestimates the likely cumulative impacts of this specific project. As Gunn and Noble (2012) indicated in their evaluation of the Bipole III project, if a past state is selected where human caused degradation has already occurred, it becomes progressively less likely that any adverse effects will be documented, and even less likely that these will be seen as as cause for concern. No baseline data that were representative of the system prior to settlement and agriculture were used to allow for an evaluation of the combined effects of present or future projects

90. Importantly and ironically, such an approach also acts to rationalize further degradation. The ecological importance of any remaining habitat fragments is effectively questioned in light of this extreme fragmentation, as indicated for example by declines in landscape intactness,

"The conversion of native vegetation for agriculture and development has reduced the number and size of intact vegetation patches on the landscape." (C10, p21).

91. As indicated in the EIS, any fragment of natural habitat that is less than 200ha is effectively ignored, unless part of the protection plan for the golden-winged warbler. But exactly the opposite should be the case. All remaining fragments should be seen as even more important

given the degree of fragmentation and the intensity of the surrounding land use in the region. A greater range in the size of fragments, than the 10 fragments that are >200 ha in size that currently exist in the RAA, should described in detail and any change to these should be monitored. Especially since some forms of habitat, notably tall-grass prairie has become legislated as endangered ecosystem in this province under the Manitoba's Endangered Species and Ecosystem Act (MB 2018b).

92. Such longer-term views of the regional landscape, and of any impacts that are also evident with respect to MH in the region, were clear to many Indigenous communities,

"Elders, years ago, saw that hydro would expand fast without enough thought about the impact on land. They feared it could destroy our water and our animals, plants and that one would see these hydro lines all over the land affecting animals and plants. Each First Nation has experienced the poor relationship with Manitoba Hydro exercising their blanket permit on our reserve lands. That poor approach is still there."

(BRLPSLFN, p51).

93. Or as indicated in the preamble with respect to Sagkeeng First Nation,

"I remember my grandparents saying there would come a time when the sky would be covered with spider webs. I thought they were talking about the jet streams but it was hydro lines they talked about – hydro lines cover the land scape."

(SFN, 2015: p4).

94. The impacts of fragmentation also accumulate over time, make it progressively harder for Indigenous harvesters to earn a livelihood. As an Elder from Long Plain First Nation indicated,

"Not too many people trapping now. The hunting areas are getting smaller. You can't make a living off of it nowadays. We would snare and trap fox, coyotes and raccoons."

(BRLPSLFN, p18).

# 3.3 Existing Cumulative Effects Assessment

95. Another key problem for CEA in general is how to meaningfully assess impacts in these relatively complex systems (Duinker 2012). The many approaches that are used reflect a continuum of quality. At one extreme, as a legal obligation they are perfunctory with little if any theoretical or pragmatic value whereas, at the other end of the continuum, practitioners view all effects in any EIA as cumulative in nature, where any impact is automatically and peripherally viewed in the context of other stressors to the system (Sinclair et al. 2017).

96. A wide diversity of approaches is used to assess cumulative impacts within these two extremes. One approach is to make use of lists and matrices that evaluate each of the combined projects on a number of components of the system at different scales of time and space.

Although these approaches are commonplace, they are widely seen as inadequate, open to bias, and as having little if any real predictive value (Sinclair et al. 2017). Although ostensibly an improvement over the Bipole III EIS, where the impacts of past and future projects were not meaningfully evaluated at all (Gunn and Noble 2012), this use of simplistic matrices was adopted in the MMTP to assess effects of existing and anticipated projects on VCs.

97. These anticipated project interactions were achieved mostly through general tables in the Methodology chapter, these elaborated upon in greater detail within each subsequent VC chapter. Although this scoping exercise may have been a useful starting point as a thought experiment to map out interactions that might be worthy of further examination, it unfortunately was also the end point in this EIS. The tables, see Fig 1 below, were simple presence/absence check boxes



MANITOBA – MINNESOTA TRANSMISSION PROJECT ENVIRONMENTAL IMPACT STATEMENT 10: ASSESSMENT OF POTENTIAL ENVIRONMENTAL EFFECTS ON VEGETATION AND WETLANDS

Potential Cumulative Environmental Effects on Vegetation and Wetlands

Table 10-19

	Potential Cumulative Environmental Effects								
Other Projects and Physical Activities with Potential for Cumulative Environmental Effects	Landscape Intactness	Native Vegetation	Wetland Cover Class	Invasive Plant Species	Rare Plant Species	Traditional Use Species			
Past and Present Physical Activities and Resource Use									
Agriculture (Conversion, Livestock Operations, Cropping and Land Drainage)	~	~	✓	✓	✓	~			
Residential Developments	~	~	✓	✓	✓	✓			
Existing Linear Developments	~	✓	✓	✓	✓	✓			
Other Resource Activities (Forestry, Mining, Hunting, Trapping, Fishing)	~	~	✓	√	✓	~			
Recreational Activities	~	✓	✓	~	~	✓			
Project-Related Physical Activities	~	✓	✓	✓	✓	✓			
Future Physical Activities									
Bipole III Transmission Project	-	-	✓	-	-	-			
St. Vital Transmission Complex	-	-	✓	-	✓	-			
Dorsey to Portage South Transmission Project	-	-	~	-	~	-			

**Fig 3.** Potential cumulative environmental effects on vegetation and wetlands in the past, present and future as described in Chapter 10 (Effects on Vegetation and Wetlands).

construction of the ROW would or would not affect vegetation and wetlands - obviously a yes, and also be affected by Residential Developments, also a yes).

98. A short rationale was presented in the original table, and then elucidated in greater detail as text in the subsequent VC chapter. These narrative texts were highly repetitive and speculative in the absence of any quantitative or qualitative data, and difficult to to read because of the lack of scientific data, much less any Indigenous or local knowledge.

99. An example of this narrative text regarding cumulative residual effects on rare plant species is presented here,

"Project effects on rare plant species abundance and distribution are expected to act cumulatively with future projects that will affect native vegetation or known occurrences or distributions of rare plant species in the RAA (Table 10-19). Parts of the RAA have been disturbed by agricultural, industrial and residential development, which is why some plant species are rare..."

(C10: p105).

Likewise, with respect to traditional use plant species,

"Project effects on traditional use plant species abundance and distribution are expected to act cumulatively with future projects that will affect areas of native vegetation or known harvest locations of traditional use plant species in the RAA (Table 10-19). Since European settlement, there has been a loss in the abundance and distribution of traditional use plant species in the RAA due to agricultural conversion and industrial and residential development. In the Existing Corridor, many of the areas used for harvesting traditional use plant species have been removed due to agricultural conversion..."

(C10: p107).

100. These descriptive narrative-texts are then summarized, according to the direction, magnitude, geographic extent, duration, frequency, reversibility, and ecological context of any effects on vegetation and wetlands as whole, and then for all its dimensions including rare, invasive, and traditional use plant species (Fig 4).

101. Few, if any, data are actually presented in these matrices. Ironically, these kind of "road maps" don't actually allow anyone to assess, much less quantify, cumulative impacts. One is left with text that indicates this project supposedly resulted in an impact, this other project perhaps not (again based on subjective check boxes) and a final conclusion of no significant Project impact. This is shown here with respect to traditional use plants,

"Because no cover classes will be eliminated from the LAA or RAA, the Project will not affect the current viability of native vegetation cover classes that support traditionally used plant species in the RAA. Based on these summaries, potential Project effects on vegetation and wetlands are considered not significant."

(C10: p110).

102. Using the above elimination of these cover classes (i.e. native vegetation, traditional plant use, plant species of conservation concern) as the threshold for significance when it came to assessing cumulative effects at the level of the LAA or RAA is unreasonably and indefensibly high. Many effects were recognized as affecting vegetation or wetlands in important ways by stakeholders and by Indigenous communities at levels that did not require the elimination of any given cover class within 15km of the Project.



Fig 4: Summary of cumulative environmental effects on vegetation and wetlands and, as presented here, on traditional use plant species (Table 10-20, p108)

103. Such shortcomings in CEA are widespread in practice. This was shown in a recent study by Noble et al. (2016) where they evaluated the quality of CEAs as reflected in seven EISs that had been generated for proposed projects conducted in the James Bay Territory (Noble et al. 2016). In all these EISs, data were rarely, if ever, presented; no probabilities of impacts occurring were shown, only narrative descriptions were used; benchmarks or references were rarely used; and explicit thresholds or levels of acceptability were rarely used when it came to monitoring or mitigation plans (Noble et al. 2016). Yet, many other more credible approaches are used to assess cumulative effects in the literature, ones that reflect the kind of detail that was used in choosing along various alternative routes in the MMTP, that are quantitative and science-based in approach and would have made more effective use of any existing data.

104. Some of these approaches are discussed in a recent CEAA report entitled 'Technical Guidance for Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012' (CEAA 2014). Although the simple checklists that have been used in the MMTP are common place, they are "*not typically useful for analysis*" (CEAA 2014, p51). More appropriate practices include the use of interviews and questionnaires in generating project-specific quantitative and qualitative data. Conceptual and numeric modelling is also often used to simulate interactions between projects, VCs and other physical activities, these including hydrological or hydrogeological models, species models, and air and water dispersion models. Network and systems analysis is often used to examine causal relationships between different projects and actions and VCs as can indicators of change that provide information regarding the VCs (e.g. herd size, density, rates of mortality or reproduction of affected caribou). Trend analysis is often used to SVCs over time in relation to some reference system and might include simple indicators, conceptual diagrams, video simulations or aerial imagery in doing so. In turn, GIS is often used to superimpose layers of spatial information, any overlaps

indicating potential cumulative effects (CEAA 2014, Duinker et al. 2012). Yet none of these is referred to for the MMTP, much less used to assess any cumulative effects.

105. Indeed, it is remarkable how few references are cited in the CEA for MMTP, and, for that matter, in the EIS as a whole. One can't help but wonder why, since it behooves the so called specialists at MH to explore what approaches represent the most current and most effective practices used in CEA. A series of literature-based biophysical technical data reports (i.e. on air, fish and fish habitat, greenhouse gas lifecycle, groundwater, historic and future climate study, noise, terrain and soils, vegetation and wetlands, wildlife and wildlife habitat) were included as part of the EIS. Socio-economic technical data reports (i.e. economic impact assessment, EMF and radio noise calculations, farming around hydro towers, heritage resources, low frequency electric study, socio-economic and land use, traffic impact study) were similarly included. It is notable that none of these includes a review on CEA, respectful ways of integrating Western science and ATK, or different models of engaging with the public or more specifically First Nation and Métis people. Thus, all of these technical and supplemental reports are science and technology centered, and even in that regard some at least are not neutral reviews, e.g. the report regarding EMF as will be discussed below (Exponent, Inc. 2015). Or others that are simply inadequate (i.e. the assessment of "heritage resources" using modelling and so-called "windshield surveys" without actually formally interviewing any rural or Indigenous communities from the RAA) (Stantec 2015b)

106. At first glance, the absence of any literature review is also a missed opportunity. Citing such references and best practices within the EIS would have helped justify the use of these practices and helped assuage at least some of the criticisms that have since been raised. In so doing, it would have helped educate the public that might be interested in such science-based approaches. But this closed or "black box" system ultimately prevents any outside insight, critical or otherwise, from occurring. It is this "trust-us-we-are-the-proponent" kind of thinking that alienates the various publics, especially when controversies arise. Thus, the absence of any informed discussion as to how or why these approaches and models such as the EPRI-GTC Routing Methodology that was used to identify the final route, were selected over others undermines meaningful public input or evaluation and ultimately supports the argument that the rationale for undertaking the CEA, and for that matter the EIS as a whole, is largely, or perhaps entirely, to meet regulatory requirements, this the extreme worst case on the quality continuum for CEA (Sinclair et al. 2017).

107. This conventional approach to CEA still assumes that quantitative and scientific data are most effective in predicting impacts (although, as I have argued, credible scientific data are still largely missing). In the absence of, or arguably in addition to any existing scientific data, the experiences and expertise of scientists could have been formally incorporated in describing the impacts (CEAA 2014). One such approach is use of expert elicitation or the Delphi technique to help define and predict the impacts of poorly understood systems. In so doing, respected scientists are contacted and then use their knowledge and experience to assess risks or impacts in isolation from other scientists that are involved in the exercise. All the scientists then subsequently meet as a group to discuss their individual responses, to reconcile any differences in their views, and then to arrive at a collective view of the problem at hand that can then be used to inform subsequent decision making.

108. Expert elicitation is an efficient, inclusive, systematic and structured approach that can be used to address complex issues. A major strength compared to other group-based techniques is the reduced influence of social pressures among respondents (Mukherjee et al. 2015). It has been widely used way of addressing gaps in scientific understanding that would otherwise hamper decision-making. It has been used in a range of disciplines, including medicine (Sinha, Smyth & Williamson 2011), nursing (Hasson, Keeney & McKenna 2000), social policy (Adler & Ziglio 1996), tourism (Donohoe & Needham 2009) and sustainability science (Hugé *et al.* 2010).

109. With respect to the environment, elicitation was first used to generate policies regarding water quality in the 1970s in the effective absence of any environmental or human health data, and has since been used to help predict risks associated with new prion diseases such as variant Creutzfeldt–Jakob disease (Tyshenko et al. 2011) and chronic wasting disease (Tyshenko et al. 2016); the performance of emerging oil sands technologies (Sleep et al. 2017); the cost of future wind energy (Wiser et al. 2016), impacts of invasive species (Turbé et al. 2017); pesticide risk in surface water (Skinner et al. 2016), and of obvious relevance here, regarding environmental health impact assessment (Knol et al. 2010) and policy advice with respect to EMF (Spruijt et al. 2015).

110. Informally, this has already occurred throughout the MMTP EIS as reflected by personal communication with various (and mostly government) scientists. But none of these conversations were formally documented nor were any interviews conducted. Thus, none were formally used to generate relevant and current data that could inform the EIS as seen through Expert Elicitation.

111. If these insights were better described and rationalized in a more transparent manner, it would be an opportunity to better understand how and to what degree such insights helped inform this EIA and those of future MH projects. Few if any of these personal communications referred to Indigenous Elders or harvesters or private landowners, all of whom would have had unique insights and knowledge to share. Such local and Indigenous knowledge has been used to better understand the movement of ungulates in central Manitoba, in isolation and in combination with scientific data (e.g. Brook and McLachlan 2006, 2009). Moreover, it is clear that harvesters and Elders have a deep and rich understanding about how these effects are cumulative and nature and compromise the environment and erode their own uses of plants and animals, and their traditions,

"And there's very few places where each and every one of our people can gather our medicine, our herbs because of the trespassing they're going to charge us with if we were going to go over that fence there and go... So we are stuck in a bad place here. And now they're bringing more stuff in for us to deal with like Hydro wire and oil pipes that are going right through our land."

(Elder Interview, April 24 2018)

112. In addition to conducting the exercise with established government and independent scientists, there is an important opportunity to undertake a parallel expert elicitation with Elders and experienced harvesters that could have been used in isolation from or in combination with

the scientific exercise to help better understand and predict any cumulative effects. Such an approach could have been used to address gaps in data in a more credible and transparent manner; to include a wider diversity of experiences, knowledges, and worldviews that are normally excluded from having meaningful input, and to help build trust and communication between Manitoba Hydro, scientists, and affected Indigenous communities in ways that could be expanded in the future.

113. Even the best science is not able to reflect the often intangible but essential ethical and spiritual dimensions of Indigenous, or in this case, Anishinaabe traditions,

Elder1: "You know what happened to me about a year ago? A year ago last summer I think it was, or the summer before. I was thinking about those little animals. We used to have a squealer out in the bush. Never see them running around up here. Like a gopher or a bush squirrel. And I sat in my house. Boy, I said, I wish I could hear those things. That's what I was thinking. I don't know, sometime after, all of a sudden, I heard one. He just squealed once and that was it. Just like he said, I'm still here. Hey, I'm still here! You just can't find me. You can't find me. He gave me a message that I'm still here. He just squealed once and that was it and I have never heard"

Elder2: "Everything has a spirit."

Elder1: "See those are the kinds of things we see. And the frogs, you don't hear them anymore. They sing their songs at night. I was sitting outside my house in the dark having tea...there was a pond in my behind my mom's house. All the sudden, I hear them singing. And then they went away again...I sat there for the night listening to them. They were singing. Probably thousands of them, it sounded like thousands. And then they kept quiet. And that was it. Again they are telling us, we're still here."

Elder2: "Survival."

Elder3: "We were taught to use those kinds of things. We were taught about those things, that they were messages. That's what we were taught and you know. And those are the kinds of things we try to tell Hydro but they're not, anybody, even with the pipeline we have the same discussion. And they don't like, they say it's mythology to them. And, yet, that's our life. By them saying that, that means our life is mythology. And we give up.

Elder1: "You see when I talk about them squirrels and those frogs and that Squealer in the bush. You know what's there? Love. that's what they are, love. They love us and we love them. We love each other. That's what's being destroyed. An animal loves to give up his life for us. So he can live. We love to hunt him and he loves being hunted because that's his purpose, that's our relationship. That's what's being destroyed is that love between me, When I say me, I'm talking about my people. It's that connection that's being destroyed by those dollar signs. The visions of the dollar sign. That's more important than life itself but she's saying. You know? That's what's going on in this world. That's what Hydro is doing. Among other things.

(Elder Interview, April 24 2018)

114. Ironically, MH acknowledges the limitations of their quantitative techno-scientific approach in reflecting these concerns and impacts, for example in response to an information request from the Southern Chiefs Organization regarding herbicides,

"Manitoba Hydro considered spiritual beliefs held by some First Nations members that herbicides will have an overall negative effect that will preclude use of the land. As described in Manitoba-Minnesota Transmission Project Environmental Impact Statement, Chapter 11, beliefs or perceptions, around adverse effects are difficult to quantify and not easily amenable to assessment in the same way as other Project effects. <u>Given the subjective nature of this effect pathway and the limited site-specific information provided by First Nations regarding beliefs and concerns regarding the Project, this topic was considered narratively in the assessment of Project effects on plant gathering, hunting and trapping, trails and travelways, and cultural sites." (MH Response To Intervenor IR: NEB SCOIR- 002, p11, emphasis added).</u>

(with Response to intervenor inc. NED\_SCORE 002, p11, emphasis added).

115. This view is then effectively copy-and-pasted in an equivalent information request raised by Animakee Wa Zhing #37 and Northwest Angle #33 First Nation in response the inability of MH to address environmental and health impacts on their and other Indigenous communities,

"The FNMEP and knowledge from self-directed studies integrated with the EIS in 23 Chapter 11 Assessment of Potential Environmental Effects on Traditional Land and 24 Resource Use and indicated that project effects may alter the experience of access to 25 and use of cultural sites. Refer to NEB Ex. A81182-20 PDF Pages 80 - 82. Experiential aspects of cultural practices are intangible values. These values encompass individual beliefs and perceptions, are qualitative by nature and not quantifiable in the same way as effects on tangible lands and resources. Given the subjective nature of this effect pathway, characterization of effects regarding intangible values was considered narratively in the assessment of project effects on plant gathering, hunting and trapping, trails and travelways and cultural sites."

(IR: NEB\_AWZNWA- 001.1, p3, emphasis added).

116. The above statement of course ignores, as we have already discussed, the extensive use of these narrative analyses to assess all cumulative effects, tangible or otherwise. Yet, in failing to consider these impacts as real much less to address them, the default is to assume that there are no significant Project impacts,

"Both Project and cumulative environmental effects on community health and well being are considered not significant."

(Exec Vol, 2015: p33).

117. What is clear from the information requests submitted by Indigenous interveners is that these concerns regarding the direct and indirect food-mediated impacts of EMF and herbicides is

that they are widespread and important. Thus, Roseau River Anishinabe First Nation (IR: NEB\_RRAFN-IR-001), Sagkeeng First Nation (IR: NEB\_SFNIR-001.17, p179,), the Southern Chiefs Organization (IR: NEB\_SCOIR- 001, p1), Anishinaabeg of Naongashiing, IR: NEB\_AONIR-017, p30), and Animakee Wa Zhing #37 and Northwest Angle #33 First Nation (IR: NEB\_AWZ-NWA-001.1, p11) all submitted information requests regarding the implications of herbicides for human health, and in the case of Peguis First Nation (IR: NEB\_PFNIR-008, p16), for water bodies. While it is notable that these concerns were reflected in all the information requests submitted by Indigenous interveners that this author examined, it is even more remarkable that MH still refuses to address these concerns, either in the context of the IR or more generally in regard to either their cumulative effects assessment or their environmental protection plan, the latter which will be discussed below.

118. Also implied in the cumulative effects assessment, and the environmental protection plan, is that any effects that are recognized as occurring, do so in ways that are predictable and that are ultimately reversible. However, is now widely accepted that these are nonlinear systems which often cascade in unpredictably ways and that thresholds are sometimes passed, beyond which it becomes difficult if at all possible to reverse any impacts (Suding and Hobbs 2009). Although these are hard to anticipate using inadequate scientific data, the experiences of scientists as well as rural and especially Indigenous communities who have thousands of combined years of experiences working in close proximity to these systems, would have allowed for a much more meaningful insight into such nonlinear responses and critical thresholds .

## 3.4 <u>Responses</u>

119. Another key problem in CEA is how to define tractable thresholds for evaluating significance or so called action or decision "triggers" that would prompt appropriate mitigation responses when it comes to unanticipated effects (Duinker et al. 2012). Ideally, these thresholds are based on the literature or scientific data, or on expert elicited data as discussed above, but they are mostly missing from this EIS as a whole. And they are entirely missing from any CEA. In large part, this is rationalized by the supposed absence of any residual effects.

120. MH argues that it has used a threshold approach in their EIS, these thresholds purportedly are to be used to generate management responses when any given adverse effect exceeds those levels as revealed in their response to an information request from Wa Ni Ska Tan regarding how and the degree to which adaptive management is used in other projects including Keeyask and Bipole III,

"Changes to mitigation measures are made when environmental or compliance monitoring has shown them to be ineffective or when industry best practice has identified a proven improvement to that method or process. Wa Ni Skat for action are identified for each environmental indicator in the environmental monitoring plan." (IR: NEB\_WNST-IR-001.28, p214).

121. One or two of these action/decision triggers were included for each valued component as indicated in the Environmental Protection Plan. Thus, for vegetation and wetlands, two such

triggers were listed,

- Wetlands have been excessively disturbed by construction activities (i.e. rutting)
- Actual disturbance footprint exceeds the expected disturbance footprint."

(C22, p20).

In turn, for plant species of conservation concern, two more were listed,

- Species of conservation concern has been disturbed by construction activities
- Discovery of new location of species of conservation concern." (C22, p22).

In contrast, only one such trigger was indicated for invasive plant species,

• Establishment and spread of invasive species along ROW." (C22, p23).

The trigger regarding traditional use plants was equally brief and generic,

• Measurable significant decrease in traditional use plant species." (C22, p26).

122. Yet, as indicated by the examples above, none of these triggers is fully "operationalized". How does one, for example, decide what disturbance is, much less excessive disturbance, and what exactly is a disturbance footprint? New locations are clear, but is this with respect to historical polygons of occurrence, does this refer to populations or individual stems, and how likely is this given the level of sampling for wildlife and vegetation (see Section 2.0), and how does one assess establishment or, for that matter, spread. Again, what is "significant" (important, probabilistic?) and is this with respect to all such species, or ones that are seen as especially vulnerable. Ultimately, most of these "decision thresholds" are better viewed as criteria that would then be used to develop functional decision triggers, which is not surprising given that they are largely informed by descriptive narrative text rather than data.

123. These shortcomings also reflect a wasted opportunity. Much insight could have been generated using the literature on equivalent electric transmission lines elsewhere. The science could have been generated or at least modelled regarding the MMTP in some cases, but the field data are simply not adequate to inform decision making regarding CEA. And perhaps most fruitfully, MH could have learned from other transmission line projects that still exist within the RAA or similar projects elsewhere in the province, notably Bipole III. Ideally, as we have already indicated, these thresholds would also have been developed in collaboration with scientists with affected Indigenous communities and rural stakeholders as part of a formal expert elicitation process, or failing that, formally interviewing them on an individual basis.

#### 4.0 Adaptive Management

124. As indicated in the MMTP EIS, adaptive management refers to,

"the implementation of new or modified processes, procedures and or mitigation measures over the construction and operation phases of a project to address unanticipated environmental effects."

(CEAA 2012).

Adaptive management allows for the flexibility to identify and implement new mitigation measures or to modify existing ones during the life of a project. It ostensibly represents a key component of the EIS and more specifically with respect to the Environmental Protection Plan (EPP), as represented in the Assessment Methods chapter,

"Adaptive management will be a core approach in implementation of the EPP. Adaptive management is a planned process for responding to uncertainty or to an unanticipated or underestimated Project effect." (C7, p31).

125. More specifically, MH recognizes that the existence and implementation of adaptive management with respect to Valuable Components, for example as it relates to monitoring changes in vegetation and wetlands,

"Monitoring programs allow predicted effects in the assessment to be compared with the actual outcome of the Project. An adaptive management strategy will be implemented for this Project; the monitoring program will aid in this regard."

(C10, 2015: p11).

It also plays such a role with respect to wildlife and wildlife habitat,

"Reports describing the results of follow-up and monitoring activities for wildlife and wildlife habitat may reveal the need for adaptive management to address unanticipated environmental effects."

(C9, 2015: p118).

126. Manitoba Hydro, in turn, recognizes the relevance of experience from other projects regarding the MMTP as reflected in the Environmental Monitoring Plan,

"Manitoba Hydro has accumulated information and lessons learned from previous monitoring programs. The successes of those programs have been reviewed and considered in the development of this plan." (EMP, p61).

Moreover, it explicitly recognized that these learning experiences will be of use when dealing with uncertainty,

"The [Environmental Monitoring Plan] will be used to evaluate land rehabilitation success against baseline and adjacent representative site conditions, recommend corrective actions and apply adaptive management where deficiencies or unanticipated environmental effects are identified" (C10, p117).

127. Low to moderate levels of uncertainty will be addressed by "passive" management whereas active management strategies will be used to address high, and some moderate, levels of uncertainty and to address these through mitigation and environmental protection And to address and improve upon previous weaknesses.

128. Annual reviews are conducted by Licensing and Environmental Assessment in Construction with Transmission Line and Civil Construction along with contractors, regulators and stakeholders, these summarized each year in a final report,

"Passive - Implement environmental protection plan measures and apply experience from previous transmission development projects (i.e. implement site-specific buffers and setbacks near watercourses)." (EPP, p22).

129. However, there are very few tangible examples of passive, much less active, adaptive management in the EIS. Indeed, no examples of either passive or active management were seen in the chapters on vegetation and wetlands (C10), on wildlife or wildlife habitat (C9) or on environmental protection plans (C22). There were typically 3-5 generic references to the concept in each, with the exception of C22, where a small and again very general subsection was provided (22.1.2, p22).

130. It is claimed there that the EPP is inherently focused on adaptive management,

"The Environmental Protection Program is designed to be adaptive and responsive throughout the Project lifecycle. Program documents, processes, procedures and mitigation measures will be continuously evaluated by inspection, monitoring and communication programs. Reviews will be conducted to facilitate updates to the program."

(EPP, p2).

131. Yet, when prompted by Wa Ni Ska Tan through an information request to elaborate on their claim for adaptive management, MH provided a few examples of passive adaptive management that had been "gleaned" from effective actions reflected in contractor plans, including: "Erosion control mechanisms and precautions, wet weather protocols, layout and instructions of implementation", which will then be incorporated into "overarching plans" (IR: NEB\_WNST-IR-001.28, p214).
132. They also provided some examples of active adaptive management referring to caribou, vegetational regrowth, and bird strikes,

"\* Utilizing caribou collaring data to tailor clearing prescriptions at frequently used locations to facilitate movement the results of which will continue to be monitored.

\* Clearing method comparisons for vegetation communities (shear vs mulch).

\* Subsequent ongoing studies of two neighboring areas to compare regrowth results.

\* Ongoing Bird diverter types and spacing trials for reducing bird strikes and effectiveness of markers and placement."

(NEB\_WNST-IR-001.28, p215).

133. They further referred to the evolving nature of the environmental protection plan as facilitated by annual evaluations of "process and function" as well as feedback from staff, community monitors and reporting by environmental inspectors in shaping adaptive management, all of which is laudable,

"Manitoba Hydro receives feedback from sustainable development staff as well as community environmental monitors. Feedback is also provided by on site environmental inspectors on mitigation effectiveness is provided in daily reports. At the end of each construction season a formal report is also written by the environmental inspectors in which they comment on the environmental protection program and make suggestions for change or improvement. The input and perspectives from these groups receive serious consideration and will often result in modifications and changes to improve how the environmental protection program functions."

(NEB\_WNST-IR-001.28, p215).

134. But there is still a dearth of examples of or explicit planning for adaptive management within the EIS itself. Much less any systematic evaluation of the degree to which Adaptive Management is taking place in any sustained or focused way. My interviews with Indigenous community environmental monitors who had worked for many months on Bipole III indicated that adaptive management rarely if ever occurred and if it did it was restricted to the advance of new technology rather than environmental protection,

"And they keep saying, oh well from our experience we learn from this, we learn from that. They don't, it's the same thing. It's the same thing that they do over and over again. I was looking at some of their old, old reports on the dam construction up there and I'm thinking, these guys are learning? What the fuck are these guys learning? They haven't done, they haven't changed anything. All they've done is they've gotten better machines, bigger machines, and quicker, right? Things like that. That's what they're learning. They're not learning anything about how to protect the environment." (Environmental Monitor Interviews, April 24 2018). 135. In part, these shortcomings reflect a systemic gap, since they also characterized the Bipole III (Gunn and Noble 2012) EIS and the Keeyask EIS (McLachlan, 2013). In part, this reflects the incomplete nature of the Environmental Protection Plans that are generated for all these projects, especially with respect to monitoring and mitigation. It also reflects the nature of monitoring on MH projects, since contractors undertake much of these activities and any responsibilities are designed on an individual basis. But they, in part, reflect larger systemic problems.

136. Adaptive Management is in part a response to uncertainty and surprises in EIA. While it is a hallmark of high quality assessments, it is also predictable that project proponents want to minimize the visibility of uncertainty, given that it can be seen as a weakness rather than a strength by some when the are submitted for evaluation. This is especially the case for postpositivist science, which ostensibly progresses through theory-driven null hypotheses, rather than supposed ad hoc conjecture and management responses. That said, there are valuable opportunities from formalized learning-by-doing, within a project such as MMTP but also, as indicated above, among like-projects, here among the pre-existing transmission line in southern MB, the Bipole III and the MMTP or between Wuskwatim and Keeyask, or for that matter among any and all projects in the larger MH system.

## 5.0 Monitoring

137. As indicated in the Draft MMTP Environmental Monitoring Plan or EMP (dated 4/12/2017), its objectives as they relate to monitoring and mitigation are to,

"confirm the nature and magnitude of the predicted environmental effects, assess the effectiveness of any mitigation measures, and establish decision-triggers for action."

(EMP, p4).

138. Moreover, the EMP will identify any unexpected environmental effects (if they occur), identify additional mitigation measures (if required), confirm compliance with regulatory requirements, and provide additional baseline information that can inform decision-making in the future.

139. Decision triggers or thresholds have been identified for each valued component, where applicable. These triggers will act to,

"promote adaptive management that cause Manitoba Hydro and its Specialists to stop and further evaluate the monitoring results and, if required, adapt mitigation measures or monitoring activities." (EMP, p11).

140. However, as indicated in the EIS, these "*triggers/thresholds cannot be identified for all situations, there are too many parameters and variables and lack of scientific data*" (EMP, p11). The inadequate nature of relevant scientific data is a challenge that confronts the MMTP when it comes to monitoring, whether with respect to vegetation and wetlands, wildlife and wildlife

habitat, fish and fish habitat, or water quality, as will be shown below. Such use of decision thresholds in EIAs in these contexts has been criticized, as they are often subjective and too open to manipulation by proponents (Murray et al. 2018).

141. Thus, with respect to an information request from Animakee Wa Zhing #37 First Nation and Northwest Angle #33 First Nation regarding the use of threshold levels (<30 percent cover) for traditional use plants, MH responded by indicating that these insights arose from field assessment and professional judgement,

"As a result, areas where traditional use plants were known to occur with cover >30% were identified for additional mitigation. The 30% threshold was based on field assessment, where sites with >30% cover of traditional use plants may involve increased availability for harvesting. Independent case studies that support the threshold as a trigger for applying mitigation for traditional use plants were not available to reference. The threshold for traditional use plants was based on professional judgment, determined from plant cover values assessed in the field."

(IR: NEB\_AWZNWA- 001.12, p45).

142. Accepting that this unsubstantiated professional judgment is in the employ and thus influence of MH, they follow up by indicating that this entirely arbitrary threshold indirectly arose from the self-directed ATK studies, from CEC hearings, and from CEC evidence and an appreciation of how important these plants are to Indigenous communities,

"This information from Indigenous Groups informed Manitoba Hydro's professional judgment in setting the 30% threshold." (IR: NEB\_AWZNWA- 001.12, p45).

143. As indicated in the original information request, there are many circumstances where uncommon, naturally low-cover plant species, and traditional use plants and medicines would never be dominant enough to have cover >30%. Although the threshold was ostensibly based on field assessment, no data or further specifics are provided.

144. Even more problematic is the highly doubtful attribution of these thresholds to engagement with Indigenous communities and their ATK studies, again without any reference to specific ATK reports, communities or meetings, or the literature. Thus, not only is the threshold subjective, it arguably represents a colonizing dimension of science, or in this case proponent science, that dominates and extracts meaning from Indigenous Knowledge without attribution, without any relationship or accountability, and in ways that the knowledge holders likely never intended. As will be demonstrated below, there are many far more appropriate ways of documenting ATK and involving knowledge holders when it comes to monitoring and mitigation.

145. There is little incentive for proponents to monitor environmental changes after construction, unless these commitments are made explicit beforehand, a problem that confronts EIA as a whole (Muir 2018). With respect to the MMTP, rare and invasive plants will ostensibly

only be surveyed until 2020/2021, one year after construction is completed (Fig 4.1. 22-15). This is simply inadequate for assessing any short-term, much less long-term, changes in species composition and community structure.

146. Although effectively denied by MH throughout the EIS and in most of their responses to information requests, such adverse environmental impacts are widely recognized as occurring by Indigenous communities and landowners alike, in this case with respect to medicines in the Roseau River Anishinabe First Nation ATK report,

"This property is prime land for its natural growth of medicines, trees, and orchids that are used to medicines. There is 300 acres of this property and we are concerned that the hydro lines going through this area will cause significant damage and impact the natural growth of plants in this area." (RRAFN 2015, p10).

147. Baseline conditions are essential for identifying any changes to the environment associated with the Project. However, it is unclear whether surveys on plants, for example, have been completed for all sites,

"Pre-construction surveys for species of conservation concern will be conducted in portions of the project footprint that were not previously surveyed and have the greatest potential for supporting these plants along the transmission line RoW."

(C22, p66).

and

"To address the uncertainty described above pre-construction surveys for rare plant species (SAR/SOCC) and invasive plant species will be conducted in previously unsurveyed areas of native vegetation at tower locations and along the ROW. These surveys can be used to confirm the location of rare plants and wetlands and to determine the need for buffers and setbacks." (C10, p110).

148. At least some of the pre-construction surveys on vegetation were not completed until 2017 (e.g. Szwaluk Consulting and Newman, 2017). Similarly, it is clear that surveys of heritage sites have not yet been completed. Thus in response to an information request by Sagkeeng First Nation regarding timelines, MH indicated,

"The pre-construction Heritage Resource Impact Monitoring (HRIM) field investigation is anticipated to start in 2018. The fieldwork component of the HRIM is anticipated to include groundtruthing via pedestrian survey and shovel testing to determine the presence of heritage resources at identified heritage ESS locations. HRIM will follow an adaptive management approach and will include First Nation and Metis knowledge regarding cultural and heritage resources."

(IR: NEB-SFNIR- 001.27, p223).

It is unclear why these surveys would not have been completed prior to 2015, or at least prior to the NEB hearings.

149. Moreover, throughout the EMP, it is assumed that species of conservation concern will only decline in comparison to pre-construction conditions,

"Monitoring for species of conservation concern will involve the review of species previously observed during pre-construction surveys."

(EMP, p66).

Yet, disturbance of vegetation and soils can result in the unanticipated emergence of protected species that are characteristic of perturbation-dependent ecosystems such as grasslands and tall grass prairie.

150. In a prairie restoration study conducted in the RAA at the Manitoba Tallgrass Prairie Preserve, the spraying of herbicide (Round Up or glyphosate) to remove the existing, lowintegrity vegetation cover prior to restoration resulted in the widespread emergence of the endangered Great Plains ladies'-tresses (Sveinson, 2003). This species had not been documented as having occurred on these sites beforehand, and thus it is likely that it had already been present in the in the propagule bank, only to be released from competition when the existing vegetation cover was removed. Unlike many forest and wetland species, native forbs and graminoids occurring in prairies and grasslands thrive under disturbance and are thus likely to also emerge during the construction or post-construction phases. It is unclear how MH would respond should are and endangered plant species emerge in these newly disturbed sites.

151. Scientific data are also missing for many fragments that have ecological importance in this highly modified landscape. Manitoba Hydro makes questionable use of a minimal 200ha patch size for protection. Although some conservation biologists argue that bigger is better, others acknowledge that small sites often play an important role in conservation, especially in highly fragmented landscapes such as those in southern Manitoba. This reflects the longstanding Single Large Or Several Small (SLOSS) debate in conservation biology, which some argue will never be resolved (Tjørve 2010).

152. Many species, especially those with ranges larger than most remnants in fragmented landscapes are recognized as functioning as metapopulations, which are dependent upon multiple patches of habitat for persistence. Some of these are the large, high-quality patches that MH has focused upon, which often support stable subpopulations, but are also the small patches of natural habitat that support ephemeral or "blinking" subpopulations but that are also essential for the persistence of the larger regional metapopulation. Also of importance is the intervening landscape matrix, in this case dominated by agricultural use but which can facilitate or deter movement among remnants depending on the nature of the land use.

153. Many fauna have home ranges that are substantially greater than 200ha, which for moose in northern Maine in the US for example averaged  $25 \text{km}^2$  (Leptich and Golbert 1989). Thus, the existence of small patches that function as "stepping stones" for plants and animals can play a

key role in maintaining connectivity and facilitating movement amongst patches in these humandominated landscapes. The recognition of such patches is only reflected in the golden-winged warbler plan where the importance of these small patches are made explicit by using Habitat Management Sites that are roughly 10ha in size, this according to Roth et al (2012),

"Habitat Management Sites (HMS) will be approximately 10ha (roughly equivalent to the ROW area between three transmission towers), which is derived from recommendation by Roth et al. (2012). Both habitat mapping and ground surveys will inform the selection of HMS. Habitat preferences for the golden-winged warbler are generally described as shrub cover interspersed with herbaceous openings, adjacent to mature forest."

(C 22, p78).

154. It would, thus, have been important to document baseline conditions and any attendant changes in species composition using a lower benchmark for size, say 10 or even 50ha, in part because these patches will continue play an important role for movement, especially as this landscape becomes progressively more fragmented in the future. But also because these smaller patches may be relatively prone to further decline, for example due to the increased establishment of invasive species in the LAA due to their higher proportion of edge habitat.

155. It is also worth noting that the huge majority of the EMP is dedicated to monitoring species (or environmental indictors according to MH terminology) that are defined solely according to scientific criteria and that are mostly species of conservation concern, rather than those species identified as important for traditional use. Thus, much less emphasis is placed on traditional use species, most of which are plants still widely used as medicines, for food, and for ceremonial purposes (RRAFN 2015). In part, this also reflects a bias towards fauna over flora in the EIS. Thus about one page each is devoted to species of conservation concern, invasive species, and traditional use species that are plants (about four pages in total). Yet some ATK reports, for example those of Peguis First Nation and Roseau River Anishinabe First Nation, indicate that the community use of plants for food, medicines, and ceremony is much more widespread than that of animals, many of which have generally become much less common and accessible in this highly fragmented and largely privately-owned landscape and that have declined in economic value.

156. Thus, about 3X the space is provided to fauna in the Environmental Protection Plan, these including amphibians, birds, and megafauna such as elk, moose and bears, and some others, notably the golden-winged warbler, are the focus of their own management reports. Most of the species have been identified according to scientific and conservation-related criteria, e.g. amphibians such as the leopard frog and tiger salamander, the garter snake, the golden-winged warbler and the peregrine falcon. Those that are used by Indigenous People, e.g. sharp-tailed grouse, black bear, whitetail deer, and elk, make no mention of this traditional use and again are largely overlooked.

157. Wildlife data are in short supply for many species, in part because of landscape-level declines in population and a lack of monitoring on the part of the provincial government. There

was no mention of describing their movement in the RAA in greater detail, for example through the use of radio-collars to assess changes in movement, whether regarding moose, deer, or bear. Indigenous Elders and environmental monitors were critical of the use of these monitoring efforts, particularly the use of motion-detecting cameras, for understanding any impacts on or movements of wildlife as presented in the community meetings,

> "And sporadic monitoring too. They're not there all the time. They depend on technology, on cameras, somewhere sitting in the bush. That's not the way animals behave, they don't go around looking for cameras so they can take a picture. Come on take a picture of me, I'm coming through this area, They don't fucking behave like that. Their logic doesn't even make sense, you know, to us as traditional people."

(Environmental Monitor Interview, Aug 24 2018).

158. Moose is an important, arguably cultural keystone (Cuerrier et al. 2015) species in the RAA and, thus, of concern to many First Nations and the MMF,

"MB Hydro needs to identify what impact the Project will have on moose and other wildlife on the proposed Transmission Line route." (BRLPSLFN 2015, p17).

159. Yet, they are effectively ignored in the EIS, except for a parenthetic and ultimately unsubstantiated reference to "unregulated" (i.e. Indigenous) harvesting as a notable cause of their decline,

"...moose are rare in southeastern Manitoba due to a combination of factors such as habitat fragmentation, predation by wolves, parasites, fires suppression, and <u>unregulated</u> harvest (Leavesley 2015, pers. comm.; Rebizant 2015, pers. comm)."

(EMP, p47, emphasis added).

160. These attitudes are widely held by government wildlife biologists. Thus, Mr Rebizant is the Big Game Manager and Ms Leavesley is the Regional Wildlife Manager for the Manitoba Government. Vince Crichton, a recently retired Manager of Game, Fur and Problem Wildlife for the Manitoba Government and past Canadian Vice President of the North American Moose Foundation, spoke at the 50th Annual Moose Conference and Workshop attended by over 200 researchers from 12 countries in part to discuss how to help threatened moose populations thrive. In an associated media interview, he similarly indicated,

"It's the unregulated harvest by a [small number] of our First Nation peoples, and now in part of Manitoba, the Métis peoples...I can tell you right now that the vast majority of our rights-based people are as concerned as I am and others."

(CBC 2016).

161. Variously known as "unregulated", "unlicensed" or "rights-based" hunting, this issue has

recently become very controversial in Manitoba, especially with respect to night hunting and regarding which much of the discourse was seen as uninformed, inflammatory and often explicitly racist. Premier Pallister famously indicated that night hunting was "unsustainable", "dangerous", "dumb" and that divisions between Indigenous and non-Indigenous people regarding night hunting were "becoming a race war" (Kilpatrick 2017). Although these comments were later defended and rationalized by government officials, they were criticized by then Grand Chief of the Assembly of First Nations, Reg Nepinak as "inflammatory" and "provocative" and by the current and Indigenous leader of the provincial NDP, Wab Kinew, as "irresponsible" and as "leading to further divide" (Kilpatrick 2017).

162. Yet, to list unregulated hunting as a major contributor to the decline of moose populations is anything but scientific. As Anishinaabe Senator Murray Sinclair indicated in his social media,

"Allegations that Indigenous people are responsible for declining moose populations will be made, when in fact far more moose are killed by sport hunters."

(Lambert 2017).

Indeed, everything else being equal and righteous assumptions about the value of management science aside, it is much more likely that the much larger and science-based licensed hinting underlies the decline.

163. Manitoba's moose population is believed to have declined from a historical high of 45,000 several decades ago to a low of 25,000 in 2015 (Timmerman and Rodgers 2017). The government management response to this decline has been the implementation of "voluntary" hunting closures or bans in five regions of the province (Duck Mountain, Red Deer Lake, Swan-Pelican, Porcupine Mountain and Nopiming) as well as a partial closure on the East Side of Lake Winnipeg. Yet, such bans have also been adopted by First Nations and Métis people in these regions, with the exception of one area in Turtle Mountain (Game Hunting Area 19A) where rights-based hunting still continues (CBC 2015).

164. The implications of these moose bans for Indigenous hunters and for their Aboriginal and treaty rights as reflected in under section 35 in the Constitution Act, where are interpreted to include a range of cultural, social, political, and economic rights including the right to land, as well as right to fish, to hunt, to practice one's own culture, and to establish treaties, are substantial. The implications are highlighted in the Sagkeeng First Nation ATK report,

"One member reminds the group that neighboring First Nations have agree d to shut down hunting. He suggests that in doing so Chiefs and Councils ar e agreeing to the erosion of Treaty rights. He talks about a study done by a man from Trinidad where it was stated that First Nations would slowly lose all their Treaty rights and that it would be Chief and Council who would use their own people to destroy those rights. He contends that, in signing on to t he Province's moose management area along the east side of Lake Winnipe g Chief and Councils of the First Nation communities are giving up our righ t to hunt for years to come. Think about the impact on future generations."

(SFN 2015, p21).

165. Yet, no monitoring will be conducted for moose in the RAA, despite their cultural importance to First Nations and Métis people and despite the extent of their population decline,

"No specific monitoring for moose is being proposed, however moose observations in all aerial survey and camera trap surveys will be documented."

(EMP, p47).

166. In addition to "unregulated" (illegal and rights based) hunting, disease, and predation by wolves were also indicated as contributing to moose decline. The importance of wolf predation in human dominated landscapes is debated in the scientific literature since their populations are generally low, although predation rates of moose by wolves and bears are sometimes high in remote regions and in large protected areas (Patterson et al. 2013, Mech and Fieberg 2014).

167. These declines in moose populations are occurring in 11 of 30 jurisdictions across North America, notably in central Canada (Manitoba, Saskatchewan, Alberta, Ontario) and the adjacent US (North Dakota, Minnesota). In these jurisdictions, important factors that contributed to these changes in included, in declining importance: parasites and disease (8 of 11 jurisdictions), predators (7 of 11), natural habitat loss (5), unregulated harvest (3), warmer temperatures (2), increases access and vehicle technology (1), increased deer densities (1), over hunting by licensed hunters (1) (Timmerman and Rodgers 2017).

168. Yet moose populations are stable in eight other jurisdictions; and even increasing in nine further jurisdictions (Timmerman and Rodgers 2017). In the southern portions of their range, increased populations are associated with widespread forest regeneration on lands that had been previously clear cut and farmed (Wattles and DeStefano 2013). Equivalent increases in moose numbers have also occurred southwest Manitoba and southern Saskatchewan, these attributed, in part, to increased farm sizes and corresponding declines in rural populations and the regional absence of predators, although these changes have yet to be studied (Timmerman and Rodgers 2017). So the declines in moose are far from guaranteed and permanent.

169. It is also important to unpack the term "fragmentation" in human dominated landscapes like those in the RAA, a term which is conventionally associated with a loss in patch area and decline in connectivity among the remaining habitat, and importantly the intensity of land use in the intervening matrix amongst remnants. Yet, this nuanced view of fragmentation was overlooked in the MH response to the information request by Sagkeeng First Nation (NEB\_SFN-IR-001.19(a)) when they arguing that moose could not be properly viewed as a VC because their habitat was ostensibly not limiting in the RAA.

170. The impacts of any habitat loss are arguably dwarfed by the intensity of the land use in the surrounding landscape matrix. Yet, it is highly contentious to make this explicit given the influence of MH and other interests in the region, notably those related to agriculture. It is much easier to blame the declines on the much despised wolf and also on rights-based hunting.

171. The landscape surrounding the MMTP is being devastated by intensive agriculture along with the ubiquitous and increasing aerial use of pesticides, the clearing of natural habitat, the elimination of weeds using herbicide-tolerant crops, the removal of shelterbelts as facilitated by the use of conservation tillage, the increased field sizes and the corresponding need for large machinery as well as widespread odour and waste generating intensive livestock operations. Further stressors are associated with large-scale wind farms and construction projects such as the TransCanada pipeline, the overgrazing of riparian areas, rapid drainage of wetlands and associated silt loading in nearby streams and rivers, nutrient runoff from fields, competition with increased populations of whitetail deer populations (Schmitz and Nudds 1994, Shura and Roth 2013), increased temperatures and changing climate (Lenarz et al. 2009), logging and mining activities in provincial parks (WC, 2011), farmer hostility to ungulates (Brook and McLachlan 2006), and, yes, power lines. These stressors, much less the cumulative impacts of these types of land use on moose are poorly understood and rarely studied in the literature, in part because this this situation is so complex and in part because it is arguably unique to southern Manitoba and Saskatchewan.

172. In contrast to government biologists and MH, Elders attribute the declines in moose numbers are related to land use, and are offended that these declines would be attributed to unlicensed (i.e. rights-based) hunting,

"Who has time to go and address the MB Hydro and the question of the moose? It's more than that, it's more than the moose. It's the people, the water, the fishes, the birds, the animals, the beaver: the very, very source of our livelihood, the very, very source of our sacred relationship to the land. That's what's at stake here. It's not the unlicensed hunter, it's the corporation, it's the system. You can tell them I said that. Because that's reality to me. You know, that's how it is!"

Elder Interview, April 24 2018.

173. Ironically, despite their importance to Indigenous People, the monitoring of traditional use species is also science-based as indicated in the Environmental Monitoring Plan,

"To validate EIS predictions, verify implementation of mitigation measures, and to allow for adaptive management, pre-construction, construction and post-construction monitoring will identify changes in baseline composition and abundance of traditional use plant species."

(EMP, p 27).

To that end, the only parameters that will be monitored regarding plants are the species name and location, occurrence (i.e. presence / absence), and sometimes cover. Although a "Specialist" will play a key role in this monitoring and any mitigation activities, it is highly probable that this person will be a botanist or plant ecologist and non-Indigenous.

175. Environmental protection will be undertaken by the Environmental Protection Team, which consists of staff and contractors as employees of Manitoba Hydro,

"As part of the [Environmental Protection Plan], Manitoba Hydro will have staff comprised of senior Manitoba Hydro management, as well as implementation teams committed to the implementation of the [Environmental Monitoring Plan] for the Project. The Environmental Protection Management Team will be responsible for the management of the environmental protection plans including compliance with regulatory and other requirements, quality assurance and control, consultation with regulators and activities related to the Public Engagement Process (PEP) and First Nation and Metis Engagement Process (FNMEP)." (EMP 2015, p5).

176. The role of Indigenous people in these activities is ambiguous and highly tentative, in that *"First Nations and the MMF <u>may be</u> invited"* (EMP, p 33, emphasis added) to provide historical and current data on traditional use of plant species or to provide guidance should mitigation be required. The documentation of changes and mitigation will undertaken by MH and any results only then provided to these communities, assuming that this occurs at all. Thus, regarding decision triggers regarding mitigation and adaptive management, MH will,

"Report results to community that identified the traditional use areas and discuss any potential mitigation measures."

(EMP, p 28).

177. These processes refer to a completely conventional approach to communication, where MH undertakes the monitoring and any mitigation based on science-based "decision-triggers", the results of which are transmitted back to Indigenous communities once the work is complete. This amounts to poor (and some would argue worst) practices, which undermine any meaningful community involvement or sustained knowledge sharing when it comes to the design and implementation of the monitoring, much less any mitigative responses to such declines. A much more fruitful and effective response on the part of MH would be to use a partnership-based or collaborative approach, which would engage with these impacted communities at all stages of the monitoring process and in a cross-cultural response to any adverse impacts (McLachlan 2014a).

178. According to MH, it as begun a process of establishing a community directed monitoring programme. Thus, in their response to a Roseau River Anishinabe First Nation information request regarding how MH would work with the First Nations to ensure adequate environmental protection and monitoring,

"Manitoba Hydro is working with communities to establish the MMTP Monitoring Committee, a committee of Indigenous representatives with a purpose that includes supporting effective and meaningful Indigenous participation in the monitoring of the Project. It is currently being contemplated and in a draft terms of reference which are being circulated, that the MMTP Monitoring Committee may also hire monitors to participate in compliance monitoring."

(IR: NEB\_RRAFN-IR-003, p8).

The above response indicates that Indigenous participation on this committee will support (not require) "effective" and "meaningful" and that Indigenous People "may also" be (again, not required) as environmental monitors. All of which is, again, clearly tenuous.

179. However, it is unclear why the creation of such a cross-cultural monitoring committee would still be so delayed, especially since the need for such an approach was strongly recommended by the CEC. Manitoba Hydro has indicated to some communities that follow up ATK studies and such multi-stakeholder initiatives are being delayed until after the MMTP is finally approved (D. Scott, pers. comm.), although it would certainly facilitate trust and communication if progress had been made regarding these studies and had some progress been made regarding the Monitoring Committee in the interim.

180. Lessons can also be learned from community experiences when it comes to such Monitoring Committees as related to other recent MH projects, namely Wuskwatim and Bipole III. Indigenous people have similarly been hired as environmental monitors on these projects, in part to share their knowledge regarding any changes and impacts as well as responses. However, little insight is provided regarding the effectiveness of such programmes in the EIS.

181. Indeed, it is remarkable how little information MH provides provides regarding monitoring and mitigation, this especially important given how brief the environmental protection and monitoring plans are regarding MMTP. To help address this important gap, interviews were recently conducted with members of a MMTP-impacted First Nation to gain better insights into their experiences as Environmental Monitors and the viability of the protection of the environment and any heritage sites as facilitated by MH. These environmental monitors had worked for many months on Bipole III.

182. There was a feeling that their involvement as Indigenous people was token, and that they had little if any influence over any monitoring or mitigation priorities or activities,

"How I feel is that I'm just, I'm just some guy in a book, that's it, that they need. Some guy in a book that they need on the line, like an Indian guy, to make them look good. That's more or less what it is. They don't want to listen to me. As long as I'm there, and everybody sees me there. That's one for them."

Environmental Monitor Interview, April 24 2018.

183. Although the MMTP Monitoring Committee could play an interesting role in enabling communication and some relationship building between MH and the impacted Indigenous communities, it is unlikely that it will address any shortcomings of the monitoring programmes that are currently being supported by MH. Such an approach reflects a consultative model of monitoring (Lawrence 2006). Indeed, as long as the

monitoring remains an after thought and is only science-based, as long as most of the scientific capacity in this regard remains with MH, and as long as the questions are also defined and controlled by MH, nothing will change.

184. Other more promising models of monitoring do exist, however, ones that provide the public with increased input (Conrad and Hilchey 2011, Garda et al. 2017, Wilson et al. 2018). The first, citizen science, has evolved in a way that is also consultative, but which engages dozens if not hundreds of citizens in generating data, often answering questions set only by scientists, who then analyze any data that are collected (McKinley et al. 2017). In part arising to address declines in government funding for monitoring and more generally science, these activities often generate richer and more representative data than expert-based monitoring, although some question how much trust decision-makers have in the citizen-generated data (Gouveia et al. 2004). Such an approach helps build capacity and understanding as it relates to the sciences, this enabling the public to better partake in science-based discussion, and generates higher quality and consistent data for larger areas, for example the RAA. But, again the questions and solutions are still driven by scientists, in this case representing the interests of MH and the government.

185. A more collaborative or multi-stakeholder approach to monitoring enables governments, universities, impacted communities, and industry to work together to generate questions, collect and make sense of the data and in some cases adapt management responses to reflect any insights. Such an approach is reflected by the Conservation Districts for example, which can generate questions that address broad areas of concern, and then also design and implement responses together (Conrad and Hilchey 2011) Although they tend to build social capital and good will, the solutions also tend to be quite conventional as they need to be broadly representative and address common interests, and are still mostly science-based.

186. However, such an approach would provide existing environmental monitors with substantially more independence and influence than they currently have,

"Firstly, we got to quit calling these guys monitors. They got to be up there at an equal level as their environmental inspectors. Actually more, because we have more knowledge. I trained these guys, I made them policies and procedures that they follow should they find something... we didn't want that employee-employer relationship because that puts us in a different category. We had to try and secure as much independence for \*\*\* to move around to work. Because he knew where our concerns were within the sections that he was going through. And if he ran into something else then he can access me, as a traditional, environmental person, or a scientist. He was never given that opportunity. He wasn't given that opportunity... So, that kind of relationship, there has to be an independence of the inspectors we send out there. Inspectors based on our knowledge."

Environmental Monitor Interview, April 24 2018.

187. The open channels of communication and multi-party representation would enable greater autonomy, accountability and transparency and move away from the self-regulation currently reflected in current MH approaches to monitoring as well as those that are more generally consultative,

"The second thing is, on that line we have to have the ability to call in the Crown and the Crown must respond to the concerns that we have based on what it is that we plan. Mitigation plans have to be developed together. Both the proponent, the contractor, and us as First Nation people. The environmental inspector has to be separate from the other processes. That person has to have as much independence as possible and the freedom to move about. Not confined to a Hydro truck. Because once you're in there you're trapped, you're going to follow Hydro's work plan, not yours. And that's what's happening. That's the biggest problem. Compliance is a big problem, they hide it, they can do all the reports, they hide it." Environmental Monitor Interview, April 24 2018.

188. A final transformative model of monitoring, from the perspective of both governance and outcomes, is when community groups set the agenda and then solicit help from scientists as is needed, if at all. Often these are disadvantaged and equity seeking groups who are also working for social and environmental change. This community based monitoring approach generally involves a small number of communities, who build sustained and diverse databases that remain under their control.

189. This model is of special relevance to Indigenous groups, as cross-cultural approaches can bridge the sciences and Indigenous Knowledge in any way that is seen by the communities as addressing their priorities (Wilson et al, 2018). In so doing, communities simultaneously build capacity in both the sciences and in their cultural traditions when addressing any of their environmental concerns. Thus, one of the Indigenous environmental monitors spoke to the importance of being able to define and assess compliance according to his own knowledge and traditional values,

"So that relationship has to change, our inspectors have to be based on our knowledge, in addition to what's in their book about mitigation. That's the first thing."

Environmental Monitor Interview, April 24 2018.

190. A notable example of a highly effective and longstanding cross-cultural community based monitoring programme is located in Fort Chipewyan, Alberta, 200 km downstream from the Oil Sands. The Mikisew Cree First Nation and the Athabasca Chipewyan Dene First Nation have worked together over the last decade training youth to work with both Elders and scientists to monitor changes associated the upstream Oil Sands and the WAC Bennett Dam and to provide data that both communities use to advocate for their own rights (McLachlan 2014b).

191. These approaches are of course not exclusive, and all three could ideally play a

role in monitoring changes arising from the MMTP and other stressors in ways that address environmental, socioeconomic, and health concerns. Presented in this light, the Monitoring Committee could potentially even help facilitate any or any combination of these three models of monitoring, building on the relationships and shared understanding that arise from those interactions within the Committee. The question is whether MH has the foresight and will to help facilitate such changes.

## 6.0 Mitigation and Rehabilitation

"Manitoba Hydro had done enough damage and it's time to fix what's already been damaged."

(PFN, 2015, p21).

192. Any rehabilitation undertaken by MH regarding the MMTP is made most explicit in the Rehabilitation and Invasive Management Plan or RISMP (undated). This document is clearly an "early" draft" and is only about nine pages in length, mostly consisting of definitions and lists. Such plans were already criticized as inadequate in the Keeyask EIS (McLachlan 2014a), and this one is also ad-hoc in nature and clearly represents an afterthought. Ignoring what this might mean for mitigating any adverse impacts, such a low-quality document represents a missed opportunity of addressing public, and notably Indigenous concerns and possible conflict regarding any future impacts.

193. A first step would have been to systematically document and evaluate the implications of other mitigative and rehabilitation actions undertaken in other projects, notably Bipole III which is the most similar in structure and function to the MMTP. Doing so would of course facilitate adaptive management and cross-project learning on the part of MH. Beginning the process so late in the process (it is frankly unacceptable that these documents remain in these draft state five years after the MMTP process began and more than 10 years after Wuskwatim), precludes any inclusive process whereby the concerns and priorities of Indigenous communities and local communities could have been reflected in similarly inadequate adaptive management sections as well as the monitoring sections of the documents.

194. Rehabilitation is defined here as,

"the process of returning the land in a project area to a condition compatible to its former state after development has disturbed the land" (RISMP, p4).

This definition is not referenced and by defining the desired end state as a condition that is comparable to its former state, represents a low and ambiguous bar. A higher and more meaningful bar would have made explicit reference to the pre-settlement landscape as a goal, as best reflected in the remaining high quality natural habitat. This would also have enabled MH to go beyond just minimizing any adverse impacts but to also undertake management activities that would actually help improve the ecological integrity of any remnants.

195. The use of the term "compatible" the above definition is also ambiguous, and is difficult to operationalize. Other terms, for example "similar", as reflected by "similarity indices" would have allowed MH to quantify whether the impacted state was converging or diverging from the former state. Although composition (i.e. species composition) is most commonly used to assess impact on biological communities and ecosystems, they can also differ according to aesthetics, structure, function, culture, or human use value. It would have been useful for MH to better explain how it will assess these changes.

196. The trajectory of rehabilitation and restoration can thus be defined according to the degree of similarity to a reference or the same site *prior* to disturbance (Bradshaw, 1987). Restoration aims to (ideally) re-create the structure or function of the pre-existing state or comparable reference site, whereas rehabilitation focuses more on function and human use but often settles for a compromise in structure or species composition. Rehabilitation tends to be much more prevalent in highly disturbed habitat, and is often associated with intensive industrial activity such as mining, oil and gas extraction, or, in this case, hydropower. As such, the goal of rehabilitation can be seen as being designed to meet three key objectives: the long-term stability and sustainability of the landforms, soils and hydrology of the site; the partial or even full repair of ecosystem capacity to provide habitats for biota and services for people; and the prevention rather than degradation of the site itself or that of the surrounding environment (Grant et al. 2016).

197. Manitoba Hydro explicitly indicates that their primary strategy for mitigation was their use of a route that would largely avoid crown land and other intact natural habitat as well as their substantial use of already existing transmission corridors,

"The most effective mitigation measure for this Project, as with most transmission lines, was through careful transmission line routing." (Exec Vol, 2015: p11).

198. Ignoring for the moment that most affected private landowners and both First Nations and Métis communities would disagree vehemently with the above sentiment, this is an erroneous use of the term "mitigation" and conflates needless damage associated with a given project with an obligation to address and reduce residual environmental damage that arises from the different phases of the project wherever feasible. Is, for example, the safe and secure storage of diesel fuel really a mitigation strategy?

199. Examining the brief summary regarding rehabilitation in the MMTP, it is also clear that there is a reliance on reseeding and transplants when it comes to revegetation, this using commercially available seed mixes and plants. Thus,

"Purchasing native seed from commercial providers is a practical option for large rehabilitation sites. In response to demand for genetically diverse native seed for rehabilitation projects, native seed producers have become increasingly common."

(RISMP, 2017, p8).

200. It is further indicated that seed selection would likely reflect a dominance of native graminoids and subdominance of native broadleaf forbs, that it would make use of local seed whenever possible, that forage seeds would be avoided wherever possible, and that the genetic origin of the seeds would ideally be from Manitoba or nearby provinces (RSIMP 2017).

201. Such active approaches to rehabilitation are common in industry, especially on sites that have been devastated by mining, long-standing agriculture or urban growth, the sites reflected here will have been subjected to short-term disturbance. Ignoring of course the infrastructure such as equipment yards, roads, transformers etc., much if not most of the natural habitat will be relatively intact, and will have certainly have intact propagule (seeds, rhizomes etc.) banks. Moreover, the linear nature of much of the disturbance, to the degree that it reflects linear rights of way, means that that these disturbed areas will generally much closer to intact native vegetation and sources of propagules (Prach et al. 2015).

202. Yet, these active forms of rehabilitation and restoration often result in slow recovery and in some (many?) cases abject failure (Prach and Hobbs 2008). This, in part, because of the intensive nature of site preparation and management (e.g. vegetation clearing, weed control, prescribed burning etc.) and the high cost of inputs (e.g. seed mixes, soils, fertilizers etc.). This becomes especially problematic if the management is short-term in nature, recognizing that there will only be one or two years of monitoring post-construction and thus, one assumes, of active management.

203. Given these circumstances (short-term commitment, recent and often high quality previous habitat, existing propagule bank, nearby like-habitat and sources of propagules), it makes more sense to focus on facilitating passive rehabilitation or restoration.

204. There are contrasting views on the possible role of soil seed banks in grassland restoration. Several studies emphasize that soil seed banks form an important source for re-colonization (Bakker & Berendse 1999), particularly when species dispersal is limited (Rosenthal 2006; Simmering et al. 2006). However, other investigations have found that target species often lack persistent seed banks (Kalamees & Zobel 1998; Bossuyt & Honnay 2008).

205. Passive restoration is increasingly involved in grassland restoration, as it offers a costeffective solution compared to technical reclamation (Prach & Hobbs 2008). It was stressed, however, that the application of passive restoration has some constraints (Bakker & Berendse 1999) and can be considered to be the most promising in sites where both the propagule sources of grassland plants and dispersal vectors are proximate, and when the soil of the sites is intact and moderately loaded with nutrients (Török et al. 2011; Valkó et al. 2017).

206. Some recent publications have emphasized the importance of this approach in forest restoration or regrowth vs. active tree planting or afforestation, for example in Mexico and Canada (Honey-Rosés et al. 2018). Passive and active restoration are not necessarily mutually exclusive, but can complement one another. Thus, once recovery is established by either active or passive restoration, such approaches can facilitate subsequent passive colonization by these newly added plants, for example through prairie restoration in Kansas (Jaksetic et al. 2018) or the facilitation or reintroduction of seed dispersers in montane forests (Nafus et al. 2018)

Although sometimes criticized because of its longer recovery times and associated frustration by landowners (Zahawi et al. 2014) passive restoration is often lower in cost and allows for greater flexibility when it comes to facilitating desireable change in degraded landscapes through multiple pathways (Prach and del Moral 2015).

207. These linear sites represent an excellent opportunity to use (active) adaptive management in order to explore to what degree natural regeneration and the control of exotics can be facilitated given the viability of the propagule bank, the high nutrient content, and proximity of surrounding seed sources. Rather than simply relying on passive regeneration.

208. If managed in appropriate ways that transmission corridors can be high in native biodiversity, especially if the surrounding land use consists of natural habitat that is lower in native diversity that these early successional rights of way (e.g. wetland, forest) or if land use precludes native diversity (e.g. agriculture, urban). Indeed, transmission lines can provide valuable habitat and help support regional populations of native bees and bumble bees, if managed in appropriate ways (e.g. avoiding mowing and use of some broad spectrum herbicides). These types of approaches represent ideal opportunities for adaptive research through collaborations with university and community researchers.

209. Another common practice when habitat is degraded by industrial development is to use "restoration offsets" to compensate for habitat that is destroyed by industrial activity, especially in sites that will never be allowed to regenerate (e.g. equipment yards, service roads, building sites etc.). Biodiversity offsetting has become common practice. The International Union for Conservation of Nature (IUCN) defines biodiversity offsets as "measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken" (BBOP, 2012; p13). The core principle that underlies these offsets, and more broadly compensation and restoration, is that there is "no net loss" of biodiversity and if possible, a "net gain" (BBOP 2012). Restoration can play a key role in offsetting any decline in biodiversity or in the loss of habitat (Schoukens and Cliquet, 2016). This becomes especially important in highly fragmented and agriculture-dominated landscapes such as those found in the RAA.

210. Yet as this MH response to an information request by Animakee Wa Zhing #37 and Northwest Angle #33 First Nation makes clear, no commitments are made in this regard,

"Manitoba Hydro has not made any commitments to conduct restoration offsets in relation to the MMTP project, including the new portion of the line."

(IR: NEB\_AWZNWA- 001.11, p43).

211. No justification is given for avoiding this common and useful practice, and is especially problematic with respect to threatened ecosystems such as tall grass prairie, especially since there is a long history of effective prairie restoration in this province (e.g. Prairie Habitats Inc, Native Plant Solutions) and an ample supply of local seed and seedlings. Likewise, any net loss of traditional use plants should also have been compensated for by offsetting. In so doing, degraded habitat could have been restored by the introduction of native and or traditional use

species as well as those that are uncommon or of conservation concern.

212. Another common practice that would ideally have been explored for the MMTP is the use of conservation or habitat banks. This refers to the permanent protection of species of conservation concern and their associated habitat, through the acquisition of parcels of land. Strategic purchases can build sequentially on existing protected areas, in some cases by expanding the size of these core areas or by increasing connectivity among otherwise isolated patches. This is often done be done in collaboration with partners, either with government agencies (e.g. Manitoba Tall Grass Prairie Preserve, Ducks Unlimited, Nature Conservancy Canada) and/or the Manitoba Government. It has also be done in ways that generate funds for non profit organizations, if they own appropriate natural habitat which could then be purchased or secured using long-term leases or conservation easements.

213. Although still not commonly used in Canada, such banks have been used in the US since the mid 1980s. Thus there are currently 500 wetland banks in the US, and another 500 that have been proposed (Harrison and Hamilton 2016). The first habitat bank was constructed in the North Fraser Harbour in Vancouver in 1993, the habitat bank has since been used in many provinces, most notably in Québec and Nova Scotia (Hunt et al. 2011), and it is currently being explored for the Milk River Watershed in southwest Saskatchewan (Harrison and Hamilton 2016).

214. Although few if any of these innovative ideas have been adequately explored in this draft document, the RISMP is also notable in that rehabilitation is tied so closely to the management of invasive species, which, while important, only represents one dimension of successful rehabilitation. Invasive species are defined in the Vegetation and Wetlands (Chapter 10) as,

"Plants that are growing outside the country or region of origin and are outcompeting or even replacing native organisms. Since they come from ecosystems in other parts of the world, they have a distinct advantage over native species whose populations are kept in check by native predators, competitors or disease."

(C10, pxiii).

215. Invasives are all grouped together, although this view of non-native species is better seen as exotics. Recent changes to the Noxious Weed Act in Manitoba now classify non-native or exotic species are classified in three tiers of noxious weeds, according to the threat they represent to the environment and the agricultural economy. These include noxious or Tier 1 species at one end of the continuum (which require immediate destruction), Tier 2 species (which require immediate destruction in patches that are <5ha and otherwise only require control), and Tier 3 species at the other extreme (which only require control). Tier 1 noxious species can refer to invasive, non-invasive or even native species, the latter including milkweed (*Asclepias* spp.) and water hemlocks (*Cicuta* spp.) for example. A total 56 noxious, invasive, and non-native species were identified in the the final preferred route (Szwaluk Consulting and Newman 2017).

216. Of the 21 noxious species that were were found, only one was Tier 1, red bartsia (*Odontites vulgaris*), one was Tier 2 (Bladder campion or *Silene vulgaris*) and 19 were Tier 3 (Szwaluk Consulting and Newman, 2017). The intensity and type of management of these species

obviously relates to the degree of threat. Thus, Red bartsia is starting to threaten and devalue pastures throughout the Interlake and is spreading across the province, thus requiring intensive management, whereas others (e.g. *Poa* spp.) are effectively naturalized and represent very little if any threat.

217. As with rehabilitation, there are active and passive approaches to invasive species management. Most of the literature views invasive species, or more generally non-native or exotic species, as problematic at best and as an inherent threat at worst. Thus, active control and ideally the control or removal of these species is generally the focus of most management approaches, as reflected here in the RISMP, where they will be controlled through a number of techniques including hand pulling as well as chemical, biological (using insect or disease), and mechanical (e.g. mowing) control. However, in many cases their removal and the associated disturbance can cause more problems than the presence of the species themselves, especially if the propagule bank is also dominated by early successional exotics. In contrast, passive management views invasives as symptomatic of underlying degradation rather than the cause of the degradation itself, and then works to address the underlying causes of the degradation (e.g. overgrazing, nutrients, soil degradation).

218. As with rehabilitation, a best practices approach would combine both active and passive forms of invasive species management, the former focusing on preventing any highly competitive Tier 1 or Tier 2 weeds from dominating recently disturbed sites, and then over time complementing these with passive approaches that are built in underlying process of natural regeneration and that facilitate the recovery of native species, which in turn would ideally outcompete any exotics. Such processes include facilitating the dispersal of seeds and propagules, the management of grazers such as cattle, ungulates, and even goats in the case of leafy spurge, and the removal of exotics through managed natural disturbance such as, prescribed burning etc. But generally resist the use of herbicides as they generally will also adversely affect native species and are distrusted by so many traditional users of plants.

219. Although there was a small subsection on climate change as a possible stressor in the future, other than some general statements about how change might or might not occur in rare, traditional use and invasive species, it was very opaque and had no citations. The role of North-South transmission lines, especially when combined with recreational use, in facilitating the movement of exotics is worth considering in the context of climate change and anticipated increased in temperatures and changes in precipitation and even the kinds of crops that will be grown. It is likely that animal and even plant species will move northwards as these changes in climate occur.

220. Such uncertainty is clearly high when one attempts to predict impacts associated with industrial projects in the absence of adequate, or in some cases any, scientific data and the unwillingness on the part of proponents to incorporate other forms of knowledge (Indigenous, local) in project design, construction or subsequent management. Uncertainty is generally underemphasized by proponents in most EIAs, perhaps predictably, and that was certainly the case in the MMTP. When 77 EA experts were interviewed in a recent study, the large majority (80%) acknowledged that EIAs contained uncertainty and very few (15%) indicated that uncertainty was adequately acknowledged by practitioners and, when disclosed, acted upon by decision makers (Leung et al. 2018).

221. Uncertainty was acknowledged and to a lesser degree addressed to some degree in the MMTP EIA when referring to wetlands and vegetation management,

"The following identifies uncertainties in the vegetation and wetlands baseline information and associated assessment, and the methods used to address them:..."

(C10, p20).

222. More specifically, references were made the kind of uncertainty that arise from 20 year-old data sources for aerial photos, pervasive gaps in data due to restricted access to privately owned land, and the lack of historical data on rare plant species. Ironically, these gaps and the uncertainty that they represent still reflect relative strengths in data compared to much more substantial and pervasive gaps, for example those associated with the inadequate consultation and outreach with Indigenous communities, the failure to include Indigenous or local knowledge, much less any ability to predict project related impacts, in isolation or especially in association with other projects into the future.

223. Another form of uncertainty is the degree to which the mitigation plans are followed in the field. This is aggravated by the lack of detail in the plans, which ostensibly provide little guidance to either the MH environment inspectors or the contractors. There is also much use of phrases like "will be considered", "likely" and "where appropriate" throughout the EIS, which can and is often abused in the field,

"That gives them that way around, right, around those mitigation plans. Just like when they started putting those mats up. There wasn't supposed to be any work out there, but they have a camp at the 305 and number 2 Highway. So are they going to keep paying these guys to sit there until the ground freezes? Of course not. They're going to bring in those mats. And then they do that and they create... And the ground is still soft so those mats are crushing things, you know?"

(Environmental Monitor Interview April 24, 2018).

224. There is no information about any failures, or successes for matter, in the EIS. However, interviews I conducted with Indigenous environmental monitors suggest that this is a pervasive problem out in the field. As indicated above, these monitors collectively worked for many months on the Bipole III project, and had encountered many such gaps between what was expressly indicated in the mitigation plans and how and to what degree these plans were actually implemented,

"The way these guys operate, is bullshit compared to the things they say in their documents. But they don't have to put anything in there that's real because they know that they're going to get that license." (Environmental Monitor Interview, April 24 2018). 225. As already indicated with respect to monitoring, this points to a systemic problem with respect to mitigation as well. The plans are presented in draft form and only developed in further, albeit still inadequate, detail after the EIS has been submitted. Although the literature shows that there is little motivation for proponents of other projects in Canada to design and ostensibly enforce compliance (Weir 2018), this was another wasted opportunity for MH to address past shortcomings in projects such as Bipole III and now Keeyask, when developing effective mitigation plans.

"Even after that, when I brought [Elders from neighbouring First Nations] onto the site and they told that inspector this is what you do, don't do this, this is what you do. Oh yeah, yeah, yeah, we will do this. Soon as those guys were gone, that was it. They [MH] went and did exactly what they were going to do. Whether it's in that map book or in their mitigation plan or not. Money. They did it quickly and cheaply."

(Environmental Monitor Interview, April 24 2018).

226. Despite claims to the contrary, there is little evidence of any adaptive management that is taking place within much less among projects. And any such experiences are rarely if ever reported in EIS or reports available to anyone but Hydro employees. Moreover, the opportunities for making mistakes and for deliberately taking shortcuts are immense, given the financial pressures to keep on or ahead of schedule.

227. This is aggravated by the absence of anyone who is not a Hydro Employee, including environmental inspectors, contractors, and community environmental employees, on these sites and that any compliance is ultimately self-regulated by MH,

"Those guys in the Crown doesn't give a shit. You've got the license, here's the rules you have to comply with, and then at the end fill out everything that you've compiled and I'll sign off on it. They self regulate, they fill out the forms themselves. They don't show it to us. They just sent it to the Crown, and the Crown says: okay here's your completion certificate. It's actually the contractor that fills it out, Hydro fills it out, because you give it to the inspector and the inspector looks at it and changes it whichever way he wants, and we don't get to look at that and then they send it off to the Crown. That's what happens here."

(Environmental Monitor Interview, April 24 2018).

228. The interviews with these Indigenous environmental monitors revealed many examples where shortcuts were taken, resulting in needless – and generally overlooked – environmental damage, including the inadequate use of mats to prevent rutting and other damage when machines were used improperly, once the ground had thawed,

*EM2* "They have mats, like matting along the right of way. If they fall off the mats, the mats are almost 15 to 20 feet, and somehow they just go off there and drive right alongside the mats, 'cause maybe they're crossing?

But I don't know why they can't wait for the other guy to go through. They just criss-cross and go off the mats and then they go on and they cause these huge ruts from cement trucks. And then that one that fell off the mat, hit the mat, then just continued to go as diesel was spilling. I was like I don't know if I'm here to ... about a quarter of a mile."

*EM1:* "Diesel is dripping right out down the right away to the tower. Then they finally stopped when the diesel is done. You should see the amount of dirt they had there. I have pictures of most the stuff I saw."

SM: "So did they clean up after?"

*EM2:* "Oh yeah they cleaned it up. I don't know how well it was cleaned up though. But when I go back I do a smell test to test the dirt. You can still smell some of the diesel and whatever it was that had been spilled." (Environmental Monitor Interview, April 24 2018).

229. Another such example, was the needless destruction of riparian and duck breeding habitat, close to the waters edge,

*EM2: "Well, me and* [EM1] were walked through there and we seen the duck habitat, well the ducks flew away when we got there. And then almost a week later that thing was run over, there was supposed to be no machines in that area, and it was gone. Right to the river, and there was supposed to be a buffer to the waters edge. And that duck habitat was wiped right out."

*EM1:* But I think a lot of those things now, looking at those things in hindsight. They didn't want to spend the money for us to do the work, so they used machines cause it's cheaper and it's quicker. And that's what they did. Those things they wrote in their book, I wish I brought my map I could've shown you specifically. You're not supposed to work on there with machines unless the ground is frozen, and it wasn't." (Environmental Monitor Interview, April 24 2018).

(Environmental Monitor Interview, April 24 2010).

230. Other examples, included the improper removal of debris from areas that had been cleared but that were prone to flooding, thus potentially resulting in threats to downstream boat use and swimming in the form of mostly submerged debris or deadheads,

"What concerned me the most was that river, and the way we dealt with the river. Cutting those stumps like this. Why that concerned me was what happened with the lakes up there where people were hitting deadheads and stuff like that. And we kept trying to tell them don't do that, don't leave those things down there we'll haul them out. But since it was cheaper to just leave them we had to leave them."

(Environmental Monitor Interview, April 24 2018).

Or the use of debris to fill dips on banks, which would stabilize the slopes in the shortterm but which would likely contribute to further erosion in the long-term since they were not being removed. 231. These oversights of course had negative impacts on areas that would be used for harvesting by communities,

*EM1: "They had signs like this down by the river, and they don't even read those signs."* 

*EM2: "Yeah, they're just put there for show."* 

*EM1:* "You see these things, this is what they came here and gave us. It's absolute crap, because their objective is to put their line in. These are just for show. Spills, no matter how little they are, a drop of oil in a bird habitat is dangerous, it can destroy that habitat. That area where we were working we told them look, we come here we hunt ducks here, we pick eggs here, don't go over that area. And we were dismissed and they went right ahead, they ran over those nesting areas. Just because those things weren't there nesting, that doesn't mean that that habitat doesn't exist, it's still there. Birds that come and fight over territory, that thing was flattened." (Environmental Monitor Interview, April 24 2018).

232. Another such example, referred to the destruction of bloodroot, a medicine used by traditional healers,

"Yep, bloodroot, it's where we find bloodroot in there. And we're telling them, oh we'll clean it up by hand around this area because it's where those things are. And bloodroot is one of the things we use for medicine. They went right through it. That's where that machine just went when I was there that Saturday when they said they were going to stop." (Environmental Monitor Interview, April 24 2018).

233. Especially disturbing was the needless destruction of heritage sites, many of which were mapped beforehand and some of which were identified in the field,

"The potential there is very high. We had a high cultural value attached to that area, particularly around the Assiniboine River and east of there. It didn't make any difference one way or the other. Their objective was to get through there and finish it off as quickly as they can. And that's what they did. Regardless of what we said or what we bitched about." (Environmental Monitor Interview, April 24 2018).

234. One such case was the destruction of a sacred site, as evidenced by old flags tied to trees,

*EM1: "That's what happened in that place. Now, when he was going on, the one incident when he was on the rest of the line, where you guys found those flags. Those Indian people putting flags around trees...* 

*EM2: "we found a whole bunch of them, we found like over a hundred maybe, and they told us to take them down… I got some that are so old, that* 

the tree was like this, when it grew the tree was like that and there was embedded inside with the cloth. That's how old those were." (Environmental Monitor Interview, April 24 2018).

235. Permission was given to take down and burn the flags by a local Elder, although the monitors that were interviewed indicated that this had been inappropriate,

*EM2: "They said to take them down and burn them. And that's with the elder did, or I guess he was an elder, but he burnt them right there. And they asked us to go and do that, and I didn't want to do that. We just took them down and put are tobacco down for each tree we did. But we didn't burn them or anything."* 

(Environmental Monitor Interview, April 24 2018).

236. However, the heritage site was ultimately destroyed. When asked why it was not just avoided, one of the monitors indicated that there had already been two changes in routing and so there was no willingness on the part of Hydro to do so again,

SM: "What normally would they have done, would they have just..."
EM2: "We don't bother them."
SM: "Don't you usually just put flagging tape?"
EM1:" If it has flagging tape around it you don't go in there. You leave those things alone."
SM: "So why do you think they didn't do that?"

EM1: "Cause they would have had to reroute the line".

*EM2: "And that was already a rerouted line already.* 

*EM1:* They changed that route twice I think. And then by the time you guys got up there, there was the potential to change that route again the third time, but they didn't. Instead they had to take these things down. But in what I'm documenting there is about the ownership of those things. No Elder should ever go in there and say take those down and burn them, because they don't belong to him. Those people that hung those things, those are the ones that are supposed to take care of that. Right? But they did it anyways."

(Environmental Monitor Interview, April 24 2018).

237. Other examples of such destruction involved the inadequate documentation or avoidance of grave sites and archaeological sites having shards of pottery,

*EM2: "There was other areas, like they had the Red River also, there was another partner, we had an archaeologist there to go dig up and find, well I guess they found shells and stuff. And there was a bone there, I don't know what they did with it. I think they send it into archaeologists, and they didn't get back to me on that. That was way in, gee, last year at some time. That was there, and I think it was supposed to be stopped."* 

*SM*: "Because as soon as they found that site they should have stopped? And they just continued?"

*EM2: "Oh yeah. Well yeah, they kept going and the archaeologist wasn't available so they sent me in there to go dig and to sift through the dirt and all that and find whatever."* 

(Environmental Monitor Interview, April 24 2018).

238. The needless destruction of another heritage site took place, despite Elders from neighbouring First Nations visiting these sites and giving advice as to how to proceed, advice that was ultimately ignored when the site was cleared over the weekend in the absence of the environmental monitors,

"And there was a hill, I got [two Elders] to come there, because we were concerned there might be graves around that area. And then we cut that, we were going to do hand cutting up that hill like this so there's a road up at the top over there. They sent that machine right through there, even after they talked to the Elders. It's not just a spot where that grave is, there's things that they used to do, put ceremonial stuff around graves. And we didn't even get a chance to look for those things. I went back later, and I'm pretty sure those were graves in that area, but it was already done, the damage was done. This is that, oops, we'll do it better next time. But they did it because it was cheaper to go right through it with machines, rather than us actually doing hand clearing. And in that whole area that they did where they're not supposed to do, where we're supposed to look at what's there first, they went right through there. And then we never got a chance to go back."

(Environmental Monitor Interview, April 24 2018).

239. At a minimum, there should be an auditing system where the effectiveness of any mitigation is evaluated and documented in reports that are available to MH but also to outside stakeholders and Indigenous communities. It is critical that these auditing systems are independent and not controlled by MH and that any evaluation be randomly chosen and systematic in nature, and not just restricted to highly controlled, demonstration sites. Currently, there seems to be a disconnect between MH management and environmental inspectors, such that it is unlikely that any such mistakes or shortcuts are reported by anyone,

"I asked them one time, I said: where the hell is the government inspectors, anyway, that are supposed to be responsible for this? They said why, why do you want that? I said because you guys aren't following your own damn mitigation plan. I said: every time I turn around you're doing something against what's in our plan. And they just dismissed it. And those guys, those senior people that came out, they come and told us a good story but as soon as we turn our back there they were again doing the same things." (Environmental Monitor Interview, April 24 2018). 240. This indicates a fundamental and systemic flaw in the mitigation plans since there are no repercussions for MH anywhere and at any stage of the project,

"It's a policy, oops will do it better next time. There are no consequences for them when they fuck up like that. Nothing, no one is going to penalize them, no one is going to give them a fine. They're just going to write a letter and say this is what we did and is it okay?. And the Crown says yeah, okay, go ahead. It's the way it is." (Environmental Monitor Interview, April 24 2018).

241. Ideally, MH environmental inspectors, autonomous Indigenous environmental inspectors, and other independent environmental inspectors would work together to enforce compliance and to document the effectiveness of these plans and report back to MH management, the government, their communities and other stakeholders in ways that are accessible and useful. The intent is not to impugn or embarrass MH, but rather to develop a credible systems of oversight that would better mitigate damage to heritage sites and the environment, facilitate learning in other sites in the future, and ultimately work for the benefit of the environment and everyone involved.

## 7.0 Public Engagement, Especially with Respect to First Nations and the MMF

242. In 1969, the US National Policy Act at once developed the EIA as well as the important role that public participation would play in that process. This importance of public involvement in environmental governance as a whole was subsequently reflected at the global scale in the United Nations Rio Conference on Environment and Development in 1992. It has now come to play a central role in EIA in over 100 countries around the world.

243. There are many approaches to public engagement as they relate to environmental decision making as a whole and more specifically to environmental assessment. Some (sensu Arnstein 1969) have created hierarchies of engagement, suggesting that those at the lower end are nominal and less worthy (e.g. manipulation, dissemination, consultation) and thus merit replacement by other more meaningful and equitable forms of engagement (partnership, delegated power, citizen and Indigenous control). Others argue that any form of public involvement has value (e.g. Conrad and Gilchey 2011).

244. Glucker et al (2013) reviewed the literature on public engagement in EIA and identified three categories or rationales of involvement, all with different goals. The first cluster represents a *normative or ideological rationale*, which would either enable increased influence, enhance citizen involvement and democratic capacity; or enhance and shift social learning shifting from the individual to the collective; or lastly, empower and emancipate equity-seeking groups that are otherwise largely excluded from decision-making. The second cluster reflects a *substantiative rationale* which would enhance local information and local knowledge thereby facilitate informed decision-making; incorporate experimental and value based knowledge that complement techno-bureaucratic values, and triangulate and test information that originates from a wide diversity of sources. The third and final cluster reflects an *instrumentalist rationale*,

which would enhance the legitimacy of the EIA and placate any resistance, ultimately furthering the project; address legal and treaty requirements to involve Indigenous people; and finally resolve conflicts through deliberation and the inclusion of a wider diversity of participant priorities. Any or all of these rationale clusters can be reflected in a given project-level EIA.

245. It is clear, however, that systemic barriers also remain to public engagement, despite the rationale for participation, barriers that will persist if not explicitly identified and addressed by proponents and regulatory bodies. Moreover, the public is not homogenous and some publics have privilege and access to influence and resources overs. These barriers may be mitigated by the funding of groups interested in participating and effective outreach and communication (e.g. CEC in Manitoba and the NEB), but these power differentials will tend to persist regardless.

246. Manitoba Hydro argues that public engagement is a core component of their MMTP EIS. This process began in June 2013, consisted of three iterative rounds, and has since,

"involved more than 1,500 participants at 37 Public Open Houses and Landowner Information Centres hosted for the project, more than 70 meetings, and responses to more than 850 phone calls and emails with stakeholders and landowners."

(Exec Vol, 2015: p5).

247. However, there are many indications throughout the EIS, that this outreach was restricted to the third instrumentalist cluster, approaches that would strive for increased legitimacy and address any legal requirements to involve any impacted First Nations or the MMF. In contrast there was little, if any, emphasis on increasing democratic engagement of the public or equity-seeking groups (normative rationale) or on increasing the quality of the data and the ability to predict or mitigate any impacts (substantiative rationale).

248. Most of these engagement processes seem to have focused on providing feedback on alterative routes, through an engineering based protocol first developed in Georgia for locating electric transmission lines. One of the steps in this process, is to enable stakeholders to give feedback on different routes that are mapped out, and thus to identify key areas that should be avoided.

249. It was, in part, this process that was responsible for the final preferred route, which largely avoided crown land and wetland areas in the East, instead focusing the route to the west, largely on privately owned agricultural land and woodlots. Many (most) of the meeting focused on alternative routing, which MH highlights in their EIS, It is notable, when describing the overall public engagement process in the Executive Volume, that the only mention as to the intent of these engagement processes was regarding routing,

"Round 1 of the public engagement process began in October 2013 and concluded in February 2014, and <u>gathered feedback that assisted in the</u> <u>evaluation of the alternative routes and the identification of a preferred</u> <u>border crossing for the Project</u>. Round 2 began in March 2014 and concluded in December of that same year. In Round 2, Manitoba Hydro presented the preferred border crossing with alternative routes and solicited feedback to assist in determining a preferred route for the Project. During Round 3, which occurred throughout 2015, Manitoba Hydro presented a preferred route for the transmission line based on the environmental assessment work and input received to-date to assist in determining the final placement of the transmission line."

(Exec Vol, 2015; p6, emphasis added).

250. In so doing, the process initially considered a large number of potential routes and then reduced these in number using increased levels of analysis on data from field studies and feedback arising from engagement until a final route was selected,

"The routing process began with more than 700,000 alternatives for comparison. This was reduced to 550,000 in the second round, and in the last round of Final Preferred Route determination, nearly 4,000 alternatives were compared."

(Exec Vol 2015, p9).

251. Participants in this process helped select the final route that would largely situate the power line in existing transmission corridors and previous developed, mostly agricultural, lands rather than further fragmenting intact crown land and natural habitat. Although over 77,000 alternative routes were technically compared, one alternative was ultimately excluded by MH from the outset.

252. There is no evidence from any of the meetings or in the EIS that a no-route alternative was presented or considered. Effectively, as with most EIA, it was always assumed that the Project would go ahead in some capacity..

253. As indicated above, MH is careful to avoid making commitments regarding public concerns. The EIS makes extensive use of caveats such as "likely", where appropriate", "considered" and "where possible" and "where feasible" when it comes to health concerns regarding herbicides and EMF for example. This is even true for irreplaceable Indigenous heritage sites,

"Known heritage sites and those identified during the First Nation and Metis engagement process were also <u>considered and avoided where</u> <u>possible</u>."

(Exec Vol, 2015: p11, emphasis added).

254. The preordained nature of the Project, and the lack of any meaningful influence over this project was described by an Elder in Swan Lake First Nation,

[Elder1] "...but do you see? You take this outsider or somebody else who were here looking at this what town is talking about, this guy would talk about those guys are poor, they're living in poverty. They don't even know how our existence is better than than what they have there. Again going back to the land relationship. Or the environmental relationship." [Elder2] "And that's what they keep taking away from us. Even one little hydro line that goes through, it takes a little bit of that. Our relationship with nature away from us. But, boy, they have every excuse in the book waiting for us." [Elder1] "It seems like we can't win either we resist and say no the

[Elder1] "It seems like we can't win either. we resist and say no, the government says no we're doing it anyway."

[Elder2] "what's the point? They're going to do it anyway." (Elder Interview, April 24 2018).

255. Many participants at one of the meetings in La Broquerie, a community with many (14%) Métis residents, wrote in to express their concern regarding the impacts the Project would have on their livelihoods, the natural habitat on their land, their livestock and health and wellbeing as well as as their lack in faith regarding the process,

"We took part in all of the meetings put forward by MB Hydro and in doing so realized the arrogance of MB Hydro and how it was just a fait accompli. They went through the motion of the environmental impact study, but only to fulfil the commitments of the licensing process." (Robert and Michelle Frankard-Cooper, Nov 22m 2015: Public Comments 2 of 3, p17).

256. If the project was deemed important enough to proceed, then there will be adversely affected individuals, communities, and environments regardless.

"Two of the central issues raised and evaluated throughout the routing process were the competing values between the use of private or Crown lands, and the relative impact to natural habitat versus farmland or residences."

(Exec Vol 2015, p9).

257. Much of the literature indicates that public outreach plays a vital role in addressing and mitigating at least some of the concern regarding these kinds of large-scale projects (e.g. O'Faircheallaigh 2010, Glucker et al. 2013, Sinclair and Diduck 2017, Simpson and Basta 2018). Manitoba Hydro, perhaps predictably, expresses that it invested substantial efforts and resources in this outreach process, ultimately reaching out to over 25,000 people. Of the total \$650 million project budget, about \$800,000 were spent on these public meetings. Whether participation representing 0.001% of the total project budget is adequate or not can be debated, but my sentiment is clear.

258. The quality of participation is also of key importance. Referring again to the highly influential, ladder or gradient of public engagement, it is clear that an overreliance on the lower end forms of engagement (e.g. dissemination, public comment, and consultation) limits the opportunity for the public to meaningfully influence the design of any given project compared to the other end of the continuum or ladder of engagement. The strategy adopted by MH regarding MMTP shows an over-reliance on these low-end forms, such that of the public engagement events over 80% were data provision or sharing events. Indeed, there have been relatively few

opportunities for collaborative decision making or even public-dominated activities, other than alternative routing as discussed above. Even that may have been preordained according to some,

"We have asked hydro why the route to the east was rejected, and their answer was "WE WERE TOLD WE CAN'T GO THERE". If hydro was told where they can't go then how can the route selection be fair. If hydro was told by Forestry or Conservation or mine and minerals they can't go on CROWN LAND then the government had their mind made up it was going on PRIVATE LAND. Hydro had NO CHOICE but to do as they were instructed to do, we all know that the CROWN told hydro to take a longer route for BIPOLE III, and we will all pay dearly for that decision!!" (Jim and Donna Teleglow, November 30 2015: Public Comments 2 of 3, p19))

259. In part, this reflects the lack of any national standards that have been legislated to require effective engagement at all stages of development (Nicolaisen and Driscoll, 2016). Many of the steps (CEAA, CEC, NFAT, and now the NEB) provide opportunities and funding support to enable the public and organizations to have input, and ideally to influence the project outcomes. But these have been criticized as occurring "too little and too late" in the process. This is especially true for equity-seeking groups, and especially, as we will discuss below, for Indigenous communities.

260. Thus, many of the public comments communicated dissatisfaction with the outreach,

When we met with individuals from MB Hydro it was not have our voice heard but rather for them to tell us this is what is happening and to assure us that there would be nothing for us to worry about." (Robert and Michelle Frankard-Cooper, Nov 22 2015: Public Comments 2 of 3, p17).

Manitoba Hydro claims to the contrary, this lack of meaningful engagement or inclusion was arguably felt most strongly and critically by affected First Nations and the Manitoba Métis Federation.

## 8.0 Indigenous Inclusion

"The Province of Manitoba's track record is dead last when it comes to including and recognizing First Nation people in Canada and this is reflected in their Crown Corporation - Manitoba Hydro." (BRLPSLFN, 2015, p54).

"Not enough information for people. Let us know what is going on." (PFN, 2015, p21). 261. The importance of involving Indigenous people in environmental assessment is recognized around the world, and their involvement has become a key and required feature of EIA in Canada. These groups ostensibly benefit from playing a meaningful role throughout the process, from scoping to mitigation, but a number of studies have come to the same conclusion: despite widespread claims to the contrary, many barriers ultimately undermine meaningful Indigenous involvement (Paci et al. 2002, Baker and McClelland 2003, O'Faircheallaigh 2007, Booth and Skelton, 2011, Muir 2018)

262. One of the primary objectives of the current Canadian Environmental Assessment Act (2012) is "to promote communication and cooperation between responsible authorities and Aboriginal peoples with respect to environmental assessment" (S4.1,d). Moreover, of the factors to be considered as part of the CEAA, "Community knowledge and Aboriginal traditional knowledge may be considered in conducting an environmental assessment" (S19.3). The involvement of Indigenous people in EIA is mandated by law, by treaty, and by a series of decisions by the Supreme Court since 2004 requiring that any Indigenous groups potentially affected by a project be provided with an opportunity to engage (Booth and Skelton, 2011, Gauthier et al. 2011).

263. Engagement is, in part, achieved through the federal Participating Funding Programme, which provides modest financial support to eligible groups (i.e. the general public, Indigenous groups, not-for-profit groups). This process mirrors that level of support available through the provincial Clean Environment Commission. Some studies have shown that these resources have helped enable these groups to participate in other MH projects, such as Wuskwatim (Foth 2012), as well as other large scale projects (O'Faircheallaigh 2007).

264. With respect to Indigenous outreach, it first appears that the First Nations and Métis Engagement Process (FNMEP) in the MMTP has occurred throughout,

"involving sharing with 11 First Nations, the MMF and four aboriginal organization and facilitating more than 90 leadership meetings, community open houses /information sessions, workshops and field visits." (Exec Vol 2015, p5).

265. In addition to holding meetings, workshops, and site visits, Manitoba Hydro also funded several Aboriginal Traditional Knowledge studies, including a combined study by Black River, Long Plain and Swan Lake First Nations and then studies separately conducted by Dakota Plains Wahpeton First Nation, Dakota Tipi First Nation, Peguis First Nation, Roseau River Anishinabe First Nation, and Sagkeeng First Nation as well as the Manitoba Métis Nation.

266. This engagement process was ostensibly,

"adapted to suit the specific needs of each First Nation" and "an effort was made to make it inclusive, adaptive, comprehensive, and responsive." (Exec Vol, 2015, p5).

In turn, the "output of the process" helped MH in,

"gaining "a better understanding of the various needs, concerns, and priorities regarding route selection and environmental processes and was an important factor in shaping a Project that minimizes potential effects on people and the environment."

(Exec Vol 2015, p6).

267. One of the early projects that is widely recognized as having a strong defining influence of Indigenous involvement in EIA is the Berger Inquiry, which ran from 1974-1979 and which centered on the proposed McKenzie pipeline project that was to be located in the McKenzie Valley in NWT (Berger 1977). The Inquiry engaged with 35 communities and concluded that the project would threaten traditional livelihoods and community wellbeing, recommending that it be postponed until any outstanding land claims were settled and their rights could be protected (Udofia et al 2017). Yet, even 35 years later, such success stories remain rare.

268. The challenges to such meaningful involvement are increasingly recognized. They range from limited technical resources and funding for these groups (Kwiatkowski 2011), inaccessible technical language and protocols used in reporting, short and inflexible timelines (Booth and Skelton 2011), poor access to isolated and remote communities in the North (McLachlan 2014a), participation fatigue in some resource-intensive regions (Noble et al. 2013), a wariness to give credibility to otherwise unworthy projects (McLachlan 2014b), and limited influence over project outcomes (Udofia et al. 2017).

269. Broader concerns revolve around the failure of proponents and governments to affirm the importance of Traditional Knowledge and cultures, cultural alienation, and a reliance on written documents rather than spoken culture. These have been aggravated by decisions to further streamline EAs under the guise of increased efficiency.

270. Yet, a recent Supreme Court decision found that "*any NEB decision affecting Aboriginal or treaty rights made on the basis of inadequate consultation will not be in compliance with the duty to consult*" (Muir 2018, p22). Where the Crown's duty to consult remains unfulfilled, the NEB must withhold project approval (Clyde River (Hamlet) v. Petroleum Geo-Services Inc. 2017, p. 5, 6) (Muir 2018). I argue and include much data here that show there was no such consultation with First Nations and the MMF, whether this relates to identifying VCs, assessing cumulative affects, adopting adaptive management practices, monitoring any impacts, planning rehabilitation and mitigation, or engaging with these affected communities, MH claims to the contrary.

271. There was much concern regarding the implications of the MMTP, and in some cases other hydro projects, on Aboriginal and Treaty rights. As indicated in the Sagkeeng First Nation ATK report,

"Consensus on the part of members is that their lands, waterways and way of life have borne and continue to bear the brunt of hydro developments that were undertaken with little or no discussion with them. In their perspective, little to no thought was given as to how development was impacting their wa y of life, their health and the exercise of their Treaty and Aboriginal rights.

(SFN 2015, p5).

272. Many barriers to meaningful engagement are still evidenced in the MMTP. One such barrier are the short and inflexible timelines, which played a fundamental role in undermining meaningful Indigenous engagement. Many of the ATK studies were only provided after the EIS was submitted in 2015, some First Nations were only recognized as affected by the MMTP after the NEB process began, indicating that timelines were already too short to allow this process to be fully credible or inclusive. This is true of MMTP but also other MH EIS processes, including Bipole III, where already short timelines were aggravated by inadequate funding to enable adequate community evaluation of the many technical documents,

Elder 3: "So it makes it difficult for us when we do that and Bipole III was a document. That big about 2 feet of document like that. one person sitting in the band office 6 days a month doing that work. To review that and you only have X amount of time to do it. And that was one of the major complaints we made to them right? you're not giving us the time to consider this fully. and you're not giving us the money so and you're not allowing us to talk to our neighbors to see how they feel about these things. So by doing that they create a division between the landowner and us."

(Elder Interview, April 24 2018).

273. Although the other ATK studies have since been submitted, they are much shorter than the techno-scientific EIS. Indeed, assuming that there are 10,000 pages in the EIS as a whole (including all the appendices, technical and supplementary reports etc.), the ATK report submitted by Roseau River Anishinabe First Nation is only 10 pages in length (or 0.001% of the EIS), that submitted by Peguis First Nation is only 32pp in length (or 0.003% of the EIS), that submitted by Sagkeeng First Nation is only 28pp (or 0.003% of the EIS), and the report jointly submitted by Black River, Long Plain, and Swan Lake First Nations is only 71pp in length (0.006% of the EIS). Their combined length at 141pp represents only about 0.01% of the length of the techno-scientific EIS.

274. It would be a mistake to confuse quantity with quality, and there are many meaningful insights in those reports, which I have highlighted throughout this document. But all are much less detailed than the EIS, in part reflecting and being hampered by the lack of credibility and trust that Indigenous people feel regarding this process and MH as a whole (Booth and Skelton 2011),

"...there is a long history of mistrust, Manitoba Hydro has not been a very considerate partner with First Nation people."

(BRLPSLFN 2015, p51).

275. This lack of trust also undermined how forthcoming communities would be in ATK studies that would likely be used in ways that they neither controlled or even approved of,

"Sagkeeng members are highly suspicious of the motives of Manitoba Hydr

o when it comes to meetings and sharing of information. Questions about ho w the information is to be used are not uncommon."

(SFN 2015, p5).

276. Throughout the process there have been information requests made by Indigenous participants, whether these be informal ones at the community meetings, workshops or site visits or whether they refer to formal requests later on in the process as represented by information requests or motions to compel. Yet, as I have shown throughout, there is an an inability or reluctance on the part of MH to meaningfully address these requests, whether they refer to additional studies on moose, additional information on EMF and herbicide use, or questions on the part of participants regarding community level engagement.

277. This reflects an inflexibility on the part of MH to deviate from its institutional approach to project design and management, in part reflecting its size, bureaucratic culture, and inertia as well an incompatibility between their technical understanding of the Project and the worldview of Indigenous participants,

"That whole way that they confined the conversation. That's what they do. Even for us as technicians that go to hydro and discuss these things, they can't find the conversations with what it is that they want to talk about. And they come here and talk about, they sit in the same right? And when we ask a question they say okay, well we don't have the person that works on that topic so we'll get an answer to you. They never have the answer provided to us when we ask them. And if they have an army of people over there." (Elder Interview, April 24 2018).

278. Yet, Manitoba Hydro is unwilling or unable to compromise its own plans and priorities, as indicated in the Sagkeeng First Nation ATK report,

"In spite of the reluctance to share their knowledge at this point in time, bui lding understanding between Hydro and the First Nation has to be an ongoi ng exercise. Members want Hydro to hear and understand what they are say ing – what their issues and concerns are – who they are as a Nation." (SFN 2015, p28).

279. The mistrust that arises from this impasse and a larger context of systemic exclusion and oppression results in a reluctance on the part of these communities and those reflected in many other studies to share their Indigenous knowledge, as it may ultimately even be used to undermine their own interests and aspirations since they have so little real influence over either the process or the outcomes as a whole.

280. Elders whom I interviewed questioned how meaningful this engagement was, indicating that Manitoba Hydro has always been listening but never hearing or understanding, always intent on promoting the Project according to their evidence and beliefs,

Elder3: "That's what they come and find out. What would be acceptable to those institutions. What do I need to get out of the Indian so I can tell the clean environment commission or the national energy board so I can get my certificate or my license to continue on this project. That's all they come here for. They don't come here to come and really hear, hear whatever concerns are. They don't. They have bullshit science that they come and present to us. And I don't hear what our concerns are or the way these people here just described. They don't come here to listen to us. They said here with what's that saying, about the deaf person. They don't hear and that's just the way it's been. It's been that way for decades now. They get mitigation has just become a word: I heard thank you very much but this is what we're going to do."

(Elder interview, April 24 2018).

281. Another response on the part of Manitoba Hydro was to receive the Indigenous Knowledge as represented in the original ATK reports or in subsequent studies if that was deemed necessary, but then using their own (ostensibly science-trained) employees or specialists to evaluate if this additional information would have any impact on their previous decisions. This was reflected in an information request by Sagkeeng First Nation, where they asked MB if the added information they had submitted had lead to any revised decisions. Manitoba Hydro, in turn, responded indicating predictably that no such change had occurred,

"The concerns raised in Sagkeeng's initial ATK study led to elevated engagement. Based on the concerns raised, Manitoba Hydro asked Sagkeeng First Nation to submit a supplemental report (in addition to their initial self-directed study) to lead to better understanding of the nature and locations of concerns. A supplemental report was filed March of 2016. The supplemental report was filed after Manitoba Hydro filed the Environmental Impact Statement for the Project. This report was shared with assessment practitioners to ask if any of their conclusions would change based on the new information provided as well as in combination with the previous study submitted. Assessment practitioners for each chapter indicated that the conclusions would not change based on the new information provided." (IR: NEB-SFNIR-001.24, p206).

282. Clearly MH managers mediated this exchange with these (ostensibly science-trained) assessment practitioners, and this process occurred without any active input from Sagkeeng. Likewise, it is apparent from the information request, that no follow up or reporting occurred with Sagkeeng. In situations like this, Indigenous Knowledge has the opportunity to influence decision-making, but all the power and influence rests with MH, which is unlikely to be receptive to any such changes, especially once their EIS has been submitted.

283. As in many other cases, Indigenous Knowledge is viewed by hydro bureaucrats and scientists alike as data and thus separate and distinct from the communities that shared it. Data that can then be refuted at will (Nadasdy 2003, McLachlan 2014b). And Indigenous knowledge
holders are yet again systematically peripheralized from having and direct and sustained input into decision-making.

284. This, in part, reflects the top-down processes that characterize this Project as well as so many other EIAs when it comes to engagement with Indigenous People as opposed to non-Indigenous landowners and stakeholders who ultimately are compensated for their losses and are engaged in reciprocal relationships with MH,

"Partnerships can be established with non-First Nation people to examine the impact of Hydro development. To date, Hydro has pretty much worked in private."

(BRLPSLFN 2015, p52).

285. These attitudes were exhibited in all stages of outreach, for example at public meetings with Indigenous communities,

"We had a meeting here regarding Bipole III with the old people. Well there was actually anybody that wanted to come in, there was quite a few of them in there. And then that one old lady says how come you guys keep talking about science? Why is that the answer to everything? Everyday on TV I watch that, they told me last week that this was safe and then this week they tell me it's not. So tell me what the hell is science? I thought great, right on! And they acted as if they didn't even hear that, they didn't address that old lady's concern."

(Environmental Monitor Interview, April 24 2018)

286. More broadly this effectively represents an unwinnable "Catch-22" situation, whereby most Indigenous people are reluctant to become involved and thus to give credibility to a process that that they are highly critical of and which they know will exclude them from having meaningful influence, yet on the other hand, knowing that not participating then only ensures that they will continue to be voiceless (David Scott, pers, comm., 2018).

287. The progressive nature of the EIA, and more specifically this NEB, avoids duplication with other provincial processes such as the CEC and NFAT and helps ensure that timelines are met. But it also undermines reflection and any ability to address oversights and mistakes earlier on in the process such as the exclusion of Indigenous voice and impacted upstream and downstream communities from the process, the desperately inadequate environmental protection, and the arbitrary and self-fulfilling VCs and self-assessed impacts as indicated above. These oversights and mistakes are further aggravated by short timelines and the inability to flex and to build the bridges that are required when incorporating Indigenous values and knowledge and the input of other equity seeking groups.

288. Even at the NEB stage, more than 18 months after the CEC process concluded, MH has yet to hear back from the Minister of Sustainable Development about the CEC licensing and nonlicensing recommendations, many of which had substantial implications for engagement with Indigenous communities. As reflected in the CEC-related information requests, and the follow up motions to compel submitted by Peguis First Nation, it was indicated by MH that, "All recommendations made by the Clean Environment Commission are made to the Minister of Sustainable Development. As jurisdiction whether to issue the Provincial licence ultimately rests with the Minister, the Minister reviews them and then accepts them, or in some cases does not, or, sometimes, modifies them. If the recommendations become imposed as licensing conditions, Manitoba Hydro will comply. Manitoba Hydro is awaiting the Minister's decision on the Clean Environment Commission's recommendations, both those called "Licensing" and those described as "Non-Licensing."

(IR: NEB\_PFNIR-001, p1).

289. This generic response was used in motions made by Peguis regarding surveys planned for least bittern and short-eared owl (PFN-IR-002) amongst others. If not deliberate, it is certainly works towards MHs interests that this delay has taken place. At best, MH should put a halt to the EIA process until these CEC recommendations were addressed, thus allowing more time for meaningful public engagement, and at worst it should take a "precautionary principle" and act on all the recommendations as if the CEC process had full integrity.

290. There has been a relentless unwillingness to accommodate community concerns regarding herbicides, in large part by using the science-based Health Canada criteria to refute any concerns, as reflected in responses to information requests by Sagkeeng First Nation (IR: NEB\_SFNIR-001.17, p181), Roseau River Anishinabe First Nation(IR: NEB\_RRAFN-IR-001, p1), and Peguis First Nation (IR: NEB\_PFNIR- 008, p16). Thus, with respect to Peguis First Nation, both the original IR (PFN-IR-008) and a follow up motion to compel (p6) regarding the use of backpack and handgun applications of herbicides in ways that might affect fish habitat and open water, the MH responses were exactly the same,

"Manitoba Hydro relies on the science that supports the regulatory requirements for Pesticide Use Permits and applicators licenses issued by Manitoba Sustainable Development, along with herbicide registrations issued by Health Canada, to determine what herbicides, application rates and methods minimize adverse effects on fish and fish habitat when applied near a watercourse."

(IR: NEB PFNIR-008, p16).

291. Regardless of the conventional views of Health Canada, many Canadians are concerned about the safety of herbicides (or more generally pesticides) for humans and environment alike. These same concerns, in part, underlie the widespread popularity of organic production, which prohibits any use of synthetic pesticides, still the fastest growing sector of agriculture in Canada (COTA, 2017).

292. The MMTP is dominated by western science and technocratic thinking. This is true of EIA as a whole, and ultimately acts to exclude Indigenous People, especially those with Traditional worldviews. Thus in a recent interview with Elders from one of the impacted First Nations, the dominance of techno-science thinking regarding health concerns in these meeting was clear,

[Elder] "We had that conversation here in that meeting we had, I think anyways some officials were here and when we brought up these things [regarding EMFs] from our understanding, they had easy answers for all that stuff that we brought for them."

[Elder2] "they usually do"

[Elder1] "Basically they were telling us oh, you guys are crazy, you're not scientists. You don't know what you're talking about. Basically what they came and told us if you understand what message they came here for that they wanted to bring these things and then they dismiss us. That's the way these things happen when you have this traditional knowledge."

(Elder interview, April 24 2018).

293. O'Faircheallaigh (2007) argues that EA in Canada was still couched in the "language of the technocratic fixers; of rigorous, rational inquiry; of a worldview which holds the economic as the highest value" (p113). Indeed, the process remains characteristically non-Aboriginal, and limited "by the values of a dominant Eurocentric society, and the structures and policies created out of them" (Robson 2013, p5)

294. Manitoba Hydro has of course initiated many projects across the the province, many of which had implications for Indigenous people and the implications of which were evaluated as EIA. Much has been made of the partnerships between MH and affected Cree communities as they relate to the Wuskwatim (MH 2006) and Keeyask (MH 2012) hydroelectric dams. The degree to which these included Indigenous worldviews and engagement have been evaluated by scholars and affected communities. Some of these are more hopeful, such that Foth (2012) who found promise in the ability of communities to participate in hearings and the staged process in the Wuskwatim and such that Robson (2012) saw demonstrated excellence in engagement with Indigenous communities. Others have been highlight critical of these agreements (e.g. Kulchyski, 2008, McLachlan, 2014a, Neckoway 2018).

295. Indeed, McLachlan (2014a) found ultimately that "*There was little room for the ATK reflected in the environmental evaluations generated by the First Nations Partners to affect project design, construction, and operation*" (p37). That said, some gains that were made in this regard arguably emerged in part through the formal partnership with Nisichawayasihk Cree Nation regarding Wuskwatim and with the so-called Keeyask First Nations, ie. War Lake First Nation, Tataskweyak Cree Nation, and Fox Lake Cree Nation, regarding Keeyask. In contrast, the MMTP EIS represents a step backwards when it comes to engagement with and the reflection of Indigenous community priorities and worldviews.

296. In part, this reflects the difficulties that MH encounters in navigating such differences in worldview Thus, in response to a Nature Conservancy of Canada representative who was interested in integrating Indigenous Knowledge and western science in natural resource management,

"NCC Question: The Nature Conservancy representative explains that the organization is looking for opportunities to work in the boreal region. They are interested in meshing western science with traditional knowledge. *Does Manitoba Hydro have an approach to combine the two types of data?"* 

MH Response: The Manitoba Hydro representative explains that it's a challenge to mesh traditional knowledge with western science. Manitoba Hydro has a dedicated chapter for Aboriginal Engagement and Traditional Land and Resource Use in the EIS."

(NCC Round 3 Meeting, March 24 2015).

297. The two track model as reflected in the Keeyask EIA represented an explicit attempt to recognize and incorporate the dominant techno-scientific rationale of MH along with the Indigenous worldview and knowledge of the four impacted partner communities. This two track approach is being explored in at least some other hydroelectric projects in other parts of Canada, for example the Champagne First Nation and Aishihik First Nation in NWT. The two-track model would ostensibly provide equal consideration to both forms of knowledge, Thus, according to the Executive Summary of Keeyask EIS,

"Keeyask adopts an "integrated and collaborative approach [that] maximizes the Project's potential benefits... [and] equal consideration to both technical-scientific studies and ATK has created a thorough and comprehensive planning and environmental assessment process." (MH, 2012, p6).

298. Although this two track model was criticized as less than ideal (Robson 2012) and even as largely inadequate (McLachlan 2014a), who both indicated that western science still dominated over TK at all stages of the project, it still explicitly affirmed the importance of Indigenous Knowledge. McLachlan (2014a) further argued that a "three-track model" would be preferable, since this provides for an equitable integration of both science and Indigenous and an information-based and process based accountability on the part of MH. Far from actually extending and refining an integrative two-track model as a form of integration and collaboration, the MMTP effectively abandons this approach, and instead simply provides communities with some limited resources to conduct their own ATK studies.

299. Although the reasons for this change in approach are not made explicit, it is apparent that the influence, albeit limited, that the four Cree partner communities had in Keeyask and before it that NCN had in Wuskwatim was ultimately seen as too great, and, instead, a much more conventional consultation model has been adopted for this Project. The cost of the limited partnerships has been high for the impacted communities, notably high levels of economic debt and risk, declines in social cohesion and community wellbeing, divisions between leadership and grassroots membership, and declines in communication and solidarity between the partner and other Indigenous communities. But at least these partner communities were at the decision-making table exerting some influence at all stages of the process,

"Yet, some things have changed from the past and from previous EIS. Regardless of how cynical we might be of Hydro, it is the first time that these First Nations have been invited to the table, albeit not the main table where all the most influential decision-makers sit."

(McLachlan, 2014, p40).

300. As reflected in the MMTP EIS, this influence has since declined substantially. The communities have little direct influence, their ATK reports are brief and have been submitted late in the process (many after the EIS was submitted in 2015 and some not at all), and these reports are seen as a form of data that are cherry-picked, if they are used at all. There is no developed mechanism for exerting influence, and the most relevant components of the EIS (i.e. environmental protection, monitoring, mitigation and rehabilitation) are presented in draft form as afterthoughts. On a more hopeful note, the delayed and fledgling nature of the environmental protection plans might still allow for meaningful community input and sustained involvement even as the project was about to break dirt, but there is nothing in this EIS, or in the many other MH projects that have preceded it, suggesting that this will occur, or that such a goal is even desireable or relevant on the part of the crown corporation.

301. Instead, one is left with a series of isolated ATK reports and much frustration on the part of these communities that this has happened to them yet again. In response to an information request submitted by Anishinaabeg of Naongashiinghat, MH indicates this disconnect is in part deliberate,

"Manitoba Hydro did not conduct key person interviews with First Nation or Metis representatives as it is Manitoba Hydro's understanding that First Nations and the MMF generally prefer to conduct interviews with their members directly rather than have Manitoba Hydro staff conduct interviews with their members. As such, any key person interviews undertaken with members of First Nations or the MMF were undertaken at the discretion of the MMF or First Nations through the self-directed studies." (Anishinaabeg of Naongashiing, IR: NEB AONIR-007, p17).

302. Ignoring that this approach conflicts other statements within the EIS where MH claims that it engages with each community in ways that reflect their unique needs, the unwillingness to conduct interviews effectively guarantees that ATK and more generally Indigenous concerns are not reflected in the EIS unless opinions are guidance are informally solicited by MH on an ad-hoc basis. Whether deliberate or a bureaucratic oversight, the ultimate effects are the same, Indigenous Knowledge and any direct input these communities and organizations might have will continue to be excluded. As indicated by this Elder this all-knowing attitude also reflects an ill-placed arrogance that will undermine everything that MH tries to do regarding the MMTP and its other projects,

"I was warned about it. [speaks in Ojibway]. Be careful my grandson. The one you see who says he knows who thinks he knows everything doesn't know anything. The one who's smart does not know anything. The one who knows everything. I always keep that in mind." (Elder Interview, April 24 2018). 303. It is also notable how Manitoba Hydro uses science as a way of sidestepping, or some would say silencing, public and more specifically Indigenous concerns regarding potential impacts. The role of techno-scientific thinking in rationalizing and sometimes even furthering atrocities such as the holocaust euthanasia, and eugenics (e.g. Müller-Hill 1998, Mitchell and Snyder 2003) as well as the tobacco and paint industries (e.g. Rampton, and Stauber 2002, Bero 2005, Michaels 2008) is well understood. Likewise, its role in undermining Indigenous influence much less resistance in EIA across Canada has been recognized by others (Chambers and Gillespie 2000, Smith 2013). Yet, this is also occurring with respect to the MMTP, as is evidenced by community concerns related to the environmental and health implications of herbicides and EMF.

304. Concerns about the use of pesticides were indicated indicated in the Peguis Nation ATK,

"Environmentally sensitive sites, such as locations of berry picking, medicinal plant harvesting, or sites where rare plants are found should be set aside as non-herbicide zones."

(PFN, p29).

but also in the ATK report jointly provided by Black River, and Long Plain and Swan Lake First Nations (BRLPSLFN 2015),

"Concerns were expressed about the use of herbicides and pesticides by MB Hydro to control vegetation and maintain the RoW after construction." (BRLPSLFN 2015, p17).

305. Likewise, there were widespread concerns about EMF, and how they would affect the behavior and health of plants, wildlife and humans,

"the EMFs associated with transmission lines and equipment used on hydro lines are hazards to the health of the animals, plants and human life." (SFN 2015, p14).

as did a member of the MMF,

"...electric magnetic fields affect us in ways that we probably don't even know about. Not to mention plants and animals."

(MMF 2016, p76).

306. Yet, MH responded by denying that these concerns had any scientific merit,

"Informational sources including Health Canada, the World Health Organization and other international health entities state that no scientific evidence suggests that exposure to EMF will cause any negative health effects on humans, vegetation, and wild or domestic animals." (Exec Vol 2015, p9). And that this, as well as the guidelines adopted by Health Canada and the World Health Organization, was "*shared with participants during the process*" (Exec Vol, 2015; p9).

307. This type science or evidence-based form of risk communication reflects the transmission of knowledge from producer to user, and has been criticized widely as being inappropriate as it generally reflects a desire the part of thee producers to educate the public and thus to assuage any fears or concerns. Generally completely unsuccessful in this regard, it has largely replaced, in the social sciences and humanities at least, by the multi-way exchange or mobilization of knowledge. Explicitly making space for different world views, knowledges, or cultures other than those that are science-based, this type of exchange is especially important when dealing with equity-seeking groups, in this case Indigenous people, as it is only by providing voice to these otherwise silenced populations, that one can affect change.

308. Risk communication and management regarding EMF and pesticides, as well as that related to new and emerging forms of technology including biotechnology, nanotechnology, vaccines, and pesticides for human and environmental health, are obviously complex and multi-layered and regrettably still grounded in ideas of using. A quick review shows that there is a substantial peer reviewed and scientific literature indicating that EMF can have adverse impacts. However, contrary to claims by MH and their very one-sided technical report on EMF, there is still much doubt as to the science that underlies health impacts. Some of these studies show potential impacts on animal models as well as adverse implications for human health, the latter including depression (Pall 2016), susceptibility to cancer (Zhang et al. 2015), Alzheimer's disease (Jalilian et al. 2017), and electrosensitivity (Johansson, 2015) in adults as well as cognitive and/or behavioral development (Calvente et al. 2016) and memory loss (Ghadamgahi et al. 2016) in children.

309. Given the lack of agreement in the scientific literature, some have suggested using the precautionary principle regarding EMF, whereby the most conservative views of such threats are used in the absence of definitive science, are adopted (e.g. Kundi et al. 2009, Dämvik and Johansson, 2010) and debated within international health bodies such as WHO and the UN (Kheifets 2001). Others, however, caution that such regulatory approaches can aggravate or amplify rather than mitigate against public fear (Wiedemann et al. 2006, Wardman and Löfstedt 2018). Yet, this debate is still predicated on a belief that risk can be quantified and is objective and real. In contrast, there is much literature that shows that risk perception can play a central role in individual, family, and community wellbeing.

310. Although it is still common practice, specially by scientists, governments and industry, to view risks associated with health as meaningful only when deemed significant by science, the socio-psychological dimensions of risk are now widely recognized. The landmark quantitative work of Paul Slovic (Slovic et al. 1980, Slovic 1987, Slovic and Peters 2006) gave rise to the psychometric paradigm regarding risk, showing us that perceptions of risk are often substantial at the level of the individual. Such sentiments are strongly affected by two main cognitive factors: the dread risk factor (with characteristics that include calm-dread, voluntary-involuntary, controllable - uncontrollable, and catastrophic-not catastrophic dimensions) and the unknown factor (i.e. known-unknown to science, known-unknown to the individual, new-old dimensions). Thus, risks associated with Ebola for example (which is alien, poorly understood, involuntary

and always lethal) are viewed as much higher than those associated with microwave ovens (familiar, innocuous, and voluntary). Intuitively, risk perceptions of EMF would normally be of the latter type, but would be aggravated if a transmission line was constructed in close proximity to one's house with little control or input on their part and if one's valued environment, livelihood, financial security, family and community health and wellbeing were viewed as impacted. This is exactly what has happened with respect to MMTP, despite the ill-placed and route-focused attempts at public engagement.

311. Mary Douglas and colleagues (Douglas and Wildavsky 1982, Wildavsky and Dake 1990) further explored the idea that environmental and socioeconomic risk is socially and culturally framed, giving rise to a second, albeit less influential, paradigm in risk perception. These anthropologists and sociologists argue that risk perception is also strongly affected by societal or cultural influences and varies according to culture (Rippl 2002). Emphases on Euro-dominant and science-based views of the world end up excluding other knowledges, especially if they are already marginalized as are rural voices and the oppressed, notably those voices that are grounded in traditional Indigenous worldviews.

312. Many concerns were also communicated regarding the safety of herbicides and that their use on vegetation and traditional use plant species in turn had adverse implications for human health,

"Members who harvest medicines and other plants also avoid the transmissi on lines. They advise that they will not harvest plants under a transmission l ine because the plants are considered unhealthy because of the EMF create d by the transmission lines and because chemicals are used to keep the right of way clear."

(SFN p14).

This was also the case regarding wildlife,

"Community members raised the issue of declining wildlife populations in the area. They are concerned about accidental releases of contaminants and the consequent negative effects on wildlife and bird wire collisions." (BRLPSLFN 2015, p15).

313. Some felt that the whole process of requiring communities to demonstrate and justify their land use as inherently alienating and disrespectful,

We been here way before, way before they we here. We utilized this land for hundreds of years...and here they come saying 'we're gonna do it here and we want you guys to know that, tell us how you use your land'. You know I fi nd that at some point you need to include that this whole approach is disres pectful to our people."

(SFN 2015, p15).

314. Although the Crown has an obligation and duty to consult, this was not adequately demonstrated here. Consultation by MH was seen as inadequate by many, including Dakota Plains Wahpeton Nation,

"Dakota Plains Wahpeton Nation members stated a number of concerns related to the Project and to development in general. They are particularly concerned about the consultation and approval process for development projects on their traditional territory, and believe that their traditional land rights are not being considered adequately."

(DPWN 2017, p16).

315. Some First Nations made it explicitly clear that the ATK reports should not be seen as consultation. Thus Sagkeeng First Nation indicated,

"...any sharing of knowledge and information and the expression of concern s related to the proposed transmission line are not to be considered "Consul tation" nor should this report be used to satisfy consultation processes that may be triggered by the proposed construction of the Manitoba Minnesota Transmission Line."

(SFN 2015, p5).

316. Despite these cumulative and long-standing impacts, there was a belief that is the concerns and knowledge of Indigenous communities were respectfully and meaningfully included in decision-making, that the environment, affected communities and indeed all Manitobans would benefit,

"Need to make the earth better. Elders know what will work. They have all the knowledge from their past Elders. They knew that someday we would have to pay for water. They told us ahead of time. Pay for hydro? For their own good we need to tell them what hurts us, especially resources that were there." (BRLPSLFN p55).

And that the ultimate solution was one that was based on meaningful engagement and collaboration,

"How can we work together to ensure the protection and monitoring of the traditional areas are mapped and not over looked during construction of this project?"

(RRAFN, p10).

## 9.0 Conclusions, Implications, and Recommendations

317. In closing, I have integrated my own training and experiences as a scientist with the insights that arise from the public meetings held by MH, the Indigenous ATK reports, the

information requests submitted by impacted Indigenous communities and associated MH responses, and the outcomes of interviews I conducted with Indigenous Elders and environmental monitors in critically evaluating the MMTP EIS and the Project as a whole.

318. In most cases, I have found the EIS to be wanting, and generally speaking it reflects a step backwards from the Wuskwatim EIS and especially the Keeyask EIS. Allthough I have been highly critical of the latter, especially as it related to assessing VCs, public engagement, and inclusion of ATK (McLachlan 2014a), this EIS actually falls short with respect to all those dimensions but also as it relates to CEA, monitoring, and mitigation.

319. In retrospect, the relative strengths of the Keeyask EIS likely represented the added voice that a subset of communities achieved through their limited partnerships with MH, although there were very real and often unanticipated environmental, economic, social and health costs associated with both Wuskwatim and Keeyask. As imperfect as the two track model was for Keeyask, it and the partnerships that informed process at least brought the communities, or at least formal leadership, to the decision-making table. In contrast, the MMTP provided no such opportunities, and at very step along the way MH interests prevailed at the expense of the environment and impacted communities alike.

320. I will summarize my findings as they relate to each of the components of my report and then make an associated recommendation for each.

1a) *Finding*: The VCs used by MH in this EIS were higher-level in that they focused on habitat rather than species level components of the environment. These seem to have been defined by MH with little if any input from impacted communities. Moreover, there was no willingness on the part of MH to address these concerns and to monitor impacts on other valued components of the environment.

1b) *Recommendation*: Rather than seeing these as mutually exclusive approaches, more inclusive, culturally appropriate and effective approaches to identifying any and all VCs should be adopted.

2a) *Finding*: The CEA adopted in this EIS was largely descriptive and devoid of any data, making extensive use of simple check boxes and text-based narratives. This in part reflects the arbitrary nature of the spatial boundaries that excludes many upstream and downstream communities that are affected by the MMTP. It also reflects the short duration of any cumulative effects that ignores the impact of settlement and agriculture.

2b) *Recommendation*: That these gaps in understanding be addressed through a more thorough and far-reaching evaluation of the literature, expert elicitation with scientists, and inclusion of local and Indigenous Knowledge, and that this be conducted at a whole-system level which enables communities from outside the current RRA to engage meaningfully in the process. This will result in the better understanding and management of all impacts, including those that emerge from an integrated hydro system.

3a) *Finding*: That adaptive management currently exists in name only and was rarely demonstrated in the EIS, in part because there are no formal methods of learning from other MH projects or any current attempt to build active adaptive management into the MMTP.

3b) *Recommendation*: That a sustained and formal approach be taken to assess what kinds of adaptive management and associated learning can result from other MH projects as well as the MMTP, and what kinds of opportunities for adaptive management and learning might be proactively built in to this Project, and meaningfully shared with stakeholders and impacted Indigenous communities.

4a) *Finding*: The Environmental Monitoring Plan currently only exists in draft form and only addresses MH concerns, rather than those of other stakeholders and Indigenous communities. Thus, it excludes any impacts or meaningful input on the part of Indigenous communities and environmental monitors.

4b) *Recommendation*: That a more collaborative or transformative approach be taken with respect to monitoring that includes sustained Indigenous involvement that will be more sensitive to adverse impacts, especially those experienced by other stakeholders and Indigenous groups.

5a) *Finding*: Mitigation and rehabilitation plans are again presented in very preliminary form and are deficient in data and insights from other projects, reflecting an approach that is largely self-regulating and that has done little to mitigate the often substantial adverse impacts associated with Bipole III.

5b) *Recommendation*: That there be independent evaluation of both impacts and mitigation activities, involving scientists and Indigenous communities, which will ultimately generate better understanding about the nature of the residual effects, adequate compliance, and more effective mitigation in future projects.

6a) *Finding*: Much effort and resources have been invested in public engagement, but these have largely focused on MH priorities, namely alternative routing. This engagement has done little to meaningfully address public concerns regarding EMF, impacts of herbicides on traditional use species, and thus limited ability for outside stakeholders and Indigenous communities to shape the Project.

6b) *Recommendation*: That much more impactful and less self-serving models of engagement be explored that enable a wider diversity of concerns and priorities to be voiced early on in the process and that genuine and respectful cross-cultural forms of engagement be developed in collaboration with affected First Nations and Métis communities.

7a) *Finding*: impacted First Nations and the Manitoba Métis Federation were systematically excluded from having meaningful input as related to their concerns or aspirations, and the ATK reports had little influence on decision-making by MH, in turn perpetuating a sense of distrust towards the crown corporation.

7b) *Recommendation*: That more democratic and culturally appropriate approaches be used that include impacted Indigenous communities as equal decision-making partners at all stages of the process from scoping to post-construction monitoring and mitigation.

8a) *Finding*: Ultimately, this author has little faith in the MH findings that there would be no significant residual environmental, socioeconomic or health effects associated with the MMTP.8b) *Recommendation*: That the Project be halted until these concerns can be addressed in a substantiative, inclusive, culturally appropriate way, if it continues at all.

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