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**Manitoba Métis Federation**

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**Manitoba Métis  
Traditional Knowledge &  
Land Use Study for the  
Southwest Region:  
Enbridge Line 3  
Replacement Project**

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**September 2015**

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## About the Authors

This report was authored by Nichole Fraser MacDonald, Kathleen Ryan and Leah Culver from Shared Value Solutions Ltd. Biographies for each of the authors is provided below.

### **Nichole Fraser MacDonald, M.Sc., Project Director and Lead Researcher**

The Lead Researcher and Project Director for this study, Nichole Fraser MacDonald, has a B.A. in Psychology from Mount Allison University, and an M.Sc. in Rural Planning and Development from the University of Guelph. Nichole has more than 13 years of experience designing and conducting community-based research projects, and has been carrying out land use and occupancy and oral history work with First Nation and Métis communities in Ontario and Manitoba for seven years. Her work has been used to identify community values and interests, determine potential impacts to way of life, and identify appropriate mitigation and accommodation for major infrastructure developments in the mining and energy sectors. Formerly an Aboriginal Consultation and Communication Specialist at AECOM, she left to establish Shared Value Solutions Ltd. in 2012. Nichole is a 2011 recipient of the Consulting Engineers of Ontario Award for Aboriginal Traditional Knowledge achievements.

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Kathleen Ryan, the Project Manager and key researcher on this project, has an M.Sc. in Integrative Biology (Ecology) from the University of Guelph and a B.Sc. in Environmental Science and Indigenous Environmental Science from Trent. She is the recipient of an award for 'Outstanding Achievement in Indigenous Environmental Studies' and has been published in the Journal of Great Lakes Research (September 2014).

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**Cameron Stewart** with the N4 Construction and **Steve Gautreau**, an independent consultant, provided mapping and Geographic Information Systems (GIS) support for the project. Cameron and Steve have both worked extensively on Métis land use and occupancy studies.

**Frances Dietrich O'Connor, Trieneke Gastmeier, Meaghan Langille** and **John Glover** of Shared Value Solutions provided support in analyzing data as well as in writing the report.

**Jocelyn Maurice** of Shared Value Solutions provided editorial support for the report.

## 1.0 Introduction

This *Manitoba Métis Traditional Knowledge and Land Use Study for the Southwest Region: Enbridge Line 3 Replacement Program (the Study or TKLUS)* has been prepared by Shared Value Solutions Ltd. (SVS) for the Manitoba Métis Federation (MMF) with funding support provided by Enbridge. Its purpose is twofold: (1) to be provided to Enbridge, as a part of its ongoing engagement process with the MMF in relation to the Line 3 Replacement Program (the Project), and (2) to be provided to the National Energy Board (NEB) as evidence in its regulatory review of the Project. **This Study may not be used or replicated for any other purpose without the written authorization of the MMF.**

### 1.1 Background, Context and Defined Terms for the Study

The focus of this Study was to document and understand the Manitoba Métis Community's<sup>1</sup> use (i.e. harvesting, social, cultural, economic use), cultural values, sites and landscapes in the MMF's Southwest Region (Figure 1) that may be affected by the Enbridge Line 3 Replacement Program—a 1,073 km light, medium and heavy crude oil pipeline that extends from Hardisty, Alberta to Superior, Wisconsin.

The pipeline route traverses the MMF's Southwest Region, crossing to the United States through Gretna. There are potential environmental, cultural, and socio-economic effects that may arise during construction, operations, and decommissioning phases of the project that could affect Métis rights and interests in an area the MMF considers to be important to its people. Specifically, the TKLUS focused on Métis use, cultural values, sites and landscapes that would be affected by the project's 45m right of way (45m ROW), the 1km right of way (1km ROW) and the 40 kilometres on either side of the ROW (the Study's Geographic Scope) (Figure 2).

The results of this Study will help to inform future MMF and Enbridge discussions and processes on Project-related issues. Further, the results of this Study are intended to be used as input for the MMF's participation in the NEB regulatory hearings on the Project.

The TKLUS attempts to provide focused and representative research specific to the citizens of the Manitoba Métis Community who use the features, areas, activities or facilities within the Study's Geographic Scope. The intent of the Study was also to help identify, explain and document impacts on Métis use, culture and way of life resulting from the Project.

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<sup>1</sup> The MMF is the democratic, representative government of the Manitoba Métis Community. Throughout this report, the MMF, the Manitoba Métis Community, the Métis people and the term "Métis" are used interchangeably.

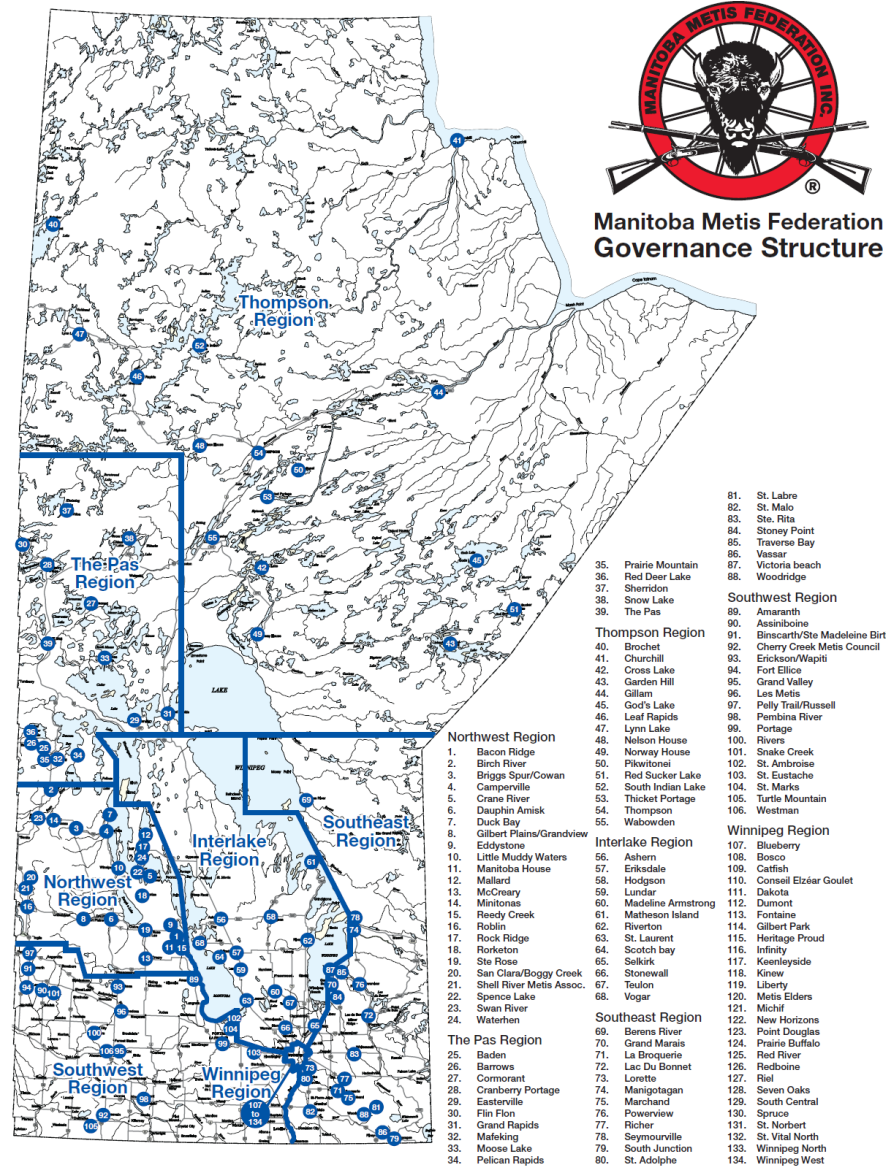


Figure 1. Manitoba Métis Federation Regions

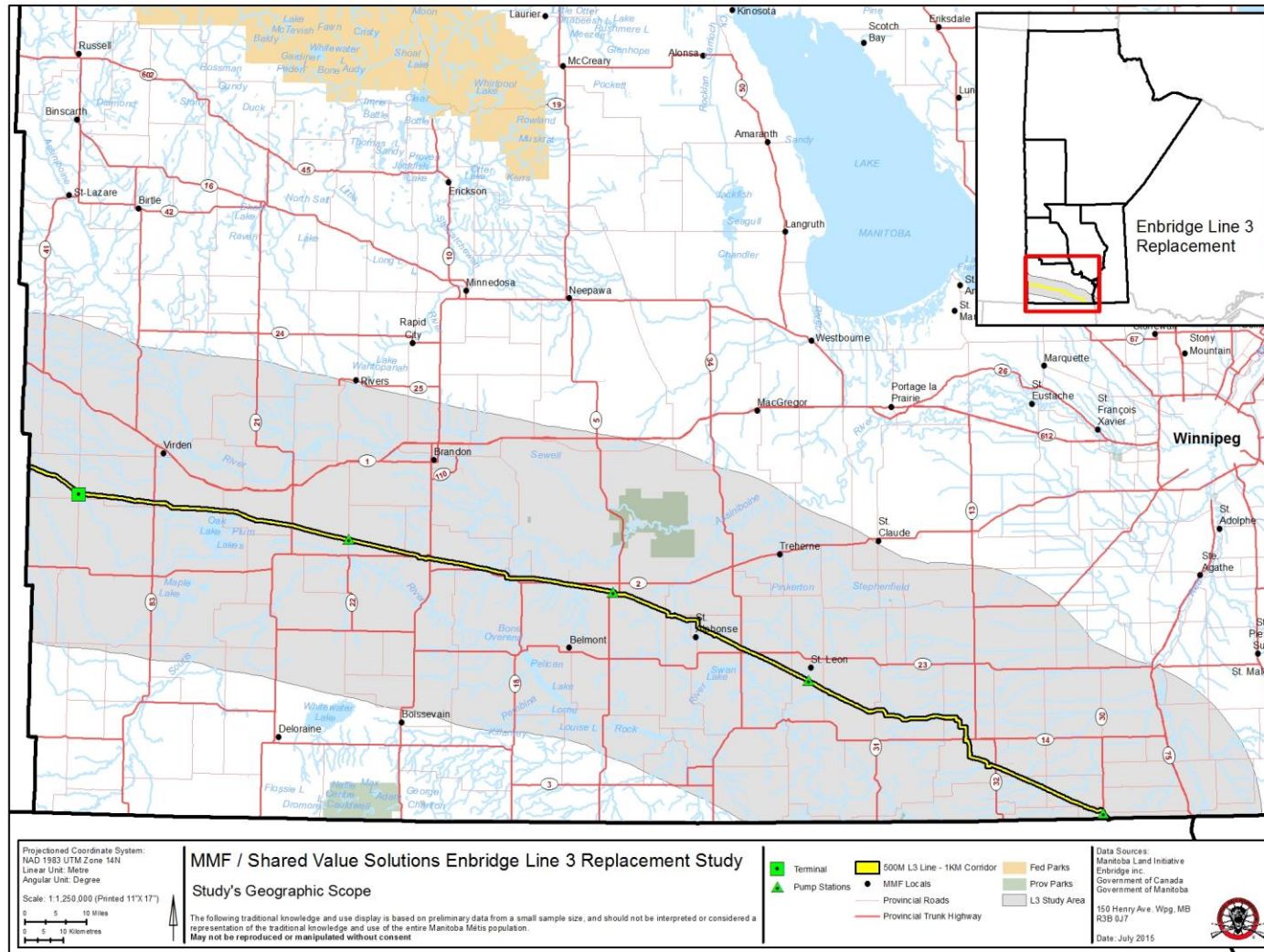


Figure 2. The Study's Geographic Scope for the MMF TKLUS for Enbridge Line 3



## 1.2 Study Objectives

The Study focused on achieving the following objectives:

- document Métis use and occupancy of the land in the MMF's Southwest Region of Manitoba, specifically focused on the Study's Geographic Scope;
- collect and outline interviewees' perceptions of the project's impacts on Métis rights, culture and way of life in relation to the Study's Geographic Scope;
- identify sensitive sites within the Study's Geographic Scope for future mitigation measures;
- ensure that the appropriate historical context of landscape and land use change is incorporated into the Study;
- understand and document the significance of potential social, cultural, environmental and economic impacts to the Manitoba Métis Community in relation to the Study's Geographic Scope;
- identify the geographies of the economic and cultural landscapes of the Manitoba Métis Community (i.e. commercial trapping, community gathering places);
- understand and communicate the history, values and way of life associated with the use of the land and resources by the Manitoba Métis Community for both future generations and for potential future project proponents in relation to the Study's Geographic Scope;
- provide a basis for the ongoing discussions and processes between MMF and Enbridge in relation to the Project;
- assist MMF in making informed decisions related to the Project, including informing MMF technical experts about Métis use of lands, species of importance, setting targets (i.e. thresholds) for monitoring programs; and
- address the specific "List of Issues" prepared by the NEB regarding the project.

The NEB's amended List of Issues from May 29, 2015, which was used as reference in the development of interview tools and analysis of results from this study, included the following:

1. The need for the Project.
2. The economic feasibility of the Project.
3. The potential commercial impacts of the Project.
4. The potential environmental and socio-economic effects of the Project, including those to be considered under the *Canadian Environmental Assessment Act, 2012*.
5. The appropriateness of the general route and land requirements for the Project.
6. The suitability of the design of the Project.
7. Potential impacts of the Project on Aboriginal interests.
8. Potential impacts of the Project on landowners and land use.

9. Contingency planning for product release, accidents or malfunctions during construction and operation of the Project.
10. The suitability of the decommissioning plan for the existing Line 3 pipeline, including whether the decommissioning is appropriately an interim step to eventual abandonment or whether it is the final step in the pipeline's lifecycle.
11. Safety and security during construction and operation of the Project, including emergency response planning and third-party damage prevention.
12. The terms and conditions to be included in any recommendation or approval the Board may issue for the Project.

### 1.3 Study Team

Shared Value Solutions is a consulting firm based in Guelph, Ontario, Canada that specializes in traditional land use and occupancy studies, and translating study results to support environmental assessment processes and community negotiations with proponents. Our researchers hold graduate degrees in land use planning, geography, ecology, and anthropology, among other relevant fields. SVS research teams always include senior team members.

MMF representatives were also involved in all steps of undertaking this research. Al Benoit, Senior Advisor at the MMF was the key client contact for SVS in relation to the Study.

### 1.4 TKLUS Definitions

The TKLUS contains details of Manitoba Métis Community representative's land use and occupancy, traditional knowledge, and traditional ecological knowledge.

For the purpose of this study, we have defined "**land use**" generally as hunting, fishing and gathering, and the use of sites and resources for cultural and ceremonial purposes. We have defined "**occupancy**" as the settlements, movements, and sites associated with Indigenous peoples.

We define "**traditional knowledge**" (TK) as the body of knowledge shared by Indigenous peoples and held by and transmitted between Indigenous representatives, which supports traditional land-use for the benefit and well-being of Indigenous peoples.

Similarly, people come to understand the ecology of their surrounding environment through years of firsthand experience and inherent cultural understandings of relationships between humans, animals, lands and waters. People also come to understand the ecology of their environment through teachings that have been passed down through relations or within a community. This type of knowledge is often referred to as **Traditional Ecological Knowledge** ("TEK").

In summary, we understand land use and occupancy, TK and TEK to be:

- Knowledge, practices, and land-uses that establish and maintain a connection over time between Indigenous people's long-term occupancy, survival and well-being, and the environmental integrity of its homeland (traditional area/homelands).
- Dynamic- The viability of a culture's oral history requires transmission, participation, and repetition by and amongst Indigenous peoples and it is adaptive to new circumstances and technologies.

- Rich in symbolic meanings as well as practical applications- the practice and possession of land use and occupancy information, TK, and TEK results has symbolic value for individuals and Indigenous peoples and has a deep connection to cultural viability, well-being, and individual identities and physical and mental health.

## 1.5 Study Limitations

### 1.5.1 Sample Size

Due to limited funding and time constraints, a total of 56 interviews were completed as part of this Study. Based on the total population of the Manitoba Métis Community, this number of participants provided a relatively small sample size of the overall Métis population that uses and occupies the land in the MMF's Southwest Region.

Due to this limited size of the Study, participants were strategically identified by the MMF in order to provide a cross-section of the Métis population that uses and lives in the region generally and the Study's Geographic Scope specifically.<sup>2</sup> Collectively, the participants' ages ranged between 23 and 77. On average, the Study's participants were 53 years of age. Of the 56 participants, 49 were male and 7 were female. The small number of female participants creates a bias in the Study.

Subject to the noted limitations and biases set out in this report, SVS is of the position that the Study provides a reasonable representation of the Manitoba Métis Community's patterns of land use in relation to the Project, including, many specific Métis sites of importance. The Study is not, however, a statistically representative sample of the population of Métis land users in the region and cannot be relied upon as such. While working with a statistically representative sample of the population of people who harvest and otherwise use the land in the MMF's Southwest Region would be ideal, it is often not possible for a land use study, given the budget, timeline and objectives.

In addition, as noted above, Métis participants were selected based on their use of the area within the Study's Geographic Scope and were asked questions in relation to the potential impacts from this Project specifically. As a result, this Study can only be said to be of assistance in understanding Métis land use in relation to this specific Project. The Study should not and cannot be used to assess potential impacts on the Manitoba Métis Community for other projects or developments in Manitoba generally or the MMF's Southwest Region specifically.

Related to the point made above, it has been noted by MMF representatives in their review of this TKLUS that there is a gap in the results, with an overall lower amount of Métis citizen land use and occupancy mapped in the eastern portion of the MMF's Southwest Region. MMF representatives felt that this gap was due to time and budget limitations of the Study. They also felt that with additional funding and time for further research, a more comprehensive representation of Métis land use and occupancy along the eastern portions of the Project could be recorded and provided as input to Enbridge's Project planning and implementation.

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<sup>2</sup> SVS worked closely with MMF to ensure that Métis citizens who use the land and waters within and in close proximity to the Study's Geographic Scope were chosen as participants for the TKLUS interviews. Following each interview, SVS asked participants to identify other land users from the region that should be interviewed, and used those suggestions in scheduling further interviews.

### 1.5.2 Mapping Issues

Digital maps were displayed to participants on laptop computers using Geographic Information System (GIS) software called ArcMap. Participants were asked to look at the computer screen with the interviewer and identify the location(s) of land use and occupancy sites as prompted by each interview question. Most of the participants were able to recall specific locations, direct the interviewer to that location on the map, and verify that the interviewer had recorded the location correctly. Some participants had difficulty reading and verifying locations using the computer-based map software due to vision problems, difficulty communicating, or difficulty understanding and/or relating to the maps.

The research team assisted participants with perspective on the digital map by providing a large paper map with town names and the boundaries of the Study's Geographic Scope for cross-referencing. Those with vision problems were assisted by the interviewer through pointing to locations on the map and reading the surrounding place names in order to orient the participant. Some participants brought a friend or family member to assist them if they had difficulty with vision or communication.

It should also be stated that slight inaccuracies may be found on the maps. For example, in a few cases, a fishing point may appear to be on land, or a hunting point to be in the water. This is a common mapping issue that can occur when data is mapped using one scale and/or one set of base maps and reported using another scale and/or set of base maps. SVS sought to verify and correct all inconsistencies during the internal QA/QC process and the Community Verification Meetings.

### 1.5.3 Interviewer, Participant and Study Biases

Both the interviewer and the interviewee have inherent biases that can impact research studies. Interview bias can stem from the social setting of the interview, perceived power imbalances between interviewer and interviewee, the comfort of the interviewer or interviewee, or the physical location of the interview. SVS took the following steps to decrease interviewer bias and mitigate the effects that it may have on the research project:

- Informed participants of the interview process at the beginning
- Provided opportunity for questions to be asked and answered
- Made conscious choices of the plain language wording of questions asked and used a standard interview methodology and questionnaire
- Limited the use of leading questions or statements
- Conducted interviews in MMF local offices, a common setting for Métis meetings and gatherings
- Took breaks when needed to ensure interviewer and interviewee stayed alert and focused

In addition to the strategies above, SVS also applied methodologies of Terry Tobias (2009). This methodology is discussed further in the Methodology section of this report. An important aspect of the Tobias approach to note here, however, is the methodology of the Data Diamond. The Data Diamond is a mapping methodology that ensures the map biography survey focuses on facts. To ensure that mapping data is as accurate as possible, a total of four use-and-occupancy facts need to be collected for the areas mapped (Tobias, 2009:47). These facts are:

1. By a respondent (Who)
2. Engaged in an activity (What)
3. At some point in time (When)



#### 4. At a specific location (Where)

The Data Diamond can also be used to improve map accuracy by helping respondents recall as many details as possible. SVS also used detailed maps to help participants orient themselves and thereby be more accurate with their mapping data as a way to support participant recall.

As noted above, of the 56 participants, 49 were male and 7 were female and ranged in age between 23 and 82, with an average age of 53. According to Terry Tobias (2009) the higher representation of male versus female participants in this study is common across other land use study research as well. This is because according to Tobias, in many aboriginal cultures, men tend to be more out on the land than women; sample strategies tend to reflect that difference. Nevertheless, the greater number of male versus female participants could be seen as a bias within this TKLUS.

## 2.0 Methodology

The methods used to collect this land use and occupancy information for the Study included the following:

- Map Biography and Oral History Interviews
- Community Verification Meetings
- Harvesters' Survey

Each of these methods is explained in further detail below.

### 2.1 Traditional Knowledge and Land Use Study: Map Biography and Oral History Interviews

This study was completed using **map biography** and **oral history** interview methods. The focus of the map biography and oral history was on the collection of the following information:

- Important fishing species, locations and spawning areas
- Culture and heritage resources, sacred sites, archaeological sites, other special sites, and gathering places
- Important travel routes and methods of travel
- Hunting sites
- Overnight sites including cabins, other types of structures and camping sites
- Vegetation and important plants gathered, including medicines and food plants
- Métis perceptions of the project's impacts on the rights, culture, interests and claims in the Southwest Region

#### *What is Map Biography?*

The methodology for this TKLUS is based on the best-practice map biography technique pioneered by Terry Tobias in his manual *Living Proof: The Essential Data-Collection Guide for Indigenous Use and Occupancy Map Surveys* (2009). The map biography is the standard data collection method for land use and occupancy studies.

A map biography is an interview process in which a person provides an account of their life on the land and water, including places they have travelled, stayed and gathered resources. In some cases, as with some of the Traditional Ecological Knowledge data provided in this TKLUS, respondents indicate places that they have not used personally, but about which they have knowledge from family or other members of the community (Tobias, 2009).

#### *What is Oral History?*

Oral history is commonly collected as complimentary material to a map biography. This is essentially the respondent's qualitative land use and occupancy knowledge that doesn't lend itself as well to being recorded on a map. It could include details about the social, economic, cultural or environmental importance of a location, species, or land-based activity, as well as legends and stories that have been passed down. Oral history is used to bring depth to land use and occupancy research and increase shared understanding about the values of the participants.

### 2.1.1 Map Biography and Oral History Participants

SVS worked with the MMF to develop criteria for the interview participants. Participants were sought who:

- were MMF citizens,
- lived in the MMF's Southwest Region or came to the Southwest Region from other parts of Manitoba Métis Community to harvest in the southwest region of Manitoba,
- had knowledge of the land along the Line 3 pipeline 45m Right of Way (ROW) and/or the 40 km on either side (the Study's Geographic Scope),
- were hunters, fishers, trappers, plant harvesters, and other land users,
- had knowledge of sensitive environmental sites within the Study's Geographic Scope,
- had a family or community connection to the land with the Study's Geographic Scope (e.g. family homes, cultural gathering places, recreational use of the area),
- depended on the land in the Southwest Region for their livelihood (i.e. made an income from the land), or
- were from a variety of age groups (from elders to young people who use the land) and from both genders.

Based on these criteria, the MMF Community Liaison arranged and confirmed interviews.

A total of 56 people took part in TKLUS interviews between June and July 2015. There were 11 pre-test interviews completed in Winnipeg from June 16–18, 2015. An additional 45 studio interviews were then carried out in Winnipeg and Brandon, Manitoba from June 22–30, 2015.

### 2.1.2 Map Biography and Oral History Procedure

A pre-test of the interview process was completed to help streamline the procedure and the tools.

Interviews were completed with one individual at a time, though in some cases the participant brought a family or friend with them to observe.

At the beginning of each interview, the study team briefed the respondents on the Project and its objectives, and on how the data would be used. The study team then reviewed a permission form with participants and invited them to sign it to consent to being audio and video recorded and to allow their information to be used for the purposes of the Study (see Appendix B: TKLUS Permission Form).

Interview teams consisted of two individuals in all but one interview, which was completed with only one interviewer. The interviewers used a data collection manual and guide to help in consistently applying a standard map biography process with each participant. The focus of the interviews was on the participants' direct experience rather than on information they may know about what others have done.

During the map biography interviews, respondents were asked about the areas that they had hunted, fished, trapped, gathered or used the land for other traditional practices in the Southwest Region, in the area of the Line 3 Pipeline. Participants were asked to focus on identifying their land use as close to the 45m and 1km ROW and the Study's Geographic Scope as possible. One of the interviewers marked locations of features (points, lines and polygons) identified by the respondents on the map directly on a

computer using an ESRI ArcGIS Geographical Information System (GIS). The second interviewer entered descriptive data for each point, line or polygon into a customized Microsoft Access database that was developed for this Study.

In addition to interview questions related to the mapping of land use and occupancy, a series of oral history questions were also asked. The objective of asking these questions was to enhance and verify the findings of the land use and occupancy interviews, draw out aspects of current and historic land uses and occupancy that pertain to the Manitoba Métis' social, economic and/or cultural identity, well-being and sustainability, and gather MMF citizen perceptions and opinions about the Line 3 Pipeline.

The GIS computer screen was video recorded to allow for post-interview verification. A separate audio file of the interview was also made to provide a back-up.

Participants received a \$150 honorarium from the MMF for their participation, and travel expenses were reimbursed.

Quality assurance (QA) measures were taken in data gathering, back-up and analysis. Senior SVS consultants provided training to other staff on the map toolkit in advance of going into the field and reviewed all tools and deliverables. Following the interviews, SVS conducted a review to ensure that the data entered in the Microsoft Access database was aligned with the data entered in GIS. SVS also conducted quality assurance checks on the written transcripts to ensure accuracy.

The data for this report was analyzed by identifying several broad thematic categories based on the questionnaire and the NEB List of Issues for the project. The results of the oral history interviews were analyzed to contribute to the assessment of potential effects of the project. The results were also analyzed to identify areas and events of significance for MMF in the Study's Geographic Scope and baseline historic and currently existing socio-cultural/socio-economic context and conditions.

The geographic data was processed to create maps which depict the land use of the respondents. This includes maps categorized by type of land use (animal harvesting, fish harvesting, plant and natural material harvesting, cultural sites and occupation areas, access routes, traplines, and a variety of traditional ecological knowledge maps), as well as maps which identify specific land uses in the project area and directly adjacent lands.

### 2.1.3 Tools for the Map Biography and Oral History

SVS prepared a data collection toolkit that included the following: a permission form, an overview of the Line 3 Pipeline, an interview record form, a Land Use and Occupancy Interview Guide, a mapping methods manual, and a species-at-risk manual for Manitoba (see Appendix B: TKLUS Permission Form, Appendix C: Line 3 Pipeline Overview Handout, Appendix D: Interview Record Form, Appendix E: Land Use and Occupancy Interview Guide, Appendix F: Mapping Methods Manual, and Appendix G: Manitoba Species at Risk). This data collection toolkit was shared with MMF and their comments were integrated into a final Study toolkit.

In addition to this toolkit, the items used for each map biography and oral history interview included two laptops per interview, GIS software, Line 3 Pipeline alignment shape files, Microsoft Access software, audio and video recording equipment, SD cards, USB memory sticks, two back-up hard drives, a master data management document where all interviewees were recorded along with the status of



data back-up, a 2' x 3' hard copy map showing the Line 3 Pipeline route through the Southwest Region, and a Harvesters' Survey (see more detail about the survey below).

## 2.2 Harvesters' Survey

SVS prepared a "Harvesters' Survey" to document the nature of land use activities and more specifically how harvesting relates to economy (Appendix H: Comment Cards and Harvesters' Survey). The survey asked participants about the type of use (commercial vs. personal, or both) across all land use categories, the number of days they spend harvesting during each season, how much money they make per year from the commercial sale of harvested goods, and how much money they save based on harvested goods supplementing their dietary requirements.

The survey was administered verbally with each of the 56 TKLUS participants at a mid-point in the map biography interview.

## 2.3 Community Validation Workshops

### 2.3.1 Community Validation Workshop Participants

Each participant who completed a mapping interview was invited to a community validation workshop. Community validation workshops were held on August 10<sup>th</sup> and 11<sup>th</sup>, 2015 in Brandon and Winnipeg, Manitoba respectively. In total, 24 participants were available to attend the workshops. Those who were not available to attend were provided opportunity to pick up their individual maps, comment cards, and transcripts from the MMF Regional office in Brandon and the MMF Head Office in Winnipeg.

### 2.3.2 Community Validation Workshop Procedure

The purpose of the validation workshops was to allow participants the opportunity to provide any comments or edits to their individual maps or transcripts, as well as to comment on the composite maps and the Southwest Region Métis Seasonal Round (explained in paragraph below). Participants did not add new data, but were given opportunity to move the location of any points, polygons or lines on their individual maps that they did not agree with. This ensures that all data on the maps are accurate and validated by participants.

The Southwest Region Métis Seasonal Round form (see Figure 3) was used to determine in which months participants harvested specific species of fish, mammals, birds, and plants. The circular diagram was broken into the 12 months of the year and participants wrote out which species they harvested in each month. In total, 24 participants completed the seasonal round. The completed diagrams were collected and the data was recorded in excel tables.

SVS worked with MMF Community Liaisons to ensure each participant was signed in and was given a personalized package upon their arrival to the workshop.

One of the two SVS Researchers who attended the workshops met with each participant individually to explain the process of making changes and assist them with any changes they required to their maps. Before the participants left, they were asked to submit their map edits, comment cards and Southwest Region Métis Seasonal Round form.

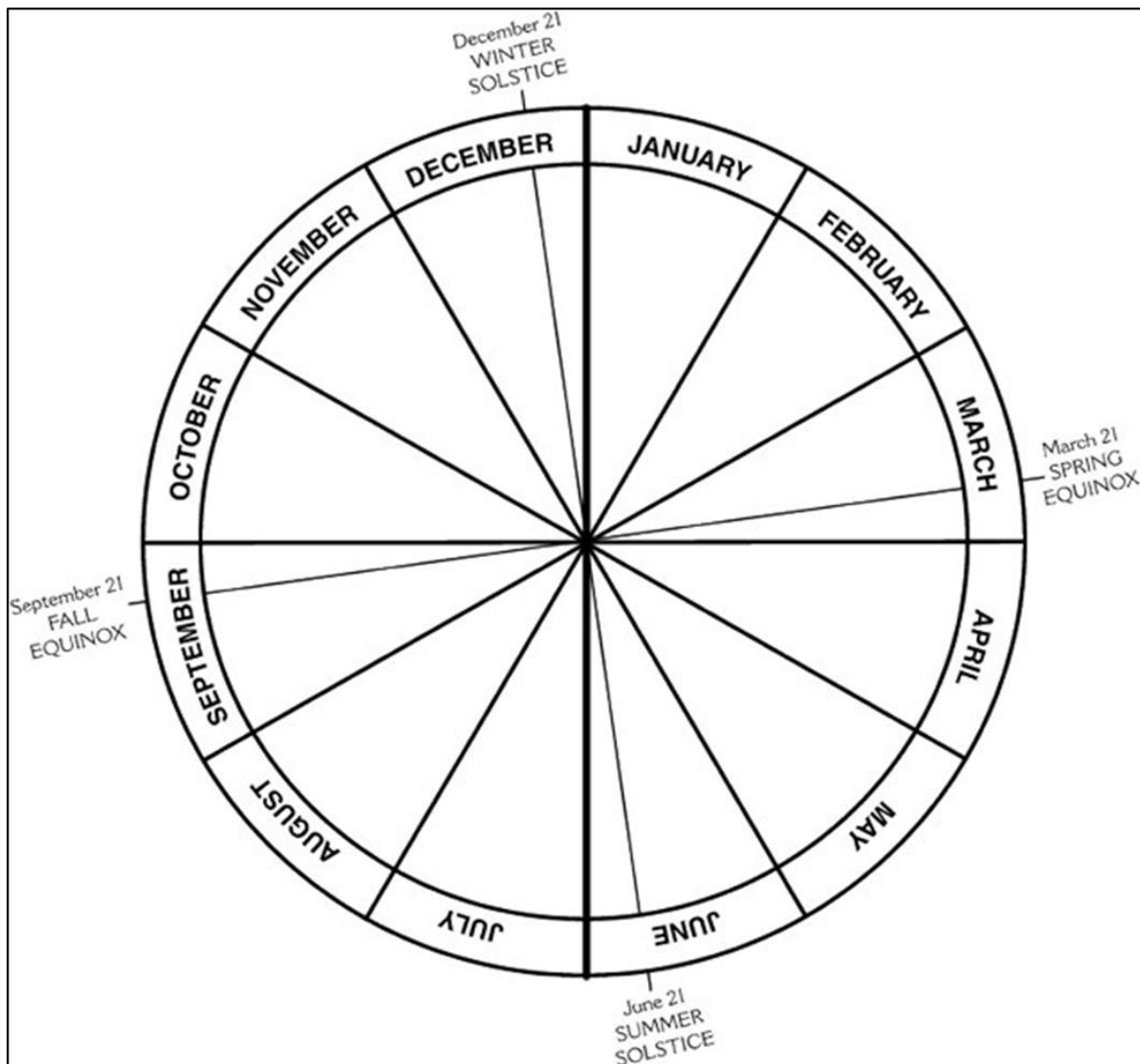


Figure 3. Seasonal Round Filled by Community Validation Participants (Blank Version)

Large scale copies of the composite maps were displayed on tables. The composite maps provided specific data on TEK, Harvesting, Cultural Sites, Access and Occupancy Sites, and Changes. The composite maps displayed mapping data within the entire Southwest Region area and also mapping data that was restricted to the Study's Geographic Scope. In most cases, each mapped feature was indicated on the composite maps with a GIS ID and a leader indicating which feature it belonged to. Tables with corresponding data were also available for participants to use. These tables included specific information regarding the mapped feature, including what type of site it was (e.g. species at risk, hunting area, wetland, route, occupancy site, etc.) and additional details that were collected during the interviews.

Very few participants had changes to make. Most changes were related to accuracy of residence locations or an extension of harvesting areas. A few people wanted changes made to their transcripts, though these were restricted to the misspelling of people and place names – an error that sometimes occurs with transcription services.

Following the community validation workshops, the researchers analyzed the comment cards, Southwest Region Métis Seasonal Round forms, and maps to make any requested changes.

## 2.4 Confidentiality and Informed Consent of Participants

SVS committed to MMF that the research team would take all reasonable measures to safeguard confidential information and would not disclose or share any information that it obtained through its work without the approval of MMF at any time during or after completion of the TKLUS.

This commitment was communicated to Study participants in writing through a permission form and verbally by SVS consultants, who read the permission form aloud to participants (see Appendix B: TKLUS Permission Form).

## 2.5 Data Management

Great care was taken to ensure that quality data was gathered and that useable footage was recorded with back-up video cameras and audio recorders to create redundancy. As a result, a large amount of data was collected from the interviews in multiple modes, including GIS files, Microsoft Access database entries, video files of the GIS screen and the participant, back-up audio recorder files, as well as hard copy permission forms and interview record forms. This large amount of information had to be managed in an organized manner to ensure that the MMF's data was protected at all times.

To achieve this objective, the research team developed and followed a data management and storage process while in the field and once back in the office. This protocol involved having one team member who was solely responsible for the management and back-up of all files and another team member who would provide QA/QC checks on the data for each set of interviews.

The data manager used a master data management sheet to record all interviews and the status of data storage (Appendix I: Data Management Sheet). Data was always backed up in at least two locations. In addition to backing up data, the data manager also served as the liaison with the third party transcription service SVS used to have interview transcripts completed.

## 3.0 Summary of Results

This section provides a summary of the key findings from the TKLUS Study, particularly as related to 45m ROW, the 1km ROW and full Study's Geographic Scope, and MMF citizen rights and interests. The summary provides insight related to socio-economic connections to land use and occupancy, current land use and occupancy in of itself, cultural and heritage sites, and traditional ecological knowledge.

Full study results can be found in the sections following this Summary.

### 3.1 Summary of MMF Socio-Economic Connections to Land Use and Occupancy

#### *Summary of MMF Occupancy*

The data describing the respondents' hometowns throughout their lives, as well as the places where their mother and father spent most of their childhood, demonstrates that the Métis have had strong familial ties to Manitoba, and the MMF's Southwest Region in particular over several generations. Some examples of the locations in the MMF's Southwest Region where the participants are from include:

- Oak Lake Beach
- Nesbitt
- Glenora
- Killarney
- Brandon
- Cypress River
- Carberry
- Birtle
- Holland
- Hartney
- Brandon
- Neelin
- Boissevain
- Justice
- Alexander
- Minnedosa
- St. Ambroise
- Elie
- Kenton
- St. Malo

A number of participants are also from Winnipeg, the Interlake Region, or the Northwest Region, but come to the Southwest Region to harvest.

#### *Summary of Cultural Connections to the Land*

The results of the TKLUS also show that participants have a strong cultural connection to the land that they use. Some of the ways that participants connect with their current and historic Métis identity are described below.

- Many participants noted that harvesting is a way that they express their Métis heritage and identity. In addition to the importance of providing a level of sustenance, harvesting with family and friends who are also Métis was noted as an important part of harvesting activities.
- Harvesting, as part of the Métis culture has been and still is being passed down through the generations of Métis people who have been harvesting on the land in the southwest region of Manitoba for generations. In most cases, participants said that they were taught by their parents, aunts, and uncles, and that they are still passing this knowledge onto their own children and grandchildren. Being on the land, learning one's geographic environment and the skills of harvesting is very much part of how participants learn and express part of their cultural identity.
- Several interviewees spoke about the importance of sharing and trading harvested foods within



the Manitoba Métis Community. Results from the Harvesters' Survey indicated that the harvesters who participated in this Study share a large proportion of the food they gather with their friends, family and Métis Elders. The interviewees indicated that they share an average of 46% of the materials that they harvest. The interviewees also spoke about the importance of the community bonding and pride that is created from harvesting and sharing within the community. These results indicate the connections to informal support services and networks that exist among Study participants, as well as the importance of harvested foods for non-harvesters.

- There were four participants who indicated as part of the Harvesters' Survey that they were involved with guiding or outfitting services; of those four, one participant provided guiding services on a commercial basis. The commercial guiding services took place throughout the Southwest Region, within 5 km of the ROW at Lizard Lake. The other participants who provided guiding services did so on a voluntary basis for friends and family and received no payment. The one study participant who reported being involved in commercial guiding services did so as a source of secondary income and to carry-on a family business. The participant described the lucrative nature of guiding services and expressed the economic importance of guiding to their personal income. Furthermore, that guiding was a skill passed down through their family, which has been used as a way to connect with family heritage and Métis culture. The participant highlighted the importance of guiding to their personal Métis identity, as well as the economic benefits associated with guiding services.
- According to the Harvesters' Survey, Métis citizens in the MMF's Southwest Region of Manitoba actively hunt, fish, gather natural resources and share harvested resources with family and friends. In addition to harvesting for Métis personal uses, some practice commercially. Gloves and pelts were cited as commercial products sold, with pelts ranging in price from \$5–\$150. Animals being trapped included coyote, muskrat, beaver, fox and fisher.

#### *Summary of MMF Socio-Economic, Cultural Heritage, and Health Concerns*

Several study participants expressed concerns over the potential socio-economic effects associated with the Project. These include any impacts from the Project that could alter or harm the socio-economic welfare of the Métis people in Manitoba. Some of the respondents highlighted the permanent nature of the effects this Project will have, not only on the land, but on the MMF. Respondents emphasized the need to fully understand these socio-economic impacts before the Project is approved. The concerns that participants had regarding socio-economic impacts need to be addressed by Enbridge, and maintained throughout the lifetime of the project.

Some of the concerns for potential socio-economic impacts that respondent's spoke about included:

- The human health effects of the Project, especially on smaller, more remote communities. Fears surrounding the contamination of water, animals and soil as a result of spills, accidents, or malfunctions of the pipeline system were prevalent themes, as ultimately it would be humans who consume or utilize these resources. Several participants said that the ability to detect spills or leaks before they had an impact on human health and country foods consumed by Métis citizens was a major concern.

- Some Study participants had concerns over food security due to the nature of the Métis diet and their dependence on wild foods. Several participants mentioned the importance of harvesting for their food supply. Apprehension over contamination from leaks or spills entering the food chain through animals or fish was a major concern.
- Multiple Study participants pointed to economic impacts of the Project, as a major spill could have a detrimental impact on the land, wildlife and Métis people. Many respondents harvest, work or fish in the vicinity of the pipeline, and in the event of a major spill, all of these activities would be impacted or potentially cease. The main economic impact from the Project was thought to be the potential effect on Métis harvesting, as many Métis people use harvesting to save money on food costs. In the event of a spill near harvesting locations, the Métis people would be greatly impacted, since they rely on these areas for food savings and traditional diet. The inability to harvest food items that are expensive to purchase versus harvest, such as meat and fish, could cause a strain on the economic well-being of many harvesters. At least one Study participant was concerned about the economic effect the Project may have on commercial trapping activities. The influx of people, machinery and infrastructure in the Project area would deter animal populations and ultimately trappers from using areas that were once lucrative for commercial trapping.

### 3.2 Summary of Spatial and Temporal Extent of MMF Land Use and Occupancy in the Southwest Region of Manitoba

#### *Summary of Land Use and Occupancy Locations – Study’s Geographic Scope*

A composite map that displays all of the 56 study participants’ land use and occupancy activity within the Study’s Geographic Scope can be found In Figure 4. Participants identified a total of **1,133** locations of their land use and occupancy within the Study’s Geographic Scope in the categories of hunting, fishing, trapping, gathering, agriculture/beekeeping, access points, routes, overnight sites, and cultural sites. Substantial Métis land use and occupancy was demonstrated surrounding the Project and any potential impacts of the Project would be potential impacts on that use and occupancy. Furthermore, given the relatively small sample size, it is expected that Métis use in the area is more extensive than that which was documented in this Study.

Generally, land use activities (across all categories) are concentrated in the vicinity of the following towns or rivers:

- |             |   |
|-------------|---|
| • Cromer    | • Wawanesa  |
| • Virden    | • Neelin  |
| • Reston    | • Glenora   |
| • Sinclair  | • Souris River (from the town of Souris to the Assiniboine River) |
| • Pipestone | • Assiniboine River (from Brandon east to Highway 34)             |
| • Oak Lake  |   |
| • Hartney   |   |
| • Nesbitt   |   |

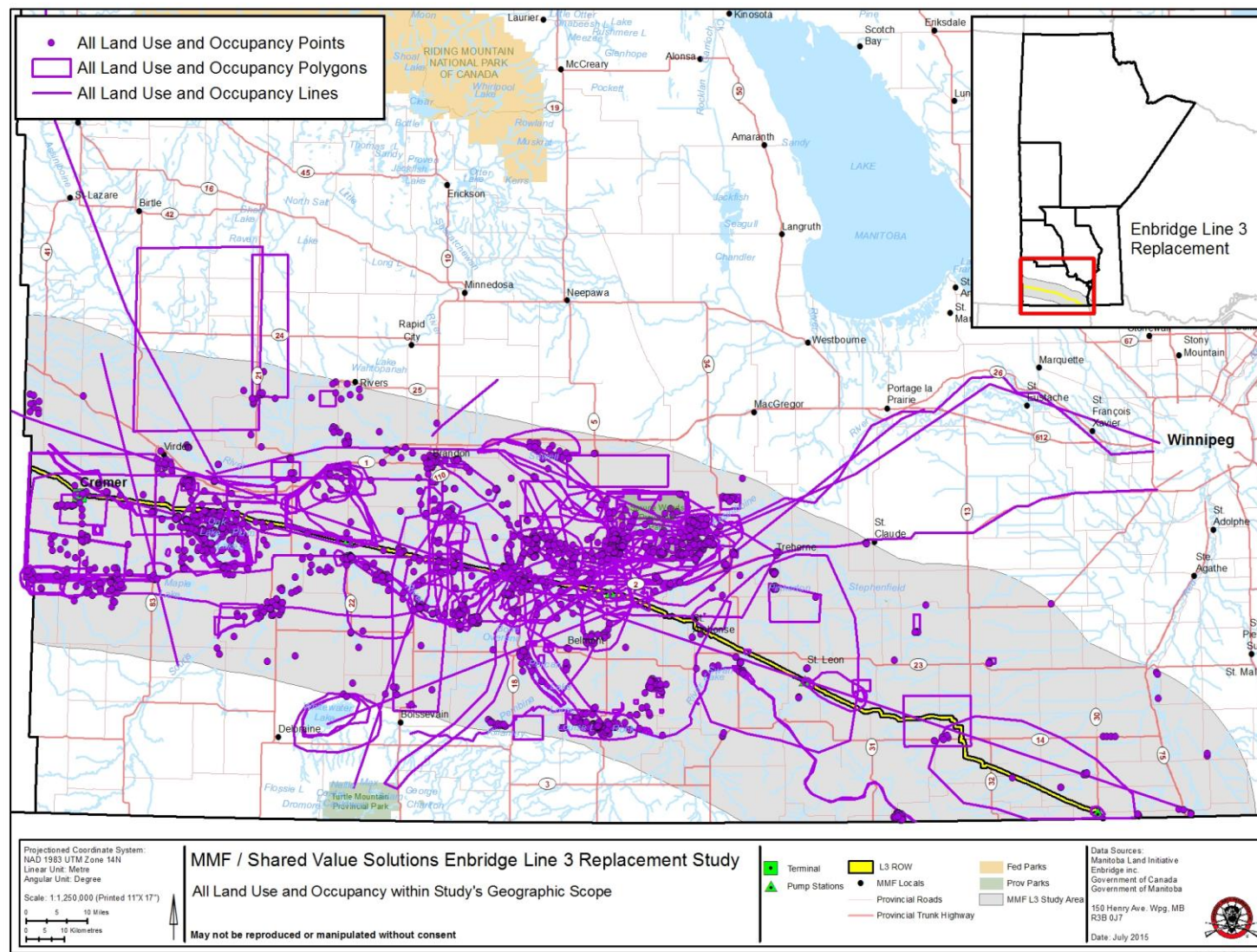


Figure 4. All Land Use and Occupancy within Study's Geographic Scope

There are several locations within or in close proximity to the 1km and 45m ROWs which were identified by multiple respondents as particularly sensitive, important and valued because of ecologically rich habitat and an association with the viability of TLU. These areas include, but are not limited to:

- Oak Lake and associated wetland complex
- Spruce Woods Provincial Park
- Alexander Marsh
- Glenboro Marsh
- Assiniboine River and Watershed
- Souris River and Watershed

#### *Summary of Temporal Scope of MMF Use & Occupancy – Study’s Geographic Scope*

Some Study participants identified a lifetime use of land within Study’s Geographic Scope due to their close connection to and dependence on the land for harvesting wild foods and for socio-economic well-being. This Study recorded a direct Métis connection to land use and occupancy in the Study’s Geographic Scope for up to 77 years (some Study participants were born in the late 1930’s). Due to the inherited nature of traditional knowledge and known occupancy of Métis people in this area for hundreds of years, it can be reasonably assumed that the ancestors of Study participants have utilized the land and accumulated traditional knowledge in the Study’s Geographic Scope for longer. Any impacts of the Project to the areas identified in the TKLUS would have not only present-day land use and occupancy implications, but cultural and knowledge sharing implications.

### 3.3 Summary of MMF Current Use of Lands and Resources in the Southwest Region of Manitoba

MMF participants in the Southwest Region were asked to map their current use of the land and resources with a focus around the Project’s 45m and 1km ROWs. The following is a summary of the types and amount of land- and resource-use within the Southwest region by participants.

#### *Summary of Land Use Activity in the ROWs*

The TKLUS found 17 points of MMF land use in the categories of hunting, gathering and agriculture/beekeeping. Sixteen (16) of these points were located within the scope of the 1km ROW and 1 point was located within the 45m ROW.

Of the 17 locations of land use identified,

- 15 related to hunting activities
  - 9 locations were used within the past 10 years
  - 5 locations were used more than 10 years ago
  - 1 location was used throughout the participant’s lifetime
- 1 related to gathering
  - location used within the past 10 years
- 1 related to agriculture/beekeeping (45m ROW)
  - no time period of use recorded

Table 1. Summary of Harvesting within the ROWs

Species within the ROW	Number of Participants within the Pipeline ROW (45m and 1km)	Locations within the pipeline ROW (45m and 1km)	Within Last 10 Years (2005-2015)	Before Last 10 years (prior to 2005)	Lifetime Use	Winter	Spring	Summer	Fall
<b>Hunting</b>									
Deer (White-Tailed Deer)	4	7	•	•	•	•		•	•
Waterfowl (Ducks, Geese, Sandhill Crane)	2	3	•	•	•	•	•		•
Coyote	1	4	•	•	•	•	•	•	•
Fox	1	1	•	•		•	•	•	•
<b>Gathering</b>									
Mushrooms	1	1	•	•	•		•	•	•
<b>Agriculture</b>									
Wheat farming	1	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

#### Land Use Activity - Study's Geographic Scope

TKLUS participants identified a total of 956 locations of their land use within the Study's Geographic Scope in the categories of hunting, fishing, trapping, gathering and agriculture/beekeeping. More information about this land use can be found in Section 4.2 of the report.

#### Access Points, Routes, and Overnight Sites - Study's Geographic Scope

While no access points, routes or overnight sites were mapped within the 1km or 45m ROWs, a total of 69 access points, routes or overnight sites were identified within the Study's Geographic Scope. More information about the access areas and overnight sites can be found in Section 4.6.3 of the report.

#### Seasonal Round – Southwest Region of Manitoba

During the verification workshops, the 24 participants completed a seasonal round (Figure 21), to determine in which months participants' harvested specific species of fish, mammals, birds, and plants. The circular diagram was broken into the 12 months of the year and participants wrote out which species they harvested in each month.

The types of species harvested in each month corresponded with the seasonal data collected during the mapping and oral history interviews. The seasonal round visual demonstrates that Métis harvesting is ongoing throughout the year and that there are a variety of species that are valued to Métis harvesters. This information could be used to assist Enbridge in understanding how the proposed construction schedule will impact Métis seasonal land use in the area, and provide input into construction scheduling



and mitigations, in order to avoid impacts to both harvesting activities and species of importance to Métis harvesters.

### 3.4 Summary of MMF Cultural Heritage in the Southwest Region of Manitoba

In addition to lands and resources used within the Southwest region, participants were asked to identify sites of cultural heritage and/or importance. Particular attention was given to sites around the Project's 45m and 1km ROW and participants were asked about specific impacts they felt the Project could have on those sites.

#### *Cultural Sites in the ROWs*

There were four cultural sites mapped by MMF citizens within the scope of the 45m pipeline ROW. The exact location of these points can be found in Figure 26. Three of the locations refer to portions of the Red River Cart Trail, which two of the participants specified was also the "Red Coat Trail" used by the RCMP. The other is an area that has been important to a participant, and their family, throughout their lifetime.

*Table 2. Summary of Cultural Sites within the ROW*

Map ID	45m ROW	1km ROW	Type of Site	Notes Taken During Interviews
1. 1501-51	YES	YES	Other Cultural Site	Red River Cart Trail. Starts at Emerson, goes to Batoche Saskatchewan. Métis people take Red River carts and horses. A re-enactment of historic route. People still take this route every year. Approximate route.
2. 1801-34	YES	YES	Other Cultural Site	Historic trail called the Red Coat Trail the RCMP used to use
3. 1707-64	YES	YES	Métis Historically Significant Site	Red river cart trail from Winnipeg, Red Coat Trail for RCMP, marked trail, passageways for furs. Going through St. Lazar CONCERN: Important not to disturb any cultural sites there. Those areas were used a lot for travel. If area is being opened up any new areas need to make sure not to disturb sites.
4. 1204-48	YES	YES	Important Landscape Feature	Area that participant feels is particularly beautiful, likes the way it looks, how the wildlife area is laid out and a little higher in some parts. Participant concerned about the construction of the pipeline on this area, specifically that the wildlife be impacted and get pushed back. Participant feels like there is nothing there for them once soil is packed. Participant is not necessarily worried about spills, but the construction is a concern. Doesn't have any suggestions for what could do. Participant started going to the area when he was 14-15 with his dad and continues to go to the area today. Participant indicated that there have already been a lot of changes in the area.

#### *Cultural Sites - Study's Geographic Scope*

A total of 108 cultural sites were mapped within the Study's Geographic Scope. More information about the cultural sites can be found in Section 4.6.3 of the report.

Many Study participants were concerned over the potential cultural impacts of the Enbridge Line 3 Project on their way of life. The need for Enbridge to demonstrate its respect for the distinct cultural



identity of the Métis people was of paramount concern for many respondents. The impact to cultural heritage sites such as Métis gathering locations, trade routes, burials and sacred sites were a major concern.

### 3.5 Summary of MMF Traditional Ecological Knowledge for the ROWs

There were a total of 147 TEK locations identified within the scope of the 1km pipeline ROW, 119 of which were within the 45m pipeline ROW. People come to understand the ecology of their surrounding environment through years of firsthand experience and inherent cultural understandings of relationships between humans, animals, lands and waters and/or teachings that have been passed down through relations or within a community. This type of knowledge is often referred to as Traditional Ecological Knowledge (“TEK”). The people who have inhabited, harvested and otherwise used the land along the Line 3 Pipeline ROW and Study’s Geographic Scope throughout their lifetime are able to provide specific insight about potential environmentally sensitive species and habitats that can prove invaluable to the NEB process.

Several study participants shared their TEK to identify areas within the study area of particular significance or concern from an ecological standpoint. The types of TEK presented by respondents included:

- Mammal seasonal habitat
- Mammal migration or movement routes
- Salt licks
- Bird habitat
- Fish spawning areas
- Plant habitat
- Wild rice
- Wetlands
- Species-at-Risk habitat
- Other important or sensitive habitats

The TEK shared by participants within the pipeline’s ROW is summarized in Table 3 below. The full TEK study results can be found in Section 4.2 of the report.

Table 3. Summary of TEK in the ROWs

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
<b>Mammal Seasonal Habitat</b>					
<b>1806-36</b>	YES	YES	Mammal Seasonal Habitat	Deer Wolf Elk Moose Coyote Bear Furbearers	Wildlife corridor under bridge used by many mammals. Pollution and destruction of habitat is already changing the land so that animals can't use it. Worry about breaches and poisoning, worry about this area and all the way down to Winnipeg. In the Souris and Assiniboine rivers, clean up would be impossible. Pollution from construction is not as concerning. Construction would alter the ability of animals to move back and forth and would alter things for a few years and that will all depend on how well the habitat is reclaimed.
<b>1806-55</b>	YES	YES	Mammal Seasonal Habitat	Deer Wolf Elk Moose Coyote Bear Furbearers	Glenboro/Belmont area. Many species use this area.
<b>1810-18</b>	YES	YES	Mammal Seasonal Habitat	Deer Moose	Construction may cause habitat disturbance. Construction may create new access routes, which may increase hunting and disturbance of animals in the area. This already fragmented habitat should not be further fragmented.
<b>1806-47</b>	YES	YES	Mammal Seasonal Habitat	Bear	
<b>1806-41</b>	YES	YES	Mammal Seasonal Habitat	Coyote	
<b>1809-23</b>	YES	YES	Mammal Seasonal Habitat	Coyote	
<b>1803-22</b>	YES	YES	Mammal Seasonal Habitat	Deer	
<b>1806-37</b>	YES	YES	Mammal Seasonal Habitat	Deer	
<b>1807-13</b>	YES	YES	Mammal Seasonal Habitat	Deer	

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1808-13	YES	YES	Mammal Seasonal Habitat	Deer	
1809-18	YES	YES	Mammal Seasonal Habitat	Deer	
1809-20	YES	YES	Mammal Seasonal Habitat	Deer	
1803-23	YES	YES	Mammal Seasonal Habitat	Elk	
1806-38	YES	YES	Mammal Seasonal Habitat	Elk	
1808-48	YES	YES	Mammal Seasonal Habitat	Elk	Concerned about the disruption to the elk population that could happen as a result of a construction or operation spill
1809-38	YES	YES	Mammal Seasonal Habitat	Elk	
1806-43	YES	YES	Mammal Seasonal Habitat	Fisher	
1809-17	YES	YES	Mammal Seasonal Habitat	Fox	
1809-22	YES	YES	Mammal Seasonal Habitat	Fox	
1806-45	YES	YES	Mammal Seasonal Habitat	Mink	
1809-28	YES	YES	Mammal Seasonal Habitat	Mink	
1806-39	YES	YES	Mammal Seasonal Habitat	Moose	
1809-15	YES	YES	Mammal Seasonal Habitat	Moose	
1809-21	YES	YES	Mammal Seasonal Habitat	Moose	
1602-9	YES	YES	Mammal Seasonal Habitat	Muskrat Deer Fox Coyote Beaver	Muskrat, deer, fox coyotes, beaver, mice, squirrels etc. Mammals here all year round. Annual fluctuations in water level - not human-made, but water fluctuations are happening. Migratory place for wetland birds.

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
				Mice Squirrel	
1806-42	YES	YES	Mammal Seasonal Habitat	Pine marten	
1806-44	YES	YES	Mammal Seasonal Habitat	Rabbit	
1806-46	YES	YES	Mammal Seasonal Habitat	Weasel	
1806-40	YES	YES	Mammal Seasonal Habitat	Wolf	
<b>Mammal Migration Route</b>					
1406-4	YES	YES	Mammal Migration Route	Elk	
1702-33	YES	YES	Mammal Migration Route	Elk	Elk migrate from south of Neelin toward Ninette up through Hilton over into the park. Usually travel south to north in December and north to south in April.
1702-34	YES	YES	Mammal Migration Route	Elk	Elk migrate from south of Neelin toward Ninette up through Hilton over into the park. Usually travel south to north in December and north to south in April.
1806-51	YES	YES	Mammal Migration Route	Elk	Fall elk migration route. Will see 50-60 animals.
1808-14	YES	YES	Mammal Migration Route	Moose	
<b>Bird Habitat</b>					
1202-5	YES	YES	Bird Habitat	Snow goose	There are more snow geese here than there used to be. When the regulations were changed around hunting to the use of a steel shot, people didn't want to hunt them as much.
1305-6	YES	YES	Bird Habitat	Duck	
1305-7	YES	YES	Bird Habitat	Geese	
1305-21	YES	YES	Bird Habitat	Turkey	
1308-16	YES	YES	Bird Habitat	Wild turkey	Turkeys are seen by the sand hills around Boissevain towards Brandon.
1501-27	YES	YES	Bird Habitat	Snow goose	Snow goose migration route.
1503-7	YES	YES	Bird Habitat	Canada goose Snow goose	Migration route. Geese are not travelling as far north as they used to and are staying put more often in the winter. Normally would go north of the pipeline and work their way back.

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1602-11	YES	YES	Bird Habitat	Snow goose Canada goose Mallard Blue-winged teal Blackbird Sparrow	Wetland and size of area makes it important - large sloughs across the landscape.
1702-35	YES	YES	Bird Habitat	Goose	
1702-36	YES	YES	Bird Habitat	Duck	
1710-11	YES	YES	Bird Habitat	Great blue heron Sandhill crane Ruddy duck Other duck Sp.	Seven big lakes in this area. Blue herons are few and far between, but there are more here than in other places because it is all part of the ecosystem. Construction impact will be temporary, but if it is done in the spring then there is potential impact on the bird species. Suggest doing the work in the winter to avoid the birds being in the area. A lot of the land there is private land and agricultural land so a lot of the disturbance would already be existing, especially in the spring when you have seeders and sprayers.
1801-17	YES	YES	Bird Habitat	Crane	
1801-18	YES	YES	Bird Habitat	Goose	
1801-19	YES	YES	Bird Habitat	Duck	
1801-20	YES	YES	Bird Habitat	Goose	
1801-21	YES	YES	Bird Habitat	Hawk	
1801-22	YES	YES	Bird Habitat	Blue heron	
1801-23	YES	YES	Bird Habitat	Crane	
1801-24	YES	YES	Bird Habitat	Duck	
1801-25	YES	YES	Bird Habitat	Hawk	
1801-26	YES	YES	Bird Habitat	Blue heron	
1801-27	YES	YES	Bird Habitat	Crane	
1803-24	YES	YES	Bird Habitat	Wild turkey	
1806-48	YES	YES	Bird Habitat	Ruffed grouse	
1806-49	YES	YES	Bird Habitat	Goose	
1806-50	YES	YES	Bird Habitat	Ducks	

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1807-14	YES	YES	Bird Habitat	Duck	
1808-22	YES	YES	Bird Habitat	Wild turkey	
1809-10	YES	YES	Bird Habitat	Snowy owl	
1809-11	YES	YES	Bird Habitat	Duck	
1809-12	YES	YES	Bird Habitat	Goose	
1809-13	YES	YES	Bird Habitat	Blue Heron	
1809-14	YES	YES	Bird Habitat	Turkey vulture	
1809-8	YES	YES	Bird Habitat	Bald eagle	
1809-9	YES	YES	Bird Habitat	Golden eagle	
1810-10	YES	YES	Bird Habitat	Goose	This is a sensitive area. It would be difficult to clean up contaminants. Contaminants migrate through sand quickly. Would be a difficult area to work in due to lack of soil stability and water table.
1810-9	YES	YES	Bird Habitat	Duck	This is a sensitive area. It would be difficult to clean up contaminants. Contaminants migrate through sand quickly. Would be a difficult area to work in due to lack of soil stability and water table.
1303-8		YES	Bird Habitat	Ducks	Bluebills, Canada goose -any and all species of ducks and geese. Geese raise their young in a smaller area but ducks mover around all over. South and West boundaries of the lake are the main areas the birds stay.
1305-20		YES	Bird Habitat	Pheasants	
1602-10		YES	Bird Habitat	Snow goose Canada goose Mallard Blue-winged teal Blackbird Sparrow	Wetlands and size of the area makes it important - large sloughs across the landscape.
1704-26		YES	Bird Habitat	Goose	
1801-16		YES	Bird Habitat	Blue heron	
<b>Fish Spawning Areas</b>					
1806-9	YES	YES	Fish spawning area	Walleye Jackfish (Northern pike) Yellow perch	



Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
				Catfish (Channel)	
<b>Vegetation</b>					
1305-5	YES	YES	Wetlands		Most important to hunters in the fall and trapping in the winter. Not against the pipeline but this is a very sensitive spot to run the pipeline.
1305-9	YES	YES	Wetlands		Most sensitive during spring and summer
1308-13	YES	YES	Wetlands		There is so much wetland that it's hard to pin point exactly where each one is. There are lots of small wetlands scattered in the area. This is also a bird habitat.
1602-6	YES	YES	Wetlands	Deer Migratory Birds Other Small Animals	Important deer habitat. Over past few years volume of water increased, but it is a cyclical process. During spring the area is important for migratory nesting. During the winter the area is important habitat for deer and small nesting animals. If any draining is occurring as part of the project it would result in loss of habitat.
1702-24	YES	YES	Wetlands		
1705-86	YES	YES	Wetlands		
1801-7	YES	YES	Wetlands		If the pipeline bursts underground, it could be days or weeks before anything is discovered, if it is not monitored properly. The pipeline should not go through these wetland and water areas.
1808-9	YES	YES	Wetlands		Spill from the pipeline here would spread quickly. Need good emergency response for wetlands especially.
1809-7	YES	YES	Wetlands		
1810-8	YES	YES	Wetlands		Contaminants would be difficult to clean up here, as they would migrate quickly through the sand. The area would also be difficult to work in due to lack of soil stability and water table. This area is near the pump station and there is concern about low level persistent leaks from pipeline pump station impacting and spreading through these wetlands. Prior spills have required significant disturbance of habitat to clean up.
1801-28	YES	YES	Plant habitat		
1809-19	YES	YES	Plant habitat	Lady's slipper	
1809-33	YES	YES	Plant habitat	Cactus	
1601-6		YES	Wetlands		Used for harvesting, invasiveness of Project could cause problems.
1602-7		YES	Wetlands		Important deer habitat. Over past few years volume of water increased, but it is a cyclical process.

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
					During spring the area is important for migratory nesting. During the winter the area is important habitat for deer and small nesting animals. If any draining is occurring as part of the project it would result in loss of habitat. Land needs to be rehabilitated back to its original state once the pipeline has gone in. Need solid rehabilitation processes in place. A spill or leak in this area would destroy vast amounts of habitat.
1703-17		YES	Wetlands		
1305-28		YES	Wild rice		.
1602-16		YES	Plant habitat	Sage Sweetgrass	
1602-18		YES	Plant habitat	Sage Sweetgrass	
<b>Insects, Reptiles and Amphibians</b>					
1602-14	YES	YES	Reptiles and Amphibian Habitat	Salamander Frog	Come out after the spring thaw.
1602-15	YES	YES	Reptiles and Amphibian Habitat	Salamander Frog	Come out after the spring thaw.
1801-15	YES	YES	Reptiles and Amphibian Habitat	Garter snake	
1806-10	YES	YES	Reptiles and Amphibian Habitat	Snapping turtle Painter turtle Leopard frog Spring peeper Tree frogs Toads Red-sided snake Green-grass snake Garter snake Red-bellied snake	
1809-30	YES	YES	Reptiles and Amphibian Habitat	Garter snake	

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1602-12	YES	YES	Insect Habitat	Dragonfly Bee Mosquitos	Come out few weeks after last frost until first frost.
1602-13	YES	YES	Insect Habitat	Dragonfly Bee Mosquito	Come out few weeks after last frost until first frost.
1801-12	YES	YES	Insect Habitat	Dragonfly	
1801-14	YES	YES	Insect Habitat	Moth	
1809-29	YES	YES	Insect Habitat	Dragonfly	
1302-7		YES	Reptiles and Amphibian Habitat	Salamander Garter snake	
1305-23		YES	Reptiles and Amphibian Habitat	Turtle	
1808-24		YES	Reptiles and Amphibian Habitat	Garter snake	
1801-13		YES	Insect Habitat	Ladybug	
<b>Sensitive Habitats and Species at Risk</b>					
1707-30	YES	YES	Sensitive Habitat		If there are machines digging, it will scare animals off.
1808-27	YES	YES	Sensitive Habitat	Jackfish (Northern pike)	
1808-28	YES	YES	Sensitive Habitat	Pickerel	
1808-29	YES	YES	Sensitive Habitat	Turtles	
1808-30	YES	YES	Sensitive Habitat	Sucker	
1808-31	YES	YES	Sensitive Habitat	Carp	
1808-32	YES	YES	Sensitive Habitat	Salamander	

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1810-12	YES	YES	Sensitive Habitat		Higher risk to wildlife due to the infrastructure of the pump station, not necessarily the sensitivity of the habitat.
1810-13	YES	YES	Sensitive Habitat		Higher risk to wildlife due to the infrastructure of the pump station, not necessarily the sensitivity of the habitat.
1810-14	YES	YES	Sensitive Habitat		This is a sensitive location because the pipeline is crossing a major river system.
1810-15	YES	YES	Sensitive Habitat		Higher risk to wildlife due to the infrastructure of the pump station, not necessarily the sensitivity of the habitat.
1810-16	YES	YES	Sensitive Habitat		Higher risk to wildlife due to the infrastructure of the pump station, not necessarily the sensitivity of the habitat.
1810-17	YES	YES	Sensitive Habitat		Higher risk to wildlife due to the infrastructure of the pump station, not necessarily the sensitivity of the habitat.
1801-8	YES	YES	Sensitive Habitat		If there was a spill here, this area would be difficult to clean up. A lot of animal habitat along this area for many species.
1806-60	YES	YES	Species at Risk	Burrowing Owl	4-6 years ago someone saw burrowing owls; the interviewee did not see this but a naturalist that the interviewee trusts did.
1804-31		YES	Species at Risk	Redheaded woodpecker	
1804-32		YES	Species at Risk	Western Spiderwort	
1804-33		YES	Species at Risk	Buffalograss	
1804-34		YES	Species at Risk	Western Hognose Snake	
1804-35		YES	Species at Risk	Prairie Skink	
1806-54		YES	Species at Risk	Prairie Skink	
1806-62		YES	Species at Risk	Least Bittern	Little slough area, 1991/92 early to mid-June.
1806-63		YES	Species at Risk	Common Night Hawks	2014 first-hand sighting.
1806-66		YES	Species at Risk	Buffalo grass	Saw buffalograss last week June 2015. There is also speargrass here.
1806-67		YES	Species at Risk	Mule Deer	Reported by a friend in approximately 1987/88.
1807-17		YES	Species at Risk	Mule Deer	
1809-32	YES	YES	Species at Risk	Prairie skink	
1809-36		YES	Species at Risk	Ferruginous Hawk	
1809-37		YES	Species at Risk	Western Hognose	

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
				Snake	
<b>Other Important Habitat</b>					
1305-10	YES	YES	Other Important Habitat	Moose	
1306-15	YES	YES	Other Important Habitat	Deer	There is a lot of prime deer habitat here. The whole area has changes occurring with all of the oilrigs that have gone in and traffic has increased.
1702-17	YES	YES	Other Important Habitat	Muskrat	If there is a spill and it affected wildlife here it could impact trapping incomes. The muddy ground sucks everything in.
1704-19	YES	YES	Other Important Habitat	Deer	
1704-21	YES	YES	Other Important Habitat	Deer	
1704-24	YES	YES	Other Important Habitat	Moose	
1707-19	YES	YES	Other Important Habitat	Elk	If construction occurs during hunting season it will scare elk away from the area.
1810-20	YES	YES	Other Important Habitat	Moose	The moose populations in Manitoba are sensitive and decreasing province wide, and there is a population of moose in this area that should be protected. Pipeline may cause easier/increased access to moose habitat, which may lead to increased hunting, which would lead to moose population decreasing. There should be independent gathering of land use/ecological data from locals to form a baseline of what habitat/species exist adjacent to the pipeline. This should be done so that the habitat/species that have returned/not returned after the construction fragmentation/disturbance can be documented is important. Monitoring of sensitive areas should be continuous.

### 3.6 Summary of Traditional Ecological Knowledge about Environmental Changes and Cumulative Effects

Participants were asked about their ecological knowledge of the land and environmental changes that they have observed. They were also asked about other changes that have already affected harvesting and land use activities, and which may have potential for cumulative effects. Cumulative effects are environmental, socio-cultural, and/or economic changes that are caused by a combination of natural and/or human activities accumulating over time.

#### *Summary of Observed Changes in the ROWs*

A total of 16 changes were reported by the MMF study participants within the 1km pipeline ROW, and 15 of these were within the 45m pipeline ROW. The knowledge that was shared about the state of local animal populations and landscapes/habitats, can be translated into an indicator that a local population/landscape may be approaching an ecological threshold or tipping point. These types of indicators are imperative in the identification of sensitive locations and/or local animal populations that may be detrimentally affected by further change. This information can help to ensure that sensitive areas are protected and afforded specific and appropriate mitigations related to the Line 3 Pipeline Project. It is also important to note that changes discussed and identified outside of the ROWs, but within the Study's Geographic Scope need to be taken into consideration, as population level changes and changes in water levels (mentioned most frequently by participants) are not changes confined to a small spatial scale between 45m and 1km.

The changes that participants had observed within the pipeline's 45m and 1km ROWs are summarized in Table 3 below.

*Table 4. Summary of Observed Changes in the ROWs*

Map ID	45m ROW	1km ROW	Type of Change	Notes Taken During Interviews
<b>1303-5</b>	YES	YES	Changes in Water Levels	Water levels have increased over the last 10-15 years in the wetlands in Oak Creek area.
<b>1303-6</b>	YES	YES	Mammal Population Increase	More moose in the area due to the increase in water levels in the wetlands. Moose are also being driven out of the mountains because of ticks, predators such as wolves and hunting pressures.
<b>1303-7</b>	YES	YES	Mammal Population Decrease	Fewer deer due to increased water levels.
<b>1704-20</b>	YES	YES	Mammal Population Decrease	
<b>1704-25</b>	YES	YES	Mammal Population Decrease	
<b>1803-25</b>	YES	YES	Mammal Population Decrease	Cold winter decreased deer population.
<b>1803-31</b>	YES	YES	Mammal Population Increase	Elk population increased due to increased food supply.
<b>1803-34</b>	YES	YES	Mammal Population Decrease	Rabbit population has declined dramatically, due to a decrease in logging and an increase in predation.



Map ID	45m ROW	1km ROW	Type of Change	Notes Taken During Interviews
<b>1803-39</b>	YES	YES	Mammal Population Increase	Increase in coyote population.
<b>1806-52</b>	YES	YES	Mammal Population Increase	Elk population increased within the last 20 years.  The pipeline construction could disrupt elk migration and push them north through the Neepawa and riding mountain area and it could land-lock elk in this area and drive them further south.
<b>1808-17</b>	YES	YES	Mammal Population Increase	Increase in elk population.
<b>1808-18</b>	YES	YES	Mammal Population Increase	Moose population increased because of habitat displacement in other areas.
<b>1810-11</b>	YES	YES	Bird Habitat, Bird Population Decrease, Vegetation Habitat, Vegetation Health, Change in Water Levels	Due to a spill, excavation occurred and vegetation had to be moved.  This caused short-term effects to agriculture and loss of bird habitat, and led to bird population decrease in that area. Hunting pressure on moose has decreased the population.  Potential fragmentation caused by the pipeline could lead to decreased moose population.
<b>1810-119</b>	YES	YES	Mammal Population Decrease	Hunting pressure on moose has decreased the population.  Potential habitat fragmentation caused by the pipeline could lead to decreased moose population.
<b>1810-19</b>	YES	YES	Bird habitat, Mammal Habitat, Vegetation Habitat, Vegetation Health	
<b>1707-16</b>		YES	Mammal Population Increase	Increased moose population. They released timber wolves into the parks in the mountains in the north near Dauphin and this scared moose away. They closed down hunting in the mountains.

### 3.6.1 Potential Cumulative Effects

Participants perceived a number of past infrastructure developments as being connected to changes in their local environment – changes which may combine cumulatively with potential impacts of the Line 3 pipeline. The past developments noted by participants included the following:

- Agriculture
- Industrial oil infrastructure
- Human disturbance
- Flooding and changing water levels

There are several locations within or in close proximity to the 45m ROW where participants noted changes they have observed as well as concerns related to how the Line 3 Pipeline could further impact these areas. It is important that Enbridge takes into account and demonstrates an understanding of the existing developments in the area, how they have interacted with and changed the landscapes and how the Line 3 Project will further impact these areas.

See Section 4.4 for details on the potential cumulative effects of the Project and impacts to the MMF.

## 4.0 Traditional Knowledge and Land Use Study Results

### 4.1 Context for Interpreting the Results

#### *Purpose of the Study Results*

The main objective of the map biography and oral history interviews was to document use and occupancy of the land by MMF in the Southwest Region of Manitoba, specifically focused on the Study's Geographic Scope.

These results will provide a basis for ongoing discussions between MMF and Enbridge in relation to the Line 3 pipeline. It is also intended that the findings be submitted to the NEB hearing process as written evidence. As such, the findings have been organized to align with the NEB's amended list of issues for the Line 3 pipeline from May 29, 2015.

#### *Approach to Presentation of the Results*

It is important to note that while the TKLUS interview participants had extensive use of the areas both within and outside of the Study's Geographic Scope, the results presented in this report focus mainly on the land use and occupancy within the Study's Geographic Scope in order to best inform the Line 3 pipeline approvals process.

In some cases, the full extent of the data that was mapped has been included to demonstrate the potential downstream impacts from development along the ROWs, as well as the inter-connectedness of the habitat.

This section includes aggregate results from the 56 TKLUS study participants. The results are presented in the following categories:

- Traditional Ecological Knowledge of MMF Study Participants
- Changes Observed by MMF Study Participants
- Potential Cumulative Effects
- Land Use and Occupancy of the MMF Study Participants
- MMF Study Participant Input to the Line 3 Issues List as presented by the NEB including:
  - The need for the Project
  - The potential commercial impacts of the Project
  - The potential environmental and socio-economic effects of the Project, including those to be considered under the *Canadian Environmental Assessment Act, 2012*
  - Potential impacts of the Project on Aboriginal interests
  - Contingency planning for product release, accidents or malfunctions, during construction and operation of the Project
  - The suitability of the decommissioning plan for the existing Line 3 pipeline including whether the decommissioning is appropriately an interim step to eventual abandonment or whether it is the final step in the pipeline's lifecycle
  - Safety and security during construction and operation of the Project, including emergency response planning and third-party damage prevention
  - The terms and conditions to be included in any recommendation or approval the Board may issue for the Project

Most of the sub-sections include a thematic map, or series of thematic maps, of the participants' composite land use and occupancy. In some cases more than one thematic map has been included per category because there was too much information to clearly display on a single map. In these cases, the maps have been divided by "polygons" (i.e. shapes), "lines" and/or "points" of data.

Where appropriate, the maps are labelled with unique identifiers that are linked to a corresponding table that provides descriptive data about the points, polygons, or lines on the maps. The unique identifiers for each point are a combination of the respondents' confidential PIN and GIS IDs used during the mapping process.

Each sub-section also provides a summary of the findings, which is then explained further through accompanying quotes that come directly from the interviewees' transcripts. The Study participants' knowledge and opinions strongly inform the analysis and conclusions using this approach.

#### *Criteria for Determining Sensitivity: Water Flow Interactions between Line 3 and Areas of Concentrated MMF Land Use*

One obvious criteria for determining the degree of sensitivity of the locations of Métis use and occupancy mapped for this study is the proximity of the location from the Enbridge (45m) and MMF (1km) ROWs.

Given the concern for potential Line 3 oil spill impacts, it is also important to consider locations downstream from Line 3 as particularly sensitive. Table 5 provides an overview of some of the water flow directions from Line 3 as they relate to areas of concentrated Métis land use and occupancy. Table 6 depicts water flow directions related to areas reported by MMF participants as being particularly important and/or sensitive habitat. The data in these tables should not be considered comprehensive, but can provide an indication of potentially sensitive areas. More fulsome watershed mapping and analysis of the potential downstream impacts of Line 3 on MMF rights and interests was beyond the scope of this Study, but should be completed.

Table 6 also outlines the potential impacts of an oil spill on Métis land use. Oil spill trajectory and impact is dependent on a large variety of factors including, among other things: spill size, type of oil spilled, vegetation, soil composition, and climatic conditions. While oil spill trajectory is difficult to predict, the table represents a preliminary understanding of potential interactions between Métis land use and an oil spill on Line 3 in the Southwest Region.

*Table 5. Water Flow Interactions between Line 3 and Areas of Concentrated Métis Land Use and Occupancy*

Areas of Concentrated Métis Land Use and Occupancy	Water Flow Interactions
• <b>Cromer</b>	Line 3 crosses Pipestone Creek just west of the Manitoba-Saskatchewan border and flows south through Cromer. Any spills near this water crossing has potential to impact Métis land use near Cromer.
• <b>Virden</b>	Not downstream
• <b>Reston</b>	Although the concentrated area of land use near Reston is not directly downstream of Line 3, because of the distances travelled by the animals harvested by Métis people, any large spills which affect Pipestone Creek have the potential to impact Métis land use around the Reston area which is approximately 3–5 km away from Pipestone Creek.
• <b>Sinclair</b>	Where Line 3 crosses Stony Creek and Jackson Creek water flows south towards Sinclair. Pipeline ruptures or incidents near Stony Creek or Jackson

Areas of Concentrated Métis Land Use and Occupancy	Water Flow Interactions
	Creek have potential to impact Métis land use in the Sinclair area.
<ul style="list-style-type: none"> <li><b>Pipestone</b></li> </ul>	Although the concentrated area of land use near the town of Pipestone is not directly downstream of Line 3, because of the distances travelled by the animals harvested by Métis people, any spills which affect Pipestone Creek have the potential to impact land use around the Pipestone area which is approximately 3–5 km away from Pipestone Creek.
<ul style="list-style-type: none"> <li><b>Oak Lake</b></li> </ul>	Any spills along Line 3 from Pipestone Creek near Butler to Oak Lake will flow downstream or downgrade towards Oak Lake and have potential to impact Métis land use in and around Oak Lake. In addition, because of the proximity of Line 3 to Oak Lake (approximately 200 m), any spill in this area has potential to impact Métis land use in the area.
<ul style="list-style-type: none"> <li><b>Hartney</b></li> </ul>	Not downstream
<ul style="list-style-type: none"> <li><b>Nesbitt</b></li> </ul>	Because of the proximity of this concentration of land use to Line 3 (< 1km), any spill in this area has potential to impact Métis land use in the area.
<ul style="list-style-type: none"> <li><b>Wawanesa</b></li> </ul>	Because of the proximity of this concentration of land use to Line 3 (< 1km), any spill in this area has potential to impact Métis land use in the area.
<ul style="list-style-type: none"> <li><b>Neelin</b></li> </ul>	Not downstream
<ul style="list-style-type: none"> <li><b>Glenora</b></li> </ul>	Not downstream
<ul style="list-style-type: none"> <li><b>Souris River (from the town of Souris to the Assiniboine River)</b></li> </ul>	<p>The Souris pump station at Souris is immediately up gradient of the Souris River; spills or ruptures at the Souris Pump station or nearby creeks have the potential to impact Métis land use in the Souris River.</p> <p>Line 3 crosses Black Creek between Nesbitt and Wawanesa and flows north to meet the Souris River. Any spill near Black Creek has the potential to impact Métis land use along the Souris River.</p> <p>Line 3 crosses the Souris River near Wawanesa. At this point, the Souris River flows north and meets the Assiniboine River. Any spills near this crossing have the potential to impact Métis land use along the Souris River.</p>
<ul style="list-style-type: none"> <li><b>Assiniboine River (from Brandon east to Highway 34)</b></li> </ul>	<p>Line 3 crosses the Souris River near Wawanesa. At this point, the Souris River flows north and feeds into the Assiniboine River. Any spills or disruptions have the potential to impact Métis land use along the Assiniboine River.</p> <p>Line 3 crosses Oak Creek in two locations, Oak Creek flows into the Souris River which feeds into the Assiniboine River. Any spill near Oak Creek could potentially impact the Métis land use in and around the Assiniboine River.</p>
<ul style="list-style-type: none"> <li><b>Oak Creek</b></li> </ul>	<p>Line 3 crosses Oak Creek south east of Stockton and flows north towards a concentration of Métis land use in and around Oak Creek. Any spills or disruptions have the potential to impact Métis land use along the Oak Creek.</p> <p>Line 3 also crosses Oak Creek southeast of Glenboro and flows west through the Glenboro Marsh. Any spills in this area have the potential to impact Métis land use in this area.</p>

There are several locations within or in close proximity to the Project ROW which were identified by multiple respondents as particularly sensitive, important and valued because of ecologically rich habitat and an association with the viability of traditional land use. Table 6 provides an overview of the water flow directions from Enbridge Line 3 as they relate to Métis sensitive habitat areas. The table also outlines the potential impacts of an oil spill on these habitats.

Table 6. Water Flow Interactions between Line 3 and Areas of Concentrated Métis Sensitive Habitat

Métis Sensitive Habitat	Water Flow Interactions
<ul style="list-style-type: none"> <li><b>Oak Lake and associated wetland complex</b></li> </ul>	Any spills along Line 3 from Pipestone Creek near Butler to Oak Lake will flow downstream or downgrade towards Oak Lake and have potential to impact Métis land use in and around Oak Lake. In addition, because of the proximity of Line 3 to Oak Lake (approximately 200 m), any spill in this area has potential to impact Métis land use in the area.
<ul style="list-style-type: none"> <li><b>Spruce Woods Provincial Park</b></li> </ul>	<p>Line 3 crosses the Souris River near Wawanesa. At this point, the Souris River flows north and feeds into the Assiniboine River which passes through the Spruce Woods Provincial Park. Any rupture or spill along Line 3 near Wawanesa has the potential to impact the Spruce Woods Provincial Park.</p> <p>Line 3 crosses Oak Creek in two locations, Oak Creek flows into the Souris River which feeds into the Assiniboine river which passes through Spruce Woods Provincial Park. Any spill near Oak Creek could potentially impact the Spruce Woods Provincial Park.</p>
<ul style="list-style-type: none"> <li><b>Alexander Marsh</b></li> </ul>	Because of the topography, the water flow near Line 3 south of Algar is undefined. However, depending on conditions at the time of an incident, there is potential that a spill may flow north to the Alexander Marsh.
<ul style="list-style-type: none"> <li><b>Glenboro Marsh</b></li> </ul>	Line 3 crosses Oak Creek southeast of Glenboro and flows west through the Glenboro Marsh. Any spills near this water crossing have the potential to impact the Glenboro Marsh.
<ul style="list-style-type: none"> <li><b>Assiniboine River and Watershed</b></li> </ul>	<p>Line 3 crosses the Souris River near Wawanesa. At this point, the Souris River flows north and feeds into the Assiniboine River. Any spills or disruptions have the potential to impact Métis land use along the Assiniboine River.</p> <p>Line 3 crosses Oak Creek in two locations, Oak Creek flows into the Souris River which feeds into the Assiniboine river which passes through Spruce Woods Provincial Park. Any spill near Oak Creek could potentially impact the Assiniboine River and Watershed.</p>
<ul style="list-style-type: none"> <li><b>Souris River and Watershed</b></li> </ul>	<p>The Souris pump station at Souris is immediately up gradient of the Souris River, spills or ruptures at the Souris Pump station or nearby creeks have the potential to impact Métis land use in the Souris River.</p> <p>Line 3 crosses Black Creek between Nesbitt and Wawanesa and flows north to meet the Souris River. Any spill near Black Creek has the potential to impact Métis land use along the Souris River.</p> <p>Line 3 crosses the Souris River near Wawanesa. At this point, the Souris River flows north and meets the Assiniboine River. Any spills near this crossing have the potential to impact Métis land use along the Souris River.</p>

## 4.2 Traditional Ecological Knowledge of MMF Study Participants

People come to understand the ecology of their surrounding environment through years of firsthand experience and inherent cultural understandings of relationships between humans, animals, lands and waters. People also come to understand the ecology of their environment through teachings that have been passed down through relations or within a community. This type of knowledge is often referred to as Traditional Ecological Knowledge (“TEK”). The people who have inhabited, harvested and otherwise used the land along the Line 3 Pipeline ROW and Study’s Geographic Scope throughout their lifetime are



able to provide specific insight about potential environmentally sensitive species and habitats that can prove invaluable to the NEB process.

Study participants were asked to share their TEK as it relates to the lands, waters, and animals of the Southwest Region in the categories outlined below. This shared knowledge is essential to understanding the potential environmental effects of the Line 3 Pipeline. Participants may have knowledge of specific habitats, plants, etc. that may not exist in the available literature or through local resource management agencies.

Participants were also asked to voice any concerns they had related to potential environmental effects of the Line 3 Pipeline. The most common concern was related to the environmental effects if a spill/leak occurred. Specifically, participants were concerned about how preventable a leak is and how adequately that spill could be cleaned up in terms of timeliness. Participants were also concerned about the pipeline going through areas on the land that are considered sensitive.

*Well, I'm just hoping that if a pipeline's going through that area nothing's going to happen where it's going to burst and affect the animals in the area. I've been going there for many moons. I know a lot of people in that area and I'd hate to see something disastrous.*

The number of times each TEK category was recorded in GIS during the map biography interviews is noted in brackets. These numbers and the descriptions under each category of land use are representative only of the locations mapped within the Study's Geographic Scope. There were a total of **723** locations identified within the Study's Geographic Scope; there were a total of 147 TEK locations identified within the scope of the 1km pipeline ROW, 119 of which were within the 45m pipeline ROW only. Figure 5 is a composite map that shows the TEK that was mapped for the entire Southwest Region of Manitoba. The figures that follow depict TEK in each category within the Study's Geographic Scope.

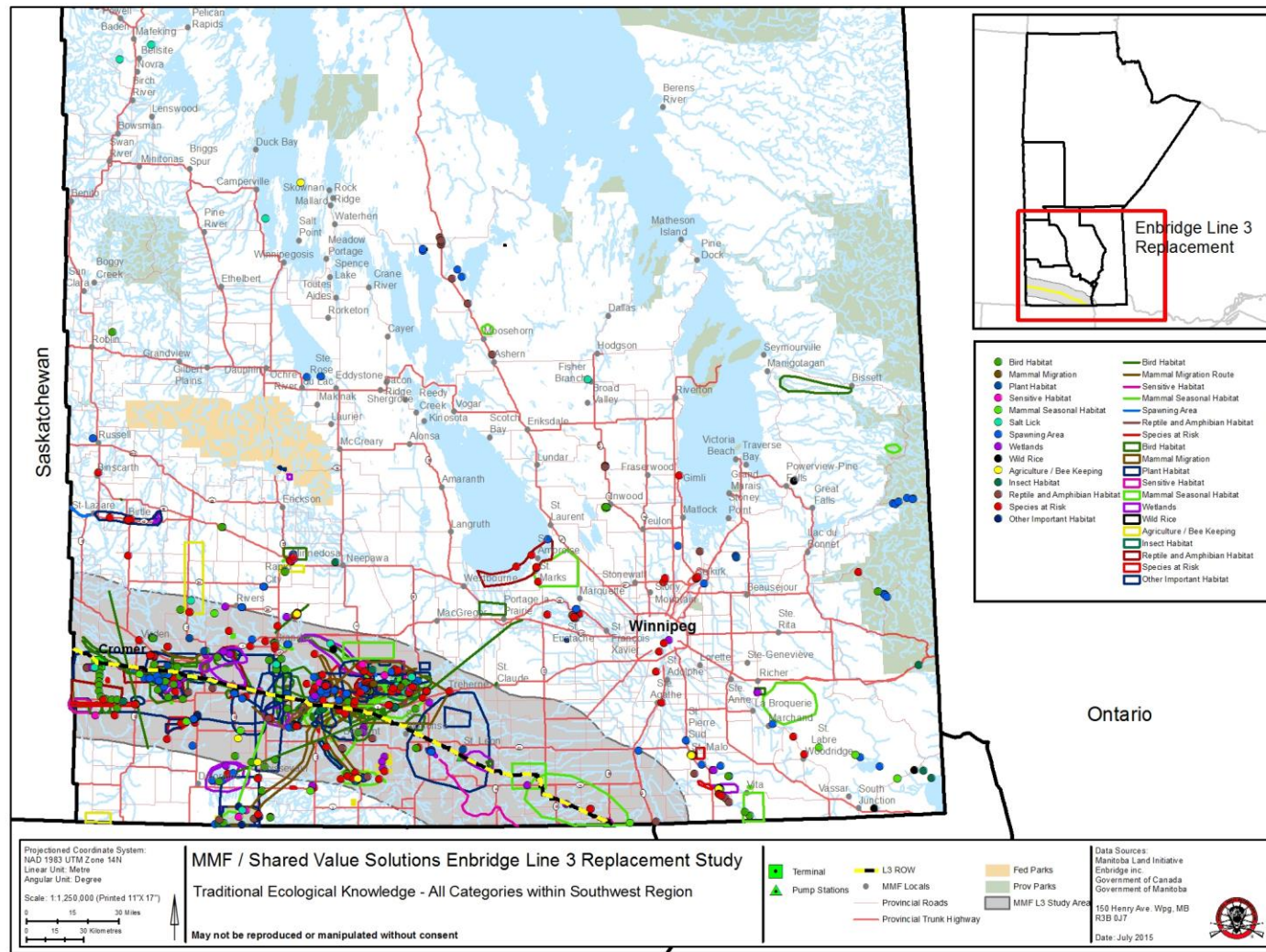


Figure 5. Traditional Ecological Knowledge – All Categories Southwest Region

The TEK that was mapped within the Study's Geographic Scope includes:

**Mammal Seasonal Habitat (100 locations):** Participants reported important seasonal habitat areas for deer, moose, elk, rabbits, muskrat, fox, coyote, beaver, black bears, marten, mink, weasel, and fisher. Moose, deer and elk were the most commonly discussed species and most sites were associated with rutting, calving and over-wintering. One participant discussed an important habitat for elk in the fall, where 50-60 elk were seen. Participants identified thirty-one **(31)** locations as seasonal habitat for mammals within the 1km pipeline ROW; twenty-nine **(29)** of these are locations within the 45m pipeline ROW, including a deer fawning area directly within the 1km pipeline ROW.

There were two fawning and rutting areas for deer that were also recorded near the pipeline ROWs in the southeast portion of the Study's Geographic Scope (see points 1601-10 and 1601-11).

*Well, I do know, in the winter months, around Rock Lake, the deer herd up there. Closer to Rock Lake. You'll see, sometimes, like 100 deer all in a herd... I don't know why they all go...see, I always theorise that in winter time all the water to the north is all froze, but in Rock Lake here there's still running springs that run all winter long...that's why there's sometimes 100 deer there, because they have a place where they have easy access to water.*

*So we'll be right about there. Now when we hunt, we assume all this area, especially when we hunt for an elk because they do have a pattern of – they do migrate but they also have a more of a weekly pattern. So that they can move in quite a large area there. So depending on the weather, time of year is where we may leave our base camp and go to a more of a satellite situation to get success.... Well, the elk primarily when we're hunting both in the provincial park and in the provincial forest area but the elk can move. And they tend to have a pattern of – you see herded elk in an area. You may not see them there for about 14 days because they'll move off to other areas.*

*And that is seasonal too depending on when they're ready, depending on the outlying fields outside the agricultural fields so go out there at night to feed. They may be feeding in the east side for a while when that runs out, then they get more vibrant. But as the fall progress, they tend to stick mostly in that park area.*

*They usually come into the valley. Like where I live in Neelin is in the bottom of a valley right, and when the winter gets tough out in the open that's where they come, to the hillsides....Yeah, yeah they're all through all right along the valley there, and it takes in all those lakes and everything. It's the same -- it's the Pembina River Valley and – ... Yeah, they just live in the hills there. Like I can go out to do chores and you either go with the horses or you go with the skidoo or something, they just look up at you. You're not bothering them then you know they don't run away. They know where they're safe. Even with the influx of the coyote population they still do very well...*

*Yeah, it's a huge area, it's all the way south of Glenboro, not directly south but it would start from there and go southwest for deer. This area – that whole area north of the pipeline, that would be all really good breeding area for deer, elk, that's a really big area. So I mean I'm talking – it would go like this and back up this way and the same here.*

*The cow and the two small calves would have been around this time last year, around May, June and the two big calves north of Nesbitt, I seen them in March. There was still snow on the ground when I seen them. As a matter of fact that's what attracted my attention to them, all the tracks that were in the snow and ditches. And I looked into the bush and there was two big calves there.*

*And that's also a heavy area for elk. A semi-truck on this area here hit about 18 and killed them one night in a blizzard. They think maybe somebody might have shot at the herd in the field and scared them and then they ran across the road. It was a heck of a mess. There was carcasses everywhere. The highway was literally just slippery with blood. They had to put a lot of them - some of them were just injured and they had to put them down. And others were killed right there on the spot. It was quite a mess.*

*This is Highway 18. It goes down to Ninette. And there's a lot of marsh and small lakes in this area and Ninette is right here and Pelican Lake. There's a lot of, still a lot of bush along that highway and there's still quite a lot of deer and elk and we seen moose here as well.*

*Yeah as far as Wawanesa and up in this area. See if you go up here far enough you're going to come up to [Shiloh] and the Spruce Woods. And so the elk population and stuff up there are moving down, which is why that guy counted 150 of them crossing the highway a couple of weeks ago.*

**Salt Lick (10 locations):** Participants identified the locations of several salt licks throughout the Study's Geographic Scope and indicated that deer, moose and elk use these areas frequently. One participant noted that cattle would also use these salt licks. No salt licks are located within the pipeline ROWs.

**Mammal Migration Route (21 locations):** Participants shared their knowledge of migration routes for elk, moose and deer. One participant shared his knowledge of historic buffalo migration routes in the Southwest region. A total of five (5) migration routes transect the 45m pipeline ROW (four elk, one moose).

An important area for migration for elk and moose is from Spruce Woods south towards Line 3, and transecting the 45m ROW; multiple participants noted this route. One participant also said that elk migrate from south of Neelin toward Ninette, through Hilton and into the Spruce Woods Provincial Park; typically, one participant noted, the elk travel from south to north in December and from north to south in April.

*Yeah it's just like passing, they pass back and forth and along here quite heavily along here and then they go ... I don't know how, but there's also some across here, so I don't know if they migrate from ... Like from here, because these are open fields of you know food for them. And then they migrate back into the provincial park, because that's that what they ... After they eat they go back in where you can't see them and it's cooler and that sort of thing. But they do it along here too.*

*Yeah because we see a lot of elk in through Cavalier Lake and Boundary Lake and Hartley Lake and along in there. We see lots of ... It's like a beaten path, like great big paths of black where the elk are crossing all the time back and forth.*

*Yeah, you know – the Southwest to me is the one of the main areas for Métis. If you look at past history, the buffalo would come in and around the Turtle Mountain and the Métis would follow the buffalo herds through these areas. And that's why Turtle Mountain was a Métis site because the Métis would follow the herds over the winter in the mountain because there was fish and there was game that they could live on and subsist on.*

**Bird Habitat (169 locations):** Participants reported bird habitat for duck species (blue-winged teal, mallard, wood), Canada goose, snow goose, swan, bald eagle, golden eagle, wild turkey, mud hens ("American coot"), sandhill cranes, great blue heron, grouse (ruffed grouse, sharp-tail grouse, spruce grouse, commonly referred to as "bush or prairie chickens"), Hungarian partridge, pheasants, owl, hawk, pelican, warbler, and woodpecker. The most commonly reported bird habitat was for geese and ducks. Many of the identified bird habitat areas were for nesting. Other commonly identified areas included locations where birds are seen in high abundance at certain times of year, as well as locations where participants commonly see a certain species of bird. There were forty-two **(42)** bird habitat locations identified within the 1km pipeline ROW, and thirty-seven **(37)** are located in the 45m pipeline ROW. As indicated by one participant in point 1710-11, the area near St. Alphonse is important for blue heron and sandhill crane.

*We have a snowy owl nest where right now they can't even do the ... They can't even start construction on the road because of the environmentalists put a halt to it, because there's a nest on the side of the road and they have to wait till the baby is big enough.*

*Well and the thing with the wetlands too is I mean every little slough raises ducks and geese. Like they don't look at a slough and go that's too small, I mean there'll be at least a few families in a small slough. So each one there is value to....Yeah. With reference to the upland, they're everywhere. Like upland won't generally be in marshy areas. In the winter when it's frozen they will go in there for cover, but you wouldn't find prairie chicken, partridge; things like that in the sloughs in the summer or when they're wet.... Snow geese, Canada geese, probably mallards would be the main ducks but there's teals, there's quite a number of duck species that will be in there. There are also quite a number of small non-game migratory birds, blackbirds, sparrows, chickadees, I mean everything. Well I mean they're not really as glamorous as if you take large mammal habitats it's a concern, a chickadee loses its nest big deal...[The area is important] Because it is a wetland....Large areas and I mean it's not -- we're not looking at lakes, we're looking at large sloughs across the landscape or if you drive just south of Alexander [Marsh], just when you are crossing the tracks, if you look east or west you'll see a slough that goes along for quite a distance.*

*Well, I would – you know...Oh, there's Seven Lake. So this area in here generally. Because there is Seven. It's called Seven because it's seven big lakes [laughs], but this is all pretty much waterfowl and bird habitat, herons, there's Sandhill Cranes in the area, there's ruddy ducks, there's... I'm trying to think what the other ones are. I mean, there's all kinds, there's just about every species in the area, pretty much. Not too many teals but...*

*Yeah, except for Golden Eagle I would only probably see that like summer, not as often, but we do get them. I guess I started off with the Blue Heron, that's, I'd say winter is the only time we don't notice them. The reason that sticks out to me is that they're like in all the places I've been I*



*used to see them when we were on like the Assiniboine-Souris River. And I used to think that was something that like you don't see those birds anywhere. It's like a big deal kind of thing, and then when I moved over to this area my husband was like well actually there is like a huge amount of them through here. And so in the beginning I was almost like in disbelief of that. But there are lots of, being able to like show that, my kids that they're through there it's pretty amazing because they're like a massive bird. It's not one we would ever hunt, same as eagles we'd never hunt them. But it's just really interesting that they're there.*

*I don't see them as much anymore. There, it would be, I guess like the area I showed you before that they call like Alexander Marsh in there, there is one spot where there is cranes. And then the other, I'm going to wait for the next one...Yeah, and for other birds like I mean we have, we have tons, and I guess especially like when we're on the Assiniboine Valley that's where you see like everything. You see birds in there, it's like pretty amazing that you don't even notice in other places ever that are like specific there.*

**Fish spawning (93 locations):** Participants identified fish spawning locations for pickerel, northern pike, carp, yellow perch, sucker, carp, goldeye, catfish, trout, sauger, burbot and lake whitefish. Pickerel was the fish species most commonly connected to fish spawning sites. Spawning sites were usually associated with mouths of rivers, small streams, creeks and drainage ditches. There was one **(1)** pickerel spawning area mapped within the 45m pipeline ROW.

*They come all the way from the Assiniboine right up to Wawanesa dam. They come out of the Assiniboine into the Souris River and then up to - the Wawanesa is on the Souris River. But the big river is the Assiniboine. Everything comes from there into the little places, they just filter down and spawn and come back.*

*We do a lot of fishing on the Assiniboine River but the tributaries - I heard you mention Oak Creek, the Souris Creek, Black Creek, those all run down into the Assiniboine and that's where the pickerel all spawn up in these areas where I am and I fish a lot. So I'm worried about – you know, I don't want an oil spill in the river. We'll have no fish, that's my concern really.*

*Well, they spawn at the mouth of the Souris River where it hits the Assiniboine and then up on the Souris River going towards Souris there's Oak Creek and Black Creek. They spawn up all in the little creeks in the spring and particularly Oak Creek we do a lot of fishing in it in the spring, which is a very small creek too. If it got disturbed and got changed, it wouldn't spawn there.*

**Plant Habitat (23 locations):** Participants identified important plant habitat for Seneca root, sweet grass, rhodesia dogwood, wild turnip, pink lady's slipper, poplar, wild asparagus and morel mushrooms. There were five **(5)** plant habitat locations mapped in the 1km ROW and three **(3)** are in the 45m pipeline ROW.

Species identified within 45m of the ROW include: sage, sweet grass (the participant who noted both sage and sweet grass stated that there is no concern for these two plants in this area as there is an abundance of habitat for these species), lady's slipper, and cactus.

*South of Virden in that area is where we get all of our sweet grass and sage. And there's not many places left that have sage...My main concern would be more things*

*like the sage and the sweet grass. Because we have... Especially with sage, sage in our area is very much going away because of farmers clearing the land.*

*Yeah, I mean like the sage and sweet grass they're common everywhere and I mean both have very strong ceremonial purposes, [like] your sage and sweet grass, those are going to grow in non-marshy areas. Okay, that's Souris right there? ...In the summer and it's like any other perennial plants, it comes up once the growing season starts....I think there's lots of habitat for it to grow, but I mean from the point of what's there, those would be some of the things you'd be losing.*

**Wild Rice (4 locations):** Participants identified the locations of four wild rice areas, one of which is located in a protected area. One **(1)** of these locations is within the 1km Pipeline ROW.

**Wetlands (60 locations):** Participants described wetlands in terms of the types of vegetation and animal species that they have commonly seen in these locations, as well as the nature of water levels they have observed. Participants associated wetlands with good habitat for moose, deer, ducks and geese. They also associated wetlands with hunting activities. Many participants considered the wetlands they identified to be sensitive and were concerned about potential impacts of Line 3 on these areas. There were thirteen **(13)** identified wetland areas within the 1km Pipeline ROW, ten **(10)** are within the 45m Pipeline ROW.

Some of the participants who noted wetlands within the 45m and 1km ROWs discussed the sensitivity of the wetlands in these particular areas and/or the potential harm the pipeline could cause to the wetlands in these areas (e.g. points 1305-5 and 1601-6).

*Yeah, through this area here there are substantial wetlands and then also there, I think it's kind of a continuation of Oak Creek or Oak Lake. So that would probably the major one, then of course all the sloughs through there....Yeah, so that would -- yeah, from [unintelligible] straight across, or even through Alexander, where you can see the Alexander Marsh there. So it is a very large area....And the other thing with the marshes is they're also a great deer habitat as well.*

**Insects Habitat (16 locations):** Several participants were able to identify locations where they had observed insects such as, dragonflies, bees, spiders, fireflies and moths. A total of six **(6)** of these locations are within the 1km ROW, five **(5)** are within the 45m pipeline ROW.

*Bees, we used to see a lot of bees, but now it's you know getting less and less. You know what happened one day, we were sitting in our backyard ... Like we live in town and we're just sitting there, it was a nice warm day, you know sitting on the deck, having a drink and all of a sudden ... Because where our deck is in a like facing towards the back alley. And then all of a sudden we could hear this humming sound, we couldn't figure out what it was and then all of a sudden there was a swarm of bees probably about the size of that wall that all came right down the back alley... And we just headed for the house, but it just went right past us ... Just went right through like they were on a mission to go somewhere and they didn't stop thank God, but no we used to see bees, wasps, all that, not so much lately ... Not so much.*

**Amphibians and Reptiles (47 location):** Participants identified habitats for turtles (snapping, painted), snakes (garter, red ruby chested, hognose), frogs (leopard), toads, salamanders, and skinks. Many



participants could identify specific locations or areas they had seen snakes or turtles, though they were not always able to identify the specific species. Habitat for turtles was identified most frequently. A total of eight **(8)** amphibian and reptile sites are located within the 1km ROW, and five **(5)** are within the 45m pipeline ROW with multiple species.

*The garter snake, go in the winter and it's called, "Denning area," in rock formation underground. They spend the winter there and in the spring the female is three times the size of the male. They have a mating ball. And you can have a mating ball that's the size of a soccer ball and the big female always – the head is always sticking out and she has a whole bunch of males around her. It's called a mating ball. They come in the spring and you'll have snakes – my kids, when they were young – I hate touching snakes – but they were always picking them up, scaring mom.*

*When they come out, the female comes out, it attracts the male – pheromones. Anyway, and she's so much bigger than the male and one of the male – she only breeds with one, but they form a mating ball. For somebody who's never seen that it's a spectacle and a half...I'm sure, 25 – 30 males forming a ball around her.... They would spring out. They'd go – in the fall they go into the denning area and they come out in the spring and then they spread all close to the lakes – eat frogs, grasshoppers, whatever.*

*Lots of salamanders, lots of snakes, garter snakes...all summer. They're just always there...Them and gophers.*

*Well, you don't see them in the winter time because they just burrow up into a big pit. But you see them all summer. Like we've had some pretty big ones in the yard and I seen a little one this morning when I took the dog for a walk before I came to town about that long just slithering across the road. The dog chased it into the long grass. So, I've heard talk from some of the other people around Nesbitt that there is a large number of snakes in certain places. They're not on my yard but they're close to somebody else's.*

**Species at Risk (112 locations):** Many participants were able to identify locations where they had observed Manitoba species at risk (SAR), including mammals, birds, amphibians, insects, and plants. Mule deer, burrowing owl, trumpeter swan, hognose snake, buffalograss, peregrine falcon, prairie skink, white lady's slipper, red-headed woodpecker, Canadian warbler, whooping crane, eskimo curlew, swift fox, greater prairie chicken, loggerhead shrike, ottoe skipper, short eared owl, golden-winged warbler, gattingers agalinis, rough agalinis, smooth goosefoot, prairie fringed orchid, western ironwood, western spiderwort, hairy prairie clover, riddells goldenrod, western silvery aster, white flower moth, Dakota skipper, ridings satyr, least bittern, common nighthawk, and ferruginous hawk locations were all identified by participants. Locations where burrowing owls had been seen were mentioned most frequently. Moreover, the area southwest of Spruce Woods Provincial Park has an abundance of rare plant and insect species, many of which are species at risk. There were 13 species at risk sites mapped in the 1km ROW associated with a variety of species; one **(1)** site for burrowing owl and one **(1)** for prairie skink were located within the 45m pipeline ROW. Thirteen **(13)** sites associated with a variety of other species were mapped within the 1km ROW.

*This hawk – it's a Ferruginous Hawk – they're around all over the Interlake as well. And there's Bittern; we call them shypokes, it's just like a little stick in the grass and as kids we used to say timbuk, timbuk, that's the noise they would make in the evenings and you would hear them out there in the marsh.*

*These little guys here, the little owl here, that Burrowing owl, I went to [Oak Hammock] and it was kind of raining and I looked on the side of the road and here's two of these little guys sitting there by a borough and they're looking at me as if to say...and they're all wet in their face and they're looking at me and said, did you bring this on?... I've been staring them in the face and he was staring back at me, and I said I go there in the evening and they fly in the evening and they have an erratic flight pattern, you know, they'll flop-flop back all over like this.*

*[I saw the burrowing owl] South of Virden...Same place that we hunt...Well, it's... That's Oak Lake, if you go west to Virden....area of about... probably about 100 kilometres each direction....[I've seen them there] Since I was a kid...But there's not many anymore...Probably the last 15 to 20 years.*

*Along the river where I go east, you know, Treesbank. Wawanesa and Treesbank area. They [little white lady's slippers] grow in a dam, they grow in the marshes and or they grow along the river. Oak Creek.*

*This spring by Treesbank, my daughter and I were out checking stuff out and we saw a skink...it's almost endangered. There's very few of those guys around. The average person never had seen one like that. But they're in our area here, the Carberry area. You know Carberry, Stockton...We see them about May. We've seen them in the spring – I guess you could see one anytime...They were very elusive, just lucky to spot one. They look like a little dinosaur and run along on their legs standing upright. I was amazed when I saw one...time.*

*There is some mule deer there in our area, but not very many, and on a very...like, they're hard to tell the difference. I would say because the horns grow closer together and taller...One particular place I can show you, it's right close to Highway Number 5, junction on Number 5 and 253... [I saw the mule deer] one time, and they hop differently that a white-tailed deer...this was quite a few years ago, probably five or eight years ago, and it was in the late fall.*

**Sensitive Habitats (29 locations):** Participants identified habitats that they felt were sensitive for a number of reasons. Some of these reasons included proximity to the Line 3 pipeline and infrastructure; low potential for clean-up/remediation if there was a spill or accident; the importance of the area as a harvesting location (hunting and fishing); or because of the impacts the location has already been subjected to from previous disturbances, such as clear-cutting and oil-well development. Many sites participants identified were associated with water. There were fourteen **(14)** sensitive habitats identified within the 45m pipeline ROW and thirteen **(13)** in the 1km ROW.

*...In the Pembina Valley, in and along these water courses here, are quite sensitive.*

*Well, like I said, the mouths of the creeks. I mean that would change the fishing patterns. The fish come out of the river into the mouths of the creeks that go and spawn. If you go in there with a bulldozer and moved it over 100 yards, they may not come back there. That's only my concern would be.*

*During the summer [these areas would be most sensitive] because during the winter frogs are hibernating. Salamanders are hibernating. I don't know about turtles, what they're doing under the water. There's beaver on the river as well. So, I don't know if there's any in this area but I know in the wildlife management area where we're fishing we watch a whole family of beavers every night. They come out and up and down the bank and they've got their huts there*

**Other Important habitat (39 locations):** Participants shared their knowledge of sites or areas that are important for animals and fish but did not necessarily fall into one of the categories outlined above. Some of these sites included areas where mussel shells have been seen along a riverside (potential riverine habitat for mussels); important habitats for muskrat and porcupines; and areas where moose, deer, elk, coyotes have been seen but are not necessarily known to be associated with a specific seasonal use. Eight **(8)** of these sites were identified within the 45m pipeline ROW. Within both the 1km ROW and 45m ROW, participants recorded important habitat for moose, deer, muskrat and elk.

Participants discussed the potential negative impact a possible spill could have on trapping incomes as well as on animal populations in these ROW areas.

*Some of it depends on the landscape; you asked about marshes and stuff, moose goes different places. A lot of the stuff in Boise's Bay, giant marshes and things like that up north. We have literally small sloughs. That's where they're here, you know?*

*No, they just live there. It's all sloughs and stuff hey, like stuff that can't really be drained, so you know it's always there. It's not like you know a lot of places where sure they're there but it dries up in the middle of summer and they pack up and leave, if the coyotes or the mink don't get them first. And it's not only that, it's all trapping area. There was a law up till -- there were a lot of people used to supplement their farm incomes off of that, you know...Well, just trapping in general it could potentially, it's like you know heaven forbid there is an accident, but you know that would be just terrible because how do you clean that up. It's not like you know mopping it up off the floor, like it gets in the water and it spreads, and that sloughy muddy ground, it just sucks everything in.*

*But they seem to have been able to keep working at what they've had with pipeline you know over the years and I don't remember anything ever happening. Maybe they kind of disturbed the land a bit when they put it in because practices were a lot different then; you know it's not like now. But yeah, they've got to watch what they're doing I'll say that, you know all the way around, when they're going through it and you know.*

*Because I know even like I say, you know, I was a mechanic with a construction outfit for 30 years and all it takes is an oil leak on a machine or something like that, like it*

*might not today but you know all it's got to do is kill a bunch of frogs and then something else comes along and eat the frogs. You know, it's a chain.*

*You know, that's maybe not a good example but you get the gist of what I mean. It's all sorts of things, variables that can affect the whole area.*

The TEK data that was mapped can be found, organized by category, in the following figures (Figure 6 to Figure 18). The descriptive information explaining each corresponding point, polygon or line on the maps can be found in the following tables (Table 7 to Table 13).

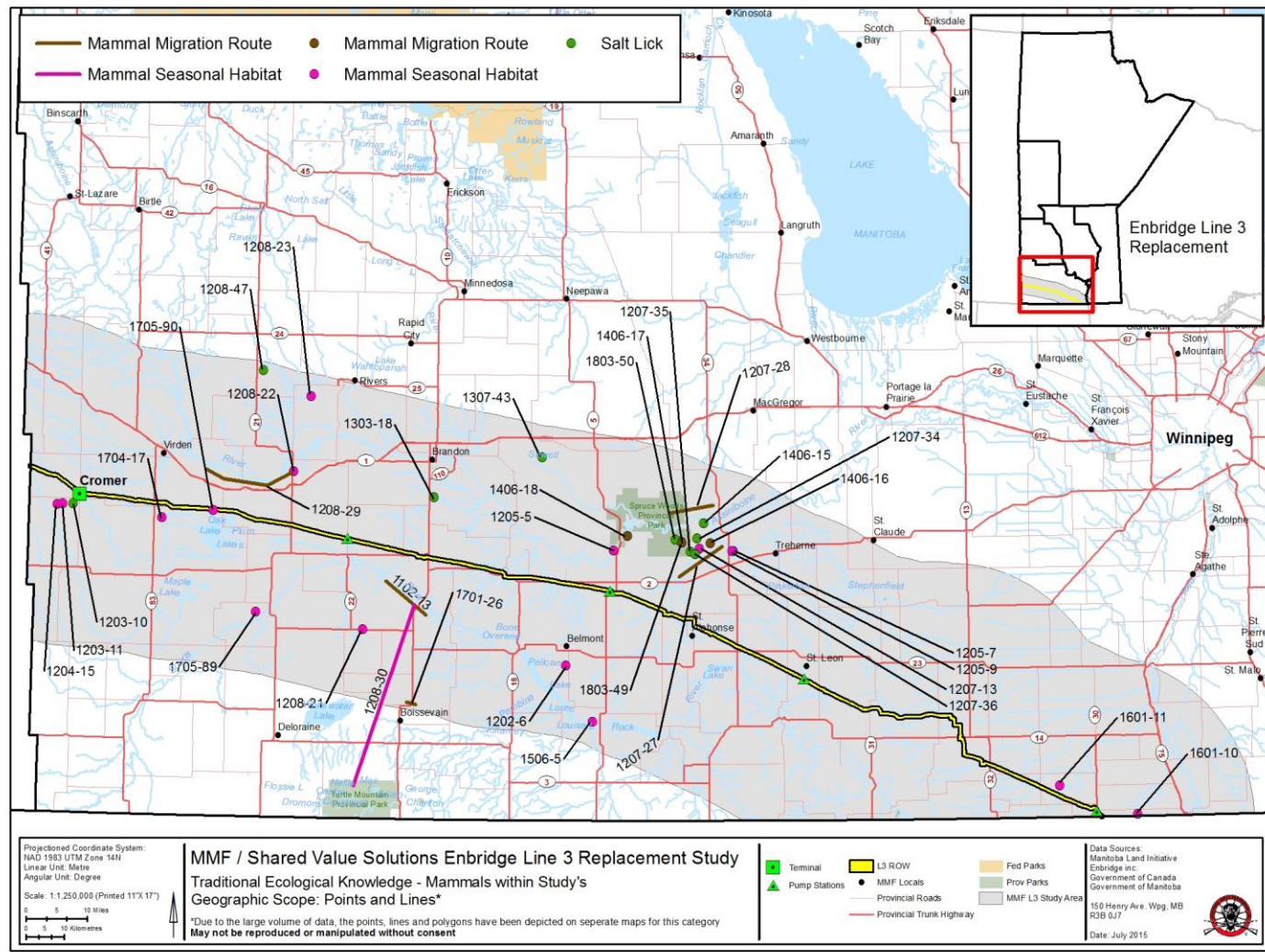


Figure 6. Traditional Ecological Knowledge – Mammals within Study's Geographic Scope: Points and Lines



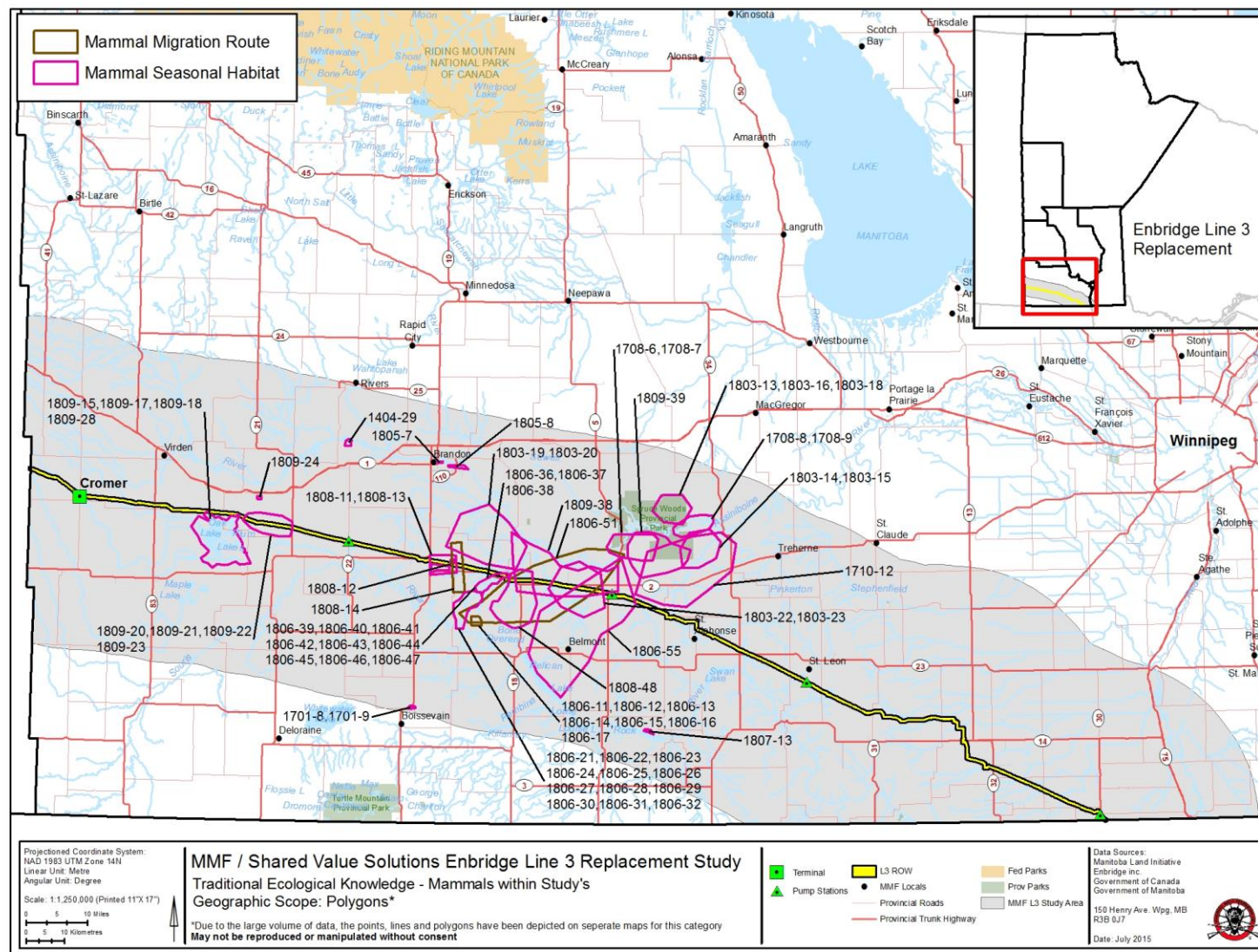


Figure 7. Traditional Ecological Knowledge – Mammals within Study's Geographic Scope: Polygons 1

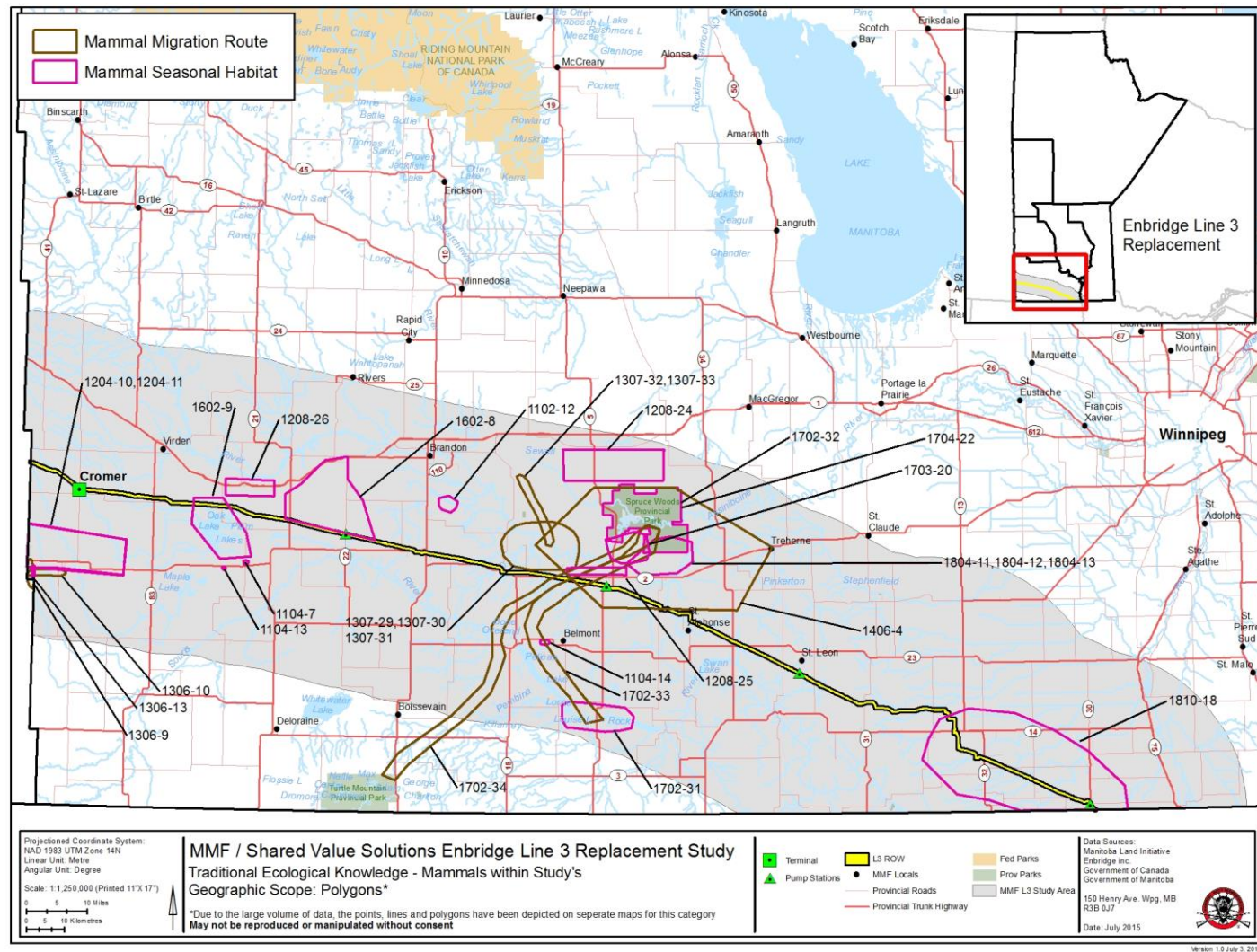


Figure 8. Traditional Ecological Knowledge – Mammals within Study's Geographic Scope: Polygons 2



Table 7: Traditional Ecological Knowledge – Mammals

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1102-13			Mammal Migration Route	Moose Deer	Animals migrate along the river in this area. Moose in particular. Lots of deer in the area, but often see moose on the move. Deer stay in this area.
1207-27			Mammal Migration Route	Elk	Sometimes the elk will travel across the river, but mostly will stay on dry area. The elk herd and travel far.
1207-28			Mammal Migration Route	Elk	Sometimes the elk will travel across the river, but mostly will stay on dry area. The elk herd and travel far.
1208-29			Mammal Migration Route	Moose	
1306-10			Mammal Migration Route	Moose	The route runs east to west - the moose tend to stay within the St. Clair area because it is the ideal habitat, although they do migrate north a little.
1306-9			Mammal Migration Route	Moose	The route runs east to west - the moose tend to stay within the St. Clair area because it is the ideal habitat, although they do migrate north a little.
1307-30			Mammal Migration Route	Moose	
1307-31			Mammal Migration Route	Elk	Originally the deer, moose and elk all came from the park and stuck around the area all year round.
1307-32			Mammal Migration Route	Elk	Elk come out of Spruce Woods Park and come to the Souris or Assiniboine river to drink.
1307-33			Mammal Migration Route	Moose	Elk come out of Spruce Woods Park and come to the Souris or Assiniboine river to drink.
1406-16			Mammal Migration Route	Buffalo (historic)	Historic buffalo migration route
1406-17			Mammal Migration Route	Buffalo (historic)	Historic buffalo migration route
1406-18			Mammal Migration Route	Buffalo (historic)	Historic buffalo migration route
1406-4	YES	YES	Mammal Migration Route	Elk	
1701-26			Mammal Migration	Deer	Deer would come in the hundreds, migrating from Killarney.

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
			Route		
1702-33	YES	YES	Mammal Migration Route	Elk	Elk migrate from south of Neelin toward Ninette up through Hilton over into the Spruce Woods park. Usually travel south to north in December and north to south in April.
1702-34	YES	YES	Mammal Migration Route	Elk	Elk migrate from south of Neelin toward Ninette up through Hilton over into the park. Usually travel south to north in December and north to south in April.
1804-12			Mammal Migration Route	Elk	North of Cypress river
1806-17			Mammal Migration Route	Rabbit	
1806-51	YES	YES	Mammal Migration Route	Elk	Fall elk migration route. Will see 50-60 animals.
1808-14	YES	YES	Mammal Migration Route	Moose	
1102-12			Mammal Seasonal Habitat	Deer	Deer use this area all year long, but there is fawning happening here as well. It's a protected area here, so it's pretty good habitat.
1104-13			Mammal Seasonal Habitat	Elk	Have gone hunting for elk in the area and saw the elk, but never harvested one.
1104-14			Mammal Seasonal Habitat	Elk	
1104-7			Mammal Seasonal Habitat	Moose	Saw the moose here during deer hunting season - saw 1 small bull on a recent hunting trip for deer.
1202-6			Mammal Seasonal Habitat	Deer	Wintering habitat. Thinks it's a pretty healthy population in this area.
1203-10			Mammal Seasonal Habitat	Moose	Rutting areas. The moose go where there are bigger areas of water.
1203-11			Mammal Seasonal Habitat	Moose	Rutting areas. The moose go where there are bigger areas of water.
1204-10			Mammal Seasonal Habitat	Deer	Calving. Also migration areas all through here.
1204-11			Mammal Seasonal Habitat	Moose	Calving and migration areas.

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1205-5			Mammal Seasonal Habitat	Deer	Last year there was less big game in this area Deer use this area in September-November. Have seen fawns in the area but it isn't birthing area.
1205-7			Mammal Seasonal Habitat	Deer	Rutting area for deer.
1205-9			Mammal Seasonal Habitat	Elk	Rutting area for elk.
1207-13			Mammal Seasonal Habitat	Elk	You will see elk in a certain areas and then will not see them again for 14 days. Elk will travel around to feed and rut. As the fall progresses they will stay mostly in the park area. Have seen them rutting. Have seen bulls fighting over a harem of cows.
1208-21			Mammal Seasonal Habitat	Moose	
1208-22			Mammal Seasonal Habitat	Moose	
1208-23			Mammal Seasonal Habitat	Moose	
1208-24			Mammal Seasonal Habitat	Elk	
1208-25			Mammal Seasonal Habitat	Elk	
1208-26			Mammal Seasonal Habitat	Deer	
1208-30			Mammal Seasonal Habitat	Moose	
1306-13			Mammal Seasonal Habitat	Rabbits	Close to the Saskatchewan border. Ducks and geese visible everywhere in the fall - the areas are all pretty diverse with animal species - they will be hunting deer but have to move out of the way for a moose and they will see plenty of ducks on their hunt.
1307-29			Mammal Seasonal Habitat	Deer	
1404-29			Mammal Seasonal Habitat	Deer	Used to be amazing deer habitat.
1506-5			Mammal Seasonal	Deer	Not specific point but represents a general are where deer are located.

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
			Habitat		
1601-10			Mammal Seasonal Habitat	White-tailed deer	Rutting and calving area for White-tailed deer.
1601-11			Mammal Seasonal Habitat	White-tailed deer	Calving and rutting.
1602-8		YES	Mammal Seasonal Habitat	Muskrat Deer Fox Coyote Beaver Mice Squirrels	Muskrat, deer, fox coyotes, beaver, mice, squirrels etc. Mammals here all year round. Annual fluctuations in water levels - not man made, but water fluctuations happening. These are the main areas - but whole area is rich habitat.
1602-9	YES	YES	Mammal Seasonal Habitat	Muskrat Deer Fox Coyote Beaver Mice Squirrels	Muskrat, deer, fox coyotes, beaver, mice, squirrels etc. Mammals here all year round. Annual fluctuations in water levels - not man made, but water fluctuations happening. Migratory place for wetland birds
1701-8			Mammal Seasonal Habitat	Moose	
1701-9			Mammal Seasonal Habitat	Moose	
1702-31			Mammal Seasonal Habitat	Deer	Deer wintering area. Have seen deer gather in the valley during winter months.
1702-32			Mammal Seasonal Habitat	Elk	Gather in park during the winter.
1703-20			Mammal Seasonal Habitat	Elk	Find antlers there in the spring, think they might be there all year round because there's no other bush nearby for them to use.
1704-17			Mammal Seasonal Habitat	Deer	
1705-89			Mammal Seasonal Habitat	Deer	Deer habitat - where fawns are born.

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1705-90		YES	Mammal Seasonal Habitat	Deer	Deer habitat - where fawns are born. Enbridge should be aware of what they're doing. When using big pieces of machinery you can't see small animals you might be impacting. Pay attention to what's there before you start.
1708-6			Mammal Seasonal Habitat	Elk	
1708-8			Mammal Seasonal Habitat	Elk	
1710-12			Mammal Seasonal Habitat	Deer Elk	<p>The deer will use this whole area - there is a lot of agriculture going on and a lot of the habitat is already gone, though feeding is still good because of the agriculture. For bedding and safety, deer are using small rows of trees but those are far and few between.</p> <p>Along the Cyprus river (the whole watershed) flows through private lands, and it is all deer and elk habitat. Currently and last season, licensed hunters they were allowed 2 deer per season and in that area it was either a buck or a doe and this last season (2014) they cut that all out and you were allowed 1 buck only. That was mostly because the last winter was really harsh and the habitat for the lactating doe is bad and the populations have decreased.</p> <p>So the whole area is important for the deer population - mule deer as well. What is left of whitetail habitat is significantly important, and it won't take much to remove the deer from that area.</p> <p>Construction of the roads will give access to the harvesters and that will impact the deer population.</p> <p>Time of the construction is important - the deer are trying to recover from a couple of really bad winters and so the disturbance from the line and the construction of the line would have a temporal impact.</p>
1803-13			Mammal Seasonal Habitat	Elk	Breeding Area.
1803-14			Mammal Seasonal Habitat	Elk	
1803-15			Mammal Seasonal Habitat	Deer	

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1803-16			Mammal Seasonal Habitat	Deer	
1803-18			Mammal Seasonal Habitat	Feral Pigs	
1803-19			Mammal Seasonal Habitat	Deer	
1803-20			Mammal Seasonal Habitat	Elk	
1803-22	YES	YES	Mammal Seasonal Habitat	Deer	
1803-23	YES	YES	Mammal Seasonal Habitat	Elk	
1804-11			Mammal Seasonal Habitat	Deer	
1804-13			Mammal Seasonal Habitat	Black bear	
1805-7			Mammal Seasonal Habitat	Deer	Deer gather along the CP rail line to eat grain that has fallen off the train cars.
1805-8			Mammal Seasonal Habitat	Deer	Deer feed on grain that has fallen from rail cars, east of Brandon.
1806-11			Mammal Seasonal Habitat	Deer	Big tiger is about 3 km by 1km.
1806-12			Mammal Seasonal Habitat	Elk	
1806-13			Mammal Seasonal Habitat	Moose	
1806-14			Mammal Seasonal Habitat	Coyote	
1806-15			Mammal Seasonal Habitat	Wolves	
1806-16			Mammal Seasonal Habitat	Bear	
1806-21			Mammal Seasonal Habitat	Deer Wolf Elk	Souris River Wildlife Management Area Represents the general area where many mammal species use habitat. Furbearers (pine marten, weasel, mink, rabbits)

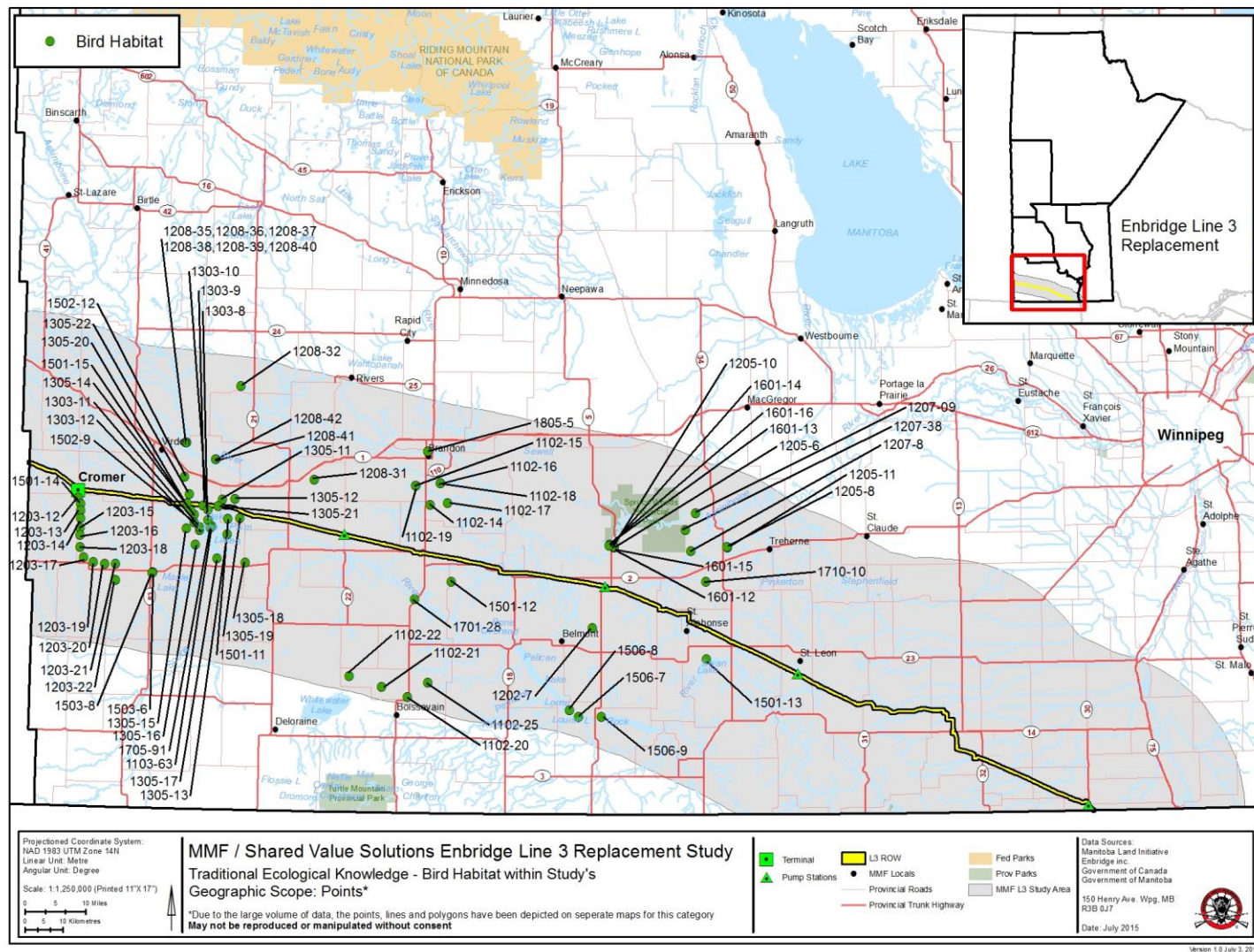
Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
				Moose Coyote Bear Furbearers	
1806-22			Mammal Seasonal Habitat	Deer	Souris River Wildlife Management Area
1806-23			Mammal Seasonal Habitat	Elk	Souris River Wildlife Management Area
1806-24			Mammal Seasonal Habitat	Moose	Souris River Wildlife Management Area
1806-25			Mammal Seasonal Habitat	Wolf	Souris River Wildlife Management Area
1806-26			Mammal Seasonal Habitat	Coyote	Souris River Wildlife Management Area
1806-27			Mammal Seasonal Habitat	Pine marten	Souris River Wildlife Management Area
1806-28			Mammal Seasonal Habitat	Fisher	Souris River Wildlife Management Area
1806-29			Mammal Seasonal Habitat	Rabbit	Souris River Wildlife Management Area
1806-30			Mammal Seasonal Habitat	Mink	Souris River Wildlife Management Area
1806-31			Mammal Seasonal Habitat	Weasel	Souris River Wildlife Management Area
1806-32			Mammal Seasonal Habitat	Bear	Souris River Wildlife Management Area
1806-36	YES	YES	Mammal Seasonal Habitat	Deer Wolf Elk Moose Coyote Bear Furbearers	Wildlife corridor under bridge used by many mammals. Pollution and destruction of habitat is already changing the land so that animals can't use it. Worry about breaches and poisoning, worry about this area and all the way down to Winnipeg. In the Souris and Assiniboine rivers, clean up would be impossible. Pollution from construction is not as concerning. Construction would alter the ability of animals to move back and forth and would alter things for a few years and that will all depend on how



Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
					well the habitat is reclaimed.
1806-37	YES	YES	Mammal Seasonal Habitat	Deer	
1806-38	YES	YES	Mammal Seasonal Habitat	Elk	
1806-39	YES	YES	Mammal Seasonal Habitat	Moose	
1806-40	YES	YES	Mammal Seasonal Habitat	Wolf	
1806-41	YES	YES	Mammal Seasonal Habitat	Coyote	
1806-42	YES	YES	Mammal Seasonal Habitat	Pine marten	
1806-43	YES	YES	Mammal Seasonal Habitat	Fisher	
1806-44	YES	YES	Mammal Seasonal Habitat	Rabbit	
1806-45	YES	YES	Mammal Seasonal Habitat	Mink	
1806-46	YES	YES	Mammal Seasonal Habitat	Weasel	
1806-47	YES	YES	Mammal Seasonal Habitat	Bear	
1806-55	YES	YES	Mammal Seasonal Habitat	Deer Wolf Elk Moose Coyote Bear Furbearers	Glenboro/Belmont area. Many species use this area.
1807-13	YES	YES	Mammal Seasonal Habitat	Deer	
1808-11			Mammal Seasonal Habitat	Moose	
1808-12		YES	Mammal Seasonal	Moose	

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
			Habitat		
1808-13	YES		Mammal Seasonal Habitat	Deer	
1808-48	YES	YES	Mammal Seasonal Habitat	Elk	Concerned about the disruption to the Elk population that could happen as a result of a construction or operation spill.
1809-15	YES	YES	Mammal Seasonal Habitat	Moose	
1809-17	YES	YES	Mammal Seasonal Habitat	Foxes	
1809-18	YES	YES	Mammal Seasonal Habitat	Deer	
1809-20	YES	YES	Mammal Seasonal Habitat	Deer	
1809-21	YES	YES	Mammal Seasonal Habitat	Moose	
1809-22	YES	YES	Mammal Seasonal Habitat	Fox	
1809-23	YES	YES	Mammal Seasonal Habitat	Coyote	
1809-24			Mammal Seasonal Habitat	Moose	
1809-28	YES	YES	Mammal Seasonal Habitat	Mink	
1809-38	YES	YES	Mammal Seasonal Habitat	Elk	
1809-39			Mammal Seasonal Habitat	Elk	
1810-18	YES	YES	Mammal Seasonal Habitat	Deer Moose	Construction may cause habitat disturbance. Construction may create new access routes, which may increase hunting and disturbance of animals in the area. This already fragmented habitat should not be further fragmented.
1204-15			Salt Lick	Deer	Approximate location. Very close.
1207-34			Salt Lick	Large game and sometimes cattle	

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1207-35			Salt Lick	Large game and sometimes cattle	
1207-36			Salt Lick	Large game and sometimes cattle	
1208-47			Salt Lick		
1303-18			Salt Lick	Deer	
1307-43			Salt Lick	Moose Elk Deer	Moose tracks here at the salt lick. There is a lake called Seagull lake and it is just off a trail. Used by moose, elk, and deer.
1406-15			Salt Lick		
1803-49			Salt Lick	Deer Elk	Mineral access in the sand.
1803-50			Salt Lick	Deer Elk	Mineral access in the sand.





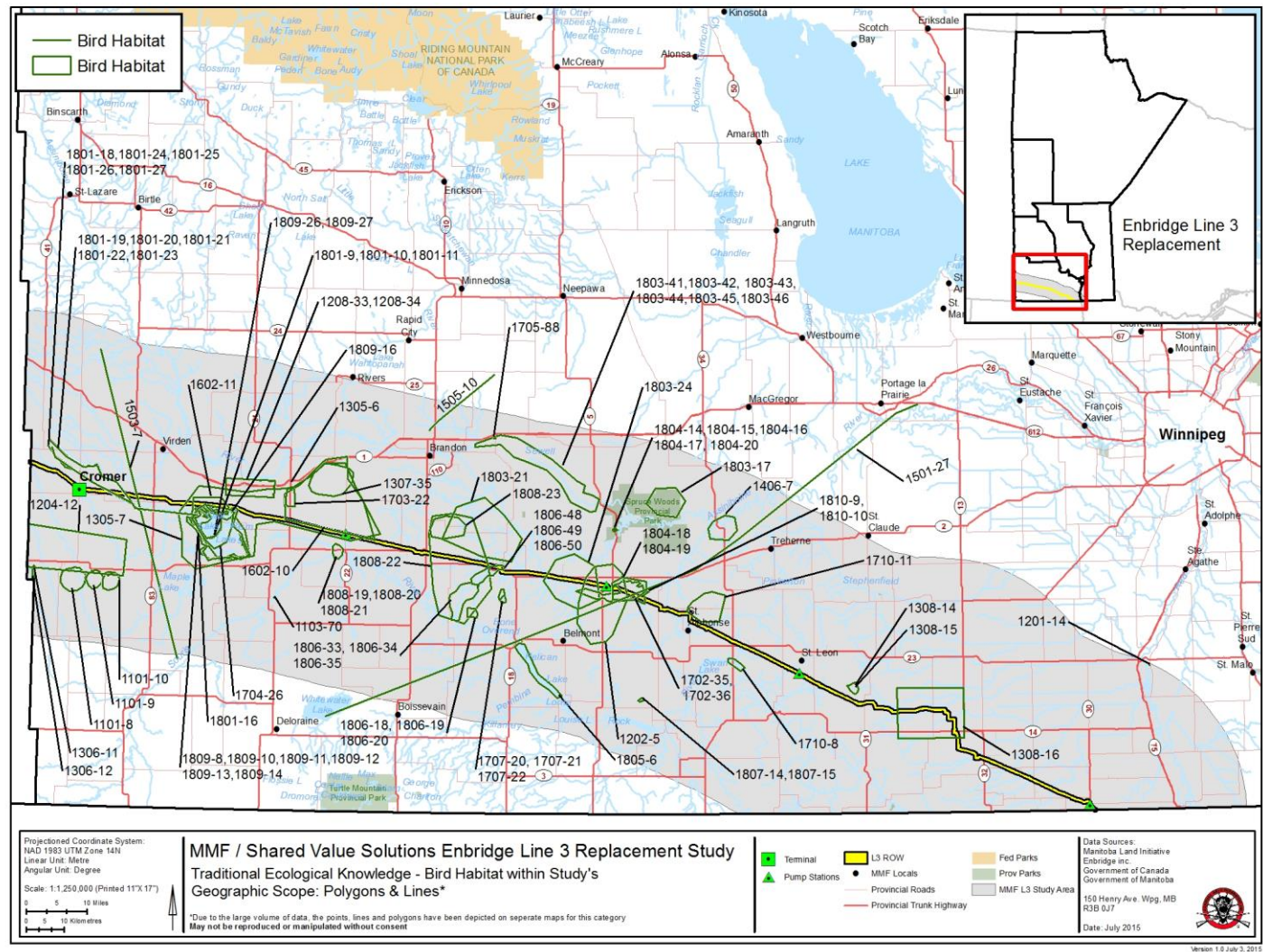


Table 8. Traditional Ecological Knowledge – Birds

Map-ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
1101-10			Sandhill crane	Thousands of sandhill cranes in this area in the fall.
1101-8			Sandhill crane	Thousands of sandhill cranes in this area in the fall.
1101-9			Sandhill crane	Thousands of sandhill cranes in this area in the fall.
1102-14			Duck	Nesting
1102-15			Duck	Nesting
1102-16			Duck	Nesting
1102-17			Duck	Nesting
1102-18			Goose	Migration in the area
1102-19			Goose	Migration in the area
1102-20			Duck	Nesting
1102-21			Duck	Nesting
1102-22			Goose	Migrating
1102-25			Goose	Migrating
1103-63			Duck	
1103-70			Mallard Goose	Thousands of mallards that were eating a field of peas - noticed because there were so many that they were shimmering.
1201-14			Blue-winged teal Mallard Mudhen	
1202-5	YES	YES	Snow goose	There are more snow geese here than there used to be. When the regulations were changed around hunting to the use of a steel shot, people didn't want to hunt them as much.
1202-7			Duck Mallard Blue-winged teal	Nesting areas for mallard and teal. Generally good area for harvesting birds.
1203-12			Duck	More ducks now than ever before. The ducks are all around this area anywhere there is water.
1203-13			Duck	More ducks now than ever before. The ducks are all around this area anywhere there is water

Map-ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
1203-14			Duck	More ducks now than ever before. The ducks are all around this area anywhere there is water
1203-15			Duck	More ducks now than ever before. The ducks are all around this area anywhere there is water
1203-16			Duck	More ducks now than ever before. The ducks are all around this area anywhere there is water
1203-17			Duck	More ducks now than ever before. The ducks are all around this area anywhere there is water
1203-18			Duck	More ducks now than ever before. The ducks are all around this area anywhere there is water
1203-19			Duck	More ducks now than ever before. The ducks are all around this area anywhere there is water
1203-20			Duck	More ducks now than ever before. The ducks are all around this area anywhere there is water
1203-21			Duck	More ducks now than ever before. The ducks are all around this area anywhere there is water
1203-22			Duck	More ducks now than ever before. The ducks are all around this area anywhere there is water
1204-12			Grouse	Sharp tail and a few rough grouse. Good habitat because they are able to get food from grain and there is still enough bush left here for them here. Concerned about the grouse population because they eat the grain sprayed with pesticides, which is depleting the population. He sees fewer every year.
1205-10			Grouse	Usually see 2-3 together, likely nesting in the area.  See them under spruce trees.
1205-11			Grouse	See them year-round, but mainly in the fall in groups of 2-3. See other birds flying around like raven and eagles.
1205-6			Sandhill crane Goose	
1205-8			Goose	Geese migrate in the fall.
1207-38			Turkey	
1207-8			Great blue heron	Very old colony of blue herons.



Map-ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
1207-9			Swan	Waterfowl reserve on the American side of the border where this type of swan had a staging area and would feed and then come across the Spruce Woods and to the Assiniboine river to feed. They would travel back and forth between America and Canada
1208-31			Crane	
1208-32			Crane	
1208-33			Warbler	Nesting area.
1208-34			Owl	
1208-35			Great blue heron	
1208-36			Mallard duck	
1208-37			Blue-winged teal duck	
1208-38			Loon	
1208-39			American Coot	
1208-40			Geese	
1208-41			Bald eagle	
1208-42			Golden eagle	
1303-10			Ducks	Bluebills, Canada goose- any and all species of ducks and geese. Geese raise their young in a smaller areas but ducks mover around all over. South and West boundaries of the lake are the main areas the birds stay.
1303-11			Goose	Bluebills, Canada goose- any and all species of ducks and geese. Geese raise their young in a smaller area but ducks mover around all over. South and West boundaries of the lake are the main areas the birds stay.
1303-12			Duck	Bluebills, Canada goose- any and all species of ducks and geese. Geese raise their young in a smaller area but ducks mover around all over. South and West boundaries of the lake are the main areas the birds stay.
1303-8		YES	Duck	Bluebills, Canada goose- any and all species of ducks and geese. Geese raise their young in a smaller area but ducks mover around all over. South and West boundaries of the lake are the main areas the birds stay.
1303-9			Goose	Bluebills, Canada goose- any and all species of ducks and geese. Geese raise their young in a smaller area but ducks mover around all over. South and West boundaries of the lake are the main areas the birds stay.

Map-ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
1305-6	YES	YES	Ducks	
1305-11			Sandhill crane	
1305-12			Sandhill crane	
1305-13			Sandhill crane	
1305-14			Sandhill crane	
1305-15			Ducks	
1305-16			Ducks	
1305-17			Ducks	
1305-18			Swan	
1305-19			Owls	
1305-20		YES	Pheasant	
1305-21	YES	YES	Turkey	
1305-22			Woodpecker	
1305-7	YES	YES	Geese	
1306-11			Duck	The bird habitat is close to the Saskatchewan border. Ducks and geese visible everywhere in the fall - the areas are all pretty diverse with animal species - ex: they will be hunting deer but have to move out of the way for a moose and they will see plenty of ducks on their hunt as well.
1306-12			Geese	Close to the Saskatchewan border. Ducks and geese visible everywhere in the fall. This areas is diverse with animal species - they will be hunting deer but have to move out of the way for a moose and they will see plenty of ducks on their hunt.
1307-35			Duck	The big marshes are usually where birds go to lay their eggs. White Water dried up years ago and it changed the bird migration patterns. Canada goose population greatly increased. Alexander Marsh is getting smaller and there are fewer habitats. Could be from drainage.
1308-14			Mallard duck	The ducks have main migration routes and stop near Lizard Lake before getting up to the north. In general, a lot of wildlife is concentrated in this area.
1308-15			Geese	
1308-16	YES	YES	Wild turkey	Turkeys are seen by the sand hills around Boissevain towards Brandon.
1406-7			Great blue heron	Go here for nesting only.

Map-ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
1501-11			Duck Goose Grouse Sandhill crane	
1501-12			Duck Goose Grouse Sandhill crane	
1501-13			Duck Goose Grouse Sandhill Crane	
1501-14			Grouse	Rough grouse, sharp-tailed grouse, Hungarian partridge (small birds in big flocks).
1501-15			Grouse	Rough grouse, sharp-tailed grouse, Hungarian partridge (small birds in big flocks).
1501-27	YES	YES	Snow goose	Snow geese migration route.
1502-12			Grouse	
1502-9			Geese	Approximate. Likely along their migration route.
1503-6			Grouse	Rough and sharp-tailed grouse are here all year.
1503-7	YES	YES	Goose Snow goose	Migration route. Geese are not travelling as far north as they used to and are staying put more often in the winter. Normally would go north of the pipeline and work their way back.
1503-8			Duck	Nesting area.
1505-10			Canada goose	Migration route.
1506-7			Goose Duck Great blue heron Partridge Rough grouse Hungarian partridge	There used to be pheasants in the area during childhood. Remembers that there were pheasant chicks released into the wild to try and boost the population - the pheasants were coming on to the road as they were attracted to the gravel and were getting run over.

Map-ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
1506-8			Goose Duck Great blue heron Partridge Rough grouse Hungarian partridge	There used to be pheasants in the area during childhood. Remembers that there were pheasant chicks released into the wild to try and boost the population - the pheasants were coming on to the road as they were attracted to the gravel and were getting run over.
1506-9			Goose Duck Great blue heron Partridge Rough grouse Hungarian partridge	There used to be pheasants in the area during childhood. Remembers that there were pheasant chicks released into the wild to try and boost the population - the pheasants were coming on to the road as they were attracted to the gravel and were getting run over.
1601-12			Canada goose	Concerned about the invasiveness of the project, and effects to the waterways.
1601-13			Mallard duck	Concerned about the invasiveness of the project, and effects to the waterways.
1601-14			Snow goose	Concerned about the invasiveness of the project, and effects to the waterways.
1601-15			Wood duck	Concerned about the invasiveness of the project, and effects to the waterways.
1601-16			Grouse	Spruce grouse and ruffed grouse. Concerned about the invasiveness of the project, and effects to the waterways.
1602-10		YES	Snow goose Canada goose Mallard Blue-winged teal Black birds Sparrows mallards	Wetland and size of the area makes it important - large sloughs across the landscape.
1602-11	YES	YES	Snow goose Canada goose Mallard Blue-winged teal Blackbird Sparrow Mallard	Wetland and size of the area makes it important - large sloughs across the landscape.
1701-28			Eagle	Nesting area
1702-35	YES	YES	Goose	
1702-36	YES	YES	Ducks	

Map-ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
1703-22			Duck Goose	
1704-26		YES	Goose	
1705-88				Not sure what species - a yellow bird - important habitat.
1705-91			Goose	Oak Lake goose refuge - large area.
1707-20			Ducks	Bird sanctuary
1707-21			Goose	Bird sanctuary
1707-22			Grouse	Bird sanctuary
1710-10			Great blue heron Sandhill crane Duck Goose	Swampy and overgrown area, even though on the map it looks like a river. Waterfowl use the area.
1710-11	YES	YES	Great blue heron Sandhill crane Ruddy duck Other duck sp.	Seven big lakes in this area. Blue herons are few and far between, but there are more here than in other places because it is all part of the ecosystem. Construction impact will be temporary, but if it is done in the spring then there is potential impact on the bird species. Suggest doing the work in the winter to avoid the birds being in the area. A lot of the land there is private land and agricultural land so a lot of the disturbance would already be existing, especially in the spring when you have seeders and sprayers.
1710-8			Bald eagle Golden eagle Duck Goose	Nesting for waterfowl along the Swan lake. The bald and golden eagles rely heavily on the rivers and lakes for feeding.
1801-10			Duck	Migration route.
1801-11			Hawk	
1801-16		YES	Blue heron	
1801-17	YES	YES	Crane	
1801-18	YES	YES	Goose	
1801-19	YES	YES	Duck	
1801-20	YES	YES	Goose	
1801-21	YES	YES	Hawk	

Map-ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
1801-22	YES	YES	Great blue heron	
1801-23	YES	YES	Crane	
1801-24	YES	YES	Duck	
1801-25	YES	YES	Hawk	
1801-26	YES	YES	Blue heron	
1801-27	YES	YES	Crane	
1801-9			Goose	Migration route
1803-17			Wild turkey	
1803-21			Wild turkey	
1803-24	YES	YES	Wild turkey	
1803-41			Duck	
1803-42			Goose	
1803-43			Crow	
1803-44			Hawk	
1803-45			Falcon	
1803-46			Eagle	
1804-14			Pelican	
1804-15			Swan	
1804-16			Goose	
1804-17			Bald eagle	
1804-18			Goose	Small slough
1804-19			Swan	
1804-20			Sandhill crane	
1806-18			Ruffed grouse	
1806-19			Lesser prairie chicken	
1806-20			Wild turkey	
1806-33			Ruffed grouse	Souris river wildlife management area
1806-34			Goose	Souris river wildlife management area



Map-ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
				Goose nesting area
1806-35			Ducks	Souris river wildlife management area
1806-48	YES	YES	Ruffed grouse	Concerned about impacts to this area.
1806-49	YES	YES	Goose	Goose habitat Concerned about impacts to this area.
1806-50	YES	YES	Ducks	Concerned about impacts to this area.
1807-14	YES	YES	Duck	
1807-15			Goose	
1808-19			Goose	
1808-20			Duck	
1808-21			Wild turkey	
1808-22	YES	YES	Wild turkey	
1808-23			Wild turkey	
1809-10	YES	YES	Snowy owl	
1809-11	YES	YES	Duck	
1809-12	YES	YES	Goose	
1809-13	YES	YES	Blue heron	
1809-14	YES	YES	Turkey vulture	
1809-16				Bird conservation area
1809-26			Snowy owl	Migration stop over
1809-27			Pelican	Migration stop over
1809-8	YES	YES	Bald eagle	
1809-9	YES	YES	Golden eagle	
1810-10	YES	YES	Goose	This is a sensitive area. It would be difficult to clean up contaminants. Contaminants migrate through sand quickly. Would be a difficult area to work in due to lack of soil stability and water table.

Map-ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
<b>1810-9</b>	YES	YES	Duck	This is a sensitive area. It would be difficult to clean up contaminants. Contaminants migrate through sand quickly. Would be a difficult area to work in due to lack of soil stability and water table.



Table 9. Traditional Ecological Knowledge – Fish Spawning Areas

Map ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
1201-9			Jackfish (Northern pike) Sucker Pickerel	
1207-10			Sucker	
1208-10			Pickerel	
1208-11			Jackfish (Northern pike)	
1208-12			Perch	
1208-13			Pickerel	
1208-14			Goldeye	
1208-15			Pickerel	
1208-16			Perch	
1208-9			Pickerel	
1303-3			Jackfish (Northern pike) Pickerel	Fish lay the eggs in the rocks. Also any crossings that have been set up by farmers became spawning areas.
1307-11			Pickerel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-12			Pickerel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-13			Pickerel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-14			Pickerel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-15			Pickerel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-16			Pickerel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-17			Pickerel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-18			Pickerel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.

Map ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
1307-19			Pickrel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-20			Pickrel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-21			Pickrel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-5			Pickrel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-6			Pickrel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-7			Pickrel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-8			Pickrel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1307-9			Pickrel	They spawn up all of the small rivers in the spring, especially in Oak Creek. They come out the Souris river 2 miles into the creek.
1401-5			Pickrel	
1501-6			Catfish Pickrel Jackfish (Northern pike)	This is an approximate area. Knows there is spawning in the Souris.
1503-4			Pike	Feeder creeks are quite deep here (about 25 feet deep). Drainage ditch on the farmer's property. You can follow it for miles. Some places there are more water and depends on whether it's a dry or wet year.
1506-4			Jackfish (Northern pike) Sucker Yellow perch	Rivers flood and the overflow water would fill the lowlands and the jackfish would spawn in those areas.
1702-11			Sucker	
1702-12			Walleye	
1702-13			Jackfish (Northern pike)	
1702-14			Sucker	
1702-15			Walleye	
1702-16			Jackfish (Northern pike)	
1702-18			Walleye	

Map ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
1702-19			Sucker	
1702-20			Jackfish (Northern pike)	
1702-21			Perch	
1702-4			Sucker	
1702-5			Jackfish (Northern pike)	
1702-6			Perch	
1702-7			Sucker	
1702-8			Jackfish (Northern pike)	
1702-9			Perch	
1704-10			Pickrel	Pickrel will spawn in this area in any mouths of the rivers or small streams off tributaries.
1704-11			Pickrel	Pickrel will spawn in this area in any mouths of the rivers or small streams off tributaries.
1704-12			Pickrel	Pickrel will spawn in this area in any mouths of the rivers or small streams off tributaries.
1704-6			Pickrel	Pickrel will spawn in this area in any mouths of the rivers or small streams off tributaries.
1704-7			Pickrel	Pickrel will spawn in this area in any mouths of the rivers or small streams off tributaries.
1704-8			Pickrel	Pickrel will spawn in this area in any mouths of the rivers or small streams off tributaries.
1704-9			Pickrel	Pickrel will spawn in this area in any mouths of the rivers or small streams off tributaries.
1705-66			Pickrel	
1705-67			Jackfish (Northern pike)	
1705-68			Perch	
1705-69			Jackfish (Northern pike)	
1705-70			Pickrel	
1705-71			Perch	
1705-72			Catfish	
1705-73			Suckers	



Map ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
1705-74			Jackfish (Northern pike)	
1705-75			Pickrel	
1705-76			Perch	
1705-77			Catfish	
1705-78			Sucker	
1705-79			Jackfish (Northern pike)	
1705-80			Pickrel	
1705-81			Catfish	
1705-82			Goldeye	
1705-83			Carp	
1705-84			Suckers	
1707-10			Pickrel	
1707-6			Pickrel	
1707-7			Pickrel	
1707-8			Pickrel	
1707-9			Pickrel	
1710-6			Pickrel	Cyprus river drains into the Assiniboine and the walleye come up the Cyprus river.
1710-7			Sauger Pickrel	Walleye will spawn in the river and sauger will spawn in the lake.
1801-5			Jackfish (Northern pike)	This area needs to be protected.
1801-6			Trout	This area needs to be protected.
1803-10			Sauger	
1803-11			Burbot	
1803-6			Jackfish (Northern pike)	
1803-7			Pickrel	
1803-8			Catfish	
1803-9			Sucker	
1806-8			Pickrel	

Map ID	45m ROW	1km ROW	Species	Notes Taken During Interviews
			Jackfish (Northern pike)	
1806-9	YES	YES	Walleye Jackfish (Northern pike) Yellow Perch Catfish (channel)	
1807-7			Pickereel	
1807-8			Pickereel	
1807-9			Yellow perch	

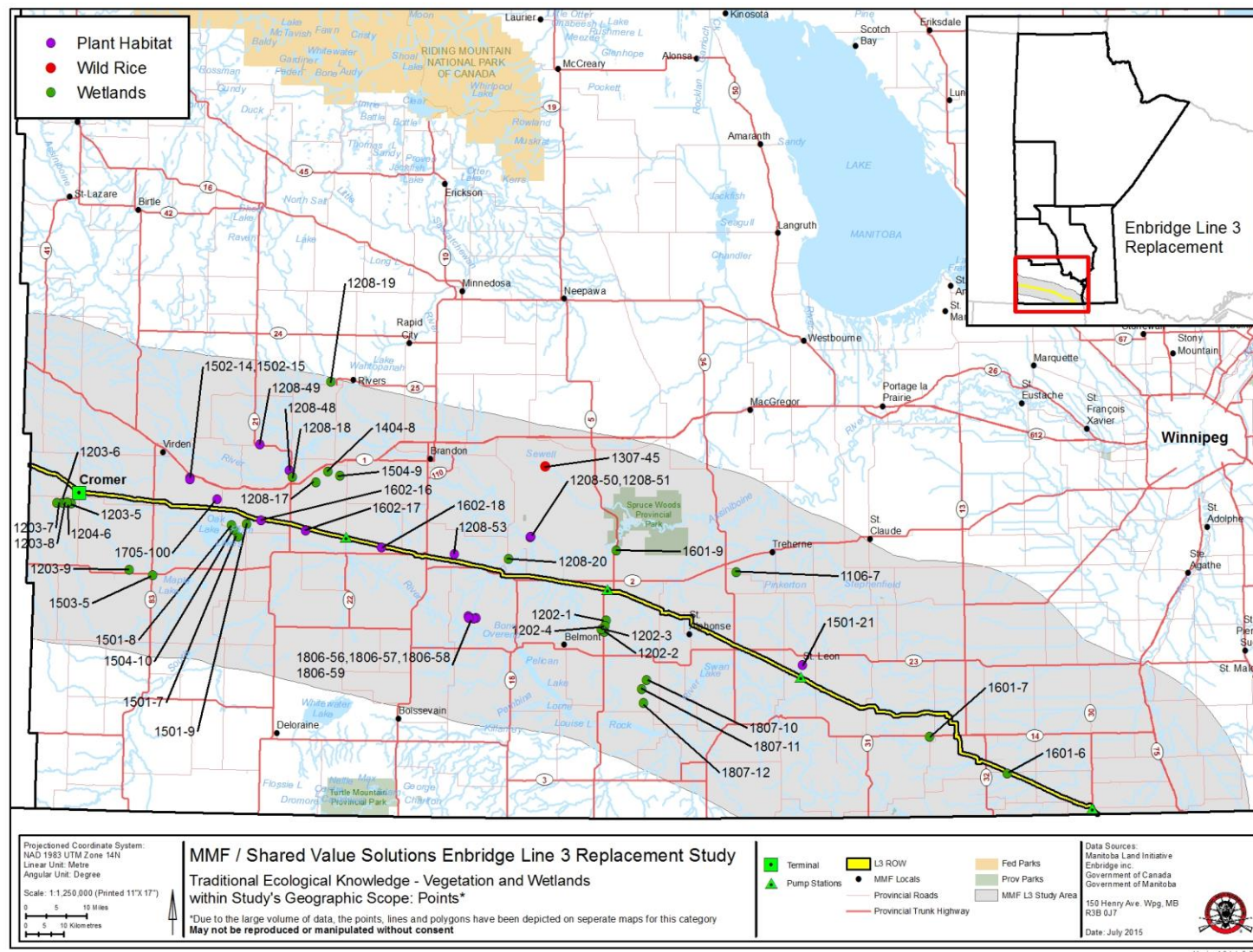


Figure 12. Traditional Ecological Knowledge – Vegetation and Wetlands within Study's Geographic Scope: Points

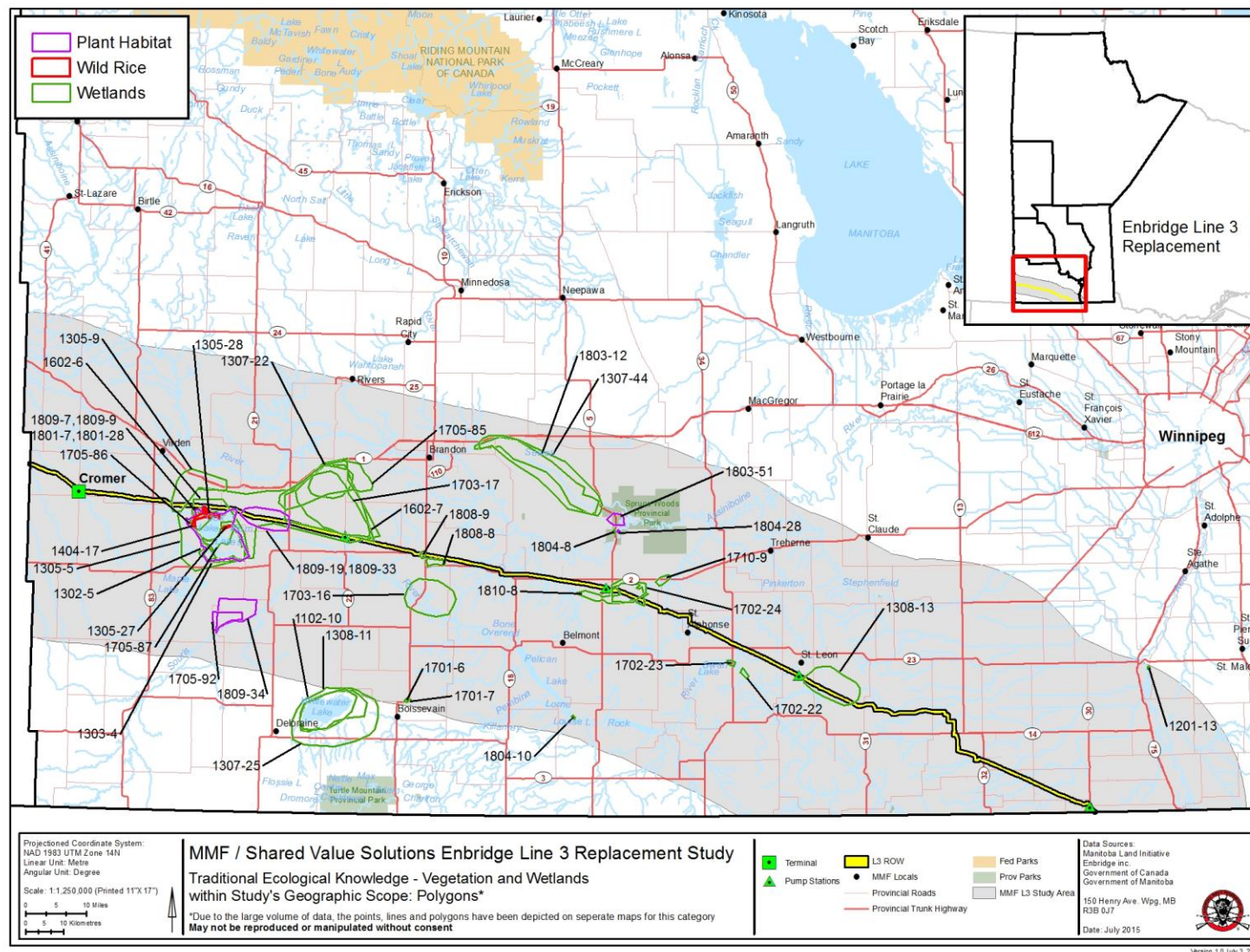


Figure 13. Traditional Ecological Knowledge – Vegetation and Wetlands within Study's Geographic Scope: Polygons



Table 10. Traditional Ecological Knowledge – Vegetation

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1102-10			Wetlands		Mostly hunted deer, ducks and geese in this area. Big tall grass and rushes in the area where the deer will hide. Ducks use this area all year round. If there were any spills and it makes its way down here it would be devastating, because a very shallow area. Only 2-3 ft. deep at its deepest when it is full. Remnants of a glacial lake that was here.
1106-7			Wetlands		This area contains the water in the spring when the snow melts and it stays there until June. On June 15 it is released and they let it dry, and then harvest the cattails. Also prevents the water from going to the Red River if the river is high and removes phosphorus from lake Winnipeg.
1201-13			Wetlands		Marsh and bulrush.
1202-1			Wetlands		
1202-2			Wetlands		
1202-3			Wetlands		
1202-4			Wetlands		
1203-5			Wetlands		Looks like there are little bluffs here, but they are actually full of water. Small, but it brings moose to them.
1203-6			Wetlands		Looks like there are little bluff here, but they are actually full of water. Small, but it brings moose to them.
1203-7			Wetlands		Looks like there are little bluff here, but they are actually full of water. Small, but it brings moose to them. Water fluctuates a lot here. Tall trees with lots of willow are how you tell where the moose are.
1203-8			Wetlands		Looks like there are little bluff here, but they are actually full of water. Small, but it brings moose to them. Water fluctuates a lot here. Tall trees with lots of willow are how you tell where the moose are.
1203-9			Wetlands		
1204-6			Wetlands		Lots of marsh around here.

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1208-17			Wetlands		
1208-18			Wetlands		
1208-19			Wetlands		
1208-20			Wetlands		
1302-5			Wetlands		
1303-4			Wetlands		Water level increased over last 10-15 years
1305-5	YES	YES	Wetlands		Most important to hunters in the fall and trapping in the winter. Not against the pipeline but this is a very sensitive spot to run the pipeline.
1305-9	YES	YES	Wetlands		Wetlands are most sensitive during spring and summer.
1307-22			Wetlands		Wetlands along here for 4-5 miles. Wetlands are impacted already due to run off from fields and chemicals from farmers.
1307-25			Wetlands		White water marsh is 20 miles long, located near Boissevain. About 20 years ago it was a lake but it dried up.
1307-44			Wetlands		This is a marsh area
1308-11			Wetlands		Around this lake is mostly all cultivated land (farm land).
1308-13	YES	YES	Wetlands		There is so much wetland that it's hard to pin point exactly where each one is. There are lots of small wetlands scattered in the area. This is also a bird habitat.
1404-8			Wetlands		
1501-7			Wetlands		There are "potholes" everywhere here. These are important duck habitat. Ducks unlimited calls it the Pothole Capital. Pothole means little pieces of wetland - they are like tiny lakes. Farmers drain a lot of them.
1501-8			Wetlands		Draining wetlands is a concern because that is also where the moose hang out. The moose come to the wetlands. They need water. They aren't like the moose up north. They eat alfalfa, grain, and sunflowers from farmers' fields.
1501-9			Wetlands		
1503-5			Wetlands		Lots of low areas. Heavily farmed area, but there are low spots with a bluff and a little marsh. Lots of ducks and geese in them. They are called "pot holes". Could be 30x20 yards or an acre and a half depending.



Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
					Spring is important for nesting here.
1504-10			Wetlands		
1504-9			Wetlands		
1601-6		YES	Wetlands		Used for harvesting, invasiveness of project could cause problems.
1601-7			Wetlands		Wetland has grown
1601-9			Wetlands		
1602-6	YES	YES	Wetlands	Deer Migratory Birds Other Small Animals	Important deer habitat Over past few years volume of water increased, but it is a cyclical process. During spring the area is important for migratory nesting. During the winter the area is important habitat for deer and small nesting animals. If any draining is occurring as part of the project it would result in loss of habitat.
1602-7		YES	Wetlands	Deer Migratory Birds Small Animals	Important deer habitat Over past few years volume of water increased, but it is a cyclical process. During spring the area is important for migratory nesting. During the winter the area is important habitat for deer and small nesting animals. If any draining is occurring as part of the project it would result in loss of habitat. Land needs to be rehabilitated back to it's original state once the pipeline has gone in. Need solid rehabilitation processes in place. A spill or leak in this area would destroy vast amounts of habitat.
1701-6			Wetlands	Moose Deer	
1701-7			Wetlands	Moose Deer	
1702-22			Wetlands		
1702-23			Wetlands		
1702-24	YES	YES	Wetlands		
1703-16			Wetlands		

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1703-17		YES	Wetlands		
1705-85			Wetlands		
1705-86	YES	YES	Wetlands		
1705-87			Wetlands		
1710-9			Wetlands	Great blue heron Sandhill crane Duck Goose	Area is swampy and overgrown.
1801-7	YES	YES	Wetlands		If the pipeline bursts underground, it could be days or weeks before anything is discovered, if it is not monitored properly. The pipeline should not go through these wetland and water areas.
1803-12			Wetlands		
1804-10			Wetlands		
1804-8			Wetlands		
1807-10			Wetlands		
1807-11			Wetlands		
1807-12			Wetlands		
1808-8			Wetlands		
1808-9	YES	YES	Wetlands		Spill from the pipeline here would spread quickly. Need good emergency response for wetlands especially.
1809-7	YES	YES	Wetlands		
1810-8	YES	YES	Wetlands		Contaminants would be difficult to clean up here, as they would migrate quickly through the sand. The area would also be difficult to work in due to lack of soil stability and water table. This area is near the pump station and there is concern about low level persistent leaks from pipeline pump station impacting and spreading through these wetlands. Prior spills have required significant disturbance of habitat to clean up.
1305-27			Wild rice		
1305-28		YES	Wild rice		

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1307-45			Wild rice		
1404-17			Wild rice		Muskrat really like to eat the wild rice.
1208-48			Plant habitat	Sweet Grass	
1208-49			Plant habitat	Sweet Grass	
1208-50			Plant habitat	Seneca Root	
1208-51			Plant habitat	Sweet Grass	
1208-53			Plant habitat	Wild Turnip	
1501-21			Plant habitat	Rhodesia dogwood	
1502-14			Plant habitat	Sweet grass	He can smell it in this arid area. In the ditches along the road.
1502-15			Plant habitat	Indian tea (Labrador Tea)	Bitter, green leaves. [Labrador tea]
1602-16		YES	Plant habitat	Sage Sweet Grass	
1602-17			Plant habitat	Sage Sweet Grass	
1602-18		YES	Plant habitat	Sage Sweet Grass	
1705-100			Plant habitat	Pink Lady's Slipper	"Sowey" (ph.) - how people say it.
1705-92			Plant habitat	Poplar	
1801-28	YES	YES	Plant habitat		
1803-51			Plant habitat		
1804-28			Plant habitat	Lady's slipper	See along the river.
1806-56			Plant habitat	Asparagus	
1806-57			Plant habitat	Wild asparagus	
1806-58			Plant habitat	Morel mushroom	
1806-59			Plant habitat	Morel Mushroom	See them in June.
1809-19	YES	YES	Plant habitat	Lady's slipper	
1809-33	YES	YES	Plant habitat	Cactus	
1809-34			Plant habitat	Cactus	

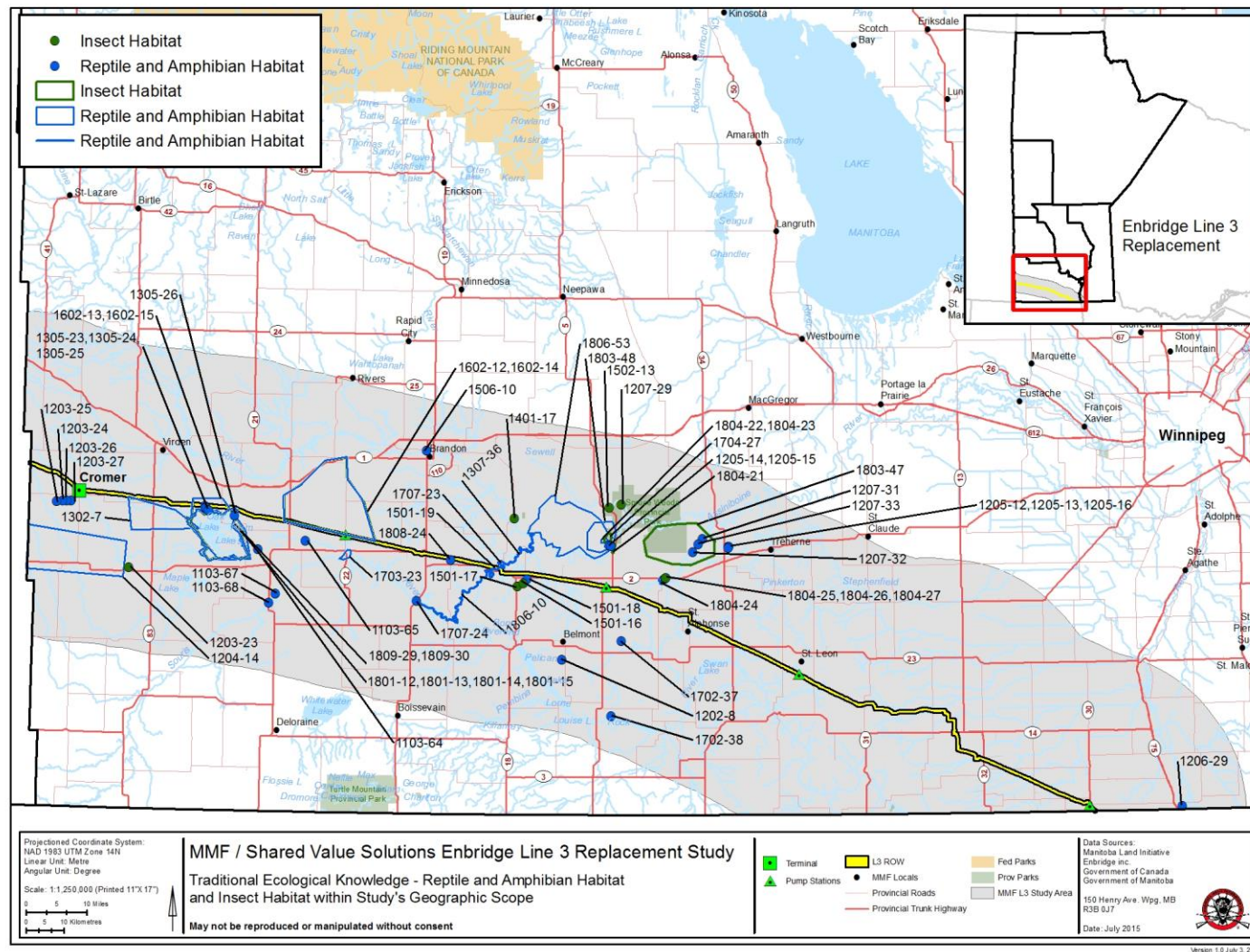


Figure 14. Traditional Ecological Knowledge – Reptile and Amphibian Habitat and Insect Habitat within Study's Geographic Scope

Table 11. Traditional Ecological Knowledge – Insects, Reptiles and Amphibians

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1103-64			Reptiles and Amphibian Habitat	Painted turtle Snapping turtle	Slow moving river good turtle habitat.
1103-65			Reptiles and Amphibian Habitat	Painted turtle Snapping turtle	Slow moving river good turtle habitat.
1103-67			Reptiles and Amphibian Habitat	Painted turtle Snapping turtle	
1103-68			Reptiles and Amphibian Habitat	Painted turtle Snapping turtle	
1202-8			Reptiles and Amphibian Habitat	Painted turtle	
1203-24			Reptiles and Amphibian Habitat	Painted turtle	
1203-25			Reptiles and Amphibian Habitat	Painted turtle	
1203-26			Reptiles and Amphibian Habitat	Painted turtle	
1203-27			Reptiles and Amphibian Habitat	Painted turtle	
1204-14			Reptiles and Amphibian Habitat	Garter snake	They come out when it gets cold and go on to the road to get warm.
1205-12			Reptiles and Amphibian Habitat	Red ruby chested grass snake	Mostly green snake with red on its stomach.
1205-13			Reptiles and Amphibian Habitat	Garter snake	Early fall season.
1205-14			Reptiles and Amphibian Habitat	Garter snake	
1205-15			Reptiles and Amphibian Habitat	Skink	Seen in sandy pastures/ dune areas (Spirit Sands).

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1205-16			Reptiles and Amphibian Habitat	Skink	
1206-29			Reptiles and Amphibian Habitat	Salamander	Seemed like when it was drier you would see them around water.
1207-31			Reptiles and Amphibian Habitat	Leopard frog	Leopard frogs - used to harvest and eat the legs.
1207-32			Reptiles and Amphibian Habitat	Leopard frog	Leopard frogs - used to harvest and eat the legs.
1207-33			Reptiles and Amphibian Habitat	Leopard frog	Leopard frogs - used to harvest and eat the legs.
1302-7		YES	Reptiles and Amphibian Habitat	Salamander Garter snake	
1305-23		YES	Reptiles and Amphibian Habitat	Turtle	
1305-24			Reptiles and Amphibian Habitat	Turtle	
1305-25			Reptiles and Amphibian Habitat	Turtle	
1305-26			Reptiles and Amphibian Habitat	Turtle	
1307-36			Reptiles and Amphibian Habitat	Snake	Snakes mostly seen along the rivers.
1501-18			Reptiles and Amphibian Habitat	Tiger salamander	
1501-9			Reptile and Amphibian Habitat	Tiger salamander	Migration route - seen them crossing the road.
1501-20			Reptiles and Amphibian Habitat	Leopard frog	
1506-10			Reptiles and Amphibian Habitat	Snapping turtle	Saw 6 or so large turtles on the short trip that they went up the river about 15 yrs. ago.
1602-14	YES	YES	Reptiles and Amphibian Habitat	Salamander Frog	Come out after the spring thaw.
1602-15	YES	YES	Reptiles and Amphibian Habitat	Salamander Frog	Come out after the spring thaw.
1702-37			Reptiles and	Salamander	



Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
			Amphibian Habitat		
1702-38			Reptiles and Amphibian Habitat	Garter snake	
1703-23			Reptiles and Amphibian Habitat	Turtles	
1707-23			Reptiles and Amphibian Habitat	Turtle	
1707-24			Reptiles and Amphibian Habitat	Turtle	
1801-15	YES	YES	Reptiles and Amphibian Habitat	Garter snake	
1803-48			Reptiles and Amphibian Habitat	Skink	
1804-22			Reptiles and Amphibian Habitat	Snake	At the sand dunes.
1804-23			Reptiles and Amphibian Habitat	Skink	
1804-24			Reptiles and Amphibian Habitat	Frog	Wetland habitat
1804-25			Reptiles and Amphibian Habitat	Frogs	
1804-26			Reptiles and Amphibian Habitat	Frog	Hear the frogs when you come into Cypress River.
1806-10	YES	YES	Reptiles and Amphibian Habitat	Snapping turtle Painter turtle Leopard frog Spring peeper Tree frogs Toads Red-sided snake Green-grass snake Garter snake Red-bellied snake	
1806-53			Reptiles and Amphibian Habitat	Hog nose snake	Artillery range is good habitat for hognose snake. Unique in terms of lack of accessibility for people, need permission to access.

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1808-24		YES	Reptiles and Amphibian Habitat	Garter snake	
1809-30	YES	YES	Reptiles and Amphibian Habitat	Garter snake	
1203-23			Insect Habitat	Dragonfly	Go to the larger 'pothole' (wetlands) to feed on mosquitos.
1207-29			Insect Habitat	Trapdoor spider	
1401-17			Insect Habitat	Bee	See large clouds of bees here.
1501-16			Insect Habitat	Grasshopper	
1501-17			Insect Habitat	Dragonfly	
1502-13			Insect Habitat	Fireflies	Humidity and spruce trees may attract them.
1602-12	YES	YES	Insect Habitat	Dragonfly Bee Mosquito	Come out few weeks after last frost until first frost.
1602-13	YES	YES	Insect Habitat	Dragonfly Bee Mosquito	Come out few weeks after last frost until first frost.
1704-27			Insect Habitat	Green wasp	
1801-12	YES	YES	Insect Habitat	Dragonfly	
1801-13		YES	Insect Habitat	Ladybug	
1801-14	YES	YES	Insect Habitat	Moth	
1803-47			Insect Habitat	Ant	
1804-21			Insect Habitat	Dragonfly	South of Spruce Woods Park.
1804-27			Insect Habitat	Firefly	
1809-29	YES	YES	Insect Habitat	Dragonfly	

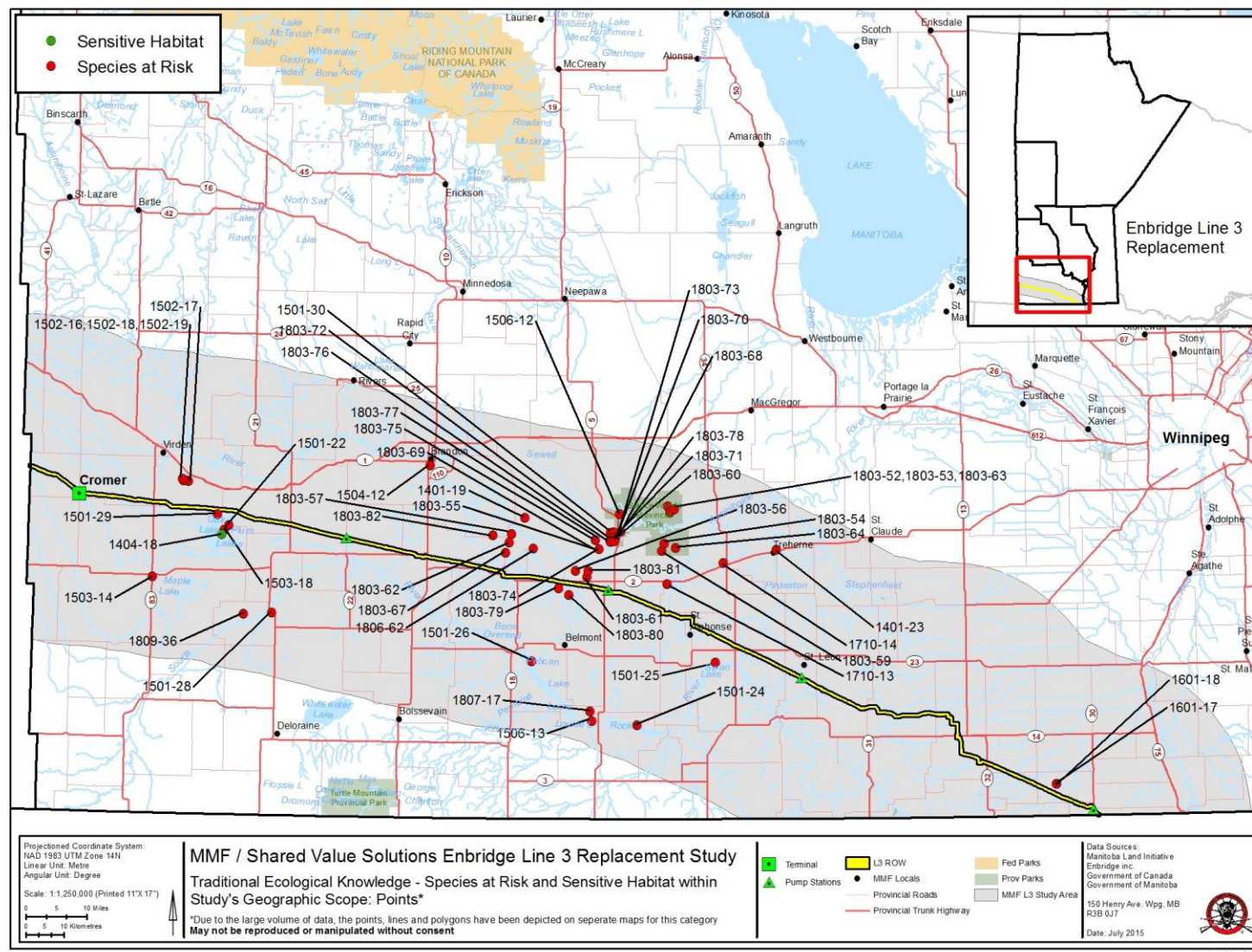
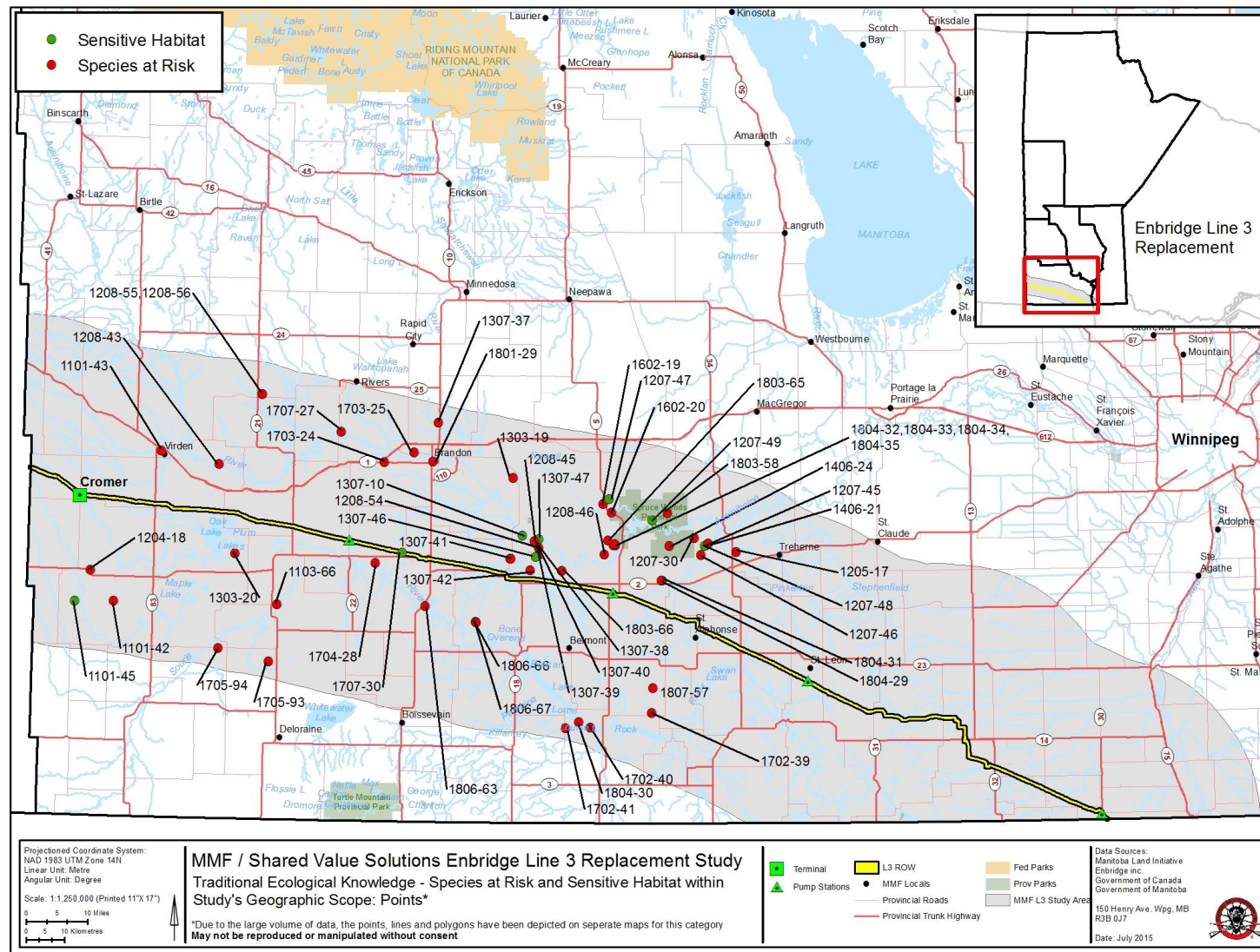


Figure 15. Traditional Ecological Knowledge – Species at Risk and Sensitive Habitat within Study's Geographic Scope: Points 1





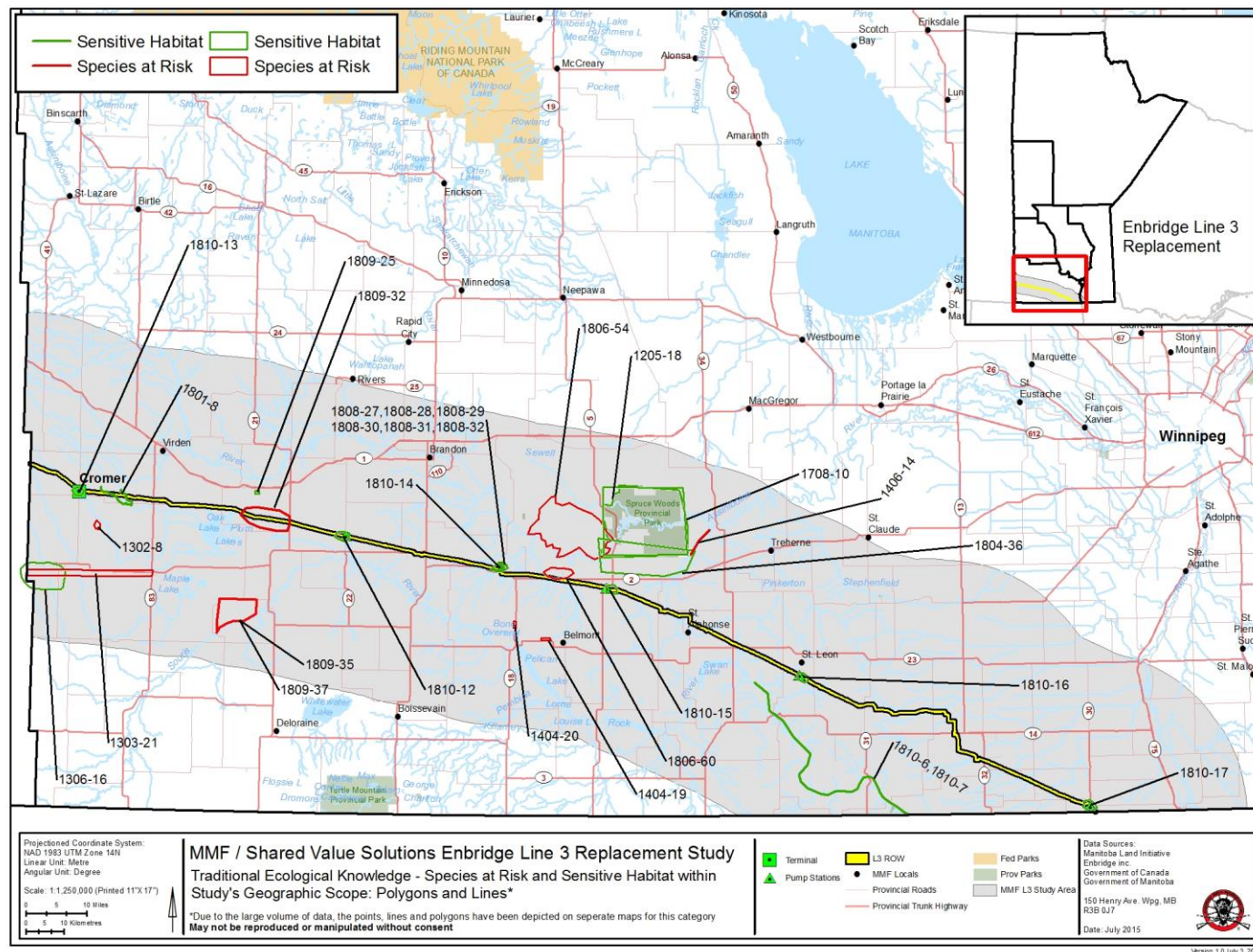


Figure 17. Traditional Ecological Knowledge – Species at Risk and Sensitive Habitat within Study's Geographic Scope: Polygons and Lines

Table 12. Traditional Ecological Knowledge – Sensitive Habitats and Species at Risk

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1101-45			Sensitive Habitat	Big game	Area where big game is hunted. Also concern with sensitive moose population in the area - population sensitivities
1205-18			Sensitive Habitat		Human encroachment could impact the area and make it more difficult to harvest as animals are disturbed. A lot more traffic and more roads, clearing of more bush lines, greater human presence makes it more difficult for game species to thrive. Seeing a lot more predators such as wolves in the area. Could negatively affect game species if more corridors open up around Spruce wood park
1207-47			Sensitive Habitat		Main harvesting area. This place its rich in diversity, and would be sensitive to encroachment and environmental impact.
1207-48			Sensitive Habitat		Main harvesting area. This place its rich in diversity, and would be sensitive to encroachment and environmental impact.
1207-49			Sensitive Habitat		Main harvesting area. This place is rich in diversity, and would be sensitive to encroachment and environmental impact.
1306-16			Sensitive Habitat		A lot of animal habitat has been lost due to clearing around the oil wells and the implementation of roads and more wells. The area has been clear-cut and now there is little room left for deer and other habitats. Within a quarter section, you can lose more than half of your forested area due to clear cutting. This does not sustain a lot of deer anymore.
1307-10			Sensitive Habitat	Pickereel	They spawn up all of the small rivers in the spring. See them especially in Oak Creek. They come out the Souris river 5 miles into the creek.
1307-46			Sensitive Habitat	Pickereel Jackfish (Northern pike)	The mouth of the creeks is specifically important to preserve. Especially oak creek - where the Souris river meets the Assiniboine. These parts are filled with pike and pickerel.
1307-47			Sensitive Habitat	Pickereel	The mouth of the creeks is specifically important to preserve. Especially oak creek - where the Souris river meets the Assiniboine. These parts are filled with pike and pickerel.
1503-18			Sensitive Habitat	Yellow Perch Pickereel	Sport fishery here.



Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
				Jackfish (Northern pike)	
1707-30	YES	YES	Sensitive Habitat		If there are machines digging it will scare animals off.
1708-10			Sensitive Habitat		
1801-8	YES		Sensitive Habitat		If there was a spill here, this area would be difficult to clean up. A lot of animal habitat along this area for many species.
1804-36			Sensitive Habitat		Spruce woods wildlife management area.
1808-27	YES	YES	Sensitive Habitat	Jackfish (Northern pike)	
1808-28	YES	YES	Sensitive Habitat	Pickereel	
1808-29	YES	YES	Sensitive Habitat	Turtles	
1808-30	YES	YES	Sensitive Habitat	Sucker	
1808-31	YES	YES	Sensitive Habitat	Carp	
1808-32	YES	YES	Sensitive Habitat	Salamander	
1809-25			Sensitive Habitat		
1810-12	YES	YES	Sensitive Habitat		Higher risk to wildlife due to the infrastructure of the pump station, not necessarily the sensitivity of the habitat.
1810-13	YES	YES	Sensitive Habitat		Higher risk to wildlife due to the infrastructure of the pump station, not necessarily the sensitivity of the habitat.
1810-14	YES	YES	Sensitive Habitat		Crossing of a major river system at the pipeline
1810-15	YES	YES	Sensitive Habitat		Higher risk to wildlife due to the infrastructure of the pump station, not necessarily the sensitivity of the habitat.
1810-16	YES	YES	Sensitive Habitat		Higher risk to wildlife due to the infrastructure of the pump station, not necessarily the sensitivity of the habitat.
1810-17	YES	YES	Sensitive Habitat		Higher risk to wildlife due to the infrastructure of the pump station, not necessarily the sensitivity of the habitat.
1810-6			Sensitive Habitat	Jackfish (Northern pike)	Sensitive because it is the major drainage river from the larger water bodies
1810-7			Sensitive Habitat	Pickereel	Sensitive because it is the major drainage river from the larger water bodies.
1101-42			Species at Risk	Mule deer	Fall 2014.
1101-43			Species at Risk	Mule deer	Saw approx. 5 years ago.
1103-66			Species at Risk	Burrowing owl	

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1204-18			Species at Risk	Trumpeter swan	Saw them flying over the road last year.
1205-17			Species at Risk	Trumpeter Swan	Likely migration route- seen them flying over. October- November.
1207-30			Species at Risk	Western Hognose Snake	Was able to pick it up. It shakes it tale as if it has a rattle.
1207-45			Species at Risk	Buffalo grass	
1207-46			Species at Risk	Buffalo grass	
1208-43			Species at Risk	Peregrine falcon	
1208-45			Species at Risk	Prairie skink	
1208-46			Species at Risk	Western Hognose Snake	
1208-54			Species at Risk	Burrowing Owl	
1208-55			Species at Risk	Red-headed Woodpecker	
1208-56			Species at Risk	Small White lady's slipper	
1302-8			Species at Risk	Burrowing Owl	Over the last 15-20 years there has been less and less. Not sure what's causing this - not because of a lack of food and not because they're getting hit on the highways.
1303-19			Species at Risk	Burrowing Owl	
1303-20			Species at Risk	Gattinger's Agalinis	Plant species
1303-21			Species at Risk	Mule deer	
1307-37			Species at Risk	Burrowing Owl	He has only seen one once. The owls are very rare.
1307-38			Species at Risk	White lady slipper	He used to see a lot of these near Oak creek - they normally grow in the ditch, low spots where it is wet and the water gathers
1307-39			Species at Risk	Small white lady's slipper	
1307-40			Species at Risk	Prairie skink	Have been going here every year for 40 years and is worried that it will continue to lose the species.
1307-41			Species at Risk	Mule deer	Saw them driving on the highway near trees bank - saw 2 of them. They don't run, they bounce.
1307-42			Species at Risk	Mule deer	
1401-19			Species at Risk	Peregrine Falcon	
1401-23			Species at Risk	Mule deer	
1404-18			Species at Risk	Canada warbler	
1404-19			Species at Risk	Small white lady's slipper	Grow in the early spring – like wet soil.

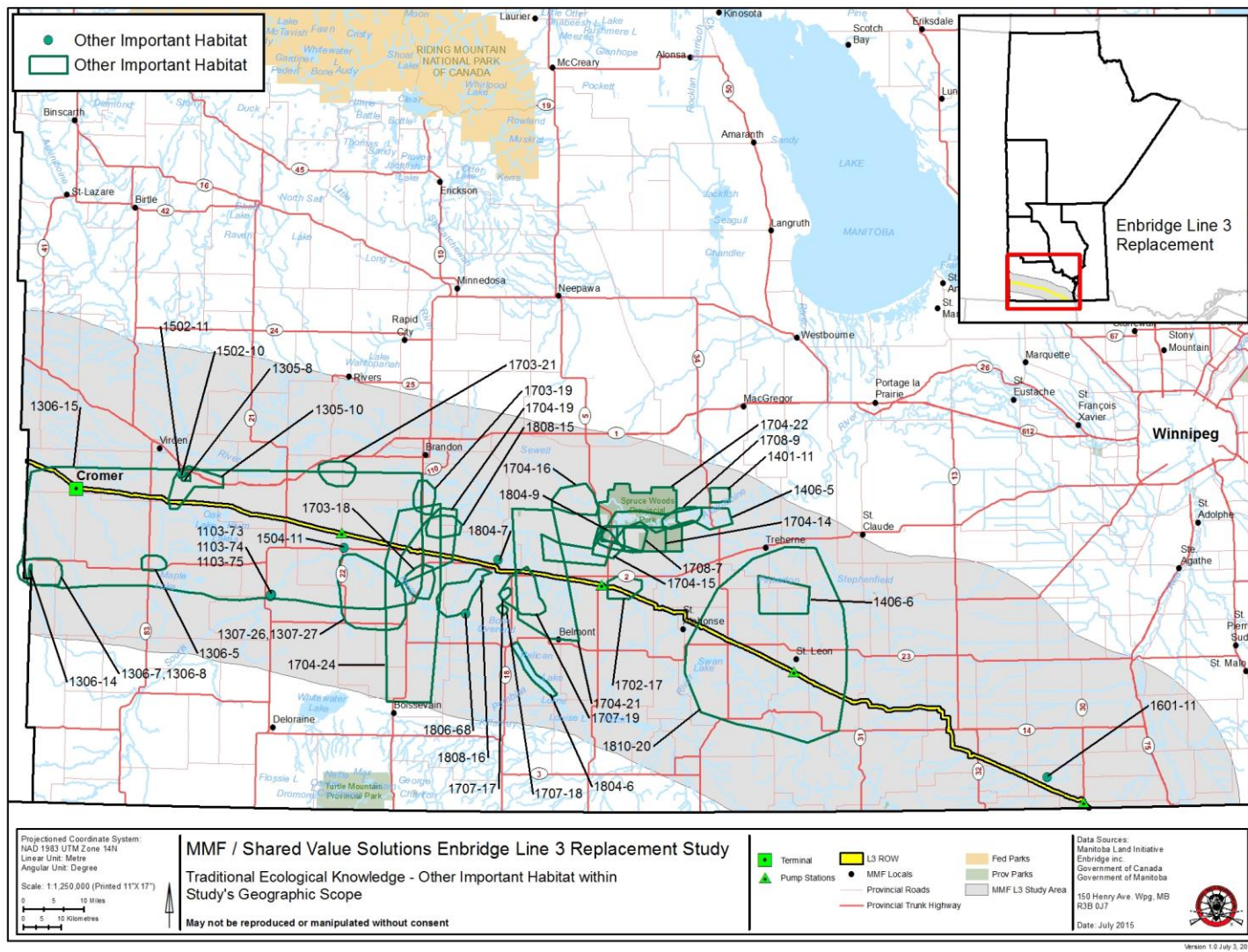
Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1404-20			Species at Risk	Small white lady's slipper	
1406-14			Species at Risk	Western hognose snake	
1406-21			Species at Risk	Canada warbler	
1406-24			Species at Risk	Mule deer	
1501-22			Species at Risk	Eskimo curlew	Approximate site.
1501-24			Species at Risk	Whooping crane	
1501-25			Species at Risk	Whooping crane	
1501-26			Species at Risk	Whooping crane	This is part of the central flyway.
1501-28			Species at Risk	Loggerhead shrike	Has seen the evidence of shrike. They impale their prey on thorns or barbed fence.
1501-29			Species at Risk	Trumpeter swan	They come mostly in the spring. You'll see them in potholes all around here.
1501-30			Species at Risk	Prairie skink	They are here because of the sand hills / dunes. It is like cactus in this area.
1502-16			Species at Risk	Burrowing owl	
1502-17			Species at Risk	Redheaded woodpecker	
1502-18			Species at Risk	Ottoe skipper	
1502-19			Species at Risk	Swift fox	
1503-14			Species at Risk	Trumpeter swan	
1504-12			Species at Risk	Canada warbler	
1506-12			Species at Risk	Greater prairie chicken	About 15 years ago when hunting in the park.
1506-13			Species at Risk	Greater prairie chicken	Used to see them in Neelin.
1601-17			Species at Risk	Burrowing owl	Concerned about the invasiveness of the project and effects to the waterways
1601-18			Species at Risk	Trumpeter swan	Concerned about the invasiveness of the project, and effects to the waterways.
1602-19			Species at Risk	Prairie skink	Late spring early summer.
1602-20			Species at Risk	Prairie skink	
1702-39			Species at Risk	Burrowing owl	
1702-40			Species at Risk	Trumpeter swan	Stick around for about a week in this location and then they're gone.

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1702-41			Species at Risk	Mule deer	
1703-24			Species at Risk	Whooping crane	
1703-25			Species at Risk	Small white lady's slipper	
1704-28			Species at Risk	Mule deer	
1705-93			Species at Risk	Burrowing owl	
1705-94			Species at Risk	Western spiderwort	
1707-27			Species at Risk	Mule deer	
1710-13			Species at Risk	Redheaded woodpecker	Seen in 2013.
1710-14			Species at Risk	Mule deer	Saw the deer in September/October.
1801-29			Species at Risk	Peregrine falcon	
1803-52			Species at Risk	Canada warbler	
1803-53			Species at Risk	Redheaded woodpecker	
1803-54			Species at Risk	Redheaded woodpecker	
1803-55			Species at Risk	Redheaded woodpecker	
1803-56			Species at Risk	Redheaded woodpecker	
1803-57			Species at Risk	Redheaded woodpecker	
1803-58			Species at Risk	Short-eared Owl	
1803-59			Species at Risk	Short-eared Owl	
1803-60			Species at Risk	Short-eared Owl	
1803-61			Species at Risk	Short-eared Owl	
1803-62			Species at Risk	Short-eared Owl	
1803-63			Species at Risk	Golden winged warbler	
1803-64			Species at Risk	Golden winged warbler	
1803-65			Species at Risk	Golden winged warbler	
1803-66			Species at Risk	Golden winged warbler	
1803-67			Species at Risk	Golden winged warbler	
1803-68			Species at Risk	Gattinger's agalinis	
1803-69			Species at Risk	Rough agalinis	
1803-70			Species at Risk	Smooth goosefoot	

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1803-71			Species at Risk	Small white lady's slipper	
1803-72			Species at Risk	Prairie fringed orchid	
1803-73			Species at Risk	Western ironwood	
1803-74			Species at Risk	Buffalo grass	
1803-75			Species at Risk	Western spiderwort	
1803-76			Species at Risk	Hairy prairie clover	
1803-77			Species at Risk	Riddell's goldenrod	
1803-78			Species at Risk	Western silvery aster	
1803-79			Species at Risk	White flower moth	
1803-80			Species at Risk	Dakota skipper	
1803-81			Species at Risk	Ottoo skipper	
1803-82			Species at Risk	Ridings satyr	
1804-29			Species at Risk	Peregrine falcon	
1804-30			Species at Risk	Whooping crane	
1804-31		YES	Species at Risk	Redheaded woodpecker	
1804-32		YES	Species at Risk	Western spiderwort	
1804-33		YES	Species at Risk	Buffalograss	
1804-34		YES	Species at Risk	Western hognose snake	
1804-35		YES	Species at Risk	Prairie skink	
1806-54		YES	Species at Risk	Prairie skink	
1806-60	YES	YES	Species at Risk	Burrowing owl	4-6 years ago someone saw burrowing owls not the interviewee but a naturalist that he trusts.
1806-62		YES	Species at Risk	Least bittern	Little slough area, 1991/92 early to mid-June.
1806-63		YES	Species at Risk	Common nighthawk	2014 first hand sighting.
1806-66		YES	Species at Risk	Buffalograss	Saw buffalo grass last week June 2015 also spear grass here.
1806-67		YES	Species at Risk	Mule deer	Reported by a friend APPROX 1987/88.
1807-17		YES	Species at Risk	Mule deer	
1809-32	YES	YES	Species at Risk	Prairie skink	
1809-35			Species at Risk	Prairie skink	

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
<b>1809-36</b>		YES	Species at Risk	Ferruginous hawk	
<b>1809-37</b>		YES	Species at Risk	Western hognose snake	





*Figure 18. Traditional Ecological Knowledge – Other Important Habitat within Study's Geographic Scope*

Table 13. Traditional Ecological Knowledge – Other Important Habitat

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1103-73			Other Important Habitat	Mussel	Unsure of the type of mussels in the area, but have seen many shells along the shoreline.
1103-74			Other Important Habitat	Mussel	Unsure of the type of mussels in the area, but have seen many shells along the shoreline.
1103-75			Other Important Habitat	Mussel	Unsure of the type of mussels in the area, but have seen many shells along the shoreline.
1305-10	YES	YES	Other Important Habitat	Moose	
1305-8			Other Important Habitat	Moose	Crown land - difficult to access.
1306-14			Other Important Habitat	Coyote	Close to the Saskatchewan border. Ducks and geese visible everywhere in the fall - the areas are all pretty diverse with animal species. While hunting deer would have to move out of the way for a moose and they will see plenty of ducks on their hunt.
1306-15	YES	YES	Other Important Habitat	Deer	There is a lot of prime deer habitat here. The whole area has changes occurring with all of the oilrigs that have gone in and traffic has increased.
1306-5			Other Important Habitat	Moose Deer	Deer and moose live in dugouts in farmer's fields and some farmers have agreed to conserve their land to support mammal migration in particular.
1306-7			Other Important Habitat	Deer	
1306-8			Other Important Habitat	Moose	
1307-26			Other Important Habitat	Moose	All along the Souris River close to Brandon.
1307-27			Other Important Habitat	Deer	
1401-11			Other Important Habitat	Deer Elk Bear	
1406-5			Other Important Habitat	Deer habitat	

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1406-6			Other Important Habitat	Deer	
1502-10			Other Important Habitat	Deer	Sand dunes
1502-11			Other Important Habitat	Porcupine	Porcupines love oak and there are a lot of oak trees here and porcupines are seen frequently.
1504-11			Other Important Habitat	Elk	
1702-17	YES	YES	Other Important Habitat	Muskrat	If there is a spill and it effected wildlife here it could impact trapping incomes. The muddy ground sucks everything in.
1703-18			Other Important Habitat	Deer	
1703-19			Other Important Habitat	Deer	
1703-21			Other Important Habitat	Deer	
1704-14			Other Important Habitat	Elk	
1704-15			Other Important Habitat	Elk	
1704-16			Other Important Habitat	Elk	
1704-19	YES	YES	Other Important Habitat	Deer	
1704-21	YES	YES	Other Important Habitat	Deer	
1704-22			Other Important Habitat	Moose	
1704-24	YES	YES	Other Important Habitat	Moose	
1707-17			Other Important Habitat	Moose	
1707-18			Other Important Habitat	Moose	

Map ID	45m ROW	1km ROW	Type of Site	Species	Notes Taken During Interviews
1707-19	YES	YES	Other Important Habitat	Elk	If construction occurs during hunting season it will scare elk away from the area.
1708-7			Other Important Habitat	Deer	
1708-9			Other Important Habitat	Deer	
1804-6			Other Important Habitat	Pickrel Jackfish (Northern pike)	Fish habitat
1804-7			Other Important Habitat	Fish	
1808-15			Other Important Habitat	Moose	
1808-16			Other Important Habitat	Moose	
1810-20	YES	YES	Other Important Habitat	Moose	The moose populations in Manitoba are sensitive and decreasing province wide, but there is a population of Moose in this area that should be protected. Pipeline may cause easier/increased access to moose habitat, which may lead to increased hunting, which would lead to moose population decreasing. There should be independent gathering of land use/ecological data from locals to form a baseline of what habitat/species exist adjacent to the pipeline. This should be done so that the habitat/species that have returned/not returned after the construction fragmentation/disturbance can be documented is important. Monitoring of sensitive areas should be continuous.

### 4.3 Changes to the Lands and Waters of the Southwest Region

Participants were asked to discuss any changes they have observed over time in both the Study's Geographic Scope and the Southwest Region of Manitoba, in general. This information can be used to establish an environmental and socio-cultural baseline of conditions. It can also provide potential insight into sensitive species/habitat in the area, cumulative impacts to already impacted areas and areas/species that may require future mitigation measures.

Figure 19 and Figure 20 map some of the changes that participants have noticed on the land over their lifetime. A total of 139 changes were mapped within the Study's Geographic Scope by 48 of the study participants. A total of sixteen (**16**) changes were reported by the MMF study participants within the 1km pipeline ROW; fifteen (**15**) of these were within the 45m pipeline ROW. Changes within the Study's Geographic Scope are labelled with unique identifiers (PIN and GIS-ID) in the map, while the Table 14 (below) details the type of change and site-specific information as discussed by the participant.

Based on the qualitative analysis of the data, it is apparent that many participants were able to identify specific changes they have observed in both local animal populations and habitat features. Most participants' descriptions of observed changes involved multiple stressors with multiple impacts to local populations of birds, mammals, fish and plants.

Among the participants, many discussed the same or similar observed changes to the lands and waters of the Southwest region. This collective knowledge on the same change led to a more robust understanding of the changes that have been occurring in the Southwest region. This type of information is essential when attempting to understand the potential for cumulative effects to the area from the Line 3 Pipeline.

The knowledge that was shared about the state of local animal populations and landscapes/habitats, can be translated into an indicator that a local population may be approaching an ecological threshold or tipping point. These types of indicators are imperative in the identification of sensitive locations and/or local animal populations that may be detrimentally affected by further change. These areas can then be protected and afforded specific and appropriate mitigations related to the Line 3 Pipeline Project.

Some of the most common changes described by participants are categorized and summarized with supporting quotes, below. It should be noted that these are not the only changes that were described, but rather only those described in most detail by more than one participant. Table 14 contains all of the location-specific descriptions of changes that were discussed by participants within the Study's Geographic Scope.

#### 4.3.1 Decrease in Deer Population(s)

Many participants discussed the decrease in the number of deer in the region. There were several reasons discussed that could be contributing to the observed decrease in deer, including: harsh winters, increase in coyote populations (predation), flooding, loss of and changes to habitat, loss of food sources and disturbance/avoidance of human activity. Many participants discussed multiple factors when describing the decrease in deer populations and described a combined effect. For example, the loss of windrows and tree-cover habitat from agriculture and industry decreased the available cover and food sources available to deer in the winter, while increasing their susceptibility to the cold and snow.

Moreover, that loss of windrows and tree-cover also meant that deer were more exposed to predation, especially during fawning season. Flooding and loss of habitat in some areas was thought to have a similar combined effect, driving deer away from the watercourses and forcing them into open-fields, leaving them unprotected from predation and hunting pressures.

*The deer population, we've noticed it go down over the last couple of years. [That] area also has a lot of oil development, so there's a lot of oil wells that have been drilled in the area. The whole south-west corner of the province is basically one big oil well. So, obviously, a lot of the cutting that's taken place to put the wells in place, the access to get to them has taken a lot of their grounds. So, now we're able to drive to wherever we drop a deer. It used to be that they'd have to walk a mile in or have to pull them out in some areas.*

*There's been some habitat depletion from some of the farmers with fields, where they're trying to fill in some of those natural - or the where they could drain water to. I wouldn't say that is a substantial contribution. The areas that the oil has gone into, most of those are into forested land where you'll find where the deer wants to stay, because it's covered, there's natural cover for them to exist within those areas. So those are the primaries. The wells have been put into the farmers' field - those aren't areas where deer would typically exist because it's wide open, and the coyotes will obviously try and get them in there, wolves, what-not.*

*The drop in deer population started about 2 years ago; the late springs are killing them, right? [And] when the snow and the ice and the snow in the spring when it freezes and thaws and it gets really hard, they try to dig. And once they get so bruised and beat up here, they'll just lay down and give up and just die.*

*The population is down significantly. We've had some hard winters, but the group that I hunt with, who've been hunting there for 30 years, have told me that when they first went there before the oil was discovered and found, that when it was thick bush, they'd have to take cover from the deer that were running across the area. They had a tough time choosing what deer to actually shoot because they couldn't focus in on one without almost being run over by another flock or group that was coming right through them. And I balance that with what we see now, where nine of us can go for five days and struggle to find nine deer.*

*Lack of trapping the coyotes is one [reason for the decrease in deer]. The coyote population has just bloomed. But then there was - there's some other factors there, terrible winters. Not just cold but long and deep snow. So a lot of the deer starved and of course the young ones they generally don't make it through a bad winter like that and we had a couple of bad winters in a row. So the only deer that you see were mature deer and as I say, in a little tour that generally you'd see 20-30 deer, you'd see one. That's how bad it was.*

*Actually last one was probably the worst I've ever seen it. About 15 years ago, there was another big winter kill off. There was a lot of snow and it just took forever for spring to come. And it was so bad I know of one farmer in the area, he had 130 deer*



*drop dead in his yard. He was a cattle farmer, so they were coming in trying to get some of the feed from the cattle.*

*Well, the town of Melita, this is going back like I said, this is 15 or 16 years ago. They actually had – there were so many deer dying all over the place from starvation that they had a pile like it was just – and we went out and the problem with conservation is they collect this data but they're 2-3 years behind implementing anything like it was ridiculous.*

*Harsh winters, two bad springs, yeah. A lot of guys try and blame the coyotes but the coyotes are killing the deer that can't... they're not killing them healthy deer; they're killing deer that are dying. Coyote can't catch a deer when it's healthy and strong. Coyote will kill a fawn or it's natural, right? They're going to eat a certain amount but they're not the reason that the deer decline.*

*This is before there was before harvesting rights and I was buying my regular tags. We were allowed –that year, we were allowed to buy 2 deer tags. So here we are a group of guys, we go out and it didn't matter. You can walk across the middle of the field; you can walk through a bluff. You found skeletons. You found skeletons everywhere. We didn't use our second tags. It was bad but it's not as bad as it was right now as last year.*

#### 4.3.2 Change in Water Levels

Participants mentioned the changes in water levels in the Southwest Region repeatedly. Changes in water levels were often correlated to one or more other changes including, but not limited to, decreases or changes in residency of bird populations due to loss of available habitat, vulnerability of animal populations to predation and hunting pressures, changes to vegetation communities and loss of access to previously used harvesting areas. Participants also spoke of flooding as a major event that causes changes to the environment.

*Well, we had the big flood in 2011. It cause a lot of damage and openings of the river banks, and more water coming into the lake. Myself, I feel it did some damage to the lake. They have different fish in there now that we never had before.*

*When it floods the river like really rises. So I don't know if it has anything to do with when it floods. But I know during the time when it's not flooding it drops like way lower than it used to be. And that's one that I can say like specifically I know because we used to go right down to fish on like the sandbanks that would come out. So you can see the difference like where we used to be to where, where the water is, like the normal level of it. So I know birch are all along there because they, like they like the water and they need it. And I guess if there is not as much then, or unless it has something to do with flooding maybe too. But I think birch can probably stand a flood, so I, that would be my best guess.*

*Sometimes, about ten years ago, there was a drought and the water in the White-water Lake went down drastically. And it destroyed thousands and thousands of birds 'cause they got that disease that ducks get in the summertime, in the fall, kills*

*them, you know, destroys... That was about ten years ago...Botulism, that's what killed them, that's what they call botulism, yeah...Yeah, the water got down so low that the water was warming up and created a lot of algae and, you know, this kind of stuff. The ducks started dying off. By the thousands they were finding ducks, not only ducks, all kinds of shore birds and everything that were destroyed, fish, a lot of fish was destroyed.*

*It's change a lot since the flooding a few years ago. It used to be a lot shallower and stuff, and you could see them everywhere and they were more shallow...after the flood. When we had the big flood it just changed the whole landscape here...What was that three, four years ago? Yeah, 2011. The water was so, so high, and it just—everywhere where there was nice little bends and nice and shallow, it's right through, but it's created some fishing spots...good fishing there.*

*And the water level has really changed on that lake (Fischer) because, as a youngster, there was always an island out there, and for the last, about eight years, there are no islands. The springs are maybe running more? I don't know why, but it's gone up, I would say, three to four feet. At least, over the last ten years. Yeah, because the island kept getting smaller every year, and then all of a sudden one year it's completely gone.*

#### 4.3.3 Changes to the Landscapes & Habitats

Many participants also discussed large-scale changes to the landscapes of the Southwest Region.

Some areas have been populated with oil-pumpers and related oil infrastructure and the increased traffic and human influx that accompanies such an industrial practice. The installation of these systems was also associated with clear-cutting and removing large tracts of wilderness areas. Similarly, participants discussed that these industrial practices have led to soil compaction, which has changed hydrology, vegetation growth and ultimately changed the use of the area by animal populations.

Changes to the landscape from agricultural practices were also discussed. Changes included, removal of windrows to increase arable land, and conversion of forests and wild areas to agricultural fields.

Other changes were related to natural occurrences, such as blight impacting the Spruce Woods area.

*It's mainly just environmental changes, a lot of land clearing, a lot of flooding, it changed a lot of things. Any change to habitat is drastic, so. Yes, [it has changed my harvesting] quite so, it's definitely not as easy to go out and hunt anymore for food. Fishing too, it's not the same as it used to be. The population is dwindling.*

*I mean, the areas where the oil rigs are right now, it's a bit of a tipping point for some of the animals because a lot of their habitat has been lost already with the access roads that have gone in and the clearing of around the well and everything like that, that there isn't a whole lot of forest left for them. These areas that used to be exclusively grazing grounds for cattle, because it's too rocky or whatever the case may be or it'd take too much effort to clear it, so they just let their cattle go into these areas and just graze for the entire summer. Then they take them in the winter or in*

*the fall and send them to the slaughter house. So, the deer could usually coexist with the cattle like we've seen in some areas. But with the amount of forest that's been lost around these areas, within a quarter section, you can lose more than a half of your forested area because of the [clear]cutting to accommodate all the stuff that goes in there. And with the open spaces in there, so you'll have a little tiny area bluff within there that could maybe have a deer with her fawns in there, but really that's enough to actually sustain a lot of deer, like it used to be when my friends started hunting there 30 years ago. They could never support that.*

*There must be some kind of a blight going through because we say pretty soon they won't be calling it Spruce Woods no more. It'd be called poplar wood because the spruce trees are – the death rate are unbelievable. So what that is, I have no idea. And also too, I know the park itself, we were hunting in there, elk hunting I would say that would have probably been about 8 years ago now. They were spring for leafy spurge. It was some kind of an invasive species of a plant.*

*Apparently, there's two types of blight in there that are affecting the trees. We're talking [of pine trees that young ones or the very tall ones, doesn't matter. They're all dying off. It's a yearly rate like you go up, it's gone now. They're standing but they're dead.*

*Well, I guess there is a beetle but the main cause of this is apparently is a type of blight. I don't know the life cycle of that blight but those trees were say 100 years old. Well, did they suffer a blight since then? I don't think so otherwise they wouldn't be that big, you know what I mean? Like I say, it's pretty dramatic. They're going to be calling it poplar woods soon because there will be no more[...]. And what the scary thing is to observe is that the young ones are dying. Any parasite doesn't want to kill its host but for whatever reason like they're no discrimination here, they're all dying. And they all feel like a, you can almost see that blight. It's only in the last 5-8 years but now it's getting like really, really dramatic. So dramatic that traditionally – here's where we would set this camp up and like I say, you rotate it a little bit. You don't want to crush too much of the ground, it's pretty sensitive. Now in order to set this tent here, I don't feel safe because you got to take this tree down because it's dead and it could fall on you. There's dead trees all over here. It's unbelievable but they're all dead. It's not like light trees are falling. If you're going to continue to use that camp this year, we will be taking the trees down. That's how dramatic that has become in the last little while. What does that? I have no idea.*

*I hate to say it, but it was just about polluted with oil pumpers. Like before I could go in fields and close to wooded areas and there was never pumpers and now you see them, they're all there...they're all over, there's just hundreds of them all over. It's just polluted with them up there now and that really affected certain areas, because you've got the transportation, you know, you've got all these vehicles, like I was saying earlier, that compacts the soil and when the soil is compacted rain can't get into it and then that affects your growth and your plants for the wildlife and, you know, for the animals and birds it has a big effect on that once you compact that soil...people have to drive to them and that, you know, to put them in it's just like there's nothing ...it's all just the vehicles and going and everything's packets. It's kind of unsightly, really... It used to be really nice; it used to be like just fields, like animals and that, there's nothing for them to feed on there anymore, you know, and the birds they don't go there because they have to go...they don't want no part of that. Nothing grows around them.*

#### 4.3.4 Changes to Moose and Elk Populations

There were mixed observations of changes to moose populations in the Study's Geographic Scope, with several participants discussing a notable increase in moose numbers and others discussing the decline of moose.

One participant mentioned an increase in the number of elk residing within a specific portion of the 45m ROW. While only one participant discussed this change, it is important to highlight because of its overlap with the Project. The participant discussed that the number of elk in this area has increased due to the availability of food from agricultural sources and shared a concern that the development in the area would force them north, or land lock them south of the Project.

*But there is elk, there is moose, if anything I would say the moose population though has increased. Like it's increased to where like we could go out every day in fall and I could find a moose or several, and that's not just fall. Like we could go now and I would find one.*

*Interviewee: The moose population has just started to grow. There was never any moose there until probably the last ten years. And we're starting to see more and more, and the province hasn't opened up a hunting season there. The Métis harvesters sometimes go down there, and very respectful of what animals they take out there. Because the population is just starting to grow. And that's one of my worries about something like this is losing that moose population. Or pushing them to another area...It dropped when I was really young. I was probably five, maybe. And we never used to see moose around there at all when I was a kid. And over the last few years it's... I take my son up there hunting and he's growing up seeing moose there... It dropped when I was really young. I was probably five, maybe. And we never used to see moose around there at all when I was a kid. And over the last few years it's... I take my son up there hunting and he's growing up seeing moose there...*

*Interviewer: And would you say that the population started to return before 2004, or was it more recent than that?*

*Interviewee: I've seen the moose population explode there. When I first started hunting, there was not a moose in the area at all. And it was probably a dozen years ago we spotted the first moose. And now, there's a very huntable population...There's no wolves in that area. There's coyotes but there's no wolves. They've got all kinds of food source. A moose is - unlike a deer, in a bad winter a moose has the strength and the height to move around deep snow. And they've also got the strength to dig down and eat. They also eat a little bit different stuff than what a deer would eat. They'll go into the marshy areas and they'll eat the marsh grasses.*

*The food source is amazing for the elk, they love potatoes, there's a huge potatoes growing area around here, Carberry's massive. They're also getting pushed – they're coming more, they're showing up in a lot of places in Manitoba, [where] there wasn't any.*



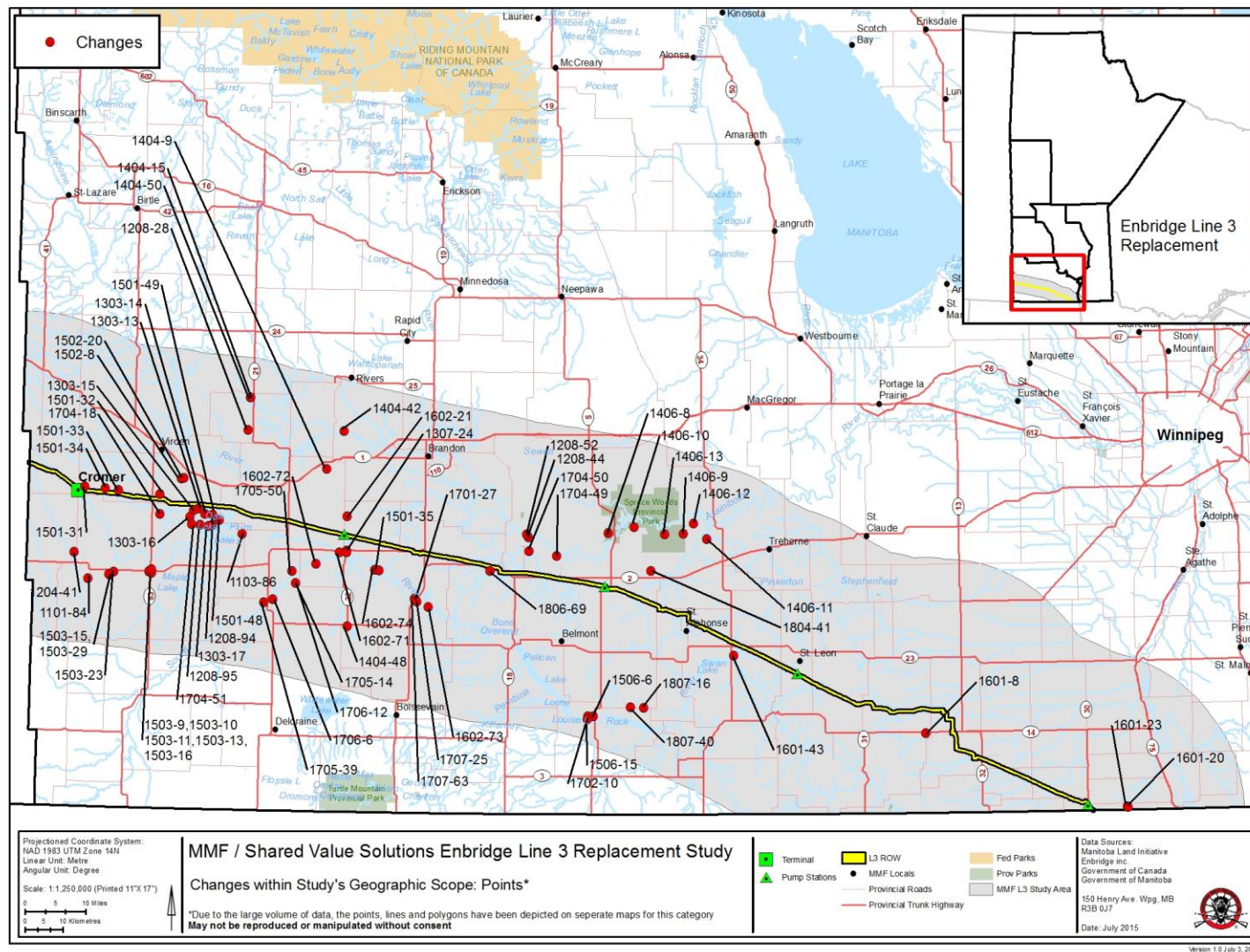


Figure 19. Changes within Study's Geographic Scope: Points

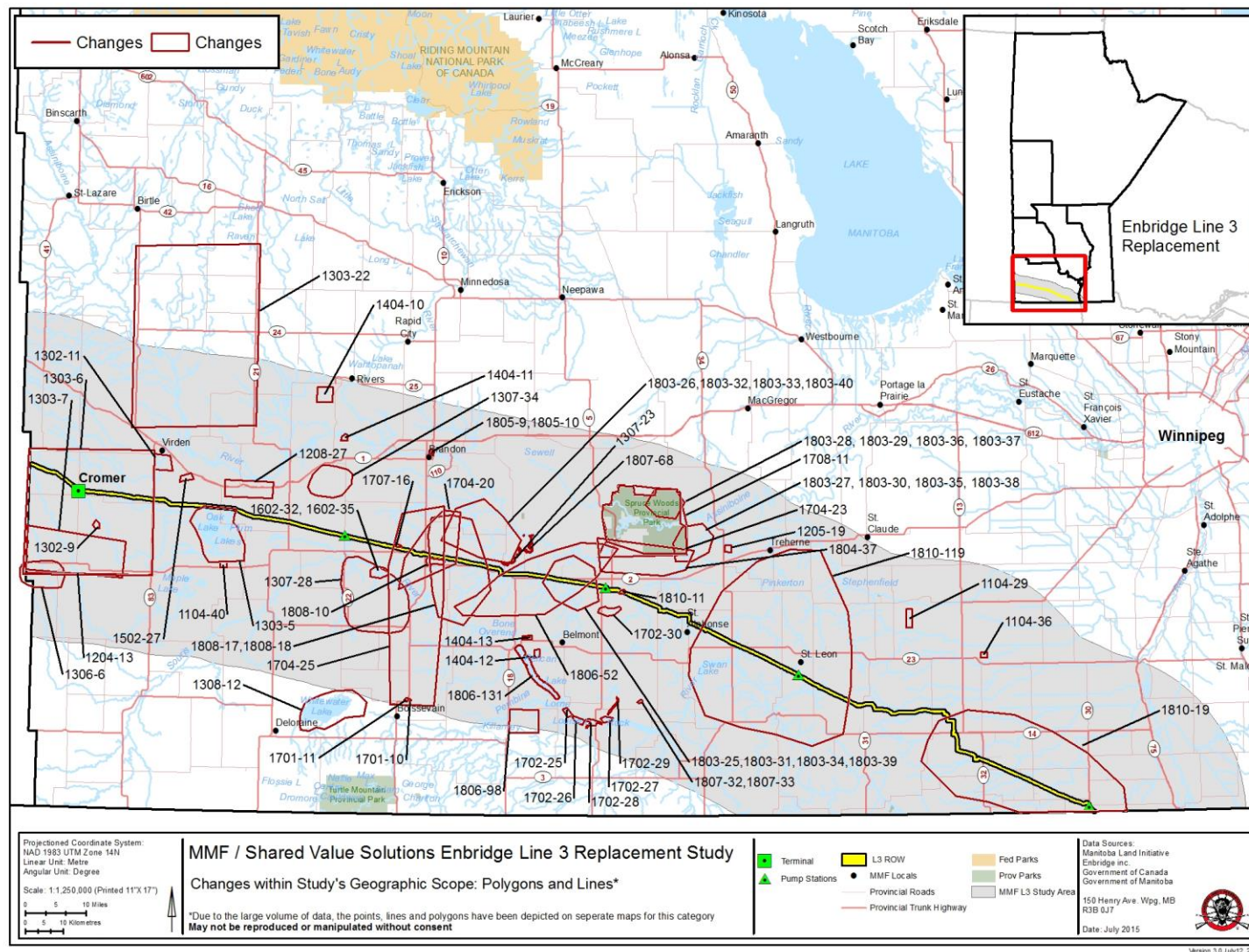


Figure 20. Changes within Study's Geographic Scope: Polygons and Lines



Table 14. Changes within Study's Geographic Scope

Map ID	45m ROW	1km ROW	Type of Change	Notes Taken During Interviews
1101-84			Mammal Habitat Mammal Population Increase Mammal Population Decrease Change in Water Levels	Deer are smaller and populations are decreasing. There used to be more hunters than deer, now there are more deer. There is flooding in the area and deer have to have their young in the open, which means they are more open to coyotes. There are also more coyotes in the area.
1103-86			Changes in Water Levels	Deer populations have decreased because of flooding. Habitat has been lost because of Assiniboine and Souris river rising. Deer have to run up into the fields and once they are in the fields they are fair game for hunters.
1104-29			Mammal Population Decrease Vegetation Population Decrease	Farmers/municipalities have been removing trees in an area where participant harvests. Has seen this within the last five years. Deer population has decreased in this area - the harsh winter has also contributed to the deer population decrease but the clearing of the trees and their habitat is being removed (no windrows means that there is no habitat for deer).
1104-36			Mammal Population Decrease Vegetation Population Decrease	Decrease in trees because farmers are removing their windrows. Removes deer habitat and decrease in deer habitat noticed.
1104-40			Mammal Population Increase	Has seen more coyotes in this area in the last 5 years. Might be because of the deer population has increased and no one is hunting them.
1204-13			Change in Water Levels Other Change Vegetation Population Decrease	High water and flooding here. The land has been polluted with oil pumpers. There are hundreds of them. Many vehicles and transportation activities which compacts the soil. Soil compaction means that rain can't get into soil which effects the growth of plants for wildlife to feed off. Used to be fields, but nothing here now for animals or birds to feed on. Started the last 10 years.
1204-41			Mammal Population Decrease	Deer have declined. Two years ago they had an extremely cold winter. Will take a while for the deer to come back.
1205-19			Other Change	More cutlines in the park are opening up corridor for increased predator species to hunt large game.
1208-27			Mammal Health Mammal Population Decrease	Deer health is decreasing and population has decreased. Human population has increased in the area, more noise, less places for them to live.

Map ID	45m ROW	1km ROW	Type of Change	Notes Taken During Interviews
1208-28			Mammal Population Increase	Moose population has increased in the last 3 years. Interviewee's father believes that the moose are moving from the south, moving north due to increased population and noise in the area.
1208-44			Vegetation Population Decrease Other Change	Decrease in wildflower and grasses population and a decreases in bees.
1208-52			Vegetation Population Decrease Change in Water Levels	Birch tree population decrease. Water levels have decreased.
1208-94			Fish Health Fish Population Decrease	Less perch and walleye. The lake doesn't look nice anymore. Its green and smells. This has to do with something else other than algae. Used to eat jackfish here but don't anymore - they look strange.
1208-95			Fish Health Fish Population Decrease	Less perch and walleye. The lake doesn't look nice anymore. Its green and smells. This has to do with something else other than algae. Used to eat jackfish here but don't anymore - they look strange.
1302-11			Mammal Population Increase Mammal Population Decrease	Moose population dropped years ago and never used to see moose around there at all. In the past 10 years the population has started to come back. This is a sensitive area.
1302-9			Bird Population Decrease	Has seen Burrowing owls (SAR) since he was a kid; however, over the last 15-20 years there has been less and less. Not sure what's causing this - not because of a lack of food and not because they're getting hit on the highways.
1303-13			Bird Population Decrease	Decline in prairie chickens in last ~15 years
1303-14			Bird Population Decrease	Decline in prairie chickens in last ~15 years
1303-15			Bird Population Decrease Change in Water Levels	Decline in prairie chickens in last ~15 years From change in water levels
1303-16			Bird Population Decrease	Decline in prairie chickens in last ~15 years
1303-17			Bird Population Decrease	Decline in prairie chickens in last ~15 years
1303-22			Mammal Population Increase	Increase in coyote population over the past 5 years. Farmers have been concerned for cattle.
1303-5	YES	YES	Changes in Water Levels	Water levels have increased over the last 10-15 year in the wetlands in Oak Creek area.

Map ID	45m ROW	1km ROW	Type of Change	Notes Taken During Interviews
1303-6	YES	YES	Mammal Population Increase	More moose in the area due to the increase in water levels in the wetlands. Moose are also being driven out of the mountains because of ticks, predators such as wolves and hunting pressures.
1303-7	YES	YES	Mammal Population Decrease	Fewer deer due to increase water levels.
1306-6			Mammal Population Decrease Vegetation Population Decrease	Changes in the last 15 years in the deer population due to increased access from roads built for accessing the oil wells. There needs to be access to get to the wells, but the companies take out a huge circle around the pump and deplete all of the forest. When some of the hunters first started, they said they would have to duck down because of the large amounts of deer. Today, it could take 5 days to get 9 deer. Huge decrease.
1307-23			Fish Population Decrease Change in Water Levels	Changes in this spawning area has resulted in less fish overall. The rivers have widened and water levels have gone down. There has been devastation to the rivers because of flooding.
1307-24			Fish Population Decrease	In the last couple of years the water levels have increased.
1307-28			Mammal Habitat Vegetation Population Decrease	Mammal habitat decrease and forest decrease. The bush is decreasing and farmland is increasing everywhere because farming is a tough business and you need to have more land.
1307-34			Bird Habitat	The big marshes are usually where birds go to lay their eggs. White Water dried up years ago and it changed the bird migration patterns. Canada goose population greatly increased. Alexander Marsh is getting smaller and there is less habitat. Could be from drainage.
1308-12			Bird Health Change in Water Levels	
1404-10			Bird Population Decrease	Less birds because of habitat loss. Birds like Hungarian partridge can't hide and the coyotes get them. Mainly due to wind rows being plowed under.
1404-11			Mammal Health Mammal Population Decrease	Deer populations have decreased because of hard winters. People try to blame coyotes but the coyotes are killing deer that are dying. In the past (8 years ago) there were 600 deer in this area now hardly see any. Farmers will poison the land to kill any weeds there in the fall so there's less work to do in the spring. Used to be food for deer. Moose are species at risk in this area as well.
1404-12			Mammal Habitat	Elk and moose habitat has been lost because roads have been built for bike paths.

Map ID	45m ROW	1km ROW	Type of Change	Notes Taken During Interviews
1404-13			Mammal Habitat	Elk and moose habitat has been lost because roads have been built for bike paths.
1404-15			Fish Population Decrease	Fish have been depleted because of overfishing.
1404-42			Vegetation Population Decrease Water Level Change	Trees dying because of flooding
1404-48			Fish Population Decrease	Depletion of pickerel.
1404-50			Fish Population Decrease	Noticed depletion of fish populations 6 years ago.
1404-9			Bird habitat, Other Change	Used to be road allowances 50 feet wide and now they're plowing all road allowances over. Grass used to get high and would leave room for nesting. Birds are running out of habitat. Used to be able to access Alexander marsh and now there is a plowed field and this destroys access to the marsh. Other municipalities (Blanchard Municipality) have incentives to keep wetlands.
1406-10			Vegetation Population Decrease	Spruce trees declining from spruce borer beetle infestation, mite infestation, and fungus that's transported by insect. This started 35 years ago.
1406-11			Vegetation Population Decrease	Spruce trees declining from spruce borer beetle infestation, mite infestation, and fungus that's transported by insect. This started 35 years ago.
1406-12			Vegetation Population Decrease	Spruce trees declining from spruce borer beetle infestation, mite infestation, and fungus that's transported by insect. This started 35 years ago.
1406-13			Vegetation Population Decrease	Spruce trees declining from spruce borer beetle infestation, mite infestation, and fungus that's transported by insect. This started 35 years ago.
1406-8			Vegetation Population Decrease	Spruce trees declining from spruce borer beetle infestation, mite infestation, and fungus that's transported by insect. This started 35 years ago.
1406-9			Vegetation Population Decrease	Spruce trees declining from spruce borer beetle infestation, mite infestation, and fungus that's transported by insect. This started 35 years ago.
1501-31			Mammal Population Decrease	Deer population decline. Coyotes are getting young when they are calving

Map ID	45m ROW	1km ROW	Type of Change	Notes Taken During Interviews
				- they calve in the long grass. Predation and overhunting could also be an impact.
1501-32			Mammal Population Decrease	Deer population decline. Coyotes are getting young when they are calving - they calve in the long grass. Predation and overhunting could also be an impact.
1501-33			Bird Population Decrease	Decrease in grouse due to water level increase.
			Change in Water Levels	
1501-34			Other Change Change in Water Levels	Increase in the population due to the wet conditions and flooding.
1501-35			Change in Water Levels Other Change	Water level rising along the Souris river from Oak Lake to Belmont. Causing issues all in the area with flooding and changes in animal populations. More rain and bigger snow melt than usual. He's never seen it that bad as it has been.
1501-48			Other Change	Algae infestation on beaches.
1501-49			Fish Population Decrease	Bad winter kill.
1502-20			Mammal Population Decrease	The groundhogs are disappearing. Used to see where they burrow on the side of the road. People shoot or poison them and see them as a nuisance.
1502-27			Other Change	More hunting in the area.
1502-8			Change in Water Level Other Change	Normally arid and sandy here, now there is a high water table. Sometimes they go and it is high water and sometimes dry.
1503-10			Mammal Population Increase	Increase in the population of coyotes.
1503-11			Mammal Population Increase	Moose population has exploded. A dozen years ago they spotted the first moose in the area and now there is a 'hunnable' population. This is because there are no wolves in the area and there is a lot of food. Moose will go in to the marshy areas and eat the marsh grass, a bit different than what the deer will eat. Now sees hunting pressures on the moose population because of harvesting rights coming in. He is concerned about the moose population.
1503-13			Other Change	The new generation of farmers have changed the land formation and increased deforestation. They knock the bush in to potholes and burn the piles. Pushing the bluffs back has impacted where the animals (deer) travel to

Map ID	45m ROW	1km ROW	Type of Change	Notes Taken During Interviews
				bed. Their bedding areas have been condensed.
1503-15			Other Change	In last 15 years have seen a number of oilwells going in.
1503-16			Other Change	Within the last 15 years oil wells have gone in. They are all scattered in this area and west to the Saskatchewan border.
1503-23			Occupation Site Change	With all the oil wells that have come up in the area there is nowhere for anyone to stay here anymore when they go to harvest.
1503-29			Mammal Health	Coyote's get mange. It's a cycle. There are so many of them now that even when they get sick there are still many of them. This has been happening over last 20 years.
1503-9			Mammal Population Decrease Other Change	Reduction in the deer population. Lack of trapping tcoyotes has caused this. Cold and long winters starved the deer. Used to see 20 to 30 deer and now sees just one. Last year was worst he's ever seen it. About 15 years ago there was another big kill off of deer.
1506-15			Other Change	Sloughs have disappeared and habitat has been lost for use in agricultural development.
1506-6			Mammal Population Increase	Elk population has increased around Rock Lake since the 1980's. Prior to 1980 there weren't Elk in the area - likely came out of the Spruce Woods Park, and migrated down to Neelin.
1601-20			Mammal Population Increase Mammal Population Decrease	White-tailed deer have increased in population. Deer carry a disease and pass on to Moose through Deer scat. Moose population decreased as a result.
1601-23			Mammal Population Decrease	Deer have decreased from harsh winters and predation.
1601-43			Mammal Population Decrease	Elk have decreased here because they have found a better food source in another location.
1601-8			Vegetation Population Increase Change in Water Levels	Wetland has grown, though it is not as wet, the vegetation is thicker and heavier.
1602-21			Bird Population Increase	Increase in duck population within the last two years.
1602-32			Mammal Population Decrease	Within last year there has been a decrease in deer populations. Perhaps due to coyotes and harsh winter.
1602-35			Mammal Population Increase	Increase in coyote populations Perhaps reduction of predators and lots of food.



Map ID	45m ROW	1km ROW	Type of Change	Notes Taken During Interviews
1602-71			Fish Population Decrease	Pickeral population decrease in the last year
1602-72			Fish Population Decrease	Pickeral population decrease in the last year
1602-73			Fish Population Decrease	Pickeral population decrease in the last year
1602-74			Fish Population Decrease	Pickeral population decrease in the last year
1701-10			Mammal Population Decrease	Fewer deer
1701-11			Mammal Population Decrease	Fewer deer
1701-27			Bird Population Decrease Mammal Population Decrease	Fewer deer and turkeys in the areas. In the past year has only seen 50 deer, whereas in the past she would usually see hundreds. For turkeys, used to see two packs of 20 but now hasn't seen any.
1702-10			Fish Habitat	This year the fish spawned later than usual.
1702-25			Mammal Population Decrease	Muskrat population decrease over the last 15 years.
1702-26			Mammal Population Decrease	Muskrat population decrease over the last 15 years.
1702-27			Mammal Population Decrease	Muskrat population decrease over the last 15 years.
1702-28			Mammal Population Increase Vegetation Population Decrease	Beaver population increase and is destroying habitat. beavers have to chew to wear teeth down and build homes, but they are killing a lot of trees. Too many because no one is trapping.
1702-29			Mammal Population Increase Vegetation Population Decrease	Beaver population increase and is destroying habitat. beavers have to chew to wear teeth down and build homes, but they are killing a lot of trees. Too many because no one is trapping.
1702-30			Mammal Population Increase Vegetation Population Decrease	Beaver population increase and is destroying habitat. beavers have to chew to wear teeth down and build homes, but they are killing a lot of trees. Too many because no one is trapping.
1704-18			Mammal Population Decrease	Noticed deer population decrease within the last 2 years. This may be caused by the floods and land clearing by farmers
1704-20	YES	YES	Mammal Population Decrease	
1704-23			Mammal Population Decrease	Moose
1704-25	YES	YES	Mammal Population Decrease	Moose
1704-49			Fish Population Decrease	Caused by flooding, heavy snows, and improper opening of dams.
1704-50			Fish Population Decrease	Caused by flooding, heavy snows, and improper opening of dams.
1704-51			Fish Population Decrease	Caused by flooding, heavy snows, and improper opening of dams.
1705-14			Mammal Habitat	A lot of the habitat in this area has been destroyed by farmers and now there are fewer places for deer to hide.

Map ID	45m ROW	1km ROW	Type of Change	Notes Taken During Interviews
1705-39			Bird Habitat	Farmers draining the duck and geese habitat.
1705-50			Other Change	Due to people fishing throwing their broken hooks, packaging into the water.
1706-12			Fish Population Decrease	A lot harder to catch fish, perhaps in recent years because of the flood - the water has been high. For a while there has also been a lot of over fishing.
1706-6			Mammal Habitat, Mammal Population Decrease	Because so many trees have been cut down the deer harder to find. May also be because of the flood in 2012
1707-16		YES	Mammal Population Increase	Increased moose population. They released timber wolves into the parks in the mountains in the north near Dauphin and this scared moose away. They closed down hunting in the mountains.
1707-25			Other Change Change in Water Levels	Flooding and high water.
1707-63			Mammal Population Decrease	Deer population is low because of hard winters. Predators are able to get them in deep snow. Used to see 10-15 in the area now only see 1 or 2. Deer get chased from parks, then get chased to areas like where the pipeline is going, so hopefully construction won't last that long.
1708-11			Mammal Population Decrease	Restricted kills to only 1 deer because of harsh winters.
1803-25	YES	YES	Mammal Population Decrease	Cold winter decreased deer population.
1803-26			Mammal Population Decrease	Cold winter decreased deer population.
1803-27			Mammal Population Decrease	Cold winter decreased deer population.
1803-28			Mammal Population Decrease	Cold winter decreased deer population.
1803-29			Mammal Population Increase	Elk population increased due to increased food supply.
1803-30			Mammal Population Increase Mammal Population Decrease	Elk population increased due to increased food supply.
1803-31	YES	YES	Mammal Population Increase	Elk population increased due to increased food supply.
1803-32			Mammal Population Increase	Elk population increased due to increased food supply.
1803-33			Mammal Population Decrease	Rabbit population has declined dramatically, due to a decrease in logging and an increase in predation.
1803-34	YES	YES	Mammal Population Decrease	Rabbit population has declined dramatically, due to a decrease in logging and an increase in predation.
1803-35			Mammal Population Decrease	Rabbit population has declined dramatically, due to a decrease in logging and an increase in predation.

Map ID	45m ROW	1km ROW	Type of Change	Notes Taken During Interviews
1803-36			Mammal Population Decrease	Rabbit population has declined dramatically, due to a decrease in logging and an increase in predation.
1803-37			Mammal Population Increase	Increase in coyote population
1803-38			Mammal Population Increase	Increase in coyote population
1803-39	YES	YES	Mammal Population Increase	Increase in coyote population
1803-40			Mammal Population Increase	Increase in coyote population
1804-37			Mammal Population Decrease	Deer population decrease.
1804-41			Mammal Population Decrease	Deer
1805-10			Other Change	The 2013 flooding of the Assiniboine river, 1st street was under water.
1805-9			Other Change	In 2011 there has been increased flooding of the Assiniboine River in Brandon (Hwy 110).
1806-131			Other Change	
1806-52	YES	YES	Mammal Population Increase	Elk population increase within the last 20 years The pipeline construction could disrupt elk migration and push them north through the Neepawa and riding mountain area and it could land lock elk in this area and drive them further south.
1806-69			Other Change	Hwy 2 bridge at Souris river was raised 20-30 ft
1806-98			Mammal Population Decrease	Decrease in rabbit population because of increase in agriculture. The sloughs and small poplar stands have been cleared. Since 1970 to now the land has been cleared from 50-60% bush to 5%.
1807-16			Other Change	
1807-32			Bird Population Decrease	Goose population decrease.
1807-33			Changes in Water Levels	Water level has increased by 3-4 feet.
1807-40			Mammal Population Increase Mammal Population Decrease	Coyote population increase and harsher winters led to deer population decrease.
1807-68			Access Route	Ferry anchors were ruined due to flooding, no longer running.
1808-10			Vegetation Habitat Change in Water Levels	Sloughs were being dried up by farmers, some wetlands have returned in the last ten years due to work done by Ducks Unlimited.
1808-17	YES	YES	Mammal Population Increase	Increase in Elk population.
1808-18	YES	YES	Mammal Population Increase	Moose population increased, because of habitat displacement.

Map ID	45m ROW	1km ROW	Type of Change	Notes Taken During Interviews
<b>1810-11</b>	YES	YES	Bird Habitat, Bird Population Decrease Vegetation Habitat Vegetation Health Change in Water Levels	Due to past spill, excavation occurred and vegetation had to be moved This caused short term effects to agriculture, loss of bird habitat and lead to bird population decrease in that area.
<b>1810-119</b>	YES	YES	Mammal Population Decrease	Hunting pressure on moose has decreased the population. Potential fragmentation caused by the pipeline could lead to decreased moose population
<b>1810-19</b>	YES	YES	Bird habitat Mammal Habitat Vegetation Habitat Vegetation Health	No additional details.

## 4.4 Cumulative Effects

Cumulative effects are environmental, socio-cultural, or economic changes that are caused by a combination of natural or human activities combining and accumulating over time. The term most often refers to accumulated effects of industrial development and other natural stressors (e.g., weather) that cause observable changes to the land and the way that people relate to and use the land.

TKLUS participants were asked about existing developments or pre-existing conditions in the environment that could contribute to cumulative effects. Inference about potential cumulative effects, related to the Line 3 pipeline can also be derived from the changes participants have observed in the Southwest Region over their lifetime (Section 4.3). Many participants were able to express their concerns about cumulative effects.

*I think the Métis as an Aboriginal people know that the economy has to move forward, that we have to have projects like this that will benefit all Canadians including Métis Canadians. But we need to be careful, we can't – the days are gone where we can just do a project and come high water.*

*I think that we need to understand that the world we live in – if there's a small [change] effects are cumulative and if one species could be affected in a large way that has a trickledown effect throughout the whole ecology of the area. So I just say just cross your T's and dot your I's and listen to people who are concerned.*

*If there are changes in the water, changes in the way that the animals use the land, all those things may not have in my estimation, they may have small effects but sometimes these small effects make for big changes. Like I was saying before, there used to be several hundred moose in the Turtle Mountains, now there's hardly any. And most of them are out in the Prairie, whether that is because of a natural shift or because of manmade issues, again, I think the changes that happen are cumulative and they can add up to major changes.*

Some of the most common developments that participants perceived to have been connected to changes in their local environments, and which may combine cumulatively with potential effects of Line 3 Pipeline, included the following:

- Oil Infrastructure
- Agriculture
- Human Disturbance
- Natural Events
- Logging/Pulp and Paper

There are several located within or in close proximity to Enbridge 45m ROW, where participants discussed the changes they have observed and concerns related to how the Line 3 Pipeline could further impact these areas.

#### 4.4.1 Past Oil Infrastructure

Many participants discussed the relatively recent oil development in Southwestern Manitoba and the disturbance and damage this development has caused to the landscapes/habitats, animal distribution and abundance and harvesting practices in the area.

*Well, like I said they clear-cut roughly I would say if I was to eyeball the area anywhere, they have to cut a road allowance to get into that, a road to get in there. And the clear cut an area I'd say about a good acre to an acre and a half per pump. So it does open up that area. So where it used to be thick bush it is now clear cut open. So it, you know, in the scheme of things over the population it may not be a big area but when you're limited to a square mile and you lose a couple acres here and there and so on, so forth you don't want to be hunting through the bush for example and there's a pump behind it that should a bullet ever get through the woods that, you know, you have to be very cognizant.*

*There's been some stuff with where we are with the pumps. The pumps used to draw oil and put it into a large reservoir that was immediately beside the pump. And some of the areas, what they've done is they've gone away with these large reservoirs and they've created pipe systems through the area, buried them and then takes it to a large central depo or whatever, then they ship it of however through there. So, there's been quite a bit of cutting to be able to accomplish that, a lot of noise takes place, dispersing the animals, more vehicle traffic, all of that has happened in that area as well. So, it's been pipelines on a significantly smaller scale, not, say, 150,000 barrels per day, but still the same practice to be able to accomplish getting something from one place to another.*

*Down around Lyleton area where we do a lot of our hunting for deer, moose and coyotes and fox, that area has become oil country, so there's pump jacks all over the place. Hundreds of them. And it pushed the deer because they're noisy, it pushes the deer especially into areas that don't have the pump jacks, so they're not in the same spots they used to be. They haven't moved far but as they keep putting more pump jacks in the deer keep moving further and further away*

*Near Virden, Manitoba. And when you're driving through areas where they clear cut an open area and for these pumps it takes away on the, it limits again the vegetation but the area for where the deer lives. Has it increased or decreased the animal population, I would say no. However, it does again shorten the areas we can hunt. Where the pumps are you don't want to shoot an animal near a pump station in case it hits a pipe or a container and so on.*

*And the big changes I saw was like say between ... Oh, I'd say 20, 25 years ago until now like the land, I hate to say it, but it was just about polluted with oil pumpers. Like before I could go in fields and close to wooded areas and there was never pumpers and now you see them, they're all there. Yeah, they're all over, there's just hundreds of them all over. It's just polluted with them up there now and that really affected certain areas, because you've got the transportation, you know, you've got all these vehicles, like I was saying earlier, that compacts the soil and when the soil is compacted rain can't get into it and then that affects your growth and your plants for the wildlife and, you know, for the animals and birds it has a big effect on that once you compact that soil...It used to be really nice; it used to be like just fields, like animals and that, there's nothing for them*



*to feed on there anymore, you know, and the birds they don't go there because they have to go ... they don't want no part of that. Nothing grows around them.*

*Around Sinclair, Manitoba, like towards the southeast there, towards the border and Reston, up near Cromer it's just all ... they're stripping a lot of the natural[areas]. [I] used to go to different places there and hunted there for years and now you go there and it's just barren packed up mud, you know, and then there's oil refineries in there and all and the animals just keep getting pushed so far back and the birds, and there's no ... it's just all being destroyed and there's nothing being put back. You go to the north where they used to log and do stuff like that, at least they replant and stuff like. They don't do stuff like that in those areas. They leave, just pack up once they get their money, whatever they do and they have those things spread all over the place, like the oil pumpers and all their equipment and that and then when they leave it's just left, there's nothing built back up again. It's kind of disheartening to see that, you know, from the way it used to be. If I was a moose or a deer I wouldn't want to hang around that area. Would you? That's what I mean, you want to be in the bush where it's nice and clean and, you know, nice fresh water and all that stuff. All that stuff gets dumped and everything else and it all ends up in our water supply.*

*Developments are oil wells in the area where I go at times. I know it's going to, how do you say it, it's part of life and you go through it and so forth. It's part of the oil patch. What is – I don't know how to say it. I've seen oil drills out. I know they're regularly maintained but when I go hunting to this one area up around Oak Lake, and crown land, at times it's very annoying because you're sitting in the tree stand or on the ground trying to be careful, because you can smell it's too much gas feeding along the ground... But talking to some people in that area, they figured it was their septic tanks smelling bad no it's H<sub>2</sub>S g[as]. They were kind of shocked. They didn't expect that. So they were kind of warned by the, in my opinion, told what it was, told it was gas...I know it cuts my time [out on the land harvesting] down because you're sitting in there in some gas. It's something you don't want to sit. You're going out into the bush...for three reasons; one to relax, two to be one with nature, three to put food on my table. And when you smell foul odours like that it makes it unenjoyable. You just want to get out there really fast, do what you have to.*

*Well, again, I think it's mostly allowing ... if it allows access easier into there, or allows people to be able to have shooting lanes for them. Like, I see that a lot when you're clearing straight runs of access like this, and it allows people to, basically, see long distances down, and see animals cross, so they're ideal set up areas for hunters and things like that, right? So that's my bigger concern about those, so that's ... you know, pipelines, the hydro right of ways, all of those types of things.*

*[...] the thing is, you know, a lot of these corridors have come back to a degree that prevents or minimises that, so you might have the odd tree that's, kind of, come up or shrub, or whatever, so for hunters, they cannot really, really see long distances down these, and that will bring all of that back again.*

#### 4.4.2 Past Agricultural Impacts

The potential for cumulative effects related to local animal and plant populations and the viability of future harvesting activities were most often tied to the expansion of large-scale agricultural practices in the area. Participants voiced their concerns around the removal of natural landscapes (forests, windrows) for the expansion of farmable land; alterations to hydrology patterns due to

agriculture-related drainage systems; decreases in the size of road allowances; and use of pesticides. Most of these impacts were then related to the effects on food sources for animals, availability of habitat for use by animals and the related depletion of harvestable animal populations in the region.

*No there would be nothing in those areas. I have a concern with some of the farming practices north of Carberry, they're starting to really get rid of a lot of forest. I don't think people realize how much is going on north of Carberry but it's bad, very bad...And like I say, with Carberry it's bad corridor with elk. I think anyhow, they're pushing pretty big swaths through there, won't be much left.*

*Farming, in my opinion farming has a lot of impact too on crown lands and marshes. And yes, like I says, we've got to clean our farms, do the lines every night, just pushing their animals off, their wildlife off the property. And another thing is drainage ditches and so forth where it flows downhill. So that's what's causing, in my opinion that's what's causing more floods in the rivers. It's not because high significant rainfall, it's because of drainage and so forth. If you follow the drainage ditch you're probably before it even stops. Where does it go? It goes into that spot. And this is also affecting our marshes and making our marshes. Is it good for the marshes, yes it is. But it's also causing humans problems*

*The big differences I've seen is that the depletion of the road allowances and tall grass and everything, the farming practices are getting a little out of control. They're ploughing all the road allowances, they're ploughing the trees. The small animals have nowhere to really survive, to hide. And the farming nowadays, they kill everything off in in the fall. So there's nothing in the fields. Even the hay crops like guys are cutting hay were cutting hay a week ago. And the idea behind that, I asked, I said, "Geez, that's awful early to cut hay." But what they're doing now is they're doing 3 cuts of hay. They'll cut it very early then they'll cut it again and then they'll cut it again. By the time the following – that fall comes when they do that cut and again, what the wildlife used to live on is it's not there. Fishing lakes, lakes are getting yucky. Earlier, blue algae already on the lake and rivers I've seen. It's just coming to the – it hasn't even been hot yet like heat usually generates that. Yeah, just a slow – everything's kind of getting polluted. I worry most about the little critters, the little rabbits and the little prairie chickens.*

*Yeah, actually all this right up to that corner and then across right in here too. And the deer population has gone – just gone. It's just gone and there's the other problem with the farmers. You want to keep talking here, the other problem is now in the farming practices, farmers will poison their land to kill weeds or any growth that was there in fall. So there's less work to do in the spring. ...Now in the fall just before it freezes, those guys go and round up and spray all that dead. So now there's absolutely nothing there for them to eat, nothing. Now they got no road allowances forage, they got no farm land forage. So add it up 10 years from now, done.*

*Well it's, like I say, there's a lot of – like I know there's a lot of wildlife in that area and vegetation, like natural vegetation and that. Part of the reason why a lot these wetlands expanded in the last 10 to 15 years is due to draining from farmland. Like my own personal experience on our farm, we got flooded out and lost over probably 80 to 100 acres of land due to the farmers draining. And it's just dig a trench, drain the water, pass the buck. And like it's just little old man on a totem pole, not their problem, you deal with it, so. But that's another story from the past.*

*Well, the farmers now with GPS and everything else on their tractors and their greed there. Like*

*that used to be a grass area and a road allowance I think is like 50 feet wide or more. And they're destroying like everywhere, they're ploughing all these road allowances under and the grass used to get high in them or farmers would cut the hay.*

*It would still leave enough room for nesting and everything else, right? Now the guys like the little birds, where do they nest in the ditch, they're running a habitat, right? So that's a huge problem. Like you go now and see where the farmers have been destroying the road allowances and it's bad, very bad. And now they got a ploughed field there so somebody comes where – we used to be able to access Alexander Marsh, now he's got the field ploughed.*

*So there could be an increase in the oil and gas activity, which might cause some cumulative effects. I think the biggest impact on the environment there and impact on our way of life is – and there's nothing anybody can do about it, but it's the agriculture. And the spraying, all the herbicides and the pesticides – potatoes have to be watered every second day... That water's coming from someplace. They're pesticided and they're pesticided for Colorado Beetle, for everything. And then you got to worry about fungus so they're sprayed to deal with the fungi and stuff. And canola, it's sprayed all the time, they're doing a lot of aerial spray. And I understand, you know. It's just the nature of that business, and I know that. But we don't pick berries anymore other than – I finally found a place to go pick berries. Because you don't know if they're clean. You don't know what's been sprayed on them. And I think that project, but you combine that and you run a pipeline through it, then you increase the possibility. Or the possibility of increased oil and gas activity. And the wildlife are disappearing. They really, truly are.*

*You know, the land is no more land you call it. They're abusing – the farmers are abusing their land with their chemicals. They're abusing the birds, everything, the environment; they're abusing everything... But that's not right, you know. You take like bees...; in the forties you used to see the beehives alongside the road; crazy, you know, there was - about every half mile you'd see bees, you know, making honey. You don't see that now. And the fertiliser they put in the land, there'll be so damn much fertiliser one of these days that nothing will grow. You take like this whole valley, you know, the Assiniboine valley – that's from Saskatchewan probably Winnipeg – where there is nothing that grows in that silt. There's a farmer in Saint Lazare, he can't seed anymore, because his land is bugged ...*

*So where are the birds going to go, the bees? Pretty soon there won't be no trapping – already today we haven't got any trapping. So that's what I take – you know, it's all you can see, it's going down, going down. Another fifty years from now, I don't know – I won't see it, but it's going down a lot since I was born....*

*Well I'm sure the agriculture has affected the environment, I'm sure you know of course. I mean you know the way they farm now, it's all you now heavy duty nutrients that go into the ... You know chemicals like [ammonia ... Anhydrous ammonia], that kind of stuff that goes onto the land or lots of you know pig manure that gets dumped on there and the nutrients flow quickly to the drainage which flows quickly to the rivers, which flows to the lake, right. I mean we're seeing that impact in the lake now, so large scale farming in the province, sure it's got an impact, it's a bad one. And why because we've become so efficient at draining water off the land, that's the thing.*

*The hog farms - again I remember when they reopened up hog farming here, factory farming to a lot of people, and the first thing that was my concern was the damaging of the aquifers because they have to get rid of their manure and ammonia bearing excreta or whatever. The supply to the land; where does it go, you know? And then also they take so much water - I don't know how they're - what is it - along the Assiniboine it's all irrigation, so there is a lot of irrigation. I think, to me, most of it was the hog farming; it just rankles me something terrible.*

#### 4.4.3 Previous Human Disturbance

Participants discussed an overall increase in human activity/disturbance activity in the areas near the Line 3 ROW. Human disturbance was often related to the increase in roads, traffic and workforce associated with the oil developments/infrastructure in the area, but also an increase in the number of people coming to the area to hunt.

*[Normally] our tradition is to be out in the field at sunrise. And, you know, you're nice and quiet and you're ready to hunt and then all of a sudden, you know, some, another hunting party will drive in at 9:30, 10 o'clock and any animals coming towards you that you've been very quiet is gone, they chase them back into the woods. And so it makes it very challenging when you have, you know, limited space and more people.*

*Well, I mentioned that for four generations we've hunted and gathered in the Virden area of the province. And I mentioned about five years ago we stopped hunting there, we've relocated to other family members up in St-Lazare, Manitoba. And but what moved us away from a very rich, bountiful area for deer and other animals is the fact that society has changed. Family has sold the land so we no longer have access to private land. And the Crown land is very overcrowded by new arrivals of people who are hunting now more so because in Canada hunting is relatively inexpensive compared to European and other countries. And so people come here and they have, and of course they go to Crown land and it causes over hunting of an area and over population.*

*[...]Because of the oil expansion in the area, there's constant vehicle traffic. So, this is an area where, I mean it provides the economic development for the farmers because they get a lot of stuff out of it, royalties, whatever the case may be. But the amount of traffic that's required by oil workers, they're nice guys and everything but there's this constant traffic. So these are areas that used to be absolutely pristine quiet. Farms would just shut down for the fall, they still had their cattle to take care of. But now you have constant, heavy machinery truck rolling through them. So, when we're pushing bush, we're coming up closer to the road, we have all these, they're transporting and the oil rig, you can have 25-30 semi-trucks lined up beside the road. And when those things start rolling, everybody knows about it. It's just so damn loud.*

*Interviewer: Okay. Alright. So you said that you had heard some stories about another spill that had taken place potentially. Can you tell me a little bit about that?*

*Respondent: It had, a pipe had burst and I heard that it had flown into a river or a creek. There was a lot of damage that was done...It was near Virden, south of Virden, I believe, in that area, yeah.*

*[...] the Crown land has received an influx of more people coming in to hunt and it's too dangerous. I've had bullets fly over my head a few times. And I've kissed the dirt a few times. I won't put my son in that jeopardy[...]. Well, I think that there's more of the land in that area has been bought by, there's no hunting zones, like people are not allowing people to hunt. Or they're selling it to the Americans and that's, and that's what happened in the last, like the Crown land, the people we*

*came across were Americans and the land owner that has a, land came and told us to get out and we didn't appreciate – we told him, well, we don't have to get out, you know. And then there's also what they call a road allowance and we were on the road allowance which is fenced off by the farmer and he tried to chase us off the road allowance. And we said you'll have to get the RCMP here cause you're not chasing me out.*

*I would say 4 years ago would be – it would probably be at least that because we've been there to fish it. And I just don't want to contribute. I don't want to go there and somebody ask me, "Where'd you go?" I went to Kenton, we caught lots of fish. Next thing you know that gets spread around. It's terrible, you got to hide everything.*

#### 4.4.4 Previous Natural Events

Participants expressed concerns about the local environment and climate and how that could contribute to cumulative effects. Many participants described the changes that have already occurred related to water levels, flooding, weather patterns and climate change.

*The weather. It's affected the wild life. I mean as far as the winters – the snow fall, like we get too much snow. And then we get too much snow, the deer can't... And then the coyote just drive on that cause they can walk in the snow, and the deer's going to... Other than that, the weather seems to be a little harder on them.... The moose, on the other hand, they can handle it. So, that's the only change that I've seen but they're getting more and more. I think the coyote numbers are up again, badly. I get phone calls from farmers just to come shoot one down....*

*The one thing I am worried about and we've been worried about a long time is what's happening to the rivers, like well a month ago we had four inches of rain and two days later, where I could walk across the river and not get my ankles wet, I had to swim across. So drainage has been something that's caused us problems and it's causing a lot of erosion problems too. Causing things to get blocked up and the rivers to move their courses and stuff, and it's cutting up people's farmland; you know stuff that they always farmed. Animals are a lot smarter than we are, they know when to get to high ground and they know when to....*

*And then you have... And again, you can't do anything about it but we're seeing significant changes in our climate. We're seeing significant changes in the springtime. We're seeing changes – and I don't know if you understand it but green-up is a super, super important time of life. Right? Almost all of your, your moose, your caribou, your deer, they're designed to have their fawns, calves, whatever, at that time. Maybe the first week in June, somewhere around there. When green-up's is happening that's when all those rich, new tender shoots high in energy are available to the mother, to feed that fawn or calf.*

*And then you have... And again, you can't do anything about it but we're seeing significant changes in our climate. We're seeing significant changes in the springtime. We're seeing changes – and I don't know if you understand it but green-up is a super, super important time of life. Right? Almost all of your, your moose, your caribou, your deer, they're designed to have their fawns, calves, whatever, at that time. Maybe the first week in June, somewhere around there. When green-up's is happening that's when all those rich, new tender shoots high in energy are available to the mother, to feed that fawn or calf.*



*If that green-up changes, if it's later or earlier – especially earlier now with warmer springs, green-up happens in May, the calf is born in June, mum doesn't have the energy and stuff to carry that calf through to the winter. She goes into the winter weaker, the calf may or may not be weaker but we don't know. They go into that winter and then they don't come out the other end. And it doesn't take long. If your recruitment is down to zero the death rate still stays high. Right? It doesn't take long .*

*So all these things, climate change, oil and gas development, if it happens, agriculture, which is always going to be part of Manitoba, that's never going to change, and it can't. Right? We all got to eat.*

*...I'd say about years ago now...they allowed a company to go in there to strip out of some of the trees. And since then, the hunting has changed in there as far as say numbers, as far as success rate. The success rate, yeah, you may harvest in the year but it took you so many trips out to get success. And also too that we often talk about it is that we've noticed the change in the station itself.*

*There must be some kind of a blight going through because we say pretty soon they won't be calling it Spruce Woods no more. It'd be called poplar wood because the spruce trees are – the death rate are unbelievable. So what that is, I have no idea. And also too, I know the park itself, we were hunting in there, elk hunting I would say that would have probably been about 8 years ago now. They were spring for leafy spurge. It was some kind of an [in]vasive species of a plant.*

#### 4.4.5 Past Logging and Pulp/Paper

A few participants discussed the impacts of logging and related pulp and paper developments in the region.

*Out in I guess it would be southwest of Hartney they did some logging that was a company from Missouri, I believe it is. They come in and they made a total flipping mess. Apparently they can't log in the summer because it just wrecks stuff, so they come up here and they logged but they just cut all the prime wood and everything else, they just throw. And, like, there's places there you can't walk because they just they cut these limbs off and they just throw them here and there. It's just a disaster. So, that logging is terrible.*

*Well, pulp and paper - they say all the Crown Land here has been, like I say, it used to be really, really pristine and they pulled all the spruce trees out of there. There was some, I think, illegal land development here that was stopped but that has no bearing on the case.*

#### 4.4.6 Other Cumulative Effects Observed

Participants identified other observed changes that could cumulatively have a more substantial impact on the environment. Participants were particularly concerned with smaller projects that together could have a larger impact on the surrounding environment.

*If there are changes in the water, changes in the way that the animals use the land, all those things may not have in my estimation, they may have small effects but sometimes these small effects make for big changes. Like I was saying before, there used to be several hundred moose in the Turtle Mountains, now there's hardly any. And most of them are out in the Prairie, whether*



*that is because of a natural shift or because of manmade issues, again, I think the changes that happen are cumulative and they can add up to major changes.*

*So, if there's one project that comes through, it might have small effects on it but if you have enough projects that have small effects on an area than large changes can occur. So that's why we need to be very careful on even projects that look like they have just small effects*

*Grass – jumpers, hey, they want to go where the grass grows and you don't see nothing around here to eat, you know. Maybe there's a place here and there and they find it, but – and you've got to find where it is so you can hunt, harvest.*

*Same thing as fish: fish are no more spawning, like the place they used to spawn, the fish, it's all gone. They don't lay their eggs in one place; there are rocks under, bedrocks on the Qu'Appelle River, the Assiniboine River – that's where they spawn, right. So they don't go all the way up.*

*And them dams they built, that's no damn good for nothing. I know they're trying to keep water; well, water was made to flow by itself and that's downhill; you can't make water go uphill. Maybe that's what they're trying to do now. It's a hell of a thing – you just think for a minute, hey, there'll never be no water going uphill. What are we trying to do here?*

## 4.5 Seasonal Round

A seasonal round is the annual pattern of food harvesting and production. For the purposes of this study, the Seasonal Round is strictly related to the harvesting of plants, animals, birds, and fish that TKLUS participants identified.

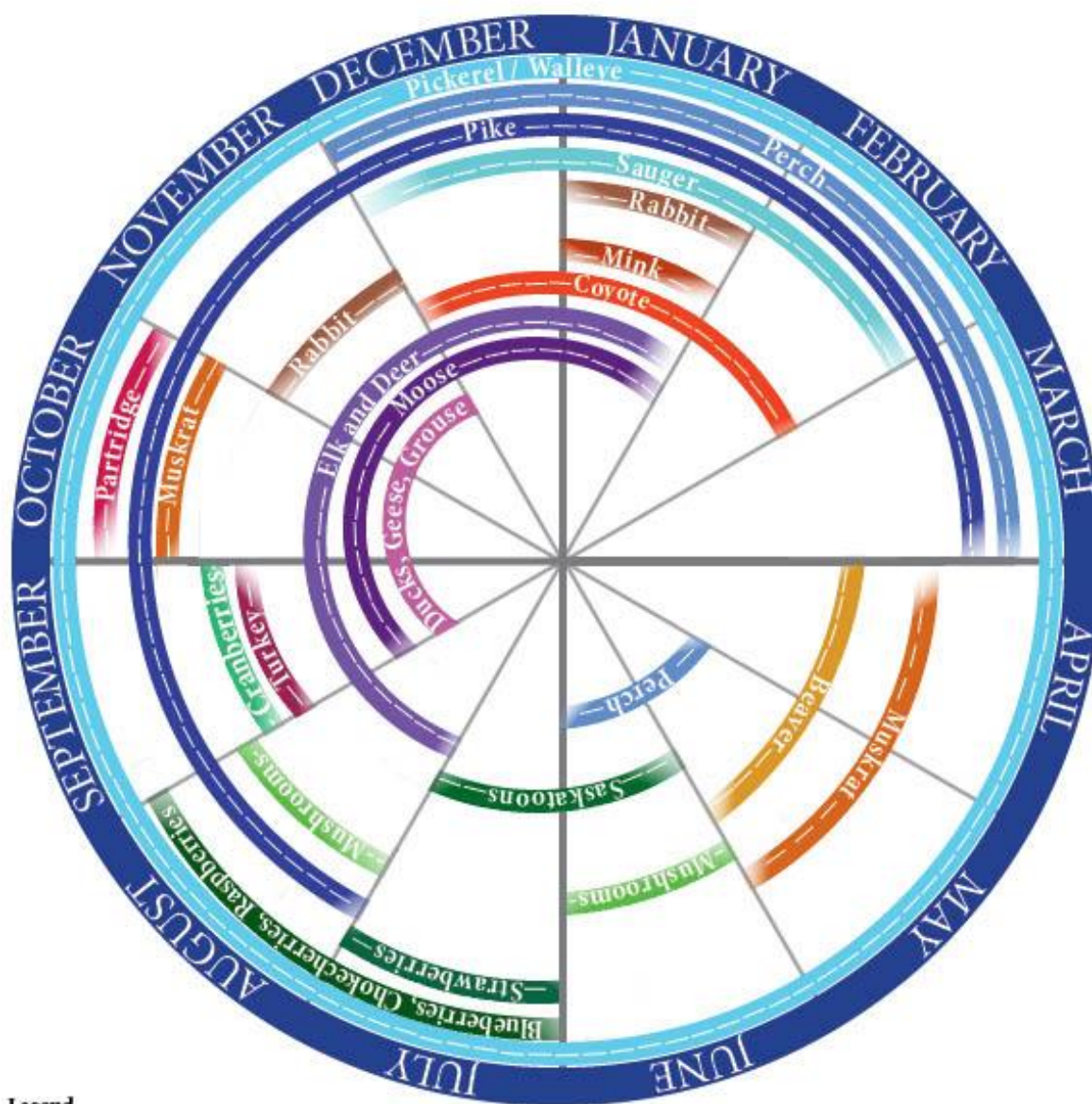
The Seasonal Round in Figure 21 shows the species that TKLUS participants harvest throughout each month. For purposes of accuracy, only species identified more than once were included.

Table 15 provides an alternative visual representation of the Seasonal Round data.

The Seasonal Round verifies the seasonal data collected during the mapping and oral history interviews. For example, fur bearers are mostly harvested in the winter months, large game is mostly harvested in the fall months, and plants are mostly gathered in the summer time.

The data presented in the seasonal round corresponds to Métis harvesters in the Southwest Region of Manitoba and should not be assumed to be accurate for other regions.

## MMF Southwest Region Seasonal Round



**Legend**  
 Blues: Fish  
 Greens: Plants  
 Oranges/Browns/Yellows: Small Game  
 Pinks: Birds  
 Purples: Large Game

Figure 21. MMF Southwest Region Seasonal Round

Table 15: Seasonal Round Data

January	February	March	April	May	June	July	August	September	October	November	December
Coyotes	Coyotes	Perch	Beaver	Beaver	Mushrooms	Blueberries	Blueberries	Deer	Deer	Deer	Coyotes
Deer	Perch	Pike	Muskrat	Muskrat	Perch	Chokecherries	Chokecherries	Duck	Duck	Duck	Deer
Elk	Pike	Walleye	Walleye	Perch	Saskatoons	Pike	Cranberries	Elk	Elk	Elk	Elk
Mink	Sauger			Walleye	Walleye	Raspberries	Deer	Goose	Goose	Goose	Moose
Moose	Walleye					Saskatoons	Elk	Grouse	Grouse	Grouse	Perch
Perch						Sauger	Mushrooms	Moose	Moose	Moose	Pike
Pike						Strawberries	Pike	Pike	Muskrat	Pike	Sauger
Rabbits						Walleye	Raspberries	Turkey	Partridge	Rabbits	Walleye
Sauger							Walleye	Walleye	Pike	Walleye	
Walleye									Walleye		

## 4.6 Métis Land Use and Occupancy in the Southwest Region of Manitoba

People's land use and occupancy were plotted in the map biography process used for this Study. Definitions of land use and occupancy generally include:

- **Land-Use** – hunting, fishing, gathering, trapping, the use of sites and resources for cultural and ceremonial purposes, and other traditional and socio-economic uses of the land
- **Occupancy** – settlements, movements, sites associated with the community

The use of lands and waters in the Southwest Region for harvesting and occupancy was cited as incredibly important to participants as a way to express their connection and identity with the environment.

Many participants said that they had formed positive relationships with farmers who allow them to use their land for harvesting activities. Participants also noted that they use Crown land to exercise their harvesting rights. The use of these public and private lands indicates that harvesters are having to adapt to social and environmental constraints that may impact their ability to harvest. Some participants discussed the importance of positive relationships with farmers, noting that if they did not have these relationships they would not be able to harvest as easily or as freely as they do.

### 4.6.1 Métis Respondent Occupancy and Lineage in the Southwest Region

Participants were asked to identify places of occupancy, either permanent or temporary, that they feel connect them to the land and / or to their Métis heritage or identity. Permanent current residences, past residences, and family homesteads were mapped and indicate historical connection to the land. Current use of lands and waters for family gatherings, Métis events, and personal recreational use also shows that participants use the land for more than just subsistence harvesting, and rather use the natural environment to express identity in other ways.

#### *Places of Occupancy*

Participants were asked to identify their birth location, current and past residences, and the location where their mother and father spent most of their childhood. Responses to these questions are listed in Table 16.

This data indicates that the Métis have strong cultural and familial ties to Manitoba, and the Southwest Region in particular.

In many instances, participants either lived in the same area for their whole lives or returned to the places where they grew up.

Table 16 should be read as follows: Each row indicates all information for the same participant. Identifying information has been removed from these tables to ensure confidentiality. An "X" has been used in instances where no data was provided. In instances where a participant lived in many places during the same time period, a list of place names has been provided.

Table 16. Residences

Respondent Birth Location	Respondent Here from Childhood to 18 Years of Age	Respondent Here after 18 Years of Age	Current Residences of Respondents	Mother's Childhood Location	Father's Childhood Location
Selkirk	Ochre River	St. Norbert	St. Norbert	Neepawa	Ochre River
Swan River	Brandon	Cherry Point	Oak Lake Beach	Swan River	Swan River/Birch River
Hamiota	Hamiota	Brandon, Killarney	Nesbitt	x	Ste. Rose Du lac
Pilot Mound	Glenora	Brandon	Glenora	Pilot Mound	St. Alphonse
Dauphin	Dunrea, Belmont	Morden	Killarney	Harding	x
St. Lazare	St. Lazare	Birtle	Brandon	Victor	x
Cypress River	Cypress River	Cypress River	Cypress River	Pilot Mound	x
Ste. Anne	Ste. Anne	Winnipeg	Carberry	St. Jean Baptiste	Ste. Anne
St. Lazare	St. Lazare	Brandon	Birtle	x	x
McCreary	Rivers	Brandon	Brandon	Crane River	x
Winnipeg	Winnipeg	Pine Falls	Holland	Winnipeg	x
St. Ambroise	St. Ambroise	Winnipeg	Winnipeg	St. Ambroise	St. Eustache
Winnipeg	Winnipeg	Winnipeg	Winnipeg	Winnipeg	Winnipeg
Ste. Rose du lac	Ste. Rose du lac	Ste. Rose du lac	Brandon	Ste. Rose du lac	x
Souris	Hartney	Hartney	Hartney	x	Portage la Prairie
St. Marks	Souris, Waskada, Brandon, Binscarth	Hartney	Hartney	Boissevain	x
Brandon	Brandon	Brandon	Brandon	Rivers	Portage la Prairie
Kemnay	Brandon	Swan River	Swan River	Swan River	X
Winnipeg	Neelin	Neelin	Neelin	X	Neelin
Deloraine	x	x	Boissevain	Deloraine	Sandy Lake
x	Portage la Prairie	Winnipeg	Brandon	Portage la Prairie	X
Winnipeg	Wuskwisi, Dauphin, Bowsman	Justice	Justice	Swan River	Duck Bay
Red Deer point	Red Deer Point	The Pas, Winnipeg, Tyndall	Selkirk	Camperville	Winnipegosis
x	x	Winnipeg	Winnipeg	Winnipeg	Chatfield



Respondent Birth Location	Respondent Here from Childhood to 18 Years of Age	Respondent Here after 18 Years of Age	Current Residences of Respondents	Mother's Childhood Location	Father's Childhood Location
St. Boniface	St. Agathe, St. Laurent, Pine Falls	Winnipeg	Winnipeg	St. Joseph	St. Boniface
Clandeboyne	Brandon	Selkirk	Selkirk	Clandeboyne	Pine dock
Winnipeg	Winnipeg	Winnipeg	Winnipeg	St. Boniface	Laurier
Birtle	Victor	St. Lazar	Winnipeg	x	X
Hamiota	Belmont	Carol, Treherne, Brandon	Alexander	x	Carberry
Sherridon	Lynn Lake	Flin Flon, Thompson, The Pas, Snow Lake, Wabowden, Leaf Rapids, Gypsumville	Brandon	x	Gypsumville
Winnipeg	Winnipeg	Winnipeg	Minnedosa	Winnipeg	Winnipeg
St. Eustache	St. Eustache	St. Eustache	Winnipeg	St.Eustache	St. Eustache
St. Ambroise	St. Ambroise	St. Ambroise	St. Ambroise	Camperville	St. Laurent
Portage	Brandon	Brandon	Brandon	Portage	Portage
Brandon	Charleswood	Charleswood	Charleswood	Fort Gary	Winnipeg
St. Clara	Shoal Lake	Shoal Lake	Brandon	x	Shoal Lake
St. Lazare	St. Lazare	Winnipeg	Birtle	St. Lazare	Victor
x	Pipestone	Brandon	Brandon	x	X
Winnipeg	Winnipeg	Winnipeg	Elie	Winnipeg	Dauphin
St. Malo	St. Malo	Poplar River	St. Vital	St. Malo	St. Malo
Brandon	Brandon	Brandon, Hamiota	Kenton	Rivers, Oakburn	Portage la Prairie, Oakville, Treesbank
Flin Flon	Thompson, Winnipeg	Winnipeg	Winnipeg	x	Boggy Creek
St. Pierre	St. Malo	St. Malo	St. Malo	St. Malo	St. Malo
St. Eustache	Winnipeg	Winnipeg	Winnipeg	x	X
Victoria Beach	Victoria Beach	Winnipeg	Selkirk	Balsam Bay	Victoria Beach
Selkirk	Selkirk	Winnipeg	Selkirk	Winnipeg	X

Respondent Birth Location	Respondent Here from Childhood to 18 Years of Age	Respondent Here after 18 Years of Age	Current Residences of Respondents	Mother's Childhood Location	Father's Childhood Location
St. Boniface	St. Boniface	Sperling, Treherne	St. Boniface	St. George, Selkirk	Mariapolis
St. Malo	St. Malo	St. Malo	St. Malo	St. Malo	St. Malo
St. Malo	St. Malo	Winnipeg	St. Malo	St. Malo	St. Malo
X	Winnipeg, Brandon	Winnipeg, Brandon	Winnipeg	X	X
St. Vital	St. Vital	Pneumata, Gypsumville	Winnipeg	X	Dominion City
Boissevain	Turtle Mountain	Brandon, St. Andrews, Winnipeg	Brandon	Morden	Sharpe Lake
Selkirk	Selkirk	Selkirk	Selkirk	Selkirk	Petersfield

#### 4.6.2 Métis Cultural Connection to the Land & Harvesting

This section includes some of the responses that TKLUS participants shared when asked about the connection between land use activities and Métis identity, and about the importance of the Southwest Region to themselves, their family and other Métis friends.

Participants expressed that part of being Métis was using the lands and waters to harvest. While this tangible action is important, the interviewees stressed that harvesting is vitally connected with their social, cultural, and economic way of life.

Qualitative data collected shows that participants have a strong cultural connection to the land that they use. There are six avenues that participants mentioned as ways that they connect with their current and historic Métis identity which are described in more detail in the section below:

- Harvesting as an expression of identity
- A legacy of harvesting and teaching the next generations
- Sharing the harvest
- Stewardship
- Harvesting rights
- Consumption of wild foods

##### *Harvesting as an expression of identity*

Many participants noted that harvesting is a way that they express their Métis heritage and identity. In addition to the importance of providing a level of sustenance, harvesting with family and friends who are also Métis was noted as an important part of harvesting activities.

Some participants expressed that their knowledge of the environment and harvesting techniques were learned from their family growing up. In some instances, participants didn't definitively find out that they were Métis until their adult life, but noted that they still feel they lived a "Métis" life that was passed down through the generations. Others knew they were Métis growing up and felt that being out on the land was part of their learned Métis culture growing up. Harvesting and being out on the land were expressed to be a lifestyle that contributed to Métis identity.

*Like the hunting and the trapping and the just the way of life because it was very important the way that I was brought up it was very traditional Métis way of life the way that we lived, eh. And it was that's just the way it was eh. And today my wife who is a Métis also, like her and I both enjoy that you know aspects of Métis life you know just the way that we like to eat, the way that our music is. We enjoy going to the gatherings that they have you know and the closeness of family and stuff like that. You know we all like that.*

*Well because of this the reason that it was never talked about like about being a Métis or anything like that it wasn't an issue. I think some of my kids now are saying you know like*

*what is this you're changing you know? I said I'm not changing it's just the way that it's just recognizing there's words and definitions put to my lifestyle now whereas before it wasn't you know it was just that's just the way we were. So I think like I definitely you know pass on what I like about you know the simplicity of life and nature and stuff like that.*

*[...] we always knew, we had our own things that we did every year that I knew nobody else did, and I was glad to be able to do it, you know hunting and fishing. You know, things like that were a big part of my life as a kid and it was part of the lifestyle that came with being who we were. You know, not too many other kids I know a lot of their meals when you're at grandma's house was cooked in a trading pot you know or stuff like that. You know, I know other kids didn't eat the same things we did but I just look at it that they missed out on a lot, you know. I'm proud of what I am and I'm glad now that I can talk about it to somebody you know, whereas before you weren't -- even your closest friend you didn't say anything to because you know you didn't want to get put down.*

*One of my favourite foods in the entire world is partridge. We would go out and shoot a partridge or a rabbit. Start a fire and we'd have frying pan, butter, salt and pepper and that's it and put it in the frying pan. And to me, partridge is the best tasting meat in the world. But secondly, as far as importance to our culture, I think it's one of the ways that we identify who we are.*

#### *Legacy of Harvesting and Teaching Next Generations*

Harvesting, as part of the Métis culture, has been and continues to be passed down through the generations. In most cases, participants said that they were taught by their parents, aunts, and uncles and that they are still passing this knowledge onto their own children and grandchildren. Being on the land, learning one's geographic environment and the skills of harvesting is very much part of how participants learn and express part of their cultural identity. Social events, such as Métis days, music festivals, re-enactment, and family and community gatherings on the land were also noted as ways that people gathered with other Métis people. These activities also provide a space for participants to participate in their culture in ways that perhaps cannot be done if a participant lives and works in a bigger city.

*Well it was -- well everything was passed down to us you know how it was done, like we thought nothing, bannock was just something you ate, you know. Now it seems to be in vogue, you know we took it for granted. You know, like there was always a pot of stew going all the time, you'd never see that in anybody else's house [...] But all of that, everything we did was all -- everything that I know how to do was passed down to me and it serves me well every day, every day, every day, you know no matter whether I'm looking after my cows or fixing my truck or going fishing or hunting or even looking after the house, it's the same thing. It's all stuff that's been handed down and it's served me well.*

*[...] so now my kids, they understand where they come from and why and all that, and they*

*are very much into hunting, fishing, outdoors. They really enjoy that, so they are, again, a little bit different than the rest of the kids in most of their school, but at the same time, now, instead of it being one of those things where it sets you aside and bit of ... not a good thing, it's considered extremely positive, and the other kids think it's awesome, so now my kids take their friends hunting and fishing and stuff like that, and the other ones think it's interesting, and they want to learn about it.*

*I'd love to teach my grandchildren. Like, of course I'm just into it, me and myself, but I'd love for my grandsons like, I took them fishing the first time three weeks ago. Great. I'd love to take them hunting, have them learn all of that stuff. I think it's pretty important.*

*[My dad] wanted me to be able to if anything ever happened to me or the world at large that I would be able to fend for myself, I'd be able to know how to live and survive. I didn't realize it then but a lot of the stuff he was passing on were things that he learned from his parents and his parents learned from their parents, just how to live and survive as Métis people.*

*When my dad was teaching me things like how to hunt, how to fish, how to trap, how to snowshoe, how to set snares for rabbits. A lot of these things I look back now. I thought everybody did it when I was a kid did this kind of stuff. Everybody took a week off in November to go shoot a deer. I thought everybody did that. But as it turns out, no, not everybody did. And he was teaching me things about our culture even though he didn't really know it at the time. He was just teaching things that he was taught. If you look back on it, hindsight is 20/20 and it's very obvious that we were Métis right from when I was a little kid.*

### *Sharing the Harvest*

Several interviewees spoke about the importance of sharing and trading harvested foods within the Métis community. Results from the Harvesters' Survey indicated that the harvesters interviewed during this study share a large proportion of the food they gather with their friends, family and Métis Elders. The interviewees indicated that they share an average of 46% of the materials that they gather. The interviewees also spoke about the importance of the community bonding and pride that is created from harvesting and sharing within the community.

*The harvesting has really been a core value for myself. We have learned to share, we gather food as a form of survival. When employment was difficult to obtain, to get a job, so on, so forth, we had to live off the land. And that included not only harvesting of wild plants and that, we also learned to be very proficient gardeners, you know, how to preserve the vegetables and so on, so forth to make it last throughout the year.*

*[Harvesting] is very important to me and to my family. Not just because we practice harvesting, but because I think it's one of the more important methods that make a sense of community for the Métis Federation, as far as I'm concerned, that type of unison and bonding that's creating from harvesting. I think that's where I get most of my pride as a member of*

the Métis Federation.

*We were raised that way, when it comes to food preferences I find that the wild foods are more preferable to my palette. That's my own – of hunting and gathering way of life. It's also about a freedom, to be able to do that. It's just preference of food and that food is not available in the supermarket which is the way everything seems to be going today. You have to go to the supermarket to buy everything. I don't like to buy into that system of sustenance. I would much prefer to be able to gather my own and trade it amongst your family and just share it with your family and some of your Métis friends and community.*

#### Stewardship

Respondents also spoke about a respect for the environment and noted that they are careful and thoughtful about when they harvest particular animals to ensure the future health of these populations and a secure food source for their descendants.

*The only thing that I would say that really the harvest thing was always part of growing up and something we always did together, you know. So my dad would – you know, he would take us out hunting and stuff like that, and he would kind of lay the laws of the land, kind of say – in the sense of you know, not harvesting big game animals in the springtime when they're calving or have fawns and things like that. Or fishing or goose and things like that in spring when they're nesting and things like that.*

*I do believe that there's a certain mindset about certain things in nature and stuff like that eh that I respect, that I could relate back to the way that I was brought up you know without the word Métis in it or anything like that. It's just the way that my people lived or my dad's people lived and that's the way that we lived eh. That's what we were taught yeah.*

*Yeah, it's not only important to me but it's important to our future generations whether you be Métis or not. I think it's just, we're borrowing it for right now to give to the future generations.*

#### Harvesting Rights

A number of interviewees spoke about the importance of the Powley case and Métis harvesting rights and the impact this has had on their lives. In particular, interviewees mentioned the pride and honour related to harvesting rights.

*Prior to this, prior to me getting my Métis [harvesting rights] yeah, and that, I had to purchase my license. Now I have it, which is, to me it's an honour to have it. I'm excited about it, but it's just I've had a lot of respect for the environment and wildlife and so forth. Put me in a bush and I can find my way out any time, anyhow.*

*Métis hunting rights as it was known in the 60s, 70s and 80s, now we call it harvesting rights.*



*But Métis hunting rights was a big important political issue and if we were going to win that one than the rest of the dominoes might start to fall. But it's a very personal thing for a lot of Métis people too is you know what, now I've always hunted and I've always had to sneak around and go out in the middle of the night in order to bring my meat back home. Now there's also a sense of pride, look I don't have to do that anymore. So I think hunting is a really personal thing for most Métis people, even the ones that don't hunt, even the ones that have lived in the city for generations. It's still a personal victory when we won that hunting right. Steve Powley and his son shot a moose I think in 1993. And then they went through the court system and they won in the Supreme Court and said that Métis have hunting, harvesting rights in 2003. And I believe then we were supposed to have negotiations in the rest of Canada and that didn't happen.*

### *Consumption of Wild Foods*

The consumption of wild foods is an important aspect of Métis diet and culture. As revealed in the Harvester's Survey (see Appendix H: Comment Cards and Harvesters' Survey) conducted in June, 2015, all survey respondents expressed that harvesting and consuming traditional foods is important to them. Moreover, 86% of Métis survey respondents stated that they ate harvested foods at least once per month. Out of all respondents, 36% had meals containing harvested foods 2-3 times per week; 13% had meals containing harvested foods 4-5 times per week; and 11% had meals containing harvested foods 5 times per week (see Table 17). The survey results indicated that between 8% and 100% of participants' harvested goods are shared with family, friends and/or Métis elders.

Harvester's Survey participants reported saving between \$0-\$20,000 annually on goods due to harvesting; on average, participants save \$2371 per year.

Both the results of the Harvesters' Survey, as well as oral history responses from the participants demonstrate that, like their ancestors, wild meats, fruits and plants remain a staple of today's modern Métis diet (77% of the TKLUS study participants reported consuming wild foods at least once per week and 59% at least three times per week).

Participants emphasized a cultural connection to the as well as a pride in harvesting and eating natural wild foods.

*Harvesting on my part, I'd say it sustains the way my life and what we have. We depend on it. There's never a shortage of anything, of our food supply or anything. We always, we enjoy hunting, whether it's for moose, elk, deer, ducks. We love the meat, we love to do it. And we save a lot of money by doing our own hunting, doing our own processing of meat and everything. We're proud of it and it's a way of life that I would never trade for another life, no. I'm happy with the way I live.*

*For me, they're (wild foods) unbelievably important. Without them, I don't really know what I would do. Especially the areas where we go hunting for deer, I'm able to capture our own meat, take it home, process it, and have something that's all natural. Yeah, if that was taken away I don't know what I would do. It's not just from a bit of a selfish perspective...you don't want to see the get destroyed, by any way, shape or form, whether it gets used or not by me or someone else. I don't want to see anything happen to that.*

Table 17. Summary of Harvested Food Consumption – Harvesters’ Survey Results

How often over the past 12 months have you had a meal containing harvested foods?	# of Days
a (none)	4
b (less than once per month)	4
c (once per month)	3
d (2-3 times per month)	3
e (once per week)	9
f (2-3 times per week)	20
g (4-5 times per week)	7
h (5 times per week)	6

Survey respondents consume a wide range of wild foods, ranging between 1-22 different species of plants, large mammals, small furbearers and birds. Table 18 lists wild foods in Manitoba and how many survey respondents consumed each type of wild food within the past 12 months.

Table 18. Wild Food Consumption

<b>Plants</b>	<ul style="list-style-type: none"> <li>○ Leeks - 1</li> <li>○ Mint - 5</li> <li>○ Mushrooms - 15</li> <li>○ Wild Ginger - 0</li> <li>○ Nuts - 11</li> <li>○ Wild Onion - 2</li> <li>○ Pin Cherries - 9</li> <li>○ Plantain - 2</li> <li>○ Poplar - 7</li> <li>○ Raspberries - 26</li> <li>○ Rat Root - 1</li> <li>○ Wild Rice – 14</li> <li>○ Lingonberries - 1</li> </ul>	<ul style="list-style-type: none"> <li>○ Red Willow - 9</li> <li>○ Roots - 5</li> <li>○ Sage - 12</li> <li>○ Saskatoon Berries - 29</li> <li>○ Seneca Root - 5</li> <li>○ Spruce -10</li> <li>○ Strawberries - 20</li> <li>○ Sumac - 0</li> <li>○ Sweet Grass - 7</li> <li>○ Syrup - 4</li> <li>○ Thistle - 0</li> <li>○ Other Wood/Trees - 9</li> <li>○ Other Plant – 5</li> <li>○ Wild Turnip - 1</li> </ul>
<ul style="list-style-type: none"> <li>○ Asparagus - 9</li> <li>○ Wild Bergamot - 0</li> <li>○ Birch - 9</li> <li>○ Blueberries - 20</li> <li>○ Burdock - 1</li> <li>○ Cattails - 3</li> <li>○ Cherries - 2</li> <li>○ Choke Cherries - 25</li> <li>○ Clover - 1</li> <li>○ Cranberries - 15</li> <li>○ Fiddleheads - 7</li> </ul>		

Large Mammals	Small Furbearers	Birds
<ul style="list-style-type: none"> <li>○ Moose - 29</li> <li>○ Woodland Caribou - 4</li> <li>○ White-Tailed Deer - 43</li> <li>○ Black Bear - 6</li> <li>○ Wolf - 2</li> <li>○ Elk - 24</li> <li>○ Other Mammal - 0</li> </ul>	<ul style="list-style-type: none"> <li>○ Badger - 3</li> <li>○ Beaver - 9</li> <li>○ Coyote - 10</li> <li>○ Fisher - 1</li> <li>○ Fox - 6</li> <li>○ Lynx - 0</li> <li>○ Marten - 2</li> <li>○ Mink - 5</li> <li>○ Muskrat - 8</li> <li>○ Otter - 1</li> <li>○ Porcupine - 3</li> <li>○ Rabbit - 18</li> <li>○ Wolverine - 0</li> <li>○ Other Furbearer – 1</li> <li>○ Squirrel - 1</li> </ul>	<ul style="list-style-type: none"> <li>○ Duck - 27</li> <li>○ Goose -30</li> <li>○ Grouse - 31</li> <li>○ Ptarmigan - 0</li> <li>○ Bird Eggs - 1</li> <li>○ Other Upland Bird - 6</li> <li>○ Other Waterfowl – 5</li> <li>○ Wild Turkey – 5</li> <li>○ Partridge – 2</li> <li>○ Sandhill Crane – 1</li> <li>○ Pickerel – 1</li> <li>○ Jackfish - 1</li> </ul>

According to the TKLUS and Harvesters Survey, MMF citizens in the Southwest Region of Manitoba actively hunt, fish, gather natural resources and share harvested resources with family and friends. In addition to harvesting for personal use, some harvest commercially. In the Harvester’s Survey, gloves and pelts were cited as commercial products sold, with pelts ranging in price from \$5–\$150. Animals being trapped include (but may not be limited to) coyote, muskrat, beaver, fox and fisher.

#### 4.6.3 Land Use Activities

*I would have to say [...] it's part of my Métis heritage. I grew up understanding what it was to be Métis and what had happened to the Métis through history and the land was always important. You know, we hunted and gathered it for hundreds of years and I just believe it's a way of life, it's important to us.*

The results in this section outline land use in each category of hunting, trapping, fishing, gathering, agriculture/beekeeping, access routes and occupation sites, and cultural sites within the Southwest Region, as well as the locations of use that are specifically within the Study’s Geographic Scope, the 1km pipeline ROW, and the 45m pipeline ROW.

The data also features the number of participants who reported engaging in each land use, the seasonality of the activity and whether the participant has taken part in this activity within the past 10 years, more than 10 years ago, or both.

Participants identified a total of 1,133 locations of their land use within the Study’s Geographic Scope, 21 of these locations were located within the scope of the 1km pipeline ROW and 5 locations were within the 45m pipeline ROW (See Figure 22 and Figure 23). Of those 21 locations of land use identified with the ROW:

- 15 related to hunting activities
  - 9 locations were used within the past 10 years

- 5 locations were used more than 10 years ago
  - 1 location was used throughout the participants lifetime
- 1 related to gathering
  - Location used within the past 10 years
- 1 related to agriculture/beekeeping (in the 45m ROW)
  - no time period of use recorded
- 4 related to cultural sites (in the 45m ROW)
  - no time period of use recorded

A composite map that displays all of the participants' harvesting activity within Manitoba and organized by category of harvesting activity is provided in Figure 22. A second map is provided with specific focus on land use within the Study's Geographic Scope (Figure 23). There were concentrations of land use activities in: Reston, Sinclair, Cromer, Virden, Oak Lake, Nesbitt, Souris, Ninette, Carberry, Glenboro, Neelin and in the area surrounding Spruce Woods Provincial Park.

There were several locations identified by multiple respondents as particularly sensitive, important and valued because of ecologically rich habitat and the association with land use activities, including, but not limited to: the wetland complex associated with Oak Lake, Pipestone, the Souris River, and the Glenboro and Alexander Marshes, Boissevain, Virden, the Assiniboine River and Spruce Woods. The Turtle Mountain area was mentioned as sensitive and valued by multiple respondents, but is not within the Study's Geographic Scope.

There was less concentration of land use and occupancy mapped in the eastern portion of the Southwest Region within the Study's Geographic Scope. Some participants reported that this could possibly be because of a higher use of the area by Mennonites. However, it was also reported anecdotally that Métis citizens who use this area of the land were not able to be interviewed due to time and budget constraints of this Study.