Harmonized Impact Assessment

Twinning of the TransCanada Highway - Phase 1

April 2021

PUBLIC VERSION

narratives

To All Readers of the Document

April 20th, 2021

Re: Harmonized Impact Assessment for Phase 1 of the Highway 17 Twinning Project

Dear Readers,

On behalf of the Anishinaabe Nations of Wauzhushk Onigum, Washagamis Bay, Shoal Lake 40, and Niisaachewan, the Niiwin Wendaanimok Partnership is pleased to submit this Harmonized Impact Assessment ("HIA") for Phase 1 of the Highway 17 Twinning Project (the "Project"). The HIA is being submitted in conjunction with the Ministry of Transportation of Ontario's ("MTO") Transportation Environmental Study Report ("TESR") following the Class Environmental Assessment for Provincial Transportation Facilities for Group B projects.

The HIA was developed in the context of the mutual respect and recognition for

1) the Crown's constitutional obligations as they pertain to Aboriginal and Treaty Rights, with emphasis on the protection and provision of access to resources within Treaty lands;
2) the spirit and intent of Treaty 3; and
3) Our collective sovereignty and responsibilities to the stewardship of the lands, skies, soils, and waters under the *Manito Aki Inakonigaawin* (Great Earth Law).

Given this context, the HIA strives to simultaneously address the legal jurisdiction of the Anishinaabe and the Crown. Although it is not itself the sole condition for consent to the Project, the HIA represents a contribution to the strengthening of the relationship between the Crown and the Niiwin Wendaanimok as affirmed by the signing of the Memorandum of Understanding on February 5th, 2020.

This document represents the Anishinaabe expression of collaboration. It represents holism, a commitment to ongoing courage and patience, willingness to share the teachings, and walking the path of reconciliation. This document contains a partial record of the evolving documentation of the lived experience, knowledge, use, and occupancy of the lands by the Anishinaabe of Treaty #3. As such, the Knowledge shared herein is strictly to inform the impacts and mitigation for the proposed Phase 1 of the TransCanada Twinning Project. The Knowledge shared is sacred and cannot be used in any other context, for any other decisions, projects, plans, or initiatives without the express consent of the Niiwin Wendaanimok Partnership.

Should you have any questions or require further information, please contact Ms. Somia Sadiq at **somia.sadiq@narrativesinc.com** or 204-807-0339.

Regards and Miigwetch,

Niiwin Wendaanimok Partnership

Executive Summary

In 2008, citing a need to overcome a critical bottleneck in the national transportation corridor, the Crown of Canada and the Crown of Ontario announced their intention to twin the TransCanada highway through Anishinaabe territory. Owing to a lack of meaningful consultation, the Anishinaabe refused and the project did not move forward.

Today, a fresh attempt is being made to realize the project. In October 2018, a Unity Agreement was signed between the four Anishinaabe Nations of Wauzhushk Onigum, Washagamis Bay, Shoal Lake 40, and Niisaachewan to coordinate their shared issues, concerns, and interests on the proposed twinning. This agreement set the foundation for the Niiwin Wendaanimok (Four Winds) Partnership ("Niiwin Wendaanimok"). Over the course of many months, collaborative engagement has been occurring, with both parties seeking to understand the interests, values, and teachings of the other.

In February 2020, guided by the *Manito Aki Inakonigaawin* (the Great Earth Law), and upholding the principles of the United Nations Declaration on the Rights of Indigenous Peoples ("UNDRIP"), a Memorandum of Understanding ("MOU") was signed between the Crown of Ontario (represented by the MTO) and Niiwin Wendaanimok. The agreement commits both the Anishinaabe governments and Ontario to an agreement that will continue to guide the relationship and the engagement process based on a spirit of cooperation and collaboration.

This Harmonized Impact Assessment represents the Anishinaabe expression of collaboration. This document tells the story of the Anishinaabeg, the history of the relationship to the lands, the skies, the soils, and the waters, and the history of the relationship with settler governments. It then describes MTO's proposal for Phase 1 of the Twinning and outlines the impacts of the project. Impacts are understood through a process that operationalizes the *Manito Aki Inakonigaawin* (the Great Earth Law) by harmonizing Anishinaabe teachings and western science. This document represents a willingness to share the teachings and walking the path of reconciliation.

Impacts to the lands, the skies, the soils, the waters, and to the wellbeing of the Anishinaabeg are outlined. Mitigation measures are presented – measures that were brought forward by the members of the four communities, measures that MTO agreed to implement, and additional measures that MTO presented. Some of the measures pertain to construction-specific practices to manage the impacts from clearing, grubbing, blasting, realigning watercourses, excavating, hauling, paving, restoring, and revegetating. Additional measures include developing and implementing a Ceremonial Plan, an Anishinaabe Guardians Program, a Revegetation Plan, and a Restoration Plan. While the mitigation measures noted in this report offer a starting point for some of the impacts that will occur, there are outstanding ongoing and historical impacts that require appropriate accommodation. As such this document does not represent the consent of the Anishinaabeg. It serves as one part of the overall decision-making framework as informed by the *Manito Aki Inaakonigaawin* (the Great Earth Law).

TABLE OF CONTENTS

Executive Summary **2**

1 Setting the Stage **1**

1.1 What this Document Represents 1

1.2 Limitations 2

2 Project Understanding **3**

2.1 Guidance for the Reader 3

2.2 Project Location 3

2.3 Why the Project is Needed 3

2.4 Alternatives Considered 4

2.5 Preferred Alternative 7

2.6 Alternative Routes Considered 7

2.6.1 Alternative 1A 7

2.6.2 Alternative 1B 8

2.6.3 Alternative 2 8

2.6.4 Alternative 3A 8

2.6.5 Alternative 3B 8

2.7 Selected Route 8

2.8 Project Components 8

2.8.1 Culverts 9

2.8.2 Gravel Pits 10

2.8.3 New Intersection with Median Crossover 10

2.8.4 Modification to Access 10

2.8.5 The Road Itself 11

2.8.6 Emergency Median Crossover 12

2.8.7 Four-to-Two-Lane Transitions 12

2.8.8 Illumination 13

2.8.9 Watercourse Realignments 13

2.8.10 Relocated Utilities 13

2.9 Project Activities 13

2.9.1 Construction Activities 13

2.9.2 Operation Activities 14

2.10 Proposed Schedule 14

2.11 Economic Impacts 15

2.11.1 Phase 1 15

2.11.2 Overall Project 16

3 What Was Done 18

3.1 Guidance for the Reader 18

3.2 Harmonized Impact Assessment Model 18

3.2.1 Overview 18

3.2.2 Principles 19

3.2.3 Process 22

3.2.4 Components 24

3.3 Knowledge Gathering 27

3.3.1 Archival Research 27

3.3.2 Community Participants 28

3.4 Types of Events 28

3.4.1 Community Events 28

3.4.2 Elders' Gatherings 29

3.4.3 Individual Interviews 30

3.4.4 Ceremonies 31

3.4.5 Impacts Discussions 37

3.5 Advertising and Outreach 39

3.5.1 Newsletters 39

3.5.2 Posters 39

3.5.3 Photo Albums 40

3.6 Documentation and Analysis 40

4 Going Back in Time 41

4.1 Guidance for the Reader 41

4.2 Our History 41

4.2.1 Anishinaabe in Lake of the Woods 41

4.2.2 Anishinaabe Trade 44

4.2.3 Institutionalization and Treaty 48

4.2.4 Indian Act and Reserves 59

4.3 Anishinaabe Relation to *Aki* (Earth) 63

4.3.1 Creating the Context: The Anishinaabe Creation Stories 63

4.3.2 Value System 65

4.4 Settler Relation to the Environment 68

4.4.1 History of Development 68

5 Anishinaabe Aki Kakendamowin 76

5.1 Guidance for the Reader 76

5.2 Spatial Scope 76
5.3 Knowledge of the Lands 77
5.3.1 *Aya'aawish* (Animals) 77
5.4 Knowledge of the Skies 116
5.4.1 *Bagidanaamowin* (air) quality 116
5.4.2 Birds 123
5.5 Knowledge of the Soils 171
5.5.1 Soil Composition and Surficial Geology 171
5.5.2 *Miinan* (Berries) 172
5.5.3 *Mitigoog* (Trees) 177
5.5.4 *Mashkikiwan* (Medicines) 202
5.5.5 *Asiniig* (Rocks) 230
5.6 Knowledge of the Waters 233
5.6.1 *Nibi* (Water) 233
5.6.2 *Manoomin* (Northern Wild Rice, *Zizania palustris*) 238
5.6.3 *Giigoonh* (Fish) 247
5.6.4 Mishiikenh (Turtles) 286
5.7 Wellbeing 293
5.7.1 *Odoidaymiwan* (The Clan System) 294
5.7.2 Ceremonies 295
5.7.3 Sacred Sites 299
5.7.4 Travel 300
5.7.5 Fishing 309
5.7.6 Gathering 336
5.7.7 Hunting 344
5.7.8 Trapping 351
5.7.9 Gardening 356

6 Impacts & Mitigation 359

6.1 Guidance for the Reader 359
6.2 Impacts to the Lands 359
6.2.1 *Waawaashkeshiwag* (Deer) 359
6.2.2 *Moozoog* (Moose, *Alces alces*) 365
6.2.3 *Amikwag* (Beaver, *Castor canadensis*) 372
6.2.4 *Wauzhushkwag* (Muskrats, *Ondatra zibethicus*) 378
6.2.5 *Ma'iinganag* (Wolves, *Canis lupus*) 385
6.3 Impacts to the Skies 394
6.3.1 *Bagidanaamowin* (Air) Quality 394
6.3.2 *Zhiishiibag* (Ducks, *Anatidae* family) 401
6.3.3 *Migiziwag* (Bald Eagles, *Haliaeetus leucocephalus*) 408
6.3.4 *Nikag* (Canada Geese, *Branta canadensis*) 412

6.3.5 *Bineshiinyag* (Birds) 418
6.4 Impacts to the Soils 425
6.4.1 *Miinan* (Berries) 425
6.4.2 *Mitigoog* (Trees) 430
6.4.3 *Mashkikiwan* (Medicines) 435
6.4.4 *Asiniig* (Rocks) 441
6.5 Impacts to the Waters 444
6.5.1 *Nibi* (Water) 444
6.5.2 *Manoomin* (Wild rice, *Zizania palustris*) 450
6.5.3 *Giigoonyag* (Fish) 457
6.5.4 *Mishiikenyag* (Turtles, Order Testudines) 463
6.6 Impacts to Wellbeing 471
6.6.1 Ceremonies 471
6.6.2 Sacred Sites 474
6.6.3 Fishing 478
6.6.4 Hunting 485
6.6.5 Trapping 495
6.6.6 Gathering 501
6.6.7 Gardening 505
6.6.8 Travel 510
7 Path Forward 515
8 Bibliography 516
9 Anishinaabemowin Glossary 550

Appendices

Appendix 1: Maps A1
Appendix 2: Construction Schedule A2
Appendix 3: Newsletters A3
Appendix 4: Posters A4
Appendix 5: Guideline Documents A5

Figures

Figure 1. Overview of the Model: Principles, Process, and Components. 18
Figure 2. The four foundational principles of harmonization rooted in the Manito Aki Inakonigaawin (the Great Earth Law). 19
Figure 3. The Seven Teachings and the four foundational principles. 20
Figure 4. Principles of Harmonization: The 12 principles of best practice for Impact Assessment, the four foundational principles informed by the Manito Aki Inakonigaawin (the Great Earth Law), and the Seven Teachings. 21
Figure 5. Process as rooted in the Manito Aki Inakonigaawin (the Great Earth Law) with principles in the outer circle. 23
Figure 6. The four operating processes and four traditional planning practices in addition to the principles. 24
Figure 7. The 13 valued ecosystem components in addition to the principles and processes. 25
Figure 8. The 18 environmental components and 13 VECs in addition to the principles and processes. 26
Figure 9. The complete graphic representation of the principles, processes, and components of the HIA. 27
Figure 10. Shoal Lake 40 mapping session on May 21, 2019. 29
Figure 11. Elders meeting at Wauzhushk Onigum on March 18, 2019. 30
Figure 12. One-on-one interview with a community member in Washagamis Bay on August 23, 2019. 31
Figure 13. Pow Wow at Wauzhushk Onigum on July 20, 2019. 32
Figure 14. Oshkaabewis (helper) preparing the rocks for the sweat ceremony on August 14, 2019. 33
Figure 15. Feasting the process at the Memorandum of Understanding signing-ceremony held in Wauzhushk Onigum on February 5, 2020. 34
Figure 16. Minister Caroline Mulroney accepting gifts during the MOU signing ceremony on February 5, 2020. 35
Figure 17. Minister Greg Rickford accepting gifts during the MOU signing ceremony on February 5, 2020. 36
Figure 18. The dewe'igan (drum) and drummers from Niisaachewan at the MOU signing ceremony on February 5, 2020. 37
Figure 19. Men's impacts discussion taking place in Shoal Lake 40 on November 12, 2019. 38
Figure 20. Impact discussion with members of Washagamis Bay on November 12, 2019. 39
Figure 21. Prehistoric trade depicting export of copper from Anishinaabe lands (ca. 4000 BCE). 44
Figure 22. Trading posts established by La Vérendrye (BTNHR). 47
Figure 23. Clipping from the Phrenological Journal and Science of Health, Aug. 1871. 50
Figure 24: Map Shewing [sic] Proposed Route between Lake Superior and the Red River Settlement. 1858. Obtained from the Manitoba Archives. 52
Figure 25. The Lieutenant- Governor's Expedition to Treaty Island. N.D. Lake of the Woods Museum. 55
Figure 26. Medal to Commemorate the Signing of Treaty No. 3. N.D. Manitoba Archives. 58
Figure 27. Map clipping showing an early survey for Rat Portage (now, the Town of Kenora) and Rat Portage Reserve 38A and 38B in 1894. Lake of the Woods Museum Archives. 61
Figure 28: Connections of Lands to Anishinaabe Wellbeing 77
Figure 29. "Deer" co-occurrence with other components 79
Figure 30. "Moose" co-occurrence with other components 88
Figure 31. "Beaver" co-occurrence with other components 97
Figure 32. "Muskrat" co-occurrence with other components 104
Figure 33. "Wolf" co-occurrence with other components 111
Figure 34: Connections of Skies to Anishinaabe Wellbeing 116
Figure 35. "Ducks" co-occurrence with other components 126

Figure 36. “Eagle” code Co-Occurrence model....131
Figure 37. “Geese” co-occurrence with other components. 139
Figure 38. "Other Birds" co-occurrence with other components.....143
Figure 39: Connections of Soils to Anishinaabe Wellbeing....171
Figure 40. “Berries” co-occurrence with other components.....172
Figure 41. “Trees” co-occurrence model with other components....181
Figure 42. "Medicines" co-occurrence with other components.....204
Figure 43: Connections of Water to Anishinaabe Wellbeing....233
Figure 44. “Wild Rice” co-occurrence with other components. 239
Figure 45. “Northern Pike/Jackfish” co-occurrence with other components. 249
Figure 46. “Bullhead” co-occurrence with other components.....255
Figure 47. "Perch" co-occurrence with other components.....258
Figure 48. “Trout” co-occurrence with other components. 261
Figure 49. “Crappie” co-occurrence with other components. 264
Figure 50. “Walleye” co-occurrence with other components. 267
Figure 51. “Sturgeon” co-occurrence with other components. 272
Figure 52. “Suckers” co-occurrence with other components. 276
Figure 53. “Whitefish” co-occurrence with other components.....279
Figure 54. "Bass" co-occurrence model with other components. 282
Figure 55. “Turtles” co-occurrence with other components.....288
Figure 56: Web of Anishinaabe Wellbeing 293
Figure 57: Anishinaabeg Territory in Treaty 3 and the Winnipeg River Watershed 304
Figure 58. Fishing for "Recreation" co-occurrence with other components. 310
Figure 59. Fishing for "Sustenance" co-occurrence with other components.....313
Figure 60. "Commercial" fishing co-occurrence with other components. 317
Figure 61. "Spawning" sites co-occurrence with other components.....324
Figure 62. Fishing "Tools" co-occurrence with other components.....327
Figure 63. “Hunting” co-occurrence with other components.....345
Figure 64. “Trapping” co-occurrence with other components. 352

Tables

Table 1. Alternatives to the Undertaking. 4
Table 2. Side Roads and Entrances. 11
Table 3. Estimated Economic Impacts of Phase 1 of the Project*. 16
Table 4. Estimated Economic Impacts of all 3 Phases of the Project in Treaty 3*.....17
Table 5: History of Development in Lake of the Woods....68
Table 6: Names for White-Tailed Deer....78
Table 7: Names for Moose....86
Table 8: Names for Beaver....94
Table 9 Names for Muskrat....103
Table 10: Names for Grey Wolf....110
Table 11. O_3, $PM_{2.5}$, and NO_2 Monitoring Data for 2019 from the Winnipeg, Manitoba Ellen Street monitoring station 116

Table 12. O_3, $PM_{2.5}$, and NO_2 Monitoring Data for 2017 from the Thunder Bay, Ontario monitoring station 117
Table 13: Names for Ducks 124
Table 14. Population status of nine common Ontario zhiishiibag (ducks) according to the IUCN Red List of Threatened Species (2019) 128
Table 15: Names for Bald Eagle 129
Table 16: Names for Canada Goose 136
Table 17: Names for Bird 142
Table 18: Names for Common Loon 146
Table 19: Names for Belted Kingfisher 148
Table 20: Names for Black-capped Chickadee 149
Table 21: Names for Yellow Warbler 150
Table 22: Names for Canada Jay 151
Table 23: Names for Blue Jay 152
Table 24: Names for Common Raven 153
Table 25: Names for Pileated Woodpecker 154
Table 26: Names for Hairy Woodpecker 156
Table 27: Names for Great Gray Owl 157
Table 28: Names for Northern Hawk Owl 158
Table 29: Names for Boreal Owl 159
Table 30: Names for Northern Saw-whet Owl 160
Table 31: Names for broad-winged Hawk 161
Table 32: Names for northern goshawk 162
Table 33: Names for Northern Harrier 164
Table 34: Names for Osprey 165
Table 35: Names for Merlin 166
Table 36: Names for American Kestrel 167
Table 37: Names for Turkey Vulture 169
Table 38. Names for Blueberry 173
Table 39. Names for Raspberry 174
Table 40. Names for Choke cherry 175
Table 41. Names for Pin cherry 176
Table 42: Names for Mitigoog (Trees) 177
Table 43: Names for Eastern White Cedar 181
Table 44: Names for Black Spruce and White Spruce 183
Table 45: Names for Okikaandagoog (Jack Pine) 185
Table 46: Names for Azaadiwag (Trembling Aspen) 187
Table 47: Names for Biisaandago-zhingwaakwag (Eastern White Pine) 188
Table 48: Names for Red Pine 190
Table 49: Names for Willow 191
Table 50: Names for Balsam Poplar 192
Table 51: Names for Maple 194
Table 52: Names for Oak 196
Table 53: Names for Balsam Fir 197
Table 54: Names for White Birch 198

Table 55: Names for Black Ash 200
Table 56 Names for Medicine 202
Table 57 Names for Sage 207
Table 58. Names for Sweetgrass 214
Table 59 Names for Cedar 216
Table 60. Names for Sweet Flag 219
Table 61. Names for Willow 224
Table 62. Names for White Birch 225
Table 63. Names for Black Ash 225
Table 64. Names for Spruce 226
Table 65. Names for Chokecherry 227
Table 66 Names for Root of the Lily pad 227
Table 67 Names for Sturgeon 228
Table 68 Names for Whitefish 229
Table 69 Names for Wild Rice 238
Table 70. Names for Fish 247
Table 71. Names for Northern Pike/Jackfish 248
Table 72. Names for Catfish 253
Table 73. Names for Brown Bullhead 254
Table 74. Names for Asaaweg (Yellow Perch) 256
Table 75. Names for Namegosag (Lake Trout) 259
Table 76. Names for Crappie 262
Table 77. Names for Walleye 265
Table 78. Names for Lake Sturgeon 270
Table 79. Names for White Sucker 275
Table 80. Names for Whitefish 278
Table 81. Names for Bass 281
Table 82. Names for Minnows 283
Table 83: Names for Turtle, Snapping Turtle and Western Painted Turtle 286
Table 84. Table identifying spawning locations and species identified in each location. 323

Maps

Map 1: Boundaries of Treaty #3 in Relation to Mikinaak Minis (Turtle Island) and Canada A1-1
Map 2: Proposed Phase 1 Twinning of the TransCanada Highway in Treaty 3 ..... A1-2
Map 3: Proposed Corridors for Phases 1, 2, and 3 of the Twinning of the TransCanada Highway A1-3
Map 4: Proposed Location for Phase 1 of the Twinning of the TransCanada Highway A1-4
Map 5: Elevation for Phase 1 of the TransCanada Highway Twinning Project A1-5
Map 6: Alternatives Considered for Phase 1 of the TransCanada Highway Twinning Project A1-6
Map 7: Alternative 1A Considered for Phase 1 of the TransCanada Highway Twinning Project A1-7
Map 8: Alternative 1B Considered for Phase 1 for the TransCanada Highway Twinning Project A1-8
Map 9: Alternative 2 Considered for Phase 1 of the TransCanada Highway Twinning Project A1-9
Map 10: Alternative 3A Considered for Phase 1 of the TransCanada Highway Twinning Project A1-10
Map 11: Alternative 3B Considered for Phase 1 for the TransCanada Highway Twinning Project A1-11

Map 12: Project Site: Phase 1 Alignment Segment Index A1-12
Map 13: Project Site: Phase 1 Alignment for the TransCanada Highway Twinning Project (Maps A – F) A1-13
Map 14: Project Area for the TransCanada Highway Twinning Project A1-14
Map 15: Project Region for the TransCanada Highway Twinning Project A1-15
Map 16: Culverts for Phase 1: Being Retained, Removed, or Replaced, and New Proposed with Fish Passage Indicated A1-16
Map 17: Proposed Clearing and Grading Areas for Phase 1 of the TransCanada Highway Twinning Project ... A1-17
Map 18: Indigenous-Crown Treaties of Canada A1-18
Map 19: Anishinaabe Aki Kakendamowin for Niiwin Wendaanimok Communities A1-19
Map 20: Anishinaabe Aki Kakendamowin for Niiwin Wendaanimok Communities – Knowledge of the Lands A1-20
Map 21: Wildlife Management Units of Ontario Featuring Cervid Ecological Zones A1-21
Map 22: Saturated Soil Cover in the TransCanada Highway Twinning Project Area A1-22
Map 23: Anishinaabe Aki Kakendamowin for Niiwin Wendaanimok Communities - Knowledge of the Soils ... A1-23
Map 24: Soil Classification by Great Group in the TransCanada Highway Twinning Project Area A1-24
Map 25: Forested Land Cover in the TransCanada Highway Twinning Project Area A1-25
Map 26: Anishinaabe Aki Kakendamowin for Niiwin Wendaanimok Communities - Knowledge of the Waters A1-26
Map 27: Watershed Context for Phase 1 of the TransCanada Highway Twinning Project - Water Survey of Canada (WSC) Classification System A1-27
Map 28: Fisheries Management Zones in Relation to the Project Area A1-28
Map 29: Surficial Geology of the TransCanada Highway Twinning Project Area A1-29

1 Setting the Stage

WAUZHUSHK ONIGUM
NIISAACHEWAN
WASHAGAMIS BAY
SHOAL LAKE 40

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1 Setting the Stage

1.1 What this Document Represents

In 1868, the Crown approached the Anishinaabeg to enter into a relationship that would allow settlers to share Anishinaabe lands and safely pass through their territory to connect east and west. The Anishinaabeg refused. Over the next several years the Crown advanced many fine promises to the Anishinaabeg if they would grant their authority to enable the creation of the country that was to be Canada. In 1873, the Anishinaabeg did enter into a sacred relationship with the Crown known as Treaty 3, but instead of the promise of partnership, participation and prosperity, the past 147 years has seen the Anishinaabeg suffer outright attack, indifference, physical and economic marginalization and, yes, even genocide. In 2008, citing a need to overcome a critical bottleneck in the national transportation corridor, the Crown of Canada and the Crown of Ontario announced their intention to twin the TransCanada highway through Anishinaabe territory. While this infrastructure would clearly impact Anishinaabe rights and interests, they were not adequately consulted. They were not meaningfully engaged. The Anishinaabeg therefore refused. For the past 12 years the project has not moved forward to construction.

Today, a fresh attempt is being made to realize the project. In October 2018, a Unity Agreement was signed between the four Nations of Washagamis Bay First Nation, Shoal Lake 40 First Nation, Niisaachewan Anishinaabe Nation, and Wauzhushk Onigum First Nation, to coordinate their issues, concerns, and interests on the proposed twinning. This agreement set the foundation for the Niiwin Wendaanimok (Four Winds) Partnership ("Niiwin Wendaanimok"). Over the course of many months, collaborative engagement has been occurring, with both parties seeking to understand the interests, values, and teachings of the other.

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This Harmonized Impact Assessment represents the Anishinaabe expression of collaboration. This document outlines the impacts of the project. Impacts are understood through a process that operationalizes the *Manito Aki Inakonigaawin* (the Great Earth Law) by harmonizing Anishinaabe teachings and western science. This document represents holism, it represents a commitment to ongoing courage and patience, willingness to share the teachings, and walking the path of reconciliation. While the mitigation measures noted in this report offer a starting point for some of the impacts that will occur, there are outstanding ongoing and historical impacts that require appropriate accommodation. As such this document does not represent the consent of the Anishinaabeg. It serves

as one part of the overall decision-making framework as informed by the *Manito Aki Inakonigaawin* (the Great Earth Law).

1.2 Limitations

- This study has several limitations that the reader should bear in mind when reviewing its contents.
    - References to “identity”, “culture”, “society”, and “spirituality” are made throughout this document in the context of communication tools like lists, concept maps, and other media. Their use and meaning are strictly relative to the scope of this study and interpretations and understanding of its authors. They should not be construed in any way as essential, final, or complete representations of the Nations of the Niiwin Wendaanimok Partnership or their membership.
    - The Study is not inclusive of the perspectives of all knowledge keepers. Budgetary, time constraints, and logistical challenges have limited the number of participants available to provide knowledge. An absence of data must not be interpreted as an absence of impact.
    - The language used to conduct the study is English. The reader is respectfully reminded to be cognizant of the fact that depth of meaning of Anishinaabe concepts may be degraded or lost in translation into English. As discussed in greater detail in Section 4.3.2, Anishinaabemowin serves a necessary and critical role in the expression of Anishinaabe culture – filling representation of the world with story, allegory, and life-processes (Lyons, 2010, pp. 133-134). Direct translations into languages like English strip story-laden content carried within Anishinaabemowin words themselves. The language used in this document represents the authors’ best attempt at figurative *translation* to be able to understand the expressions to the best of their ability.

2 Project Understanding

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

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2 Project Understanding

2.1 Guidance for the Reader

This chapter presents the Niiwin Wendaanimok understanding of the proposed Project.

Over the course of many months, the Niiwin Wendaanimok Partnership met with the Ministry of Transportation ("MTO") many times. Each time we met, we developed a deeper understanding of what is being proposed for this first phase of the Project. MTO shared maps, designs, figures, reports, and other information, with together with our own history with the Project help build an understanding of Phase 1 of the Project. We also felt it necessary to explain all components of the proposed Project as well as all activities to prepare for, build, and maintain that component.

2.2 Project Location

The Project will be located within the traditional lands of the Anishinaabeg of Treaty 3 between the Manitoba/Ontario border and the City of Kenora. **Map 1** shows the location of Treaty 3 territory in relation to present day Canada. **Map 2** shows the location of the Project in Treaty 3 territory.

The Project is divided into three portions ("Phases"). These have been referred to as Sections in the Transportation Environmental Study Report ("TESR") but will be identified as Phases hereon. The first Phase begins in the west at the Manitoba/Ontario border and extends east towards Kenora, as shown in **Map 3**. The three Phases are:

- Phase 1: From the Manitoba/Ontario border to Highway 673 (6.5 km);
- Phase 2: From Highway 673 to Rush Bay Road (8.5 km); and
- Phase 3: Between Rush Bay Road and Highway 17A (24 km).

This Chapter focuses solely on Phase 1 of the Project. **Map 4** displays the location for Phase 1.

Map 5 shows the topography of the project area. The elevation varies across the site from approximately 340 m above sea level to 375 m above sea level. Along the project site along Highway 17, the land is approximately 355 to 375 m above sea level. Near the Rush Bay Road Gravel Pit, the elevation is slightly lower and varies between 340 to 350 m above sea level.

2.3 Why the Project is Needed

As the only east-west road connection between Manitoba and Kenora, Highway 17 is an essential trade and transportation route. The highway is used for various purposes including long-distance commercial and tourist traffic, local community traffic, and access to surrounding lands.

Traffic on Highway 17 has increased with development in the surrounding area and is expected to continue growing. The Ministry of Transportation ("MTO") anticipates that by 2029, daily traffic will rise

by approximately 12-18% of 2016 levels (Cooke & Narin, Highway 17 Four-Laning, Section1: Manitoba / Ontario Border to Highway 673 , 2019). The annual average daily traffic is expected to increase to 5,480 vehicles, and the summer average daily traffic to 7,810 vehicles. With current and anticipated traffic growth, the two-lane highway is becoming increasingly more hazardous for road-users and local wildlife. In 2016 over 500 collisions occurred on Highway 17 near Kenora, resulting in 111 injuries and two fatalities (Ontario Ministry of Transportation, 2016). A four-lane highway can be expected to increase the capacity of the highway to accommodate the future traffic increase, provide a safer transportation route, and hence facilitate a reliable corridor for passage of goods through Anishinaabe territory.

2.4 Alternatives Considered

Under the Ministry of Transportation ("MTO") Class Environmental Assessment ("EA") process, "alternatives to the undertaking" must be considered to ensure that there is a justified and demonstrated need for the project. According to MTO, the following planning alternatives were assessed and taken into consideration for the project in their ability to decrease congestion, improve safety, improve accessibility, serve local needs, and allow for staging:

1. Do Nothing;
2. Transportation Demand Management (Reduce Peak Demand);
3. Non-Roadway Improvements (Rail, Air, Transit);
4. Localized Operational Improvements (Existing Highway 17); and
5. Highway 17 Corridor Capacity Improvements.

Table 1 compares the potential impacts for each of the above-listed alternatives. This table has been reproduced from the Transportation Environmental Study Report ("TESR") produced for the project:

Table 1. Alternatives to the Undertaking.

Criteria	**Alternatives**				
	Do Nothing	**Transportation Demand Management (Reduce Peak Demand)**	**Non-Roadway Improvements (Rail, Air, Transit)**	**Localized Operational Improvements (Existing Highway 17)**	**Highway 17 Corridor Capacity Improvements**
Long Term Needs					
Congestion Decreased	Congestion will increase as traffic volumes increase over long term	Congestion will not decrease significantly	May result in small decrease in congestion over short term as alternates modes are used	Congestion will increase as traffic volumes increase	Congestion reduced with significant capacity improvements

Road Safety Improved	Potential for collisions will increase as traffic volumes increase	Safety will not improve	Will not improve safety in existing highway corridor	Minor safety improvements	Safety improved with design / capacity changes
Accessibility Improved	Area access more difficult as traffic volumes increase	Area access may not improve, may be more difficult	May improve regional access. May not improve local access.	Minor effect on accessibility	Area access improved with capacity improvements
Serve Local Needs	Will not service local needs due to higher congestion	Will not service local needs due to higher congestion	Will not service local needs due to higher congestion	Will not service local needs due to higher congestion	Will serve local needs. Access changes may be required
Can be Staged	Not applicable	Can be staged	Cannot be effectively staged	Can be staged	Can be staged
Minimize Negative Impacts					
Minimize Economic Impacts	Economic potential may be limited with existing highway	Shifting travel patterns may cause economic impact	Minimal impact on highway businesses. Does not support area tourism focus	Economic potential may be limited with existing highway	Regional mobility is a positive impact however potential change to local business access
Minimize Environmental Impacts	No impact	Minimal impact	Minimal impact if existing corridors used	Minimal impact	Some impacts, most of which can be mitigated
Minimize Socio/Cultural Impacts	Minimal impact	High Impact Potential (i.e. Staggered work hours / caps on development	Minimal impact	Minimal impact	Some impacts, most of which can be mitigated

Consistent with Existing Systems					
Existing Corridor Available	The existing highway corridor is available	The existing highway corridor is available	Existing rail corridor and existing highway, air and marine corridors are available	The existing highway corridor is available	The existing highway corridor is available
Required Different Modes	Possible modes include cars, trucks, and buses	Possible modes include cars, trucks, and buses	Requires other modes to access rail/marine/air facilities	Possible modes include cars, trucks, and buses	Possible modes include cars, trucks, and buses
Cost Effective	The most cost-effective solution considering capital cost	The most cost-effective solution considering capital cost	Not cost effective since significant additional infrastructure required to achieve local access	A cost-effective solution considering capital cost	More costly solution. Economic benefits to the area and improved highway safety and operation offset capital costs
Comments					
	Will not meet the area's future needs. Minimal impact. Consistent with existing systems	Will not meet the area's future needs. Potential impact on development. Consistent with existing systems	Will not meet the area's future needs. Not consistent with existing systems. Does not adequately address long term needs as highways are the major means of transportation	Will not meet the area's future needs. Minimal impacts. Consistent with existing systems	Will meet the area's future needs. Some impact requiring mitigation. Consistent with existing systems
Recommendation					

	Eliminate from further consideration	Eliminate from further consideration	Eliminate from further consideration	Eliminate from further consideration	Carry forward for further analysis

2.5 Preferred Alternative

The Ministry of Transportation's ("MTO's") preferred alternative is Alternative No. 5, "Highway 17 Corridor Capacity Improvements". Rationale for this decision is displayed in Table 1. In MTO's opinion, this alternative adequately addresses the transportation needs of the Project by providing an opportunity to improve the roadway capacity, improve the safety through provision of an open median, modify the existing entrances to accommodate only right in-right out movements, and improve the design of existing intersections. For these reasons, MTO selected this alternative as the preferred option and carried it forward for further study.

2.6 Alternative Routes Considered

Within the "Highway 17 Corridor Capacity Improvements", the Ministry of Transportation ("MTO") then identified alternative routes and analyzed them based on the following criteria:

- Natural Environment, including watercourses, habitats, vegetation, and wildlife;
- Socio-Economic Environment, include property requirements, impacts on existing and future land uses, utilities, emergency response, site contamination and noise;
- Cultural Environment, including archaeological, built heritage, and cultural landscape resources;
- Transportation Considerations, including traffic operations, geometrics, access management, continuity of local road access, safety, and staging flexibility; and
- Construction Cost, including construction and constructability costs.

Map 6 shows all alternative routes considered for Phase 1. The following sections outline each of the five alternative routes that were considered, along with a summary of their anticipated impacts when applicable.

2.6.1 Alternative 1A

As depicted in **Map 7**, Alternative 1A is a southern alignment for the twinning of Highway 17 with a constant median width in all of Phase 1. Major impacts include the relocation of the rest area, and the infilling of a watercourse feature.

2.6.2 Alternative 1B

As depicted in **Map 8**, Alternative 1B is a southern alignment for the twinning of Highway 17 in Phase 1, with an increased median width to accommodate a watercourse feature in the western portion of Phase 1. Major impacts include the relocation of the rest area and the crossing of a wetland in a larger area than in Alternative 1A.

2.6.3 Alternative 2

As depicted in **Map 9**, Alternative 2 is a northern alignment for the twinning of Highway 17 with a constant median width in all of Phase 1. The major impact of this alternative is a long wetland crossing, incurring major construction challenges.

2.6.4 Alternative 3A

As depicted in **Map 10**, Alternative 3A is a northern alignment for the twinning of Highway 17 on the west portion of Phase 1. A transition to southern alignment occurs approximately 1 km east of the Ontario Tourist Information Centre & Rest Area. The median width is constant in all of Phase 1. The major impact of this alternative is a long wetland crossing.

2.6.5 Alternative 3B

As depicted in **Map 11**, Alternative 3B is a northern alignment for the twinning of Highway 17 on the west portion of Phase 1. A transition to a southern alignment occurs 500 m east of the Ontario Welcome Centre. Median width is not constant, with an expanded median to avoid a watercourse feature approximately 650 m east of the Ontario Tourist Information Centre & Rest Area. This alternative reduces impacts to the wetland due to a shorter crossing.

2.7 Selected Route

The selected route is shown in **Map 12** and detailed in Section 2.8.5.

2.8 Project Components

The following boundaries are used in describing the Project Components and Activities:

- **Project Site** – will be comprised of 250m buffer around the proposed alignment, project components including paved and gravel road surfaces, culverts, and utility relocation, and project activities including blasting, clearing, and grading. The Project Site will also encompass the Rush Bay Gravel Pit. An overview of the Project Site is shown in **Map 12**, and a detailed view of the Project Site is provided in **Map 13**.
- **Project Area** – will include the Niiwin Wendaanimok communities and the surrounding area, shown in **Map 14**.

- **Project Region** – will include Treaty 3 territory, shown in **Map 15**.

The Project Components and Activities can be further described by the following three stages:

1. Construction Stage
2. Operation Stage
3. Decommissioning Stage

All components of the Project will be located at the Project Site. The project components in Phase 1 include:

1. Existing Culvert Replacement
2. New Culverts
3. Gravel Pits
4. New Intersection with Median Crossover
5. Modifications to Access
6. Road Itself
7. Emergency Median Crossover
8. Four-to-Two-Lane Transitions
9. Illumination
10. Signage
11. Watercourse Realignments
12. Roadside Protection
13. Relocated Utilities

The sections below outline the details of each above listed components.

2.8.1 Culverts

Map 16 show the locations of retained, eliminated, replaced, and proposed culverts. This map set also shows culverts with accommodation for fish passage.

2.8.1.1 Existing Culvert Replacement

A total of 12 existing culverts cross Highway 17 within Phase 1.

A review of the local drainage conditions was carried out to determine the physical characteristics and conditions of the existing culverts along the highway. Based on this review, it was determined that nine existing centreline culverts require replacement. Additionally, three existing culverts (C2, C10 and C11) will be retained, one culvert (C2) requires some clean out, and one culvert (C4) will be eliminated with a new culvert installed at a different location due to the alignment of the highway.

2.8.1.2 New Culverts

15 new culverts are proposed at the Project Site. Eight culverts will be replaced, three will be retained, and one will be removed. New culverts will be sized according to Ministry Standards and will be designed large enough to accommodate the movement of fish and small animals. Culverts that support fish or potential fish use up and downstream of the highway will be properly embedded to ensure the new culvert elevation does not create a barrier to fish passage.

Measures to minimize culvert length and potential habitat infill have been specifically targeted where potential pike spawning habitat may be present (e.g. C9 [Baubee Lake Tributary]). Modifications adjacent to the new water crossings will be done to provide additional habitat and ensure proper connection to facilitate fish passage.

2.8.2 Gravel Pits

The active Rush Bay Road gravel pit located on Rush Bay Road will be used as the Project gravel pit.

2.8.3 New Intersection with Median Crossover

A median crossover intersection is proposed to be added at the Rest Area, located at the Ontario Travel Information Centre, approximately 1.25 km east of the Manitoba/Ontario border on the south side of Highway 17. The existing Rest Area provides a place for drivers to rest and facilitates picnic and dog-walking opportunities for seasonal local users. If built, the proposed intersection will allow access to the Rest Area from both directions of Highway 17 and facilitate U-turns. The Rest Area recently underwent improvements to accommodate long combination vehicles (LCVs) in the future. LCVs are not currently permitted to use Highway 17 in this area. The proposed intersection will include left- and right-turn lanes and will have a wider (36 m) median to provide adequate access to the Rest Area for LCVs. This will only service LCVs in the eastbound direction, as the 36 m median will not be able to accommodate LCVs in the westbound direction.

2.8.4 Modification to Access

There are five unsigned accesses located along Highway 17 within the Project Site. These include two abandoned highway/forest accesses, a utility road to Trans-Canada Pipelines (also used for logging access), and two accesses to private properties (Fire Roads 47 and 48). The only signed road intersecting Highway 17 in Phase 1 is Gundy Road (a.k.a., Gundy Lake Road).

Table 2 outlines the side roads and entrances along Highway 17 within the Project Area and the proposed access. This table has been reproduced from the Transportation Environmental Study Report ("TESR") produced for the project:

Table 2. Side Roads and Entrances.

Township	Description	Location #	Side of Highway	Access
Ewart	Abandoned Highway/Forest Access	E10290	N	Access Not Provided
	Utility Road, also used for logging, and old dump access	E10600	S	Retained, right in – right out
	Trails	E10650	N	Access Not Provided
	Rest Area (former Ontario Travel Information Centre)	E11050	S	Retained, right in – right out
	Rest Area (former Ontario Travel Information Centre)	E11250	S	Retained, median intersection provided with EB and WB lanes
	FR48, Entrance	E13120	S	Retained, right in – right out
	FR47, Entrance	E13790	S	Retained, right in – right out

2.8.5 The Road Itself

As a part of Phase 1, the new proposed road will extend 6.5 km between the Manitoba/Ontario border and Highway 673 (also locally known as Shoal Lake 39 Road). Directly on the east side of the Manitoba/Ontario boarder, the existing two-lane Highway 17 will transition to a four-lane divided highway with an open median at least 30 m wide. The existing two lanes will be used as the eastbound lanes and two new lanes will be built on the north side of Highway 17 as the westbound lanes. The twinning will continue along the north side approximately 1 km to just east of the Rest Area, at which point the twinning will transition to the south side of the existing road. The purpose of this transition is to avoid crossing a large swamp to the east. After the transition to the south, the existing Highway 17 lanes will become the westbound lanes and the new lanes to the south will become the eastbound lanes. The twinning will continue east along the south side of the existing road to the end of the Phase

1 Project Area (approximately where the existing Highway 17 intersects with Highway 673). At this point, the south-side twinning is proposed to match the west limit of the Phase 2 alignment, however alternatives for Phase 2 have not been developed yet and will be done in the coming months.

2.8.6 Emergency Median Crossover

A wide (maximum 76 m) median turnaround for emergency and maintenance vehicles is proposed between the Rest Area and Gundy Road (approximately 2.1 km west of Gundy Road).

Emergency vehicles will generally respond to emergencies in the area from the east. Vehicles responding to accesses on the north side of Highway 17 will not incur out-of-the-way travel and can expect slightly reduced response times because of the proposed improvements. Vehicles responding to accesses on the south side of Highway 17 will need to use this emergency median crossover or the median crossover at the Rest Area. This may require some out-of-the-way travel as vehicles 'double-back' to right in-right out accesses to the south. The purpose of this emergency median crossover is to reduce out-of-the-way travel for emergency vehicles. With this proposed crossover, the maximum out-of-the-way travel distance to existing accesses will be approximately 4600 m.

2.8.7 Four-to-Two-Lane Transitions

Phase 1 of the twinning is expected to be completed well in advance of Phase 2 on the east or twinning of Manitoba's Highway 1 on the west. To accommodate for this, two provisional transitions will be required to connect the proposed four-lane divided cross-section of Highway 17 to the existing two-lane, undivided cross-section near the east and west ends of Phase 1.

Transition locations have been carefully assessed to increase road safety. The Ministry of Transportation ("MTO") considered the following three locations to identify a preferred location for the east transition:

- **Option 1:** This option has the transition located between the Highway 673 and Gundy Lake Road intersections.
- **Option 2:** This option locates the transition approximately 200m west of the Gundy Road intersection.
- **Option 3:** This option locates the transition furthest to the west in the vicinity of the Fire Road #47 intersection.

MTO assessed the three options based on:

1. Safety performance, as it pertains to traffic operations;
2. Geometrics; and
3. Potential impacts to drainage features.

Option 1 maximized the length of the twinning but was the least preferred option from a safety perspective due to its location between the Gundy Lake Road and Highway 673 intersections. Proximity to intersections is a risk because it can increase drivers' cognitive workload and lead to conflicts

between vehicles using the intersection (Cooke & Narin, Highway 17 Four-Laning, Section1: Manitoba / Ontario Border to Highway 673 , 2019). From a drainage perspective, Option 2 had the least impact on existing and proposed drainage features. Therefore, Option 2 was identified as the most desirable four-to-two-lane transition design at the east study limit of Phase. As part of the design process, Option 2 has been refined and moved 300 m farther west to provide more distance between the transition and Gundy Road. This change was made to enhance driver decision time and provide more favourable vertical profile and sight distance.

2.8.8 Illumination

There is no Ministry of Transportation ("MTO") owned and/or operated roadway illumination and no traffic signals within the Project Area. There is, however, existing parking lot illumination within the Ontario Tourist Information Centre & Rest Area.

2.8.9 Watercourse Realignments

Construction of the new highway will require some redirection of watercourses to ensure they flow through the intended locations at culverts. In some cases, watercourses will require realignment where the channel flows parallel to the existing highway, within the footprint of the new lanes, or is sharply skewed to the highway alignment. In addition, some of the wetland areas supporting open water or shallow aquatic conditions and supporting confirmed fish use will be partially or completely infilled to accommodate the new highway lanes. Channel realignments at watercourses supporting fish are anticipated at culverts C10 and C12 and along the watercourse reaches connecting C4 and C5.

2.8.10 Relocated Utilities

An existing underground fibre line, operated by Bell, will be relocated. A 1.8 km extension of the Hydro One line approximately 350 m east of Highway 673 will be required to provide power to the four-to-two-lane transition lighting west of Gundy Road. An existing access to a pumping station operated by Trans-Canada Pipelines, located to the south of Highway 17 approximately 600 m east of the Manitoba/Ontario border, will be maintained as part of the selected route. Existing and proposed utility lines in the Project Site are shown in **Map 13**.

2.9 Project Activities

The boundaries and stages stated in the Project Components section are also used in describing Project Activities. Understanding all activities that will occur as a part of the proposed project help identify potential impacts associated with such activities. This section outlines the activities associated with Construction and Operation Stages of Phase 1.

2.9.1 Construction Activities

The Phase 1 activities associated with the Construction Stage are:

1. Pre-Construction Staging:
    a) Clearing trees and bush around the right-of-way, including for setting up construction staging areas (see **Map 17**).
    b) Stockpiling trees for community distribution.
    c) Hauling aggregate materials to the site.
    d) Hauling equipment to the site.
    e) Storing aggregate at the site.
    f) Storing equipment at the site.
2. Building the Road and Other Components
    a) Blasting rock within the right-of-way (see **Map 13**).
    b) Using vehicles, including fuelling construction equipment.
    c) Excavating and hauling rock.
    d) Filling in rock.
    e) Levelling and grading (see **Map 17**).
    f) Using dust suppression.
    g) Disposing of construction waste.
    h) Dewatering for culvert replacements (see **Map 16**).
    i) Applying erosion and sediment control measures.
    j) Providing amenities for workers.
    k) Relocating utilities (see **Map 13**).
    l) Installing signage.

3. Demobilizing and Restoring

    a) Demobilizing equipment, including winter shutdowns.
    b) Revegetating and restoring the site.

2.9.2 Operation Activities

During the Operation Stage of Phase 1, once the road is built, activities will include:

1. Using the new highway.
2. Applying herbicides.
3. Clearing snow.
4. Applying ice-control measures.
5. Maintaining barriers.
6. Marking pavements and maintaining signage.
7. Maintaining pavements.

2.10 Proposed Schedule

MTO has developed a preliminary schedule for construction on Phase 1 of the project, which can be found summarized in **Appendix 2**: Construction Schedule of this report. Construction will occur in three

main stages, preceded by a pre-construction stage, and followed by a clean-up and demobilization stage. Each stage will have a Winter Shutdown Period which will range from approximately November to May of each year. Stage 1 is scheduled to occur from roughly Jun. 1, 2021 to Jul. 6, 2022.

Key activities include:

- Contract Award and Mobilization (Jun. 1 - Jun. 7, 2021)
- Traffic Control Set-up (Jun. 8 – Jun. 9, 2021)
- Aggregate Production (Jun. 1 – Jun. 19, 2021)
- Cleaning and Grubbing (Jun. 17 - Jun. 30, 2021)
- Construct New Eastbound Lanes (Jun. 17, 2021 – Feb. 23, 2022)
- Construct New Westbound Lanes (Jul. 2, 2021 –Jun. 10, 2022)
- Construct Temporary Widening (Jul. 5, 2021 – Aug. 18, 2021)
- Construct Two-to-Four Lane Transition (Jul. 5, 2021- Aug. 18, 2021)
- Winter Shutdown Period (Oct. 28, 2021 – Jun. 1, 2022)
- Construct Four-to-Two Lane Transition (Aug. 16, 2021– Sept. 3, 2021)
- Temporary Access Connections (Sept. 2, 2021– Sept. 14, 2021)
- Paving (Jun. 13, 2022-Jul. 6, 2022)

Specific details on activities including excavation and blasting are noted on the schedule in **Appendix 2.** Planning and engagement for Phase 2 will begin once construction on Phase 1 commences.

2.11 Economic Impacts

The Niiwin Wendaanimok Partnership contracted MNP LLP (“MNP”) to conduct an economic impact analysis to quantify the economic contributions the Project could make within Treaty 3 territory, within the Province of Ontario, and within Canada as a whole. These estimates are based on the best available information from the Ministry of Transportation (“MTO”), the Partnership, and public data sources at the time of the analysis (MNP, 2020).

2.11.1 Phase 1

In their economic analysis, MNP estimated that Phase 1 would generate a total output of $77 million, which represents the gross value of all goods and services produced by Phase 1 of the Project. MNP also estimated the Gross Domestic Product (GDP) generated by Phase 1 of the project would be $35 million. Phase 1 would also generate the equivalent of 331 full-time jobs. This represents 331 full-time positions for a full year of employment, although these positions may be spread over a shorter or longer period depending on the construction schedule. Approximately 296 of these full-time positions would be in Ontario (see Table 3. Estimated Economic Impacts of Phase 1 of the Project*.) (MNP, 2020).

Table 3. Estimated Economic Impacts of Phase 1 of the Project.*

	Output ($ million)	**GDP ($ million)**	**Employment (FTE)**	**Federal Tax ($ million)**	**Provincial Tax ($ million)**	**Municipal Tax ($ million)**
Economic Impacts in Ontario						
Direct	$35	$13	146	$1	$1	$0.3
Indirect and Induced	$35	$18	150	$2	$1	$1
Total in Ontario	**$70**	**$31**	**296**	**$3**	**$2**	**$1**
Economic Impacts in the Rest of Canada						
Indirect and Induced	$7	$4	35	$1	$1	$0.04
Grand Total of Economic Impacts in Canada						
Grand Total	**$77**	**$35**	**331**	**$4**	**$3**	**$1**

*Table copied directly from Table 2 in (MNP, 2020)

2.11.2 Overall Project

MNP estimated the economic contributions of the overall Project. This includes Phases 2 and 3, which are each expected to generate more economic activity than Phase 1. For all three phases of the Project, MNP estimated the Project would generate approximately $546 million in total output, including $245 million in GDP. The project could also lead to the creation of the equivalent of 2,339 full time jobs including 2,089 in Ontario. MNP estimates the overall Project would generate $26 million in federal taxes, $19 million in provincial, and another $7 million in municipal taxes (MNP, 2020).

In addition, MNP estimated the total economic impact the Project would have on Treaty 3 Territory over the course of all three phases. The analysis showed the project could generate between $346 and $395 million in total output, including between $153 and $175 million in GDP. It could also generate the equivalent of 1,462 to 1,671 full-time positions in Treaty 3 Territory. The Project would also generate federal, provincial, and municipal taxes for governments in Treaty 3 Territory (see Table 4 below). Overall, MNP estimated that roughly 70 to 80 percent of all Project expenditures could be spent in Treaty 3 Territory depending on the availability of service providers, labor, and other factors (MNP, 2020).

Table 4. Estimated Economic Impacts of all 3 Phases of the Project in Treaty 3.*

	Output ($ million)	**GDP ($ million)**	**Employment (FTE)**	**Federal Tax ($ million)**	**Provincial Tax ($ million)**	**Municipal Tax ($ million)**
Economic Impacts in Treaty 3 Territory						
Direct	$175 - $200	$63 - $72	721 – 824	$7 - $8	$4 - $5	$1.2 - $1.4
Indirect and Induced	$171 - $195	$90 - $103	741 – 847	$9 - $11	$7 - $8	$3.7 - $4.2
Total	**$346 - $395**	**$153 - $175**	**1462 – 1671**	**$16 - $19**	**$11 - $13**	**$4.9 - $5.6**

*Table copied directly from Table 7 in (MNP, 2020)

3 What Was Done

WAUZHUSHK ONIGUM
NIISAACHEWAN
WASHAGAMIS BAY
SHOAL LAKE 40

narratives

3 What Was Done

3.1 Guidance for the Reader

As we set out to build this work, it became clear that there were very few models that truly reflected what the Anishinaabeg sought to do with respect to understanding impacts on the land whilst incorporating western science. Most models represented diagrams that did not do justice to the depth of understanding that was being built through this process. The Niiwin Wendaanimok thus built a model that it believes explains this approach. This chapter presents the model itself, and outlines the methods used to conduct the work.

3.2 Harmonized Impact Assessment Model

3.2.1 Overview

The model presented in Figure 1 shows three concentric circles. The outermost circle builds the foundational principles of harmonization. The next circle represents the process to be followed as informed by the principles. The inner-most circle represents the components of harmonization captured through a process that would be informed by the principles of harmonization.

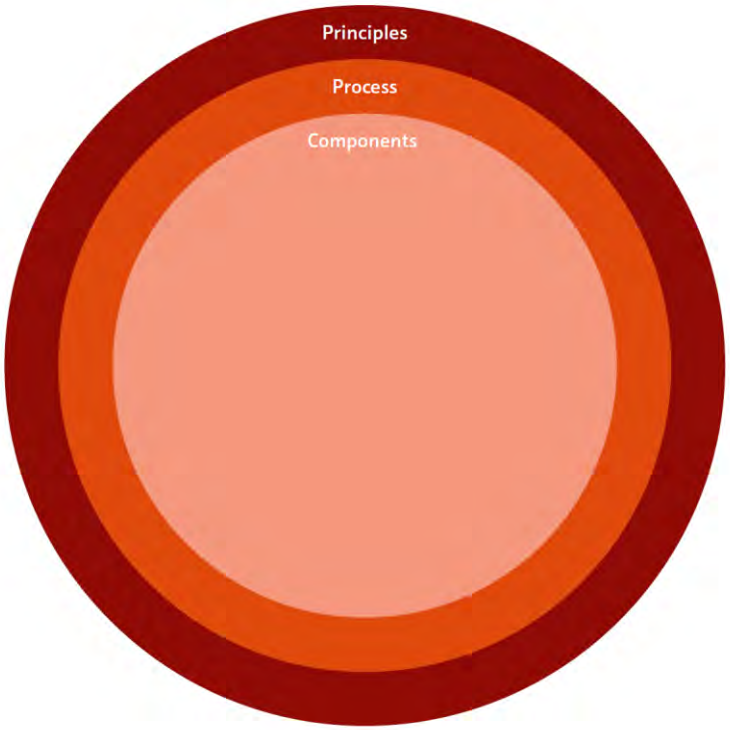


Figure 1. Overview of the Model: Principles, Process, and Components.

3.2.2 Principles

The principles of harmonization as informed by the *Manito Aki Inakonigaawin* (the Great Earth Law) are:

- ***Weweni*** (Take our time)—This refers to taking our time to undertake due process to make sure our protocols are respected.
- ***Bebekaa*** (Doing it right)—This refers to making sure we are doing things properly at the onset. It entails building relationships at the appropriate levels of authority: Political, Technical, and Task Forces. It also requires education of the public, governmental agencies and industry, and promotion of the objectives through public forum, media, and other sources at every opportunity. It requires invoking guidance from all our sacred lodges, *opwaaganag* (pipes), *dewe'iganag* (drums), songs, traditional laws, and ceremonies.
- ***Biiziindun*** (Listen)— This represents a commitment that we will listen to our people, our Elders, our men, women, and youth.
- ***Kegofachken*** (Don't be afraid)— This reminds us that we have been taught to be afraid. We will not be afraid of implementing our laws and principles.

These principles form the outer-most circle of the model, shown in Figure 2.

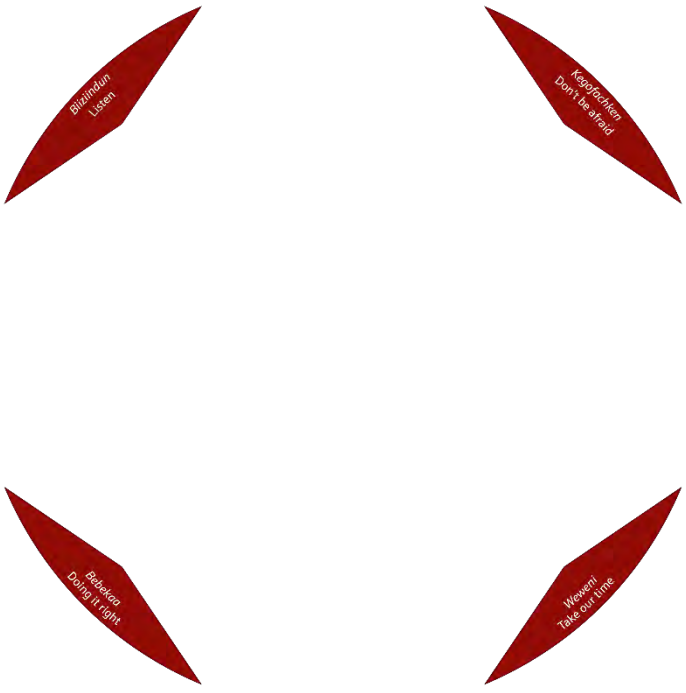


Figure 2. The four foundational principles of harmonization rooted in the Manito Aki Inakonigaawin (the Great Earth Law).

The Seven Anishinaabe Teachings traditionally passed down orally from generation to generation are:

1. **Respect**

2. **Love**
3. **Honesty**
4. **Courage**
5. **Humility**
6. **Wisdom**
7. **Truth (Integrity)**

These principles form the outermost circle of the model along with the four foundational principles from the *Manito Aki Inakonigaawin* (the Great Earth Law). See Figure 3 below.

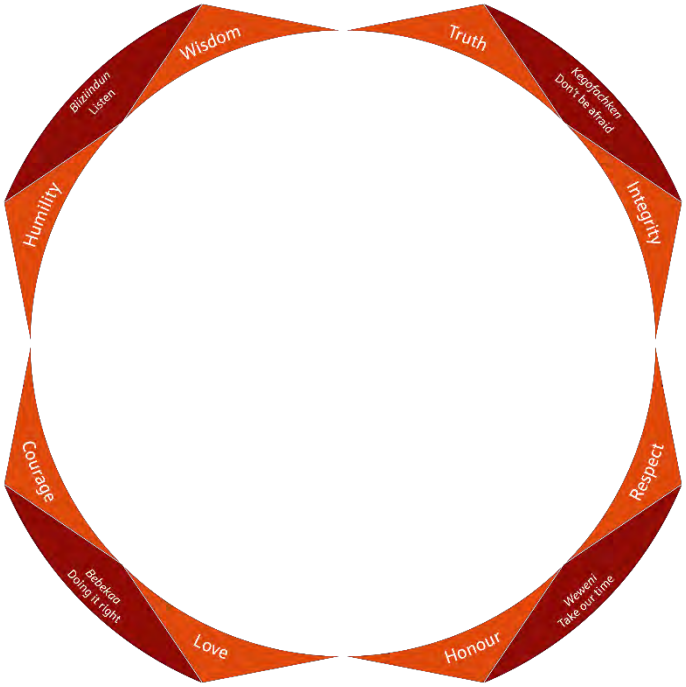


Figure 3. The Seven Teachings and the four foundational principles.

The principles of best practice as outlined by the International Association for Impact Assessment (IAIA) (1991) are:

- **Rigorous**—"best practicable" science should be applied to the process, and methodologies and techniques appropriate to address the problems being investigated should be employed.
- **Practical**—information and outputs of the process should assist with problem solving and be accepted by proponents and be able to be implemented.
- **Cost-effective**—the objectives of Environmental Impact Assessments ("EIAs") should be achieved by the process within the resource, methodology, time, and available information limits.
- **Efficient**—minimum cost burdens with regards to time and finance should be imposed on proponents and participants, while consistently meeting EIA requirements and objectives.
- **Focused**—the process should focus on key issues and significant environmental effects.

- **Adaptive**—the process should adapt to proposal circumstances, issues, and realities, and iteratively incorporate necessary changes.
- **Participative**—appropriate opportunities should be provided to inform and include interested and affected public, and documentation and decision making should reflect public input and concerns.
- **Inter-disciplinary**—the appropriate experts and techniques in socio-economical and bio-physical aspects and traditional knowledge should be included in the process.
- **Credible**—the process should be rigorous, fair, objective, impartial, professional, and balanced, and undergo independent verification.
- **Integrated**—interrelationships between social, economic, and biophysical aspects should be addressed.
- **Transparent**—the process should transparently identify factors influencing decision making; acknowledge process limitations and difficulties; provide public access to information; and have comprehensible EIA content requirements.
- **Systematic**—the process should follow a systematic approach to ensure full consideration of relevant information on the affected environment, on proposed alternatives and associated impacts, and of monitoring measures and residual effect investigations.

These principles form the outer-most circle of the model along with the four foundational principles and from the *Manito Aki Inakonigaawin* (the Great Earth Law) and the Seven Teachings. This is shown in Figure 4.

Figure 4. Principles of Harmonization: The 12 principles of best practice for Impact Assessment, the four foundational principles informed by the Manito Aki Inakonigaawin (the Great Earth Law), and the Seven Teachings.

3.2.3 Process

The traditional planning phases as informed by the *Manito Aki Inakonigaawin* (the Great Earth Law) are:

Visioning Phase—Traditional leaders, warriors, and hunters knew very clearly who they were and exactly why they were taking on a new major campaign. They were experts on environmental scanning and sought a clear vision before any major undertaking. They made sacred offerings. They fasted. They meditated. They conducted extensive ceremonies. They prepared with the greatest care and guided by the Seven Laws of Creation; they did this together. They carefully considered their mission against their vision and were guided by their values and principles. Thus, in times of critical challenges or conflict, they were able to act quickly and decisively on options because they had clear knowledge of their purpose and what their priorities were.

Scouting Phase—Having listened carefully to everyone, traditional leaders knew the needs and aspirations of their people. Having validated their purpose in ceremony, they scouted their territory assessing the land, terrain, and resources. They determined controllable and uncontrollable factors seeking the most strategic sites and the best circumstances under which to launch their collective enterprise. How the women, children and Elders would fare from the venture.

Hunter/Warrior/Gathering Phase—In this phase, the tactics were fully deployed. This was the time for commitment. A time for action. The leaders knew the strengths and talents of each hunter or warrior. They would not delegate any task that they themselves were not prepared to do.

Feasting and Celebrating Phase—Traditional hunters and gatherers knew when to call off the enterprise leaving the animals and natural crops to replenish. The successful hunters were always the last to claim share of the hunt remembering for whose benefit the hunt was carried out. But in recognition of their valuable contribution, the community presented them with the choicest pieces. They feasted the spirits of the animals taken and they retired the remains with the appropriate ceremony.

These four traditional planning phases form the mid-level circle of the model and are shown in Figure 5.

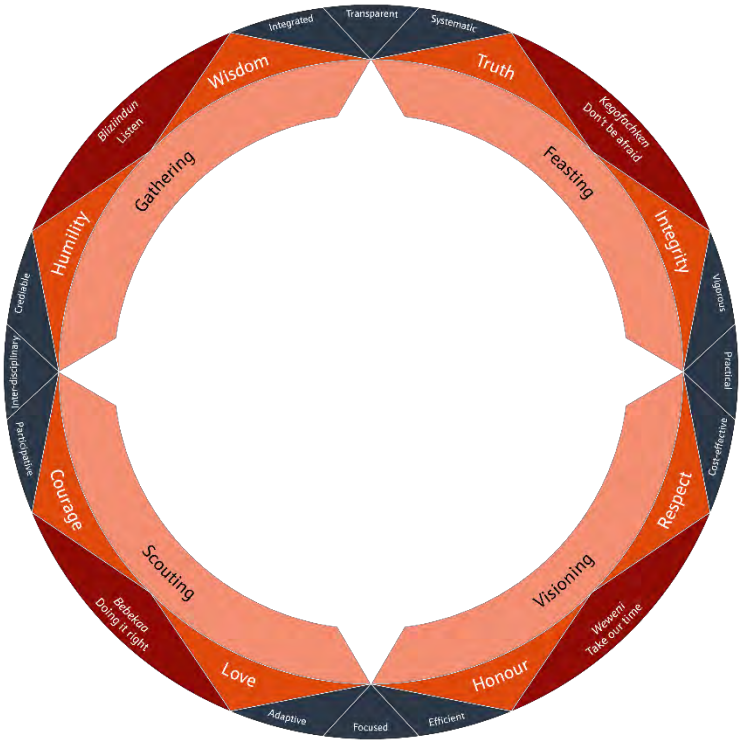


Figure 5. Process as rooted in the Manito Aki Inakonigaawin (the Great Earth Law) with principles in the outer circle.

The four main stages of an Environmental Assessment ("EA") under the Ministry of Transportation's ("MTO's") Class EA (1997) process can be understood as:

Scoping/Planning Stage—identification of environmental constraints and deficiencies to project objectives and the development of environmental protection strategies and planning alternatives.

Baseline/Preliminary Design Stage—identification of environmental constraints to design, development of environmental mitigation and design concepts, and begin formal permitting procedures.

Impact Assessment/Detail Design Stage—identification of environmental constraints to construction, modification and completion of environmental mitigation and design elements, and finalize approvals and permits.

Mitigation/Construction—project implementation and establishment of environmental mitigation measures.

These four operating processes complete the mid-level circle of the model as shown in Figure 6.

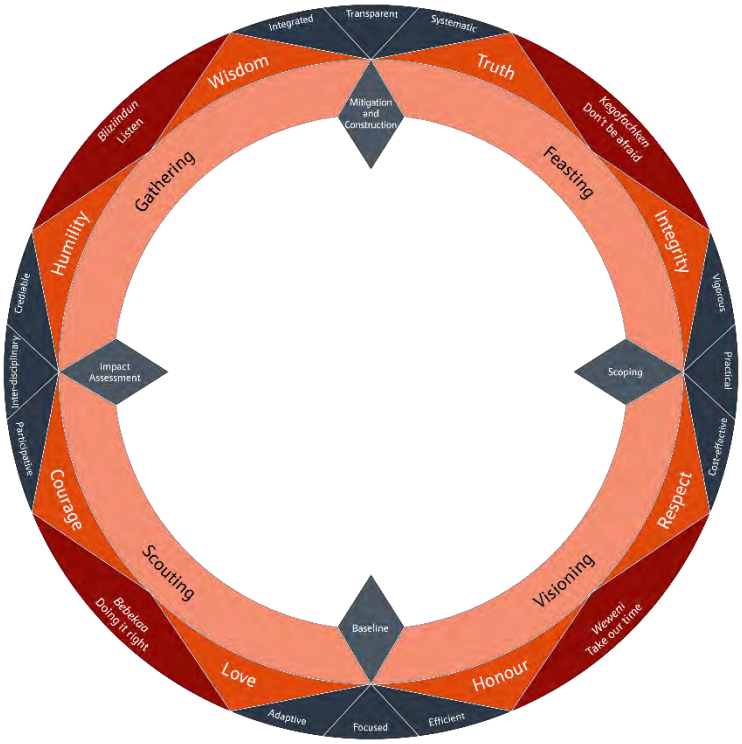


Figure 6. The four operating processes and four traditional planning practices in addition to the principles.

3.2.4 Components

The following 13 key Valued Ecosystem Components ("VECs") are comprised of relevant Factor Areas commonly identified in a Class Environmental Assessment ("EA") process (Ministry of Transportation, 1997). VECs are fundamental components of the physical, biological, or socio-economic environment as identified by the Indigenous people, the proponent, government agencies, or the public that may be affected by the implementation of a project (Canadian Environmental Assessment Agency, 2014).

- Invertebrates
- Mammals
- Flora
- Soils
- Geology
- Topography
- Surface Water
- Ground Water
- Aquatic Habitat
- Aquatic Species
- Birds
- Air Quality
- Noise

These 13 VECs form part of the inner circle of the model. See Figure 7 below.

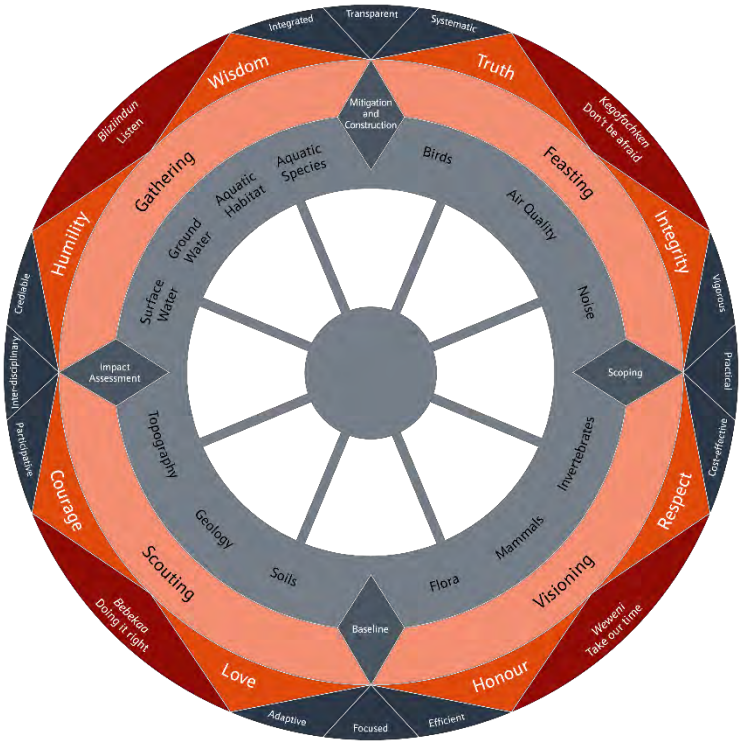


Figure 7. The 13 valued ecosystem components in addition to the principles and processes.

Undertaking a process rooted in the *Manito Aki Inakonigaawin (the Great Earth Law)*, the following components of the environment are to be considered:

Lands

- ***Waawaashkeshiwag* (White-tailed Deer)**
- ***Moozoog* (Moose)**
- ***Wauzhushkwag* (Muskrat)**
- ***Amikwag* (Beaver)**
- ***Ma'iinganag* (Grey Wolf)**

Soils

- ***Minaan* (Berries)**
- ***Mitigoog* (Trees)**
- ***Mashkikiwan* (Medicines)**
- ***Asiniig* (Rocks)**

Waters

- ***Manoomin* (Wild Rice)**
- ***Giigoonyag* (Fish)**
- ***Nibi* (Water)**
- ***Mishiikenyag* (Turtles)**

Skies

- ***Bagidanaamowin* (Air)**
- ***Zhiishiibag* (Ducks)**
- ***Migiziwag* (Bald Eagles)**
- ***Nikag* (Canada Geese)**
- **Other *Bineshiinyag* (Birds)**

These 18 components form parts of the inner circle of the model in addition to the VECs. This is shown in Figure 8.

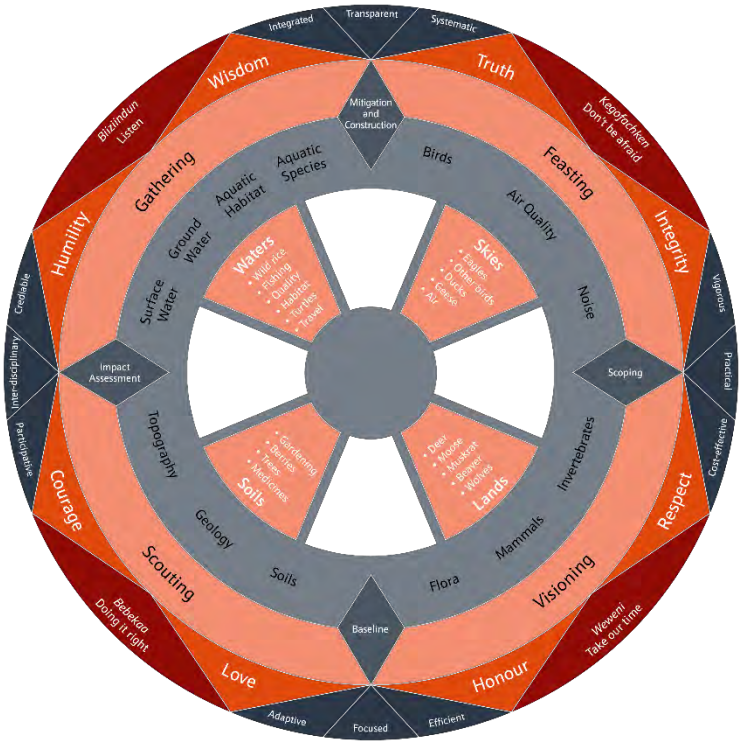


Figure 8. The 18 environmental components and 13 VECs in addition to the principles and processes.

Wellness must be understood from a holistic perspective in which wellbeing is a balance of one's mental, spiritual, heart/emotions, and physical being (Health Canada, 2015). The four directions—the mental, the spiritual, the physical and the social—are all necessary to individual, family, and community level mental wellbeing, as expressed by the Thunderbird Partnership Foundation through the First Nations Mental Wellness Continuum Framework (2015):

Mental—a state of wellbeing expressed through intuitive and rational thought, and the understanding that follows when these exist in balance.
Spiritual—a state of wellbeing expressed through a connection to one's beliefs, values, and sense of identity.

Physical—a state of wellbeing expressed through the way of being and caring for oneself in the spirit of wholeness.
Social—a state of wellbeing expressed through one's attitude towards life and relationships with family and community.

These four directions complete the inner-most circle of the model as shown in Figure 9.

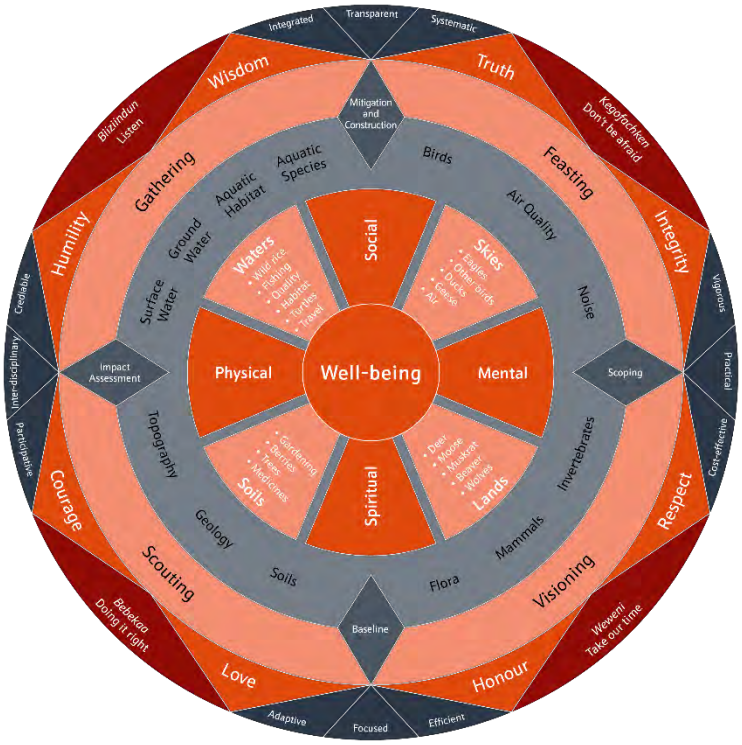


Figure 9. The complete graphic representation of the principles, processes, and components of the HIA.

3.3 Knowledge Gathering

3.3.1 Archival Research

3.3.1.1 Public Archives

Archival documents were gathered from the Manitoba Archives and the Lake of the Woods Museum in Kenora to provide context for and assist in the development of a historical record of the four communities and their ties to the land. The archives consist of photographs and written documents highlighting traditional practices and values.

3.3.1.2 Private Collections

Community members shared personal photographs, books, and other documents to contribute to our research. These documents, and the stories that went along with them, provided deeper insight into the values, traditions, cultures, and histories of the communities.

3.3.2 Community Participants

3.3.2.1 Elders

Individuals are normatively defined as Elders based on a combination of factors including age, knowledge, and respect. Though some communities may have formal process to determine who is an Elder, in many cases the title is self-determined. Throughout the process, we maintained an ongoing relationship with Elders from Wauzhushk Onigum, Washagamis Bay, Shoal Lake 40, and Niisaachewan through Community Events, Small Focus Groups, Elder's Gatherings, Individual Interviews, and Gatherings on the Land. As is customary, Elders were presented with *asemaa* (tobacco) prior to our discussions to respectfully initiate the knowledge gathering process and honorariums were given to Elders after the events to respectfully thank them for sharing their knowledge.

3.3.2.2 Resource Users

Individuals who partake in traditional practices involving the use of natural resources are defined as resource users. This includes individuals who hunt, trap, fish, harvest *manoomin* (wild rice), pick *miinan* (berries), or collect *mashkikiwan* (traditional medicines).

3.3.2.3 Members at Large

Community members who are not considered Elders or resource users (i.e. youth or individuals who do not follow traditional ways of life) were also very actively involved in building an understanding of the potential impacts of the proposed projects.

3.4 Types of Events

3.4.1 Community Events

Community Events were held across the four communities to gather community knowledge in a group setting where people of all generations could come together to learn and share. Community events included a mapping component where individuals gathered around to identify locations of significance and tell stories about these locations, as well as presentations to provide updates on the project and receive feedback.

Figure 10. Shoal Lake 40 mapping session on May 21, 2019.

3.4.2 Elders' Gatherings

Elders' Gatherings provided an opportunity for Elders in each community to share their opinions, thoughts, knowledge, and stories in a group setting. Mapping and storytelling were major elements of Elder's Gatherings. Through stories, the Elders identified various locations that we then recorded on the map. Discussions during Elders' Gatherings were generally centred around past traditions, ways of life, and connections to land. These gatherings were initiated with a *dewe'igan* (drum) circle and the offering of *asemaa* (tobacco) to each Elder.

Figure 11. Elders meeting at Wauzhushk Onigum on March 18, 2019.

3.4.3 Individual Interviews

Individual Interviews were conducted across all four communities as part of the Harmonized Impact Assessment to capture the *Anishinaabe Aki Kakendamowin* ("AAK") (Translation: We know our Indian lands), understood in western science as 'traditional land use study'. Interview questions focused on the following topics: hunting, trapping, fishing, *miinan* (berry) picking, *manoomin* (wild rice) harvesting, *mashkikiwan* (traditional medicine) collecting, sacred sites, and Anishinaabemowin (language). Rather than following a strict 'question-answer' framework, semi-structured interviews were conducted to allow for greater flexibility and discussion, and to promote storytelling. These one-on-one interviews were conducted subsequent to community events and Elders' gatherings to allow for time to contemplate and reflect on the topics that had been presented.

Figure 12. One-on-one interview with a community member in Washagamis Bay on August 23, 2019.

3.4.4 Ceremonies

An important component of the *Manito Aki Inakonigaawin* (the Great Earth Law) is ceremonies at key milestones. Ceremonies act as sources of traditional knowledge, guidance, and support, representing the ongoing celebration of Anishinaabe identity—which is rooted in one's relation to *Aki* (Earth). Through ceremony, sovereignty is respected along with the right to health, wellbeing, and livelihood.

3.4.4.1 Pow Wow

On July 20, 2019, a Pow wow was held in Wauzhushk Onigum. Pow wows are ceremonial gatherings which play important roles in the lives of the Anishinaabeg—representing a celebration of cultural heritage, community, and spirituality in which music, dances, regalia, food, and crafts are showcased. Pow wows are discussed further in Section 5.7.2.4.

Figure 13. Pow Wow at Wauzhushk Onigum on July 20, 2019.

3.4.4.2 Sweat Ceremony

On August 13, 2019, a sweat ceremony was held in Niisaachewan. This ceremony laid the foundation for this process by reminding us of the sacredness of the role we would play. The sweat also marked an important milestone in the commencement of the knowledge gathering process with the Elders in Niisaachewan.

Figure 14. Oshkaabewis (helper) preparing the rocks for the sweat ceremony on August 14, 2019.

3.4.4.3 Boat Tour

On September 17, 2019, the Niiwin Wendaanimok Partnership conducted a boat tour of the Winnipeg River south of the Dalles and surrounding area with Elders of Niisaachewan. The boat tour was one of two site reconnaissance's conducted by the Niiwin Wendaanimok. It was noted several times that for future phases additional site visits will be required.

3.4.4.4 Feasting the Process

An important component of the *Manito Aki Inakonigaawin* (the Great Earth Law) involves feasting the process. Feasting processes is an aspect of customary Anishinaabe engagement protocol, representing the ongoing celebration of Anishinaabe identity. By engaging in the ceremony in the presence of leaders, Elders, heads of families and community members, the community is brought together. Feasting in the presence of sacred items such as *asemaa* (tobacco), feathers, gifts, *opwaaganag* (pipes), and *dewe'iganag* (drums) reminds one of the gifts of Creation and the importance of cultural persistence.

Figure 15. Feasting the process at the Memorandum of Understanding signing-ceremony held in Wauzhushk Onigum on February 5, 2020.

3.4.4.5 MOU Signing Ceremony

On February 5, 2020, the Niiwin Wendaanimok Partnership confirmed a Memorandum of Understanding ("MOU") with Ontario Minister of Transportation, Caroline Mulroney at Wauzhushk Onigum. Witnessed by Ontario Minister of Indigenous Affairs, Greg Rickford, the MOU served to solemnize the principles that have guided the parties and their technicians in a respectful, collaborative working relationship.

Figure 16. Minister Caroline Mulroney accepting gifts during the MOU signing ceremony on February 5, 2020.

Figure 17. Minister Greg Rickford accepting gifts during the MOU signing ceremony on February 5, 2020.

Figure 18. The dewe'igan (drum) and drummers from Niisaachewan at the MOU signing ceremony on February 5, 2020.

3.4.5 Impacts Discussions

Meetings were held in each of the Niiwin Wendaanimok communities to facilitate conversations regarding potential impacts of Phase 1 of the Project. During these events, community members were shown maps and asked to reflect on potential impacts of and mitigation strategies for the proposed project during construction and operation.

Figure 19. Men's impacts discussion taking place in Shoal Lake 40 on November 12, 2019.

Figure 20. Impact discussion with members of Washagamis Bay on November 12, 2019.

3.5 Advertising and Outreach

3.5.1 Newsletters

Bi-monthly newsletters were distributed to apprise community members of key events, progress updates, ongoing teachings from the *Manito Aki Inakonigaawin* (the Great Earth Law), and upcoming activities. Newsletters were distributed to the Whiteshell Cottagers Association, Lake of the Woods District Stewardship Association, the City of Kenora, the Lake of the Woods Museum, Northwest Business Centre, Shoal Lake Lodge, and within each of the four communities. Copies of the newsletters produced are provided in **Appendix 3**. Newsletters were sent door-to-door in each of the Niiwin Wendaanimok communities, and copies made available on notice boards in community halls and band offices. Digital versions of the newsletter were shared on the Facebook page of the Niiwin Wendaanimok Partnership, and Facebook pages of each of the Niiwin Wendaanimok communities. Newsletters were also mailed out to all Treaty 3 Nations to explain the project process and current status.

3.5.2 Posters

Posters were distributed in all communities and shared on Facebook prior to each upcoming event. These posters highlighted key information such as the date, time, location, contact person, and

purpose of the event, as well as additional information regarding prizes and honorariums. Posters were shared on the Facebook page of the Niiwin Wendaanimok Partnership, the pages of each of the four Niiwin Wendaanimok communities, as well as 'shared' by community coordinators, community members, and community leadership. During an event, photos were shared to boost participation. All posters produced are presented in **Appendix 4**.

3.5.3 Photo Albums

Photo albums were produced for each of the Niiwin Wendaanimok communities to feature photos from their respective journeys on the project. Two sets of albums were produced: the first one being community-specific and the second one featuring photos from all communities and joint gatherings.

3.6 Documentation and Analysis

All interviews (both key person and focus group) were audio recorded. Individual interviews were transcribed, and meeting summaries were created for group interviews. Most interviews and facilitated focus groups had a mapping and storytelling component to it. Memory-jogging resources (photos from personal and locally and nationally curated archives) were used to help memory recall and storytelling.

Transcripts and summaries were coded with descriptive and inductive codes to facilitate thematic analysis. Geo-referencing was undertaken where the content has a specific spatial reference. Themes were built around specific environmental components (related to lands, soils, waters, and skies), wellbeing, and traditional practices.

Qualitative Data Analysis was conducted using MAXQDA©, all communications were logged and analyzed in Borealis© and all mapping was completed in ArcGIS™.

4 Going Back in Time

narratives

4 Going Back in Time

4.1 Guidance for the Reader

There is much debate about how far to go back in time to start understanding impacts. The Anishinaabeg have lived on these lands for time immemorial. The stories go back centuries. The connection to the lands, skies, soils, and waters goes back centuries. It is therefore only fair to start at the beginning. This section will outline for the reader the history of the Anishinaabeg, who they are, their connection to the land, their connection to each other, and their relationship with the settlers. We tell this story that the reader may appreciate the present, so we may together act in a manner that protects the future.

4.2 Our History

4.2.1 Anishinaabe in Lake of the Woods

> *"Obviously, our story does not begin in 1492; nor does it begin with the Norsemen some 500 years before Columbus. The quest for the good life in the Creator and overall wellbeing is the story of the Anishinaabe from time immemorial. This forms the basis for our worldview upon which our life ways are founded."*
>
> *Pazaga'owin – Reclaiming our Wings. Grand Council Treaty #3*

The story of the Anishinaabeg in the present-day Lake of the Woods region begins at time immemorial with the Creation Story, in which *Kizhe Manitou* (the Creator) created all life on *Aki* (Earth). In this Creation Story, the Anishinaabeg are a people descended from the star constellation *Paagonekiizhig* (Hole in the Sky) (Grand Council Treaty #3, 2003, p. 1). This spiritual context explains the word 'Anishinaabe', in which *niisiina* means 'descended' or 'from whence lowered', and *naabe* signifies 'man' – or 'man from whence lowered' (Benton-Banai, 1988, pp. 3-4; Grand Council Treaty #3, 2003, pp. 1-2). See section 4.3.1: Creation Story for further discussion on the spiritual context of the Anishinaabeg.

The Anishinaabeg are comprised of (but not limited to) diverse cultural subgroups including the Ojibwe, Chippewa, Odawa, Oji-Cree, Potawatomi, Mississaugas, and Algonquin. They have traditionally resided in and governed sovereignly an expansive territory centred in the north-eastern woodlands, central prairies, and subarctic ranges of *Mikinaak Minis* (Turtle Island or present-day North America) (Parrott, 2008). This is in part evidenced by the present-day range of the spoken Anishinaabe language, Anishinaabemowin, with its various dialects spoken from the prairies in the west to present-day Quebec in the east and concentrated in the areas surrounding the Great Lakes (Horton, 2017).

The earliest archaeological evidence of Indigenous inhabitation in the Lake of the Woods stretches back at least 12,500 years at the close of the Pleistocene era, after the Laurentide ice sheet began to recede

(Meltzer, 2009, pp. 1-3). The ancestors of the present-day Anishinaabe of Lake of the Woods trace their cultural heritage as far back as 6000 BCE. Excavated evidence of year-round dwellings and settlements dates at approximately 1000 BCE (Kinew, 1995, p. 183). The Lake of the Woods and Rainy Lake regions were important economic, trade, governance, strategic, and spiritual centres for the Anishinaabeg before contact with settlers.

William Warren describes the immense resource wealth – of which the resident Anishinaabeg were both beneficiaries and stewards – of the Ojibwe territories, and is worth quoting at length:

> *…their lands are covered with deep and interminable forests, abounding in beautiful lakes and murmuring streams, whose banks are edged with trees of the sweet maple, the useful birch, the tall pine, fir balsam, cedar, spruce, tamarac [*sic*], poplar, oak, ash, elm, basswood, and all the plants indigenous to the climate in which they reside.*
>
> *Their country is so interspersed with watercourses, that they travel about, up, and down streams, from lake to lake, and along the shores of Lake Superior, in their light and ingeniously made birch-bark canoes. From the bark of this useful tree, and rushes, are made the light covering of their simple wigwams …*
>
> *…They procure food principally by fishing, also by gathering wild rice, hunting deer, and, in some bands, partially by agriculture.*
>
> *W. W. Warren (1885). pp. 39 – 40.*

These and other abundant local resources, most notably various *miin* (berry) and garden sites, *name* (lake sturgeon), and *aninaatig* (maple) sugar groves supported a large and widely distributed population (Waisberg & Holzkamm, 2001, p. 2). Pre-contact Anishinaabe communities were typically made up of small hunting groups of two or more families constituted by marriage, kinship, and *ndotem* (clan) membership. These groups would come together in significant numbers during harvest seasons both to collect, harvest, and feast the resources of the region, as well as to attend to the business of collective (read *national*) governance, defence, and policy (Waisberg & Holzkamm, 2001, p. 3).

Traditional Anishinaabe civil society and governance structure is generally decentralized. Although community Chiefs had principal or formal external authority, family heads and representatives had equal bearing on local affairs (Waisberg & Holzkamm, 2001, p. 3). With that said, the Nation could efficiently establish delegated decision-making structures through the selection of Civil Chiefs representing several bands or communities as needed. In any degree of decentralization or delegation, however, it was and remains the way of the Anishinaabeg to make decisions by consensus, rather than through the coercion of rank or status. In Anishinaabe governance, a Chief was and remains a first among equals (Waisberg & Holzkamm, 2001, pp. 3-4; Kinew, 1995, p. 20). Those who are affected by a decision must share in making that decision, depending on their wisdom and experience (Kinew, 1995, p. 20). As such, the Anishinaabe governance system is dependent upon “the power of persuasion rather than the persuasion of power.”

Anishinaabe civil society exercises this power of persuasion in a number of actors and offices. Perhaps the most important of these is the *Midewiwin* (Grand Medicine Society). The *Mide* Elders (healers and curers) are members of the *Midewiwin* (Grand Medicine Society), a structured and ranked institution overseeing the passage of intergenerational knowledge and spiritual teachings. A significant aspect of this transmission of intergenerational knowledge is *Bimiikamaagewin* (stewardship practices), which involves the direct, active, and literal participation of the Earth, Water, Soils, and Skies in decision-making (Ladner, 2006, p. 3). This method of governance displays "the way a people has structured their society in relationship to the natural world" (Ladner, 2006, p. 3). Anishinaabe governance is therefore intrinsically tied to the responsibility of stewardship, with practices such as hunting, fishing, gathering, and agriculture forming integral parts of spiritual life (Kinew, 1995, p. 90). See Section 4.3.2 for a discussion of the value system underpinning *Bimiikamaagewin* (stewardship practices).

Anishinaabe *Bimiikamaagewin* (stewardship practices) have also traditionally included deliberate landscape alteration through burning, flooding, and sowing, to satisfy resource needs of the time (Davidson-Hunt, 2003, p. 26). Madeline Theriault recorded altered landscapes as a result of intentionally set spring fires:

> *…White man makes a farm to grow hay to feed his animals. He also grows vegetables for food. Indians also feed their animals, only in a different way. Around the middle of April, the Indian trapper looks around to find a bare spot, mostly up on the rocks where the snow goes first, where there is still a lot of snow at the bottom of the hill. They set a match to this bare spot and only burn where it is dry and bare, so there's no danger of a big forest fire because the fire stops when it reaches the snow.*
>
> *…Two years later you would find a big patch of blueberries in amongst the bushes. And you would see all the hungry animals feeding on those blueberries: fox, wolves, black bear, partridge, squirrels, chipmunks, and all kinds of other birds. No doubt they were happy to find those berries. It was the trapper that got it for them by setting the fire.*
>
> *…This is what I mean when I say Indians feed their animals too. As we would preserve them for our winter use. After a few years, young trees would grow on that burnt place. Then the rabbits would get to feed from those young bushes. In later years, the little trees would get bigger. Then the moose and deer get to feed from it. So, you see the setting of these small fires can go a long way in feeding many animals.*
>
> *I. J. Davidson-Hunt (2003). pp. 29.*

Among the most important of these resource management practices for the Anishinaabeg was – and remains - *manoomin* (wild rice). See Section 5.6.2 of a discussion of *manoomin* (wild rice). The relationship between the Anishinaabeg and *manoomin* (wild rice) can be traced back through rock paintings, with evidence of sowing and gathering being dated as far back as 3000 years ago (Kinew, 1995, p. 327). The culture and governance of *manoomin* (wild rice) can be considered the longest

continuing form of self-governance in the Lake of the Woods, and included practices of ceremony, preparation, growing period control and tracking, and harvesting. It was in the rice fields where cultural traditions were maintained, and traditional leadership recognized for longer than in other aspects of life (Kinew, 1995, p. 84). Elders with specialized knowledge of *manoomin* (wild rice) growing practices and ceremonies of thanksgiving held the title of *Manoomin Ogemah* (Rice Chief).

4.2.2 Anishinaabe Trade

Prior to the arrival of European settlers, the Anishinaabeg maintained extensive communications and trade networks with other Nations. Figure 21 is a recreation of a map from The Historical Atlas of Canada (Wright & Carlson, 1987, pp. 53 - Plate 14) illustrating archaeological evidence for the export of copper from the historic lands of the Anishinaabeg approximately 6000 years ago.

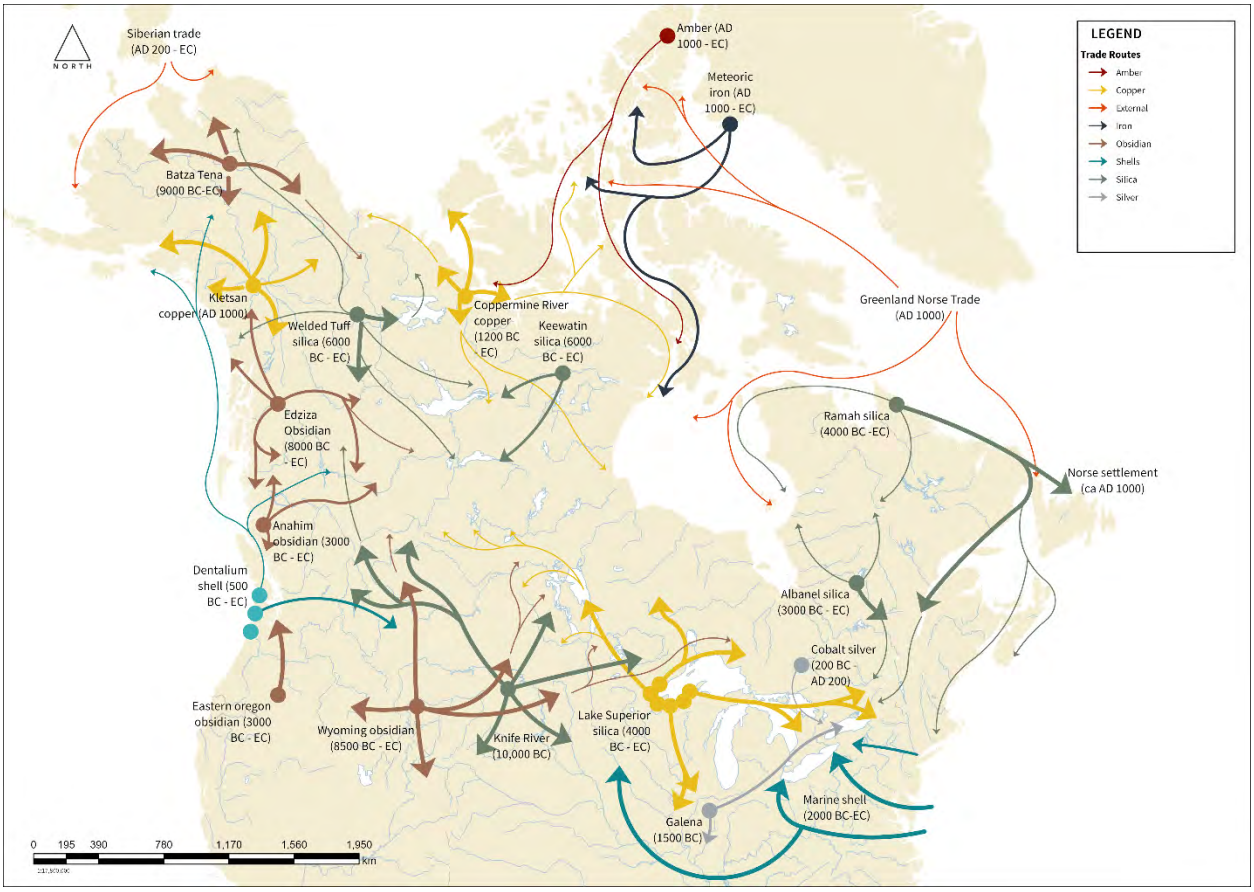


Figure 21. Prehistoric trade depicting export of copper from Anishinaabe lands (ca. 4000 BCE).

The archaeological record depicted in the Historical Atlas of Canada is limited to non-perishable commodities found in different archaeological sites, such as metals, spear points, or shells with evidence of quarrying or harvesting from other geographic locations. Perishable goods were also traded, such as *manoomin* (wild rice), *mandaamin* (corn), *asemaa* (tobacco), *giigoonyag* (fish), *mashkikiwan* (medicines), pelts and furs, and game meats, among others.

European trade and fisheries on the eastern shores of North America quickly produced changes in Anishinaabe society throughout *Mikinaak Minis* (Turtle Island). The vast trade and communication network that existed since time immemorial meant that word spread quickly about the knowledge of Europeans and the goods they offered in trade for pelts, furs, and food. Since at least the early 1600s, the Anishinaabeg of Lake of the Woods regularly sent trade delegations to the St. Lawrence River valley. These delegations involved trading goods like *amik* (beaver) skins and returning with European goods like firearms, trinkets, and blankets (Red River Ancestry, 2013). The nations that constituted the vast Anishinaabe territory, from the present-day St. Lawrence in the east to the Red River valley in the west, used European goods for many purposes: for gifts in ceremonies, to improve social status, and to tip the balance of power in war (Foster & Eccles, 2019). Europeans first used traded furs and pelts to service a demand for *amik* (beaver) skins in the hat industry, though this market was slowly diversified as Europeans continued to establish trading posts into the western "frontier" of *Mikinaak Minis* (Turtle Island).

From 1688 to 1689, Jacques De Noyon led an expedition to the northwest from Lake Superior into Lake of the Woods where local Assiniboine (Nakota) people provided the route to Lake Winnipeg and the Red River (Ontario Heritage Foundation, 2006). The practice of travelling east to meet European traders was increasingly curtailed by the trading companies' advancement into the west. This European westward expansion was driven both by a political objective to expand their influence over rivals and to gain direct access and control over the natural resource wealth uncovered through the trade conducted with the Anishinaabeg. The Lake of the Woods area was also attractive for European settlers for the wealth of lakes and rivers in the region, which served as water routes and trading highways that would eventually provide access to the Canadian interior (Unterman McPhail Associates, 2009, pp. 2-4).

The Anishinaabeg established trading relations with Europeans as they built trading posts throughout Anishinaabe territory. The French were the first European power with whom the Anishinaabeg built a trading relationship. "La Compagnie des Indes Occidentales" (West India Company) was formed to purchase furs and pelts from colonial residents of what the French called "Nouvelle France" (New France) (Foster & Eccles, 2019). Because Christianity was an early condition of trade, French settlers were incentivised to act as intermediaries between Anishinaabeg traders and the Compagnie. These settlers, referred to as "Coureurs des bois" (Wood runners) in French colonies, obtained the furs and pelts in trade with the Anishinaabeg. They were the first Europeans to learn of the extensive Indigenous trade network and served as an important cultural bridge to Indigenous ways of life. Some lived within Anishinaabe communities, married into Anishinaabe families, and established kinship ties that linked the two nations beyond trade (Foster & Eccles, 2019). Along with the Indigenous communities that welcomed them, they were the forebearers of the Métis Nation.

The late 1600s and early 1700s were characterized by an increasingly complex and shifting geopolitical landscape. The English and French were fighting over control of the fur trade in the eastern Great Lakes and St. Lawrence River valley. The Haudenosaunee in the east had allied themselves with the English and were armed with European weapons. The Anishinaabeg had established trading and military alliances with the French as far west as the lands inhabited by the "Saulteaux Ojibwa" of present-day

Sault Ste. Marie and Thunder Bay (Foster & Eccles, 2019). As a result of these alliances, significant displacement, conflict, and military expansion also occurred between Indigenous Nations. In the early 18th century, the Anishinaabeg were in the midst of expanding their presence into present-day Wisconsin, Minnesota, and parts of Northwestern Ontario (Redsky, 1972, p. 28; Red River Ancestry, 2013). Prior to this expansion, the Lake of the Woods area was also home to smaller Cree and Assiniboine populations with whom the Anishinaabeg competed for control over hunting and trade territory (Witgen, 2012). This region also constituted the contested northern front of Eastern Dakota (Sioux) territory (Red River Ancestry, 2013).

As recorded by knowledge-keepers from both Nations, the Sioux and Anishinaabeg were each others' long-established rivals, and contested territory well into the 19th century (Redsky, 1972, p. 28). The term "Sioux" is a French word derived from the Anishinaabemowin*, Naduesiu* or *Nadouessioux* (little snakes) (Red River Ancestry, 2013). Increasing European settlement, trade and importation of European weapons and diseases led to the displacement and migration of many Nations. This caused territorial tensions to rise throughout *Mikinaak Minis* (Turtle Island). The expansion of the Haudenosaunee Confederacy in the central Great Lakes region in the east, for example, displaced many nations, including the Sioux south of the Great Lakes (Eid, 1979; Minnesota Historical Society, 1924, p. 42).

By the late 1700s and early 1800s, life in Lake of the Woods was increasingly tied to international (i.e. nation-to-nation) trade between the local Anishinaabeg and a growing population of primarily French explorers, traders, and administrators. The first fur trading post in the Lake of the Woods region was Fort St. Charles, established in 1732 by Jean Baptiste La Vérendrye at Northwest Angle (Redsky, 1972, p. 18). This was the second of eight trading posts he would establish west of Lake Superior and was intended to deal with Anishinaabeg traders and other resident nations in the area (Redsky, 1972, p. 9). See Figure 22 for a map of the French forts established by Le Vérendrye.

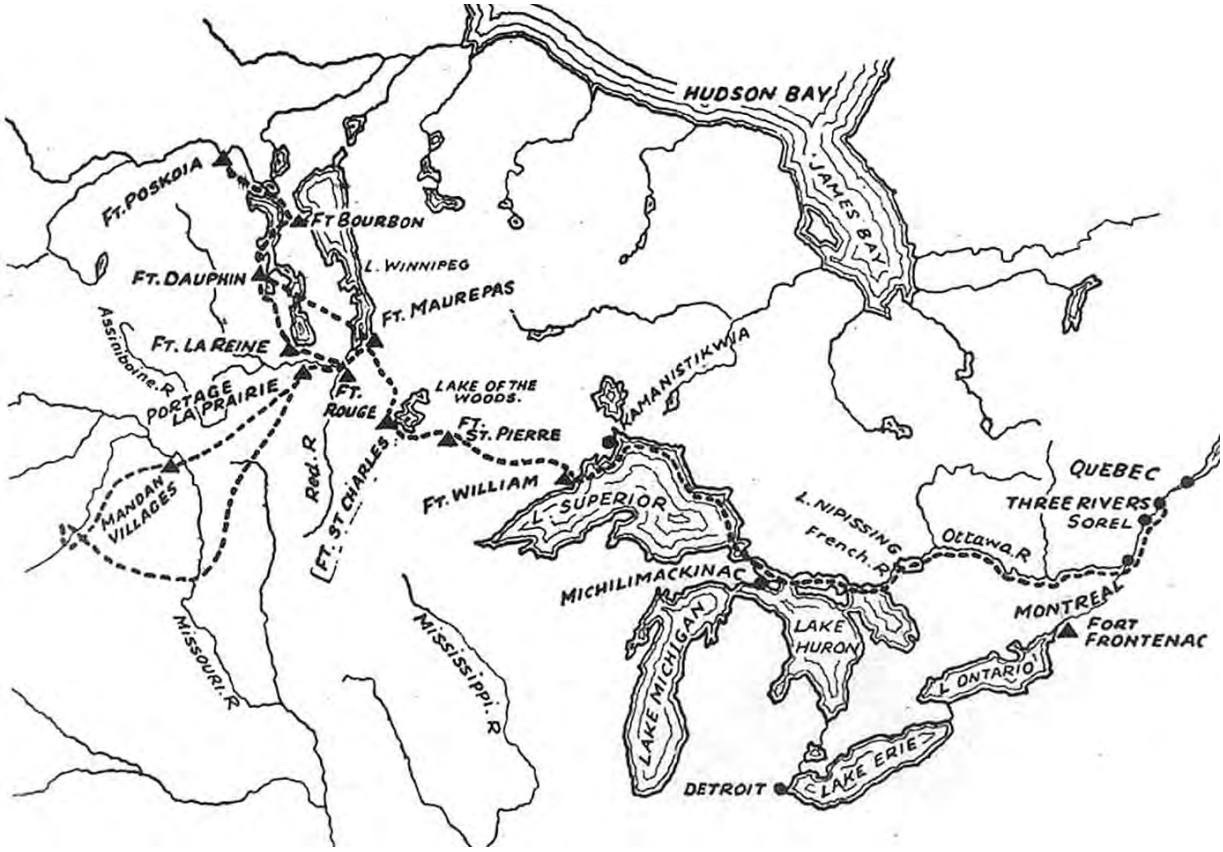


Figure 22. Trading posts established by La Vérendrye (BTNHR).

In order to secure and streamline trading relations with the nations operating in Lake of the Woods, La Vérendrye attempted to broker a peace between the Anishinaabeg and the Sioux. He also attempted to ally them to the French cause as a collective against the English. By the mid 18th century, the English established trading posts along Hudson's Bay to the North. Despite the efforts of the French to prevent their Indigenous trading partners from entertaining trade deals with the English, the Indigenous were astute in playing the rivalry to their advantage, selling to both parties (Foster & Eccles, 2019; Berthelette, 2017).

With the expansion of French trade in the Lake of the Woods throughout the early 18th century, the Anishinaabeg became increasingly powerful, armed with European weapons and exerting control over the rich resources and transportation routes. In 1736, a contingent of 21 men led by La Vérendrye's eldest son left Fort St. Charles for the fort at Kaministikwia and Michilimackinac (on the north shore and south east of Lake Superior, respectively) for relief following the death of a key administrator. The contingent was well-armed but were ambushed by a Sioux raiding party about 20 miles southeast of Fort St. Charles in Lake of the Woods. The Sioux were angered by the fact that the French had armed and allied themselves with the Anishinaabeg, by this time, their sworn enemies. The entire 21-man contingent was killed. Anishinaabeg warriors swore revenge and eventually open war ensued between

the Anishinaabeg and the Sioux for the following 40 years (Morton A. S., 1939, pp. 185-186; Red River Ancestry, 2013). By 1749, Fort St. Charles was shuttered.

Over the course of the fur trade, the Lake of the Woods Anishinaabeg employed institutions of trade and governance adapted to their traditions, worldview, and practices. This was based on their heavy involvement in the fur trade and their access to *manoomin* (wild rice), *giigoonyag* (fish), *aninaatig* (maple) sugar, and game *aya'awish* (animals) (Lovisek, Waisberg, & Holzkamm, p. 227). The Anishinaabeg had significant knowledge, skills and experience acquiring these resources for their own use, which made their involvement critical to the success of the international trading economy at the time.

4.2.3 Institutionalization and Treaty

At the conclusion of the Seven Years War and the Treaty of Paris in 1763, the French surrendered their North American territories to the British. The Royal Proclamation of 1763 ("the Proclamation"), issued by King George III, followed the Treaty of Paris. This Proclamation established the ways that former French colonies were to be assimilated into British rule (Hall, Royal Proclamation of 1763, 2006). The Proclamation also legally reserved a large portion of the interior of *Mikinaak Minis* (Turtle Island) as Indigenous land. Crucially, however, the Proclamation affirmed British sovereignty over these lands, and made the Crown the necessary agent in the transfer of land from the Indigenous of *Mikinaak Minis* (Turtle Island) to settlers. This was the foundation for treaty-making. It stated:

> *…And whereas it is just and reasonable, and essential to our Interest and the Security of our Colonies, that the several Nations or Tribes of Indians, with whom We are connected, and who live under our Protection, should not be molested, or disturbed in the Possession of such Parts of Our Dominions and Territories as, not having been ceded to, or purchased by Us, are reserved to them, or any of them, as their Hunting Grounds.*
>
> *Royal Proclamation of 1763, as cited in Hall, A.J. (2006)*

Prior to the Proclamation, the Anishinaabeg made it clear that they were sovereign in their territory. This is perhaps most famously captured by Alexander Henry, who was among the first British colonists to travel into Anishinaabe territory after the French had been defeated:

> *Englishman, although you have conquered the French, you have not yet conquered us! We are not your slaves. These lakes, these woods, and mountains, were left to us by our ancestors. They are our inheritance; and we will part with them to none... Englishman, your king has never sent us any presents, nor entered into any treaty with us, wherefore he and we are still at war; and until he does these things, we must consider that we have no other father, nor friend, among the white men, than the king of France …*

Chief Minavavana as quoted in Henry, A. (1809).

The peace through the Proclamation was negotiated and ratified through the Treaty of Niagara in 1764 among 24 nations and the Crown. Anishinaabe Nations were among them, but it is not clear whether the Grand Council representing the Lake of the Woods and Rainy Lake were party to the signing or aware that their territory had been claimed by another sovereign (Mainville, 2007, pp. 17-18).

The American Revolution (1765 – 1783) sparked unique hardship for the Indigenous Nations of *Mikinaak Minis* (Turtle Island). The arrival of over 80,000 Loyalists from the south further encroached on lands in what was then Upper and Lower Canada (Sprague, 2006). Furthermore, the Proclamation, ratified only a year prior to the beginning of the revolutionary war, was not transferred into American law. Following their independence from the British, the Americans pursued a campaign of expansionism, pushing into lands originally reserved for Indigenous use by the Proclamation (Marsh & Berton, 2012). In some cases, limited treaties had been established, in others, Indigenous populations were forcibly removed.

Three decades later, following the War of 1812 and the Treaty of Ghent, "Aboriginal peoples were entitled to the land they had occupied before the war and were not to be targets of hostility" (Hall, 2015). Despite this provision, the Indigenous of *Mikinaak Minis* (Turtle Island) were greatly affected, and often the targets of hostility. West of Lake Superior, Anishinaabe land which had been ceded to the United States by Great Britain in the Treaty of Ghent was largely occupied by settlers, forcing migration of many Nations northward. It is over the years that followed that many Anishinaabeg from south of the new boundary consolidated in Lake of the Woods, Rainy Lake, and other lands north of Lake Superior (Hall, 2015).

The early part of the 19th century following the War of 1812 was marked by a broad cultural shift in colonial administration and thinking. At the time, the Canadian colonies were gaining certain local legislating powers independent from Britain. Language in policy circles began to include phrases concerning the "liberal treatment" of Indigenous people (Harring, 1998, pp. 10-13). This was a term being used to describe a dual-pronged British colonial strategy that defined the rights of the "Indian" and the "Non-Indian."[1] On the one hand, this was intended to protect Indigenous lands from being stolen in violation of the Proclamation. On the other hand, the act of "… according them the full legal rights of Englishmen" was intended to encourage the assimilation of the Indian into broader society through Christianity and education in marginal roles in the colonial economy (Harring, 1998, p. 18). A policy movement rooted in paternalism began to grow in the colonial administration through numerous "Indian Acts" directed towards "benevolent" assimilation in the ostensible interest of the "Indian." Figure 23 below is a clipping from the Phrenological Journal and Science of Health in 1871 that asks, "N.A. Indians – Can they be Civilized?" Written in an otherwise sympathetic tone as if the subjects were children needing education and Christianity, the article very cogently captures the colonial 'spirit of the times' reflecting this attitude regarding 'liberal treatment.'

[1] The term "Indian" is being used here to refer to the legal term for the Indigenous of *Mikinaak Minis* (Turtle Island) that reside in present-day Canada. It is a legal term and status that remains in effect to the present day.

N. A. INDIANS—CAN THEY BE CIVILIZED?

THE OJIBWAYS.

NOT by the guns; not by firewater and tobacco; not by wicked, swindling agents; not by party politicians. No! such savage lives. But they can be *improved*, Christianity is sufficient, when properly practiced, to reach and subdue "the savage breast." Let it be tried. Instead of swords, spears, tomahawks, and rifles, give them plowshares and pruning-hooks,—agricultural implements—and teach them to use them. Instead of the precarious chase for wild game, give them

TWO OJIBWAY INDIANS.

Figure 23. Clipping from the Phrenological Journal and Science of Health, Aug. 1871.

The *Bagot Commission* report of 1844 was intended to determine the political and administrative reforms required to improve living conditions on Indigenous territory. It recommended centralizing matters pertaining to Indigenous Nations and proposed federally run residential schools be used as a tool to raise children away from traditional ways of life. This was recommended in addition to the following:

> *…To collect the Indians in considerable numbers and settle them in villages with a due portion of land for their cultivation and support.*
>
> *…To make such provision for their religious improvement, education, and instruction in husbandry as circumstances may from time to time require.*
>
> *…To afford them such assistance in building their houses; rations; and in procuring such seed and agricultural implements as may be necessary, commuting when practicable a portion of their presents for the latter.*
>
> *Leslie, J. (1982), pp. 33*

This policy reached its height in 1857 with the "Gradual Civilization Act". The Act:

> *…defined an inferior legal status for Indians… denying them the franchise, and placing them … under the paternalistic protection of the government. Legally holding Indians in this condition, the government could subject them to unique forms of social control, educate and Christianize them, and 'gradually' train them for the full responsibilities of citizenship. Then, when each Indian arrived that the level, a special board of examiners would examine his moral character, education, and personal habits, and, if all was satisfactory, would award him 40 acres of land and the full privileges of citizenship that went along with it, including the right to vote.*
>
> *Harring, S. (1997)*

This Act has had the most lasting colonial legacy in Canadian Indian law and constituted the legal and political basis for the *Indian Act* in 1876, in addition to being an ongoing source of significant historical trauma that has continued through generations of colonial institutionalization.

Also in 1857, the Crown commissioned a survey to identify an all-Canadian route between Fort William (present-day Thunder Bay) and Fort Garry (present-day Winnipeg). Since the early 19th century, the Hudson's Bay Company had been slowly losing its monopoly to the territories in the north-west of *Mikinaak Minis* (Turtle Island) and what it called "Rupert's Land." As such, this exploratory effort was part of a campaign in Upper and Lower Canada to find new agricultural lands (Morton W. L., 1980, p. 108). The expedition was formidable, and included numerous officials and surveyors from Upper Canada, representatives from the fur trade, a dozen Haudenosaunee (Iroquois), and a dozen Anishinaabeg (Morton W. L., 1980, p. 36).

Figure 24 below shows the route that was reported following the expedition in 1858. Note that the surveyors did not actually survey the "Exploratory Line", sometimes called "Snow's Road", that cuts in a straight line between Shoal Lake (known as Lac Plat at the time) and the Red River Settlement. According to Henry Y. Hind, who kept a journal of the expedition, the group was meant to split into three parties. Two groups would take the "Rat Portage" at the mouth of the Winnipeg River. The third, Hind's group, would take the Muskeg River, traverse the plains to arrive at the Roseau River, and travel north to the Red River Settlement. Before reaching the Muskeg River, Anishinaabe warriors intercepted Hind at Garden Island in Big Traverse Bay and said,

> *The reason why we stop you is because we think that you do not tell us why you want to go that way, and what you want to do with those paths. You say that all the white men that we have seen belong to one party, and yet they go by three different roads, why is that? Do they want to see the Indian's land? Remember, if the white man comes to the Indian's house, he must walk through the door, and not steal in by the window. That way, the old road, is the door, and by that way you must go.*

Ojibwe Chief speaking to H. Y. Hind on Garden Island, Summer 1857 as cited in Hind (1860). p. 99.

The above quotation exemplifies the well-established and respected protocol, followed by generations of "explorers" and traders, of acknowledging absolute Anishinaabe control over travel and trade in their territory; a protocol that often included generous gifts and tolls customarily paid for the right of passage.

The "Hind Expedition", as it has been referred, would be important in the decades that followed because the route it surveyed would spur nation-to-nation deliberations in 1869, and then treaty negotiations in 1873.

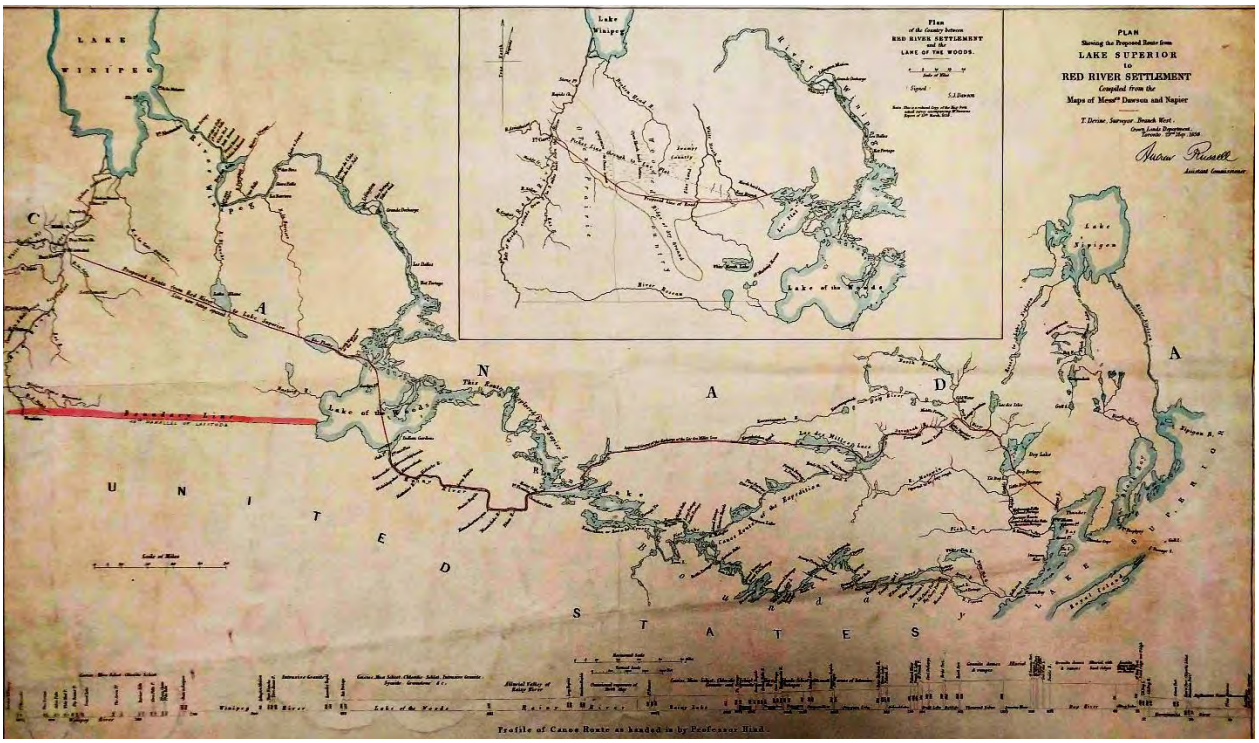


Figure 24: Map Shewing [sic] Proposed Route between Lake Superior and the Red River Settlement. 1858. Obtained from the Manitoba Archives.

The Crown's anxiety about the land that would come to be known as Treaty 3 territory began to surface in the late 1860s. Confederation of the Dominion of Canada occurred in 1867, and the Crown acquired Rupert's Land in 1869. Intent on securing its interests in the interior of *Mikinaak Minis* (Turtle Island), it sought to "maintain good relations" with the Anishinaabeg between Fort William and Fort Garry. In early 1869, the Crown hired Simon Dawson, a surveyor who was part of the 1857 expeditionary force, Robert Pither, an Indian Agent, and Adams Archibald, an Indian Commissioner to "maintain good relations" with the Anishinaabeg (Mainville, 2007, pp. 28-30; Daugherty, 1986, pp. 4-5). Later, the Métis Red River Rebellion occurred at the end of 1869 and early 1870. The Crown then tasked Wemyss

Simpson, a Member of Parliament, to secure safe passage for troops to enforce the Dominion's sovereignty at the Red River.

The Anishinaabeg initially understood that the Crown was seeking to engage in relationship-building. Later, they understood that the Crown was seeking to obtain safe passage through their lands (2007, pp. 30-32; Daugherty, 1986, pp. 6-7). Importantly, there was no mention of treaty negotiations at the outset – Simpson was authorized only to secure passage through Anishinaabe lands (Daugherty, 1986, p. 6). After informing the Anishinaabeg that soldiers would be passing through, he appeared to be surprised to receive a list of demands in exchange, including ten dollars per person in perpetuity, as well as gifts of flour, pork, tea, and *asemaa* (tobacco) as part of a feast to receive payments (Daugherty, 1986, p. 7). The Chief who communicated the demands said:

> *[T]hat we expect an answer to our demand sent to Mr. Pither during the winter so that we may know how to act and when to assemble for payment. For this we are willing to allow the Queen's subjects the right to pass through our lands, to build and run steamers, build canals and railroads and to take up sufficient land for buildings for Government use - but we will not allow farmers to settle on our lands. We want to see how the Red River Indians will be settled with and whether the soldiers will take away their lands - we will not take your presents, they are a bait and if we take them you will say we are bound to you.*
>
> *Robert J. Pither (1870) As cited in Mainville, 2007, p. 33.*

Simpson responded in disbelief, arguing that the amount being demanded was enough to acquire title to all of the lands, let alone a right-of-way (Daugherty, 1986, pp. 7-8).

Well before these talks, the Anishinaabeg were prepared to negotiate. A Grand Council of Principal Chiefs, led by the *Ogichidaa* (Grand Chief), were authorized through ceremony, speeches, and feasting to conduct foreign policy on behalf of Anishinaabeg of 'the boundary waters' (the vicinity of Lake of the Woods and Rainy Lake). The early deliberations that ensued in 1869 were directed at creating a respectful and cautious approach to relationship-building (Mainville, 2007, pp. 33-34). Apart from demonstrating a political mandate to treat, the diplomatic environment for negotiations was controlled and dictated by the Anishinaabeg. Anishinaabeg negotiators impressed upon their colonial counterparts their sovereignty over their lands at each meeting.

The colonial administration was discouraged by the high degree of political and institutional organization and unity they encountered in the Grand Council. The colonial administration understood that any Anishinaabe conception of treaty would need to include annuity payments in exchange for a right-of-way, transportation infrastructure, and limited government buildings. They also understood that any conception of treaty would need to explicitly exclude settlement. While the Anishinaabeg were willing to sign a treaty of right-of-way, they maintained the terms they set in late 1869 in the treaty negotiation over the years that followed (Daugherty, 1986, p. 11). Awaiting a response from the Crown

for their demands, they permitted the passage of the soldiers through their territory in the summer of 1870, but, applying the centuries-old Anishinaabe custom, expected to be paid for their passage.

While the Crown was occupied by the Métis Rebellion, Simpson, Archibald, and Dawson made several reports to Ottawa over the course of 1870. The reports discussed the Anishinaabe demands, speculated about how to assess the value of the territory, and outlined potential objectives in treaty negotiation. Ultimately, in May 1871, the Crown had established its policy direction; Simpson was finally authorized to negotiate a treaty with Anishinaabeg (Daugherty, 1986, pp. 11-13). This authorization, however envisioned the complete surrender of the Anishinaabe territory between the western shores of Lake Superior to the Northwest Angle of Lake of the Woods, and north to the streams that flow to Hudson's Bay (Daugherty, 1986, p. 14).

This official authorization from the Crown was a radical shift from its original interest in relationship-building and securing passage. Most importantly, the shift was one that ignored the non-negotiability of settlement in Anishinaabe territory. When reporting on his address to a very large gathering of Anishinaabeg in June of 1871, Simpson noted that they "preferred" the initial terms as they pertained to the establishment of a right-of-way (Simpson W. as cited in Daugherty W. E., 1986, pp. 14-15). The Crown's delegation left without successfully negotiating a treaty, but they did pay the Anishinaabeg "…a small sum of money." (ibid, pp.15). Despite Simpson's claims that it was "…fully and distinctly understood [by the Anishinaabeg]…", it appears that the purpose of this payment was not mutually understood. For the Ansihinaabeg, who had been expecting payment for the passage of troops and establishment of a right-of-way through their territory, this was part of an annuity they had demanded a year prior (Mainville, 2007, p. 32). For the Crown, however, this payment was intended to absolve it of any discussions made up to that point – that it was payment in full for the demands made by the Anshinaabeg (Daugherty, 1986, p. 15).

The Crown's negotiators would be unsuccessful in signing a treaty for the next two years. News that gold and silver had been discovered in Ansihinaabe territory had at this point widely circulated, as well as the comparatively large sums received by Anishinaabe in treaty with the United States to the south. These events emboldened the Anishinaabeg delegation, strengthening their demands for compensation for use of their lands. Settlement was still flatly rejected (Daugherty, 1986, pp. 17-18). In 1872, Simpson reported the following to Ottawa:

> *They seem fully alive to their own interests and had no small amount of intelligence in maintaining their views. We have made them liberal presents of provisions, tobacco etc. and have parted with them on amicable terms, with the understanding that we are not to negotiate with separate bands, but that, if further propositions are to be made, we are to call a general council of the chiefs, but we do not believe that under existing circumstances any good could arise from further councils.*
>
> *Wemyss Simpson (1872) As cited in Mainville, 2007, p. 34.*

Treaty negotiations eventually restarted in the October of 1873 at Northwest Angle at what is now called Treaty Island in Lake of the Woods. This time, the Crown mounted a negotiating commission headed by the Lieutenant-Governor of Manitoba, Alexander Morris, in place of Simpson, as well as a military escort. To support these treaty negotiations, the Grand Council had hired Joseph and August Nolin to record negotiations and all oral agreements (Daugherty, 1986, p. 45; Mainville, 2007, p. 33).

Figure 25. The Lieutenant- Governor's Expedition to Treaty Island. N.D. Lake of the Woods Museum.

At the first meeting on October 1st, 1873, Morris outlined the following terms:

> *I want to settle all matters both of the past and the present, so that the white and red man will always be friends. I will give you lands for farms, and also reserves for your own use. I have authority to make reserves such as I have described, not exceeding in all a square mile for every family of five or thereabouts. It may be a long time before the other lands are wanted, and in the meantime you will be permitted to fish and hunt over them. I will also establish schools whenever any band asks for them, so that your children may have the learning of the white man. I will also give you a sum of money for yourselves and every one of your wives and children for this year. I will give you ten dollars per head of the population, and for every other year five dollars a-head. But to the chief men, not exceeding two to each band, we will give 20 dollars a year for ever. I will give to each of you this year a present of goods and provisions to take you home and I am sure you will be satisfied.*

Lieutenant Governor A. Morris (1873) as cited in Daugherty W. E., 1986, pp. 29-30.

The next day, Chief Mawintopinesse (sp. Mainville, 2007) rebuffed the demands by stating in writing that they required:

> *… 50 dollars a year for each chief and 20 dollars a year for each council member. For each band member, they demanded a cash payment of 15 dollars and an annuity of ten dollars. Each first and second "soldier," as they termed them, was to receive an annuity of 15 dollars. The Indians also asked for agricultural implements, farm animals, suits of clothing, guns and ammunition, twine for fishing nets, horses and buggies, carpenter's tools, seed, and provision such as flour and sugar, and household utensils including stoves.*
>
> *Department of Indian Affairs Annual Report (1874) as cited in Daugherty W. E., 1986, p. 31.*

According to Morris, these demands amounted to approximately $125,000 per year in perpetuity. He refused them immediately, arguing his initial offer was fair and that the Anishinaabeg should accept before the Crown's generosity expired (ibid, 1986. p. 31). As noted by Mainville (2007, p. 64), Chief Mawintopinesse couched the Anishinaabeg terms in the understanding that the land that is unequivocally their *property*. Their authority to govern themselves autonomously on the land had been granted to them by *Kizhe Manitou* (the Creator).

> *…This is What we think, that the Great Spirit has planted us on this ground where we are, as you were where you came from. We think where we are is our property. I will tell you what he said to us when he planted us here; the rules that we should follow - us Indians -He has given us rules that we should follow to govern us rightly.*
>
> *Department of Indian Affairs Annual Report (1874) as cited in Daugherty W. E., 1986, pp. 31.*

Treaty 3 was signed the next day, on October 3rd, 1873. According to Daugherty (1986, pp. 32-34) a significant reason for the signing was Morris' desperate attempts to sow dissension in the ranks of the Grand Council, apparently with some success. He pled for the community Chiefs and family heads to consider their own interests, threatening to leave the negotiations and therefore, their families and community members, with nothing gained (Daugherty, 1986, p. 33). For Mainville (2007, pp. 57-59), however, the Treaty agreement came down to deep-seated cultural and inter-societal misunderstanding about what was actually being agreed to. Most importantly for the Anishinaabeg, all signs pointed to the fostering of a Nation-to-Nation agreement whereby their sovereignty over their territory was never surrendered.

The Anishinaabeg spoke in no uncertain terms about how they viewed their tenure between 1869 and 1873. The Crown's position, by contrast, shifted from one of conciliatory relationship-building, to the procurement of a right-of-way, to the surrender of all Anishinaabe lands for settlement. It was always

an objective of the Anishinaabeg to extract payments for the use of land that they retained ownership over – a status endowed by *Kizhe Manitou* (the Creator). At no point in the four years of talks was the Crown's understanding of its sovereignty over the land clarified as part of the negotiation (Mainville, 2007, p. 59). In fact, since the earliest talks in 1869, the Crown had observed the National diplomatic protocols of the Anishinaabeg, suggesting they were speaking as guests in a foreign land.

Ultimately, the Crown's version of Treaty 3 entailed the following terms:

> *…The Salteaux tribe of Ojibway Indians ceded, released, surrendered, and yielded to the Dominion of Canada forever all rights, titles, and privileged to a tract of land 55,000 square miles (14,245,000 hectares) in extent. The Indians were pledged to obey the laws, observe the treaty and refrain from molesting the property or persons of Her Majesty's subjects either inhabiting or travelling through the territory.*
>
> *Treaty Research Report: Treaty Three (1873), Daugherty, W. E. (1986), pp. 42*

In exchange, the Government of Canada was obligated to provide the Anishinaabeg with:

> *…reserves for farming and other purposes, it being stipulated that lands already under cultivation would be respected. The reserves, for whatever purposes, were not to exceed one square mile (259 hectares) per family of five or in like proportion for larger or smaller families. Reserve land could be sold, leased, or disposed of by the government for the use and benefit of the Indians, but only with their consent.*
>
> *…In terms of monetary awards... an immediate cash payment of 12 dollars and an annuity of five dollars. Each chief was to receive an annual salary of 25 dollars and each subordinate officer (headman), not exceeding three to each band, would receive 15 dollars per year.*
>
> *Treaty Research Report: Treaty Three (1873), Daugherty, W.E. (1986), pp. 42-43*

In addition to annuities and land rights, other goods were to be provided such as livestock and hunting and farming equipment, and provisions were put in place to meet needs for schools where desired. The Treaty contained a further provision allowing the Anishinaabeg to hunt and fish on unoccupied Crown land "until such time as the land was required for settlement, mining, lumbering or other purposes" (Daugherty, 1986, p. 43).

In the years that followed, the Crown received numerous complaints that the written contents of the Treaty were not the same as those many Anishinaabeg believed were agreed upon (Mainville, 2007, p. 81). This view is related to the many verbal agreements made over the four years of talks – what the Crown has since called "outside promises". What the Anishinaabeg believe to be closest to the real Treaty exists only in the English translation of the Nolins' notes detailing the treaty negotiations, originally in French. This document is known as *Manitoo Mazina'igan* (Sacred Paper). It has also been called the Paypom Treaty, after Chief Paypom purchased them from a photographer in the early 20th

century (Daugherty, 1986, pp. 44-45). This version of the Treaty shows four additional provisions, including:

> *i. If their children that are scattered come inside of two years and settle with you, they will have the same privilege as you have.*
>
> *ii. The English Government never calls the Indians to assist them in their battles but he expects you to live in peace with red and white people.*
>
> *iii. If some gold or silver mines be found in their reserves, it will be to the benefit of the Indians but if the Indians find any gold or silver mines out of their reserves they will surely be paid the finding of the mines.*
>
> *iv. You will get rations during the time of the payment every year."*
>
> *v. Mr. Dawson said he would act as by the past about the Indians passage in his road. The Indians will be free as by the past for their hunting and harvest.*
>
> *The Paypom Treaty (1873) as cited in Daugherty W.E. (1986), p. 45*

There is evidence in correspondence between Dawson and the Deputy Minister of Indian Affairs in 1895 to suggest the Articles of Treaty that was signed in 1873 was a draft prepared in 1872. It is argued that was not amended to include the items agreed upon in the 1873 negotiations and listed in the Paypom Treaty (Mainville, 2007, p. 48). As explained by Mainville (2007, p. 48), that there is no agreement on the contents of the Treaty does not mean that there is no Treaty. A reconciliatory approach to understanding Treaty 3 would entail recognition for the Anishinaabe legal perspective and diplomatic institutions, the importance of verbal agreements and relationships, and the primacy of oral history as equal to the pen. "[M]ore has to be done to discover the treaty" (Mainville, 2007, p. 48).

Figure 26. Medal to Commemorate the Signing of Treaty No. 3. N.D. Manitoba Archives.

Between 1871 and 1921, the Government of Canada signed a total of 11 numbered treaties with First Nations, Métis, and Inuit communities across the country. As with Treaty 3, there were misunderstandings between the government and the communities about what was being agreed to in the other numbered treaties. After 1975, the Government of Canada also signed modern treaties—also

known as comprehensive land claim agreements—with a number of Indigenous communities. (Miller J. R., 2009). **Map 18** shows the distribution of Indigenous-Crown Treaties across Canada.

4.2.4 Indian Act and Reserves

The *British North America Act* of 1867 *(*now the *Constitution Act, 1867*) delineated the powers of the provinces and the federal government. The Act gave the Crown's "beneficial interest" in all the lands within provincial boundaries to the provinces (St. Catherines Milling and Lumber Company v the Queen (Ontario), 1888). A "beneficial interest" has to do with who benefits from, and is therefore responsible for, territory. The St. Catherines Milling case of 1888 rules on this "beneficial interest", and the consequences of this case continue to be felt by the Anishinaabe and Indigenous Nations throughout Canada to the present day.

The 1885 to 1888 case involved Ontario, a lumber company, and the federal government as an intervener. The case was decided by "lords" in Great Britain ruling on issues having to do with lands they had likely never set foot on (Kinew, 1995, p. 132). The purpose of the case was to determine what level of government had the right to grant a license to cut timber. The Province argued it was their right, while the federal government argued that it was its responsibility, having made a treaty with the Anishinaabe Nation. The case widened after a series of court appeals to include jurisdiction over the management of all resources within the province. Ultimately, the Judicial Committee of the Privy Council, which at that time operated as the highest court for Canada (located in Great Britain), ruled:

- That the Province had the right to manage its resources as it saw fit;
- That the Crown had ultimate underlying title to the land but were administered by the provinces; and
- That the Indigenous inhabitants of the land had a "usufructuary right" – meaning they inhabited the land and took up its resources as "dependent upon the goodwill of the sovereign."

(Kinew, 1995, p. 132; St. Catherines Milling and Lumber Company v the Queen (Ontario), 1888)

During Treaty negotiations, the issue of sovereignty was never clarified despite multiple Anishinaabe attempts to do so. This clarity was codified in 1888 with the St. Catherines Milling Case without any Anishinaabeg being party to the decision. Suddenly, Anishinaabe lands and resources were administered by a government with whom they did not have a treaty, the Crown had lost its legal power to uphold its treaty obligations, and no Anishinaabeg had been consulted about this monumental shift of fate (Kinew, 1995, pp. 132-134). In fact, this case has served as the starting point in Canadian Common Law for the legal understanding of Aboriginal Title.

As explained by Kinew (1995, pp. 133-134), Anishinaabeg in Lake of the Woods felt these effects immediately "…in the disastrous management of their waters, fishery, and timber…." This is echoed in a 1929 letter to the Deputy Minister of Indian Affairs:

> *I desire to draw your attention to the deplorable state of affairs that is existing among the Indians of the Lake of the Woods area (Treaty No. 3) due entirely to the action of the province [sic] of Ontario in curtailing their hunting and fishing rights. I have seen many Indians practically starving on the shore, whilst watching whitemen fishing commercially in the bays adjacent to their reserves, the Indians themselves being refused fishing licenses by Ontario, although quite willing to pay the license fee and purchase their own nets and equipment…*
>
> *H. F. Bury, (1929).*

The establishment of reserves was also discussed as part of the *Articles of Treaty*. It would provide Anishinaabeg with "tracts of land, which cannot be interfered with, by the rush of immigration and afford the means of inducing them to establish homes and learn the arts of agriculture" (Daugherty, 1986, p. 62). The designation of reserve boundaries were to be drawn in consultation with the Anishinaabeg. Instead, commissioners were informed that the reserves "…should be removed as much as possible from the probable line of future settlement, and should not include any land known to the Commissioners to be mineral lands…" (Daugherty, 1986, p. 48).

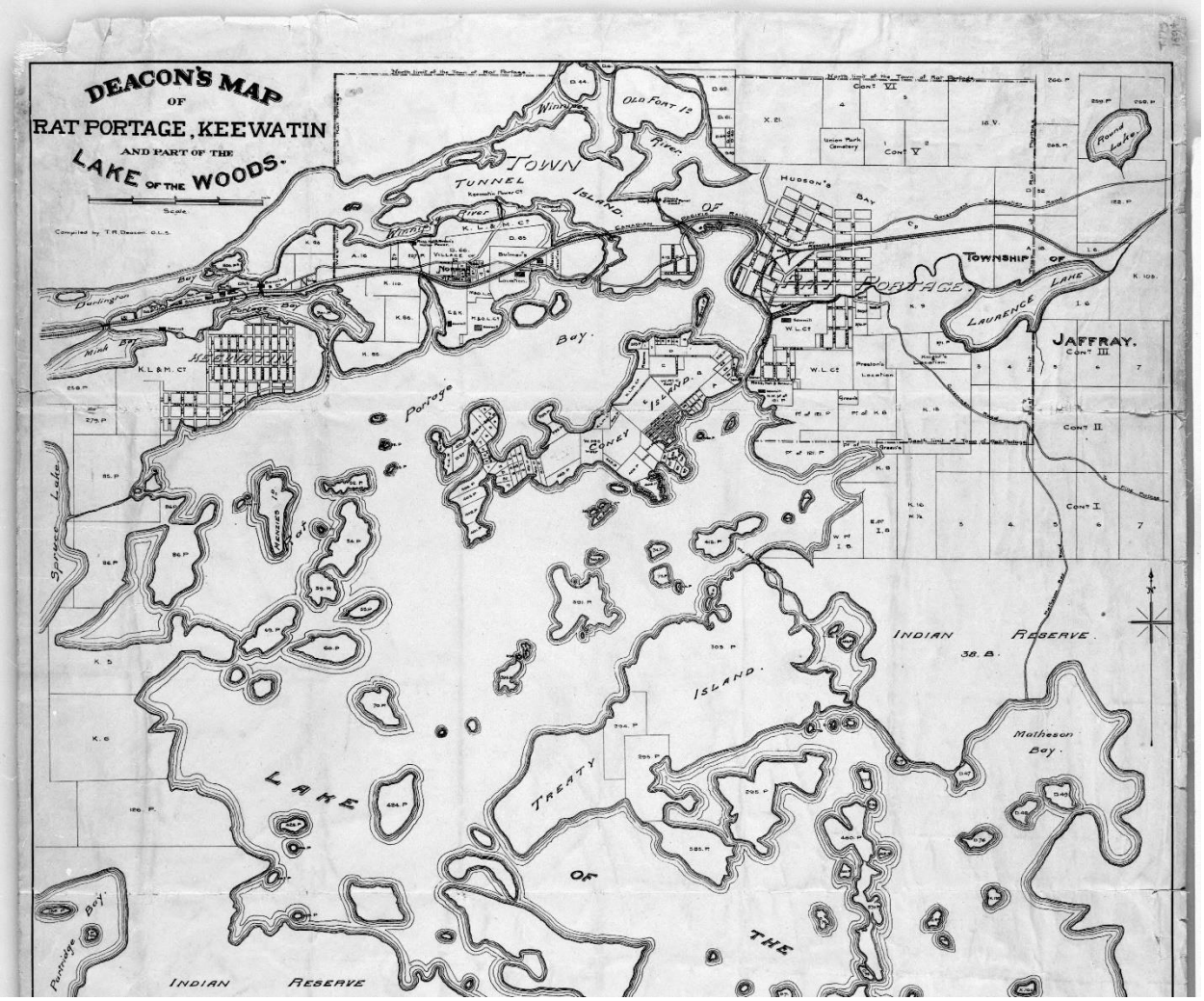


Figure 27. Map clipping showing an early survey for Rat Portage (now, the Town of Kenora) and Rat Portage Reserve 38A and 38B in 1894. Lake of the Woods Museum Archives.

At the time of selection, the Dominion of Canada and the Province of Ontario were in dispute over Ontario's western boundary. The resolution in 1890 resulted in the land held under Treaty 3 being predominantly within Ontario borders. The Province of Ontario felt that Anishinaabeg beneficiaries of Treaty 3 territory were being granted a disproportionate amount of land and argued extensively with the federal government about the "proper" allotments (Daugherty, 1986, p. 64). It is important to note that Anishinaabeg signatories of Treaty 3 understood that the lands outside of the reserves would be shared, and essential resource use and trading practices respected. It was neither expected, nor agreed to under the terms of Treaty #3 that communities would be confined within a small allotment of land indefinitely.

The reserve policy took on new importance with the influx of settlers and mining and industrial interests in the late eighteenth and early nineteenth centuries, as finding additional land for settlement increased in urgency (The Royal Commission on Aboriginal Peoples, 1996, p. 244). Reserves became increasingly impoverished as game and furbearing animals relied on for sustenance and commerce

disappeared (The Royal Commission on Aboriginal Peoples, 1996, p. 244). The result was a growing dependence on treaty annuities and increasing difficulty in maintaining traditional ways of life.

Into the latter part of the 19th century, the Crown had continued its policy of "the improvement and elevation of the Indian Race, socially and morally" (Daugherty, 1986, p. 63). The *Indian Act* is a federal law which oversees matters pertaining to Indigenous status, reserves and bands. Since its conception, the *Indian Act* has enabled the government to regulate and administer control over the right to practice Indigenous culture, economy, traditions, and governance (The Royal Commission on Aboriginal Peoples, 1996, p. 166). Throughout the time it has been in effect, the application of the *Indian Act* has:

- Forbidden Indigenous Nations from observing traditional practices, ceremonies, and spirituality;
- Mandated residential school attendance;
- Imposed the band council system while forbidding the formation of traditional forms of political organization;
- Expropriated and leased-out reserve land while prohibiting anyone from soliciting funds for Indigenous Nations legal claims;
- Enforced enfranchisement and denied Indigenous Nations the right to vote;
- Denied women status and by undermining, ignoring and disrespecting the traditional roles of women, subjected Indigenous women to a legacy of discrimination;
- Prohibited the sale of alcohol or ammunition to Indigenous people; and
- Controlled the sale of Indigenous products (Joseph, 21 Things You May Not Know About the Indian Act, 2018).

Among the most destructive policies of the *Indian Act* was the introduction of the Indian Residential School (IRS) system. The Truth and Reconciliation Commission of Canada indicated that the sole purpose of the residential school system was to "kill the Indian in the child" (Truth and Reconciliation Commission of Canada, 2015, p. 375). Compulsory attendance was incorporated into the *Indian Act* in the early twentieth century. By 1931, at the peak of the system, 80 schools were in operation (Joseph, Indian Residential Schools, 2012). An estimated 6,000 children died from disease, malnourishment, and abuse (Joseph, 2018, p. 53). The Truth and Reconciliation Commission implicates the ongoing residential school legacy in the development of social problems causing harm in many communities today (Truth and Reconciliation Commission of Canada, 2015, p. 370).

In 1969 an attempt was made to dismantle the barriers faced by Indigenous populations through the proposed elimination of the *Indian Act.* This suggestion was met with fervent opposition. The following excerpt was written by Harold Cardinal and characterizes this paradox well:

> *We do not want the Indian Act retained because it is a good piece of legislation. It isn't. It is discriminatory from start to finish. But it is a lever in our hands and an embarrassment to the government, as it should be. No just society and no society with even pretensions to being just can long tolerate such a piece of legislation, but we would rather continue to live in bondage under the inequitable Indian Act than*

> *surrender our sacred rights. Any time the government wants to honour its obligations to us we are more than ready to help devise new Indian legislation.*
>
> *Volume 1: Looking Forward, Looking Back, The Royal Commission on Aboriginal Peoples (1996), pp. 236.*

The Royal Commission on Aboriginal Peoples appropriately documents the struggle between Indigenous Nations and Canadian policy makers with the following paragraph:

> *In many ways the history of the evolution of the Indian Act has been a dialogue of the deaf, marked by the often vast differences in philosophy, perspective and aspirations between Canadian policy makers and Indian people. Indian people have been consistent in calling for respect for their special constitutional status, especially in the context of the Indian Act and its colonial predecessors. However, Canadian officials have generally interpreted Indian proposals for reform of Indian policy as yet another indication of their need for further guidance, for even sterner measures to help them adapt to the culture and political ways of the settler society that has grown up around them.*
>
> *Volume 1: Looking Forward, Looking Back, The Royal Commission on Aboriginal Peoples (1996), pp. 237.*

Over the course of the last 200 years, the Governments of Canada and the Provinces have tried to institutionalize every aspect of Indigenous life while clearing a way to take resources from the land with minimal disruption. Today, hope may be found in the Reconciliation Movement (Truth and Reconciliation Commission of Canada, 2015). This movement means many things to many people. In reflecting on the history of the institutionalization of the Anishinaabeg of Treaty 3 territory, it is clear that deep-seated inter-societal misunderstanding is one of the chief reasons for centuries of injustice against the Indigenous of *Mikinaak Minis* (Turtle Island), though certainly not the only one. The following section is intended to very briefly introduce the Anishinaabe relationship to the *Aki* (Earth) as a starting point to building better inter-societal understanding.

4.3 Anishinaabe Relation to *Aki* (Earth)

4.3.1 Creating the Context: The Anishinaabe Creation Stories

Anishinaabeg have made their home on *Mikinaak Minis* (Turtle Island) since time immemorial, as life on *Aki* (Earth) "has no beginning and no end—everything that ever was continues to be, and everything that will ever be already exists in spirit" (Castellano, Archibald, & DeGagné, 2008). Story and the Oral Tradition are the keys for the transmission of knowledge and memory in Anishinaabe society. The following paragraphs provide a brief overview of an Anishinaabe Creation Story, the most important of

these stories.[2] This is intended to provide critical context for understanding the Anishinaabe value system and relation to *Aki* (Earth), discussed in section 4.3.2.

> It began a long time ago, when the world was fresh and new. *Kitche Manitou* (The Great Spirit) envisioned a sky filled with stars, the Sun, the Moon, and the Earth. He saw the Earth made of mountains, forests, lakes, and plains. He glimpsed the Earth covered in vegetation and teeming with wildlife. *Kitche Manitou* meditated upon and understood his vision. From nothing, he created the four elements: rock, water, fire, and wind. *Kitche Manitou* breathed life into these elements and created the physical world – from the tallest mountains, to the tiniest flower. Into each he poured the spirit of life, growth, healing, and beauty. After this, *Kitche Manitou* created the animal beings – two-legged, four-legged, winged, and swimmers. Everything had purpose, and he granted Earth the utmost beauty, harmony and order (Johnston, 1976, pp. 12-13). *Kitche Manitou* spoke with the animal beings and told them of a new creature coming to live amongst them. The animal beings would need to act as teachers to the new beings (Wagamese, 2019, pp. 32-33). Then, *Kitche Manitou* made man – the weakest of his creations, but blessed with the power to dream; the greatest gift of all (Johnston, 1976, pp. 12-13; Robertson & McCracken, 2003, p. 23).
>
> For many years, all of Creation lived in harmony together. But with the passage of time, people slowly forgot to listen to their animal guides. They created their own language, and thus the ability to share knowledge with other beings was lost. The humans began to distance themselves from the spiritual way of life (Wagamese, 2019, p. 36). When it seemed that all had been lost, *Kitche Manitou* determined to flood the Earth and begin again. Water spilled upon the Earth and wiped out every creature on land that inhabited it.
>
> During the great flood, *Gizhigookwe* (Sky Woman) came to rest on the back of a Giant Turtle (Wagamese, 2019, p. 90). Using soil collected by Muskrat from the bottom of the sea, *Gizhigookwe* took this soil and walked in wider and wider circles on the Turtle's back, creating an island called *Michilimackinac* (Place of the Great Turtle's Back). *Michilimackinac* grew into large expanses of land, and the waters began to recede. Grasses, flowers, and trees began to grow, and new animals walked on the land. *Gizhigookwe* gave birth to two children, a boy and a girl, who were created as both physical and soul-spirit beings. The new man and woman became the Anishinaabeg, for they were made from none of the elements, but created by *Gizhigookwe* as "spontaneous beings" (Johnston, 1976, pp. 14-15). Many years

[2] There are many Creation Stories, including those told by Christian and other denominations of Anishinaabeg. As a narrative that is told through *Anishinaabemowin,* and in part because story is used to inform 'ways of being', Creation Stories do not function as definitive historical records, but as guiding allegories. They inform and are informed by Anishinaabemowin and the context of their transmission (Borrows, 2018, p. 3).

passed. Once the first Anishinaabeg had grown up, *Gizhigookwe* brought her children to her side. She told them she would be returning to her home, the Land of Peace. Once they had done sufficient good in life, they too would leave their bodies behind and join her in the Land of Peace. With this, *Gizhigookwe* returned to the Spirit World, becoming the Moon in the Sky. For the Anishinaabeg, a period of prosperity reigned.

4.3.2 Value System

Creation Stories are key allegories that describe relationships to the land, the skies, the waters, the soils, and all the creatures of *Aki* (Earth). These relationships are embodied in all Anishinaabe institutions, but two of the most central of these are Anishinaabemowin, and the *Manito Aki Inakonigaawin* (the Great Earth Law). These translate into specific practices of *Bimiikamaagewin* (stewardship) where Anishinaabe value systems are manifested in actions on *Aki* (Earth).

Before beginning, it is important to note that contemporary Anishinaabe society is not monolithic in its values or practices. There are Anishinaabeg who identify as Christian or who observe other religious or spiritual traditions. With that said, Anishinaabeg Elders have emphasized that the Anishinaabe relationship to *Aki* (Earth) transcends spiritual difference:

> *„„whatever they believe in, either Christianity or the [traditional] way, your heritage, your belief, whatever you believe in. We do offerings for that for the feeling of greatness of the power of [the] Creator...*
>
> *They've got different knowledge about appreciating the man upstairs. Some people call [it] God, Jesus, some people say Creator. That's what I call [it], the Creator, in my language but in Ojibway, Gizhe Manitou. This is people [doing] a different style of appreciating the life Creator gave us.*
>
> *Elder, Washagamis Bay, AAK Individual Interviews, July 25, 2019.*

What follows in this section is an account of the Anishinaabe value system from the perspective of the 'traditional ways." This account does not mean there are no other Anishinaabe ways of knowing, experiencing, and having responsibility to the *Aki* (Earth) and to the Creator – be they Christian or otherwise.

Linguistically, Anishinaabe storytelling is mediated by Anishinaabemowin, the "living dynamic [language] composed of all the social institutions that ensure the transference of beliefs, values […] and traditions" (Partridge, 2013, p. 41). Even in routine communication, but particularly in ceremony, story is invoked in *any* Anishinaabemowin utterance. Anishinaabemowin is a verb-focused language, as opposed to the noun-focus of English and other European languages. The verb-focus of Anishinaabemowin leads to a linguistic world filled with actions and processes, rather than objects and things (Lyons, 2010, pp. 133-134). In the former case, Anishinaabemowin features linguistic building-blocks predicated on allegorical cues, where concepts are themselves references to stories, memories,

processes of life, or ways of being. This bears contrast to English or French, in which nouns are defined by the mutual exclusivity and distinction – what 'counts' or does not 'count' as a stone, for example, is conceptually abstract and doesn't mean very much until it is placed in a sentence. Consider that,

> *… the Ojibwe noun form of "stone" is asin, and it is animate, living. To be made of stone, however, is asiniiwan, inanimate. What is the difference between a stone and something made of stone? Life. Only humans have a power strong enough to kill a stone and transform it into a building material. Elders will tell you to be extremely careful, respectful, and above all thankful when taking the life of a stone. Actually, they are only commentators; it is [Anishinaabemowin] that teaches the lesson.*
>
> *There's No Translation For it: The Rhetorical Sovereignty of Indigenous Languages. Scott Richard Lyons (2010). p. 137*

It is for this reason that Anishinaabe ceremonies and protocols must be recited in Anishinaabemowin: direct translations into languages like English strip meaning from the allegorical, story-laden content carried within the words themselves. This highlights the deliberative qualities of Anishinaabemowin – meaning-making is a communal process dependent upon context. To quote the work of Mark Ruml, who expressed following an interview process, that that the Elders being interviewed all "echoed the problems with writing down the teachings, the experiential nature of learning, and the in-process, ever changing and evolving understanding, interpretation, and expression of the teachings" (McIvor, 2013, p. 28). As such, Anishinaabemowin should be recognized as more than "just" a language used for the transmission of meaning but as an institution governing conduct on *Aki* (Earth).

This has bearing on the practices of *Bimiikamaagewin* (stewardship). Three central Anishinaabemowin teachings about life on *Aki* (Earth) inform key legal-political rules in Anishinaabe society. These include (Borrows, 2018; McIvor, 2013),

- *Mino Bimaadiziwin* (A Good Life);
- *Onijinewin* (What You Do to Creation will Come Back to You in Some Form); and
- *Niizhwaaswi Gagiikwewin* (the Sacred Seven Teachings).

Mino Bimaadiziwin (A Good Life) is the Anishinaabe standard of living. The Creation Story tells of how *Kizhe Manitou* (the Creator) prepares the *Aki* (Earth) and all living beings for the arrival of human beings. Animal beings were to act as teachers to the new beings. In return, human beings would act as stewards of the land, harvesting and transforming the land only to the extent necessary for their wellbeing (Mills, 2010; Wagamese, 2019, p. 32). *Kizhe Manitou* (the Creator) has blessed the Anishinaabeg with the tools necessary to live well, and it is understood that the continuity of the resource being harvested is not to be threatened. This means that the need for "…resource extraction is understood in reference to a degree of material stability commensurate with security and good health, not the bare minimum of material goods needed for survival" (Mills, 2010).

Onijinewin (What You Do to Creation will Come Back to You in Some Form) conceptualizes the obligation of *Bimiikamaagewin* (stewardship). As written by the Anishinaabe author Peter Jones, "[Anishinaabeg]

suppose that all animals, fish, trees, stones, etc., are endued with immortal spirits and that [they may] punish any one [sic] who may dare despise or make any unnecessary waste of them" (Mills, 2010). This shows the obligation of stewardship towards Creation, in this way ensuring the continuity and wellbeing of the Anishinaabeg. A similarly important aspect of *Onijinewin* (What You Do to Creation will Come Back to You in Some Form) involves the respectful acknowledgment of the agency and sacrifice of a resource or animal being harvested or feature of land undergoing modification (Mills, 2010). A recurring theme reflected in the Anishinaabe outlook is that "all life must be honoured. The quality of life for one order depends upon another…. By honouring death, life itself is honoured. Animal beings deserve life. They deserve honour" (Johnston, 1976, p. 57).

Niizhwaaswi Gagiikwewin (the Sacred Seven Teachings) give life to the following seven concepts:

1. *Respect*
2. *Love*
3. *Truth*
4. *Bravery*
5. *Wisdom*
6. *Honesty*
7. *Humility*

Benton-Banai, E. (2010), pp. 64; Wagamese, R. (2019), pp.40-41.

Niizhwaaswi Gagiikwewin (the Sacred Seven Teachings) act as a moral steppingstone and cultural foundation for Anishinaabe *Bimiikamaagewin* (stewardship) and Law (McIvor, 2013). Each of the seven concepts must be understood in relation to specific thoughts and actions—it must be lived in context in connection to "living hearts, tongues, and relationships" (Borrows, 2018).

This is important in considering the origin of *Niizhwaaswi Gagiikwewin* (the Sacred Seven Teachings). The Teachings are said to originate when *Kizhe Manitou* (the Creator) send his *Oshkaabewis* (helper) to find one spiritual human being that still lived according to the original life-purpose. *Oshkaabewis* (helper) found a child and brought him to where *Kizhe Manitou* (the Creator) sat with seven spiritual beings, *Niizhwaaswi Mishomis* (Seven Grandfathers) (Benton-Banai, 1988, p. 60; Wagamese, 2019, pp. 36-38). For many years, the boy was taught carefully about *Aki* (Earth), and when the boy was ready to return to his people, the *Niizhwaaswi Mishomis* (Seven Grandfathers) offered him the *Niizhwaaswi Gagiikwewin* (the Sacred Seven Teachings) to bring back to the Anishinaabeg. The boy travels throughout the Spirit World, aging as he goes, until he returns to his village as an old man. It is therefore an essential part of Anishinaabe culture that community members of all ages work and live closely together. Elders are the carriers of communally generated knowledge and hold crucial roles in supporting cultural education in Anishinaabe communities. This occurs through orality and serving as role models through *Bimiikamaagewin* (stewardship) (Borrows, 2018; First Nations Pedagogy, 2009).

The above discussion highlights the inseparable connection of *Aki* (Earth) and the Anishinaabe value system. It also shows the role of Anishinaabemowin in the transmission of those values to institutions

of *Bimiikamaagewin* (stewardship). Although this account is by no means comprehensive of the Anishinaabe value system, it does communicate that:

- Anishinaabemowin mediates a worldview predicated upon processes and actions of *Aki* (Earth) and its creatures.
- Much of the normative work of Anishinaabe institutions is carried by the language itself.
- Anishinaabe consumption is defined by a modest standard of living predicated upon conservation, security, and good health.
- Action on *Aki* (Earth) must be respectful of the agency of life (which exists in all things made by the Creator).
- The transmission of cultural knowledge occurs primarily through the actions of storytelling and setting examples through environmental stewardship.

4.4 Settler Relation to the Environment

4.4.1 History of Development

Colonial and settler development in the territory of the Anishinaabeg of the Lake of the Woods watershed extends as far back as 1731 with the construction of Fort St. Charles (now in present-day Minnesota). Development began in earnest, however, during treaty negotiations in 1870. The following list provides an overview of physical development projects in the vicinity of Lake of the Woods and Shoal Lake, as well as key policy events.

It is recognized that this list is incomplete. It is intended to serve as a preliminary record of the settler relation to the environment as demonstrated in the pattern of development to the present day.

The list will be refined in future phases of the Highway 17 Twinning Project.

Table 5: History of Development in Lake of the Woods

Date	Project	Notes / Approximate Location	Reference
1872	Dick & Banning Lumber		(City of Kenora, 2020; Benidickson, 2019, p. 78)
1873	Signing of Treaty 3		
1878	National Policy	Stipulated the development of a railway	

Date	Project	Notes / Approximate Location	Reference
1879	Establishment of Keewatin Lumbering & Manufacturing Company	Timber harvesting in traditional territory (Mill burned in 1906)	(Goldsborough, 2015)
1879	Sultana mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
1880s	Winnipeg River outlet control dam		(Shoal Lake Watershed Working Group, 2002, p. 1)
1882	Town of Rat Portage incorporated		
1883	Establishment of Reserves		(Robertson & McCracken, 2003, p. 120)
1884	Ontario wins District of Keewatin dispute		(Robertson & McCracken, 2003, p. 123)
1884	Non-Indigenous commercial fishing for lake sturgeon and other species begins on Lake of the Woods		(Ministry of Natural Resources and Forestry, 2020)
1885	CPR line across northern Ontario completed		(Ministry of Natural Resources and Forestry, 2020)
1887	Lake of the Woods Milling Company incorporated	Flour mill in Keewatin.	(Benidickson, 2019, p. 63)
1887	Rollerway Wier built	Provided access from Portage Bay, Keewatin to Darlington Bay. Raises water levels and floods lowlands.	(Benidickson, 2019, p. 62)
1888	Establishment of Lake of the Woods Milling Company		(Goldsborough, 2015)
1889	Canadian Lake of the Woods waters commercial fishery closed	Concern over sturgeon	(Ministry of Natural Resources and Forestry, 2020)

Date	Project	Notes / Approximate Location	Reference
1890	Fish and Game Commission established	Report submitted in 1892—included many regulations	(Ministry of Natural Resources and Forestry, 2020)
1891	Norman Dam replaces Rollerway Dam		(Benidickson, 2019, p. 62)
1892-ongoing	CPR allows influx of sportsmen, tourists & cottagers		(Ministry of Natural Resources and Forestry, 2020)
1893	Dam construction	Keewatin Power Company	(Goldsborough, 2015)
1897	St. Mary's (St. Anthony's) Residential School begins operations		(NCTR, 2020)
1900	Lake whitefish commercial fishery reduced		(Ministry of Natural Resources and Forestry, 2020)
1900	Mikado mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
1901	Rat Portage Lumber Company		(City of Kenora, 2020)
1901	Cecilia Jeffrey Boarding/Residential School construction	Shoal Lake; operation began in 1902-1929 located in Shoal Lake	(Mcauley, 2018)
1901	CNR railway between Thunder-Bay and Winnipeg completed		(Ministry of Natural Resources and Forestry, 2020)
1903	Sale of game fish prohibited in Ontario		(Ministry of Natural Resources and Forestry, 2020)
1905	Maple Leaf Milling Company		(Benidickson, 2019, p. 78)

Date	Project	Notes / Approximate Location	Reference
1905	Rat Portage is renamed 'Kenora'		(Benidickson, 2019, p. 78)
1906	Kenora Generating Station and dam constructed		(H2O Power, 2020)
1909	Rainy River dam & powerhouse construction		(Ministry of Natural Resources and Forestry, 2020)
1910	Four-year moratorium on all fishing for lake sturgeon on Lake of the Woods		(Ministry of Natural Resources and Forestry, 2020)
1912	Crest of a rock ridge removed from Ash Rapids	Increased flow between Shoal Lake & Lake of the Woods	(Benidickson, 2019, p. 102)
1916	Fur industry strict regulation begins		(OFMF, 2020)
1919	Shoal Lake to Winnipeg aqueduct		(Shoal Lake Watershed Working Group, 2002, p. 17)
1919	International Joint Commission rules on regulation of the Lake of the Woods. Canadian Control Board created.	Raised level of Lake of the Woods approximately 1m and disrupts water level cycles.	(LWCB, 2020)
1920s	Limited cottage development	Falcon Lake (drains into Shoal Lake)	(Shoal Lake Watershed Working Group, 2002, p. 4)
1920	First sport fishing resorts established on east Lake of the Woods		(Ministry of Natural Resources and Forestry, 2020)
1926	Kenora pulp & paper mill built		(Shoal Lake Watershed Working Group, 2002, p. 33)
1929	Cecilia Jeffrey Boarding/Residential School relocated to Round Lake, Northeast of Kenora		(SRSC, 2011)

Date	Project	Notes / Approximate Location	Reference
1932	Construction of Winnipeg-Kenora stretch of HWY 17		(The Fort William Daily Times, 1932)
1941	Spearing licenses discontinued		(Ministry of Natural Resources and Forestry, 2020)
1958	Caribou Falls Generating Station operations begin		(Ontario Power Generation, 2019)
1958	Completion of Ontario leg of TransCanada pipeline		(Bothwell, 2006)
1958	Whitedog Falls Generating Station begins operations		(Forbes, 2017)
1970s	Peak fisheries operations—five Indigenous, five non-Indigenous commercial operations		(Shoal Lake Watershed Working Group, 2002, p. 8)
1973	Cameron Is. mine (Damascus, Duport)		(Shoal Lake Watershed Working Group, 2002, p. 18)
1977	Division of Rat Portage reserve		AAK Group Interview, September 17, 2019 (Boat Trip)
1983	Closure of Commercial walleye fishery; banning of gill nets		(Shoal Lake Watershed Working Group, 2002, pp. 8, 33)
1990	Kenora bypass		(Beavers, 2020)
1992	Devlin Timber Company Limited	Sawmill	(Ministry of Natural Resources, 2002)
2001	Approval of 20-year management plan for Kenora Management Unit (KMU) (forestry)	Spruce, pine, fir	(Shoal Lake Watershed Working Group, 2002, p. 9)
UNDATED			
TBD	Western Lumber Company		(City of Kenora, 2020)

Date	Project	Notes / Approximate Location	Reference
TBD	Ross, Hall & Brown Lumber Company	Sawmill	(Benidickson, 2019, p. 65)
TBD	Minnesota & Ontario Lumber Company		(Benidickson, 2019, p. 65)
TBD	H. Bulmer Jr. Company	Sawmill	(Benidickson, 2019, p. 65)
TBD	Cameron & Kennedy Company	Sawmill	(Benidickson, 2019, p. 65)
TBD	Keewatin Milling		(Benidickson, 2019, p. 72)
TBD	Weyerhaeuser Company Limited	Sawmill	
TBD	Kenora Forest Products Ltd.	Sawmill	
TBD	E.&G. Custom Sawing Ltd.		
TBD	Dave Burt General Contractors Ltd.	Sawmill	
TBD	Baden Powell mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Big Master mine (Kenwest)		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Bonanza mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Cedar Is. mine (Cornucopia		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Champion mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Russell C. Cone mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Elora mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Foley mine		(Shoal Lake Watershed Working Group, 2002, p. 11)

Date	Project	Notes / Approximate Location	Reference
TBD	Gold Hill mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Golden Star mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Grace Mining Co.		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Kenricia mine (Three Ladies)		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Laurentian mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Maybrun mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Olive mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Olympia mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Ophir mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Pinewood Peat Industries		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Polar Bear Peat Moss Products Registered		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Port Arthur Copper mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Redeemer mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Regina mine (Black Eagle, Horseshoe)		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Sakoose mine (Golden Whale, Van Houten)		(Shoal Lake Watershed Working Group, 2002, p. 11)

Date	Project	Notes / Approximate Location	Reference
TBD	Straw Lake Bean mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Twentieth Century mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Wendigo mine		(Shoal Lake Watershed Working Group, 2002, p. 11)
TBD	Hunting/Fishing Camp—Labyrinth Bay/Shoal Lake Narrows Outpost	Shoal Lake Narrows	(Shoal Lake Watershed Working Group, 2002, p. 17)
TBD	All-seasons camp—Ash Rapids Lodge	Ash Rapids	(Shoal Lake Watershed Working Group, 2002, p. 17)
TBD	Pioneer Camp Summer Youth Camp	Cash Island & MacKinnon Island (near Iskatewizaagegan #39)	(Shoal Lake Watershed Working Group, 2002, p. 17)
TBD	Municipal wastewater effluents		
TBD	Cottage wastewater effluents		
1950	Blasting second channel at the Dalles		

5

Anishinaabe Aki Kakendamowin

WAUZHUSHK ONIGUM
NIISAACHEWAN
WASHAGAMIS BAY
SHOAL LAKE 40

narratives

5 Anishinaabe Aki Kakendamowin

5.1 Guidance for the Reader

All living beings share a deep interconnection in Anishinaabe tradition. The connection is explained through the concept *Anishinaabe Minigoziwin*, which translates to "inherent relations and sovereignty that are tied to the Creation Story". Elders shared the following Creation Story:

> *When the Creator created all beings, they were all invited to the circle with the Creator. Each animal was given a responsibility. They stepped forward. The rabbit said it would give itself for food for the Anishinaabe, and fur for the babies. The deer said it would give its fur too, but also its bones. The trees said they would give themselves for warmth and medicine. And they all came forward to share what they would give. And that is how everything living is tied together to each other and to the Anishinaabe. One cannot be without the others.*
>
> *Elders, Treaty 3.*

Anishinaabe Aki Kakendamowin ("AAK") is Anishinaabemowin for "Anishinaabe knowing the Earth" or simply "we know our Earth". As indicated in Section 3 - What Was Done, numerous types of knowledge gathering activities were undertaken, including: archival research; community gatherings; group and individual interviews with Elders, men, women, and youth; and ceremonies. Members from each Nation shared stories – about growing up, about Creation, about family trips to collect *miinan* (berries), about learning how to harvest *manoomin* (wild rice), about long days on the water and bountiful catches of *giigoonyag* (fish), about *migiziwag* (eagles), about sacred places, about the ways of life of ancestors, about how the world had changed, and about the future. These stories cast a web of values and perspectives that work to define a collective identity.

The following sections reflect and report on this web of values, beginning with a sketch of the historical record of the Anishinaabeg, and then exploring the knowledge gathered about the environment throughout the AAK process. In keeping with the *Manito Aki Inakonigaawin* (the Great Earth Law) as implemented in the Harmonized Impact Assessment model, knowledge of the environment is drawn from a fusion of Anishinaabe knowledge keepers and traditions, and contemporary science and best practice.

5.2 Spatial Scope

As part of the project, Elders, resource users, and other people from the four Niiwin Wendaanimok communities shared knowledge about the environment in the surrounding region. This includes knowledge about the location of sacred sites, medicines, and wild rice as well as activities including berry picking, hunting, fishing, and trapping. **Map 19** shows the spatial scope of the *Anishinaabe Aki Kakendamowin* (We Know Our Earth) for the Niiwin Wendaanimok communities.

Knowledge of the Lands

5.3

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives

5.3 Knowledge of the Lands

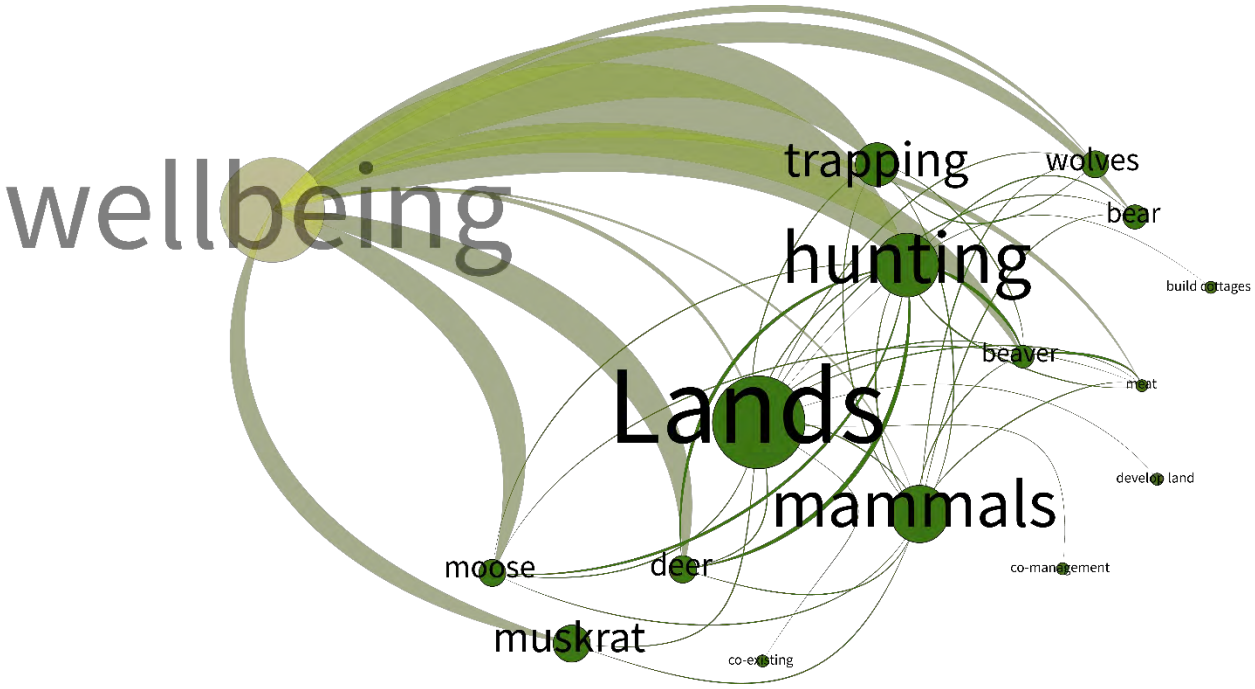


Figure 28: Connections of Lands to Anishinaabe Wellbeing

5.3.1 *Aya'aawish* (Animals)

Hunting and trapping *aya'aawish* (animals) are important traditional activities of the Anishinaabeg that have been practiced since time immemorial. **Map 20** highlights areas near the project site where Niiwin Wendaanimok community members hunt and trap, as well as access routes to these areas. In the AAK interviews, Niiwin Wendaanimok community members spoke about hunting *waawaashkeshiwag* (deer), *moozoog* (moose), *zhiishiibag* (ducks), *amikwag* (beavers) and *wauzhushkwag* (muskrats). They also spoke about trapping *amikwag* (beavers), *wauzhushkwag* (muskrats), and *waaboozoog* (rabbits). More information on the significance of hunting is available in Section 5.7.7, while more information on trapping is available in Section 5.7.8. Species discussed in this chapter include the following:

- *Waawaashkeshiwag* (Deer, *Odocoileus virginianus*)
- *Moozoog* (Moose, *Alces alces*)
- *Amik* (Beaver, *Castor canadensis*)
- *Wauzhushk* (Muskrat, *Ondatra zibethicus*)
- *Ma'iingan* (Wolf, *Canis lupus*)

5.3.1.1 *Waawaashkeshi* (White-Tailed Deer, *Odocoileus virginianus*)

Table 6: Names for White-Tailed Deer

Common Name	White-tailed deer
Anishinaabemowin (singular)	*Waawaashkeshi*
Anishinaabemowin (plural)	*Waawaashkeshiwag*
Scientific Name	*Odocoileus virginianus*

5.3.1.1.1 About

Waawaashkeshiwag (deer) are a medium-sized ungulate species belonging to the Cervidae family in the genus Odocoileus (McShea, 2012, p. 45). They are the most widely distributed ungulate species in Canada (Ministry of Natural Resources and Forestry, 2019). *Waawaashkeshiwag* (deer) originated in Anishinaabe tradition when *Kizhe Manitou* (the Creator) made *Aki* (Earth). *Kizhe Manitou* (the Creator) placed all four-leggeds on the land, including *waawaashkeshiwag* (deer), before placing Original Man (Benton-Banai, 1988, p. 2). The four-leggeds lived in harmony with Original Man and all other beings of the natural world (Benton-Banai, 1988, p. 2). *Kizhe Manitou* (the Creator) gave *waawaashkeshiwag* (deer) the power of grace (Johnston, 1976, p. 53). *Waawaashkeshiwag* (deer) are the oldest species from the Cervidae family, first appearing in the archaeological record in North America around three million years ago (Ministry of Natural Resources and Forestry, 2019). The Cervidae family also homes the larger *omashkooz* (American elk), *moozoog* (moose), and *adikwag* (woodland caribou) species. (McShea, 2012, p. 45). Three of the 38 subspecies of *waawaashkeshiwag* (deer) can be found in Canada (Blood, White-tailed Deer in British Columbia, 2000). The prairie subspecies of *waawaashkeshiwag* (deer), *Odocoileus virginianus dacotensis*, can be found across *Mikinaak Minis* (Turtle Island), representing all regions of the present-day Treaty territories in Canada, extending south into the United States and Central and South America (Vercauteren, 2003, p. 18).

Waawaashkeshiwag (deer) are one of the largest herbivores present in many North American ecosystems (McShea, 2012, p. 45). The height and weight of the species is variable and depends on their age, health, location, and the season (Blood, White-tailed Deer in British Columbia, 2000). The further north the species is located, the larger it is thought to grow. In Canada, a typical *ayaabe* (buck, singular)/*ayaabeg* (bucks, plural) can weigh between 68 and 102 kg (Blood, White-tailed Deer in British Columbia, 2000). Older and matured *ayaabeg* (bucks) can weigh more. Treaty 3 territory produces some of the largest *ayaabeg* (bucks) in North America, making the region a popular hunting destination for visitors.

A typical *oniijaaniw* (doe, singular)/*oniijaaniwag* (doe, plural) is smaller, with weights averaging between 45 and 73 kg (Blood, White-tailed Deer in British Columbia, 2000). The height of a *waawaashkeshi* (deer) ranges between 53 and 120 cm (Blood, White-tailed Deer in British Columbia, 2000). *Ayaabeg* (bucks) grow and shed a new pair of antlers each year (Blood, White-tailed Deer in

British Columbia, 2000). *Waawaashkeshiwag* (deer) shed their coats twice each year for the summer and winter (Heffelfinger, 2006). In the summer months, their coat is reddish-brown in colour, changing to greyish brown over winter (Blood, White-tailed Deer in British Columbia, 2000). The defining feature of this species is their long tail. With its distinctive white fur on the underside, it is used for alerting others of predators and guiding their young. Breeding begins in November and *gidagaakoonsag* (fawns) are born between May and June (Blood, White-tailed Deer in British Columbia, 2000).

In analysing the interviews, a co-occurrence model was created that shows intersections of "Deer" with other components. This model is illustrated in Figure 29. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Deer" and any given component shows the number of times "Deer" was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 29 shows that in total "Deer" was brought up 96 times, and "Hunting" was brought up 122 times. Of the 96 times "Deer" was brought up, 76 of those times it was in the context of "Hunting".

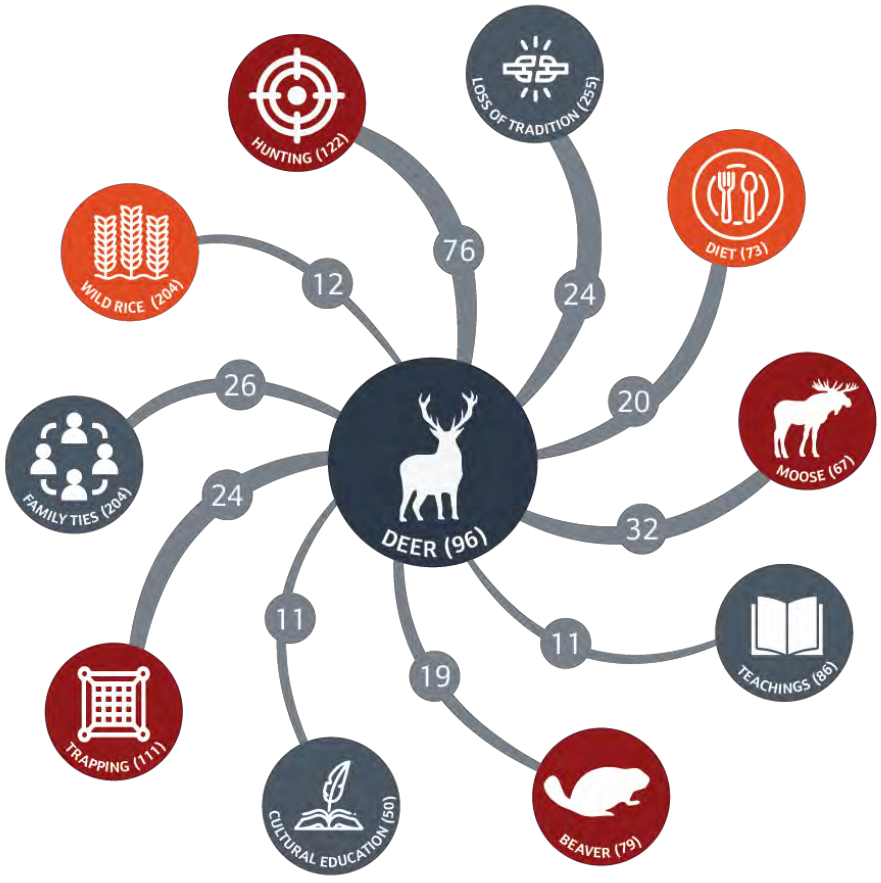


Figure 29. "Deer" co-occurrence with other components

5.3.1.1.2 Habitat

With simple needs of food, water, and cover, *waawaashkeshiwag* (deer) have been able to thrive in a broad range of environments across *Mikinaak Minis* (Turtle Island) (Blood, White-tailed Deer in British Columbia, 2000; Voigt, Broadfoot, & Baker, 1997). On present-day *Mikinaak Minis* (Turtle Island), *waawaashkeshiwag* (deer) are common in Southern Canada and across the United States, as well as throughout Mexico, Central America, and the northern tip of South America. Although the North American population numbers have fluctuated, the wide range of *waawaashkeshiwag* (deer) has remained constant over the previous centuries (Vercauteren, 2003; Gallina & Arevalo, 2016) *Waawaashkeshiwag* (deer) are not a territorial species and often does well when living near humans (Gallina & Arevalo, 2016). For example, a community member from Shoal Lake 40 noted that "there's a lot of deer in Kenora, tame ones" (AAK Individual Interview, June 10, 2019). Their home range will vary depending on the availability of their needs, the season, age, and location, but averages at 145-1300 acres (Gallina & Arevalo, 2016). As a result of a changing climate, the range of *waawaashkeshiwag* (deer) is expanding northward in North America (Dawe & Stan, 2016).

Large, forested areas can provide ample food and cover needed for *waawaashkeshiwag* (deer). *Waawaashkeshiwag* (deer) prefer *mitig* (tree, singular)/*mitigoog* (trees, plural) like *giizhik* (cedar), *gaawaandag* (white spruce), *zesegaandag* (black spruce), *zhingobiiwaatig* (pine), and *maanazaadi* (balsam poplar) as their habitat because these *mitigoog* (trees) prevent snow from reaching the ground by catching it, which creates a clear passage for browsing during winter months (Voigt, Broadfoot, & Baker, 1997). *Giizhik* (cedar), while intercepting snow from reaching the forest floor, also provides habitat for refuge (Blood, White-tailed Deer in British Columbia, 2000; Voigt, Broadfoot, & Baker, 1997). Mixed forests are also home to an abundance of plant species, including shrubs, herbs, mosses, fungi, and ferns, providing crucial nutrients to *waawaashkeshiwag* (deer) (Government of Ontario, 2019). For example, an Elder from Shoal Lake 40 noted an area near Falcon Bay "where the deer like to come and lay down. It's a bed of cedar and heart medicine" (AAK Individual Interview, May 23, 2019).

Treaty 3 territory has been divided up into Cervid Ecological Zones and further into Wildlife Management Units by the Ministry of Natural Resources and Forestry ("MNRF"). These classifications serve to document and keep track of cervid populations throughout the region. Phase 1 of the Project falls within Wildlife Management Unit ("WMU") 7B in the Cervid Ecological Zone D1, shown in **Map 21**. The goal of the MNRF is to maintain a moderate population density of *waawaashkeshiwag* (deer) in Cervid Ecological Zone D1, with a particular focus on winter *waawaashkeshiwag* (deer) habitat (Ministry of Natural Resources and Forestry, 2019).

5.3.1.1.3 Diet

Waawaashkeshiwag (deer) are herbivores, relying mainly on leaves, branches, shoots, and buds as their source of energy (McShea, 2012, p. 46). They prefer edge habitats because it provides good cover and is a fulfilling food source (Voigt, Broadfoot, & Baker, 1997). The dietary needs of *waawaashkeshiwag* (deer) evolve through the seasons. In the summer months, they spend most of their time eating to account for the large amount of energy they are exerting through growing their body mass, antlers, and

nursing their young (Voigt, Broadfoot, & Baker, 1997). Into the fall, *waawaashkeshiwag* (deer) begin to consume foods with a higher carbohydrate level in order to accumulate fat reserves to prepare for the winter (Voigt, Broadfoot, & Baker, 1997). *Ayaabeg* (bucks) begin to spend a large amount of energy during the rutting period in November through December (Voigt, Broadfoot, & Baker, 1997). Over winter, they consume lower quality foods, consisting of *giizhik* (cedar) leaves, deciduous buds and twigs, and shrubs (Voigt, Broadfoot, & Baker, 1997). Lichens can also act as a valuable food source over winter, specifically arboreal lichens in north western Ontario (Voigt, Broadfoot, & Baker, 1997).

5.3.1.1.4 Population Trends

Fossil records indicate that ancestors of *waawaashkeshiwag* (deer) have been present in North America since the Pleistocene Epoch three million years ago (Vercauteren, 2003). Historically, Indigenous wildlife management maintained *waawaashkeshiwag* (deer) populations by providing suitable habitat through prescribed burnings (Vercauteren, 2003). Between 1500 and 1900, extensive market hunting and habitat destruction caused the population to decline drastically on *Mikinaak Minis* (Turtle Island), but conservation programs effectively facilitated the recovery of this species (Blood, White-tailed Deer in British Columbia, 2000). Over the past 100 years, the population has fluctuated through two high-low population cycles, reaching sustained high densities in the 1940s-1950s and again in the 1990s-2000s (Ranta & Lankester, 2017).

Today, *waawaashkeshiwag* (deer) are the most widely distributed and abundant large mammal on *Mikinaak Minis* (Turtle Island) (Ministry of Natural Resources and Forestry, 2019) and are listed as a species of least concern on the International Union for Conservation of Nature ("IUCN") Red List of Threatened Species (IUCN, 2015). Their population in Ontario consists of approximately 400,000 individuals, making them the most numerous of the four cervid species, which include *waawaashkeshiwag* (deer), *moozoog* (moose), *adik* (woodland caribou), and *omashkoozoog* (American elk) (Ministry of Natural Resources and Forestry, 2019). In the City of Kenora, *waawaashkeshiwag* (deer) are currently experiencing significant population growth as they migrate into urban centres. Based on interviews with community members, the movement of *waawaashkeshiwag* (deer) into Kenora and the surrounding communities is recent, ongoing, and poses considerable implications for traditional hunting practices. For example, an Elder from Washagamis Bay commented on this shift:

> *They'd have to go sometimes for three days to find the deer… Now the damn things are walking through our yard.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

An Elder from Shoal Lake 40 shared that the increasing urban *waawaashkeshiwag* (deer) population is not only impacting Kenora residents, but also affecting the health of the *waawaashkeshiwag* (deer):

> *There's a lot of deer in Kenora, tame ones, and they don't belong in town. They're too tame, they don't taste very good, I hear. They chase little kids away sometimes, and birds. They dig up people's gardens. They don't belong in town. A lot of people feed*

them too in their backyards. Do you ever see deer in town? They're not too healthy looking, they're scruffy.

Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.

Community members have cited several causes for this change in *waawaashkeshiwag* (deer) behaviour. An Elder from Shoal Lake 40 pointed to predation as one cause:

I see lots of deer in Kenora. I think they're moving all there. Just on account of the wolves, I think they move into the city.

Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.

An Elder from Shoal Lake 40 shared her experience with *waawaashkeshiwag* (deer) movement from the Grassy Narrows region, where she was born:

There was a forest fire back in '81, and the whole community had to be evacuated. And because of that fire, a lot of the wildlife left. There's nothing, there's nothing there. But slowly you can see it coming back. But a lot of the deer are moving to Kenora.

Elder, Shoal Lake 40, AAK Individual Interview, June 18, 2019.

A Niisaachewan Elder proposed another explanation for the movement of the species. He discussed how cottage and road development on Highway 596 to Minaki are pushing *waawaashkeshiwag* (deer) away from their historical feeding grounds and altering traditional hunting practices:

You got houses and you can't just hunt now…. Because the deer won't be there, what you're hunting for, because the feeding grounds aren't there anymore. So it's no use for them to [go] there anymore. So, it would be a waste of my time going there now. So, I have to keep moving myself to these new hunting spots.

Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.

Based on the increasing population of *waawaashkeshiwag* (deer) and the experiences of community members, it can be expected that these trends will continue. *Waawaashkeshiwag* (deer) range and density primarily fluctuate in response to weather, climate, and changes in habitat, and the main factor limiting population growth and northern range expansion is severity of winter (Ministry of Natural Resources and Forestry, 2019). Based on current climate models, it is predicted that the future range will expand northward as winter conditions will no longer limit their distribution (Kennedy-Slaney, Bowman , Walpole, & Pond, 2018).

5.3.1.1.5 *Waawaashkeshiwag* (deer) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *waawaashkeshiwag* (deer). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Waawaashkeshiwag (deer) play an important role in Anishinaabe tradition. When Original Man was placed on *Aki* (Earth), he lived in harmony with all of the natural beings (the animals and plants) (Benton-Banai, 1988, p. 2). Each animal was given a name by Original Man, who noted the animals that would be good as food or *mashkiki* (medicine). Every animal carried their own form of wisdom, which would be crucial to the people to come in the later years on *Aki* (Benton-Banai, 1988, p. 7).

The *odoidaymiwan* (the clan system), was developed by *Kizhe Manitou* (the Creator) to help *Aki's* (Earth's) second people govern themselves. These *ndotem* (clans) gave strength and order to the people, and each served the people in a different way (Benton-Banai, 1988, p. 74). The *odoidaymiwan* (the clan system) was a crucial part of the Midewiwin Lodge, and each were given an important role to play during this ceremony (Benton-Banai, 1988, p. 74). Featured in the original seven *ndotem* (clans) was *wawasheshe* (Deer Clan). Considered the pacifists and poets, *wawasheshe* (Deer Clan) was a *ndotem* (clan) of the gentlest of people, never using harsh words or actions against another (Benton-Banai, 1988, p. 76). A *waawaashkeshiwayaan* (deer hide singular)/*waawaashkeshiwayaanag* (deer hide plural) was used by Original Man to create the head of the *mitigwagik* (waterdrum). The *mitigwagik* (waterdrum) was constructed for the first Midewiwin ceremony. *Waawaashkeshiwayaan* (deer hide) brought the qualities of *waawaashkeshiwag* (deer) to the *mitigwagik* (waterdrum). It gave "speed and agility to the drumbeat" and "a quality of peace and gentleness to the waterdrum" (Benton-Banai, 1988, p. 70).

"Hunting" was most frequently mentioned in the context of "Deer" (Figure 29), emphasizing the important role *waawaashkeshiwag* (deer) have in the practice. More information about hunting can be found in Section 5.7.7. "Moose" was the second most frequently mentioned code with "Deer", as both animals are closely related and were important for culture and food and were often mentioned together when discussing hunting.

Throughout all seasons, *waawaashkeshiwag* (deer) are an important food source to the Anishinaabeg. In the *Anishinaabe Aki Kakendamowin* interviews, "Diet" was one of the most frequent codes mentioned with "Deer", emphasizing the important role it played in Anishinaabe tradition. *Waawaashkeshiwag* (deer) do not hibernate and are accessible all year round. For example, an Elder from Niisaachewan recalled hunting *waawaashkeshiwag* (deer) and putting it away "so that it lasts all winter" (AAK Individual Interview, September 18, 2019).

Historically, it was common practice to share *waawaashkeshiwi-wiiyaas* (deer meat) within the community and it was customary that food was first offered to Elders and those in need. An Elder from Niisaachewan spoke to this:

> *Before, you'd help out your fellow Anishinaabe, even for hunting. I'd give away deer here like crazy. Kill a deer or a moose, give some meat away.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

Another Elder from Niisaachewan also told stories about sharing *waawaashkeshiwi-wiiyaas* (deer meat) within the community, noting that on numerous occasions they were able to "feed the whole reserve" (AAK Individual Interview, August 15, 2019).

This tradition extends beyond hunting to also include an array of other associated practices. It is customary that when *waawaashkeshiwag* (deer) are killed, all parts of the animal are utilized for various purposes in addition to consumption. Tanning is an example of such a practice that allowed the Anishinaabeg to produce *waawaashkeshiwayaanag* (deer hides) for further use. Through activities such as tanning *waawaashkeshiwayaanag* (deer hides), families often spent lots of time together to teach each other. During discussions with community members, "Family Ties" was mentioned 26 times in context of "Deer", and was discussed in stories about hunting, feasting, and preparing *waawaashkeshiwayaanag* (deer hides) with family. An Elder from Shoal Lake 40 shared her experience of making *waawaashkeshiwayaanag* (deer hides) with her mother and aunt:

> *We'd make hides from scratch; everything was from scratch… We'd make moccasins. I wish I could've kept it, but I had a real nice leather vest with fringes and beading work on it. My mum had it on before she died. I still do quite a bit of that. I'd make jingle dresses and ribbon skirts.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.*

In recent years, some community members have noticed changes in the quality of this important resource. Many believe that the decreased health of *waawaashkeshiwag* (deer) can be linked to increased development in the region. An Elder from Shoal Lake 40 shared one health concern that *waawaashkeshiwag* (deer) are facing and how it is impacting traditional hunting practices:

> *I just saw four months ago a picture of an opened-up deer and it had ulcers on it. It had white little bubbles on it. They said that it was some kind of TB. It's scary. And yet, we live off the land. I know we came across that here when we did that fall harvest, that one deer we didn't bother touching because it had ulcers on it. The fish, when it has ulcers, I don't eat it, I just go put it to the side, because you see a lot of that, it's scary. We're supposed to live off the land, but we can't even trust the food.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 11, 2019.*

In addition to the declining quality of traditional resources, many community members have also pointed to another shift involving the cultural transition away from traditional lifestyles. "Loss of Tradition" was noted 24 times in the context of "Deer", showing that the changing populations and health of *waawaashkeshiwag* (deer) is impacting Anishinaabe tradition. Not only has hunting become less common, but the use of *waawaashkeshiwag* (deer) has evolved. The Elder from Shoal Lake noted that this shift is particularly evident with regards to the tradition of using every part of the animal:

> *They used everything, it's not like nowadays where they just take the hind quarters, they don't even eat ribs off a deer.*

Elder, Shoal Lake 40, AAK Individual Interview, June 11, 2019.

Despite these changes, *waawaashkeshiwag* (deer) remain an important food source for the Anishinaabeg and continue to play a significant role in ceremony. The "Deer" code also interacts with "Moose", "Beaver", "Wild Rice", and "Trapping" codes. These co-occurring codes show that practices involving *waawaashkeshiwag* (deer) often overlapped with other practices such as picking *manoomin* (wild rice), trapping *amikwag* (beaver), or hunting *moozoog* (moose). Instances of these overlapping practices comes through when communities are preparing for gatherings. *Waawaashkeshiwag* (deer) are traditionally hunted in preparation for gatherings like feasts, Pow Wows, and the fall harvest. According to a community member from Shoal Lake 40, the fall harvest "happens every year. Everyone goes out, moose hunting, deer hunting, collecting *manoomin* (wild rice), fishing, getting all the essentials." (AAK Individual Interview, April 8, 2019). However, a shift is also occurring in this traditional gathering. An Elder from Washagamis Bay spoke to these changes:

> *You see, nowadays, Native people, Anishinaabe, when they have ceremonies, they don't go to the bushes or out on the lake to gather fish. Moose meat and deer, and even beaver, they don't…They have a feast. Berries to pick. Medicines. They don't go there. They go to the store to buy stuff… for ceremonies.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.*

Waawaashkeshiwag (deer) fur was also used for providing warmth in the winter months. A Shoal Lake 40 Elder shared how her father would line his boots with *waawaashkeshiwag* (deer) fur in the winter when he went out hunting:

> *I remember him going out early, early in the mornings, then he'd come back with his deer, he had snares out. I'd see him sometimes, I'd see fur sticking out of his boots, that was the deer fur inside his boots because sometimes the lining wouldn't last very long so they'd use that.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

Waawaashkeshiwag (deer) also played an important role in storytelling and teaching. More information about how hunting is an opportunity for teaching can be found in found in Section 5.7.7. The code "Cultural Education" and "Teachings" were each discussed 11 times with "Deer". Animals were often in these stories. An Elder from Washagamis Bay said that:

> *There's all kinds of stories that you can listen to…They're very interesting stories sometimes [about] how the animals interact with the with humans, like the fish, the moose, deer, the beaver, the eagle and the birds. They're good stories.*
>
> *Elder, Washagamis Bay, Individual Interview, July 25, 2019.*

An Elder from Niisaachewan shared this experience from when she was living off the land:

> *That was quite the learning experience. The beavers, skinned them, deer, moose. I could still do it. I still know everything, but I'm very happy my grandparents taught me, my mom.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 14, 2019.*

Waawaashkeshiwag (deer) are a species that have historically been deeply interconnected with Anishinaabe culture and tradition. Whether as a food source or teaching tool, *waawaashkeshiwag* continue to be used and valued today. Understanding how the species has changed over time is important for predicting future changes to the *waawaashkeshiwag* and the Anishinaabeg who depend on them.

5.3.1.2 *Mooz* (Moose, *Alces alces*)

Table 7: Names for Moose

Common Name	Moose
Anishinaabemowin (singular)	*Mooz*
Anishinaabemowin (plural)	*Moozoog*
Alternative Anishinaabemowin Spelling	*Moonz*
Scientific Name	*Alces alces*

5.3.1.2.1 About

Mooz (moose, singular)/*moozoog* (moose, plural) are the largest ungulate species belonging to the Cervidae family in the genus *Alces.* In Anishinaabe tradition, animals symbolized "an ideal to be sought, attained and perpetuated" by the Anishinaabeg. Each animal on *Mikinaak Minis* (Turtle Island) "reflected character, the external manifestation of the elemental nature and quality of the inner being". *Moozoog* (moose) are an Anishinaabe totem and was a symbol of endurance and strength (Johnston, 1976, p. 53).

Moozoog (moose) have been on *Mikinaak Minis* (Turtle Island) since time immemorial when *Kizhe Manitou* (the Creator) placed them. There are seven subspecies of *moozoog* (moose) on *Mikinaak Minis* (Turtle Island) (Pastor, 2016). The North-western *mooz* (*Alces alces andersoni)* is the subspecies found on Treaty 3 territory and is the second largest subspecies on *Mikinaak Minis* (Turtle Island) (Blood, Moose in British Columbia, 2000). *Moozoog* (moose) are not likely to be found in coastal regions but are dominant in many inland regions across the nation (Blood, Moose in British Columbia, 2000).

Although *moozoog* (moose) are the largest ungulate species on *Mikinaak Minis* (Turtle Island), size and height vary in different regions. In Canada, a typical *naabe-mooz* (bull, singular)/*naabe-moozoons* (bulls, plural) weighs up to 500 kg and can grow well beyond this weight (Blood, Moose in British Columbia, 2000). *Naabe-moozoons* (bulls) can grow up to 2 m tall (Blood, Moose in British Columbia,

2000). *Noozhe-mooz* (cow, singular)/*noozhe-moozoons* (cows, plural), are much smaller than *naabe-moozoons* (bulls), weighing between 340 to 420 kg on average (Blood, Moose in British Columbia, 2000). *Moozoog* have coats that are dark brown and black in colour year-round and are thicker in winter months to allow for survival in extreme temperatures (Blood, Moose in British Columbia, 2000). Both *naabe-moozoons* (bulls) and *noozhe-moozoons* (cows) have distinct long legs and a shoulder hump not found on the other ungulates in the Cervidae family (Blood, Moose in British Columbia, 2000). Mating between *moozoog* (moose) begins in September, with calves being born in May and June of the following year (Blood, Moose in British Columbia, 2000). *Naabe-moozoons* (bulls) become aggressive during the mating period and engage in fights with other *naabe-moozoons* (bulls), letting the *noozhe-moozooons* (cows) pick the superior *naabe-moozoons* (bulls) as mates (Blood, Moose in British Columbia, 2000).

Naabe-mooz (bulls) carry *moozweshkan* (moose antlers), which are grown and shed each year (Blood, Moose in British Columbia, 2000). *Moozweshkan* (moose antlers) begin to develop in the spring and are fully formed by early fall (Blood, Moose in British Columbia, 2000). While growing, *moozweshkan* (moose antlers) are encased in a velvet covering that provides blood supply to the developing bone (Blood, Moose in British Columbia, 2000). *Naabe-mooz* (bulls) shed their *moozweshkan* (moose antlers) between November and March. *Moozweshkan* (moose antlers) vary greatly in size and shape depending on a variety of factors including health, diet, and age (Child, Aitken, & Rea, 2010). Older *naabe-moozoons* (bulls) usually have larger *moozweshkan* (moose antlers), with some growing up to a span of 2 m across (Blood, Moose in British Columbia, 2000). *Moozweshkan* (moose antlers) serve many purposes. They are used for defence and sparring with other *naabe-mooz* (bulls), amplifying hearing and mating calls, and showcasing their reproductive fitness to *noozhe-mooz* (cows) (Child, Aitken, & Rea, 2010). Given their size and shape, *moozweshkan* (moose antlers) can easily become stuck in branches or with other *naabe-mooz* (bulls). For example, an Elder from Shoal Lake 40 shared:

> *I know a story about Hay River here, my grandpa killed a moose with a hatchet. He went to go check his campground and saw a moose with its antler stuck on a tree. Took advantage of that. Had to paddle all the way back with a bunch of guys, fed the whole reserve. Saved everybody apparently that day because I guess everyone was going hungry at the time. Killed a moose and everybody took a share.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

In analysing the interviews, a co-occurrence model was created that shows intersections of “Moose” with other components. This model is illustrated in Figure 30. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting “Moose” and any given component shows the number of times “Moose” was brought up in the context of the component. The width of the line visually represents this as well. For example, Figure 30 shows that in total “Moose” was brought up 67 times, and “Loss of Tradition” was brought up 255 times. Of the 67 times “Moose” was brought up, 25 of those times it was in the context of “Loss of Tradition”.

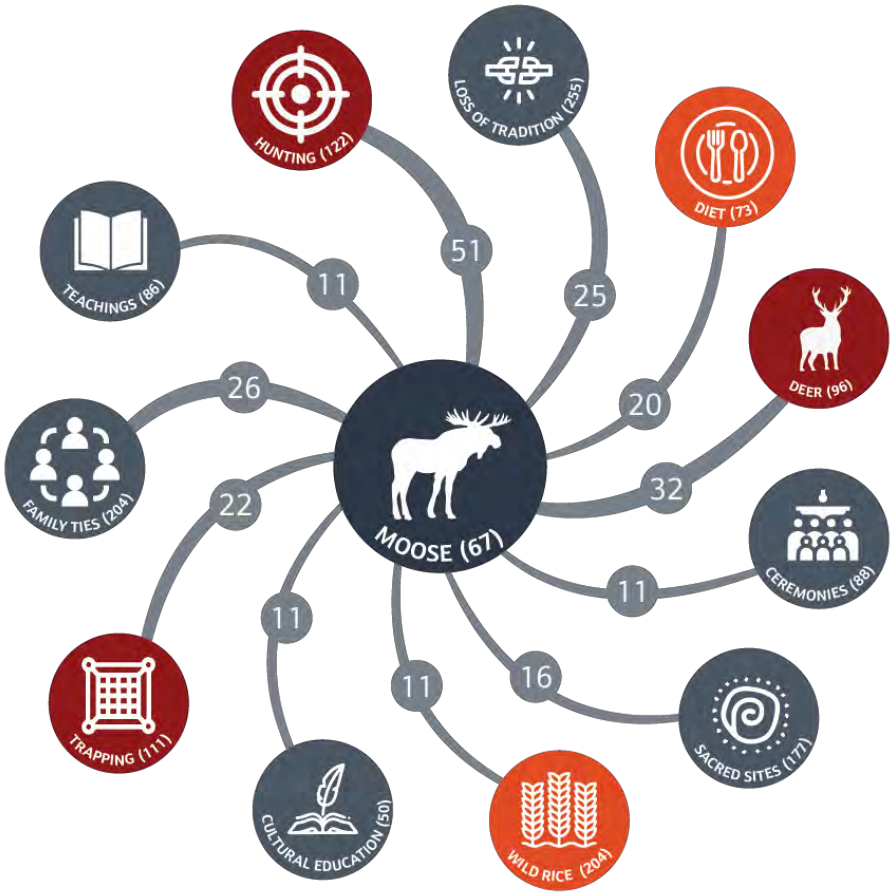


Figure 30. "Moose" co-occurrence with other components

5.3.1.2.2 Habitat

Moozoog (moose) have an expansive range across *Mikinaak Minis* (Turtle Island), covering most of present-day Canada, Russia, and parts of Europe (Blood, Moose in British Columbia, 2000). Across *Mikinaak Minis* (Turtle Island), *moozoog* (moose) have made the Boreal Forest regions their home (Blood, Moose in British Columbia, 2000). Boreal regions provide ample forest cover and access to aquatic areas. Seasonal migration occurs with *moozoog* (moose), as their habitat requirements vary throughout the year. In spring and early summer, *moozoog* (moose) make use of shady *mitigoog* (trees) and shallow waters to keep cool and to feed (Ministry of Natural Resources and Forestry, 2013). Aquatic areas are crucial during summer months as they provide important nutrients and protection. *Moozoog* (moose) are skilled swimmers, utilizing their long legs to access and wade through aquatic plants and escape predators (Ministry of Natural Resources and Forestry, 2013). These aquatic areas include ponds, swamps, riverbanks, and lakeshores (Blood, Moose in British Columbia, 2000). Aquatic zones also make for easier hunting. An Elder from Shoal Lake 40 remembered when she first went hunting with her father down a creek and a "moose was standing in the middle of the water" (AAK Group Interview, May 23, 2019). More information about hunting *moozoog* (moose) can be found in Section 5.7.7.

Mooz (moose) habitat in the summer months greatly depends on the quality, location, and availability of aquatic plants (Ministry of Natural Resources, 1988). *Moozoog* (moose) also use forested areas during this time and into the fall months for flourishing shrubs and leaves (Ministry of Natural Resources and Forestry, 2013). Over winter months, *moozoog* (moose) move into denser forest for wind and snow protection (Ministry of Natural Resources and Forestry, 2019). With long legs and well-insulated bodies, *moozoog* (moose) can easily manoeuvre through deep snow (Ministry of Natural Resources, 1988). Mineral licks (an area where *moozoog* (moose) can lick essential minerals) and calving areas are also important components of *mooz* (moose) habitat (Ministry of Natural Resources, 1988).

Moozoog (moose) are solitary mammals and move within familiar ranges throughout the year. *Moozoog* (moose) prefer to live apart from civilization, leaving areas they once used when they become too close to people. An Elder from Washagamis Bay noted that "the moose are gone because of the highway" near the area of Welcome Channel (AAK Group Interview, July 23, 2019). More information on the changes in *mooz* (moose) population can be found in Section 5.7.7.

Treaty 3 territory has been divided up into Cervid Ecological Zones and further into Wildlife Management Units ("WMU") by the Ministry of Natural Resources and Forestry ("MNRF"). These classifications serve to document and keep track of cervid populations throughout the region. As indicated in **Map 21**, Phase 1 of the Project falls within WMU 7B in the Cervid Ecological Zone D1. The goal of the MNRF is to keep a moderate to high density population of moose in Cervid Ecological Zone D1 (Ministry of Natural Resources and Forestry, 2019).

5.3.1.2.3 Diet

Moozoog (moose) are herbivores with changing diets throughout the seasons. In the spring and summer months, the majority of *moozoog* (moose) diet consists of aquatic plants rich in sodium and protein (Ministry of Natural Resources, 1988). These include horsetails, pondweeds, burweed, pond-lilies, bladderwort, and variations of cattails (Ministry of Natural Resources, 1988). An Elder from Niisaachewan shared that moose like "vegetation on lily pads, up near the bottom of the root" (AAK Group Interview, September 17, 2019).

Into the fall and over winter, *moozoog* (moose) must consume between 6 and 9 kg of food to make up for the energy lost daily, with *noozhe-moozoog* (cows) requiring more when pregnant (Pastor, 2016). During this time, *moozoog* (moose) consume more shrubs, leaves and twigs. *Oziisigobiminzhiig* (willow) is the primary species consumed, in addition to cranberry, birch, aspen, and poplar (Blood, Moose in British Columbia, 2000). *Moozoog* (moose) can easily take down large branches, reaching up to 2.5 m high (Blood, Moose in British Columbia, 2000). As *moozoog* (moose) consume more food during the fall, they become targets for hunters. An Elder from Washagamis Bay shared:

> *Then in the fall, we start to prepare for... it would be for hunting. Moose hunting, deer hunting, around August, September, October."*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

5.3.1.2.4 Population Trends

At a global scale, *moozoog* (moose) are listed as a species of least concern on the IUCN Red List (Hundertmark, 2016). Although the *mooz* (moose) population is increasing globally, this trend is not consistent throughout various parts of its range regionally.

Mooz (moose) populations in north-western Ontario are believed to be linked to *waawaashkeshiwag* (deer) populations, having experienced notable changes in response to changing *waawaashkeshiwag* (deer) numbers throughout history (Ranta & Lankester, 2017). Of the 67 times "Moose" was mentioned in discussions with community members, 32 times it was in the context of "Deer". An Elder from Washagamis Bay identified that in recent years, *moozoog* (moose) populations have dropped drastically while *waawaashkeshiwag* (deer) populations have remained high:

> *There used to be moose and deer. There usually is lots of deer, but moose… I think the last one was here quite a while ago. They all died out.*
>
> *Elder, Washagamis Bay, AAK Group Interview, August 22, 2019.*

Over the past 100 years, *moozoog* (moose) and *waawaashkeshiwag* (deer) have fluctuated through two high-low population cycles. In the 1940s and 50s *waawaashkeshiwag* (deer) numbers were increasing while *moozoog* (moose) numbers were decreasing. Between the mid-1960s to 1980s, *moozoog* (moose) numbers in Ontario declined by roughly 35% (Euler, 1985). In the past decade, Ontario's *moozoog* (moose) population has dropped by 20% (Environmental Commissioner of Ontario, 2016).

Today, Ontario's *moozoog* (moose) population consists of approximately 100,000 individuals, which makes up roughly 10% of the North American population (Ministry of Natural Resources and Forestry, 2019). The *moozoog* (moose) population in Wildlife Management Unit ("WMU") 7B is currently below the desired ecological density and consists of an estimated 212 individuals (Ministry of Natural Resources and Forestry, 2019). *Moozoog* (moose) are experiencing population decline across *Mikinaak Minis* (Turtle Island) and face pressures such as habitat degradation, disease and parasites, hunting, predation, and impacts from climate change.

The declining *moozoog* (moose) population has been especially evident to members of the four communities, who have considered the species a valuable resource for generations. This is accounted for in Figure 30, where "Loss of Tradition" occurred 25 times with "Moose". Many community members recounted days when *moozoog* (moose) were abundant while few had even seen a *mooz* (moose) in the last decade. For example, an Elder couple from Shoal Lake 40, who used to track *moozoog* (moose) together, stated:

> *It was ten years ago last time we got a moose.*
>
> *Elders, Shoal Lake 40, AAK Group Interview, May 23, 2019.*

Another community member from Shoal Lake 40 noted the dramatic change in *mooz* (moose) population:

> *We hardly get any moose. I don't know what happened. It seems like they're extinct. Because I remember about close to 20 years ago, you used to see moose just right out [on] Shoal Lake Road or at the Highway. I hardly see that now.*
>
> *Community Member, Shoal Lake 40, AAK Individual Interview, May 22, 2019.*

An Elder from Washagamis Bay echoed this narrative, recounting that he had not seen a *mooz* (moose) for over five years (AAK Individual Interview, August 22, 2019). Similarly, an Elder from Shoal Lake 40 noted the population change in recent years:

> *Used to be moose. Lots of moose around here. Not anymore.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.*

During a group interview in Washagamis Bay, community members agreed that *moozoog* (moose) have not been seen for many years. One Elder spoke to a potential reason for the population decline:

> *There's no moose on this reserve anymore. The last time I [saw] a moose here was five or six years ago. They haven't been here at all. They used to come all the time. 30 years, they used to come all the time. But there's zero now… Could be because of the highways and byways, cottages, and population. Could be all that. But, most of the moose are gone from here.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.*

Another Elder from Washagamis Bay gave a similar explanation for why the *moozoog* (moose) have disappeared:

> *The moose are gone, all in this area they're gone. Probably because of the highway, the bypass.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.*

Because of the noted decrease in Ontario's *mooz* (moose) numbers, management efforts are in place to ensure that *mooz* (moose) populations can be sustainably maintained in the future. The lower and upper 2030 population objectives for the WMU 7B region are 400 and 1100 individuals respectively (Ministry of Natural Resources and Forestry, 2019). To reach these objectives, Ontario's moose management program is focused on increasing *mooz* (moose) populations through habitat management in the D1 zone. This involves a broad scale landscape-based approach to allow for the quality of habitat necessary to ensure cervid populations are sustainable (Ontario Ministry of Natural Resources, 2019).

5.3.1.2.5 *Moozoog* (moose) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *moozoog* (moose). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Moozoog (moose) are an important species to the Anishinaabeg that have played a role in tradition throughout history. Despite the impacts of declining *mooz* (moose) populations, the species continues to be valued for its use as sustenance and in ceremony. Symbolizing endurance and strength (Johnston, 1976, p. 53), teachings from *moozoog* (moose) also serve to educate future generations.

Like all animals, *moozoog* (moose) are highly respected by the Anishinaabeg. Respect for *moozoog* (moose) is demonstrated through prayers and protocols that take place before, during, and after *mooz* (moose) hunting. More information on the protocols and ceremonies when killing *moozoog (moose)* can be found in Section 5.7.7.

Moozoog (moose) are respected in consumption by using every part of the animal. Traditionally, this involves distributing *mooz* (moose) meat within a community and making use of other parts of the animal like the organs, bones, *moozwashkan* (moose antlers), and hide. While community members have noted a decline in these traditions, there are many cases where these practices continue. For example, regarding the hunting and food-sharing protocols, a community member of Grassy Narrows explained:

> *I think just some of those practices have been kind of diminishing. And probably even the way it's done, right? Because I know that there's been people that only take what they're going to have and then leave the rest, when before, our people used everything of the animal. Like you find a lot of carcasses in the fall… in our community when somebody shoots a moose, they distribute just like that too, and then they just keep some for themselves and for their family. That's still our practice.*
>
> *Community Member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

Sharing food within a community is a valued tradition that carries on today. Of the 67 times "Moose" was mentioned in discussions with community members, 26 times it was in the context of "Family Ties". Not only is *mooz* (moose) meat a significant food source, but it also holds cultural importance because of its use in community events like the fall harvest and feasts. The Fall Harvest is an annual celebration to welcome the fall season. A community member from Shoal Lake 40 shared that:

> *It happens every year. Everyone goes out, moose hunting, deer hunting, collecting wild rice, fishing, getting all the essentials.*
>
> *Community Member, Shoal Lake 40, AAK Individual Interview, May 22, 2019.*

Regarding feasts, an Elder from Shoal Lake 40 explained:

They'd pass to the Elders, then the kids, and then to the rest. Everybody shared food in those days. Today, nobody wants to share their food, believe it or not. It's only for themselves nowadays, whatever they get. But my son is still the same, my oldest son... When he goes hunting, he killed a moose, so, what does he do? He cuts it up, passes it around to all the Elders at Shoal Lake. He still does that today. He's probably the only one that does that, that shares food to the Elders first. It's always shared, everything was shared, back then in my days. What I love about it, it turned into a big feast, everybody cooking everything, kids running around having fun, waiting to be fed. Of course, the Elders and the kids went first. A lot has changed, we don't have that anymore. That's the sad thing about it, nobody wants to share anymore.

Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.

The cultural shift away from these traditions can in part be accounted for by the declining *mooz* (moose) population in the area. Community members have identified that reductions in the numbers of *moozoog* (moose) have impacted traditional practices like hunting and have affected the diet of the Anishinaabeg. Of the 67 times "Moose" was mentioned in discussions with community members, 51 times were in the context of "Hunting". A Shoal Lake 40 community member said:

I haven't eaten a moose in maybe seven years. Before it used to be all the time. In the fall they would go hunting for the moose but you don't see them around anymore.

Community Member, Shoal Lake 40, AAK Group Interview, May 24, 2019.

The impacts to this traditional food source extend to cultural practices and traditions as well. For example, an Elder from Wauzhushk Onigum outlined the implications that reduced *mooz* (moose) populations have on associated customs like feasts:

One time I heard in Grassy, I guess they were going to have a feast. They were looking for a moose. That's what they use when they're going to have a feast. They couldn't find one. They couldn't find any moose out there. There used to be lots of them. That's what they used to say, you have to slow down because you might hit the moose on the highway. Now I don't see them anymore.

Elder, Wauzhusk Onigum, Individual Interview, June 18, 2019.

In addition to their role in feasts and other community events, *moozoog* (moose) also hold cultural value for their role in raising future generations. In Anishinaabe tradition, it is important to ensure that new-born children have a connection to *Aki* (Earth) and can continue to be nourished by it. For example, a community member from Grassy Narrows wanted to ensure that her grandson would have this connection, noting that *moozoog* (moose) played an important role in instilling good hunting skills:

Everything that we want our child to be, like for my grandson, [we make an offering]. We put a drum, we put little moccasins, we put sun dance pegs, we put him on a moose

trail so that he'll be a good hunter. We put fishing line and a hook so that he'll be a fisherman. And like the moccasins was so that he'll be a dancer. The sun dance pegs so he'll follow the sun dance way of life. And then we put all the medicines in there…

Community Member, Grassy Narrows, AAK Individual Interview, September 13, 2019.

As children grow, *moozoog* (moose) continue to serve as a tool for education. Hunting *moozoog* (moose), preparing *mooz* (moose) meat, and tanning *mooz* (moose) hide are all important skills that are often passed down to children by their parents and grandparents. These land-based teaching methods have been fundamental components of cultural education to the Anishinaabeg for thousands of years and continue today. Of the 67 times "Moose" was mentioned in discussions with community members, 11 times it was in the context of "Teachings". For example, an Elder from Shoal Lake 40 learned how to track and hunt *moozoog* (moose) from her father when she was young. She fondly recounted a story from her first *mooz* (moose) hunt:

I think I was 12 years old when I first went moose hunting with my dad. We were going down this creek and the moose was standing in the middle of the water and he had only that double barrel shotgun and he told me to shoot the moose. So, I shot and I didn't realize that I pulled both triggers. The last thing I remember was flying, and I flew right back into my dad's belly.

Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.

Many community members can attest to the value of animals like *moozoog* (moose) in cultural education. One Elder from Wauzhushk Onigum further spoke to the importance and revival of traditional land-based learning approaches:

I think that teaching and learning the traditional ways of knowing how to skin a moose, how to skin a deer… they are learning that which is good- they kind of lost some of that but it really is coming back. But I think what's more important is getting them out there into the land.

Elder, Wauzhushk Onigum, Individual Interview, June 17, 2019.

As children continue to gain skills and knowledge from experiencing life on the land with animals like *moozoog* (moose), it is critical to ensure long-term sustainability of the species for future generations. Despite population decline, cultural practices and ceremonial traditions surrounding *moozoog* (moose) remain today.

5.3.1.3 *Amik* (Beaver, *Castor canadensis*)

Table 8: Names for Beaver

Common Name	American Beaver

Anishinaabemowin (singular)	*Amik*
Anishinaabemowin (plural)	*Amikwag*
Scientific Name	*Castor canadensis*

5.3.1.3.1 About

Amik (beaver, singular)/*amikwag* (beaver, plural) is a rodent species belonging to the family Castoridae in the genus Castor. As a keystone species for biodiversity, *amikwag* (beaver) have a valuable niche within an ecosystem. Second only to humans in altering habitats (University of Wisconsin, 2004), *amikwag* (beaver) have been noted to directly affect geological processes, ecological processes, invertebrates, fish, vegetation, mammals, reptiles, amphibians, and *bineshiinyag* (birds) (Baker & Hill, 2003). The ecological role of *amikwag* (beaver) involves modifying the landscape by building dams, removing *mitigoog* (trees), and flooding valleys to provide habitat for other species (Cassola F. , 2016). Because of this, *amikwag* (beaver) are respected as a symbol of resourcefulness to the Anishinaabeg. *Amikwag* (beaver) are also valued for the role they played in the fur trade, ultimately playing a significant role in the development of the country. For their contributions, *amikwag* (beaver) became the official symbol of Canada in 1975 (Government of Manitoba, n.d.).

Amikwag (beaver) live in family groups called colonies, generally consisting of a permanent monogamous breeding pair of adults and one to two generations of their offspring (Hatler & Beal, 2003). Colonies tend to stay well separated from each other and use vocalization, tail-slapping, and scent marking to communicate territory boundaries to other colonies. Young *amikwag* (beaver) are born between April and June in litters with an average size of three or four kits. Kits are born fully furred and teethed and develop relatively rapidly, having full use of their eyes within several hours of birth (University of Wisconsin, 2004). Kits can swim by the time they are nine days old and eat mainly vegetation by the time they are three weeks old. On average, *amikwag* (beaver) may live up to 10 to 12 years in the wild.

Fully grown *amikwag* (beaver) can measure up to 120 cm in length and weigh from 16 to 29 kg, making the species the largest rodents on *Mikinaak Minis* (Turtle Island) (Hatler & Beal, 2003). Their distinctive flat tails can be up to 32 cm long and 18 cm wide and serve various purposes such as propulsion and steering in water, balancing on land, storing fat, and communicating with other individuals (Hatler & Beal, 2003). *Amikwag* (beaver) have large incisors that grow continually to allow them to wear down wood by frequent grinding and chewing. *Amikwag* (beaver) are agile in water and are well-suited for aquatic environments with webbed hind feet and an insulative water-repelling pelt that ranges from light brown to nearly black in colour (Hatler & Beal, 2003). *Amikwag* (beaver) develop thicker coats in the winter to accommodate for colder temperatures. While trapping can be done during any season, it is generally practiced in the winter for this reason. For example, an Elder from Wauzhushk Onigum shared that she “did a lot of trapping for beaver in the wintertime.” (AAK Individual Interview, June 18, 2019). Many continue to hunt and trap in the spring, as the same quality of pelts can be harvested in

less harsh conditions. For example, an Elder from Washagamis Bay stated that, “in the spring, we go hunting beavers.” (AAK Individual Interview, August 21, 2019).

Amikwag (beaver) pelts became a major driver of the fur trade between Europeans and Indigenous people on *Mikinaak Minis* (Turtle Island) in the early 1600s. Felt hats made from *amikwag* (beaver) fur were a fashion trend that created significant demand for the trapping and trading of *amikwag* (beaver) and caused the species’ population to fall drastically. Competition for trade led to conflicts like the Iroquois Wars over hunting territory as well as wars between the French and English decades later. The height of the fur trade was in the 1780s and the two leading companies were the Hudson’s Bay Company and the North West Company. During this time, *amikwag* (beaver) pelts were being sold by English and French fur traders in Europe at 20 times their original purchase price (Government of Canada, 2017). The Hudson’s Bay Company had approximately 500 trading posts on *Mikinaak Minis* (Turtle Island), one fifth of which were in Ontario. The fur trade began to decline in the 1800s as fashion trends transitioned away from *amikwag* (beaver) hats. The price of *amikwag* (beaver) pelts has since fallen significantly, which resulted in a notable decline in *amikwag* (beaver) hunting and trapping practices.

In analysing the interviews, a co-occurrence model was created, that shows intersections of “Beaver” with other components. This model is illustrated in Figure 31. *“Beaver” co-occurrence with other components*. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting “Beaver” and any given component shows the number of times “Beaver” was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 31 shows that in total “Beaver” was brought up 79 times, and “Trapping” was brought up 111 times. Of the 79 times “Beaver” was brought up, 44 of those times it was in the context of “Trapping”.

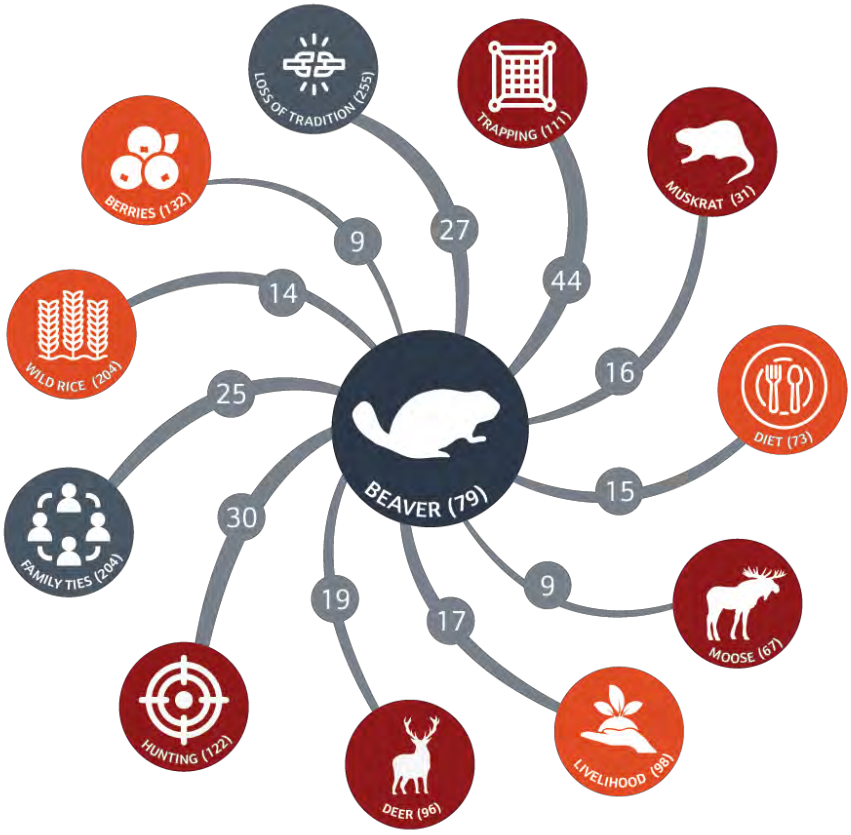


Figure 31. "Beaver" co-occurrence with other components

5.3.1.3.2 Habitat

Amikwag (beaver) have a vast geographic range that extends across *Mikinaak Minis* (Turtle Island) with the exceptions of the arctic tundra, peninsular Florida, and the deserts of the southwestern United States. *Amikwag* (beaver) are native to Canada, Mexico, and the United States, but have also been introduced in Argentina, Belgium, Finland, Germany, Luxembourg, and Russia (Cassola F. , 2016). As a semi-aquatic species that depend on a combination of land and water environments, *amikwag* (beaver) habitat consists of inland waters and wetlands in forested areas. Wetlands and string bogs in the surrounding project area are shown in **Map 22**. Ideal habitat occurs along the banks of rivers, streams, ponds, and lakes that are well-guarded from waves or currents and are muddy rather than rocky to allow for burrowing, channelling, and damming (Hatler & Beal, 2003). An Elder from Shoal Lake 40 shared that *amikwag* (beaver) were often trapped in *manoomin* (wild rice) fields as the two species utilized the same habitats (AAK Individual Interview, May 22, 2019). "Beaver" and "Wild Rice" were mentioned together 14 times, illustrating their interconnectedness. *Amikwag* (beaver) reside in structures known as lodges that they build from mud, sticks and logs. A key component of a lodge is an underwater entrance that serves to protect *amikwag* (beaver) from predation. Lodges are often built in the middle of shallow ponds or, in northern environments, along riverbanks and lakeshores of deeper water bodies to ensure that ice does not prevent access (Hatler & Beal, 2003). *Amikwag* (beaver) also

construct bank dens, which are similar to lodges in their purpose to provide protection, their construction from woody vegetation, and their entrance located underwater. Bank dens are commonly found on the shores of rivers and deep lakes and are often dug under large *mitigoog* (trees) or shrubs to provide support for the roof of the den (Baker & Hill, 2003).

5.3.1.3.3 Diet

Amikwag (beaver) are generalist herbivores, consuming mainly herbaceous woody plants. Their diet varies regionally and seasonally (Baker & Hill, 2003). During winter months *amikwag* (beaver) prefer bark and twigs of certain deciduous *mitigoog* (trees) and shrubs like poplar and *oziisigobiminzhiig* (willow). In the summer months *amikwag* (beaver) may also consume a variety of plants including grasses, forbs, shrub leaves, and aquatic plants such as pond lilies (Hatler & Beal, 2003).

5.3.1.3.4 Population Trends

Based on fossil records, the presence of *amikwag* (beaver) on *Mikinaak Minis* (Turtle Island) can be dated as far back as the early Oligocene and Holocene epochs (University of Wisconsin, 2004). The genus Castor is believed to have originated in Eurasia and migrated to *Mikinaak Minis* (Turtle Island) during the Pliocene epoch. There were an estimated six million *amikwag* (beaver) in Canada before the start of the fur trade (Government of Canada, 2017). The *amikwag* (beaver) population was decimated as hunting and trapping increased over the 1700s. By the 1800s *amikwag* (beaver) had become scarce across the country and had nearly disappeared from Ontario. Recovery of *amikwag* (beaver) was established as the fur trade declined and through various conservation efforts. Currently, *amikwag* (beaver) have a stable population and are a species of least concern on the International Union for Conservation of Nature's ("IUCN") Red List of Threatened Species (Cassola F. , 2016). The population is maintained sustainably through harvest management plans, national hunting and trapping regulations, and conservation sites including in-place land and water protection over the entire range (Cassola F. , 2016).

In the Treaty 3 territory, some community members have been noticing a decline in the *amikwag* (beaver) population due to blasting that has changed water levels. A Niisaachewan Elder shared that:

> *We don't hardly see beaver, just barely…because a lot of them got drowned…after the blasts.*
>
> *Elder, Niisaachewan, AAK Group Interview, September 17, 2019.*

Another Niisaachewan Elder shared a similar narrative on the declining *amikwag* population:

> *It's not the same anymore…you can still see the old dam and beaver houses which no longer live there anymore because of the water level and everything. It kind of washed away.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

5.3.1.3.5 *Amikwag* (beaver) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *amikwag* (beaver). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

In Anishinaabe tradition, animals possess and reflect various character traits that represent ideals to be emulated. *Amikwag* (beaver) are a totemic symbol of resourcefulness because of their ability to modify their environment (Johnston, 1976, p. 53). Additional symbolism associated with *amikwag* (beaver) may vary between communities and individuals. To one Elder from Niisaachewan *amikwag* (beaver) depict an image of self-determination and freedom. He shared this through a story drawing parallels between *amikwag* (beaver) and the Anishinaabeg:

> *We hit the back roads, then spotted a beaver putting up a dam also. Middle of nowhere. 'How did he get up here?', I was thinking. Like he owns the whole territory, it's the way he lives. He's got a pond here and a pond up here, and it's like stairs. For him, he controls the water. And you see everything growing there. The same situation the beaver has – if we could control our own water, we'd have the same thing the beaver does. If his house was getting flooded out, he'd open the other creek and drain it out. It's all controlled. It would be nice to have if we had that on our side here somewhere. To see that control compared to all what happens.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 18, 2019.*

Amikwag (beaver) can also represent wisdom to the Anishinaabeg because of how the animal uses its natural gifts wisely for survival (Uniting Three Fires Against Violence, n.d.). Like other animals, *amikwag* (beaver) provide teachings to the Anishinaabeg and are valued as a learning tool. In the traditional story of Original Man and his *Nokomis* (grandmother), the tail and webbed feet of *amikwag* (Beaver) were the inspiration for Original Man to design and create the first paddle (Benton-Banai, 1988, p. 12). *Amikwag* (beaver) also serve to educate the Anishinaabeg through traditional land-based methods of cultural education. For example, an Elder from Wauzhushk Onigum learned valuable skills for hunting, trapping, skinning, and cooking *amikwag* (beaver) from her family:

> *I used to go with my dad when he used to hunt beaver. And I used to go with my mom when she used to trap beaver. But I learned how to skin beaver from my grandma. And I finally killed my first beaver too when I lived with my husband in Wash Bay. That's the first time I ever shot a beaver, because we had no food and we had to go hunting so I shot beaver and skinned it, cooked the beaver and traded the fur."*
>
> *Elder, Washagamis Bay, AAK Individual Interview, June 18, 2019.*

Similarly, an Elder from Shoal Lake 40 explained how she learned practical skills for using *amikwag* (beaver) by watching her mother. She emphasized the importance of these skills for their survival:

> *I used to watch them, how they would prepare the rabbits and how they would prepare the beaver. How they would nail it on to the boards and how they'd scrape off everything off. I used to watch my mom and how she would, by the candlelight, just work on the beaver and just nail them. And you know that was income for them, for us kids to have food on the table… I used to watch her going on to those beaver houses sometimes and even where the muskrats were... and she put snares there, little traps. Because by that time my dad had already passed, so she would go out, and that was her living. She'd trap these things, and she'd prepare them, and she'd take them to the bay to buy food.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

An Elder from Niisaachewan recounted similar experiences of learning to prepare *amikwag* (beaver) skins from her mother during her youth (AAK Individual Interview, August 14th, 2019). "Beaver" and "Family Ties" were mentioned 25 times together during interviews. This emphasized the important role *amikwag* (beaver) played when connecting family members together during activities. She highlighted the importance of these teachings and noted that:

> *My mom would stretch them when we'd get home, sometimes like seven o'clock you can see her back in there stretching them. And it was hard. My grandma used to make moccasins for us… That was quite the learning experience. Catching beavers, skinned them... I could still do it. I still know everything, and I'm very happy I kept everything my grandparents taught me, my mom.*
>
> *Elder, Niisaachewan., AAK Individual Interview, August 14, 2019.*

Skinning *amikwag* (beaver) is a difficult task that requires attention to detail and skills learned over time. A community member from Shoal Lake 40 further spoke to the challenges of learning to prepare *amikwag* (beaver) pelts:

> *They would dry the pelts and I remember doing the skinning. Sometimes I made a mess because you can't make a mistake on that pelt because you're going to sell them. But sometimes I find myself, making a hole in the pelt, while skinning them.*
>
> *Shoal Lake 40 community member, AAK Individual Interview, May 22, 2019.*

According to an Elder from Niisaachewan, traditional education is a life-long process. However, he noted that while the Elders of today remain eager to learn, the youth are becoming less receptive to traditional methods of teaching:

> *I know most of the Elders here, it's never too old to learn anything. I was learning everything. And there's always things that I did with my dad, or my grandparents –*

hunting, how to trap beaver, and snare beavers and rabbits, foxes, deer. Our traditional ways... You can't teach kids now, eh? Today it's really, really different.

Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.

This change in cultural education can be linked to a decline in the practice of trapping itself. Community members have noted that the tradition of trapping *amikwag* (beaver) has diminished over the past few years from being a practice many participated in, to a practice that only few continue. "Trapping" was mentioned 44 times in the context of "Beaver" in discussions with community members, the most of any component, and "Loss of Tradition" was mentioned 27 times with "Beaver". This shows that when beaver populations began declining, many people felt as if they were losing a part of their tradition. "Beaver" was also mentioned 17 times in the context of "Livelihood", as for many, selling *amikwag* (beaver) pelts was a good source of income. It was identified that a major reason for the shift in trapping practices was the reduced value of *amikwag* (beaver) pelts. Information about trapping and its role in Anishinaabe livelihood can be found in Section 5.7.8.

"Hunting" was mentioned 30 times with "Beaver" as often, community members would hunt for beaver instead of trapping them. Additionally, "Beaver" was frequently mentioned with other animals, including "Deer" (19 times), "Muskrat" (16 times), and "Moose" (nine times). Hunting and trapping seasons often overlapped in the same areas, and many species were harvested together. An Elder from Shoal Lake 40 described this and highlighted the level of skill that was required for hunting *amikwag* (beaver):

There was a lot of the livelihood that we lost so much over the years. Like when we'd do wild beaver. At that time, they didn't use traps, they started shooting them with a .22. I had a 50 calibre .22 that I used to use. You've got to hit them right on the head too, not the body, because the felt has to be in one piece.

Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.

In addition to selling pelts, *amikwag* (beaver) were also hunted and trapped for sustenance. *Amikwag* (beaver) are a traditional food source to the Anishinaabeg that can be prepared in several different ways. In discussions with community members, "Diet" was mentioned 15 times in the context of "Beaver", as it was a staple food source for many years. As is customary, all parts of *amikwag* (beaver) were used to respect the life of the animal. For example, an Elder from Shoal Lake 40 shared that she "used to hear about people eating beaver tails." (AAK Individual Interview, June 12, 2019). Another Elder from Wauzhushk Onigum fondly recalled eating *amikwag* (beaver):

Beaver meat was good. Oh, I ate lots of that.

Elder, Wauzhushk Onigum, AAK Group Interview, June 18, 2019.

An Elder Niisaachewan identified that *amikwag* (beaver) meat was often dried and consumed as jerky. She also noted that unlike many other traditional food sources, *amikwag* (beaver) tend to be less prone to contamination because of their diet. She explained:

> *Some people used to come along just to come in and get the beaver jerky. It's good to eat because beaver, all they eat is sticks and stuff like that, wild rice.*
>
> *Elder, Niisaachewan, AAK Group Interview, September 17, 2019.*

Amikwag (beaver) could be consumed by itself or with other foods, such as *miinan* (berries), and was often harvested during similar seasons. In the interviews, "Beaver" overlapped with "Berries" nine times. An Elder from Wauzhushk Onigum shared that her grandmother would make pin cherry jam which they ate with *amikwag* (beaver) (AAK Group Interview, June 18, 2019). An Elder from Washagamis Bay shared that after he finished *amikwag* (beaver) hunting in the spring, he would begin blueberry picking in June (AAK Individual Interview, August 21, 2019).

Use of *amikwag* (beaver) extended beyond diet and trade, as it also offered potential for use as a traditional medicine. For example, an Elder from Wauzhushk Onigum shared how *amikwag* (beaver) castors were used:

> *My grandmother used to use beaver castors. Like the sacks. They look like sacks. They dry them up and then they grind them. It turns to powder then you put your sage, your wiikenh, tobacco and the beaver castors and burn them. Even sweat grass, you burn it all together and it has this smell. A nice smell.*
>
> *Elder, Wauzhushk Onigum AAK Individual Interview, June 18, 2019.*

In Anishinaabe tradition, *amikwag* (beaver) are respected throughout any practice that involves or uses the animals. An Elder from Wauzhushk Onigum described an example of how *amikwag* (beaver) are respected through sacred practices:

> *There were sacred practices that we did too. For instance, growing up on that old island we had two dogs. They were hunting dogs - they were small, and every time we had a beaver, we always put the bones in the water. It was part of our spirituality; we couldn't let the dogs eat the bones because it was a part of our traditional practices to do that.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 17, 2019.*

Throughout history, *amikwag* (beaver) have had a significant role in influencing the ecology and culture on *Mikinaak Minis* (Turtle Island). Despite changes in hunting and trapping practices, *amikwag* (beaver) remain an important species to the Anishinaabeg for their inherent spiritual value and their use as a tool for education, source of livelihood, source of food, and as medicine.

5.3.1.4 *Wauzhushk* (Muskrat, *Ondatra zibethicus*)

Table 9 Names for Muskrat

Common Name	Muskrat
Anishinaabemowin (singular)	*Wauzhashk*
Anishinaabemowin (plural)	*Wauzhushkwag*
Scientific Name	*Ondatra zibethicus*

5.3.1.4.1 About

Wauzhushk (muskrat, singular)/*wauzhushkwag* (muskrat, plural) is a rodent species from the family Cricetidae (Cassola F. , 2016). To the Anishinaabeg, *wauzhushkwag* (muskrats) were given the power of endurance, which they remain a symbol of today (Johnston, 1976, p. 53). With Original Man, a *wauzhushk* (muskrat) played a particularly important role in the creation of *Aki* (Earth). After the Great Flood, a *wauzhushk* (muskrat) swam to the bottom of the waters and retrieved a piece of earth for Original Man to create a new land with. Today, *wauzhushkwag* (muskrats) continue to make their nests in the water to honour their history (Benton-Banai, 1988, p. 34). On *Mikinaak Minis* (Turtle Island), *wauzhushkwag* (muskrats) can be found across present-day Canada and the United States. There are 16 subspecies of *wauzhushkwag* (muskrats) across this region (Miller J. E., 2018).

Wauzhushkwag (muskrats) are small and have a solid build. *Wauzhushkwag* (muskrats) vary in size and weight across regions but are generally larger in northern regions (Miller J. E., 2018). A *naabezhashk* (male muskrat, singular)/*naabezhashkoog* (male muskrat, plural) generally weighs around 1.1 kg, with a *noozhezhashk* (female muskrat, singular)/*noozhezhashkoog* (female muskrat, plural) weighing slightly less (Miller J. E., 2018). The weight of *noozhezhashkoog* (female muskrats) tends to increase closer to parturition (Miller J. E., 2018). *Wauzhushkwag* (muskrats) grow between 46 and 61 cm in length, with up to half of that length coming from their narrow tail (Miller J. E., 2018). *Wauzhushkwag* (muskrats) have a high blood oxygen content, enabling them to remain submerged underwater for periods of 15 minutes or longer, making *wauzhushkwag* (muskrats) skilled swimmers (Miller J. E., 2018; Lacki, Peneston, Adams, Vogt, & Houppert, 1989). The hind feet of *wauzhushkwag* (muskrats) are partially webbed and adapted for swimming, with their tail acting as a rudder (Miller J. E., 2018). The front feet of *wauzhushkwag* (muskrats) have long claws and are adapted for digging and feeding. *Wauzhushkwag* (muskrats) also have large front teeth that enable them to cut through their diet of woody vegetation (Miller J. E., 2018). The fur of *wauzhushkwag* (muskrats) is thick and short and varies in colour depending on the season and geographic location. Typically, their fur ranges between a few shades of brown. *Wauzhushkwag* (muskrats) will typically only live up to a year, but adults have an average life span of 3-4 years (Cassola F. , 2016).

Wauzhushkwag (muskrats) are a territorial species, especially during the breeding season. Fights between *wauzhushkwag* (muskrats) often break out within populations because of multiple breeding

partners. *Noozhezhashkoog* (female muskrats) and *naabezhashkoog* (male muskrats) breed between October and June and will have up to three litters per year, with each litter consisting of three to seven kits (Miller J. E., 2018).

In analysing the interviews, a co-occurrence model was created, that shows intersections of "Muskrat" with other components. This model is illustrated in Figure 32. "Muskrat" co-occurrence with other components. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Muskrat" and any given component shows the number of times "Muskrat" was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 32 shows that in total "Muskrat" was brought up 31 times, and "Trapping" was brought up 111 times. Of the 31 times "Muskrat" was brought up, 22 of those times it was in the context of trapping.

Figure 32. "Muskrat" co-occurrence with other components

5.3.1.4.2 Habitat

On *Mikinaak Minis* (Turtle Island), *wauzhushkwag* (muskrats) occur in most areas in present-day Canada and the United States. *Wauzhushkwag* (muskrats) were introduced to Europe in the early 20th century and have since become an invasive species. Across these regions, *wauzhushkwag* (muskrats) live in aquatic environments such as wetlands, swamps, culverts, ditches, borrow pits, and marshes (Miller J. E., 2018).

As long as there is enough water for building a den and food sources are readily available, *wauzhushkwag* (muskrats) are not limited to living in one specific ecosystem. *Wauzhushkwag* (muskrats) will build their nests near species such as bulrush, horsetail, and sedge, which act as a food source and as building materials for their dens (Lacki, Peneston, Adams, Vogt, & Houppert, 1989). A community member from Shoal Lake 40 shared that *wauzhushkwag* (muskrats) could be caught in these areas:

> *Just around the point area and the shoreline, that's where she caught the muskrats. Especially where she lived, it was kind of a grassy area there. That's where she got the muskrats from.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, May 22, 2019.*

Throughout Treaty 3 territory, *wauzhushkwag* (muskrats) can be found in almost every water body with the suitable conditions. An Elder from Wauzhushk Onigum shared that his father used to trap *wauzhushkwag* (muskrats) in Witch Bay (AAK Group Interview, June 17, 2019). An Elder from Niisaachewan shared that the area around Hay Island once had plenty of *wauzhushkwag* (muskrats) (AAK Individual Interview, September 18, 2019). Another Elder from Niisaachewan shared that he used to trap *wauzhushkwag* (muskrats) along his trapline near Longbow Lake, and across the entire Niisaachewan reserve area (AAK Individual Interview, September 18, 2019). An Elder from Wauzhushk Onigum also shared how her family's trapping grounds spanned far distances, as her family trapped *wauzhushkwag* (muskrats) in Bald Indian Bay and Mud Bay (AAK Individual Interview, June 18, 2019). An Elder from Shoal Lake 40 also trapped *wauzhushkwag* (muskrats) in different locations, including the southern region of Falcon Lake and around Mud Lake (AAK Individual Interview, May 23, 2019).

The home range of *wauzhushkwag* (muskrats) varies depending on where their den is located. *Wauzhushkwag* (muskrats) living in a small pond may have its home range as just the size of the pond if all needs are met. *Wauzhushkwag* (muskrats) living in a larger body of water, such as a marsh or wetland, may have a home range of 60 m or more, increasing up to 220 metres during seasonal dispersion (Miller J. E., 2018).

Wauzhushkwag (muskrats) utilize shallow water bodies to build their nests (Miller J. E., 2018). Typically, *wauzhushkwag* (muskrats) will build one of two styles of nests. The style chosen will depend on local conditions. Both provide shelter from weather and predators. *Wauzhushkwag* (muskrats) will build a lodge situated within the water in areas where there is a stable water level, such as a pond, wetland, or marsh (Miller J. E., 2018). Lodges are more common and created from vegetation shaped into domes (Miller J. E., 2018). These lodges will have multiple underwater entrances. During the Creation story, the *wauzhushk* (muskrat) collected a piece of soil in the shape of a ball from the bottom of the waters for Original Man. Original Man used this small ball of soil to create the new *Aki* (Earth). In present-day, *wauzhushkwag* (muskrats) continue to build their lodges in this shape to replicate the ball of soil that created *Aki* (Earth). In areas where water levels are more unstable, *wauzhushkwag* (muskrats) will burrow into the banks of ditches, rivers, and streams (Miller J. E., 2018). These dens are accessed by one or more underwater entrances.

Wauzhushk (muskrat) habitat is greatly influenced by water levels. *Wauzhushk* (muskrat) dens require water that is deep enough so that the dens do not completely freeze over winter, continuing to allow them access underneath the ice. Hydroelectric dams that alter the surrounding water levels have been known to disrupt *wauzhushk* (muskrat) habitat. An Elder from Wauzhushk Onigum noted that:

> *The dams have a special effect on the muskrat because if the water's too low, they freeze in the wintertime, the muskrat. It's because they don't have enough water.*
>
> *Elder, Wauzhushk Onigum., AAK Group Interview, August 14, 2019.*

When there are changes in *wauzhushk* (muskrat) habitat or food becomes scarce, *wauzhushkwag* (muskrats) will relocate to a new area. An Elder from Niisaachewan shared this story that echoes this:

> *Ever since they started building the dams, flooding. In the wintertime, they would drown the rats, so they had to find a way to forage over, went over to the Lake of the Woods.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 17, 2019.*

5.3.1.4.3 Diet

Wauzhushkwag (muskrats) are mainly herbivores. *Wauzhushkwag* (muskrats) are not picky and will consume a wide variety of aquatic plants and grasses that grow around the shallow waters of their dens. These species include horsetail, sedges, cattails, and bulrush (Lacki, Peneston, Adams, Vogt, & Houppert, 1989). An Elder from Niisaachewan noted that *wauzhushkwag* (muskrats) "forage for whatever they can feed on" (AAK Group Interview, September 17, 2019). *Wauzhushkwag* (muskrats) also eat *manoomin* (wild rice). Like *wauzhushkwag* (muskrats), *manoomin* (wild rice) requires a stable water level. Another Elder from Niisaachewan recalled the relationship between the two species:

> *The wild rice… and I haven't seen that much of muskrat dams. Those normally you always see when you have a rice field. When I went out there not this year, but surrounding areas, the rice fields are still not fully developed to grow because of our water level. And it takes years for it to regrow itself again. It's like watering a plant without proper soil. If you don't have that...*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 18, 2019.*

To make eating woody plants underwater easier, *wauzhushkwag* (muskrats) have two large incisors that protrude outside of their closed mouths. In cases where vegetation is scarce, *wauzhushkwag* (muskrats) will consume animal matter, such as frogs, clams, turtles, and mussels (Miller J. E., 2018). As *wauzhushkwag* (muskrats) are dependent on their aquatic environments for food, in times of drought or flooding, *wauzhushkwag* (muskrats) can travel long distances to relocate to an area with greater food availability (Miller J. E., 2018). An Elder from Niisaachewan recalled that *wauzhushkwag* (muskrats) were once flooded out of the area and had to relocate (AAK Group Interview, September 17, 2019). He

noted that some *wauzhushkwag* (muskrats) still "come up the river, but there's hardly any around here" (AAK Group Interview, September 17, 2019).

5.3.1.4.4 Population Trends

Wauzhushkwag (muskrats) made their first appearance when they were placed on *Aki* (Earth) by *Kizhe Manitou* (the Creator). *Wauzhushkwag* (muskrats) first appeared on the fossil record in the early Pliocene Epoch, around 4.1 million years ago (Martin, 2008). The biology of *wauzhushkwag* (muskrats) species has remained virtually unchanged over the past 3.75 million years (Martin, 2008). As a result of the sacrifice the *wauzhushk* (muskrat) made during the Great Flood, *Kizhe Manitou* (the Creator) made it so that *wauzhushkwag* (muskrats) will always be on *Aki* (Earth), no matter what. Even when the wetlands and marshes dry up and their homes are destroyed, *wauzhushkwag* (muskrats) will be able to continuously grow and multiply (Benton-Banai, 1988, p. 34). *Wauzhushkwag* (muskrats) in Treaty 3 territory of northwestern Ontario are common and have a stable population (Cassola F. , 2016).

Wauzhushkwag (muskrats) have played an important role in trapping for centuries. "Muskrat" was most frequently mentioned in the context of trapping, as trapping was a source of income, food, education, and tradition. More information on trapping can be found in Section 5.7.8. Historically, *wauzhushkwag* (muskrats) played an important role in the North American fur trade, which began in the 16th century. The fur of *wauzhushkwag* (muskrats) was highly sought after, making *wauzhushkwag* (muskrats) a popular species to trap during this period, which eventually led to a decrease in their population. The population has bounced back, as *wauzhushkwag* (muskrats) are now a species of least concern on the International Union for Conservation of Nature's ("IUCN") Red List for Threatened Species (Cassola F. , 2016). In recent years, *wauzhushk* (muskrat) populations in Treaty 3 territory have begun to decline again. An Elder from Wauzhushk Onigum shared that the *wauzhushkwag* (muskrats) in the region have migrated to the area of Sabaskong Bay (AAK Group Interview, August 14, 2019). An Elder from Niisaachewan, shared a similar story about the migrating *wauzhushkwag* (muskrats):

> *There used to be a lot of muskrats. Now all the muskrats migrated from the reserve to Lake of the Woods, and from Lake of the Woods they were getting flooded out on the river system. So, they end up in Sioux Narrows. They were getting flooded out there, so they end up... Last time I heard; they were up in Sabaskong where the water level is leveled.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 19, 2019.*

Wauzhushk (muskrat) was one of many species that were trapped and was frequently mentioned in the context of "Hunting", along with other species such as "Deer", "Beaver", and "Moose". Hunting and trapping locations often overlapped, making changes to the landscape even more damaging to the Anishinaabe way of life. More information on hunting *wauzhushkwag* (muskrats) can be found in Section 5.7.7. Often, the seasons for hunting and trapping would occur concurrently, with *wauzhushkwag* (muskrats) and *ma'iinganag* (grey wolves) trapped during hunting trips for *moozoog* (moose) and *waawaashkeshiwag* (deer).

An Elder from Niisaachewan shared that the decline in *wauzhushk* (muskrat) populations began in the 1960s, and although *wauzhushkwag* (muskrats) can still be found in the region, they can be found at significantly lower numbers (AAK Group Interview, September 17, 2019). An Elder from Wauzhushk Onigum shared a similar statement, that it had been over 30 years since she last hunted for *wauzhushkwag* (muskrats) (AAK Individual Interview, June 18, 2019).

5.3.1.4.5 Wauzhushkwag (muskrats) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *waushushkwag* (muskrats). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Wauzhushkwag (muskrats) played a pivotal role in the Anishinaabe Creation Story of *Mikinaak Minis* (Turtle Island). After the Great Flood, the *wauzhushk* (muskrat) was the only successful animal that swam to the bottom of the sea to collect soil for the new *Aki* (Earth). From this piece of soil, a new *Aki* (Earth) was created from the back of a turtle, and *Mikinaak Minis* (Turtle Island) was born. A community member from Grassy Narrows shared that this piece of soil then became the source of all the foods and medicines that we have today (AAK Individual Interview, September 13, 2019).

In Anishinaabe tradition, all animals symbolize an ideal that Anishinaabeg should make a part of themselves (Johnston, 1976, p. 53). Across different communities, *wauzhushkwag* (muskrats) hold importance and symbolism in many ways. An Elder from Washagamis Bay shared that the *wauzhushk* (muskrat) held its importance in the historical ties to the region and its role in teachings (AAK Group Interview, July 23, 2019). *Wauzhushkwag* (muskrats) were mentioned nine times when discussing sacred sites, due to their importance in the Creation Story. "Muskrat" was also mentioned 11 times with "Loss of Tradition", as the population of the species has been declining and sacred sites of *wauzhushkwag* (muskrats) are being lost. An Elder from Washagamis Bay expressed how the Anishinaabeg are losing sacred sites of the *wauzhushkwag* (muskrats):

> *Those areas had fossilized muskrat and things like that on the rock there that they blasted all away there when they built that stuff… They destroyed a lot of that area. They were just talking about our teachings about that muskrat and how that name became very prominent in the area here. They talked about that muskrat visiting our area, the spirit of the muskrat, the muskrat itself and they really like the area because of the way that people treated them. And there's tracks, which will be the fossilized tracks and whatnot. And the story's told the muskrat left from there and went north and said it would return one day, but it hasn't returned.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.*

For many, *wauzhushkwag* (muskrats) served as an educational tool within families. In discussions with community members, "Muskrat" was mentioned four times in the context of "Teachings" and 12 times in the context of "Family Ties", emphasizing the important role the species played in connecting families with each other and with the land. Parents and grandparents would often teach children how

to trap, skin, and prepare *wauzhushkwag* (muskrats). More information about trapping *wauzhushk* (muskrat) teachings and cohesion can be found in Section 5.7.8, “Trapping”. *Wauzhushkwag* (muskrats) continue to be a source for teaching youth about the land and the need to care for *Aki* (Earth).

Trapping *wauzhushkwag* (muskrats) also provided a source of income for families. “Livelihood” was often mentioned when speaking about *wauzhushkwag* (muskrats), as the fur of *wauzhushkwag* (muskrats) was a valuable source of income. Families would often rely on the income made from trapping *wauzhushkwag* (muskrats) and other fur bearing species. The fur of *wauzhushkwag* (muskrats) was in its prime during winter months, when it was thicker and softer, making for more valuable pelts. Information on trapping and Anishinaabe livelihood can be found in Section 5.7.8, “Trapping”.

Wauzhushk (muskrat) was also a primary food source for many homes. “Muskrat” was discussed with “Diet” eight times, emphasizing the importance of *wauzhushkwag* (muskrats) to the diet of the Anishinaabeg. A community member from Shoal Lake 40 shared a story of their grandmother trapping *wauzhushkwag* (muskrats) and using the meat and the fur:

> *My Grandma did some trapping too. But mostly, she was going for muskrats. While she made food from the meat too, and then she made pelts too. A lot of them and she sold them. I don't know where she sold them, she sold them anyway.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, May 22, 2019.*

An Elder from Washagamis Bay shared that before colonization, people rarely became sick, as they ate wild food such as *wauzhushkwag* (muskrats) (AAK Individual Interview, August 21, 2019). This is another example of just how important *wauzhushkwag* (muskrats) were to the traditional Anishinaabe diet. A community member from Shoal Lake 40 shared that there were different methods to preparing *wauzhushkwag* (muskrats):

> *They eat what they caught, beaver and muskrat. I like muskrat. They used to dry them too, in the drying rack. That's what they did, to preserve their food.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, May 22, 2019.*

An Elder from Shoal Lake 40 shared that for a feast, *wauzhushkwag* (muskrats) would be smoked (AAK Individual Interview, June 10, 2019). This was also a way for communities to store food over the winter months. An Elder from Niisaachewan shared this story about how he used to prepare *wauzhushkwag* (muskrats) for his family:

> *We'd eat beaver, muskrats, stuff like that. I'd say it's beef. But it's the way we cooked it. Got rid of the wild game taste.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

The *wauzhushk* (muskrat) has remained an important symbol of Anishinaabe tradition throughout history. Beginning with their pivotal role in the Creation Story, *wauzhushkwag* (muskrats) have held

great spiritual value for their uses as a food and income source, and a way for families to bond together over trapping and preparing skins.

5.3.1.5 *Ma'iingan* (Wolf, *Canis lupus*)

Table 10: Names for Grey Wolf

Common Name	Grey Wolf
Anishinaabemowin (singular)	*Ma'iingan*
Anishinaabemowin (plural)	*Ma'iinganag*
Scientific Name	*Canis lupus*

5.3.1.5.1 About

The *ma'iingan* (grey wolf, singular)/*ma'iinganag* (grey wolf, plural) belongs to the Canidae family of the order Carnivora. The range of *ma'iingan* on *Mikinaak Minis* (Turtle Island) historically included nearly all of *Mikinaak Minis* (Turtle Island) but present-day distributions are largely restricted to the regions of Canada and Alaska as a result of extirpation (Carbyn & Paquet, 2003). On *Mikinaak Minis* (Turtle Island), specifically present-day Canada, *ma'iinganag* (grey wolves) occupy 80% of their original range and are spread throughout all territories and provinces except Nova Scotia, New Brunswick, and Prince Edward Island, where they have been extirpated (Government of Canada, 2008). This long history of decimation throughout other parts of *Mikinaak Minis* (Turtle Island) makes it important to cherish and protect Canada's stable *ma'iingan* (grey wolf) populations (Carbyn & Paquet, 2003). In Anishinaabe tradition, *ma'iinganag* (grey wolves) originated when Original Man wondered why all the animals came in pairs, but he was on *Aki* (Earth) alone. *Kizhe Manitou* (the Creator) sent a *ma'iingan* (grey wolf) to walk *Aki* (Earth) with Original Man and the two of them realized their comradeship with one another and all other creation (Benton-Banai, 1988, p. 8).

There are two subspecies of *ma'iinganag* (grey wolves) found throughout Ontario; the northern grey wolf (*C. lupus occidentalis*) and the eastern wolf (*C. lupus lycaon*) (Government of Canada, 2008). Northern *ma'iinganag* (grey wolves) are listed by the Committee on the Status of Endangered Wildlife in Canada ("COSEWIC") as not at risk and therefore holds no *Species at Risk Act* ("SARA") provisions (Species At Risk Public Registry, 2019). However, as a result of hybridization with other Canis subspecies, COSEWIC listed eastern *ma'iinganag* (grey wolves) as threatened in May 2015 with an estimated population of less than 1,000 individuals (COSEWIC, 2015).

In analysing the interviews, a co-occurrence model was created, that shows intersections of "Wolf" with other components. This model is illustrated in Figure 33. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Wolf" and any given component shows the number of times "Wolf" was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 33

shows that in total “Wolf” was brought up 15 times, and “Loss of Tradition” was brought up 255 times. Of the 15 times “Wolf” was brought up, three had to do with “Loss of Tradition”.

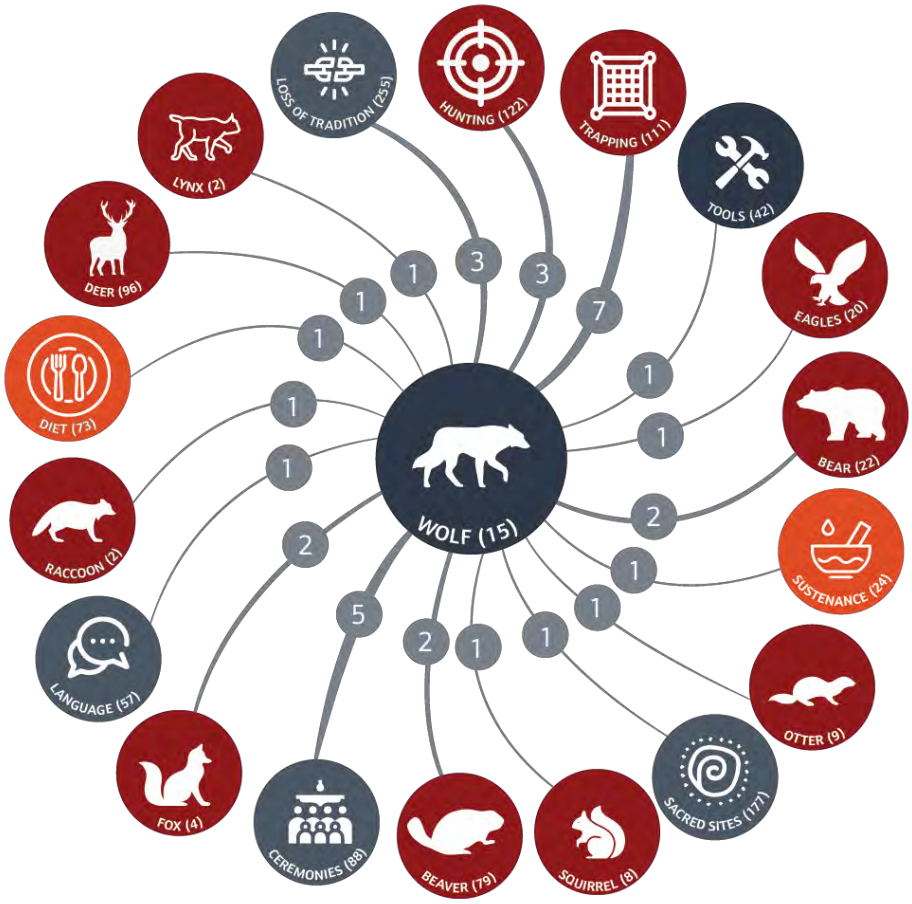


Figure 33. “Wolf” co-occurrence with other components

5.3.1.5.2 Habitat

Ma’iinganag (grey wolves) are commonly found within boreal forest habitats that cover Treaty 3 territory’s north-western Ontario region (Government of Ontario, 2019; Manitoba Sustainable Development). An Elder from Shoal Lake 40 noted his observations on the abundance and presence of *ma’iinganag* (grey wolves) around the Lake of the Woods and Kenora regions.

> *We still have lots of wolves around. We see them on the highway at nighttime. Sometimes over the years we see an odd one in the daytime, but the nighttime you see them quite a bit.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.*

Ma’iinganag (grey wolves) are considered to be habitat generalists due to their ability to live in a wide range of habitats such as boreal, tundra, cordillera, and pacific coast environments (Carbyn & Paquet,

2003). As a result of such a wide habitat range, local populations of *ma'iinganag* (grey wolves) can become quite adapted to their environments and will specialize in region-specific denning, habitat use and prey selection. (Mladenoff, Sickley, Haight, & Wydeven, 1995). An Elder from Washagamis Bay shared how *ma'iinganag* (grey wolves) have persisted in the area even after the expansion of cottagers started in the 1990s:

> *Since these guys' cottages have been here, some people have lost seven or eight of their dogs to the wolves. You can hear them too… sometimes at night, you can hear the wolves howling.*
>
> *Elder, Washagamis Bay, AAK Group Interview, August 21, 2019.*

The home range of *ma'iinganag* (grey wolves) must meet all of the essential requirements for the *ma'iinganag* (grey wolves) to survive such as a sufficient food source, denning locations and shelter (Carbyn & Paquet, 2003). While all of these factors are important to the survival of *ma'iinganag* (grey wolves), the habitat in which they reside is most influenced by the availability of prey rather than habitat itself (Government of Canada, 2008).

5.3.1.5.3 Diet

Ma'iinganag (grey wolves) are carnivores and well adapted to prey on large ungulates such as *waawaashkeshiwag* (deer), *omashkooz* (american elk), *adik* (woodland caribou), and *moozoog* (moose) (Wayne, et al., 1995). However, *ma'iinganag* (grey wolves) are also predators of *amik* (beaver), *akakojiishag* (groundhog) and *waaboozoog* (snowshoe hare) (Rausch, 1967). *Waawaashkeshiwag* (deer) are of notable importance for *ma'iinganag* (grey wolves) as they are an integral source of food. As a result, their population dynamics are thoroughly intertwined, where changes to one's population will be reflected in the other (Government of Canada, 2008). This relationship between *ma'iinganag* (grey wolves) and *waawaashkeshiwag* (deer) can be seen in Figure 33. Mentions of "Deer" were common when discussing *ma'iinganag* (grey wolves) during the *Anishinaabe Aki Kakendamowin* interviews. Of the 96 times "Deer" was mentioned in discussions with community members, five times it was in the context of "Wolf". An Elder from Shoal Lake 40 shared his observations of the relationship between *ma'iinganag* (grey wolves) and *waawaashkeshiwag* (deer) when he discussed the increased movement of *waawaashkeshiwag* into Kenora "on account of the wolves" (AAK Group Interview, May 23, 2019). This influx of *waawaashkeshiwag* (deer) has ultimately increased the sightings of *ma'iinganag* (grey wolves) who follow the *waawaashkeshiwag* (deer) in to the Kenora area.

5.3.1.5.4 Population Trends

On a global scale *ma'iinganag* (grey wolves) are listed by the International Union for Conservation of Nature ("IUCN") as least concern with an overall stable population (Boitani, Phillips, & Jhala, 2018). In Canada, populations of *ma'iinganag* (grey wolves) are also stable and estimated to be between 50,000 and 60,000 individuals. While national populations are stable, localized populations of *ma'iinganag* (grey wolves) can differ as a result of a loss of prey availability in a specific region (Government of

Canada, 2008). Within the province of Ontario, populations of *ma'iinganag* (grey wolves) are estimated to be around 9,000 individuals (Ministry of Natural Resources and Forestry, 2020). Many of the Niiwin Wendaanimok community members noted the strong presence of *ma'iinganag* (grey wolves) in the area through their experiences of trapping and hunting. One of these accounts were by two community members from Shoal Lake 40 who recounted of traplines set for *ma'iinganag* (grey wolves) near Deadman Portage and Carl Bay.

> *Somewhere in there is where we got that wolf. I used to check those traps…*
>
> *Community members, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

Additionally, an Elder from Washagamis Bay recalled that although he does not personally hunt *ma'iinganag* (grey wolves), he did recall of the presence of *ma'iinganag* (grey wolves) around Clearwater Bay and Shoal Lake Road:

> *You have to look out for wolves, there's wolves in there…I don't hunt wolves, but there's some trappers that do that there.*
>
> *Elder, Washagamis Bay, AAK Group Interview, August 21, 2019.*

Generally, *ma'iinganag* (grey wolves) mate from January to April, with some variance due to latitudinal differences (Carbyn, 1987). Pups are birthed starting early April and into June. Mothers will search for a whelping den, a type of natural shelter or crevice, for the birth such as holes, hollowed logs, or crevices between rocks. During community discussions, members from Wauzhushk Onigum shared their observation of an active den of *ma'iinganag* (grey wolves) within the area along Highway 17. Within a pack of *ma'iinganag* (grey wolves), there are generally three breeding females per season. However, when *populations of ma'iinganag* (grey wolves) are under exploitation or experiencing increased mortality, they have been found to respond with higher birth percentages, (Fuller & Novakowski, 1955); (Rausch, 1967). This is achieved by more females per pack giving birth to a higher number of pups (Government of Canada, 2008). Females will rear her pups with the assistance of the entire pack, a method known as cooperative rearing (Carbyn & Paquet, 2003).

5.3.1.5.5 Ma'iingan (grey wolf) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *ma'iinganag* (grey wolves). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Ma'iinganag (grey wolves) have a significant history with the Anishinaabeg, especially through the story of the comradeship bond between the *ma'iingan* (grey wolf) and the Original Man (Benton-Banai, 1988, p. 8). An Elder from Niisaachewan described a unique bond he had built between an abandoned pup which he had cared for*:*

[The wolf pup] eventually became the leader of a pack…he actually brought a deer hindquarter for me… he dragged it over to me and I pushed it towards him, then he'd bring it back again.

Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.

Ma'iinganag (grey wolves) share many commonalities with humans. *Ma'iinganag* (grey wolves) are a family-oriented species, where pups are raised as a community and hunting skills are passed to younger generations. Starting at a young age, pups learn hunting techniques from adult pack members and learn social interaction through play with other pups (Packard J. , 2012). With a strong instinct to raise young, pack members assist the mother with rearing her young (Carbyn & Paquet, 2003). Additional assistance by pack members is observed as they will acquire prey for the mother, who requires a high nutritional demand when it comes to providing milk for her pups. This method of cooperative rearing increases the chances of survival for both the mother and her young (Boyd & Jimenez, 1994). The familial commonalities between man and *ma'iinganag* (grey wolves) were emphasized by an Elder from Wauzhushk Onigum when he spoke of the creation of man and *ma'iinganag* (grey wolves) as intertwined with one another:

The creator brought us down to Earth. That's part of our DNA as Anishinaabe people… But it's also a creation story of where the wolf becomes involved in that process.

Elder, Wauzhushk Onigum, AAK Individual Interview, August 21, 2019.

Ma'iinganag (grey wolves) also serve as a symbol of perseverance, guardianship, and humility (Johnston, 1976, p. 53; Bouchard & Martin, 2016). Where in the wild, the strongest *ma'iinganag* (grey wolves) will defend their pack during times of danger. Male *ma'iinganag* (grey wolves) will demonstrate aggression towards intruders in order to protect their offspring. This is important as the members of a pack invest significant energy in the cooperative rearing process by spending additional time hunting, cleaning, and caring for the young. Additionally, protection of females is important to ensure future offspring. Aggression in males has shown to increase with age – likely a result of these members having more descendants within the pack to protect (Cassidy, Mech, MacNulty, Stahler, & Smith, 2017). Regarding the Seven Sacred Teachings, *ma'iinganag* (grey wolves) demonstrate humility as *ma'iinganag* (grey wolves) live for the pack and for the protection of other pack members. An Elder from Wauzhushk Onigum discussed the principle of humility in relation to the Anishinaabeg when he shared the journey that a person embarks throughout life. He shared the importance on remembering that it was *Kizhe Manitou* (the Creator) who brought man down to *Aki* (Earth) and thus, man must remain humble until the end when we leave *Aki* (Earth) (AAK Individual Interview, August 21, 2019). *Ma'iinganag* (grey wolves) also carry cultural importance for the Anishinaabeg, as they provide the opportunity for trapping and hunting activities. This was also noted during the *Anishinaabe Aki Kakendamowin* interviews. As illustrated in Figure 33, trapping had the strongest relationship with *ma'iinganag* (grey wolves) with a total of 11 co-occurrences. A memory of *ma'iingan* (grey wolf) trapping was shared by an Elder from Shoal Lake 40:

> *I married a trapper… so I had to learn how to do all the skinning, I would skin everything that he brought in—wolves, coyotes, beavers, fishers.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

Another Elder from Shoal Lake 40 also recalled his memories of trapping *ma'iinganag* (grey wolves) within the Shoal Lake 40 area:

> *In the wintertime I used to Skidoo…trapping for foxes and wolves*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 23, 2019.*

While hunting *ma'iinganag* (grey wolves) was not practiced by all members of the Niiwin Wendaanimok Partnership, the importance of *ma'iinganag* (grey wolves) resounded all around. Whether it be the symbolism and meaning behind *ma'iinganag* (grey wolves) or the beauty they hold when seen in person, *ma'iinganag* (grey wolves) are animals that holds great cultural importance for the Anishinaabeg of Treaty 3 territory.

Knowledge of the Skies

5.4

WAUZHUSHK ONIGUM
NIISAACHEWAN
WASHAGAMIS BAY
SHOAL LAKE 40

narratives

5.4 Knowledge of the Skies

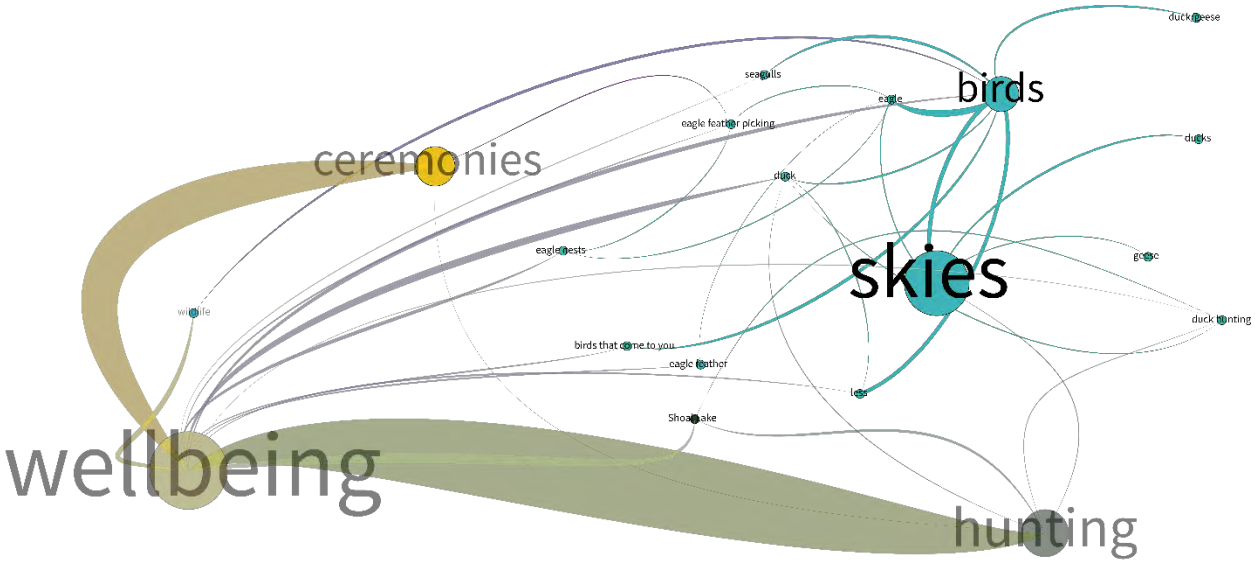


Figure 34: Connections of Skies to Anishinaabe Wellbeing

5.4.1 *Bagidanaamowin* (air) quality

In Anishinaabemowin, *bagidanaamowin* (air) is synonymous to "breathe", demonstrating that *bagidanaamowin* (air) is not simply a component of the environment but is required to support life on *Aki* (Earth). Clean *bagidanaamowin* (air) is depended upon to ensure vegetation, animals and humans can exist on *Aki* (Earth). The quality of *bagidanaamowin* (air) depends on a variety of pollutants such as particulate matter and dusts, noise, odours, and light.

Specific measurements of baseline *bagidanaamowin* (air) quality in the Kenora/Lake of the Woods region are not available. The nearest *bagidanaamowin* (air) quality monitoring station is the Winnipeg, Manitoba Ellen Street *bagidanaamowin* (air) monitoring station located at a distance of 209.8 km from Kenora (Government of Manitoba, 2020). The nearest Ontario *bagidanaamowin* (air) monitoring station is the Thunder Bay *bagidanaamowin* (air) monitoring station located at a distance of 488.4 km from Kenora (Government of Ontario, 2020). To identify suitable background concentrations, reference has been made to results recorded as part of ongoing monitoring carried out by the Province of Manitoba (Government of Manitoba, 2020) and the Province of Ontario (Government of Ontario, 2020). Annual averages of ground-level ozone (O_3), fine particulate matter ($PM_{2.5}$) and nitrogen dioxide (NO_2) for Winnipeg and Thunder Bay are summarized in Table 11and Table 12, respectively.

Table 11. O_3, $PM_{2.5}$, and NO_2 Monitoring Data for 2019 from the Winnipeg, Manitoba Ellen Street monitoring station.

Pollutant	**Concentration in parts per billion (ppb)**		
	Max 1-hour	Max 24-hour	Mean

O_3	42	35.5	11.3
$PM_{2.5}$ (µg/m³)	207.2	77.6	5.4
NO_2	105.9	26.4	8.3

Table 12. O_3, $PM_{2.5}$, and NO_2 Monitoring Data for 2017 from the Thunder Bay, Ontario monitoring station.

Pollutant	**Concentration in parts per billion (ppb)**		
	Max 1-hour	Max 24-hour	Mean
O_3	51	44	23.4
$PM_{2.5}$	34	22	5.1
NO_2	51	30	6.7

The measured concentrations of ground level ozone, fine particulate matter, and nitrogen dioxide obtained from the Winnipeg, Manitoba station did not exceed the Manitoba Ambient Air Quality Objectives or Canadian Ambient Air Quality Standards (Government of Manitoba, 2005). The measured concentrations of nitrogen dioxide, fine particulate matter, and ground level ozone obtained from the Thunder Bay, Ontario station did not exceed the Ontario Ambient Air Quality Criteria or the Canadian Ambient Air Quality Standards (Government of Ontario, 2017; Government of Ontario, 2019).

Kenora is located in a predominantly rural area with the nearest large city being Winnipeg, Manitoba, at a distance of 209.8 km. *Bagidanaamowin* (air) quality in this area should be generally very good compared with larger cities and commercial and industrial areas in Ontario. The closest regional influences on *bagidanaamowin* (air) quality are associated with vehicular traffic on adjacent community roads and Highway 17A (Kenora Bypass), as well as seasonal smoke from forest fires.

Transportation related *bagidanaamowin* (air) pollutants are emitted by most vehicles which run on hydrocarbons. Directly emitted primary pollutants include carbon monoxide (“CO”), nitrogen oxides (“NOx”), and volatile organic compounds (“VOCs”) (Ontario Ministry of Transportation, 2011). *Bagidanaamowin* (air) pollutants such as smog (composed of multiple chemicals including nitrogen oxides, sulphur dioxide, carbon monoxide, VOCs, particulate matter, and ground-level ozone), particulate matter, and ground level ozone affect wildlife health similarly to human health. This can include causing damage to the lungs and cardiovascular systems, disrupt endocrine function, cause organ injury, increase vulnerability to stress and disease, reduce reproductive success, and cause premature death (Government of Canada, 2012). When abundance of a species is impacted due to changes in *bagidanaamowin* (air) quality, this can significantly affect the abundance and health of other interdependent species. Bioaccumulation of *bagidanaamowin* (air) pollutants is also of particular concern, especially for species consumed by humans (Government of Canada, 2012). A Wauzhushk

Onigum Elder discussed *bagidanaamowin* (air) pollution and the effects on species upon which the Anishinaabeg depend on for food:

> *They use spraying teams or planes, airplanes, jets. You know—all kinds of stuff like that. Even the big trucks, transports. You can see the thing coming out. And trains, the smoke coming out. So, one time I heard in Grassy, I guess they were going to have a feast. They couldn't find any moose out there. There used to be lots of them. That's what they used to say, you have to slow down because you might hit a moose on the highway. Now I don't see them anymore, even in Tunnel Bay.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

5.4.1.1 Noise

Adjacent land uses through the area of Highway 17 in question are predominantly logging/industrial, dispersed residential, and open space. The above-mentioned influences on regional *bagidanaamowin* (air) quality (Section 5.4.1), would contribute to regional noise levels as well. Noise influence is dependent on the nature of the source and landscape features surrounding the source that may act to attenuate noise (Aylor, 1972; Goff & Tsui, 1973). Baseline noise information is not available for the Kenora region; however, the area is primarily influenced by large trucks and other vehicular traffic on Highway 17. An Elder from Washagamis Bay said "…you hear trains, and stuff like that, from a long way [away]" (AAK Group Interview, August 21, 2019).

Noise pollution has a negative effect on wildlife species through habitat quality reduction, masking of natural sounds essential to species survivability, and increasing stress levels (Jain, Cui, & Domen, 2016). Chronic noise exposure is particularly disruptive to species dependant on sound for hunting and communication (Bayne, Habib, & Boutin, 2008). Species reliant on vocal communication have been shown to avoid areas with higher levels of noise pollution (Barber, Crooks, & Fristrup, 2009). An Elder from Wauzhushk Onigum shared the importance of silence when tracking species:

> *…You walk in the bush, you hear a squirrel there, but you don't see it. Okay. So, you walk again. He chirps again. He keeps chirping. So, next thing you know, he gets closer. Oh, there he is. You don't see him, but you got to trick him. Same with a partridge. When you're walking you hear [them] flapping their wings. Then, you'll stop. And what happens, you started walking again and you'll walk, and you stop, they'll flap their wings again... if you wait for him in an open area, you got something to eat.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, August 14, 2019.*

Foraging wildlife species population reductions can negatively impact seed dispersion, thereby altering ecosystem services and diversity (Francis, Kleist, Ortega, & Cruz, 2012). The nature of most noise pollution is closely associated with general development, city soundscapes, and vehicular traffic, meaning that noise pollution often exacerbates problems related to development which have already increased habitat fragmentation and destruction (Barber, Crooks, & Fristrup, 2009).

5.4.1.2 Dust

Fugitive dust emissions include very small particles which remain suspended in the *bagidanaamowin* (air) for some time (Government of Ontario, 2017). The amount of dust emissions from mechanical disturbance of granular material is affected by a wide range of factors including climatic conditions, control measures in place, material characteristics, and frequency and amount of mechanical disturbance (Government of Ontario, 2017). The effects of fugitive dust emissions are influenced by dust composition, particle size distribution, dispersion pattern, and amount emitted. Impacts of fugitive dust emissions can range from surface staining to direct impacts on human health. Fugitive dust emissions can result from a variety of sources, including paved roads and common industrial activities such as blasting (Government of Ontario, 2017).

Human health impacts of fugitive dust vary depending on the makeup and size of the particles emitted. Smaller particles pose the greatest risk of health problems as they can be inhaled into the lungs. Those with existing heart and respiratory diseases, children, and the elderly are most at risk from inhaling fugitive dust (New Hampshire Department of Environmental Services, 2019). Human health impacts of fugitive dust emissions include respiratory distress, olfactory and pharyngeal irritation, heart attacks and aggravated heart disease, increased severity of respiratory diseases, and premature death (New Hampshire Department of Environmental Services, 2019). Studies undertaken on the effects of high dust concentrations on livestock suggested an association between fugitive dust and animal health problems such as respiratory system irritation and increased susceptibility to serious respiratory tract diseases (Aleadelat & Ksaibati, 2018).

The effects of fugitive dust emitting from blasting extend beyond health effects on wildlife and community members to the Anishinaabeg. Sources of dust in the area include human activities such as vehicular emissions, unpaved roads, smokestacks, industrial emissions, and construction. Blasting is another key source of localized dust. Blasting of rock has commonly occurred around the Niiwin Wendaanimok communities for the purpose of expanding waterways as well as other commercial and industrial developments, often without previous consultation or consent. An Elder from Niisaachewan talked about the history of blasting and developments in the area:

> *The [government] would come in, say "we would like this, like that" and the things not talked about [are] how forcefully that these lands were taken away, and you could hear that [from] some of the older ones today. They talk about yeah, we got kicked out of that place. Indian agents would come in, so you guys have to go. Somebody else…And even for this community when Hydro One was coming across and they started blasting a lot of…The few that were here, a lot of them got kicked out or chased away, and same thing, forcefully.*
>
> *Elder, Niisaachewan, AAK Group Interview, August 15, 2019.*

An Elder from Niisaachewan expressed frustration at past blasting, saying:

> *That's how important it was, it was like a community here, it was like a church where you... life and such. They blasted it away without even consulting the landowners here. That was more important—to blast it, to ease the water [movement].*
>
> *Elder, Niisaachewan, AAK Ground Interview, September 17, 2019.*

Another Elder from Niisaachewan pointed out former portage routes of importance to the Anishinaabeg affected by blasting:

> *See that's where the portage used to be, where is it now? That's the road, that's North Road... It comes right here that's an old portage. Before they [blasted] this thing out, that's where they used to portage.*
>
> *Elder, Niisaachewan, AAK Group Interview, August 15, 2019.*

The Elder went on to discuss the destruction of sacred sites:

> *…the other spot is where they blasted out rock. They used to leave offerings there…*
>
> *Elder, Niisaachewan, AAK Group Interview, August 15, 2019.*

An Elder from Washagamis Bay described the Indian Bridge, located between Keewatin and Kenora, where fossils and pictographs could be found, before "they destroyed a lot of that area" (AAK Group Interview, July 23, 2019). An Elder from Niisaachewan spoke of a sacred rock, where:

> *…hydro went and put [a] line through. And then, they ended up blasting out this channel, which knocked out [the] sacred stone that we had there before that.*
>
> *Niisaachewan Elder, AAK Group Interview, August 14, 2019.*

Blasting resulted in the destruction of homes as well, an Elder from Niisaachewan said:

> *There used to be a lot of people living there... He was a band member. He had his house over there. Three story building... when they blasted, his house went down [in] the water.*
>
> *Elder, Niisaachewan, AAK Group Interview, September 17, 2019.*

A community member from Wauzhushk Onigum said:

> *So, there was many stories, too, I heard from that area. You know, because in the 70's actually my son and his grandmother—she is from Dalles, and I guess when she was younger in her teens there was blasting going on—and that was for the dam or something like that. And what happened was, they all got forced out—just that day as soon as the blasting happened, and then all the water came—everything just flooded,*

they were forced and so she ends up moving to White Fish Bay... Like everything... was affected like the wild rice, the sturgeon, you know, everything.

Community member, Wauzhushk Onigum, AAK Individual Interview, June 19, 2019.

Blasting of fishing locations of importance also signified the end of cultural practices such as spear fishing at night. An Elder from Niisaachewan said:

Along that, on the other side of that, where the rock was blasted out, people were telling stories that they were spear fishing where the river is fast…

Elder, Niisaachewan, AAK Group Interview, August 15, 2019.

Another Elder from Niisaachewan described the environmental effects of blasting:

1953, they blasted... it made a lot of difference after they blasted, [the water level] kind of went down. Oh, you should have seen it. All sticks, everything floating around here. Yeah. But when they blasted... a whole bunch of fish floating around this area... it's amazing how we were all standing by the shore over there, looking at all the fish, you know? Because people always ask me what happened to the turtles, I said, I wouldn't know what happened to these snapping turtles and stuff like that, because... a lot of them got drowned, and a lot of fish, lot of sturgeons went…no more... after the blasts.

Elder, Niisaachewan, AAK Group Interview, September 17, 2019.

An Elder from Shoal Lake 40 also described the cultural and environmental effects of blasting, saying:

I know from the old stories my dad used to tell me, right here, Snowshoes Bay, he said... would be just completely full of wild rice. And that was before that opening of Ash Rapids. They blasted away that area. And of course, on this side here, that would be full also. Falcon Bay. And now I bet you there's only little pockets of wild rice left because of the water level being... so high, and so low, and so high. Because of... Ash Rapids.

Elder, Shoal Lake 40., AAK Individual Interview, May 23, 2019.

An Elder from Niisaachewan described the effect blasting had on Anishinaabe emotional wellbeing:

So, the blasting of the channel had some effect, bad memories [associated with] knowing when a hydro line was going through.

Elder, Niisaachewan, AAK Individual Interview, August 19, 2019.

5.4.1.3 Odours

Baseline odour information is not available for the Kenora region; however, the area is primarily influenced by large trucks and other vehicular traffic, with an estimated 3,200 to 5,200 vehicles travelling per day along Highway 17 (Government of Ontario, 2016). A study undertaken in Sarnia, Ontario, found odour annoyance significantly associated with nitrogen dioxide and sulphur dioxide pollution exposure, both of which may be related to the operation of vehicles (Atari, Luginaah, Gorey, Xu, & Fung, 2013). Additional research has indicated a connection between olfaction and emotion—influencing behavioural performance such as working memory, attention, and reaction times to auditory and visual stimuli (Michael, Jacquot, Millot, & Brand, 2003). Depending on the specific scenario, odour has the potential to modulate noise and visual landscape perceptions (Jiang, Masullo, & Maffei, 2016; Kuang & Zhang, 2015).

Wildlife is highly perceptive to odour influences, as behaviours can be affected by allelochemical release (Nielsen, Rampin, Meunier, & Bombail, 2015). For instance, many mammalian species have adapted to be highly sensitive towards predator-derived odours in recognition, avoidance, and defense against predation. Distinctive behavioural effects of predator odours include activity inhibition, non-defensive behaviour suppression, and habitat shifts to locations where odours are no longer present (Apfelbach, Hayes, McGregor, Blanchard, & Blanchard, 2005). Predator odours may also affect the endocrine system through testosterone suppression and stress hormone level increases (Apfelbach, Hayes, McGregor, Blanchard, & Blanchard, 2005). In the absence of data detailing the effect of odours resulting from vehicular emissions on wildlife, odour annoyances remain an important aspect of consideration when expanding the capacity for vehicular traffic.

5.4.1.4 Light

Light pollution is an anthropogenic phenomenon associated with human activities and urbanization, in which the use of obtrusive lighting results in the brightening of the night sky (Le Tallec, 2019). Although artificial light has greatly benefited society, light pollution is quickly becoming one of the most pervasive forms of environmental pollution (Chepesiuk, 2009). Known to affect both flora and fauna, prolonged exposure to artificial light can prevent *mitigoog* (trees) from adjusting to seasonal variations. This has, in turn, implications for wildlife dependant on these *mitigoog* (trees) for natural habitat or for sustenance (Chepesiuk, 2009). Artificial light can act as a barrier to animal movement, isolating populations and thus impacting genetic diversity, increase susceptibility to disease, and affecting resource access (Bliss-Ketchum, de Rivera, Turner, & Weisbaum, 2016). *Manidoons* (insect) persistence is also greatly affected by artificial lighting, a factor of great concern due to the vital role of *manidoonsag* (insects) in all terrestrial and freshwater food webs (Owens, et al., 2020).

Darkness was critical for practicing certain Anishinaabe activities that were integral for sustenance, including night fishing with spears (Dibaajimowin, 2018). Using a torch as bait, fastened in a manner in which the light extended over the water, fishermen were able to spear *giigoonyag* (fish) attracted to the light, without being seen (Dibaajimowin, 2018). This is discussed further in Section 5.7.5.5.3. Light pollution also actively inhibits the ability of humans to view the stars—a critical aspect of Anishinaabe

tradition and knowledge system. The Anishinaabeg share a close relationship to the sky through philosophical and spiritual perspective. For instance, in practicing the reconciliatory ritual, the smoking of the *Opwaagan* (pipe) of Peace, Anishinaabeg are "to remember as they smoke their special relationship to and dependence upon the sun, earth, moon, and stars. Like the animal beings they depend ultimately upon the earth and the sun" (Johnston, 1976, p. 21). *Waussnodae* (Northern Lights) were also said to be "the glow of torches that the grandfathers used to illuminate the Path of Souls for the soul-spirits on their way to the Land of Peace" (Johnston, 1976, p. 27).

Industrial developments, residential developments, and vehicular traffic passing through the Kenora / Lake of the Woods region have the potential to cause a variety of noise, odour, light, and dust *bagidanaamowin* (air)-pollution effects. Impacts of *bagidanaamowin* (air) pollution can include detrimental effects on human, wildlife, and plant health and wellbeing. The Anishinaabeg rely on clean *bagidanaamowin* (air) for community wellbeing as well as cultural and traditional purposes. Maintaining clean *bagidanaamowin* (air) for communities must remain a priority of future development.

5.4.2 Birds

Species discussed in this chapter include the following:

- *Zhiishiibag* (Ducks, *Anatidae* family)
- *Migizi* (Bald Eagle, *Haliaeetus leucocephalus*)
- *Nika* (Canada Goose, *Branta canadensis*)
- *Maang* (Common Loon, *Gavia immer*)
- *Ogiishkimanisii* (Belted Kingfisher, *Megaceryle alycon*)
- *Gijigijigaaneshiinh* (Black-capped Chickadee, *Poecile atricapillus*)
- *Ozaawibineshi* (Yellow Warbler, *Setophaga petechia*)
- *Gwiingwiishi* (Canada Jay, *Perisoreus canadensis*)
- *Diindiisi* (Blue Jay, *Cyanocitta cristata*)
- *Gaagaagi* (Common Raven, *Corvus corax*)
- *Meme* (Pileated Woodpecker, *Dryocopus pileatus*)
- Hairy *Baapaase* (Hairy Woodpecker, *Dryobates villosus*)
- Great Gray *Gookooko'oo* (Great Grey Owl, *Strix nebulosi*)
- Northern Hawk *Gookooko'oo* (Northern Hawk Owl, *Surnia ulula)*
- *Boreal Gookooko'oo* (Boreal Owl, *Aegolius funerous*)
- Northern Saw-whet *Gookooko'oo* (Northern Saw-whet Owl, *Aegolius acadicus*)
- Broad-winged *Gekek* (Broad-winged Hawk, *Buteo platypterus*)
- Northern Goshawk (*Accipiter gentilis*)
- Northern Harrier (*Circus hudsonius*)
- *Biijigigwane* (Osprey, *Pandion haliaetus*)
- Merlin (*Falco columbarius*)
- American Kestrel *(Falco sparverius*)

- *Wiinaange* (Turkey Vulture, *Cathartes Aura*)

5.4.2.1 *Zhiishiibag* (Ducks, *Anatidae* family)

Table 13: Names for Ducks

Common Name	Duck
Anishinaabemowin (singular)	*zhiishiib*
Anishinaabemowin (plural)	*zhiishiibag*
Scientific Name	*Anatidae* family (various)

5.4.2.1.1 About

Zhiishiib (duck, singular) / *zhiishiibag,* plural) is the common name given to several species of the waterfowl family *Anatidae* which is comprised of over 158 species including *nika* (Canada geese) and *waabiziig* (swans). *Zhiishiibag* (ducks) are divided amongst several *Anatidae* family subfamilies and represent a form taxon rather than a monophyletic group (Mcnicholl, 2006). *Zhiishiibag* (ducks) are birds of flight with elongated, broad bodies and relatively long necks. *Zhiishiibag* (ducks) have short legs, narrow, pointed wings, and webbed feet, with the exception of grebes, which have lobed feet (Mcnicholl, 2006). *Zhiishiibag* (duck) bills are generally flat and wide, with fine serrations. Male *zhiishiibag* (ducks) are known as drakes, while *noozheshib* (female ducks) are referred to as *noozheshib* (hens) (Hines, 2006). Male plumage is distinct from that of females, and is often highly coloured, such as that of wood *zhiishiibag* (ducks) (Mcnicholl, 2006).

Male *zhiishiibag* (ducks) may be territorial during the early stages of nesting but *zhiishiibag* (ducks) are gregarious creatures and tend to congregate in large flocks for feeding, wintering, and moulting. Many *zhiishiibag* (ducks) species communicate readily with each other through a series of calls; the most common of theses being the well-known “quack” (Animalia, 2018). Although most *zhiishiibag* (ducks) are birds of flight, an inability to fly occurs temporarily during the period of moulting, which precedes migration. During the mating process pair bonds differ in length for different species, with some occurring temporarily and others lasting several years. Females take complete responsibility for incubating eggs. Nesting occurs in grasses on the ground near water, however several species nest in holes in *mitigoog* (trees) or in underground crevices. Marsh-dwelling species may have floating nests. Clutches usually vary in size, ranging from 4 to 16 eggs and hatchlings swim within hours following hatching. The upbringing of young falls exclusively to mothers, however some species of *zhiishiibag* (ducks) rely on brood parasitism methods of breeding (Mcnicholl, 2006; Yerkes, n.d.).

Years of natural selection have allowed *zhiishiibag* (ducks) to successfully adapt to their environments and fill diverse ecological niches. Through this process, some variation has developed between *zhiishiibag* (duck) body structures, affecting body movements such as flying, swimming, and walking and permitting different species to exploit various habitat types (James J. D., n.d.; Mcnicholl, 2006). Dabbling *zhiishiibag* (ducks) have centrally placed legs to facilitate take-off and walking and long, broad wings that permit quick take-off and graceful navigation. Diving *zhiishiibag* (ducks) have slightly

heavier, more rounded bodies and legs that are located further back to assist in diving – though this is to the detriment of walking and requires "pattering" along the water surface for take-off. Diving *zhiishiibag* (ducks) wings are also short, narrow, and swept back to facilitate high-speed flying and diving (James J. D., n.d.; Mcnicholl, 2006).

Zhiishiibag (ducks) are thought to have originated from the *ininishiib* (wild mallard), with a small minority descending from muscovy *zhiishiibag* (ducks) (The Cornell Lab, 2019). *Zhiishiibag* (ducks) were domesticated between 2,000 to 3,000 years ago in China and have undergone numerous mutations and crossbreeding since then (The Editors of Encyclopaedia Britannica, 1998). The two main varieties of *zhiishiibag* found in Ontario are dabbling *zhiishiibag* (puddle ducks) and diving *zhiishiibag* (ducks). Common dabbling *zhiishiibag* (duck) species inhabiting Ontario include *ininishiib* (wild mallard), Northern Pintails, Gadwalls, Green-winged Teals and Wood *zhiishiibag* (duck). Common diving *zhiishiibag* (duck) species found in Ontario include Canvasback, Bufflehead, Common Goldeneye and Lesser Scaup (Morrison, 2016).

Zhiishiibag (ducks) have a cosmopolitan distribution, with their range extending across both the Northern and Southern Hemispheres. On present-day *Mikinaak Minis* (Turtle Island), *zhiishiibag* (ducks) are common through Canada and the United States, with the Pacific American, Mississippi American and Atlantic American migration flyways extending over Central and South America. There are at least 36 *zhiishiibag* (duck) species native to or established in *Mikinaak Minis* (Turtle Island) (Classic Collection of North American Birds, 2019).

In Anishinaabe culture, according to the story of the Great Flood, the *zhiishiib* (duck) was among the animals that attempted to dive to the bottom of the water to acquire soil for *Gizhigookwe* (Sky Woman) (Anishinabe Nation, 2016). Although the *zhiishiib* (duck) was unsuccessful, Black *zhiishiibag* (ducks) are represented in the *odoidaymiwan* (the clan system), symbolizing depth (Johnston, 1976, p. 53).

In analysing the interviews, a co-occurrence model was created that shows intersections of "Ducks" with other components. This model is illustrated in Figure 35. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Ducks" and any given component shows the number of times "Ducks" was brought up in the context of the component. The width of the line visually represents this as well. For example, Figure 35 shows that in total "Ducks" was brought up 29 times, and "Loss of Tradition" was brought up 255 times. Of the 29 times "Ducks" was brought up, three of those times it was in the context of "Loss of Tradition".

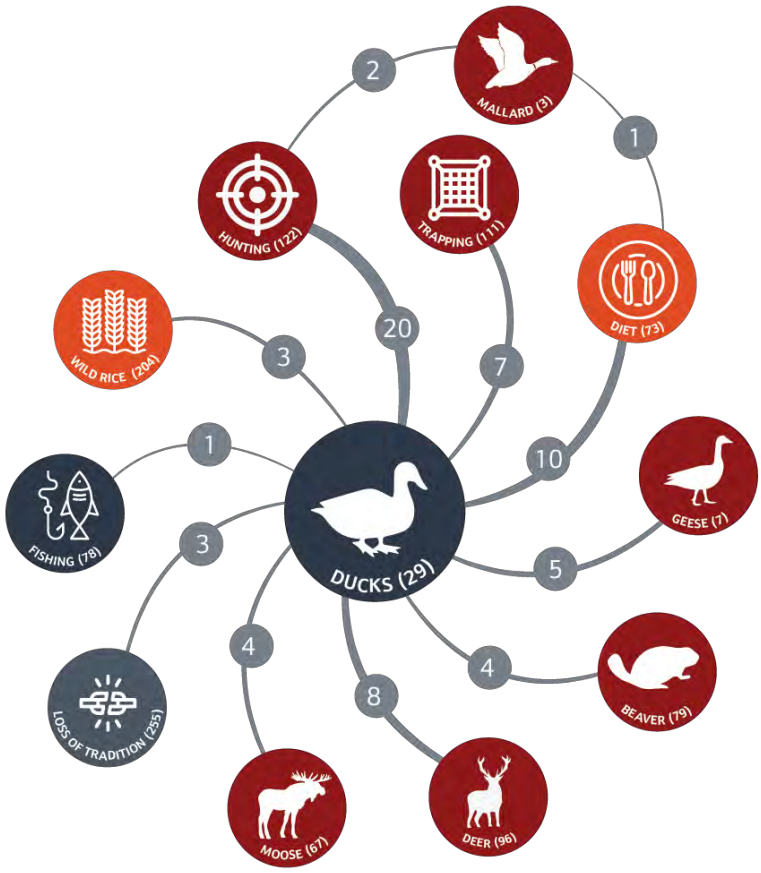


Figure 35. "Ducks" co-occurrence with other components

5.4.2.1.2 Habitat

Common habitats include riparian zones, freshwater marshes, coastal wetlands and wooded swamps. Several *zhiishiibag* (duck) species live on sub-Antarctic or oceanic islands as well (International Union for Conservation of Nature and Natural Resources, 2019). Dabbling *zhiishiibag* (ducks) prefer to inhabit shallow wetlands, while diving *zhiishiibag* (ducks) favour larger bodies of water with areas of significant depth (James J. D., n.d.). Suitable *zhiishiib* (duck) habitat occurs across the Lake of the Woods and Kenora areas, and the 2009 and 2018 field survey programs carried out by WSP observed the presence of *ininishiib* (wild mallards) (2019).

Zhiishiibag (ducks) include both migratory and non-migratory species. *Zhiishiibag* (ducks) species breeding in temperate climates and the Arctic Northern Hemisphere are often migratory, however species breeding in the tropics generally are not (U.S. Fish & Wildlife Service). *Zhiishiibag* (ducks) often take shelter from disturbances such as hunting by relocating to fresh impoundments on conservation land (Animalia, 2018).

5.4.2.1.3 Diet

Zhiishiibag (ducks) are omnivores. Their animal diet includes *manidoonsag* (insects), mollusks, amphipods, *es* (mussels), *biimiskodisiig* (snails), and small *ginoozheg* (fish). Their plant diet relies mainly on grasses, sedges, and the seeds, stems, leaves and root stalks of aquatic plants (Animalia, 2018). They are equipped with rows of thin bristles in their mouths to scoop and filter nutrient particles out of water (Savedge, 2019). Z*hiishiib* (duck) beaks are used to catch prey or forage for food, which is then swallowed whole and digested through the gizzard (A-Z Animals, 2008). In addition to food, *zhiishiibag* (ducks) will also consume sand, gravel, pebbles, or small shells to provide digestion-aiding grit to assist the gizzard. Grit may also contain trace minerals necessary for good health (Mayntz, 2020).

Zhiishiib (duck) diet changes according to the habitat shift occurring with migration. In fall and winter, *Zhiishiib* (duck) diet consists mainly of plant matter (Mayntz, 2020). Summertime involves foraging for new growth, roots, and animal matter, as it is most plentiful during this season. Diet may also vary according to the availability of food (Mayntz, 2020). For the first two weeks after hatching, ducklings rely predominantly on a diet of water invertebrates including aquatic *manidoonsag* (insects) and larvae. Following this period, ducklings nourish themselves with a diet of seeds and other plant parts (Animalia, 2018; Mayntz, 2020).

5.4.2.1.4 Population Trends

Ininishiibag (wild mallards) are the most widespread and abundant *zhiishiibag* (ducks) of *Mikinaak Minis* (Turtle Island), with populations increasing between 1966 and 2014 (The Cornell Lab, 2019). Population numbers tend to decrease during droughts, and increase during wet periods, with numbers cycling between five and 11 million (The Cornell Lab, 2019). *Ininishiibag* (wild mallards) are the most heavily hunted *zhiishiibag* (ducks) of *Mikinaak Minis* (Turtle Island) and account for approximately one in every three *zhiishiibag* (ducks) shot. That having been said, population densities have shifted over time, and *ininishiibag* (wild mallards) are no longer common in areas in which they were once abundant. An Elder fromWashagamis Bay recalls the population having been much greater in earlier years:

> *The only ducks you see there now [are] usually what they call mud ducks. Not very edible, they're called mud ducks. But we used to go after... they're called fall ducks, or what do you call those…mallards.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

An Elder fromNiisaachewan remembers similarly:

> *At one time, there used to be thousands of them. I don't know what happened. It kind of slowed down.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

Zhiishiibag (duck) populations are vulnerable to habitat disturbance and climate change. Wildfires and spring heat waves endanger *zhiishiibag* (ducks) young in the nest and slow habitat recovery. *Zhiishiibag*

(duck) species are also affected by climate changes resulting in a shifting population range, vulnerability to anthropogenic habitat effects such as poor water quality, pollution, wetland clearing or drainage, and oil spills (Anderson M. , n.d.; Guillemain, et al., 2013; Pease, Rose, & Butler, 2005). Conservation efforts target *zhiishiibag* (duck) species of concern, with some of the nine common Ontario *zhiishiibag* (duck) species being more vulnerable than others. None of the nine species considered are listed by the *Species at Risk Act.* According to the International Union for Conservation of Nature's ("IUCN") Red List of Threatened Species, the populations statuses are as follows:

Table 14. Population status of nine common Ontario zhiishiibag (ducks) according to the IUCN Red List of Threatened Species (2019)

Species	IUCN Red List Population Status
Bufflehead	Increasing
Canvasback	Decreasing
Common Goldeneye	Stable
Gadwall	Increasing
Green-winged Teal	Unknown
Lesser Scaup	Decreasing
Mallard (*ininishiib)*	Increasing
Northern Pintail	Decreasing
Wood	Increasing

Climate change predictions for the next century indicate warming in most areas, precipitation pattern changes, sea level rising, declining snowpacks, and increasing instances of severe weather (Anderson M. , n.d.). Conservation efforts including wetland and grassland restoration and management, and water use management (Anderson M. , n.d.; Ducks Unlimited, 2019) These efforts are essential to maintain and support healthy *zhiishiibag* (duck) populations. An Elder fromNiisaachewan discussed declining marshlands and the effect on *zhiishiibag* (duck) populations:

> *…Also, another thing too, the birds. Any kind of birds, eagles, not the eagles but the ducks and normally what you see out there is kind of scarce. Like today if you were to go out hunting for ducks, it's not like years ago. You can see flocks of ducks but now it's not the same. You can probably see ten ducks at a time…*
>
> *…there used to be good for duck hunting, which [it] is no longer. You don't have marsh there anymore... we normally have ducks that normally hang out to feed.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 18, 2019.*

5.4.2.1.5 Zhiishiibag (ducks) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *zhiishiibag* (ducks). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Zhiishiibag (ducks) play a role in Anishinaabe tradition through the *odoidaymiwan* (the clan system). The *odoidaymiwan* (the clan system) was developed by *Kizhe Manitou* (the Creator) to give strength and order to *Aki's* (Earth's) people and help them govern themselves. Each animal was given wisdom in the form of a character trait which would instruct and benefit the Anishinaabeg in the future (Benton-Banai, 1988, p. 74). Black *zhiishiibag* (ducks) are represented in the *odoidaymiwan* (the clan system), representing depth (Johnston, 1976, p. 53). According to the story of the Great Flood in which *Gizhigookwe* (Sky Woman) came down from the Heavens, the *zhiishiib* (duck) was also among the animals that attempted to dive to the bottom of the water to acquire soil for her from which new *Aki* (Earth) would be created (Anishinabe Nation, 2016).

Zhiishiibag (ducks) have also traditionally provided nourishment for Anishinaabe communities. The code "Diet" occurred ten times with "Ducks". Not only are *zhiishiibag* (ducks) hunted for meat, but the fat, feathers, eggs and bones were all used as well (Kuhnlein & Humphries, n.d.). *Zhiishiibag* (duck) meat is a good source of protein, iron, selenium, vitamin B, and zinc. With a high fat-to-meat ratio, *zhiishiib* (duck) meat has what is considered a "complicated" flavour (Berkely Wellness, 2016). However, in recent years, community members have noticed a decrease in the quality and quantity of meat. Not only are they harder to find for hunting, a community member of Shoal Lake 40 said:

> *…even the geese and the ducks don't taste like they used to.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

The code "Hunting" occurred 20 times with "Ducks". *Zhiishiib* (duck) hunting areas are not as easy to find as they once were. More information on hunting *zhiishiibag* (ducks) can be found in Section 5.7.7.

Throughout history, *zhiishiibag* (ducks) have played a significant role in ecological and cultural significance on *Mikinaak Minis* (Turtle Island). Over time, *zhiishiib* (duck) habitat has been affected by anthropological disturbances which has, in turn, affected Anishinaabe hunting practices. It is important that *zhiishiibag* (ducks) remain accessible as a cultural resource to Anishinaabe communities for both spiritual and nutritional means.

5.4.2.2 *Migizi* (Bald Eagle, *Haliaeetus leucocephalus*)

Table 15: Names for Bald Eagle

Common Name	Bald Eagle
Anishinaabemowin (singular)	*Migizi*

Anishinaabemowin (plural)	*Migiziwag*
Scientific Name	*Haliaeetus leucocephalus*

5.4.2.2.1 About

The *migizi* (bald eagle) is Canada's largest bird of prey and found throughout *Mikinaak Minis* (Turtle Island) (Stocek, 1992). Nationally, *migiziwag* (bald eagles) were listed as endangered from 1978 to 1984 but were reassigned as not at risk by the Committee on the Status of Endangered Wildlife in Canada ("COSEWIC") in April of 1984 which it continues to hold today (Government of Canada, 2019). However, provincial listings can differ, as is the case in Ontario where *migiziwag* (bald eagles) are listed as special concern by the Committee on the Status of Species at Risk in Ontario ("COSSARO") (MECP, 2019). *Migiziwag* (bald eagles) are a diurnal bird of prey from the order Accipitriformes. They cover a wide range in Canada and can be found in all three territories and all ten of the provinces (Government of Canada, 2019). Adult *migiziwag* (bald eagles) are known for their appearance, possessing a distinct white head and tail feathers, dark brown body feathers and a well distinguished yellow beak, legs, and feet. They have a wingspan that measures over 2 m in length and have a standing height of approximately 76 cm with female *migiziwag* (bald eagles) tending to be larger than males. (Stocek, 1992).

In analysing the interviews, a co-occurrence model was created, that shows intersections of "Eagle" with other components. This model is illustrated in Figure 33. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Eagle" and any given component shows the number of times "Eagle" was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 33 shows that in total "Eagle" was brought up 15 times, and "Ceremonies" was brought up 88 times. Of the 20 times "Eagle" was brought up, ten of those times it was in the context of "Ceremonies".

Figure 36. "Eagle" code Co-Occurrence model

5.4.2.2.2 Habitat

Migiziwag (bald eagles) are typically found around the boreal forest lakeshores of Manitoba and northwestern Ontario. The highest density of Ontario's *migiziwag* (bald eagle) populations is contained near the Lake of the Woods region (MECP, 2019) where they tend to nest in large *mitigoog* (trees) such as conifers and pines found in old growth forests where human disturbance is minimal. However, they have been observed nesting off cliffs, on ground or man-made structures (Stocek, 1992). *Migiziwag* (bald eagles) prefer nesting in areas which provide optimal foraging habitat such as near some sort of waterbody that allows access to *giigoonyag* (fish). Being a territorial *bineshiinh* (bird), they will defend their home range territory which can be up to a 4 km^2 (Armstrong, 2014). Many members of the Niiwin Wendaanimok Nations recounted the strong presence of *migiziwag* (bald eagles) in and around the lakeshores. A Washagamis Bay Elder discussed her observation of the high *migiziwag* (bald eagles) presence around the Sultana islands:

> *For instance, here in Sultana, that whole island is covered in eagle's nests…*

Elder, Washagamis, AAK Group Interview, July 23, 2019.

In regions where open water may freeze over and inhibit fishing opportunities, *migiziwag* (bald eagles) may leave their northern breeding habitat and migrate to a coastal or more southern wintering area (Stocek, 1992). In the Lake of the Woods area, most *migiziwag* (bald eagles) will leave by mid-October, however a few have been observed remaining in the area to overwinter (Sandilands A. P., 2005).

5.4.2.2.3 Diet

Primarily feeding on *giigoonyag* (fish), *migiziwag* (bald eagles) will also prey upon waterfowl such as *zhiishiibag* (ducks) and *gayaashkwag* (gulls) as well as small mammals such as *nigigwag* (otters), *wauzhushk* (muskrats) and *waaboozoog* (rabbits). They are also known to consume the occasional aquatic arthropod such as *ashaageshiinhyag* (crayfish) or *es* (clams). However, *migiziwag* (bald eagles) will also scavenge for food, taking advantage of carrion that may be leftover from previously hunted *waawaashkeshiwag* (deer) (Dunstan & Harper, 1975; Ewins & Andress, 1995). Studies have shown that *migiziwag* (bald eagles) will alter their diet depending on which resources are available. *Waawaashkeshiwag* (deer) act as a major source of food for *migiziwag* (bald eagles) in the colder months when access to *giigoonyag* (fish) is more difficult (Environment Canada, 2001). A unique tactic that *migiziwag* (bald eagles) will use is stealing food from other predators, a tactic known as kleptoparasitism. *Migiziwag* (bald eagles) have been observed stealing food from other *migiziwag* (bald eagles), *gaagaagiwag* (common ravens), *gayaashkwag* (gulls), *biijigigwaneg* (osprey) and humans (Armstrong, 2014). An Elder from Shoal Lake 40 shared her experiences watching the *migiziwag* (bald eagles) interact with her husband in hopes of having some of his *giigoonyag* (fish):

> *He [my husband] has this one eagle, last year, that kept coming by… Because my husband, after he'd fish, he would leave the fish there, like the guts and stuff-for the eagles, and they'd come down. Every time he came home from fishing, this one eagle would be there in only a few minutes. He would see him landing on a certain tree. He says, "There's my eagle, he's waiting for me…I got to feed him".*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

These different methods of hunting, stealing, and scavenging can be done either alone or in pairs (Stocek, 1992). The strong hunting skills of *migiziwag* comes from the fact that they have an incredible eyesight allowing them to see nearly three or four times farther than humans (Stocek, 1992).

5.4.2.2.4 Population Trends

Migiziwag (bald eagles) reach sexual maturity around four years of age but may not breed right away as a successful process of courtship must first be achieved. These displays of courtship are loud and elaborate, full of aerial acrobatics and unique calls (Stocek, 1992). Known for their tendency to mate for life, *migiziwag* (bald eagles) will breed and prepare a nest together for the eggs. The female *migiziwag* (bald eagle) will lay an average of one to three eggs which will be incubated until the hatchlings emerge about one month later. Both parent *migiziwag* (bald eagles) share responsibilities in the rearing process

(Parks Canada, 2019). *Migiziwag* (bald eagles) have reached lifespans over 30 years in the wild, however survival this long can be difficult and many *migiziwag* (bald eagles) will experience early mortality as a result of chemical contamination, poisoning, disease or human activity (Armstrong, 2014).

Migiziwag (bald eagles) have a long history of exploitation throughout *Mikinaak Minis* (Turtle Island) as a result of European colonization where development and agricultural practices began to intensify (MECP, 2019). At the time, *migiziwag* (bald eagles) were perceived as pests who preyed on profitable livestock and poultry. Expanding developments left *migiziwag* (bald eagles) without nesting habitats forcing them to congregate elsewhere. Continuing into the 1900s, *migiziwag* (bald eagles) were hunted both as a pastime and even carried financial bounties in some regions (Van Name, 1921). Extreme declines were rampant throughout all *migiziwag* (bald eagle) populations. It was not until the implementation of the *Bald and Golden Eagle Protection Act* of 1940 in the United States that *migiziwag* (bald eagle) populations were able to start growing (Stocek, 1992).

Unfortunately, *migiziwag* (bald eagle) populations faced another serious decline in the 1940s as a result of chemical bioaccumulation. Dichlorodiphenyltrichloroethane ("DDT") is a compound that was popularly used as an insecticide in 1945. DDT commonly contained dichlorodiphenyldichloroethylene (DDE) and dichlorodiphenyldichloroethane ("DDD") (CCME, 1999). At the time, DDT was revered in Ontario in hopes of being a solution to control budworm infestations (Leslie, 1945). Unfortunately, its use had massive repercussions for *migiziwag* (bald eagles). The ingested DDT began to lower reproductive success, thin the shells of *migiziwag* (bald eagle) eggs and persist within an environment. This persistence of DDT allowed the contaminant to accumulate in higher concentrations as it moved up the food chain ultimately leaving *migiziwag* (bald eagles), apex predators, consuming disproportionate concentrations of DDT (Wiemeyer, et al., 1984; Grier, 1982). Southern Ontario's *migiziwag* (bald eagle) populations were nearly extirpated in the 1970s and estimations reported between 6 to 16 individuals left within the region (Armstrong, 2014). Reproduction rates of northwestern Ontario's *migiziwag* (bald eagle) population declined from 1.26 young per breeding area to 0.46 between 1966-1974 (Grier, 1982). This alarming rate of population decline resulted in *migiziwag* (bald eagles) being listed under Ontario's *Endangered Species Act* in 1973 (Armstrong, 2014) and continues to be protected under Ontario's *Endangered Species Act*, *2007* as a special concern species. Furthermore, because of DDT's impacts on wildlife, Canada and the United States placed heavy restrictions on its use in the 1970s (CCME, 1999).

Within Ontario, *migiziwag* (bald eagles) continue to hold a listing of special concern from the Committee on the Status of Species at Risk in Ontario ("COSSARO"). Provincial protection of *migiziwag* (bald eagles) has allowed populations to increase and recover from the impacts of previous decades. *Migiziwag* (bald eagles) are a species that many of the community members have observed flying overhead or perched along lakeshores. An Elder from Washagamis Bay talked about his frequent observations of the local *migiziwag* (bald eagles) hunting for *giigoonyag* (fish) in the lake. He emphasized how these experiences are always special to see:

> *I used to take people out by the lake in the summer and we'd always see eagles…It means a lot when somebody sees and eagle swoop down and grab a fish out of the water right close to the spot they're looking at. I've had many experiences like that at the lake.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.*

Additionally, an Elder from Shoal Lake 40 recalled her husband's knowledge of popular *migiziwag* (bald eagle) nesting sites:

> *He knows where all the eagle nests are... one night I guess he followed [the eagles]. He says, 'I know where they go now…there's a certain island where they all go'. And one day we were all driving, and he showed me that island and you could see the eagles and their nests up there.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

When discussing the Sacred Sites of Sunset Channel, a Wauzhushk Onigum Elder described the strong presence that the *migiziwag* (bald eagles) have around those islands:

> *That island where the eagle's nest and gather…it's on an island on the main channel. You could see hundreds of them.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, April 8, 2019.*

Unfortunately, there are many threats towards *migizi* (bald eagle) populations that. The ingestion of lead pellets and bullet fragments embedded in the tissues of game animals and waterfowl (MECP, 2019) expose and poison *migiziwag* (bald eagles) and has been identified as a concern. Dead *migiziwag* (bald eagles) have been found with high lead concentrations, most notably in areas that are popular for waterfowl hunting (Wayland & Bollinger, 1999). Despite lead shot being banned for use on waterfowl in 1999, it remains to be allowed for hunting large game animals and upland game *bineshiinyag* (birds) (Government of Canada, 2018). As a result, lead poisoning continues to cause mortality within *migiziwag* (bald eagle) populations (Owen, 2019). Similarly, accumulation of mercury (Rutkiewicz, et al., 2011) and secondary poisoning by pesticides (Wobeser, Bollinger, Leighton, Blakely, & Mineau, 2004) have also been observed as a concern for *migiziwag* (bald eagles) who ingest prey species already contaminated with these compounds. Diseases such as West Nile Virus ("WNV") can also lead to *migiziwag* (bald eagle) mortality. While it has largely had impacts on corvid species, some *migiziwag* (bald eagles) have tested positive for WNV in Ontario with some associated mortalities (Armstrong, 2014). Lastly, the poaching of *migiziwag* (bald eagles) has garnered public attention as *migiziwigwanag* (bald eagle feathers) and *migiziwag* (bald eagle) talons have been smuggled for profitable black-market purposes (Actman, 2017; Gerson, 2013; Mick, 2008; Moore D. , 2015; Jones, 2005). Killing *migiziwag* (bald eagles) is illegal in Canada under provincial wildlife acts and in the United States under federal acts, both carry heavy penalties such as imprisonment and fines. An Elder from Shoal Lake 40 recounted the time she witnessed the shooting of *migiziwag* (bald eagles). She emphasized how upsetting this

occurrence was, as both her and her husband love watching the *migiziwag* (bald eagles) and have a strong connection to the *migiziwag* (bald eagles) that live within the area:

> *I was at my place and I could hear shots. I saw a boat coming down this way shooting at the eagles. Oh, it just really upset me, and I realized they were shooting them for their feathers. I told my husband I said, "Let's call the cops, they can't do that, that's illegal.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

Additionally, despite their current stable populations, *migiziwag* (bald eagles) are vulnerable to the loss of adult populations. A slight shift in adult populations can cause several problems for the entire population (Armstrong, 2014). This vulnerability is heightened particularly because 50% of *migiziwag* (bald eagles) will not survive their first year (Parks Canada, 2019).

5.4.2.2.5 Migiziwag (bald eagles) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *migiziwag* (bald eagles). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Migiziwag (bald eagles) are of cultural and spiritual importance and serve as a symbol with many meanings. In general, *migiziwag* (bald eagles) are respected as a symbol for courage, strength, honor, and foresight. One of the many traditional stories about *Migizi* (the bald eagle) tells of the courage it showed by acting as a messenger to *Kizhe Manitou* (the Creator). Each day *Migizi* (the bald eagle) is said to have flown over *Aki* (Earth) to ensure people continue to respect the use of the *dewe'igan* (drum), *asemaa* (tobacco) and *opwaagan* (pipe). *Migizi* (the bald eagle) believed that the unborn and children carry hope for *Aki's* (Earth's) people who had created a world full of evil and corruption (Benton-Banai, 1988, p. 80). This idea of *Migizi* (the bald eagle) flying high above and watching over was noted an Elder from Washagamis Bay who shared that there are always a couple of migiziwag (bald eagles) that fly around as if they are patrolling the area, (AAK Group Interview, July 23, 2019).

Migiziwag (bald eagles) can also be seen perching high up in *mitigoog* (trees). Some stories say *Migizi* (the bald eagle) sits in these high places to notify *Kizhe Manitou* (the Creator) of Anishinaabeg who have moved on to the spirit world (Benton-Banai, 1988, p. 42). For many people of the Niiwin Wendaanimok Nations, *migiziwag* (bald eagles) continue to hold these ties between family and the spirit world. The idea that *migiziwag* (bald eagles) hold some sort of familial ties came up several times during the *Anishinaabe Aki Kakendamowin* interviews (Figure 36). A community member from Niisaachewan shared one such experience:

> *There was one experience where I saw an eagle flapping his wings…It's a good experience, I feel that my ancestors are in there, the people that have passed on…that maybe they're protecting me.*

Community member, Niisaachewan AAK Group Interview, July 23, 2019.

The sacredness of *migiziwag* (bald eagles) can also be understood through the many ways in which the Anishinaabeg honour the physical parts of *migiziwag* (bald eagles). Parts such as the wing bones and the *migiziwigwan* (bald eagle feather) have traditional uses and carry cultural significance. The co-occurrence model reinforces this importance of *migiziwag* (bald eagles) with ceremony as "Eagles" were most commonly brought up when discussing "Ceremonies" (Figure 36). Ceremonial use of the wing bones of *migiziwag* (bald eagles) can be used to make whistles. The eagle bone whistle is a sacred instrument that carries significance for many Anishinaabeg. A community member from Shoal Lake 40 shared of difficult time in her daughter's life:

> *I believe that prayers and dance, the jingle dress, and the eagle whistles helped get her through it.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, June 11, 2019.*

A community member from Grassy Narrows shared how the use of feathers in ceremonies and sweats came naturally to her early in childhood. Upon coming across the feather as a young girl, she inherently felt the deeper understanding and honor that comes with a *migiziwigwan* (bald eagle feather). *Migiziwigwanag* (bald eagle feathers) are also one of the highest gifts of honor that one can receive. She spoke of the meaning that came with receiving a *migiziwigwan* (Bald Eagle feather) and how it reassured that she was on the right path in life:

> *Sometimes people will ask me to come and help them in their communities, I'll get a call from 39, asking to come and help them with the funeral. Of course, I'm going to say yes, because that's just how I am, how I was raised. I received an eagle feather from the Elders…they said that I am on the right path now with what I'm doing, that's why they were giving me the eagle feather. They said I was here to help and that I was going to be a helper. I've been doing that since, helping and giving back.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, June 11, 2019.*

Therefore, it is evident that the physical parts such as the feathers and bones of *migiziwag* (bald eagles) carry strong meanings of distinction and respect for many Anishinaabeg. Additionally, the spiritual meanings and teachings behind *migiziwag* (bald eagles) demonstrate the importance this species has within Ojibwe culture. Lastly, for many from the Niiwin Wendaanimok Nations, *migiziwag* (bald eagles) are simply a beautiful animal to observe, highlighting the importance of protecting their shared landscapes.

5.4.2.3 *Nika* (Canada Goose, *Branta canadensis*)

Table 16: Names for Canada Goose

Common Name	Canada goose

Anishinaabemowin (singular)	*Nika*
Anishinaabemowin (plural)	*Nikag*
Scientific Name	*Branta canadensis*

5.4.2.3.1 About

The *nika* (Canada goose) is a large waterbird belonging to the *Anatidae* family in the genus *Branta*. *Nikag* (Canada geese) are one of nine goose breeds and the second largest of the three waterfowl in the *Anatidae* family – being generally larger than *zhiishiibag (*ducks) but smaller than *waabiziig* (swans). A male *nika* (Canada goose) is referred to as a gander, and a female *nika* (Canada goose) is referred to as a goose. In Anishinaabe oral tradition, *nikag* (Canada geese) were placed on *Mikinaak Minis* (Turtle Island) by *Kizhe Manitou* (the Creator) and have lived here for time immemorial, representing the totemic embodiment of prudence (Johnston, 1976, p. 53). The sight of *nikag* (Canada geese) flying overhead in a V formation is universally recognized as a sign of a changing season (Kaufman, 2001).

Nikag (Canada geese) are native to arctic and temperate regions of *Mikinaak Minis* (Turtle Island), with migration routes reaching as far as northern Europe. *Nikag* (Canada geese) are the most widely distributed and abundant goose on *Mikinaak Minis* (Turtle Island)–with an estimated 400,000 *bineshiinyag* (birds) in Ontario alone (Environment Canada, 2016). The taxonomy of *nikag* (Canada geese) is highly complex, with over 12 types being recognized. Several of these species intergrade and the traditional pattern has experienced erosion through natural range expansions and translocations (Marchant, 2019). Seven widely recognized subspecies of *nikag* (Canada goose) include Atlantic, Dusky, Giant, Hudson Bay or Interior, Lesser, Moffitt's or Great Basin, and Vancouver (Ducks Unlimited, n.d.). Subspecies found in the Treaty 3 territory include the Hudson Bay or Interior and the Lesser Canada *nikag* (Canada goose). *Nikag* (Canada geese) nest across inland *Mikinaak Minis* (Turtle Island) and are found on Treaty 3 territory (Ducks Unlimited, n.d.).

Although *nikag* (Canada geese) are the second largest of the three *Anatidae* family species, size and height vary, with females of a breeding pair often being smaller. Measurements for both sexes generally range between a length of 76 to 110 cm, a weight of 3 to 9 kg, and a wingspan of 127 to 170 cm (Cornell University, 2019). Goslings weigh between 3 to 4 ounces at hatching and are precocial at birth (United States Department of Agriculture Wildlife Services, 2019). The appearance of *nikag* (Canada geese) is quite distinctive, characterized by a black head with white cheeks and a white chinstrap. The neck is black, chest is tan, and back is brown, and the bill, legs and feet are black. *Bineshiinyag* (birds) inhabiting more northern habitats tend to be smaller, while plumage tends to darken as the species moves west (Cornell University, 2019). *Nikag* (Canada geese) are long-living species, with a banded *nika* (Canada goose) currently holding the longevity record for waterfowl at 30 years old (Ducks Unlimited, n.d.). *Nikag* (Canada geese) are swift and strong fliers, able to cover over 2,400 km in 24 hours when riding wind currents (The Editors of Encyclopaedia Britannica, 2019).

Nikag (Canada geese) are gregarious *bineshiinyag* (birds), moving in pairs or flocks which assume a V formation. Communication occurs through combined calls – "honks", and body language. *Nikag* (Canada geese) may often be found dabbling in water or grazing on lawns or agricultural fields. *Nikag* (Canada geese) are monogamous and form life-long pairings (Cornell University, 2019; Marchant, 2019). Migration also occurs in family units. Sexual maturity occurs after two years of age however breeding does not usually occur until *nikag* (Canada geese) reach three or four years of age. Sub-arctic *Nikag* (Canada geese) breed and raise their goslings in remote northern locations, with spring and fall migrations bringing *nikag* (Canada geese) to southern provinces to rest and feed. Offspring live with parents throughout the first year of life, eventually joining the larger family flock (Cornell University, 2019; United States Department of Agriculture Wildlife Services, 2019). Temperate breeding *nikag* (Canada geese) live and breed in the same location, migrating south only if snow covers roosting and feeding areas.

A period of moulting occurs during late summer, during which flight is typically impaired until autumn, by which *nikag* (Canada geese) are prepared to undertake migration or dispersal (Marchant, 2019). *Nikag* (Canada geese) undertake seasonal migration to meet breeding and over-wintering habitat requirements. Historically, local populations followed rigid migratory paths with set stopovers and overwintering areas, however the encroachment of *nikag* (Canada goose) populations on urban areas has been accompanied by permanent residency for some populations (Ducks Unlimited, n.d.; Kaufman, 2001). *Nikag* (Canada geese) are protected under the Canadian *Migratory Birds Convention Act, 1994* (Environment Canada, 2016), and this protection, along with changes in farming practices and warming weather has resulted in an expanding population and range (Cornell University, 2019). This has led to an increase in confrontations and conflicts with humans. An Elder from Niisaachewan discussed how, where once were *ininishiibag* (mallard ducks), now *nikag* (Canada geese) have taken over, even with efforts to reduce their presence using decoys of *gookooko'oog* (owls) and *waagoshag* (foxes):

> *At one time, there used to be thousands of [ducks]. I don't know what happened. It kind of slowed down... Now there's tons of geese... Now it's all geese... Those big geese that track all over the lawns in Kenora… You got owls to scare them off. Just a form of an owl. Geese feeding all around those fake things that are supposed to scare them away. Or foxes, silhouettes of foxes… They're probably too smart. They got to eat. There's good grass there. Good for grazing for the geese.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

The encroachment of *nikag* (Canada geese) on agricultural and urban areas causes a variety of complications. If nesting occurs on agricultural land, *nikag* (Canada geese) may feed on crops such as wheat, rice, alfalfa and *mandaamin* (corn). In suburban and urban settings, turf grasses may be trampled, befouled, and grazed upon, and open water may experience heavy nutrient and bacterial load. *Nikag* (Canada geese) droppings can result in municipal water supply pollution and eutrophication, and cause human health problems, such as *Escherichia coli* (E-coli) and *Cryptosporidium parvum* (Marchant, 2019). The overabundance of *nikag* (Canada geese) in parks and

residential areas has also resulted in ruined landscapes and habitat loss and destruction for other species, particularly other waterfowl (Environment Canada, 2016; United States Department of Agriculture Wildlife Services, 2019).

In analysing the interviews, a co-occurrence model was created, that shows intersections of "Geese" with other components. This model is illustrated in Figure 37. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Geese" and any given component shows the number of times "Geese" was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 37. "Geese" co-occurrence shows that in total "Geese" was brought up seven times, and "Hunting" was brought up 122 times. Of the seven times "Geese" was brought up, three of those times it was in the context of "Hunting".

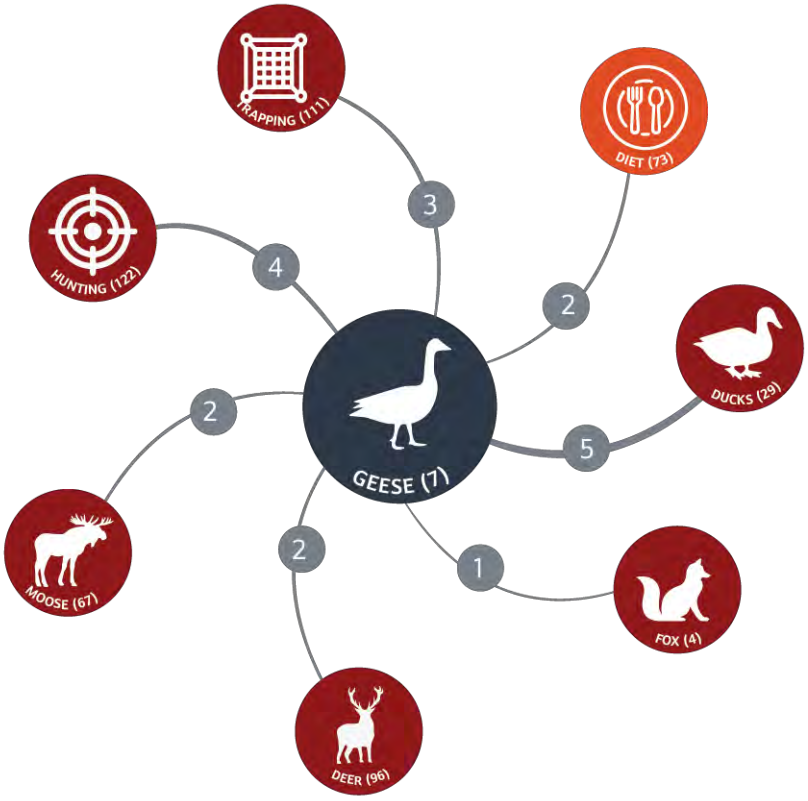


Figure 37. "Geese" co-occurrence with other components.

5.4.2.3.2 Habitat

Nikag (Canada geese) inhabit diverse regions across *Mikinaak Minis* (Turtle Island), always nesting near water and favouring wintering areas within commuting distance of water (Cornell University, 2019; Kaufman, 2001). An Elder from Shoal Lake 40 shared that *nikag* (Canada geese) could be found in the area of Snake Lake (AAK Individual Interview, May 23, 2019). In recent years, the habitat of *nikag* (Canada geese) has also expanded to include city parks, suburban ponds and agricultural fields

(Kaufman, 2001). Nesting habitats include lakes, ponds, bays, fresh marshes, salt marshes, tundra, lakes in wooded country, and conservation refuges. Nesting may occur on cliff ledges, in *mitigoog* (trees), in *wauzhushkwag* (muskrat) houses, or on artificial platforms. Nesting sites are chosen by female *nikag* (Canada geese) between mid-March and mid-May during which slightly elevated areas with good visibility are selected for (Kaufman, 2001; Marchant, 2019). The nest is also constructed by the female *nika* (goose) of the mating pair and is in the form of a bowl built of grass, sticks, moss, leaves, bark, and weeds. Down and feathers line the slightly depressed interior, in which 4 to 7 eggs are typically laid (Kaufman, 2001; Marchant, 2019). Ganders defend the nests with wing displays, hissing, head pumping and bill opening with tongue raised (Kaufman, 2001).

5.4.2.3.3 Diet

Nikag (Canada geese) are grazers and feed almost exclusively on plant material. Diet varies according to the changing seasons, with spring and summer feeding concentrating on grass stems and shoots, sedges, and aquatic plants. Primary species consumed include skunk cabbage leaves and eelgrass. During fall and winter, *nikag* (Canada geese) favour seeds, *miinan* (berries), and cultivated grains (Cornell University, 2019). *Nikag* (Canada geese) will rarely, but occasionally consume molluscs, crustaceans, small *giigoonyag* (fish), and *manidoonsag* (insects) (Cornell University, 2019; Kaufman, 2001). Feeding occurs most often during early morning and late afternoon (United States Department of Agriculture Wildlife Services, 2019). Two subspecies of *nikag* (Canada geese) have adapted to urban environments and feed on domesticated grasses throughout the year (Cornell University, 2019).

5.4.2.3.4 Population Trends

Nikag (Canada geese) are native to, and have an expansive range across, *Mikinaak Minis* (Turtle Island). In Canada, the range of *nikag* (Canada geese) runs along both coasts and through central and lower United States (United States Department of Agriculture Wildlife Services, 2019). *Nikag* (Canada geese) have also been found in Greenland, South Korea and Japan (Fox, et al., 1996; Marchant, 2019). The species has been introduced as game animals to the United Kingdom, Ireland, the Netherlands, Belgium, France, Germany, Scandinavia, New Zealand, and Finland (Attenborough, 1998; Svensson, 2009).

Nikag (Canada geese) are quite common and of low conservation status. They are not listed by the *Species at Risk Act* ("SARA"). According to the International Union for Conservation of Nature's ("IUCN") Red List of Threatened Species, *nikag* (Canada geese) are rated as a species of least concern. Translocations within the native range have resulted in mass expansions of urbanised populations and are largely responsible for species increases between 1966 and 2015, culminating in a 2015 population numbering over 5.6 million *bineshiinyag* (birds) (Cornell University, 2019; Marchant, 2019). This is in part due to the proliferation of lawns, golf courses and parks, unwittingly providing *nikag* (Canada geese) with reliable year-round habitat (Cornell University, 2019). An Elder from Niisaachewan shared that you can find *nikag* (Canada geese) across the lawns in Kenora as they do not respond to any deterrents (AAK Individual Interview, September 18, 2019).

Although the population of *nikag* (Canada geese) is currently experiencing elevated numbers, in previous decades populations were unstable. In the early 1900s, Giant *nikag* (Canada geese) populations faced extirpation through overhunting and habitat loss. Conservation efforts and refuges worked to improve habitat and nesting grounds through the creating and modification of wetlands (U.S. Fish & Wildlife Service, 2014). Hudson Bay *nikag* (Canada geese) and remaining subspecies are stable and combined account for over 4.7 million birds (Ducks Unlimited, n.d.). In the Treaty 3 territory, *nikag* (Canada geese) remain a popular species for hunting. As a species, *nikag* (Canada geese) are vulnerable to the changing climate, which could lead to an increase in wildfires and spring heat waves (Kaufman, 2001).

5.4.2.3.5 Nikag (Canada geese) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *nikag* (Canada geese). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Like all animals, *nikag* (Canada geese) are highly respected by the Anishinaabeg. The Anishinaabe *ndotem* (totems) of the *odoidaymiwan* (clan system) refer to the spiritual kinship and sacred relationship shared by Anishinaabeg and all other living beings. *Nikag* (Canada geese) are considered a *ndoteman* (totemic) manifestation of "prudence", or "wisdom in the way of caution and provision" (Castellano, Archibald, & DeGagné, 2008; Johnston, 1976, p. 53). *Nikag* (Canada geese) play a role in oral storytelling, for instance, in the cautionary tale "Wenebojo and the Dancing Geese" (Day-Murdoch). A community member from Wauzhushk Onigum shared that during feasts, *nika* (Canada goose) was often on the menu (AAK Individual Interview, June 19, 2019).

Nikag (Canada geese) have also provided nourishment for Anishinaabe communities. *Nikag* (Canada geese) was identified in the AAK interviews as playing an important role as a traditional food source, as it was discussed numerous times when speaking about "Diet". Meat was traditionally cooked, smoked, or dried. Not only were *nikag* (Canada geese) hunted for meat, but the fat, feathers, eggs and bones were all used as well (Kuhnlein & Humphries, n.d.). *Nika* (Canada goose) meat provides ample amounts of minerals, lipids, nutrients, and amino acids, and the fat is monounsaturated – assisting in the lowering of cholesterol. *Nika* (Canada goose) meat has been found to have many health benefits including improved muscular and bone health, oxygen transfer assistance, improved hair and skin health, strengthened immune system, digestion support, increased rates of healing processes, improved brain function, and fatigue relief (Health Benefits, 2020). In recent years, however, community members have noticed a decrease in meat quality. A community member of Shoal Lake 40 shared:

> *Even the geese and the ducks don't taste like they used to. I don't know why, but it's probably the pollution.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

Hunting is an important component of land-based teaching methods that form a fundamental component of cultural education to the Anishinaabeg and have for thousands of years. "Hunting" was

mentioned most frequently when talking about “Geese” in discussions with community members, emphasizing their importance to the practice of hunting. *Nikag* (Canada geese) were also frequently mentioned with other coded species that were hunted, such as *moozoog* (moose) *waawaashkeshi* (deer), and *zhiishiib (d*ucks). *Nikag* (Canada geese) was also coded with “Trapping”, as often different species could be hunted and trapped in the same areas. *Nikag* (Canada geese) have traditionally played a valued role in this culture and tradition; therefore, understanding the ways in which *Nikag* (Canada geese) have undergone population shifts over time is important, to predict future changes which may affect Anishinaabe cultural practices for sustenance.

5.4.2.4 Other *Bineshiinyag* (Birds)

Table 17: Names for Bird

Common Name	Bird	Thunderbird
Anishinaabemowin (singular)	*Bineshiinh*	*Animikii*
Anishinaabemowin (plural)	*Bineshiinyag*	*Animikiig*

In analysing the interviews, a co-occurrence model was created that shows intersections of “Other Birds” with other components. This model is illustrated in Figure 38. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting “Other Birds” and any given component shows the number of times “Other Birds” was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 33 shows that in total “Eagle” was brought up eight times, and “Trapping” was brought up 111 times. Of the eight times “Other Birds” was brought up, three of those times it was in the context of “Trapping”.

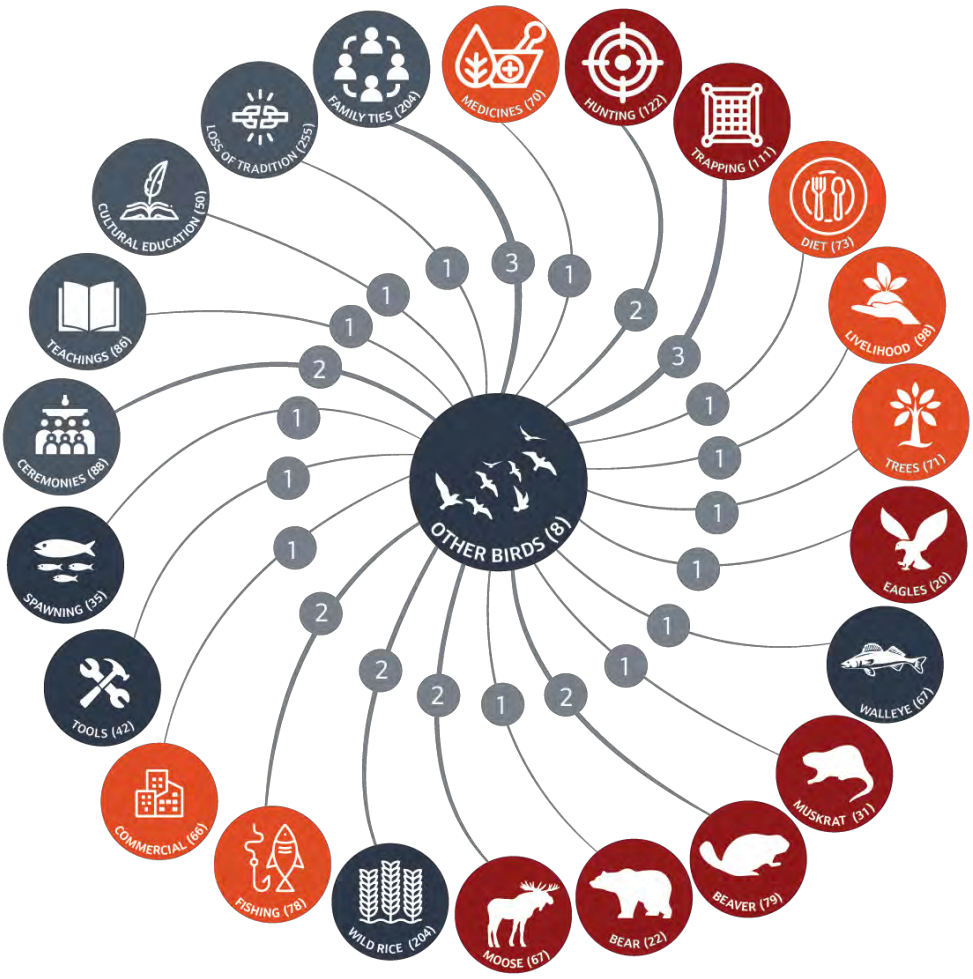


Figure 38. "Other Birds" co-occurrence with other components.

All different types of *bineshiinyag* (birds) can be found around the forests, marshes, lakes, and rivers that make up the shared lands of the Niiwin Wendaanimok Nations. Each species holds different importance to the Anishinaabeg whether it be spiritual, for food, or for songs. *Bineshiinyag* (birds) are a gift from *Kizhe Manitou* (the Creator) to represent the spirit of *bagidanaamowin* (the air) that is provided to humans and cycles through their lungs throughout life (Pomedli, 2014). *Bineshiinyag* (birds) are also thought to be messengers to *Kizhe Manitou* (the Creator) as they can travel great distances and fly at great heights allowing them the ability to watch over a wide range of terrestrial and aquatic environments (Pomedli, 2014). A sacred rock painting near Poplar Bay that was shown to this Elder from Niisaachewan by other Elders speaks to the importance of *bineshiinyag* (birds):

> *There's all kinds of sacred things there, rock paintings, pictures of birds, eagles…. Right on that point there. And that was shown to me by Elders, people that are gone to the spirit world now. The reason why I'm sharing that is because I need to show my kids some of these places too, so they know to pass it on to their children.*

Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.

Bineshiinyag (birds) are also a symbol of spring, demonstrating a time of new life as they produce offspring and bring an end to the harsh winter months (Vecsey, 1983). A similar explanation of the symbolism of *bineshiinyag* (birds) was shared by an Elder from Washagamis Bay who explained why many ceremonies are conducted in the springtime as it coordinates with the time of year that migrating *bineshiinyag* (birds) come together. He shared that the symbolism of this natural phenomenon acts as a symbol for humans to come together and give thanks for the creation of life, regardless of differences in spiritual beliefs:

> *Well, you can do a ceremony here in the spring. The springtime is more natural because of the bird families coming together for the summer … whatever [humans] believe in, either Christianity or the Anishinaabe way, your heritage, your belief, whatever you believe in. We do offerings for that for the feeling of greatness of the power of [the] Creator. We do offerings like what the white man does. They do offerings, the Israelites, the Pakistani, the Hindu. They've got different knowledge about appreciating the man upstairs.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 25, 2019.*

The Elder also shared how *bineshiinyag* (birds) hold spiritual importance in their role of guiding people through life as a spirit helper. Just as traditional stories can differ but teach the same lessen, so can one's spirit helper. Spirit helpers can take different forms depending on one's beliefs, but each works towards the goal of guiding those of us on *Aki* (Earth):

> *People have different knowledge but the same knowledge, same knowledge here but people of different parts of the First Nations have different stories, but they're all the same creator. Like the eagle…the crow … like that any bird might come to you. If constantly [that] bird comes to you, that means supposedly it's known as your spiritual helper. There are signs sometimes of the animals like when they're trying to tell you something. We don't know because we don't speak the animal language ... There's a way they're trying to communicate that. They're trying to tell us something.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 25, 2019.*

In traditional Anishinaabe stories, the *animikii* (thunderbird) is a powerful *manitou* (spiritual being) that protects the skies. The *animikii* (thunderbird) gets its name from the thundering sounds that are produced when it strikes its wings against the hills or cliffs (Pomedli, 2014). The powers of an *animikii* (thunderbird) allow it to have control over the wind and rain and the ability to manipulate thunderstorms. With its ability to control weather and elements, it allows for vegetation to grow in the spring with adequate rainfall (Pomedli, 2014). The importance of the *animikii* (thunderbird) to the Anishinaabeg can be understood with the many iterations and stories that depict it throughout Anishinaabe existence. Some Anishinaabeg believe the *animikii* (thunderbird) can be reached through

vision quests (Pomedli, 2014). An Elder from Niisaachewan shared how he experienced a vision of an *animikii* (thunderbird):

> *My spirit moved. It left me. Next thing I remember was I was in a big, huge plane. Weightless, my weight wasn't there. All I see was clouds … But then again, I see him … I don't know if you've ever seen a Thunderbird before, but that's what I [saw]*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

The *animikii* (thunderbird) continues to be a *manitou* (spiritual being) that is present in Anishinaabe culture today. An Elder from Shoal Lake 40 shared that there is a sacred site near Ash Rapids that his grandfather would visit to give offerings. This site was said to be visited by an *animikii* (thunderbird) where it would pick up the offerings left by the Anishinaabeg (AAK Individual Interview, May 24, 2019).

Outside of traditional stories, *bineshiinyag* (birds) also hold importance to the Anishinaabeg as a source of food, either through their meat or eggs. An Elder from Washagamis Bay shared how his grandmother would catch *bineshiinyag* (birds) and use them for their meat:

> *And one of the things that I saw her do, which I didn't think anything of, but now that I think back on it was quite an impressive thing. She had a cardboard box and because we didn't have store bought food a lot of the times, we had no refrigerators. So even if you canned stuff that you could keep, she'd get a box and she put breadcrumbs in there and then attach a stick, a long stick and she'd sometimes catch like 12 little birds whatever they happened to be up and around the ground… Just whatever kind and they were delicious.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

Other community members shared how they or their family members would use the eggs of different *bineshiinyag* (birds) as a source of food. An Elder from Washagamis Bay shared memories of his dad collecting the eggs of some *bineshiinyag* (birds), something an Elder from Wauzhushk Onigum also did with her sisters when they were younger (AAK Group Interview, August 21, 2019; AAK Individual Interview, June 18, 2019).

The presence of *bineshiinyag* (birds) are also important for the Anishinaabeg as they represent indicators of the health of the environment. An Elder from Wauzhushk Onigum shared how the sounds of *bineshiinyag* (birds) was something that she always heard around the *miin* (berry) bushes. Given the evolving landscape as a result of various developments in the area, she has noted a change in the presence of *bineshiinyag* (birds)*:*

> *Even when you see around here, you could see the choke cherries, any kind of cherries. Now you don't see those anymore. I used to hear a bird the way you found before, when I was walking around with my dog. I used to hear that bird, summer bird. I don't hear*

that noise anymore. It's gone. I don't know where he is. I used to stand there, listen to him, him, or her. That noise. That voice.

Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.

A Niisaachewan Elder shared how he has noticed the unnatural fluctuations to lake water levels as a result of dams has impacted the *maang* (common loon) nests that lay along the lakeshores:

And when the water rises here, and [the dams] let go of the water, and the loons are still having their babies because they live right by the shoreline and then the eggs are still not hatched yet… and sometimes when you let the water go up too early and they destroy their nesting area.

Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.

It is important to note that this chapter does not represent an extensive list of all avian species that fall within the project area. The aim of this chapter is instead to highlight some of the notable avian species that were identified by the Ministry of Transportation ("MTO") and their relationship to the Niiwin Wendaanimok communities. Species included in this chapter are as followed:

- Common loon
- Belted kingfisher
- Black-capped chickadee
- Yellow warbler
- Canada jay
- Blue jay
- Common raven
- Pileated woodpecker
- Hairy woodpecker
- Great gray owl
- Northern hawk owl
- Boreal owl
- Northern saw-whet owl
- Broad-winged hawk
- Northern goshawk
- Northern harrier
- Osprey
- Merlin
- American kestrel
- Turkey vulture

It is important to note that *bineshiinyag* (birds) such as *migiziwag* (bald eagles), *nikag* (Canada geese) and *zhiishiibag* (ducks) were species that were more commonly discussed in the AAK interviews and have been addressed in their own chapters. More information on *migiziwag (bald eagles)* is outlined in Section 5.4.2.2, *nikag* (Canada geese) in Section 5.4.2.3 and *zhiishiibag* (ducks) in Section 5.4.2.1. For each avian species that is noted above, this report will provide general background about the species, its habitat, diet, and its current population trends.

5.4.2.4.1 *Maang* (Common Loon, *Gavia immer*)

Table 18: Names for Common Loon

Common Name	Common loon
Anishinaabemowin (singular)	*Maang*
Anishinaabemowin (plural)	*Maangwag*
Scientific Name	*Gavia immer*

5.4.2.4.1.1 About

The *maang* (common loon) is a common species seen within the lakes of northwestern Ontario and is recognized as the official avian emblem of the province of Ontario since June of 1994. *Maangwag* (common loons) have a strong dependence on freshwater lakes, which makes them susceptible to changes to aquatic chemistry and human activities in those areas (Government of Canada, 2015).

5.4.2.4.1.2 Habitat

Maangwag (common loons) can most often be found inhabiting expansive freshwater lakes, ponds or rivers that experience low primary productivity and contain low nutrient content. Such lakes would subsequently experience low algal production and a low level of turbidity (Sandilands A. P., 2005). These types of water bodies are often found within oligotrophic lakes such as those of Ontario's Lake of the Woods area. Changes to aquatic chemistry, algal production and nutrient content will garner change from populations of *maangwag* (common loons) (Government of Canada, 2015). For these reasons, *maangwag* (common loons) are often labelled as an indicator for the health of a lake.

5.4.2.4.1.3 Diet

Lakes with clear water (i.e., low turbidity) allow *maangwag* (common loons) to hunt more successfully for *giigoonh* (fish) and crustaceans. Good water clarity is crucial since the majority of *maang* (common loon) hunting activity occurs underwater (Evers, Paruk, McIntyre, & Barr, 2010), with 80% of their diet being made up of *giigoonh* (fish), crustaceans and occasionally amphibians. In Ontario, common prey includes *giigoozens* (minnows), *asaaweg* (yellow perch) and bass (*Ashigan* (largemouth) and *noosa'owesi* (smallmouth)) (Sandilands A. P., 2005). Most often, *maangwag* (common loons) will nest in very close proximity to the waters edge. They are highly territorial and will defend their nesting area from other waterfowl, even reportedly engaging in conflicts with *mikinaakwag* (snapping turtles), *nigigwag* (otters) and *amikwag* (beaver) (Sandilands A. P., 2005). To avoid risk of predation, *maangwag* (common loons) will often seek preferred nesting habitat on small islands where human disturbance is minimal (Evers, Paruk, McIntyre, & Barr, 2010).

5.4.2.4.1.4 Population Trends

Human disturbance has been identified as a threat to *maangwag* (common loons) populations. Cottage development has increased the overall recreational activity within prime habitats for *maangwag* (common loons) (Heimberger, Euler, & Barr, 1983). Also, small islands are seen as attractive camping locations for canoeists who navigate near the marshland banks lakes and lake islands (Clay & Clay, 1997). This has resulted in *maangwag* (common loons) moving to more secluded habitats or becoming timider around humans, both having different consequences on their natural activities. *Maangwag* (common loons) carry a Committee on the Status of Endangered Wildlife in Canada ("COSEWIC") listing of not at risk with no status under the *Species at Risk Act* ("SARA") (Species At Risk Public Registry, 2019).

5.4.2.4.2 *Ogiishkimanisii* (Belted Kingfisher, *Megaceryle alycon*)

Table 19: Names for Belted Kingfisher

Common Name	Belted kingfisher
Anishinaabemowin (singular)	*Ogiishkimanisii*
Anishinaabemowin (plural)	*Ogiishkimanisiig*
Scientific Name	*Megaceryle alycon*

5.4.2.4.2.1 About

The *ogiishkimanisii* (belted kingfisher) is a member of the order Coraciiform, from the Alcedinidae family. Within Canada, *ogiishkimanisiig* (belted kingfishers) are both migratory and resident depending on their regionality. Ontario's populations are mainly migratory as their open water environments will freeze over in winter. Ontario provides a good breeding range that sprawls across nearly the entire province (Kelley, Bridge, & Hamas, 2009).

5.4.2.4.2.2 Habitat

Ogiishkimanisiig (belted kingfishers) can be found in aquatic environments around lakes, rivers, and estuaries. The banks along these environments provide soft earth for *ogiishkimanisiig* (belted kingfishers) to dig their burrows. Preferring banks with minimal vegetation and large roots, *ogiishkimanisiig* (belted kingfishers) will dig about 90 to 180 cm into the bank that leads to a chamber where the nest will be kept (Speirs, 1985). Exact periods can vary across Canada, but generally nesting starts between April and June and will continue into the summer month of July and August (Rousseau & Drolet, 2017).

5.4.2.4.2.3 Diet

Living near water is important for *ogiishkimanisiig* (belted kingfishers) as their diet consists of *giigoonh* (fish), ashaageshiinhyag (crayfish), molluscs, amphibians, and reptiles. However, *manidoonsag* (insects), juvenile *bineshiinyag* (birds) and *miinan* (berries) can also be integrated within the diet of *ogiishkimanisiig* (belted kingfishers) (Kelley, Bridge, & Hamas, 2009). *Ogiishkimanisiig* (belted kingfishers) hunt by perching or hovering above the water and plunging down into the water once prey has been targeted.

5.4.2.4.2.4 Population Trends

Since 1970, populations of *ogiishkimanisiig* (belted kingfishers) have been in decline. It is hypothesized that their specific nesting requirements make this species susceptible to habitat loss (Government of Manitoba, n.d.),loss of shoreline due to erosion, and human disturbance (Kelley, Bridge, & Hamas, 2009). Globally, *ogiishkimanisiig* (belted kingfishers) hold a status of least concern by the International Union for Conservation of Nature ("IUCN") (IUCN, 2020). However, within the province of Ontario, *ogiishkimanisiig* (belted kingfishers) was designated as a priority species in 2013 by the Bird

Conservation Region Strategy. Under this listing, Ontario has committed to the responsibility of stewardship to ensure *ogiishkimanisiig* (belted kingfishers) continue to have a large portion of their natural range and maintain healthy populations (Collins & Smith, 2014).

5.4.2.4.3 *Gijigijigaaneshiinh* (Black-capped Chickadee, *Poecile atricapillus*)

Table 20: Names for Black-capped Chickadee

Common Name	Black-capped chickadee
Anishinaabemowin (singular)	*Gijigijigaaneshiinh*
Anishinaabemowin (plural)	*Gijigijigaaneshiinyag*
Scientific Name	*Poecile atricapillus*

5.4.2.4.3.1 About

The *Gijigijigaaneshiinh* (black-capped chickadee) is a resident species in Ontario, with a notable presence in the fall and winter months (Speirs, 1985). These northern populations survive harsh winter conditions by lowering their body temperature and entering a state of regulated hypothermia. By doing so, *gijigijigaaneshiinyag* (black-capped chickadees) are able to conserve a considerable amount of energy (Foote, Mennill, Ratcliffe, Smith, & Rodewald, 2010).

5.4.2.4.3.2 Habitat

Gijigijigaaneshiinyag (black-capped chickadees) are found in many habitats such as deciduous forests, mixed forests, open woods, and urban settings. They reside in habitats that can provide dead *mitigoog* (trees), small natural cavities, abandoned nests or nest boxes for nesting purposes (Foote, Mennill, Ratcliffe, Smith, & Rodewald, 2010). *Gijigijigaaneshiinyag* (black-capped chickadees) will build their own nests by excavating a small cavity into *mitigoog* (trees) or stumps and building a nest within the hollowed-out section. Deciduous *mitigoog* (trees) are used more than coniferous *mitigoog* (trees) with *gijigijigaaneshiinyag* (black-capped chickadees) preferring dead over living *mitigoog* (trees) (Campbell R. W., et al., 1997). Coarse vegetation, such as moss and soft materials get added to the nest for additional foundation and lining (Foote, Mennill, Ratcliffe, Smith, & Rodewald, 2010). *Gijigijigaaneshiinyag* (black-capped chickadees) will lay one brood with a clutch size ranging between 1 to 13 eggs (Foote, Mennill, Ratcliffe, Smith, & Rodewald, 2010).

5.4.2.4.3.3 Diet

As a resident species, the diet of *gijigijigaaneshiinyag* (black-capped chickadees) will vary depending on the season. In the spring, summer and fall months *gijigijigaaneshiinyag* (black-capped chickadees) feed primarily on *manidoonsag* (insects) and other small invertebrates, as well as seeds and nuts. During the winter months, *gijigijigaaneshiinyag* (black-capped chickadees) can be seen consuming more seeds, *miinan* (berries) and vegetation, while their consumption of *manidoonsag* (insects) decreases (Foote, Mennill, Ratcliffe, Smith, & Rodewald, 2010).

5.4.2.4.3.4 Population Trends

Global populations of *gijigijigaaneshiinyag* (black-capped chickadees) are listed as species of least concern (IUCN, 2020) and Canadian populations have seen slight increases between the 1966 and 2015 (Government of Canada, 2015). Development and agricultural activities can benefit *gijigijigaaneshiinyag* (black-capped chickadees) as they increase forest edge, and urbanization can offer additional sources of food (Foote, Mennill, Ratcliffe, Smith, & Rodewald, 2010). However, intense forest management and removal of dead *mitigoog* (trees) used for nesting could reduce nesting habitats (Foote, Mennill, Ratcliffe, Smith, & Rodewald, 2010). There are currently no conservation measures for *gijigijigaaneshiinyag* (black-capped chickadees) within Canada or Ontario.

5.4.2.4.4 *Ozaawibineshi* (Yellow Warbler, *Setophaga petechia*)

Table 21: Names for Yellow Warbler

Common Name	Yellow Warbler
Anishinaabemowin (singular)	Ozaawibineshi
Anishinaabemowin (plural)	Ozaawibineshiinyag
Scientific Name	*Setophaga petechia*

Note: Listed as *Dendroica petechia* within the Ministry of Transportation of Ontario's Highway 17 Class Environmental Assessment (Cooke, 2019), the American Yellow Warbler is referred to as *Setophaga petechia* in accordance with the American Ornithologists' Union' s Checklist of North and Middle American Birds (Chesser, et al., 2019). On a similar note, the Anishinaabemowin word *ozaawibineshi* generally means "yellow bird" but is used here to refer to "yellow warbler" as this was the term most commonly used by Anishinaabemowin speakers to describe warblers in an ethnobiological bird study (Rempel, 2019).

5.4.2.4.4.1 About

The *ozaawibineshi* (yellow warbler) is a long distant migrant, breeding in Ontario during the spring and summer months before migrating into Mexico and Central America for winter (Campbell, et al., 2001).

5.4.2.4.4.2 Habitat

Ozaawibineshiinyag (yellow warblers) spend their breeding seasons within thicket, shrubbery, and deciduous vegetation that grow along water bodies such as streams or wetlands (Lowther, Celada, Klein, Rimmer, & Spector, 1999). *Ozaawibineshi* (yellow warbler) nests are built in the fork of a bush or the branches of *mitigoog* (trees). The female will use vegetation and weave them together to make the cup. Softer materials such as furs, feathers, and soft fibers from plants line the interior (Lowther, Celada, Klein, Rimmer, & Spector, 1999). *Ozaawibineshiinyag* (yellow warblers) have an average clutch size between one to seven. However, southern populations may rear additional eggs as the Brown-Headed Cowbird *(Molothrus ater)* is a common brood parasite to the *ozaawibineshi* (yellow warbler) (Campbell,

et al., 2001). The *ozaawibineshi* (yellow warbler) may re-nest above its old nest if it has been parasitized by the cowbird, abandoning its own eggs in the process (Lowther, Celada, Klein, Rimmer, & Spector, 1999).

5.4.2.4.4.3 Diet

*Manidoonsag (*insects) are a large part of *ozaawibineshi* (yellow warbler) diet. *Manidoonsag* (insects) will be foraged by picking through foliage or hovering over leaves. Beetles, caterpillars, midges and other *manidoonsag* (insects) that occupy deciduous vegetation are their prey of choice (Lowther, Celada, Klein, Rimmer, & Spector, 1999). During migration, these *ozaawibineshiinyag* (yellow warblers) will continue to forage within deciduous *mitigoog* (trees) or shrubbery within riparian areas (Campbell, et al., 2001).

5.4.2.4.4.4 Population Trends

Globally, *ozaawibineshiinyag* (yellow warblers) hold a stable population trend with a listing of least concern (IUCN, 2020). Within Canada, it has been estimated that populations have decreased by 26% relative to 1970. This ongoing decrease risks the *ozaawibineshi* (yellow warbler) dropping below Canada's acceptable national population goals (Government of Canada, 2015). Possible explanation for decreases to *ozaawibineshi* (yellow warbler) populations stem from loss or changes of riparian habitats (Government of Canada, 2015).

5.4.2.4.5 *Gwiingwiishi* (Canada Jay, *Perisoreus canadensis*)

Table 22: Names for Canada Jay

Common Name	Canada jay, gray jay, whiskey jack
Anishinaabemowin (singular)	*Gwiingwiishi*
Anishinaabemowin (plural)	*Gwiingwiishiwag*
Scientific Name	*Perisoreus canadensis*

5.4.2.4.5.1 About

The *Gwiingwiishi* (Canada jay) is a member of the Corvidae family and a common passerine *bineshiin* (bird). They are mainly resident within the boreal forests and western mountain ranges of Canada (Strickland & Henri, 2018). *Gwiingwiishiwag* (Canada jays) wear thick plumage with fluffy undercoat feathers which helps them to survive year-round in cold and snowy environments (Strickland & Henri, 2018).

5.4.2.4.5.2 Habitat

Gwiingwiishiwag (Canada jays) can be found in areas with thick evergreen coverage, such as boreal or mixed evergreen-deciduous forests. They have also been found within proximity to edges of forests where opportunities to find food can be greater (Strickland & Henri, 2018). *Gwiingwiishiwag* (Canada

jays) mate in monogamous breeding pairs and will breed beginning in February into March, even if low temperatures and snow is still present. As a result of winter breeding, *gwiingwiishiwag* (Canada jays) eggs enter the incubation process in late winter. Average *gwiingwiishi* (Canada jay) clutches range from two to five eggs. Despite their early brood, *gwiingwiishiwag* (Canada jays) do not produce a second brood in the spring or summer months when temperatures are more favourable (Strickland & Henri, 2018).

5.4.2.4.5.3 Diet

Gwiingwiishiwag (Canada Jays) are highly opportunistic when it comes to food. They are known to forage for *manidoonsag (*insects), *miinan* (berries), fungi as well as scavenge for carrion that may be left over from nearby predators (Strickland & Henri, 2018). *Gwiingwiishiwag* (Canada jays) will also prey on nestlings and eggs of other *bineshiinyag* (birds) (Ibarzabal & Desrochers, 2004) and take advantage of opportunities to find food that may arise from human activity (Campbell, et al., 2001). *Gwiingwiishiwag* (Canada jays) use their saliva in a glue-like manner to stick food to the branches of *mitigoog* (trees) either behind a bark, under lichen or in other small hiding spots in preparation for the winter months. This allows *gwiingwiishiwag* (Canada jays) to have a secure stash of food ready when foraging becomes more difficult upon the arrival of snow (Strickland & Henri, 2018).

5.4.2.4.5.4 Population Trends

Gwiingwiishiwag (Canada jays) hold a listing of least concern by the International Union for Conservation of Nature ("IUCN") Red List for Threatened Species because of their large population and wide range. However, the IUCN does recognize that *gwiingwiishiwag* (Canada jays) are experiencing population decreases from warming climates, habitat loss and disease. Populations are anticipated to move into Canada's more northern boreal habitats as southern climates continue to warm (Strickland & Henri, 2018).

5.4.2.4.6 *Diindiisi* (Blue Jay, *Cyanocitta cristata*)

Table 23: Names for Blue Jay

Common Name	Blue jay
Anishinaabemowin (singular)	*Diindiisi*
Anishinaabemowin (plural)	*Diindiisiwag*
Scientific Name	*Cyanocitta cristata*

5.4.2.4.6.1 About

The *diindiisi* (blue jay) is a passerine belonging to the Corvidae family and can be found along the southern Manitoba/Ontario border and throughout the southern regions of Ontario. *Diindiisi* (blue jay) populations extend across much of Canada and the United States but are contained within the mid-continental and eastern regions (IUCN, 2020).

5.4.2.4.6.2 Habitat

Diindiisiwag (blue jays) can be found in a variety of habitats, such as the mixed wood and spruce forests of Ontario but will take advantage of human presence using *bineshiinyag* (bird) feeders (Nero, 1991). They tend to be more active near forest edges instead of within dense forest stands but have also become common in urban areas (Smith, Tarvin, & Woolfenden, 2013).

5.4.2.4.6.3 Diet

Manidoonsag (insects) and nuts are a large component of the diet of the *diindiisi* (blue jay), but the species will also feed on fruits, grains, and other nestlings and eggs (Smith, Tarvin, & Woolfenden, Blue Jay (Cyanocitta cristata), 2013). Their strong beak allows *diindiisiwag* (blue jays) to peck for *manidoonsag* (insects) and open hard-shelled nuts (Smith, Tarvin, & Woolfenden, Blue Jay (Cyanocitta cristata), 2013). *Diindiisiwag* (blue jays) have been a popular subject in the behavioural studies of 'anting'; a unique preening method that uses *enigoonsag* (ants). *Diindiisiwag* (blue jays) will wipe formicine *enigoonsag* (ants) on the underside of their wings in a similar fashion as if preening their feathers. By wiping the *enigoonsag* (ants), the poisonous formic acid is secreted before the *diindiisi* (blue jay) ingests the *enigoonsag* (ants) (Eisner & Aneshansley, 2008).

5.4.2.4.6.4 Population Trends

Diindiisiwag (blue jay) hold a listing of least concern from the International Union for Conservation of Nature ("IUCN") with stable populations throughout Canada and the United States (IUCN, 2020). However, as a member of corvids their susceptibility to West Nile Virus (WNV) has been a topic in recent research. While WNV has been a cause of mortality in *diindiisiwag* (blue jays), overall, their populations have remained stable. *Diindiisiwag* (blue jays) in Ontario have found positive detections for West Nile Virus ("WNV") demonstrating a potential risk to the population (Canadian Wildlife Health Cooperative, 2018). Its adaptability to urban landscapes makes *diindiisiwag* (blue jay) unlikely to be threatened by moderate habitat changes (Government of Canada, 2015).

5.4.2.4.7 *Gaagaagi* (Common Raven, *Corvus corax*)

Table 24: Names for Common Raven

Common Name	Common raven
Anishinaabemowin (singular)	*Gaagaagi*
Anishinaabemowin (plural)	*Gaagaagiwag*
Scientific Name	*Corvus corax*

5.4.2.4.7.1 About

Gaagaagiwag (common ravens) are a member of the Corvidae family and the largest of the passerine order. They are resident *bineshiinyag* (birds), breeding and over-wintering within Ontario, but can be found throughout most of the Northern Hemisphere. *Gaagaagiwag* (common ravens) are quite smart

in comparison to other *bineshiinyag* (birds) and are known for their playful and mischievous character. (Boarman & Heinrich, 1999). *Gaagaagiwag* (common ravens) begin breeding between the ages of two to four years old and females produce an average clutch of three to seven eggs (Peck, 2005).

5.4.2.4.7.2 Habitat

Gaagaagiwag (common ravens) are capable of thriving in a wide range of habitats such as coniferous and deciduous forests, islands, mountains, grasslands, agricultural lands and urbanized areas, but tend to be absent in open Great Plains (Boarman & Heinrich, 1999). *Gaagaagiwag* (common ravens) have been able to adapt within environments subjected to anthropogenic changes and thrive amongst urbanization (Peck, 2005). *Gaagaagiwag* (common ravens) will take advantage of many different natural and non-natural structures for nesting purposes and have been observed nesting on cliffs, in *mitigoog* (trees) as well as on powerlines, bridges, and telephone poles (Boarman & Heinrich, 1999).

5.4.2.4.7.3 Diet

Gaagaagiwag (common ravens) have a wide and successful range likely due to their feeding adaptabilities. Commonly known as a scavenger, *gaagaagiwag* (common ravens) will feed on the carcasses of other animals and take advantage of human trash. However, *gaagaagiwag* (common ravens) are also predators and will prey on *manidoonsag* (insects), small mammals, reptiles, *giigoonh (*fish) or other *bineshiinyag* (birds). Additionally, they will forage for seeds and grains (Boarman & Heinrich, 1999).

5.4.2.4.7.4 Population Trends

The population of *gaagaagiwag* (common ravens) has increased across *Mikinaak Minis* (Turtle Island) between the years of 1966 and 2014 (Government of Canada, 2015). One hypothesis is that this increase may be due to increased urbanization and road networks which have provided more opportunities for feeding (Peck, 2005). Furthermore, decreased hunting by humans and the reduced usage of poisons such as herbicides, insecticides and pesticides may have also assisted in the overall increase in the population of *gaagaagiwag* (common ravens) (Boarman & Heinrich, 1999). Being of a corvid species, West Nile Virus (“WNV”) is a potential risk to the population of *gaagaagiwag* (common ravens). However, in both 2018 and 2019 the Canadian Wildlife Health Cooperative reported no cases of WNV in *gaagaagiwag* (common ravens) and identified WNV as not having noticeable consequences to populations (Canadian Wildlife Health Cooperative, 2018).

5.4.2.4.8 *Meme* (Pileated Woodpecker, *Dryocopus pileatus*)

Table 25: Names for Pileated Woodpecker

Common Name	Pileated Woodpecker
Anishinaabemowin (singular)	*Meme*
Anishinaabemowin (plural)	*Memeg*
Scientific Name	*Dryocopus pileatus*

5.4.2.4.8.1 About

Memeg (pileated woodpeckers) are the largest of Ontario's *baapaaseg* (woodpeckers). They are found throughout much of Ontario's deciduous and coniferous forests (Naylor, Baker, Hogg, McNicol, & Watt, 1996). *Memeg* (pileated woodpeckers) are heavily reliant on their habitat and density of dead *mitigoog* (trees) within their home range (Naylor, Baker, Hogg, McNicol, & Watt, 1996).

5.4.2.4.8.2 Habitat

Memeg (pileated woodpeckers) are a resident avian species that utilizes forested habitats for feeding, nesting, and roosting, preferring dense mature forest stands with high productivity (Naylor, Baker, Hogg, McNicol, & Watt, 1996). *Memeg* (pileated woodpeckers) are not often spotted in urban or developed areas as they require large acreage and dead or dying *mitigoog* (trees) (Speirs, 1985). Dead or decaying standing *mitigoog* (trees) are of particular importance as they provide crucial feeding and nesting habitat. *Memeg* (pileated woodpeckers) will excavate an interior cavity where the nest will be built, lined with wood chips and shavings (Bull & Jackson, Pileated Woodpecker (Dryocopus pileatus), version 2.0, 2011). There is some regional variation, but in general *memeg* (pileated woodpeckers) will start nesting between April and May till mid-July (Rousseau & Drolet, 2017). An average clutch size of three to five eggs will be lain within the cavity, with a single brood (Bull & Jackson, Pileated Woodpecker (Dryocopus pileatus), version 2.0, 2011). The extent of the home range of *memeg* (pileated woodpeckers) can vary between 40 to 260 ha, with both parental *memeg* (pileated woodpeckers) defending this territory throughout the year (Naylor, Baker, Hogg, McNicol, & Watt, 1996).

5.4.2.4.8.3 Diet

Being a resident avian species, *memeg* (pileated woodpeckers) incorporate a variety of sources of food in their diet to allow for proper nutrition throughout the seasons. *Memeg* (pileated woodpeckers) will feed primarily on carpenter *enigoonsag* (ants) but will also prey on the larvae of wood boring beetles, termites, caterpillars, and grasshoppers (Bull & Jackson, Pileated Woodpecker (Dryocopus pileatus), version 2.0, 2011). Additionally, in the colder months, *memeg* (pileated woodpeckers) will forage for fruits and nuts (Naylor, Baker, Hogg, McNicol, & Watt, 1996). Much of their *manidoons* (insect) diet is gathered from dead and decaying *mitigoog* (trees) with well decomposed woody debris by using three main techniques: gleaning, bark pecking and excavation. Gleaning entails plucking *manidoonsag* (insects) from crevices while bark pecking and excavation entails pecking into *mitigoog* (trees) to retrieve *manidoonsag* (insects) from inside (Bull & Jackson, Pileated Woodpecker (Dryocopus pileatus), version 2.0, 2011).

5.4.2.4.8.4 Population Trends

During the 1800s, populations of *memeg* (pileated woodpeckers) declined as a result of clear cutting of forests in Ontario (Speirs, 1985). Presently, the *meme* (pileated woodpecker) is listed by the International Union for Conservation of Nature ("IUCN") (2020) as least concern as global populations have shown an overall increase since 1970 (Bull & Jackson, Pileated Woodpecker (Dryocopus pileatus),

version 2.0, 2011) placing *memeg* (pileated woodpeckers) at an acceptable level relative to national population goals (Government of Canada, 2015). While *memeg* (pileated woodpeckers) do not carry any conservation concerns in Ontario, possible risks have been identified such as forest management, which can reduce the availability of decaying standing *mitigoog* (trees), as well as habitat fragmentation which could increase vulnerability of *memeg* (pileated woodpeckers) to predators (Bull & Jackson, Pileated Woodpecker (Dryocopus pileatus), version 2.0, 2011).

5.4.2.4.9 Hairy *Baapaase* (Hairy Woodpecker, *Dryobates villosus*)

Table 26: Names for Hairy Woodpecker

Common Name	Hairy woodpecker
Anishinaabemowin (singular)	Hairy *Baapaase*
Anishinaabemowin (plural)	Hairy *Baapaaseg*
Scientific Name	*Dryobates villosus*

5.4.2.4.9.1 About

The hairy *baapaase* (woodpecker) is a resident species that is widely distributed across *Mikinaak Minis* (Turtle Island), ranging from Alaska into Mexico (Jackson & Ouellet, 2018). Within Ontario, this *baapaase* (woodpecker) is recognizable by being larger than other *baapaaseg* (woodpeckers) and its prevalence throughout many habitats.

5.4.2.4.9.2 Habitat

The hairy *baapaase* (woodpecker) occupies a wide range of habitats. Most commonly in woodlands and forests made of coniferous and deciduous *mitigoog* (trees), they can also be seen in urban backyards, parks, or disturbed forests (Jackson & Ouellet, 2018). Similar to other *baapaaseg* (woodpeckers), hairy *baapaaseg* (woodpeckers) nest in cavities within *mitigoog* (trees). However, it is more common for them to construct their own nest within deciduous *mitigoog* (trees) (Sandilands A. I., 2010). Average clutch size ranges between three to six eggs, with one brood raised annually. Hairy *baapaaseg* (woodpeckers) remain within their home range for their entire lives, rarely exploring more than 0.5 km outside of their normal range (Sandilands A. I., 2010).

5.4.2.4.9.3 Diet

The diet of hairy *baapaaseg* (woodpeckers) is comprised mainly of *manidoonsag* (insects) and *manidoons* (insect) larvae of wood boring beetles, *enigoonsag* (ants) or moth pupae (Jackson & Ouellet, 2018). However, substitution with fruits, grains and seeds will be incorporated by some *baapaaseg* (woodpeckers) (Sandilands A. I., 2010).

5.4.2.4.9.4 Population Trends

International populations have been listed with a status of least concern by the International Union for Conservation of Nature ("IUCN") with populations overall increasing across *Mikinaak Minis* (Turtle Island) (IUCN, 2020). Within present day Canada, populations of hairy *baapaase*g (woodpeckers) have increased by 95% relative to the early 1970s (Government of Canada, 2015) and is not a species addressed under the Committee on the Status of Endangered Wildlife in Canada ("COSEWIC"). Although Canada's populations have not been exposed to any immediate threats, loss of habitat fragmentation of forests in other parts of *Mikinaak Minis* (Turtle Island) has seemed to reduce habitat suitability for the *baapaase* (woodpecker) (Sandilands A. I., 2010).

5.4.2.4.10 Great Gray *Gookooko'oo* (Great Gray Owl, *Strix nebulosi*)

Table 27: Names for Great Gray Owl

Common Name	Great Gray Owl
Anishinaabemowin (singular)	Great Gray g*ookooko'oo*
Anishinaabemowin (plural)	Great Gray g*ookooko'oog*
Scientific Name	*Strix nebulosa*

5.4.2.4.10.1 About

The great gray *gookooko'oo* (owl) is a resident throughout Ontario (Speirs, 1985). Despite only weighing approximately 2.5 lbs, they are extremely powerful when it comes to hunting and diving into packed snow for prey (Bull & Duncan, Great Gray Owl (Strix nebulosa), version 2.0, 1993).

5.4.2.4.10.2 Habitat

The great gray *gookooko'oo* (owl) spends much of its time in northern evergreen forests and taiga environments. Proximity to semi-open environments such as meadows and bogs provide great gray *gookooko'oog* (owls) with many hunting opportunities (Turisk, 2000). The great gray *gookooko'oo* (owl) does not build its own nest but will make use of nests built by other species. Nests of raptors, *ajidamoog (*squirrels) and human-made platforms have been used by great gray *gookooko'oog* (owls). An average of two to five eggs will then be lain by the great gray *gookooko'oo* (owl) (Bull & Duncan, Great Gray Owl (Strix nebulosa), version 2.0, 1993).

5.4.2.4.10.3 Diet

Voles, *waawaabiganoojiinyag (*mice), *nenaapaajinikesiwag (*moles), *agongosag (*chipmunks), and lemmings make up a large part of the great gray *gookooko'oo* (owl) diet (Bull & Duncan, Great Gray Owl (Strix nebulosa), version 2.0, 1993). These *gookooko'oog* (owls) are well adapted to hunting small mammals that might otherwise go unheard and unnoticed by other predators. Even in snowy

conditions, great gray *gookooko'oo*g (owls) will listen for activity below the snow, plunging into the snow to grab their prey (Bull & Duncan, Great Gray Owl (Strix nebulosa), version 2.0, 1993).

5.4.2.4.10.4 Population Trends

The great gray *gookooko'oo* (owl) is an elusive species making it difficult to monitor their populations within present day Canada. In 1996, populations of the great grey *gookooko'oo*g (owls) were estimated at 50,000 individuals in the wilderness, giving them a status of not at risk from the Committee on the Committee on the Status of Endangered Wildlife in Canada ("COSEWIC") (Government of Ontario, 2019). Deficiencies in data has made it difficult to estimate current populations (Government of Ontario, 2019). Risk of habitat loss from harvesting which reduces breeding, perching and nesting habitats threatens the populations of great gray *gookooko'oog* (owls) (Bull & Duncan, Great Gray Owl (Strix nebulosa), version 2.0, 1993).

5.4.2.4.11 Northern Hawk *Gookooko'oo* (Northern Hawk Owl, *Surnia ulula*)

Table 28: Names for Northern Hawk Owl

Common Name	Northern hawk owl
Anishinaabemowin (singular)	Northern hawk g*ookooko'oo*
Anishinaabemowin (plural)	Northern hawk g*ookooko'oog*
Scientific Name	*Surnia ulula*

5.4.2.4.11.1 About

The Northern hawk *gookooko'oo* (owl) is a resident *gookooko'oo* (owl) species found throughout the northern regions of *Mikinaak Minis* (Turtle Island) and Eurasia. The majority of *Mikinaak Minis* (Turtle Island) populations spend their time in present day Canada but have been seen in northern states of the United States (Duncan, 2018). In Canada, the Northern hawk *gookooko'oo* (owl) can be found in boreal forests in remote locations making monitoring its population a difficult task (Government of Canada, 2015).

5.4.2.4.11.2 Habitat

Northern hawk *gookooko'oog* (owls) tend to inhabit moderately dense forests made up of coniferous or mixed coniferous-deciduous forests that neighbor aquatic habitats with nearby open areas (Duncan, 2018). Perches along open areas such as logging sites, prairie landscapes or farmland provide good hunting and foraging opportunities (Duncan, 2018). Environments subjected to fire or that contain dead *mitigoog* (trees) serve as strong nesting habitats for the Northern hawk *gookooko'oo* (owl). Their nests will frequently be built in old *baapaase* (woodpecker) cavities or burnt and rotted-out cavities in *mitigoog* (trees) (Duncan, 2018). Northern hawk *gookooko'oo*g (owls) start nesting between March and

April till the end by the end of July (Rousseau & Drolet, 2017). During this time, between 3 to 13 eggs can be lain by the female (Duncan, 2018).

5.4.2.4.11.3 Diet

Sight is one of the more important senses for Northern hawk *gookooko'oog* (owls) who rely on their vision as their primary method of detecting prey. with this adaptation, prey can be spotted from over 800 m away (Duncan, 2018). Hunting primarily during the daytime, Northern hawk *gookooko'oog* (owls) are predators of small mammals and rodents, as well as other *bineshiinyag* (birds) such as *bine* (grouse). They have also been observed to stash prey for future consumption in crevices and holes in nearby *mitigoog* (trees) (Duncan, 2018). In years with high prey abundance, Northern hawk *gookooko'oo* (owl) populations are more likely to remain within Canada instead of spreading into the United States (Duncan, 2018).

5.4.2.4.11.4 Population Trends

Northern hawk *gookooko'oog* (owls) are listed as least concern globally (IUCN, 2020) and as not at risk nationally by the Committee on the Committee on the Status of Endangered Wildlife in Canada ("COSEWIC") (Government of Ontario, 2019). However, Ontario has identified the Northern hawk *gookooko'oo* (owl) as a priority species for conservation and stewardship efforts in the Taiga Shield and Hudson Plain areas of Northern Ontario (Collins & Smith, 2013). As a result of deficient data, the reliability of exact population trends of the Northern hawk *gookooko'oo* (owl) is uncertain throughout Canada (Government of Canada, 2015).

5.4.2.4.12 Boreal *Gookooko'oo* (Boreal Owl, *Aegolius funerous*)

Table 29: Names for Boreal Owl

Common Name	Boreal owl
Anishinaabemowin (singular)	Boreal g*ookooko'oo*
Anishinaabemowin (plural)	Boreal g*ookooko'oog*
Scientific Name	*Aegolius funerous*

5.4.2.4.12.1 About

Boreal *gookooko'oog* (owls) are circumpolar *bineshiinyag* (birds) that resides year-round in Canada's boreal forests and are a rare sighting for most (Government of Canada, 2015). Boreal *gookooko'oog* (owls) breed in Ontario's northern boreal forests but can be found in more southern areas during the winter and spring months (Speirs, 1985).

5.4.2.4.12.2 Habitat

The boreal *gookooko'oo* (owl) prefers mixed-conifer and mature forest stands usually containing *zesegaandagoog* (black spruce), *wiigwaas* (birch) and *azaadiwag* (trembling aspen) (Hayward & Hayward, 1993). However, hunting will often take place in open spaces such as agricultural fields or clear-cut areas where prey can be easily spotted. Boreal *gookooko'oog* (owls) use small cavities or crevices in *mitigoog* (trees) for nesting purposes, such as cavities made by *baapaaseg* (woodpeckers) or in naturally occurring holes (Hayward & Hayward, 1993). Nesting can begin in March and continue until late July (Rousseau & Drolet, 2017) with clutch size ranging from 1 to 19 eggs (Hayward & Hayward, 1993).

5.4.2.4.12.3 Diet

The boreal *gookooko'oo* (owl) does not expend large amounts of energy actively hunting for prey but will perch and wait for a prey to approach. Their diet is made up mostly of small rodents and other small mammals such as *waawaabiganoojiinyag* (mice) and *ajidamoog* (squirrels). However, *manidoonsag* (insects) and small *bineshiinyag* (birds) can also be incorporated into their diet (Hayward & Hayward, 1993).

5.4.2.4.12.4 Population Trends

Because the boreal *gookooko'oo* (owl) is rarely seen, much remains unknown about the species resulting in an overall deficiency of data with respect to Canadian populations (Government of Canada, 2015). The boreal *gookooko'oo* (owl) is listed as a priority species with stewardship responsibilities within Ontario's Boreal Softwood Shield (Collins & Smith, 2014). However, despite unreliable population statistics, the boreal gookooko'oo (owl) holds a Committee on the Status of Endangered Wildlife in Canada ("COSEWIC") status of not at risk and a status of least concern internationally by the International Union for Conservation of Nature ("IUCN") (Government of Ontario, 2019). Potential risks to boreal *gookooko'oog* (owls) include their likely susceptibility to loss of habitat, specifically mature forest habitats. Activities from timber harvesting, clear-cutting, and burning can reduce mature forests and nesting habitats as well as potentially displace prey species from the area (Government of Canada, 2015).

5.4.2.4.13 Northern Saw-whet *Gookooko'oo* (Northern Saw-whet Owl, *Aegolius acadicus*)

Table 30: Names for Northern Saw-whet Owl

Common Name	Northern saw-whet owl
Anishinaabemowin (singular)	Northern saw-whet *gookooko'oo*
Anishinaabemowin (plural)	Northern saw-whet *gookooko'oog*
Scientific Name	*Aegolius acadicus*

5.4.2.4.13.1 About

The Northern saw-whet *gookooko'oo* (owl) is Ontario's smallest owl, but one of the most common throughout *Mikinaak Minis* (Turtle Island). Northern saw-whet *gookooko'oog* (owls) are highly nocturnal and are a rare sighting for most people. They have numerous predators such as other *gookooko'oog* (owls)*, gekekwag* (hawks), and falcons (Rasmussen, Sealy, Cannings, Pool, & Gill, 2007).

5.4.2.4.13.2 Habitat

Northern saw-whet *gookooko'oog* (owls) tend to prefer mature forest stands with both deciduous and coniferous *mitigoog* (trees) within Ontario. The presence of both *mitigoog* (trees) is important—deciduous *mitigoog* (trees) are favoured for nesting while dense conifers are used for roosting as the dense foliage keeps them out of sight (Rasmussen, Sealy, Cannings, Pool, & Gill, 2007). Northern saw-whet *gookooko'oog* (owls) will take over nests previously constructed, such as the excavated cavities of *memeg* (pileated woodpecker) (Rasmussen, Sealy, Cannings, Pool, & Gill, 2007).

5.4.2.4.13.3 Diet

Being a small species themselves, Northern saw-whets prey on very small mammals and rodents such as shrews, *waawaabiganoojiinyag* (mice*)*, voles, *apakwaanaajiinyag (*bats), and *agongosag* (chipmunks). Occasionally, supplementing their diet with other small *bineshiinyag* (birds) or *manidoonsag* (insects) (Rasmussen, Sealy, Cannings, Pool, & Gill, 2007).

5.4.2.4.13.4 Population Trends

Within the last 40 years, Northern saw-whet *gookooko'oo* (owls) have undergone a small population decrease on *Mikinaak Minis* (Turtle Island) (IUCN, 2020). However, they currently hold a status of least concern by the International Union for Conservation of Nature ("IUCN") (2020) as the declines are not believed to threaten the overall populations nor reach vulnerable thresholds. Additionally, Ontario's Northern saw-whet *gookooko'oog* (owls) populations are not listed under the Committee on the Status of Endangered Wildlife in Canada ("COSEWIC"). In order to maintain suitable Northern saw-whet habitats, it is encouraged that dead deciduous *mitigoog* (trees) are abundant for nesting purposes, as well as nest boxes (Rasmussen, Sealy, Cannings, Pool, & Gill, 2007).

5.4.2.4.14 Broad-winged *Gekek* (Broad-winged Hawk, *Buteo platypterus*)

Table 31: Names for broad-winged Hawk

Common Name	Broad-winged hawk
Anishinaabemowin (singular)	Broad-winged g*ekek*
Anishinaabemowin (plural)	Broad-winged g*ekekwag*
Scientific Name	*Buteo platypterus*

5.4.2.4.14.1 About

The broad-winged *gegek* (hawk) can be seen in northwestern Ontario's deciduous and mixed forests. Spending the spring and summer months breeding in present day Canada, broad-winged *gekekwag* (hawks) are long-distance migrants and will migrate into the neotropical regions of Central and South America as winter returns to Canada (Government of Canada, 2015)

5.4.2.4.14.2 Habitat

Broad-winged *gekekwag* (hawks) have demonstrated a preference for large patches of deciduous and mixed forests stands near riparian areas but tend to avoid areas with heavy agriculture as they lack extensive forest cover (James R. D., 1984). In Ontario, broad-winged *gekekwag* (hawks) can be found nesting in deciduous *mitigoog* (trees) such as *wiigwaas* (birch), *azaadiwag* (trembling aspen), *aninaatig* (maple), *mitigomizh* (oak) or *zhingobiiwaatig* (pine) (Sandilands A. P., 2005). The overall home range of broad-winged *gekekwag* (hawks) has been estimated to be approximately 2.5 km^2 (James R. D., 1984).

5.4.2.4.14.3 Diet

Broad-winged *gekekwag* (hawks) frequently prey upon small mammals, amphibians, reptiles, nestlings and juvenile *bineshiinyag* (birds), as well as *manidoonsag* (insects). Their most frequent prey species are *omagakiig* (frogs), *obiigomakakiig* (toads), and small rodents but broad-winged *gekekwag* (hawks) are opportunistic and will feed on what is abundant and available (Goodrich, Crocoll, & Senner, 2014). Broad-winged *gekekwag* (hawks) can be spotted perched below forest canopies or near forest edges where they watch for potential prey.

5.4.2.4.14.4 Population Trends

Having been a persecuted species in the past, the populations of broad-winged *gekekwag* (hawks) have experienced moderate but steady increases since the 1970s (Government of Canada, 2015). Reforestation in regions across *Mikinaak Minis* (Turtle Island) is thought to have increased the breeding habitat for broad-winged *gekekwag* (hawks) (Goodrich, Crocoll, & Senner, 2014). While broad-winged *gekekwag* (hawks) are listed with least concern globally (IUCN, 2020), they have been identified as a priority for stewardship in Ontario's boreal hardwood transition regions along the Manitoba/Ontario border (Collins & Smith, 2014). Potential threats to broad-winged *gekek* (hawk) populations are generally centered around loss of habitat and fragmentation which would impact available breeding grounds within Canada (Goodrich, Crocoll, & Senner, 2014).

5.4.2.4.15 Northern Goshawk (Northern Goshawk, *Accipiter gentilis*)

Table 32: Names for Northern Goshawk

Common Name	Northern goshawk

Scientific Name	*Accipiter gentilis*

5.4.2.4.15.1 About

The Northern goshawk is a large forest raptor that can be found within Ontario's boreal forests. It is a partial migrant, sometimes spending winters within Ontario after the breeding season (Squires & Reynolds, 1997). Goshawks are secretive in nature making it difficult to estimate population and trends with certainty (Government of Canada, 2015).

5.4.2.4.15.2 Habitat

Northern goshawks seem to give preference to mature forests (Sandilands A. P., 2005). Within Ontario, they can be found occupying coniferous, deciduous, and mixed forests. Forests with open understories are frequented as they allow the goshawk to fly near the ground of a forested area (Squires & Reynolds, 1997). Nesting takes place within the branches of *mitigoog* (trees) and are usually built by the female with twigs, mosses, and feathers. Alternatively, existing nests will be repaired and used (Sandilands A. P., 2005). Nesting generally begins between the months of March and April and can continue until the end of August (Rousseau & Drolet, 2017). During this time females around the age of two will lay between two and four eggs (Sandilands A. P., 2005), usually with a two to three-day interval between each egg (Squires & Reynolds, 1997). Goshawks are very territorial especially when protecting nestlings. They have been reported to attack humans and kill other raptors when threatened (Squires & Reynolds, 1997).

5.4.2.4.15.3 Diet

The Northern goshawk are carnivorous *bineshiinyag* (birds) and will prey upon *ajidamoog (*squirrels), *waaboozoog* (rabbits), *zhiishiibag* (ducks) and small *bineshiinyag* such as *diindiisiwag* (Blue jays), *gwiingwiishiwag* (Gray jays) or *baapaaseg* (woodpeckers) (Sandilands A. P., 2005). Northern goshawks will only perch for a brief amount of time when searching for prey. Once spotted, the goshawk will fly at high speeds and manoeuvre around *mitigoog* (trees) or even flythrough shrubs and bushes in order to attain their prey (Squires & Reynolds, 1997). Piles of fur or feathers can be a sign of Northern goshawk activity as they will perch and pluck their prey before consumption (Sandilands A. P., 2005). During the nesting season, Northern goshawks have been observed caching prey to facilitate the frequent feeding of nestlings (Sandilands A. P., 2005).

5.4.2.4.15.4 Population Trends

The Northern goshawk holds a global status of least concern (IUCN, 2020), and a national status of not at risk from the Committee on the Status of Endangered Wildlife in Canada ("COSEWIC") (Government of Ontario, 2019). Within the province of Ontario, Northern goshawks are listed as a priority species with concerns over their conservation in the Boreal Softwood Shield region (Collins & Smith, 2014) and the Manitoba/Ontario Boreal Hardwood Transition region (Collins & Smith, 2014). The Northern goshawk is sensitive to changes in habitat such as fragmentation and logging. Such activities can result in the loss

of mature *mitigoog* (trees) and reduce canopy cover important for nesting. As a result, increasing road networks and creating open spaces can have repercussions to local Northern goshawk populations (Squires & Reynolds, 1997). Additionally, Northern goshawk populations are influenced by prey abundance (Salafsky, Reynolds, Noon, & Wiens, 2007). Many of their primary prey such as *waaboozoog* (hares) and *bine* (grouse) experience population fluctuations on an 11-year cycle. This is thought to determine whether the Northern goshawk will migrate South to optimize their prey opportunities (Doyle & Smith, 1994).

5.4.2.4.16 Northern Harrier (Northern Harrier, *Circus hudsonius*)

Table 33: Names for Northern Harrier

Common Name	Northern Harrier
Scientific Name	*Circus hudsonius*

5.4.2.4.16.1 About

The northern harrier is a common *gekek* (hawk) around Ontario, often seen flying low over marshlands (Sandilands A. P., 2005). More common in summer, the northern harrier is a short-distance migrant, seeking warmer temperatures in southern Canada, the United States or northern Mexico (Government of Canada, 2015).

5.4.2.4.16.2 Habitat

During breeding periods, northern harriers prefer open areas with dense vegetation such as open wetlands and marshes, prairie grassland or arctic tundra (Smith, Wittenberg, Macwhirter, & Bildstein, 2011). These regions provide heightened visibility for hunting purposes as well as allowing for the harrier to conceal their nest in surrounding thicket. Harriers begin arriving in Ontario in March (Sandilands A. P., 2005) and will begin the nesting process shortly after (Rousseau & Drolet, 2017). Nesting more commonly occurs in vegetation low to the ground such as tall grasses, reeds, and bulrushes (Smith, Wittenberg, Macwhirter, & Bildstein, 2011). Female harriers can reach sexual maturity after one year of age, laying between four to five eggs (Sandilands A. P., 2005). While the northern harrier does not display territorial characteristics, it will defend its nest from other raptors or predators (Sandilands A. P., 2005).

5.4.2.4.16.3 Diet

Northern harriers are known for their habit of flying low over fields and marshes in search of prey. They rely heavily on auditory cues when hunting (Smith, Wittenberg, Macwhirter, & Bildstein, 2011). Harriers hunt prey including rodents and other small mammals, *bineshiinyag* (birds), amphibians, and reptiles (Smith, Wittenberg, Macwhirter, & Bildstein, 2011).

5.4.2.4.16.4 Population Trends

Northern harriers hold a global status of least concern (IUCN, 2020) and a listing of not at risk from the Committee on the Status of Endangered Wildlife in Canada ("COSEWIC") (Government of Ontario, 2019). Within Ontario, the Northern harrier is a priority species with concerns over conservation in the Lower Great Lakes Area (Government of Canada, 2015). The northern harrier experienced significant declines in population as a result of pesticide-use before the 1970s. Harriers were sensitive to organochlorine pesticides which decreased their overall reproductive success (Sandilands A. P., 2005). Since restrictions were placed on pesticide-spraying in the 1970s, Northern harriers have experienced moderate population declines between 25%-50% (Government of Canada, 2015). Currently, loss of habitat is the greatest threat to northern harriers as wetlands areas are diminished or drained which decreases viable harrier breeding habitat (Smith, Wittenberg, Macwhirter, & Bildstein, 2011).

5.4.2.4.17 *Biijigigwane* (Osprey, *Pandion haliaetus*)

Table 34: Names for Osprey

Common Name	Osprey
Anishinaabemowin (singular)	*Biijigigwane*
Anishinaabemowin (plural)	*Biijigigwaneg*
Scientific Name	*Pandion haliaetus*

5.4.2.4.17.1 About

Biijigigwaneg (osprey) are migratory *bineshiinyag* (birds) of the order Accipitriformes that spend their summers breeding in Ontario before migrating south into the United States, Mexico and Central America. They are Ontario's only raptor that is known to dive and submerge under water in pursuit of *giigoonhyag* (fish) (Bierregaard, Poole, Martell, Pyle, & Patten, 2016).

5.4.2.4.17.2 Habitat

Biijigigwaneg (osprey) commonly nest near water bodies such as marshes, swamps, bogs, or flooded terrain (Sandilands A. P., 2005). Their nests can be constructed on tops of natural structures such as snags, cliffs or *mitigoog* (trees) as well as human-made structures like utility lines, radio towers, or channel markers in water bodies (Bierregaard, Poole, Martell, Pyle, & Patten, 2016). With a large dependence on *giigoonhyag* (fish), nests are normally within proximity to a source of water, usually no further than about 20 km (Bierregaard, Poole, Martell, Pyle, & Patten, 2016). Female *biijigigwaneg* (osprey) commonly start nesting around the age of three years, usually laying between one to five eggs (Sandilands A. P., 2005).

5.4.2.4.17.3 Diet

The diet of *biijigigwaneg* (osprey) is primarily made up of *giigoonhyag* (fish) that can be caught by either by plunging up to 1 m deep into the water or by hunting in shallow areas. However, water and weather conditions such as rain, wind, of cloud cover may alter the success rate in catching *giigoonhyag* (fish) (Sandilands A. P., 2005). *Biijigigwaneg* (osprey) are opportunistic feeders, as they will prey on nearly any *giigoonh* (fish) that approaches the surface of the water.

5.4.2.4.17.4 Population Trends

Internationally, *biijigigwaneg* (osprey) populations are increasing and are thus listed as least concern (IUCN, 2020). The *biijigigwaneg* (osprey) is not listed nationally under the Committee on the Status of Endangered Wildlife in Canada ("COSEWIC") or provincially under the Committee on the Status of Species at Risk in Ontario ("COSSARO"). However, it is protected under Ontario's *Fish and Wildlife Conservation Act, 1997* as specially protected *bineshiinyag* (birds). Under the legislation, restrictions are placed on trapping and hunting *biijigigwaneg* (osprey). *Biijigigwaneg* (osprey) experienced significant population loss because of Dichlorodiphenyltrichloroethane (DDT) use in the 1940s, with their populations growing between the 1950s and 1980s once restrictions were placed on the use of DDT (Naylor, Churcher, Cavalier, Hiller, & Saunders, 2006). Their vulnerability to disturbance has resulted in their nests being classified as natural resource values where projects within the area must work to minimize impacts from disturbance (Naylor, Churcher, Cavalier, Hiller, & Saunders, 2006). Loss of habitat and nesting sites as a result of loss of *mitigoog* (trees) and development along shorelines significantly impact *biijigigwaneg* (osprey) and can affect breeding distribution and productivity (Bierregaard, Poole, Martell, Pyle, & Patten, 2016; Sandilands A. P., 2005).

5.4.2.4.18 Merlin (*Falco columbarius*)

Table 35: Names for Merlin

Common Name	Merlin
Scientific Name	*Falco columbarius*

5.4.2.4.18.1 About

Merlins are small raptors of the order Falconiformes. Their range extends globally, with breeding occurring in the Northern hemisphere and seasonal migration south into Latin-America and as far as Ecuador. Many subspecies can be found on different continents with three subspecies within North America and six subspecies dispersed throughout Eurasia (Warkentin, et al., 2005).

5.4.2.4.18.2 Habitat

Ontario is part of the merlin's breeding habitat and provides coniferous and mixed forests for nesting (Warkentin, et al., 2005). Preference is given for non-contiguous forests with semi-open spaces near

lakes or bogs. However, merlins have been observed to adapt well in urban areas and will nest in urban parks or backyards within close proximity to roads and traffic (Sandilands A. P., 2005). As a migratory species, merlins arrive to southern Ontario around April and move into the northern regions by May where they remain for breeding until September (Sandilands A. P., 2005). The nesting period runs from May until August (Rousseau & Drolet, 2017) and the merlin will protect their nest by chasing away other *bineshiinyag* (birds) or attacking potential predators. Females reach sexual maturity around two years of age and lay a clutch between one to five eggs within two-day intervals (Sandilands A. P., 2005). Merlins do not normally build nests, instead they occupy nests previously made by *aandegwag* (crows), *gaagaagiwag* (common ravens) or other corvids (Warkentin, et al., 2005).

5.4.2.4.18.3 Diet

, Merlin mainly prefer other *bineshiinyag* (birds) such as warblers, sparrows, or larger species such as *bine* (grouse) on occasion. *Manidoonsag* (insects) such as *oboodashkwaanishiinyag* (dragonflies) and *bapakineg* (grasshoppers) can also be incorporated into their diet (Sandilands A. P., 2005). The merlin will perch near open spaces when scoping for prey, chasing the prey, and attacking in mid-air (Warkentin, et al., 2005). Prey can then be consumed at the time of attack or cached for future consumption (Sandilands A. P., 2005).

5.4.2.4.18.4 Population Trends

During the 1950s and 1960s merlins fell victim to organochlorine pesticides which resulted in thinning of their eggshells and consequential decline in population. Since then, however, populations have seen large increases and are deemed to be at an acceptable level at a national level (Government of Canada, 2015). Populations of merlin are listed globally as least concern by the International Union for Conservation of Nature ("IUCN") (IUCN, 2020), not at risk federally under the Committee on the Status of Endangered Wildlife in Canada ("COSEWIC)" (Government of Canada, 2015) and currently hold no special concerns within the province of Ontario. Potential risks to merlins stem from disturbance to their habitat either through direct disturbance to their nests in urban areas or a reduction in forest edges (Sandilands A. P., 2005; Warkentin, et al., 2005).

5.4.2.4.19 American Kestrel (*Falco sparverius*)

Table 36: Names for American Kestrel

Common Name	American kestrel
Scientific Name	*Falco sparverius*

Note: The sparrowhawk (*Accipiter nisus*), also known as the Eurasian sparrowhawk or Northern sparrowhawk, is a species from the Accipiter genus found throughout Europe, Asia and Africa but is not a species known within North America. 'Sparrow hawk' was a common name previously used for the American kestrel (*Falco sparverius*). However, the American Ornithologist' Union issued a correction in

the sixth edition checklist (1983) over the use of the name 'Sparrow hawk' and officially named the species as 'American kestrel' to avoid confusion with the Eurasian sparrowhawk (Chesser, et al., 2019). It is assumed that the 'Sparrow hawk' noted by the Ministry of Natural Resources and Forestry "(MNRF") in the Ministry of Transportation of Ontario's Highway 17 Class Environmental Assessment was an American Kestrel (*Falco sparverius*) under an incorrectly used common name. Going forward, this document will be referring to the observed species as the American kestrel.

5.4.2.4.19.1 About

The American kestrel is one of *Mikinaak Minis'* (Turtle Island's) most common and widespread raptor of the *Falco* genus (Smallwood & Bird, 2002). They can often be seen hunting during the day by perching above an open area and scanning for prey (Smallwood & Bird, 2002). Canadian kestrel populations have demonstrated long-term declines since 1970 (Government of Canada, 2015).

5.4.2.4.19.2 Habitat

American kestrels tend to favor habitats with open areas, short vegetation and sparse *mitigoog* (trees). They can often be seen in grasslands, meadows and marshland but have also adapted well within habitats modified by humans such as urban areas, parks, and farmland (Smallwood & Bird, 2002). Furthermore, areas that have undergone significant disturbance such as burns, clear-cuts or agriculture activity have also introduced kestrels (Sandilands A. P., 2005). The American kestrel does not build its own nest, instead nests in old *baapaase* (woodpecker) cavities or naturally occurring cavities in deciduous *mitigoog* (trees) (Smallwood & Bird, 2002). Female kestrels can begin laying eggs around the age of one and will lay between four to five eggs, within two to three-day intervals (Smallwood & Bird, 2002) (Sandilands A. P., 2005). While American kestrels will defend their nest from larger raptors, they are more tolerant towards other *bineshiinyag* (birds) in the surrounding area (Sandilands A. P., 2005).

5.4.2.4.19.3 Diet

When perched, the American kestrel surveys the surrounding area for *manidoonsag* (insects) and other invertebrates which make up a large portion of their diet (Smallwood & Bird, 2002). As an opportunistic feeder, the kestrel will also consume small mammals such as *waawaabiganoojinyag* (mice) or *apakwaanaajiinyag* (bats), as well as a variety of other *bineshiinyag* (birds) (Sandilands A. P., 2005).

5.4.2.4.19.4 Population Trends

The American kestrel maintains stable populations on a global scale and is listed as a species of least concern by the International Union for Conservation of Nature ("IUCN") (2020) but has not been assessed nationally under COSEWIC. Within Ontario, the American kestrel is a priority species with conservation concerns in the Boreal Hardwood Transition and Lower Great Lakes regions (Collins & Smith, 2014; Collins & Smith, 2014). While clearing forests has seemed to have been beneficial for the kestrel by increasing viable nesting habitat (Sandilands A. P., 2005), new risks to their food sources have developed. Since American kestrels primarily prey on *manidoonsag* (insects), intensive use of even regulated pesticides has likely impacted the available food supply (Government of Canada, 2015).

5.4.2.4.20 *Wiinaange* (Turkey Vulture, *Cathartes aura*)

Table 37: Names for Turkey Vulture

Common Name	Turkey vulture
Anishinaabemowin (singular)	*Wiinaange*
Anishinaabemowin (plural)	*Wiinaangeg*
Scientific Name	*Cathartes aura*

5.4.2.4.20.1 About

The *wiinaange* (turkey vulture) is the most widespread vulture species throughout North and South America. They migrate to Ontario between March and May and will depart back south between August and November (Kirk & Mossman, 1998). Their featherless red head is easily distinguishable and can be seen as they soar high above, using their keen eyesight and sense of smell to locate carrion (Sandilands A. P., 2005).

5.4.2.4.20.2 Habitat

Within Ontario, *wiinaangeg* (turkey vultures) inhabit a variety of terrains and can be found nesting on escarpments, within hollowed *mitigoog* (trees), stumps or logs, as well as in caves or between rock ledges (Sandilands A. P., 2005). They can often be found near agricultural landscapes where broken woodland areas are present (Sandilands A. P., 2005). *Wiinaangeg* (turkey vultures) are often seen roosting on high perches or along steep drops where they can sun and preen. *Wiinaangeg* (turkey vultures) will return to previous nesting sites and defend their territory (Sandilands A. P., 2005). *Wiinaangeg* (turkey vultures) do not build nests, instead, they may clear a small spot and lay their eggs directly on the surface being used (Kirk & Mossman, 1998). On average, between one to two eggs will be lain, generally within a one to two-day interval (Kirk & Mossman, 1998).

5.4.2.4.20.3 Diet

The diet of *wiinaangeg* (turkey vultures) is largely made up of carrion and they will feed opportunistically on what is available. Roadkill is a large contributor to their diet, such as *waawaashkeshiwag* (deer), *esibanag* (raccoons), *zhigaagwag* (skunks) and other small mammals. Fresh carrion is preferred over rotting flesh, with rare reports of *wiinaangeg* (turkey vultures) actively killing its own prey (Sandilands A. P., 2005).

5.4.2.4.20.4 Population Trends

Before being recognized as an important scavenger species, *wiinaangeg* (turkey vultures) were hunted as pests. Current *wiinaange* (turkey vulture) populations have undergone large increases across *Mikinaak Minis* (Turtle Island) (Government of Canada, 2015). This species is listed as least concern by

the International Union for Conservation of Nature ("IUCN") (2020), and as secure by the Wild Species General Status Report in Canada (Environment Canada, 2015). Reasons for population increases are hypothesized to be due to a variety of reasons such as a warming climate, increased *waawaashkeshiwag* (deer) populations, increased road networks and subsequent increases in roadkill (Environment Canada, 2015). While populations are not currently at risk, some threats to *wiinaangeg* (turkey vultures) are from poisoning and bioaccumulation through the ingestion of lead shot that may remain in hunted animals as well as ingestion of mercury from *giigoonh* (fish) carcasses (Sandilands A. P., 2005). Depletion of large *mitigoog* (trees) between the ages of 150-200 in forests are another contributing factor for the loss of habitat for *wiinaangeg* (turkey vulture) (Sandilands A. P., 2005).

Knowledge of the Soils

5.5

WAUZHUSHK ONIGUM
NIISAACHEWAN
WASHAGAMIS BAY
SHOAL LAKE 40

narratives

5.5 Knowledge of the Soils

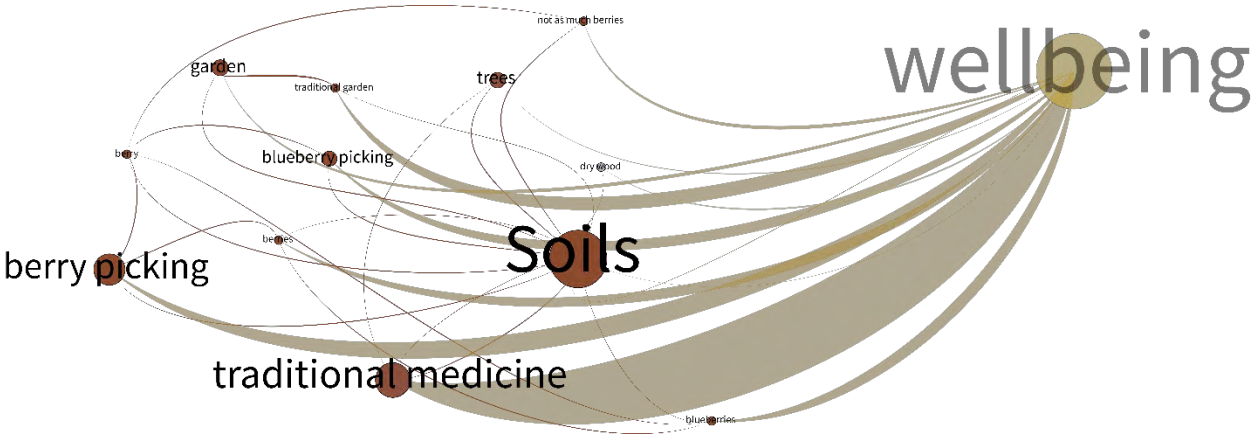


Figure 39: Connections of Soils to Anishinaabe Wellbeing

In AAK interviews, Niiwin Wendaanimok community members shared their knowledge of the soils, including knowledge about *miinan* (berries), *mitigoog* (trees), *mashkikiwan* (medicines), and *asiniig* (rocks). Gathering *miinan* (blueberries), *miskominag* (raspberries), *ookweminan* (chokecherries), and *bawa'iminaanan* (pin cherries), is an important traditional activity of the Anishinaabe. **Map 23** highlights areas near the project site that Niiwin Wendaanimok community members pick *miinan* (berries) as well as *Manoomin* (wild rice), which is discussed in Section 5.6.2.

5.5.1 Soil Composition and Surficial Geology

5.5.1.1 Soil Composition

The area surrounding the project site consists of three types of soil. Mesisol covers almost a third of the area, or approximately 32 percent of the land. Mesisol soils are organic soils that are more decomposed than Fibrisol soils but less decomposed than Humisol soils. Approximately 28 percent of the project area consists of Dystric Brunisol soils, which are acid Brunisol soils that are usually formed under forest vegetation. The mineral-organic surface layer in Dystric Brunisol soils is generally poorly developed. A small portion of the project area also consists of Gray Luvisol soils (National Research Council of Canada, 1998). The remaining soil in the project area is unclassified. **Map 24** illustrates the distribution of soil in the project area.

Soil Great Group	Area (km^2)	% of Project Area*
Dystric Brunisol	1,745.88	27.9%
Gray Luvisol	199.98	3.2%
Mesisol	2,012.56	32.15%
Unclassified	1,192.45	19.05%

* Total project area is 6,259 km^2, shown in **Map 24**

5.5.2 *Miinan* (Berries)

Miinan (berries) were a significant topic of discussion among members of the four communities. In analyzing the interviews, a co-occurrence model was created that shows intersections of "Berries" with other components. This model is illustrated in Figure 40. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Berries" and any given component shows the number of times "Berries" was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 40 shows that in total "Berries" was brought up 132 times, and "Family Ties" was brought up 204 times. Of the 132 times "Berries" was brought up, 36 of those times it was in the context of "Family Ties". According to Figure 1 "Berries" was most discussed in relation to "Family Ties", followed by "Wild Rice", "Livelihood", "Loss of Tradition", "Inter-Community Ties" and "Diet" respectively. This not only suggests that *miinan* (berries) are important to the social interactions, livelihood, and diet of the Anishinaabeg, but also indicates a strong connection with *manoomin* (wild rice) and a decline in associated practices.

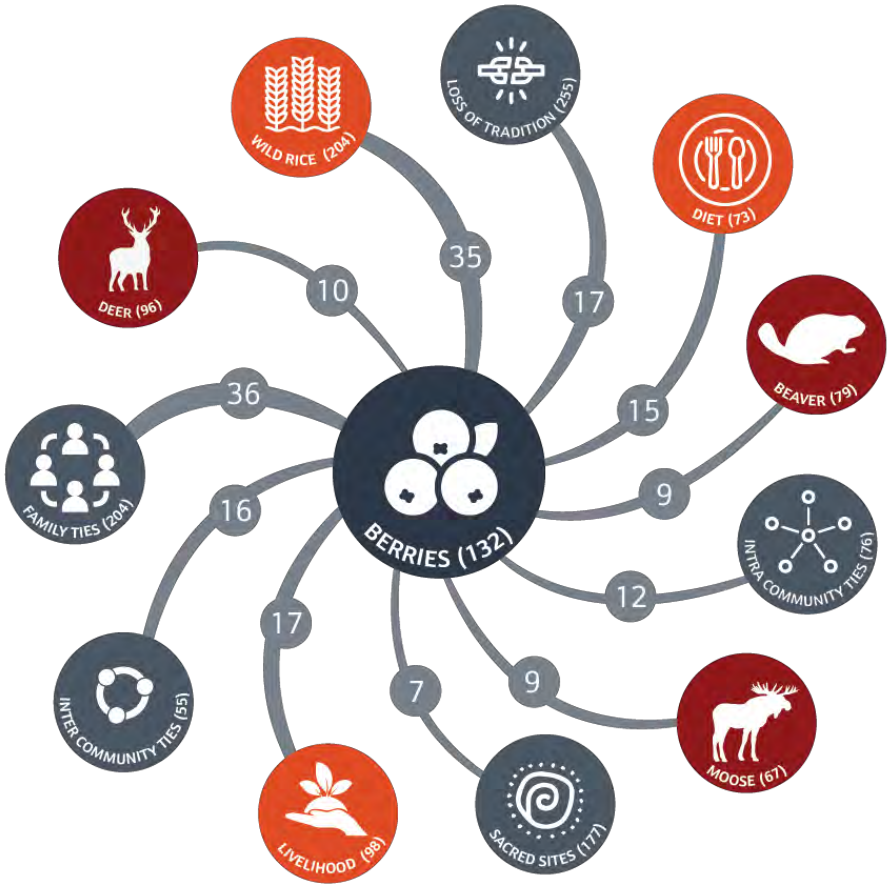


Figure 40. "Berries" co-occurrence with other components.

5.5.2.1 Overview

This following sections in this chapter provide context on the varieties of *miinan* (berries) discussed during the AAK interviews. These include:

- *Miin*[3] (Blueberry, *Vaccinium myrtilloides*)
- *Miskomin* (Raspberry, *Rubus strigosus*)
- *Ookwemin* (Choke cherry, *Prunus virginiana*)
- *Bawa'iminaan* (Pin cherry, *Prunus pensylvanica*)

Inawendiwag ("they are related to each other") of the Anishinaabeg with *miinan* (berries) and the practice of *miin* (berry) picking is outlined in Section 5.7.6.1.

5.5.2.2 *Miin* (Common Blueberry, *Vaccinium myrtilloides*)

Table 38. Names for Blueberry

Common Names	Common Blueberry, Velvetleaf Blueberry, Canadian Blueberry.
Anishinaabemowin (singular)	*Miin*
Anishinaabemowin (plural)	*Miinan*
Scientific Name	*Vaccinium myrtilloides*

5.5.2.2.1 About

Miin (blueberry, singular)/*miinan* (blueberries, plural) is one of many types of *miinan* (berries) and one of 11 species of the genus *Vaccinium* in Ontario, which include varieties of blueberries, bilberries, deerberries, cranberries, and mountain cranberries. *Miinan* (blueberries) grow on low deciduous shrubs averaging 20 cm to 60 cm in height (Meades, 2020). The plants can be found throughout Treaty 3 territory and have significant value to wildlife and the Anishinaabeg. *Miinan* (blueberries) have been a staple in the diets of the Anishinaabeg since time immemorial and are considered sacred. Gathering *miinan* (blueberries) has traditionally been a highly social event where families and communities gather between the months of June and July when the fruit has ripened.

5.5.2.2.2 Distribution and Landscape Characteristics

Miinan (blueberries) have a vast range that covers a large portion of *Mikinaak Minis* (Turtle Island). The range for *miinan* (blueberries) spans across present day Canada from central Labrador to British Columbia and the Northwest Territories and extends southward through the United States from the mountains of New England, New York, and Pennsylvania, to West Virginia and Virginia (United States Department of Agriculture Wildlife Services, 2019). *Miinan* (blueberries) are an early successional

[3] Same as berries

species that grow best in young post-disturbance communities such as clear cuts and recent burns. *Miinan* (blueberries) generally require well-drained, acidic soils, sandy soils, and can grow on infertile sites such as rock outcrops (United States Department of Agriculture Wildlife Services, 2019). The ideal habitat includes stands of conifer species such as *okikaandag,* (jack pine, singular)/*okikaandagoog,* (jack pine, plural). An Elder from Wauzhushk Onigum explained how to identify sites to pick *miinan* (blueberries) based on indicators of soil quality from landscape characteristics:

> *Where you can find lots is where people cut trees, in cleared areas, but it depends on what kind of trees they cut down. Its jack pine. That's where there are usually lots of blueberries. And then if it's more in like a hilly, swampy area, there is hardly [any], even if the trees are cut down there, they wouldn't grow because there is Balsam and Spruce, you know, those evergreens. The evergreens grow on moss and even those things up there now, the poplar and birch, they grow on clay, those ones.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

5.5.2.2.3 Wildlife Usage

Miinan (blueberries) are an important food source for many wildlife species including *waawaashkeshiwag* (deer), *waagoshwag* (red fox), *gaagwag* (porcupines), *esibanag* (raccoons), *waawaabiganoojiinyag* (mice), *agongos* (chipmunks), and *makwag* (black bears). In addition to consuming the fruit, *waawaashkeshiwag* (deer) also feed on the shoots and twigs of the plant during fall and winter months. *Miinan* (blueberries) are a particularly important food source for *makwag* (black bears), and in many areas, bear-human conflicts are most likely to occur during years of crop failures in *miinan* (blueberries) (United States Department of Agriculture Wildlife Services, 2019). *Miinan* (blueberries) contain high concentrations of both mono- and di-saccharides, as well as vitamin C, carbohydrates, and energy content but low in fats.

5.5.2.3 *Miskomin* (Raspberry, *Rubus strigosus*)

Table 39. Names for Raspberry

Common Names	American red raspberry
Anishinaabemowin (singular)	*Miskomin*
Anishinaabemowin (plural)	*Miskominag*
Scientific Name	*Rubus strigosus*

5.5.2.3.1 About

Miskomin (raspberry, singular)/*miskominag* (raspberries, plural) is a berry that grows in Treaty 3. *Miskominag* (raspberries) are aggregates of drupelets in the Rubus genus, which consists of flowing

plants belonging to the rose family, Rosaceae. *Miskominag* (raspberries) grow on deciduous shrubs that have pointed, toothed leaves, white flowers, and a height averaging from 0.2 to 2 m (Klinkenberg, 2019). These plants are native to *Mikinaak Minis* (Turtle Island) and have an extensive range across the continent. *Miskominag* (raspberries) have an important role in the ecosystem and are a traditional food source to the Anishinaabeg.

5.5.2.3.2 Distribution and Landscape Characteristics

Miskominag (raspberries) can be found throughout Treaty 3 territory and are transcontinental across *Mikinaak Minis* (Turtle Island) except for maritime climates (Klinkenberg, 2019). *Miskominag* (raspberries) are shade-intolerant and prefer moist, nitrogen-rich soils. *Miskominag* (raspberries) are present in a range of habitats including mesic thickets, rocky slopes, clearings, burn sites, fields, and open forests (Klinkenberg, 2019). As an early successional species, *miskominag* (raspberries) thrive in disturbed communities and are known to quickly invade cleared forests after logging (Oleskevich, Shamoun, & Punja, 1996). For example, a community member from Shoal Lake 40 shared that the best harvesting areas are often at disturbed sites:

> *There's even a place where my grandpa would go, it's by the mine that they built out there, where he would harvest wild raspberries.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, June 11, 2019.*

5.5.2.3.3 Wildlife Usage

Miskominag (raspberries) are a valuable species in various ecosystems, as they play a role in cycling nutrients, reducing soil erosion in disturbed sites, stabilizing banks along steep road cuts and streams, and managing competitive species in reforestation areas (Oleskevich, Shamoun, & Punja, 1996). *Miskominag* (raspberries) also provide important habitat and food for wildlife. Leaves and stems are consumed by large and small mammals such as *waawaashkeshiwag* (deer), *makwag* (black bears), *waaboozoog* (rabbits), *ajidamoog* (squirrels), *amikwag* (beaver), and *esibanag* (raccoons). Most notably, the fruit are a significant food source for *bineshiinyag* (birds) and other small mammals and are also a traditional food source for the Anishinaabeg.

5.5.2.4 *Ookwemin* (Choke cherry, *Prunus virginiana*)

Table 40. Names for Choke cherry

Common Names	Choke cherry
Anishinaabemowin (singular)	*Ookwemin*
Anishinaabemowin (plural)	*Ookweminan*
Scientific Name	*Prunus virginiana*

5.5.2.4.1 About

Ookwemin (choke cherry, singular)/*ookweminan* (choke cherries, plural) is a type of deciduous shrub that are members of the rose family, Rosaceae. When in flower, *ookweminan* (chokecherries) have many dense clusters of white five-petaled flowers. Once pollinated, the fruits that form are round drupes that are often dark red to black in colour. The plant can range from small shrubs to small *mitigoog* (trees) and can reach up to 9 m tall depending on the location and conditions (Ministry of Natural Resources and Forestry, 2019).

5.5.2.4.2 Distribution and Landscape Characteristics

Ookweminan (chokecherries) are native to *Mikinaak Minis* (Turtle Island) and remain distributed across the continent. Native habitat for *ookweminan* (chokecherries) generally consists of moist woods, stream banks, prairie hillsides, rocky bluffs, and roadsides. *Ookweminan* (chokecherries) are highly shade tolerant and are resilient under variable growing conditions (University of Texas, 2015).

5.5.2.4.3 Wildlife Usage

Ookweminan (chokecherries) are an important food source to an array of wildlife species. Similar to *miinan* (berries) such as *miinan* (blueberries) and *miskominag* (raspberries), *ookweminan* (chokecherries) are an important food source for *bineshiinyag* (birds) and small mammals, while the twigs offer sustenance for larger mammals during the winter months (Ministry of Natural Resources and Forestry, 2019).

5.5.2.5 *Bawa'iminaan* (Pin cherry, *Prunus pensylvanica*)

Table 41. Names for Pin cherry

Common Names	Pin cherry
Anishinaabemowin (singular)	*Bawa'iminaan*
Anishinaabemowin (plural)	*Bawa'iminaanan*
Scientific Name	*Prunus pensylvanica*

5.5.2.5.1 About

Bawa'iminaan (pin cherry, singular)/*bawa'iminaanan* (pin cherries, plural) is a type of *miin* (berry) that grows in Treaty 3. *Bawa'iminaanan* (pin cherries) are bright red drupes that are generally 6 to 8 mm across and ripen between late July and early September. As a member of the rose family, Rosaceae, *bawa'iminaanan* (pin cherries) bloom in the spring and produce clusters of white flowers. *Bawa'iminaanan* (pin cherries) are sour and are a food source for a variety of wildlife as well as the Anishinaabeg. *Bawa'iminaanan* (pin cherries) grow on small *mitigoog* (trees) that can reach up to 12 m in height, but in poor conditions the plant often remains the size of a shrub (Ministry of Natural

Resources and Forestry, 2020). As a pioneer species, *bawa'iminaanan* (pin cherries) grow rapidly but usually disappear within 20 years of a disturbance (University of Texas, 2015).

5.5.2.5.2 Distribution and Landscape Characteristics

Bawa'iminaanan (pin cherries) are distributed across *Mikinaak Minis* (Turtle Island) from coast to coast in Canada and south to Georgia and the Appalachian Mountains (NC State University, n.d.). *Bawa'iminaanan* (pin cherries) are often found in open woods, clearings, woodland edges, and disturbed areas, as they need full sun and do not grow well under shaded conditions. However, *bawa'iminaanan* (pin cherries) can grow in an array of soil types and tolerate varying moisture levels. *Bawa'iminaan* (pin cherries) seeds can remain dormant in the ground for decades and often sprout in great numbers following disturbances such as windstorms or fires that remove forest cover (Ministry of Natural Resources and Forestry, 2020). *Bawa'iminaanan* (pin cherries) are found in riparian zones and can be effective for stabilizing eroding riverbanks and soils (University of Guelph, n.d.).

5.5.2.5.3 Wildlife Usage

Bawa'iminaanan (pin cherries) are used by a variety of wildlife as a food source. The foliage and twigs are browsed by *waawaashkeshiwag* (deer), while the fruit are especially important to songbirds and small mammals (University of Texas, 2015). The fruit of *bawa'iminaanan* (pin cherries) are also consumed by humans but other parts of the *mitigoog* (trees) such as the bark, flowers, stems, and leaves are highly poisonous (NC State University, n.d.). *Bawa'iminaanan* (pin cherries) can be eaten fresh but are often used for preserves because of their sour taste.

5.5.3 *Mitigoog* (Trees)

Table 42: Names for *Mitigoog (Trees)*

Common Name	Tree
Anishinaabemowin (singular)	*Mitig*
Anishinaabemowin (plural)	*Mitigoog*

The forest is culturally significant for the Anishinaabeg. For many, protection of the forest and its resources is equivalent to protecting their Anishinaabe identity and culture. The forest is an important setting for the stories of the *Sabe* (sasquatch), also known as *Bug-way'-ji-nini*, who watches over the forests and protects those within it. The purpose of the *Sabe* (sasquatch) is explained in the adventure of Waynaboozoo who encountered him on a journey that led him through the prairies, past the mountains and into a forest with giant *mitigoog* (trees). Upon their encounter, the *Sabe* (sasquatch) explained that *Kizhe Manitou* (the Creator) had sent him to guide and care for the Anishinaabeg who enter the forests, swamps, hills, and mountains. While people gather medicines and other things, he is the designated the caretaker of the natural landscape and teaches others to respect and honour it. The *Sabe* (sasquatch) advocates for environmental protection and explains the importance of protecting

the environment—as all-natural features are works of art, not to be altered, disturbed, or destroyed. Two elders from Washagamis Bay shared a story about the *Sabe* (sasquatch) where they discussed the meaning behind increased sightings of the *Sabe* (sasquatch). One of the elders explained that the purpose of the *Sabe* (sasquatch) is to watch over the land and when sightings of *Sabe* (sasquatch) increase it implies that humans are not doing a good job of caring for the land (AAK Group Interview, August 22, 2019). Furthermore, with the many healing properties of plants, the forest is strongly rooted in the practice of traditional *mashkiki* (medicine). There are hundreds of ways different plants are used to treat different injuries or ailments. Interviews with members of Niiwin Wendaanimok highlighted their deep knowledge of medicines that have been passed down through generations who had relied solely on their forests as a means of medicine.

The majority of Ontario's landscape is forested lands, totalling 52.2% or 56,093,603 ha (Ontario Ministry of Natural Resources and Forestry, 2019). The forest that surrounds Lake of the Woods and Kenora is unique as it includes both the Boreal Forest region in the North and the Great Lakes and St. Lawrence forest region in the South (Ontario Ministry of Natural Resources and Forestry, 2019). Ontario's boreal forest is largely comprised of coniferous softwood and mixed wood stands.

More than half of the Phase 1 project area is covered by coniferous and mixed-wood forests, which include both coniferous and broad-leaved trees, shown in **Map 25**. Approximately 41 percent of the project area is mixed wood stands, which means that neither broad-leaved nor coniferous trees make up more than three quarters of the basal area. Approximately 12 percent of the project area is categorized as a coniferous forest while another 3 percent are classified as broadleaf forest. A small portion of the project area also consists of wetlands with trees and shrubland (Dechka, et al., 2003).

Forested Land Cover in the Project Area	Area (km^2)	% of Project Area*
Shrubland/Shrub Tail	43.03	0.7%
Wetland Treed	96.74	1.5%
Coniferous Forest	743.09	11.9%
Broadleaf Forest	172.34	2.7%
Mixed Forest	2,558.04	40.9%

*Total project area is 6,259 $km^{2.}$

In this region, dominant species include *zesegaandag* (black spruce), *gaawaandag* (white spruce), *okikaandag* (jack pine), *zhingob* (balsam fir), *mashkiigwaatig* (tamarack), *giizhik* (eastern white cedar), *maanazaadi* (balsam poplar), *azaadiwag* (trembling aspen), and wiigwaas (white birch). Within the Great Lakes-St. Lawrence forest region there is a mix of *aninaatig* (maple), *mitigomizh* (oak), *wiinizik* (yellow birch), *biisandago-zhingwaak* (white pine) and *wenda-zhingwaak* (red pine).

Lumber can be harvested from these forests and used for a variety of value-added wood products, (furniture, cabinetry, flooring), as well as paper and pulp products. Popular *mitigoog* (trees) species such as *okikaandagoog* (jack pine), *zesegaandag* (black spruce), and *gaawaandag* (white spruce) make up most of the wood harvested in Ontario with a harvest size of 3,570,185 ha and 5,157,627 ha respectively in 2015 (Ontario Ministry of Natural Resources and Forestry, 2018). Harvesting does however pose some environmental risks. *Mitigoog* (trees) in aquatic and riparian environments are sensitive to soil disturbances which can lead to changes in in the flow of rivers and watersheds (Ontario Ministry of Natural Resources and Forestry, 2016). Furthermore, deforestation can have large repercussions for Ontario's wetlands and peatlands which sequester more than 90% of carbon (Ontario Ministry of Natural Resources and Forestry, 2016). While harvesting lumber does not constitute as deforestation by the Ontario government, the permanent loss of forest because of road networks does (Ontario Ministry of Natural Resources and Forestry, 2016). Road networks fragment contingent forest into smaller sections which increases the volume of forest edge, minimizes buffer zones, and can alter the way species interact with the landscape. Additionally, biotic disturbances by *manidoons* (insects), pests and disease can alter the forest landscape. Within north western Ontario moderate to severe damage has been observed north of Kenora within the forests surrounding Red Lake up into Pikangikum (Ontario Ministry of Natural Resources and Forestry, 2019). However, smaller isolated patches of moderate to severe damage has been recorded north of Kenora near Caribou Falls (Ontario Ministry of Natural Resources and Forestry, 2019).

This section will highlight some of the notable *mitig* (tree) species that were identified by the community members during the AAK interviews, most notably:

- *Giizhik* (Eastern White Cedar, *Thuja occidentalis*)
- *Zesegaandag* (Black Spruce, Picea spp.)
- *Gaawaandag* (White Spruce, Picea spp.)
- *Okikaandagoog* (Jack Pine, *Pinus banksiana*)
- *Azaadiwag* (Trembling Aspen, *Populus Tremuloides*)
- *Biisaandago-zhingwaak* (Eastern White Pine, *Pinus strobus*)
- *Wenda-zhingwaak* (Red Pine, *Pinus resinosa*)
- *Oziisigobiminzh* (Willow, Salix spp.)
- *Maanazaadi* (Balsam Poplar, *Populus balsamifera*)
- *Aninaatig* (Maple, Acer spp.)
- *Mitigomizh* (Oak, Quercus spp.)
- *Zhingob* (Balsam Fir, *Abies balsamea*)
- *Wiigwaas* (White Birch, *Betula papyrifera*)
- *Baapaagimaak* (Black Ash, *Fraxinus nigra*)

For each of the identified *mitigoog* (trees) in this report, a general background on the *mitigoog* (trees) *will* be provided, how their landscape has changed over time, the wildlife in which they support and their importance in Anishinaabe culture.

To facilitate the reader's understanding, it is important to explain the different soil textures mentioned and how they are classified:

- **Loam** soil consists of sand, silt, and clay components (Vittum, 2009).
- **Clay** soils are characterized by having small pore spaces allowing them to retain more water (Vittum, 2009). Particulate matter in clay holds dimensions of 0.002 mm or less (Soil Classification Working Group, 1998).
- **Sandy** soils have a high amount of drainage as grains have irregular shapes leaving gaps when compacted (Vittum, 2009). Sand particles can range from being very coarse to fine resulting in a size range of 2.0 to 0.05 mm in diameter (Soil Classification Working Group, 1998).
- **Silt** soils contain both sand and clay components but hold a weak cast. Silt soils are characterized by particles between 0.05 to 0.002 mm in diameter (Soil Classification Working Group, 1998).

Additionally, the tolerance of *mitigoog* (trees) to shade demonstrate their ability to establish, survive, and thrive in shaded conditions (Grebner, Bettinger, & Siry, 2013). In this chapter *mitigoog* (trees) are classified as being either shade tolerant, intermediate, or shade intolerant. These can be understood as follows:

- **Shade tolerant** plants demonstrate good competitiveness and survival when subjected to full shade or majority shaded environments (Grebner, Bettinger, & Siry, 2013).
- *Mitigoog* (trees) with **intermediate** tolerance demonstrate moderate abilities to compete and survive in shade (Grebner, Bettinger, & Siry, 2013).
- **Shade intolerant** *mitigoog* (trees) demonstrate the need for full or majority sunlight to achieve strong competitiveness and survival (Grebner, Bettinger, & Siry, 2013).

The relationship between wildlife and certain *mitig* (tree) species will not be discussed in depth in this chapter. However, detailed description of such relationships can be found in other sections. More information on *waawaashkeshiwag* (deer) is outlined in Section 5.3.1.1, *moozoog* (moose) in Section 5.3.1.2, *amikwag* (beaver) in Section 5.3.1.3, *migiziwag* (bald eagles) in Section 5.4.2.2 and other *bineshiinyag* (birds) in Section 5.4.2.4. Additionally, the medicinal properties of *mitigoog* (trees) will be discussed in this chapter specifically in the context of cultural importance, however more information on *mashkikiwan* (medicines) is outlined in Section 5.5.4.

In analysing the interviews, a co-occurrence model was created that shows intersections of "Trees" with other components. This model is illustrated in Figure 41. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Trees" and any given component shows the number of times "Trees" was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 41 shows that in total "Trees" was brought up 71 times, and "Medicines" was brought up 70 times. Of the 71 times "Trees" was brought up, 31 of those times it was in the context of "Medicines".

Figure 41. "Trees" co-occurrence model with other components

5.5.3.1 *Giizhik* (Eastern White Cedar, *Thuja occidentalis*)

Table 43: Names for Eastern White Cedar

Common Name	**Eastern White Cedar**
Anishinaabemowin (singular)	*Giizhik*
Anishinaabemowin (plural)	*Giizhikag*
Scientific Name	*Thuja occidentalis*

5.5.3.1.1 About

Giizhik (eastern white cedar, singular)/*giizhikag* (eastern white cedar, plural) is a dense evergreen coniferous *mitig* (tree) and does not belong to the Cedar genus as its common name may suggest. *Giizhikag* (eastern white cedar) are common *mitigoog* (trees) that grow throughout Ontario in wet and swampy areas (MNRF, 2019). They are resilient in soils of limestone plains where limestone bedrock is present below shallow soil. These soils are well-drained with best growth occurring when the water is

low in acidity (LandOwner Resource Centre, 1999). Although, *giizhikag* (eastern white cedar) have shown minimal success when exposed to road salts (MNRF, 2019). A community member from Niisaachewan shared:

> *I have a spot in Kenora that I go pick cedar, but [cedar] is not on the highway…*
>
> *Community member, Niisaachewan, AAK Group Interview, September 13, 2019.*

5.5.3.1.2 Landscape Change

Giizhikag (eastern white cedar) were largely impacted by deforestation during European colonization because of their extensive use due to its durability and strength. Its use continues today as the timber is popularly used for outdoor structures such as fences and sheds (IUCN, 2020). Industrial usage of *giizhikag* (eastern white cedar) is also common for the production of kraft pulp and particleboard (IUCN, 2020).

5.5.3.1.3 Giizhikag (eastern white cedar) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *giizhikag* (eastern white cedar). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Giizhikag (eastern white cedar) are well known for their use by *waawaashkeshiwag* (deer) who rely heavily on the *mitigoog* (trees) during winter months. *Giizhikag* (eastern white cedar) will intercept snowfall, allowing *waawaashkeshiwag* (deer) to have access to protected refuges or small grazing patches (Blood, White-tailed Deer in British Columbia, 2000; Voigt, Broadfoot, & Baker, 1997). Additionally, *giizhikag* (eastern white cedar) act as a food source for *waawaashkeshiwag* (deer) who will consume the leaves and twigs during winter (Ministry of Natural Resources and Forestry, 2019; Voigt, Broadfoot, & Baker, 1997). An Elder from Shoal Lake 40 shared his observations of *waawaashkeshiwag* (deer) using *giizhikag* (eastern white cedar) near Falcon Bay:

> *…where the deer like to come and lay down, it's a bed of cedar…*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 23, 2019.*

The flexibility and durability of *giizhikag* (eastern white cedar) resulted in their use for the fabrication of traditional birchbark canoes by Indigenous people. *Giizhikag* (eastern white cedar) would be soaked to increase their flexibility and used to frame and rib the canoes (Price, 2000). As they dry, *giizhikag* (eastern white cedar) will harden and provide the canoe with significant structural integrity (Price, 2000).

For many Anishinaabeg, *giizhikag* (eastern white cedar) are also a sacred plant and are used in several ceremonies. During sweat ceremonies, *giizhik* (eastern white cedar) is offered to the *asiniig (*rocks) in the center of the sweat lodge as a symbol of strength (Benton-Banai, 1988, p. 87). An Elder from

Wauzhushk Onigum shared how *giizhik* (eastern white cedar) is used during sweats and burial ceremonies:

> *It's a sacred thing. It's a sacred bunt. Like when you have sweat lodges or earth ceremonies, they need to splat down, but they also use it for burial ceremonies.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, August 4, 2019.*

Picking *giizhikag* (eastern white cedar) around Kenora and Rat Portage is something a community member from Niisaachewan recalled doing during times of Pow Wows:

> *Some people go further, like Rat Portage. That's where we usually get ours during our Pow Wow time. And then, I would say, along the same area as birch trees. If you wanted to make little canoes, or the offering things, then that's where we would go. There's not so much in the community…*
>
> *Community member, Niisaachewan, AAK Group Interview, September 13, 2019.*

She also shared her traditional usage of *giizhik* (eastern white cedar) in other ceremonies, around the house and as a medicine:

> *Cedar tea, cedar baths, just having cedar hanging over your door, protect your entry ways, windows, your Pow Wows…Your funerals…even just having a ceremony in the band office, or the drum, and then you put the cedar down. They use it for a lot of stuff.*
>
> *Community member, Niisaachewan, AAK Group Interview, September 13, 2019.*

5.5.3.2 *Zesegaandag* and *Gaawaandag* (Black Spruce and White Spruce, *Picea* spp.)

Table 44: Names for Black Spruce and *White Spruce*

Common Name	Black Spruce	White Spruce
Anishinaabemowin (singular)	*Zesegaandag*	*Gaawaandag or Mina'ig*
Anishinaabemowin (plural)	*Zesegaandagoog*	*Gaawaandagoog or Mina'igoog*
Scientific Name	*Picea mariana*	*Picea glauca*

5.5.3.2.1 About

Zesegaandag (black spruce, singular)/*zesegaandagoog* (black spruce, plural) and *gaawaandag* (white spruce, singular)/*gaawaandagoog* (white spruce, plural) are both large coniferous evergreens whose needles are blueish green in colour (OMNR, 2011). Their appearances differ slightly as *zesegaandagoog* (black spruce) have shorter needles, smaller and rounder pinecones. While *zesegaandagoog* (black

spruce) are distributed all across Ontario and Canada, *gaawaandagoog* (white spruce) are most common in northern environments (OMNR, 2011) .

Zesegaandagoog (black spruce) can grow in soils of different moisture levels but occur most often in boggy areas with permafrost and peat moss soils (IUCN, 2020). They are shade tolerant and will grow in partially shaded environments (OMNR, 2011). *Gaawaandagoog* (white spruce) grow best in far northern regions and thrive within arctic environments but are tolerant of different soil types and moistures allowing them to grow in the wet lowlands of northwestern Ontario (OMNR, 2011). An Elder from Wauzhushk Onigum shared her Traditional Knowledge of what soils the spruce *mitigoog* (trees) grow in and how they affect *miinan* (blueberries):

> *Even if the trees are cut down there, [blueberries] wouldn't grow because there is balsam and spruce, you know, those evergreens. The evergreens grow on moss…*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

5.5.3.2.2 Landscape Change

Both *zesegaandagoog* (black spruce) and *gaawaandagoog* (white spruce) have been used in the production of pulpwood, for construction and carpentry, as well as for Christmas *mitigoog* (trees) (IUCN, 2020). Kenora and its surrounding forests have a long history of use by European colonizers who developed sawmills in the area. In the early 1900s, the abundance of pine *mitigoog* (trees) began to diminish because of intensive harvesting which then resulted in spruce becoming the next-best available resource (Kuhlberg, 2005). Spruce *mitigoog* (trees) were targeted as a source of pulpwood for newsprint production and as construction lumber (Kuhlberg, 2005). As a result of intensive exploitation and forest degradation, flooding damaged the lands of the Anishinaabeg (Robertson & McCracken, 2003, p. 130). An Elder from Niisaachewan recalled this activity:

> *And they had a sawmill there and started cutting dry pines, spruce in the 80s, 70s, around there.*
>
> *Elder, Niisaachewan, AAK Group Interview, September 17, 2019.*

Defoliation by the yellowheaded spruce sawfly (*Pikonema alaskensis*) within the Kenora District has previously been observed on spruce *mitigoog* (trees) that occur along Highway 105. As a result, young *gaawaandagoog* (white spruce) experience moderate to severe defoliation (OMNRF, 2019). In addition, both species are vulnerable to infestation by spruce budworm (*Choristoneura fumiferana*) which has been noted to damage approximately 151,000 ha of spruce forests annually (OMNRF, 2016).

5.5.3.2.3 *Zesegaandagoog* (black spruce), *Gaawaandagoog* (white spruce), and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *zesegaandag* (black spruce) and *gaawaandag* (white spruce). The nature of the relationship cannot be

described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Zesegaandag (black spruce) and *gaawaandag* (white spruce) are important species for the *bineshiinyag* (birds) of northwestern Ontario. *Diindiisiwag* (blue jays) and the boreal *gookooko'oo* (boreal owl) also inhabit spruce forests (Hayward & Hayward, 1993; Nero, 1991). Additionally, their thick and bushy branches intercept snow from piling below them, providing *waawaashkeshiwag* (deer) with patches for browsing (Voigt, Broadfoot, & Baker, 1997).

Waadabiig (spruce roots) played a role in the fabrication of traditional birchbark canoes as a way to lace the strips of birchbark together and hold them in a tight seam (Price, 2000). Solitary *waadabiig* (spruce roots) would be dug up, trimmed, peeled, and split to create a sleek stitching fiber (Price, 2000). Flexibility would be maintained by soaking the *waadabiig* (spruce roots) in water and the *waadabiig* (spruce roots) would harden in place once the birchbark strips were stitched together (Price, 2000).

Like many *mitigoog* (trees) in the area, spruce *mitigoog* (trees) have natural medicinal uses making it an important species to the Anishinaabeg. An Elder from Washagamis Bay shared how her grandmother taught her how to identify spruce *mitigoog* (trees) and how they could be used:

> *The spruce trees, they have that little bubble. You take that and when you have cuts anywhere, you put that, and you cover it, and it heals pretty fast. My grandma taught us a lot.*
>
> *Elder, Washagamis Bay, AAK Group Interview, August 22, 2019.*

5.5.3.3 *Okikaandag* (Jack Pine, *Pinus banksiana*)

Table 45: Names for *Okikaandagoog* (Jack Pine)

Common Name	**Jack Pine**
Anishinaabemowin (singular)	O*kikaandag*
Anishinaabemowin (plural)	*Okikaandagoog*
Scientific Name	*Pinus banksiana*

5.5.3.3.1 About

Okikaandag (jack pine, singular)/*okikaandagoog* (jack pine, plural) are a common widespread *mitig* (tree) species throughout Ontario. They are distinguishable by their characteristic of being lopsided or oddly shaped (OMNR, 2011). They can be found growing in dry and shallow soils containing significant sand or loam content (OMNR, 2011). They have also been observed growing over peatlands (IUCN, 2020). *Okikaandagoog* (jack pine) are shade intolerant and require full sun exposure to thrive (OMNR, 2011). The cones of *okikaandagoog* (jack pine) are well adapted to fires, opening up after being subjected to high heat to release their seeds (OMNR, 2011). Without high temperatures, the cones

remain tightly closed on the branches for many years (IUCN, 2020). This adaptation allows for *okikaandagoog* (jack pine) to be an early successional species on a landscape that may have been recently disturbed. An Elder from Wauzhushk Onigum shared how she frequently comes across *okikaandagoog* (jack pine) when looking for *miinan* (blueberries):

> *Yeah, you can find lots [of blueberries] where people cut trees, in cleared areas…but it depends on what kind of trees they cut down. Its Jack Pine. That's where there are usually lots of blueberries.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

The jack pine budworm is a pest that has caused damage to Ontario's *okikaandagoog* (jack pine) populations, notably those in northwestern Ontario. It was estimated that between 2009 and 2014 the jack pine budworm had damaged an average of approximately 84,500 ha of *okikaandagoog* (jack pine) and *biisaandago-zhingwaakwag* (eastern white pine) (OMNRF, 2016).

5.5.3.3.2 Landscape Change

Okikaandagoog (jack pine) have a wide distribution within Canada which has made them a significant source for pulpwood, lumber, carpentry, and particle board manufacturing (IUCN, 2020). As heavy European use led to diminishing *biisaandago-zhingwaakwag* (eastern white pine) and *wenda-zhingwaak* (red pine) populations in Kenora, lumbermen turned to *okikaandagoog* (jack pine). *Okikaandagoog* (jack pine) were sought after and used in the construction of railway ties (Kuhlberg, 2005). The impacts of *okikaandagoog* (jack pine) harvesting for Niisaachewan community members continue to resonate in the present day. An Elder from Niisaachewan shared his observations on how the old mill had impacted the *mitigoog* (trees) on the landscape:

> *So, you notice [how] there's hardly any poplar or jack pine? It's mostly balsam, spruce, white spruce, and a little bit of jack. That had been harvested when the mill was here.*
>
> *Elder, Niisaachewan, AAK Group Interview, September 17, 2019.*

5.5.3.3.3 Okikaandagoog (jack pine) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *okikaandagoog* (jack pine). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Like other pines, *okikaandagoog* (jack pine) are used for browsing by *waawaashkeshiwag* (deer) and *gaagwag* (porcupine) (Payette, Rivet, Berteaux, & Girard, 2017; Voigt, Broadfoot, & Baker, 1997). Furthermore, as succession takes place, *okikaandagoog* (jack pine) will provide food and shelter for different *bineshiinyag* (birds) as the *mitigoog* (trees) change between life stages. This highlights the importance of mixed aged *okikaandag* (jack pine) stands to attract different *bineshiinyag* (birds) and promote avian biodiversity within the area (Venier & Pearce, 2005).

Moderate to severe o*kikaandagoog* (jack pine) defoliation by the jack pine budworm (*Choristoneura pinus pinus*) increased from 100,187 ha in 2017 to 627,455 ha in 2018. 98% of defoliation occurred within the Red Lake District with small, defoliated areas in the Kenora and Dryden districts (Ontario Ministry of Natural Resources and Forestry, 2019). However, Perrault Lake and Cedar Lake of the Kenora District experienced a total 10,278 ha of moderate to severe jack pine budworm defoliation in 2018.

Being prominent species of *mitig* (tree) in Ontario, *okikaandagoog* (jack pine) are significantly integrated with the lives, knowledge, and craft of many Anishinaabeg. A community member from Shoal Lake 40 shared how her grandparents lived off the land and harvested *okikaandagoog* (jack pine) and spruce from Moose Lake near Sprague:

> *That's where they'd do their pulp cutting there. They would harvest spruce and jack pine and sell the wood. They'd make cords. My grandmother did it until she was about 60.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, June 11, 2019.*

5.5.3.4 *Azaadi* (Trembling Aspen, *Populus Tremuloides*)

Table 46: Names for *Azaadiwag* (Trembling Aspen)

Common Name	**Trembling Aspen**
Anishinaabemowin (singular)	*Azaadi*
Anishinaabemowin (plural)	*Azaadiwag*
Scientific Name	*Populus Tremuloides*

5.5.3.4.1 About

Azaadi (trembling aspen, singular)/*azaadiwag* (trembling aspen, plural) are a *mitig* (tree) species widespread across *Mikinaak Minis* (Turtle Island). Within Ontario, it ranges across the entire province with the exception of the northernmost Hudson Bay area (OMNR, 2011). *Azaadiwag* (trembling aspen) are distinguishable by their long slender trunk and leaves that rustle with a small breeze. *Azaadiwag* (trembling aspen) are a dominant species in many of the areas it inhabits (IUCN, 2020). Within Ontario, *azaadiwag* (trembling aspen) can reach between 12 to 18 m tall with a diameter of their trunks between 20 to 25 cm (LRC, 1996). They can grow in a variety of soil types but prefer sites that contain well-drained and moist loamy soils with rich organic matter (OMNR, 2011; LRC, 1996). *Azaadiwag* (trembling aspen) are shade intolerant and require sunlight to thrive. Full shade conditions will result in the *azaadiwag* (trembling aspen) being outcompeted by other species (LRC, 1996).

5.5.3.4.2 Landscape Change

Recent forest surveillance has shown Ontario's *azaadiwag* (trembling aspen) are vulnerable to pests such as gypsy moth, forest tent caterpillars and septoria leaf spotting disease (OMNRF, 2019). In 2018,

a total of 9 ha of defoliation by forest tent caterpillars was observed around Swan Lake, with additional defoliation within the City of Kenora, resulting in a decline of *azaadiwag* (trembling aspen) within the area (OMNRF, 2019). The fast growth rates and availability of *azaadiwag* (trembling aspen) across the majority of landscapes has made it an important timber species commonly used in the production of particle board and pulp (IUCN, 2020). It is an early successional species and benefits from disturbance from fires or logging which create open areas with lots of sunlight (LRC, 1996). It is this ability to adapt to grow in areas of recent disturbance which has made *azaadiwag* (trembling aspen) a popular species for restoration efforts (IUCN, 2020).

5.5.3.4.3 Azaadiwag (trembling aspen) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *azaadiwag* (trembling aspen). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Bine (grouse) use stands of *azaadiwag* (trembling aspen) as their prime habitat as it provides both nutrition and protection for the species. During winter, *azaadiwag* (trembling aspen) provide coverage from snow and their sprouting buds serve as the main source of food for the *bine* (grouse) (Gullion, 1989). *Moozoog* (moose) also consume parts of *azaadiwag* (trembling aspen) such as bark, twigs, and buds during the winter months (Blood, Moose in British Columbia, 2000).

The use of *azaadiwag* (trembling aspen) by the Anishinaabeg has been recorded as serving many purposes, one being the use as a food source. This can be completed by stripping and grinding the bark or by consuming the catkins that bloom (IUCN, 2020). The expansive root system and bark of *azaadiwag* (trembling aspen) have traditionally been used as a pain reliever (Red Lake Regional Heritage Centre, n.d.). Similar to *oziisigobiminzhiig* (willow), *azaadiwag* (trembling aspen) contain the chemical salicin and can be used as an anti-inflammatory and analgesic (Albrecht, Nahrstedt, Luepke, Theisen, & Baron, 1990). Other medicinal uses include treating skin irritations such as burns, ulcers or eczema, or making tea with the buds to sooth respiratory problems and congestion (Mistik Askiwin Dendrochronology Lab, 2019).

5.5.3.5 *Biisaandago-zhingwaak* (Eastern White Pine, *Pinus strobus*)

Table 47: Names for Biisaandago-zhingwaakwag (Eastern White Pine)

Common Name	**Eastern White Pine**
Anishinaabemowin (singular)	*Biisaandago-zhingwaak*
Anishinaabemowin (plural)	*Biisaandago-zhingwaakwag*
Scientific Name	*Pinus strobus*

5.5.3.5.1 About

Biisaandago-zhingwaak (eastern white pine, singular)/*biisaandago-zhingwaakwag* (eastern white pine, plural) is an evergreen coniferous softwood found in the northeastern region of *Mikinaak Minis* (Turtle Island), specifically around the Great Lakes and down the east coast. They can be found concentrated within Ontario's Lake of the Woods and Great Lakes regions and are known for their role in regeneration of forests as an early successional species (Lowe, 1994). *Biisaandago-zhingwaakwag* (eastern white pine) can be best distinguished by their pine needles which grown in bundles of five (OMNR, 2011). They can reach heights of 20 to 35 m, with a trunk width ranging from 60 to 140 cm (OMNR, 2011). *Biisaandago-zhingwaakwag* (eastern white pine) are tolerant of different soil types and moistures. They are able to grow in dry soils but thrive in moist soils with a sandy or loamy base (LRC, 1995). *Biisaandago-zhingwaakwag* (eastern white pine) require partial to full sunlight to thrive and mature.

5.5.3.5.2 Landscape Change

Biisaandago-zhingwaakwag (eastern white pine) were a significant lumber resource for European colonists due to their fine grain and smooth wood in the nineteenth century (IUCN, 2020). Harvests of *biisaandago-zhingwaakwag* (eastern white pine) increased after the construction of railways in northern Ontario as those forests became more accessible to lumbermen (Kuhlberg, 2005). Within Ontario, the *biisaandago-zhingwaak* (eastern white pine) continues to be a valued source of softwood lumber and is used in cabinetry, furniture, siding, and panelling and for pulpwood production (LRC, 1995). Fortunately, its ability to grow in disturbed environments has allowed the *zhingwaak* (pine) species to repopulate and persist in such areas. It is often one of the first *mitigoog* (trees) to grow on a barren site and has adapted to be shade tolerant as a sapling. However, as it enters mature stages, *biisaandago-zhingwaakwag* (eastern white pine) become shade intolerant and require sunlight in order to dominate smaller *mitigoog* (trees) with their height (IUCN, 2020).

5.5.3.5.3 Biisaandago-zhingwaakwag (eastern white pine) and the Anishinaabeg

Like other *zhingwaak* (pine) species, *biisaandago-zhingwaakwag* (eastern white pine) assist *waawaashkeshiwag* (deer) and *moozoog* (moose) through their ability to provide for shelter and browsing (Blood, 2000; Voigt, Broadfoot, & Baker, 1997). Their height also makes them alluring *mitigoog* (trees) for the nests of *migiziwag* (Bald Eagles) and *gegekwag* (hawks) (MECP, 2019; Sandilands A. P., 2005). Additionally, many smaller animals such as *waaboozoog* (hares), *gaagwag* (porcupines), and *amikwag* (beaver) use *biisaandago-zhingwaakwag* (eastern white pine) for food and shelter (LRC, 1995).

Biisaandago-zhingwaakwag (eastern white pine) are important to the *Anishinaabeg*, both as a provider of habitat and for medicinal purposes. The bark and needles of *biisaandago-zhingwaakwag* (eastern white pine) can be dried up or burnt and used as a remedy for colds (Zedeno, et al., 2001). A community member from Grassy Narrows also told of her experiences using *biisaandago-zhingwaakwag* (eastern white pine) as medicine:

> *But actually, all the trees have medicine. So even the pine, the white pine, every tree has medicines.*

Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.

5.5.3.6 *Wenda-zhingwaak* (Red Pine, *Pinus resinosa*)

Table 48: Names for Red Pine

Common Name	Red Pine, Norway Pine
Anishinaabemowin (singular)	*Wenda-zhingwaak*
Anishinaabemowin (plural)	*Wenda-zhingwaakwag*
Scientific Name	*Pinus resinosa*

5.5.3.6.1 About

Wenda-zhingwaak (red pine, singular)/*wenda-zhingwaakwag* (red pine, plural) is an evergreen coniferous *mitig* (tree) species which covers a similar range as the *biisaandago-zhingwaakwag* (eastern white pine) of Lake of the Woods, the Great Lakes and southern Ontario (United States Forest Service, 1980). It can grow to 20 to 30 m tall, with the diameter of its trunk ranging from 30 to 75 cm. *Wenda-zhingwaakwag* (red pine) grow best in sandy and loam-based soils that are well drained (USFS, 1980). They are shade intolerant, preferring areas with full sun exposure (OMNR, 2011). *Wenda-zhingwaakwag* (red pine) have deep roots which makes them sturdy and resilient to inclement weather (OMNR, 2011). These attributes have made *wenda-zhingwaakwag* (red pine) a commonly used species for shelterbelts and to prevent erosion (IUCN, 2020).

5.5.3.6.2 Landscape Change

The resilience and strength of the *wenda-zhingwaakwag* (red pine) wood resulted in their use by European colonizers in sawmills for lumber. With the expansion of railway into northern Ontario, *wenda-zhingwaakwag* (red pine) were accessed until their populations became sparse (Kuhlberg, 2005). *Wenda-zhingwaakwag* (red pine) continue to be limited within the northwest region of Ontario but are still used by sawmills for lumber and pulpwood (Ministry of Natural Resources and Forestry, 2019). In Ontario, lumber from *wenda-zhingwaakwag* (red pine) is used in the fabrication of utility poles or foundational pilings (OMNR, 2011).

5.5.3.6.3 Wenda-zhingwaakwag (red pine) and the Anishinaabeg

This section describes *inawendiwag* (“they are related to each other”) of the Anishinaabeg with *wenda-zhingwaakwag* (red pine). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Wenda-zhingwaakwag (red pine) are commonly used by *waawaashkeshiwag* (deer), *waaboozoog* (hares), *waawaabiganoojiinyag* (mice) and *agongosag* (chipmunks) for food and shelter (Moore L. M., 2002). They are also used frequently for nesting by *migiziwag* (Bald Eagles) (MECP, 2019; USFS, 1980).

The resin from *wenda-zhingwaak* (red pine) can be collected and boiled in a process to make pitch. The pitch can then be used as a sealant for waterproofing. The Anishinaabeg have used pitch in the fabrication of canoes and in mending bark roofing.

5.5.3.7 *Oziisigobiminzh* (Willow, *Salix* spp.)

Table 49: Names for Willow

Common Name	**Willow**
Anishinaabemowin (singular)	*Oziisigobiminzh*
Anishinaabemowin (plural)	*Oziisigobiminzhiig*
Scientific Name	*Salix* spp.

5.5.3.7.1 About

Oziisigobiminzh (willow, singular)/*oziisigobiminzhiig* (willow, plural) come in many shapes and sizes across Ontario's landscape. They are deciduous *mitigoog* (trees) and shrubs with more than 75 varieties throughout *Mikinaak Minis* (Turtle Island) (LandOwner Resource Centre; Ontario Ministry of Natural Resources, 1995). While most *oziisigobiminzhiig* (willow) are shrub-sized, the prominent peachleaf *oziisigobiminzh* (willow) (*Salix amygdaloides*) is the size of found in Ontario's northwestern region. Most *oziisigobiminzh* (willow) species are intermediate in terms of shade tolerance but grow best in sunlit areas (Ontario Ministry of Natural Resources, 2011). They prefer moist soils and are often found near rivers, lakes, or in swamps (Ontario Ministry of Natural Resources, 2011). During the springtime, small soft blossoms will develop, known as catkins.

5.5.3.7.2 Landscape Change

Oziisigobiminzh (willow) *mitigoog* (trees) have been disrupted by the willow lace pest, however most activity has taken place in parts of northeastern Ontario such as in the Hearst District. The town Kapuskasing experienced moderate *oziisigobiminzhiig* (willow) defoliation, leaf discoloration and premature leaf drop (Ontario Ministry of Natural Resources and Forestry, 2019). In some places, planting of *oziisigobiminzh* (willow) *mitigoog* (trees) has been used to restore degraded shorelines and to slow the impacts of soil erosion. *Oziisigobiminzhiig* (willow) have extensive root systems that can anchor and strengthen the banks of waterways (LandOwner Resource Centre; Ontario Ministry of Natural Resources, 1995).

5.5.3.7.3 Oziisigobiminzhiig (willow) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *oziisigobiminzhiig* (willow). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Oziisigobiminzhiig (willow) are a primary food source for *moozoog* (moose) (Blood, Moose in British Columbia, 2000), specifically the twigs and catkins. *Amikwag* (beavers) also take advantage of these marshy deciduous *mitigoog* (trees), consuming the bark and twigs (Baker & Hill, 2003). *Amoog* (bees) also benefit from *oziisigobiminzhiig* (willow) because their flowers are a source of nectar and pollen (Ontario Ministry of Natural Resources, 2011).

Oziisigobiminzh (willow) holds prominent medicinal benefits with many community members sharing their experiences using *oziisigobiminzhiig* (willow) for medicinal purposes. An Elder from Wauzhushk Onigum shared how a blend of *oziisigobiminzh* (willow) and other vegetation was used to stop the bleeding of an external wound:

> *You could see the bone. I was about six years old…I hit a rock. They couldn't get me to Kenora. So, it was bleeding pretty bad…They got this willow ... well, three different plants anyway. They mashed them and they chewed them. And what they did is they put [it on there].*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, July 23, 2019.*

Additionally, salicin is a molecule found within *oziisigobiminzh* (willow) bark. Properties of this molecule include anti-inflammatory and pain-relieving agents (Vlachojannis, Magora, & Chrubasik, 2011). An Elder from Washagamis Bay referenced these medicinal properties and explained its role in modern medicine:

> *Willow tree, American tribes discovered that, to relieve pain. In North America, discovered how to relieve pain from the willow tree. It became a form of aspirin. Then, now days you have Tylenol come out of that aspirin. And now they simply... the pharmaceutical company, and the government simply added a few ingredients into it, so it became an aspirin.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

The malleability of *oziisigobiminzh* (willow) branches also allow the plant to be used as a tool for other traditional practices.

5.5.3.8 *Maanazaadi* (Balsam Poplar, *Populus balsamifera*)

Table 50: Names for Balsam Poplar

Common Name	**Balsam Poplar**
Anishinaabemowin (singular)	*Maanazaadi*
Anishinaabemowin (plural)	*Maanazaadiwag*
Scientific Name	*Populus balsamifera*

5.5.3.8.1 About

Maanazaadi (balsam poplar, singular)/*maanazaadiwag* (balsam poplar, plural) is a hardy and deciduous species that grows across the majority of Canada, except for the northernmost Hudson Bay fringe. They can reach heights of nearly 30 m. Their hardiness allows them to persist in boreal, prairie, or tundra biomes (IUCN, 2020). They prefer nutrient rich, well draining, moist soils ranging from loam to clay (LRC, 1996). An Elder from Wauzhushk Onigum shared her knowledge on *maanazaadi* (balsam poplar) soil textures and where they grow:

> *The evergreens grow on moss… the poplar and birch, they grow on clay.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

Maanazaadiwag (balsam poplar) are a common early successional, shade intolerant species, making them less successful in an area where it must compete for total sun exposure (LRC, 1996).

5.5.3.8.2 Landscape Change

Maanazaadiwag (balsam poplar) are harvested for their lumber as well as for the production of pulpwood, veneer and particleboard (IUCN, 2020). An Elder from Niisaachewan shared his memories about the sawmill that used all of the *maanazaadi* (balsam poplar) *mitigoog* (trees) along with other poplar species:

> *On this side, this would have been the sawmill…I don't know why, but as soon as they finished cutting all the poplar and everything like that, came over to the mainland.*
>
> *Elder, Niisaachewan, AAK Group Interview, September 17, 2019.*

The ability of *maanazaadiwag* (balsam poplar) to grow in environments disturbed by fire or logging as an early successional species has made *maanazaadi* (balsam poplar) *mitigoog* (trees) used for reclamation of land (IUCN, 2020). However, it is also impacted by diseases and pests within Ontario. Defoliation as a result of the satin moth *(Leucoma salicis)* and aspen leafblotch miner *(Phyllonorycter nipigon*) have had impacts in northwestern Ontario *maanazaadiwag* (balsam poplar) (OMNRF, 2019). Additionally, the septoria leaf spot (*Sphaerulina populicola*), which is a foliar disease has also been recorded within the Kenora District along Ena Road (OMNRF, 2019).

5.5.3.8.3 Maanazaadiwag (balsam poplar) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *maanazaadiwag* (balsam poplar). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Similar to other *mitigoog* (trees) from the genus *Populus, amikwag* (beavers) use *maanazaadiwag* (balsam poplar) for food and use it to build dams (Baker & Hill, 2003; LRC, 1996). *Moozoog* (Moose) also use *maanazaadiwag* (balsam poplar) as food (Blood, 2000).

Maanazaadiwag (balsam poplar) are of medicinal importance to the Anishinaabeg, who use the bark and buds for medicinal purposes. A community member from Grassy Narrows explained:

> *And some people use the bark off of the poplars. They'll even use the buds in the spring.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

The buds of *maanazaadiwag* (balsam poplar) can be quite fragrant when cooked or boiled. This has led to its use in traditional salves made of lard or fat which can be applied on small open wounds (Smith H. H., 1932). *Maanazaadi* (balsam poplar) is also said to be applied as an ointment around the nose or chest to assist with respiratory congestion from colds or bronchitis (Smith H. H., 1932).

5.5.3.9 *Aninaatig* (Maple, *Acer* spp.)

Table 51: Names for Maple

Common Name	**Maple**
Anishinaabemowin (singular)	*Aninaatig*
Anishinaabemowin (plural)	*Aninaatigoog*
Scientific Name	*Acer* spp.

5.5.3.9.1 About

Aninaatig (maple, singular)/*aninaatigoog* (maple, plural) are a large genus of *mitigoog* (trees) of the genus *Acer* which has a variety of species found throughout Ontario. Around the Lake of the Woods district, sugar *aninaatig* (maple) *(Acer saccharum)*, red *aninaatig* (maple) *(Acer rubrum),* and Manitoba *aninaatig* (maple) *(Acer rubrum)* can be found (OMNRF, 2019; OMNR, 2011).

Sugar *aninaatigoog* (maple) can grow up to 35 m tall and with roots that grow deep and widespread underground making them strong and sturdy (OMNR, 2011). They do best when grown in deep nutrient rich soils that are moist but well drained (OMNR, 2011). Additionally, sugar *aninaatigoog* (maple) are shade intolerant, growing in areas that allow for full sun exposure (OMNR, 2011).

Manitoba *aninaatigoog* (maple) can grow to reach heights of 20 m (OMNR, 2011). They adapt well to both wet and dry soils, which makes them a good species to plant in restoration efforts, so long as they receive full sun exposure (OMNR, 2011). Manitoba *aninaatigoog* (maple) are more common within Manitoba along floodplains and streambanks but can be found in northwestern Ontario near Kenora and Thunder Bay. Manitoba *aninaatigoog* (maple) are also commonly tapped for to produce maple syrup (OMNR, 2011). Sugar *aninaatigoog* (maple) are recognized for providing the sweetest sap of the species, with required yields of approximately 40 L of sap to make 1 L of maple syrup (OMNR, 2011).

Red *aninaatigoog* (maple) have a low relative occurrence around the Lake of the Woods region compared to the south of Ontario. They can grow to reach heights of 25 m and are shade tolerant

(OMNR, 2011). Red *aninaatigoog* (maple) can grow in a variety of soils but are more common in wetter areas, thriving in moist soils (OMNRF, 2016).

5.5.3.9.2 Landscape Change

Sugar *aninaatigoog* (maple) are sought for their durable and whitened wood for the production of furniture and flooring. Additionally, they are valued for their characteristic of burning slowly and are therefore used for firewood and fuelwood (LRC, 1995). Harvest of sugar *aninaatigoog* (maple) makes up 5% of Ontario's total growing stock volume while red *aninaatigoog* (maple) represents about 2% (OMNRF, 2016). Sugar *aninaatigoog* (maple) are an important crop species as they are a primary source of sap used in the production of maple syrup. However, Manitoba *aninaatigoog* (maple) and red *aninaatigoog* (maple) can also be used to produce maple syrup, however their yields are not as high as that of sugar *aninaatigoog* (maple).

5.5.3.9.3 Aninaatigoog (maple) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *aninaatigoog* (maple). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

The bark, buds, twigs, and fruit of sugar *aninaatigoog* (maple) are used as a source of food by moozoog (moose), *waawaashkeshiwag* (deer), and *waaboozoog* (hares), while *waawaabiganoojiinyag* (mice) are known to girdle younger saplings by removing strips of bark (LRC, 1995).

Aninaatigoog (maple) provide nutrition and shelter for both animals and humans. *Aninaatigoog* (maple) tapping is an activity that many Anishinaabeg have historically taken part in. An Elder from Shoal Lake 40 spoke to this:

> *They would go there every spring…I think when [maple] started running or started dripping. They would go there all the way from... on the ice, I assume. They would send canoes [to Stull Island] and live off the land. They would take a whole bunch home… I don't know how many trees were in that little island. I imagine there's more than probably 50, 60, 80. I don't know about now.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.*

A community member from Shoal Lake 40 shared how her family used to tap *aninaatigoog* (maple) on Potato Island:

> *We used to do maple tapping, my family. I think we were the last ones that did that after my grandpa Steven passed away… We used to all go out near the Potato Islands. There were a couple areas there, I don't know where abouts, but we used to maple tap there. It was a thing we did every late-winter or early-spring. While we were still able to get there by snow machines, because it would be a big family thing. They'd be tapping and then they'd put it on the snow, and the kids would be there. That was one*

of the things that we didn't promote, because we didn't want people to come in there and start building cabins around it. We were trying to preserve it.

Community member, Shoal Lake 40, AAK Individual Interview, June 11, 2019.

5.5.3.10 *Mitigomizh* (Oak, *Quercus* spp.)

Table 52: Names for Oak

Common Name	**Oak**
Anishinaabemowin (singular)	*Mitigomizh*
Anishinaabemowin (plural)	*Mitigomizhiig*
Scientific Name	*Quercus* spp.

5.5.3.10.1 About

Mitigomizh (oak, singular)/*mitigomizhiig* (oak, plural) are *mitigoog* (trees) of the genus *Quercus* with many different species across *Mikinaak Minis* (Turtle Island). The most common *mitigomizh* (oak) that can be found around the Lake of the Woods area are red common *mitigomizh* (oak) (*Quercus rubra*) and bur common *mitigomizh* (oak) (*Quercus macrocarpa*). Reaching heights of up to 30 m, *mitigomizhiig* (oak) are strong *mitigoog* (trees) with thick bark and deep roots (OMNR, 2011). They are shade intolerant and grow best when exposed to full sunlight and where they have a good amount of space for their roots to disperse (OMNR, 2011). *Mitigomizhiig* (oak) can grow in a variety of soils and moisture levels, however, deep soils with a silt-loam texture and good drainage are optimal (LRC, 1995).

5.5.3.10.2 Landscape Change

Mitigomizhiig (oak) are a valued source of lumber in Ontario and are often used for flooring, furniture, plywood, and fencing (LRC, 1995). They have distinguished strength and pink or reddish coloration to them. Within Ontario, *mitigomizhiig* (oak) represents 0.2% of the annual harvest of *mitigoog* (trees) (OMNRF, 2019).

5.5.3.10.3

5.5.3.10.4 Mitigomizhiig (oak) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *mitigomizhiig* (oak). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Mitigomizhiig (oak) produce *mitigominan* (acorns) which are an important source of food for mammals such as *waawaashkeshiwag* (deer), *makwag* (bears), *esibanag* (raccoons), and *ajidamoog* (squirrels) (LRC, 1995). Dispersal of *mitigomizh* (oak) seeds has been attributed largely to foragers such as

ajidamoog (squirrels) and diindiisiwag (blue jays) (Perea, San Miguel, & Gil, 2011). Additionally, many *bineshiinyag* (birds) such as *zhiishiibag* (ducks), *gichi-binewag* (turkeys), *binewag* (grouse), *diindiisiwag* (blue jays) and other songbirds use *mitigominan* (acorns) as a source of food (LRC, 1995). The *mitigoog* (trees) themselves are used by the broad-winged *gekek* (broad-winged hawk) who commonly nest in deciduous *mitigoog* (trees) (Sandilands A. P., 2005).

Mitigomizhiig (oak) are known for having astringent and haemostatic properties because of the high amount of tannins contained within their bark. The tannins of *mitigomizhiig* (oak) will interact with proteins and bind protein structures (Aldred, 2009), which provides many benefits in healing wounds and decreasing inflammation and irritation. *Mitigomizhiig* (oak) can be used in many ways for traditional medicines. Their bark has been used as bandages and can act as a medicine for the heart and lungs (Smith H. H., 1932).

5.5.3.11 *Zhingob* (Balsam Fir, *Abies balsamea*)

Table 53: Names for Balsam Fir

Common Name	**Balsam Fir**
Anishinaabemowin (singular)	*Zhingob*
Anishinaabemowin (plural)	*Zhingobiig*
Scientific Name	*Abies balsamea*

5.5.3.11.1 About

Zhingob (balsam fir, singular)/*zhingobiig* (balsam fir, plural) are softwood evergreen coniferous *mitigoog* (trees) that occur throughout much of Ontario. They have a high presence around Lake of the Woods and are distinguishable from other conifers by their narrow shape with sap clumping around the trunk (OMNRF, 2019). *Zhingobiig* (balsam fir) can grow up to 30 m tall and in a variety of climate and soil conditions. Their soil is not required to be deep as roots remain quite shallow, making *zhingob* (balsam fir) *mitigoog* (trees) vulnerable in instances of high winds (OMNR, 2011). Additionally, *zhingobiig* (balsam fir) are shade tolerant and have adapted to shaded environments by their ability to let lower branches dry out and die while its upper portions will remain alive and green (OMNR, 2011).

5.5.3.11.2 Landscape Change

Zhingobiig (balsam fir) is harvested within the province of Ontario and represents 2.5% of the annual harvest (OMNRF, 2016). The wood is used in the production of pulpwood or lumber products (IUCN, 2020). Additionally, *zhingobiig* (balsam fir) are a common species used for landscaping and greenery, and for use as Christmas *mitigoog* (trees) or wreaths in eastern North America (Gasser & Swift, 2014). *Zhingobiig* (balsam fir) within the Kenora District have been observed with damage from the woodboring whitespotted sawyer beetle (*Monochamus s. scutellatus*). Larvae and beetle activity were

present in *zhingobiig* (balsam fir) stands North of Sioux Narrows along Highway 71 up to Highway 17. This was similarly noted in the district of Red Lake (OMNRF, 2016).

5.5.3.11.3 Zhingobiig (balsam fir) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *zhingobiig* (balsam fir). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

During their winter browsing, *moozoog* (moose) will feed on *zhingobiig* (balsam fir). The heavy twigs with dark green needles make *zhingobiig* (balsam fir) a reliable food source with both substance and energy (Peek, 1974). The needles and buds of *zhingobiig* (balsam fir) also provide nutrition for *bine* (Ruffed Grouse) and *waawaashkeshiwag* (deer) during the winter months (Uchytil, 1991).

The Anishinaabeg have identified *zhingobiig* (balsam fir) as having antiseptic properties for external wounds (IUCN, 2020). The resin of *zhingob* (balsam fir) is also used as a glue or sealant for other wood products (Zedeno, et al., 2001).

5.5.3.12 *Wiigwaas* (White Birch, *Betula papyrifera*)

Table 54: Names for *White Birch*

Common Name	**White Birch**
Anishinaabemowin (singular)	*Wiigwaas*
Anishinaabemowin (plural)	*Wiigwaasag*
Scientific Name	*Betula papyrifera*

5.5.3.12.1 About

Wiigwaas (white birch, singular)/*wiigwaasag* (white birch, plural) are common deciduous *mitigoog* (trees), also known as paper birch, that can be found all around Ontario except for the shores of the Hudson Bay (OMNR, 2011). They are tolerant of different soils and moistures. They are shade intolerant, requiring full sun to thrive (OMNR, 2011). Their ability to grow in a variety of soils to heights of about 25 m has made *wiigwaasag* (white birch) frequently used *mitigoog* (trees) for landscaping (OMNR, 2011). On their natural landscape, they can dominate sites that have been recently disturbed as an early successional species and have been observed to form large homogenous stands (IUCN, 2020).

5.5.3.12.2 Landscape Change

Wiigwaasag (white birch) represent 3% of the annual *mitig* (tree) harvest in Ontario and can be used to produce veneer, pulpwood, and plywood (OMNRF, 2019). Their durability, light coloration and fine grain make *wiigwaasag* (white birch) a good source of lumber, being notably used to make hockey sticks (IUCN, 2020). *Wiigwaasag* (white birch) contain an interior sap that can be tapped and collected. Tapping *wiigwaasag* (white birch) for sap water is a traditional activity that the Anishinaabeg practice

during the springtime. An Elder from Niisaachewan shared his experiences tapping *wiigwaasag* (white birch):

> *You get it out of the birch during the spring. All you do is make a little hole in the tree, like in the bark, with an ax or something sharp and then split your red willow in half, then stick it in between where you had the mark one the birch. Just enough to make something bleed. Put the stick there and then all of a sudden, just put in a bottle or a pale and it will drain itself… And that's fresh. And you know you can leave it there all night and come the next morning and you have your drinking water. Fresh water right from the tree.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

Additional reasons for tapping *wiigwaasag* (white birch) is for the production of syrups, wines or vinegar (IUCN, 2020).

Changes to the health and abundance of *wiigwaasag* (white birch) has come from septoria leaf spot foliar disease (*Septoria betulae*), which was observed in the Kenora District along Highway 71 and within the Red Lake District along Hwy 105 (Ontario Ministry of Natural Resources and Forestry, 2019). Septoria leaf spot disease has caused forest disturbance in Ontario (Ontario Ministry of Natural Resources and Forestry, 2019). Furthermore, a warming climate may further affect the distribution of *wiigwaasag* (white birch) with a condensing southern United States range and an expanding northern Canadian range (IUCN, 2020).

5.5.3.12.3 Wiigwaasag (white birch) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *wiigwaasag* (white birch). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Wiigwaasag (white birch) are a species that are well utilized by surrounding wildlife as they are a source of food and provide nesting habitats for many species. *Moozoog* (moose) will forage on the leaves and twigs of *wiigwaasag* (white birch) (Blood, Moose in British Columbia, 2000), while *bineshiinyag* (birds) will eat the buds and seeds (Ontario Ministry of Natural Resources and Forestry, 2019). Deciduous nesting species such as the Boreal *gookooko'oo* (Boreal Owl) and broad-winged *gekek* (broad-winged Hawk) have been observed nesting in the forks of *wiigwaas* (white birch) branches (Hayward & Hayward, 1993; Sandilands A. P., 2005).

The Anishinaabeg use the bark of *wiigwaasag* (white birch) in many ways. Their unique waxy, malleable, and durable structure can be peeled off in large strips allowing them to be incorporated into many tools and craft. *Wiigwaas* (white birch) is popularly known for its integral role in making birchbark canoes. Birchbark canoes are recognized as an icon of Indigenous science and technology (Price, 2000). The intricacy of birchbark canoes demonstrates the ecological knowledge held by those who craft them.

The bark is harvested and used as the outer covering of the canoes (Price, 2000). An Elder from Niisaachewan shared her experiences using birch bark to build a canoe:

> *We made a canoe one time, a birch canoe. But, my god, you have to have quite a bit of tar. And shellac…You got to paint it to make it hard. And you got to get those weeds that they have where the rice is, you got to braid them. It takes about a while. It takes about a month to do that.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

Wiigwaas (white birch) is also used to craft birch bark baskets (IUCN, 2020). One Shoal Lake 40 Elder told of their mother and grandmother who used to make birch bark baskets to facilitate berry picking near Granite Lake:

> *That was in '60s. We picked blueberries there [at Granite Lake]. And my grandmother was there, and my mother. They used to make birch bark baskets. Yeah, and people used to make those where we put the blueberries and we sold them on the highway there.*
>
> *Elder, Shoal Lake 40, Group Interview, May 23, 2019.*

5.5.3.13 *Baapaagimaak* (Black Ash, *Fraxinus nigra*)

Table 55: Names for Black Ash

Common Name	**Black Ash**
Anishinaabemowin (singular)	*Baapaagimaak*
Anishinaabemowin (plural)	*Baapaagimaakoog*
Scientific Name	*Fraxinus nigra*

5.5.3.13.1 About

Baapaagimaak (black ash, singular)/*baapaagimaakoog* (black ask, plural) are deciduous *mitigoog* (trees) that grow nearly everywhere in Ontario except for the northernmost regions (Ontario Ministry of Natural Resources and Forestry, 2019). However, *baapaagimaak* (black ash) is most associated with the wetter regions of central and northern Ontario (Ontario Ministry of Natural Resources and Forestry, 2019). As a result of extensive damage from the emerald ash borer, *baapaagimaak* (black ash) is listed internationally as critically endangered (IUCN, 2020) and nationally listed as threatened (COSEWIC, 2018). Canada holds approximately 51% of the global *baapaagimaak* (black ash) range, with the majority of Canada's *baapaagimaak* (black ash) contained within Ontario (COSEWIC, 2018). The species can grow up to 20 m tall and shows dominance in areas that are flood-prone or swampy with wet soils

(Ontario Ministry of Natural Resources and Forestry, 2019). *Baapaagimaak* (black ash) is relatively shade tolerant, but its shallow roots make *baapaagimaak* (black ash) vulnerable to windthrow (COSEWIC, 2018).

5.5.3.13.2 Landscape Change

The emerald ash borer (*Agrilus planipennis*) is a *manidoons* (insect) native to Asia and is a serious invasive pest within *Mikinaak Minis* (Turtle Island). Emerald ash borer larvae eat the interior of *baapaagimaakoog* (black ash) resulting in their death within a few years, with nearly a 100% rate of mortality (COSEWIC, 2018). Many forests have demonstrated serious repercussions because of extensive loss from *baapaagimaak* (black ash) from the environment. The loss of *baapaagimaak* (black ash) will increase the likelihood of soil eroding into surrounding aquatic areas, a reducing canopy cover causing increasing sun exposure, and the loss of biodiversity of *mitigoog* (trees) and the animals who rely on *baapaagimaak* (black ash) (Natural Resources Canada, 2019). Before its steep population decline from emerald ash borer, *baapaagimaakoog* (black ash) had many traditional uses. Their wood is malleable and was used to make snowshoe frames, canoe ribs and baskets, as well as commercially to produce furniture and flooring (COSEWIC, 2018). As of 2016, the annual harvest of *baapaagimaakoog* (black ash) makes up a very small percentage in Ontario and is only 0.5% of the growing stock volume (Ontario Ministry of Natural Resources and Forestry, 2019).

5.5.3.13.3 Baapaagimaakoog (black ash) and the Anishinaabeg

This section describes *inawendiwag* (“they are related to each other”) of the Anishinaabeg with *baapaagimaakoog* (black ash). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Baapaagimaakoog (black ash) are a dominant species found in many of Ontario’s swamps and riparian ecosystems. They are therefore an important species that hosts a wide range of biodiversity, providing food and shelter for surrounding wildlife (COSEWIC, 2018). The seeds and twigs are sought after by *bineshiinyag* (birds) such as *gijigijigaaneshiinyag* (chickadees), *bine* (ruffed grouse), and *gichi-binewag* (turkeys) as well as by mammals like *waawaashkeshiwag* (deer) and *moozoog* (moose). Furthermore, the wood of *baapaagimaak* (black ash) is consumed by *amikwag* (beavers) and *waaboozoog* (hares) (COSEWIC, 2018).

Baapaagimaakoog (black ash) also have medicinal purposes and have been used by the Anishinaabeg to treat exterior wounds, and to ingest and cleanse the body. One Wauzhushk Onigum Elder shared a childhood memory of Elders using *baapaagimaak* (black ash) root to take care of an open wound injury he acquired after an accident with a large rock in the water:

> *But you can't get to the hospital. So, the Elders just ... what they did was they took a willow, they chewed that and some other plants…black ash root … and I don't know what the other one is. So, they put a little bit of mud on there just to stop the bleeding, on the outside. And so, they wrapped it up and that was it…But that's how they*

survived all those years…. It's all black ash in the cleansing stuff. And they use black ash to cleanse inside of you.

Elder, Wauzhushk Onigum, AAK Group Interview, August 14, 2019.

5.5.4 *Mashkikiwan* (Medicines)

Table 56 Names for Medicine

Common Name	Medicine
Anishinaabemowin (singular)	*Mashkiki*
Anishinaabemowin (plural)	*Mashkikiwan*

During the Creation of *Aki* (Earth), plants were the second order that *Kizhe Manitou* (the Creator) created after the physical world (Johnston, 1976, p. 33). As they were created prior to the creation of animals, plants can survive with or without humans (Johnston, 1976, p. 33). However, the animal world cannot live without plants, and when the quality of flora begins to decline, so does the quality of life for the animal world (Johnston, 1976, p. 43). In Anishinaabe teachings, plants were given many purposes. One of these purposes was having the power to heal. Many plants were discovered to have healing properties after observing the interactions between plants and animals (Johnston, 1976, p. 58). After studying how the animals would use certain plants as a *mashkiki* (medicine), the Anishinaabeg would harvest these *mashkikiwan* (medicines) and use them to heal their own ailments.

The Anishinaabeg have been practicing traditional healing methods since time immemorial. Knowledge of traditional *mashkikiwan* (medicines) has helped ensure the survival of the Anishinaabeg throughout time. *Mashkiki* (medicine) means “strength from the earth”, as it is using the plant life that *Aki* (Earth) has created to build strength in the living beings that consume them. In Anishinaabe tradition, there are four sacred *mashkikiwan* (medicines). These are *giizhik* (cedar), *wiingwash* (sage), *wiingashk* (sweet grass), and *asemaa* (tobacco) (Native Women's Association of Canada, 2014). These *mashkikiwan* (medicines) are deeply interconnected and are used for healing, smudging, and making offerings. Another sacred *mashkiki* (medicine) of the Anishinaabeg is *wiikenh* (sweet flag), which has significant healing properties. Together, these five *mashkikiwan* build the foundation of healing for the Anishinaabeg. These *mashkikiwan* (medicines) are used during ceremonies and in everyday life and are a fundamental component of Anishinaabe wellbeing.

The Treaty 3 territory is filled with *mashkikiwan* (medicines). An Elder from Wauzhushk Onigum shared:

The way to describe it is that you have prevailing winds. You have the winds from the west, and you have winds from the east. Apparently, all those seas, whatever, they all gather at Lake of the Woods. That's why you have so many medicines in Lake of the Woods.

Elder, Wauzhushk Onigum, AAK Group Interview, July 23, 2019.

A community member from Grassy Narrows also shared this view:

> *So, there's cedar, and some places might have sage, but there is sweetgrass around here… And there's the cedar. But actually, all the trees have medicine. So even birch bark has a sap that's medicine. And some people use the bark off of the poplars. They'll even use the buds in the spring. There's even the bark from diamond willows. There's people that use tamarack. So even the pine, the white pine, every tree has medicines. Also, there's a lot of the stuff that are the undergrowth of the plants. I know there's heart medicines. There's even medicines that are very rare and only grow all in this area, that's like a seizure medicine. Like people that have seizures, there's medicines for that too. Then there's like the lilies. Those are heart medicines. I could go on and on. Me and my husband, we go out and just identify plants. And literally, people don't realize that you drive by medicine every day.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

Mashkikiwan (medicines) were used to treat physical ailments of the body as well as ailments of the mind and spirit. It is believed that some physical ailments are the result of a poor state of inner wellbeing (Johnston, 1976, p. 71). Many medicine persons believed that “there was a relationship between the physical wellbeing of a person and his inner wellbeing; illness and inner turmoil” (Johnston, 1976, p. 42). As *mashkikiwan* (medicines) were applied to physical ailments, they were concurrently “instilled in the inner being of a patient” (Johnston, 1976, p. 42)

Throughout the interviews, *mashkikiwan* (medicines) were a significant topic of discussion across the generations. In analysing the interviews, a co-occurrence model was created that shows intersections of “Medicines” with other components. This model is illustrated in Figure 42. "Medicines" co-occurrence with other components.. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting “Medicines” and any given component shows the number of times “Medicines” was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 42 shows that in total “Medicines” was brought up 70 times, and “Loss of Tradition” was brought up 255 times. Of the 70 times “Medicines” was brought up, 11 of those times it was in the context of “Loss of Tradition”. According to Figure 42, “Medicines” was most discussed in relation to “Ceremonies”, followed by “Loss of Tradition”, “Family Ties”, “Teachings”, and “Diet” respectively. This suggests that *mashkikiwan* and associated practices have strong social components and are currently at risk.

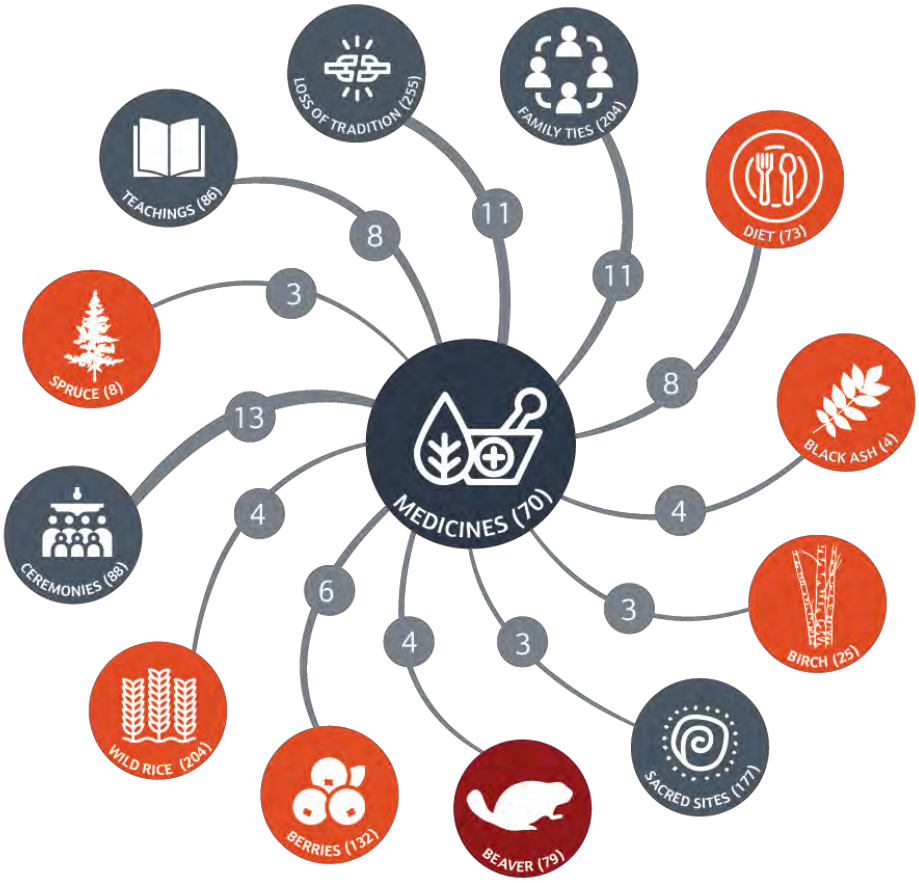


Figure 42. "Medicines" co-occurrence with other components.

Mashkikiwan (medicines) were discussed in the context of "Loss of Tradition" 11 times. During the interviews, many community members shared that they are losing knowledge about *mashkikiwan* (medicines). An Elder from Wauzhushk Onigum shared she never had a chance to learn about traditional *mashkikiwan* (medicines) and ceremony because she was taken away to residential school:

> *I was going to residential school and we weren't supposed to speak our language and it wasn't actually school and we weren't supposed to practice our native religion. So, whenever my mom had her ceremonies to do, shed send us children into the house and she would be outside by the fire doing her stuff whatever it was. And that was that, I never got taught any of that stuff cause of residential schools.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

With the modernization of western science and medicine, it has also become more difficult to follow the traditional ways. One Niisaachewan Elder shared that now that there is access to hospitals, less people are using traditional *mashkikiwan* (medicines) to help them heal (AAK Individual Interview, August 15, 2019). An Elder from Wauzhushk Onigum shared that it was important that young people get

out on the land to learn about these traditional *mashkikiwan* (medicines) so that the tradition is not lost:

> *So, they are learning that which is good- they kind of lost that soul there but it really is coming back. But I think what's more important is getting them out there into the land, you know? Where the rice picking areas are and blueberry pickings are and where all the plants are and where various types of diseases and sicknesses and how do you alleviate some of the suffering that may be attached to that. But we still have a lot of older people that know this, and I think it's coming back to taking these remedies other than going to the pharmacy. So, which is good. But I think these young people need to go out into the land and see what's out there.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 17, 2019.*

A community member from Grassy Narrows shared how the maintenance of developed areas is hurting the *mashkikiwan* (medicines):

> *I think [it's] because of the herbicides. You know, when they spray stuff to kill off all the vegetation, so when they're cutting trees and stuff, or they spray the sides of the roads.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

Mashkikiwan (medicines) are also closely interconnected with "Ceremonies" (brought up 13 times in relation to each other), "Sacred Sites" (brought up three times in relation to each other) and "Teachings" (brought up eight times in relation to each other). During ceremonies, the *gichitwaa mashkikiwan* (four sacred medicines) were used and offered to the spirits. The ceremony itself was also a form of *mashkiki* (medicine), as it provided its own set of healing properties, such as in a sweat lodge. *Mashkikiwan* (medicines) also play a role when visiting sacred sites. When visiting a sacred site, it was important to leave an offering, usually *asemaa* (tobacco), to pay respects. *Mashkikiwan* (medicines) are also used in teachings, as it was important to offer an Elder *asemaa* (tobacco) to give thanks for the knowledge that is to be received.

"Diet" was mentioned in the context of "Medicines" eight times in discussions with community members. Wild food often acted as a form of *mashkiki* (medicine), as an Elder from Washagamis Bay explains:

> *There's so many medicines, there's thousands of medicine that way we have now. Before colonial times, we were never sick because we always ate the wild food. Wild rice, moose, deer, beaver, muskrat, even groundhog…even turtles.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

"Family Ties" was mentioned in the context of "Medicines" 11 times in discussions with community members, as picking and preparing *mashkikiwan* (medicines) was often a family activity, and knowledge about *mashkikiwan* (medicines) was passed down from parents and grandparents to

children. The intergenerational sharing of *mashkiki* (medicine) knowledge allowed for tradition to be passed on throughout families. An Elder from Washagamis Bay shared that her grandmother taught her about preparing and picking *mashkikiwan* (medicines) (AAK Individual Interview, August 22, 2019). Another Elder from Washagamis Bay shared that his son now collects *mashkikiwan* (medicines) based off knowledge him and his grandmother and shared with him (AAK Individual Interview, August 22, 2019). An Elder from Shoal Lake 40 shared how his grandfather taught him about *mashkikiwan* (medicines):

> *My grandpa told me, "if anybody is sick, show them what they need. Ask them why they're sick". I wanted to learn because he said to me, "when you get old you have to have a preparation for yourself. When you pass on you have to have all this stuff because your creator wants to see your stuff when you take off". Nowadays people are not doing that, so they're losing their stuff and how to be prepared… You need all your stuff ready. The herbs, the medicines you need, for offering to showing the creator that you have to stuff ready to keep yourself occupied after life. This way you have a better life in the after life because you know you're going to have medicines.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

"Berries" were discussed eight times in the context of "Medicines" as in some cases, *miinan* (berries) were considered a *mashkiki* (medicine). A community member from Grassy Narrows shared that *miinan* (berries) were one of the gifts that were brought to *Aki* (Earth) with the sacred *mashkikiwan* (medicines):

> *I use berries because that was one of the gifts that Gizhigookwe brought. There was berries, tobacco, sage, cedar. Those are all the medicines that are used.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, August 14, 2019.*

This chapter will provide context on the following *mashkikiwan:*

- *Mashkodewashkoon* (Sage, *Artemisia ludoviciana*)
- *Asemaa* (Tobacco, *Nicotiana tabacum*)
- *Wiingashk* (Sweetgrass, *Hierochloe odorata*)
- *Giizhik* (Cedar, *Thuja occidentalis*)
- *Wiikenh* (Sweet Flag, Acorus spp.)
- *Oziisigobiminzh* (Willow, Salix spp.)
- *Wiigwaas* (White Birch, *Betula papyrifera*)
- *Baapaagimaa* (Black Ash, *Frazinus nigra*)
- *Zesegaandag; Gaawaandagoog* (Black Spruce/White Spruce, Picea spp.)
- *Ookwemin* (Chokecherry, *Prunus virginiana*)
- *Akandamoo* (Root of a Lily pad)
- Labrador Tea (*Rhododendron groenlandicum*)
- *Namewag* (Lake Sturgeon, *Acipenser fulvescens*)

- *Adikamegwag* (Whitefish, *Coregonus clupeaformis*)

5.5.4.1 *Gichitwaa Mashkikiwan* (Four Sacred Medicines)

The *gichitwaa mashkikiwan* (four sacred medicines), *giizhikag* (cedar), *mashkodewashk* (sage), *wiingashk* (sweet grass), and *asemaa* (tobacco) build the foundation for traditional Anishinaabe *mashkikiwan*. They are most commonly used in everyday life, ceremony, and in healing.

5.5.4.1.1 *Mashkodewashk* (Sage, *Artemisia ludoviciana*)

Table 57 Names for Sage

Common Name	Sage, White Sagebrush
Anishinaabemowin (singular)	*Mashkodewashk*
Anishinaabemowin (plural)	*Mashkodewashkoon*
Alternative Anishinaabemowin Spelling	*Mashkotewashk*
Scientific Name	*Artemisia ludoviciana*

5.5.4.1.1.1 About

Mashkodewashk (sage, singular)/*mashkodewashkoon* (sage, plural) is a shrub species from the family Asteraceae. The primary use of *mashkodewashkoon* (sage) is for smudging and in ceremonies such as sweat lodges. Because of its important role in ceremony, *mashkodewashk* (sage) is considered one of the four sacred *mashkikiwan* (medicines) by the Anishinaabeg (Six Nations, 2020). According an Elder from Washagamis Bay, *mashkodewashk* (sage) is a popular medicine and often a sought-after ingredient for ceremonies like Pow Wows and healing lodges (AAK Individual Interview, August 21, 2019). A community member from Grassy Narrows that conducts sweat lodge ceremonies noted that *mashkodewashk* (sage) is one of the medicines used for the ceremony (AAK Group Interview, August 14, 2019) Collecting *mashkodewashkoon* (sage) is also often a treasured activity shared within families and communities, making the plant an important piece of community and family ties.

The species, *Artemisia ludoviciana* encompasses several subspecies of *mashkodewashk* (sage) that grow across *Mikinaak Minis* (Turtle Island) (Anderson M. D., 2005). The species is perennial plant and can grow up to 1 m in height. The stems and leaves are a silver green in colour and covered in small white hairs (Guana, n.d.). The stems tend to keep a clustered form and rarely branch out (Anderson M. D., 2005). The leaves of *mashkodewashk* (sage) plants can grow up to 11 cm long. At the top of the stem is a small flower head. *Mashkodewashk* (sage) plants are rhizomatous, meaning they produce numerous roots and shoots out of its nodes and into the soil.

5.5.4.1.1.2 Habitat

Mashkodewashk (sage) is a widely distributed species across habitat types and does well in a variety of plant communities (Anderson M. D., 2005). The species is usually scattered and is not known to grow in

dense stands (Anderson M. D., 2005). The species also prefers areas that have been disturbed, such as the sides of roads (Guana, n.d.). An Elder from Niisaachewan shared that one can see an abundance of *mashkodewashkoon* (sage) growing on the sides of the highway near Middle Lake (AAK Individual Interview, August 19th, 2019). An Elder from Wauzhushk Onigum shared where she would pick *mashkodewashkoon* (sage):

> *Sage, we just pick that anywhere. Well, we usually get some from Keewatin by the train tracks. That's where we go to get ours in the fall.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

An Elder from Shoal Lake 40 shared a similar story, that she could collect *mashkodewashkoon* (sage) on the side of the road (AAK Individual Interview, May 24, 2019).

5.5.4.1.1.3 Population Changes

Kizhe Manitou (the Creator) placed *mashkodewashk* (sage) on *Aki* (Earth), where the species has been growing since. Throughout time, *mashkodewashk* (sage) has continued to remain an established species on *Mikinaak Minis* (Turtle Island) and in the Treaty 3 territory. *Mashkodewashk* (sage) carries no at-risk designation under the Species at Risk in Ontario ("SARO") list under the Ontario *Endangered Species Act, 2007* or the IUCN Red List for Threatened Species.

A community member from Niisaachewan shared that *mashkodewashk* (sage) plants grow almost everywhere (AAK Group Interview, September 13, 2019). An Elder from Washagamis Bay shared that all you had to do was go into the bush and you would find *mashkodewashk* (sage) plants growing (AAK Individual Interview, August 21, 2019). An Elder from Wauzhushk Onigum shared that people from his community still pick *mashkodewashkoon* (sage) today (AAK Group Interview, June 17, 2019). The Elder also shared that in the Treaty 3 territory community of Saugeen First Nation, *mashkikiwan* (medicines) like *mashkodewashk* (sage) could also be purchased locally. They shared, "they had a little store where you can go and buy or go and get some medicines for yourself" (AAK Group Interview, June 17, 2019).

5.5.4.1.1.4 Mashkodewashkoon (sage) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *mashkodewashkoon* (sage). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

As one of the four sacred *mashkikiwan* (medicines), *mashkodewashk* (sage) holds great importance to the Anishinaabe identity. *Mashkodewashk* (sage) is primarily used in ceremony and in teachings. Sweat lodge ceremonies require the use of certain *mashkikiwan* (medicines), including *mashkodewashkoon* (sage). An Elder from Washagamis Bay shared that when his nephew runs sweat lodges, he uses *mashkodewashkoon* (sage) during the ceremony for healing (AAK Individual Interview, August 21, 2019). A community member from Grassy Narrows shared that the *mashkikiwan* (medicines) she uses in her sweat lodge ceremonies are *miinan* (berries), *asemaans* (tobacco), *giizhikag* (cedar), and *mashkodewashkoon* (sage) (AAK Individual Interview, August 14, 2019). *Mashkodewashk* (sage) is also

used during funeral ceremonies. An Elder from Wauzhushk Onigum shared that to help guide the departed person onto the next life, a ceremony is held that includes all four sacred *mashkikiwan* (medicines) (AAK Individual Interview, August 14, 2019).

Mashkodewashk (sage) is also used in smudging. A smudging ceremony is a type of purification ceremony and is often done as a precursor to other ceremonies or meetings. Any one of the *gichitwaa mashkikiwan* (four sacred medicines) can be used, but *mashkodewashk* (sage) is the most common. An Elder from Wauzhushk Onigum shared that she would combine mashkodewashk (sage), *wiikenh* (sweet flag), and *asemaa* (tobacco) to make a *mashkiki* (medicine) for smudging (AAK Individual Interview, June 18, 2019). Through the smudging ceremony, *mashkodewashk* (sage) cleanses the mind and removes negative energy. A home can also be smudged with *mashkodewashk* (sage), cleansing the space.

Mashkodewashk (sage) also played an important role in the Creation Story. A community member from Grassy Narrows shared that *mashkodewashk* (sage) was one of the original *mashkikiwan* (medicines) brought to *Aki* (Earth) so that the seeds could be used to grow new *mashkikiwan* (medicines) (AAK Individual Interview, September 13, 2019).

Collecting *mashkodewashkoon* (sage) is an important activity shared between family and community members. Additional information on picking medicines can be found in Section 5.7.6.2.

5.5.4.1.2 *Asemaa* (Tobacco, *Nicotiana tabacum*)

Common Name	Tobacco
Anishinaabemowin (singular)	*Asemaa*
Anishinaabemowin (plural)	*Asemaans*
Scientific Name	*Nicotiana tabacum*

5.5.4.1.2.1 About

Asemaa (tobacco, singular)/*asemaans* (tobacco, plural) is an herbaceous plant from the family Solanaceae that is native to the tropical and subtropical regions of *Mikinaak Minis* (Turtle Island) and South America. *Asemaa* (tobacco) is one of the *gichitwaa mashkikiwan* (four sacred medicines) in Anishinaabe culture, holding strong ties to ancestors. *Asemaa* (tobacco) continues to be a crucial piece of Anishinaabe *mashkikiwan* (medicines) in the contemporary world. *Asemaa* (tobacco) has many purposes as one of the sacred *mashkikiwan* (medicines). It is a symbol of healing and is most frequently used to make offerings to knowledge keepers, Elders, in ceremonies, and to the land. Offerings of *asemaans* (tobacco) provide a connection to Anishinaabe tradition, as well as to the spirit world. Offering *asemaans* (tobacco) is done for many reasons but it is mainly given to show respect and appreciation for receiving knowledge or in thanks for something that was taken. Offerings of *asemaans* (tobacco) are also given at the beginning of ceremonies to give thanks to *Kizhe Manitou* (the Creator) and Mother Earth. *Asemaa* (tobacco) offerings are also given after someone passes away.

Asemaa (tobacco) is often smoked. Smoking *asemaa* (tobacco) is a way to channel away bad spirits and energy, clear a way for the smoke to cleanse the mind, heart, and *bagidanaamowin* (air), preparing the individual for a ceremony (Struthers & Hodge, 2004). Smoke from *asemaa* (tobacco) becomes the connection between the physical and spirit world, allowing for prayers to be heard (Struthers & Hodge, 2004). No other plant than *asemaa* (tobacco) is considered suitable enough to induce peace and carry thoughts and prayers to *Kizhe Manitou* (the Creator) (Johnston, 1976, p. 43).

Given its commercial value, *asemaa* (tobacco) is now cultivated on a global scale. *Asemaa* (tobacco) plants prefer growing conditions with a higher temperature and humidity, making the tropical regions of *Aki* (Earth) ideal for growing.

5.5.4.1.2.2 Asemaans (tobacco) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *asemaans* (tobacco). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Asemaa (tobacco) is a historically important sacred *mashkiki* (medicine). It is the first plant that *Kizhe Manitou* (the Creator) gave *Aki* (Earth). In the modern day, *asemaa* (tobacco) continues to be a vital component of Anishinaabe tradition, connecting communities to their culture, Elders, and the land. The act of offering *asemaans* (tobacco) continues to be an important way to honour tradition. As an Elder from Washagamis Bay said:

> *As Anishinaabe people, we honor the stories and the legends of whatever it was there, or whatever the story is that will honor the sacred items or whatever it is, the land. So, this is why the Anishinaabe people offer tobacco here and there to honor the spirit.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, July 25, 2019.*

Offerings of *asemaans* (tobacco) could be made to the land and the spirit of Mother Earth. As all grounds were considered important and sacred, it was important to show respect to them. The Elder shared another statement which echoed this:

> *It's all kinds of sacred grounds, sacred areas, stories about the island or stories about the land here. This is why people offer tobacco to respect the spirit of the land.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, July 25, 2019.*

Asemaa (tobacco) is also offered at specific sites that were sacred to the Anishinaabeg. These sites included ceremonial grounds, areas of spiritual significance, and areas that were used for historical settlement battles. Offerings are made to these sacred sites for various reasons, including showing respect to spirits, *Aki* (Earth), or for the departed. An Elder from Niisaachewan shared that at Shoulder Blade Reef, the site of a historical murder between voyagers and an American traveler, offerings are made to show respect to the fallen:

> *Every time they used go by, they used to put tobacco there to have respect… I guess somebody being killed, murdered there.*
>
> *Elder, Niisaachewan, AAK Group Interview, August 15, 2019.*

Offerings of *asemaans* (tobacco) are also made to specific areas known to have Little People, a small and mischievous spirit that live near rock faces. An Elder from Wauzhushk Onigum shared how her, and her son made an offering of *asemaans* (tobacco) to the Little People:

> *Right here is where the Little People are. It's just one big rock cut. They said they live in the rocks. That's what I even told my son. I told him you have to put tobacco when you go around there… Last year when we were fishing, that's what we did, we offered tobacco to them, to the Little People.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

An Elder from Shoal Lake 40 shared that she makes offerings of *asemaans* (tobacco) in different places around Shoal Lake 40, including on some of the small islands on Shoal Lake. She shared why:

> *For safe travels or for thanking the Creator for healings. And you talk to them. When I do it, I talk in Ojibway. But in English, I kind of find it hard to say, some of them. I guess it's also because when you want healing, you talk to the Creator – in my language anyway, when I thank him – I thank my Creator for another wonderful day that he has provided for us, in order for us to see the daylight again. Because, during the night, he still gives us light through the moon and the stars. And then, when you wake up in the morning, you thank him again for another beautiful day, for getting you up because you're alive and you're well, ready to go again.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.*

Offerings of *asemaans* (tobacco) are also made before a journey across the water began. An Elder from Wauzhushk Onigum shared that *asemaans* (tobacco) would be placed in the water on which you are travelling to ensure a safe trip (AAK Group Interview, June 17, 2019). An Elder from Niisaachewan also shared that *asemaa* (tobacco) offerings were made for safe passage:

> *They've been doing that for centuries, even the warriors used to go by or different tribes used to go by there, they used to leave offerings for safe travels to go down river and up river so that the spirits would look after them... Because the river in those days it was pretty hectic at times and stuff like that and they traveled by night so, you know that would help them through going either way, traveling either way. So that was one of the most important areas we left tobacco.*
>
> *Elder, Niisaachewan, AAK Group Interview, August 15, 2019.*

The Elder also shared that offering *asemaans* (tobacco) for safe passage is a tradition passed onto him by the Elders:

> *The Elders in the past had marked those areas for us to respect and put tobacco on and put some offerings there for our safe travels to go back and forth.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

An Elder from Shoal Lake 40 shared a similar story about their grandmothers making offerings of *asemaans* (tobacco) while travelling on the water:

> *Our people, our ancestors, they used to paddle from Shoal Lake right down to Kenora and they offered Tobacco along the way… But I learned that from my grandma because my grandma used to do that, to put the tobacco down. Even when it's thundering, she would go out and put the tobacco down, if there's storms coming, that's what they did. It doesn't have to necessarily be a certain place. Maybe a tree where it looks right. I remember my grandma doing that.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 22, 2019.*

Another reason for offering *asemaans* (tobacco) is for when you were seeking guidance, knowledge, or an answer from an Elder. An Elder from Washagamis Bay shared an instance where he offered *asemaa* (tobacco):

> *I'm trying to find a person here in the Lake of the Woods area reserves to interpret my dream. What was it all about? Why I dreamt like that. So, I talked to a lady in Winnipeg. She says, "We know a person that can interpret your dream. He lives in Pine Falls. An old man." So, I made a trip to Pine Falls to look for that old man, so I found him. I was happy to find him and I gave him tobacco and gifts. It's what you do when you want an answer. If you want to find out about a traditional way, you give tobacco and gifts to that person to tell you what's bothering you.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.*

Making an offering of *asemaans* (tobacco) is also important when harvesting a resource, such as during hunting, fishing, collecting *mashkikiwan* (medicines), or picking *miinan* (berries). An Elder from Niisaachewan shared this sentiment when discussing taking anything from the forest:

> *They had to do the offerings, too, before you take something off the bush. Put your tobacco down, it's one of our traditional ways of taking something off the forest. No matter what, it's the thing that passes on is you have to do your offering.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

A community member from Grassy Narrows shared that when hunting for one's family, one has to offer *asemaans* (tobacco) for the life that was given (AAK Individual Interview, September 13, 2019). An Elder from Washagamis Bay also shared that *asemaa* (tobacco) is left as an offering prior to hunting and at the site of a kill (AAK Group Interview, August 22, 2019). An Elder from Wauzhushk Onigum shared that when fishing, it is important to throw *asemaans* (tobacco) into the water (AAK Individual Interview, June 18, 2019). The Elder also shared that she leaves an offering of *asemaans* (tobacco) after *miin* (blueberry) picking:

> *We'd leave tobacco after we're done. Thank the guy up there for a good haul.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

Similar to making an offering when hunting, an offering of *asemaans* (tobacco) was also made when picking other tradition *mashkikiwan* (medicines). An Elder from Washagamis Bay shared a story of making this offering when collecting *wiikenh* (sweet flag)*:*

> *You have to give an offering. Like a blanket or tobacco. No money, because you're not supposed to accept money, just [a] symbolic thing.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

Offerings of *asemaans* (tobacco) are also made when someone passes away or when one comes across ancient burial grounds. An Elder from Shoal Lake 40 shared that he makes offerings of *asemaans* (tobacco) to an old burial ground in Indian Bay (AAK Individual Interview, June 10th, 2019). *Asemaa* (tobacco) is also an important component of ceremony. Offerings of *asemaans* (tobacco) are made to the sacred fire during ceremonies, creating smoke that becomes the connection to the human and spirit world. Smoke from burning *asemaans* (tobacco) is also created when using an *opwaagan* (pipe). The smoking of the *opwaagan* (pipe) "represented man's relationship to his maker, to the world, to the plants, to the animals, and to his fellow men" (Johnston, 1976, p. 135). The burning *asemaa* (tobacco) leaf "was the tangible demonstration and evidence of creation and destruction, life and death, and the change of form of all substances" (Johnston, 1976, p. 135). When asked why *asemaa* (tobacco) holds so much importance to the Anishinaabeg, this Elder from Wauzhushk Onigum replied:

> *Well, what it is, is that ... of course, you got a pipe. You smoke it. That's our connection, just smoke to the Creator. That's our connection to the above.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, August 14, 2019.*

Asemaa (tobacco) has been one of the sacred Anishinaabe *mashkikiwan* (medicines) for generations and continues to be so into the present day. Making an offering of *asemaans* (tobacco) gives thanks and shows respect to Elders, the land, and to *Kizhe Manitou* (the Creator). Burning *asemaans* (tobacco), either through a sacred fire or through an *opwaagan* (pipe), creates smoke that becomes the sacred connection between the human and spirit world. In all forms, *asemaa* (tobacco) continues to remain a sacred *mashkiki* (medicine) of the Anishinaabeg.

5.5.4.1.3 *Wiingashk* (Sweetgrass, *Hierochloe odorata*)

Table 58. Names for Sweetgrass

Common Name	Sweetgrass
Anishinaabemowin (singular)	*Wiingashk*
Anishinaabemowin (plural)	*Wiingashkoon*
Scientific Name	*Hierochloe odorata*

5.5.4.1.3.1 About

Wiingashk (sweetgrass, singular)/*wiingashkoon* (sweetgrass, plural) is a herbal medicine from the family Poaceae. The species is native to Eurasia and *Mikinaak Minis* (Turtle Island). In Anishinaabe tradition, *wiingashk* (sweetgrass) is considered to be the sacred hair of Mother Earth (Native Women's Association of Canada, 2014). *Wiingashk* (sweetgrass) is traditionally braided, which represents the strength a united community has. Each of the three sections of the braid represents the mind, the body, and the spirit (White Earth Nation, 2011). *Wiingashk* (sweetgrass) was named so due to its sweet aroma created from the compound coumarin, which becomes more fragrant when it has dried. This sweet aroma is said to remind people of Mother Earth's gentleness and kindness, and the love she holds for the people on *Aki* (Earth) (Native Women's Association of Canada, 2014). An Elder from Wauzhushk Onigum shared that *wiingashk* (sweetgrass) has a pleasant scent and when it is combined with other *mashkikiwan* (medicines), you can mostly smell the *wiingashk* (sweetgrass) (AAK Individual Interview, June 18, 2019). An Elder from Shoal Lake 40 shared that some people can smell *wiingashkoon* (sweetgrass) growing, even if they cannot physically see it (AAK Individual Interview, May 24, 2019). This aroma can also repel mosquitos. Similar to the other sacred *mashkikiwan* (medicines), *giizhik* (cedar) and *mashkodewashk* (sage), *wiingashk* (sweetgrass) is used during smudges for its purification properties (Native Women's Association of Canada, 2014).

Wiingashk (sweetgrass) is a perennial plant that can thrive in a diverse range of habitats (Walsh, 2018). Two species of *wiingashkoon* (sweetgrass) grow on *Mikinaak Minis* (Turtle Island); common *wiingashk* (sweetgrass) and alpine *wiingashk* (sweetgrass), with the former growing in the Treaty 3 territory (Walsh, 2018). The stem of the *wiingashk* (sweetgrass) plant is hollow and stands up to 60 cm tall (Walsh, 2018). The leaves on *wiingashk* (sweetgrass) plants are long and can grow up to 30 cm (Walsh, 2018). The leaves hold the strong aroma and are the parts of the plant used to make *wiingashk* (sweetgrass) braids (Walsh, 2018). *Wiingashk* (sweetgrass) plants have deep root systems, which allows the plants to spread and grow rapidly (Walsh, 2018).

5.5.4.1.3.2 Habitat

Wiingashk (sweetgrass) plants commonly grow in wet areas, including on the edges of lakes, rivers, and streams, and throughout wetlands and marshes (Walsh, 2018). *Wiingashkoon* (sweetgrass) can be found throughout the Treaty 3 territory growing in moist soils.

5.5.4.1.3.3 Population Trends

Wiingashk (sweetgrass) continues to grow in the Treaty 3 territory since it was placed on *Aki* (Earth) by *Kizhe Manitou* (the Creator) and does not carry an at-risk designation under the Species at Risk in Ontario ("SARO") list under the Ontario *Endangered Species Act*, *2007* or the International Union for Conservation of Nature's ("IUCN") Red List for Threatened Species. A community member from Niisaachewan shared that she can still find *wiingashkoon* (sweetgrass) growing in the region (AAK Individual Interview, September 13, 2019). Although the species continues to grow in the region, it is less common to find compared to other *mashkikiwan* (medicines). An Elder from Wauzhushk Onigum shared that she has never found *wiingashkoon* (sweetgrass) growing, but that she can smell the sweet scent, although does not know where it is (AAK Individual Interview, June 18, 2019). A community member from Niisaachewan shared that she has never seen any *wiingashkoon* (sweetgrass) growing around the Niisaachewan community (AAK Group Interview, September 13, 2019). An Elder from Shoal Lake 40 shared:

> *I have a lot of sweetgrass that I pick on my own. But you have to go far. I don't think I would ever make it to pick it again.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.*

5.5.4.1.3.4 Wiingashkoon (sweetgrass) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *wiingashkoon* (sweetgrass). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

As one of the *gichitwaa mashkikiwan* (four sacred medicines), *wiingashk* (sweetgrass)is an important component of Anishinaabe culture. It is believed to be a symbol of purification (White Earth Nation, 2011). Like *mashkodewashk* (sage), *wiingashk* (sweetgrass) is also used for protection. A community member from Niisaachewan shared that *wiingashk* (sweetgrass) is also used in a similar way to *mashkodewashk* (sage) and hung in the home for protection (AAK Individual Interview, September 13, 2019). She also shared that *wiingashk* (sweetgrass) is burned in smudging ceremonies (AAK Individual Interview, September 13, 2019). Once *wiingashk* (sweetgrass) is dried and braided, it is ready to smudge with. Because of the attractive aroma *wiingashk* (sweetgrass) produces, burning *wiingashk* (sweetgrass) is thought to attract good spirits and to create positive energies (White Earth Nation, 2011). This pleasant scent also deters evil spirits from entering the ceremony (White Earth Nation, 2011).

Another way of using *wiingashkoon* (sweetgrass) is to turn the *mashkiki* (medicine) into a tea. *Wiingashk* (sweetgrass) tea could be used to treat sore throats and coughs (Walsh, 2018). An Elder from Shoal Lake 40 shared how *wiingashk* (sweetgrass) is hung up to dry and then prepared as a tea:

> *Once they're clean and dry and have become light, you kind of crush them or grind them. Then you put them into very strong tea, and then you drink that. And you fill it up in a jar… And if you get a full jar like that, that's supposed to last you at least a week…*

> *Good for your stomach and for your pain or whatever. Even if you grind it to mix, it's good for toothaches because it's very strong. You put it just right where your toothache is, and the swelling goes down and the pain goes away.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.*

Wiingashk (sweetgrass) is also used in ceremonial regalia and for making items such as baskets. The Grass Dance, a Pow Wow dance, incorporates *wiingashk* (sweetgrass) braids into the regalia (White Earth Nation, 2011).

Wiingashk (sweetgrass) continues to be a sacred *mashkiki* (medicine) of the Anishinaabeg. As a symbol of purification, *wiingashk* (sweetgrass) is used during ceremonies, and hung for protection or consumed for healing. In all its forms, *wiingashk* (sweetgrass) continues to be integral to the Anishinaabe identity.

5.5.4.1.4 *Giizhik* (Cedar, *Thuja occidentalis*)

Table 59 Names for Cedar

Common Name	Cedar
Anishinaabemowin (singular)	*Giizhik*
Anishinaabemowin (plural)	*Giizhikag*
Alternative Anishinaabemowin Spelling	Kiishkaandak
Scientific Name	*Thuja occidentalis*

5.5.4.1.4.1 About

Giizhik (cedar, singular)/*giizhikag* (cedar, plural) is a dense evergreen coniferous *mitig* (tree) that grows throughout the Treaty 3 territory. More information on the habitat, population, and wildlife usage of *giizhikag* (cedar) can be found in Section 5.5.3.1. *Giizhik* (cedar) is one of the *gichitwaa mashkikiwan* (four sacred medicines). It is used for healing, as well as for smudging and conducting ceremonies. Similar to smudging with *wiingashkoon* (sweetgrass), smudging with *giizhikag* (cedar) is also conducted for the purpose of cleansing people and spaces. *Giizhikag* (cedar) can also be added to sacred fires during ceremony. Speaking to the multiple uses of *giizhikag* (cedar), this Elder from Wauzhushk Onigum shared why *giizhik* (cedar) is used:

> *It's a sacred thing. It's a sacred bunt. Like when you have sweat lodges or earth ceremonies, they need to splat down, but they also use it for burial ceremonies.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, August 14, 2019.*

5.5.4.1.4.2 Giizhikag (cedar) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *giizhikag* (cedar). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Giizhik (cedar) has many uses. It is used during ceremony and as a healing *mashkiki* (medicine). Different parts of a *giizhik* (cedar) *mitig* (tree) are used, including the bark and the leaves. The waxy substance between the wood and bark of a *giizhik* (cedar) *mitig* (tree) can be used to stop external bleeding (Johnston, 1976, p. 42). The leaves of *giizhik* (cedar) *mitigoog* (trees) can be boiled with water to make a *mashkiki* (medicine) that relieves throat congestion (Johnston, 1976, p. 42). An Elder from Niisaachewan described some of these uses and how *giizhik* (cedar) can be prepared:

> *Cedar we use for colds, stomach cramps and stuff like that. You got to season it first. You got to pick it, season it, dress it, and put it in a dry place, tin... If you're not feeling too good, you just put a handful into boiling water and... like tea, yeah. So, we used for medicinal purpose or cleansing. If you feel bloated or anything like that you use that…the leaves. And then when you strip the whole stems, you keep the stems. My wife does something like this, and she ties them up into a bundle. So, you cut them about this long and wrap them into a little bundle like that. There's roots coming out of the stems the flavor, so what the cedar leaves and the stems boiling together so you don't waste anything. And you just wrap them up in a piece of thread, but the other ones you put them in a bag, dry bag, and tin.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

A community member from Niisaachewan shared that *giizhik* (cedar) is used to make *mashkiki* (medicine) water, such as *giizhik* (cedar) tea (AAK Group Interview, September 13, 2019). Another community member from Niisaachewan shared some other uses for *giizhikag* (cedar):

> *Cedar tea, cedar baths, just having cedar hanging over your door, protect your entry ways, windows, your Pow Wows… Yeah, a lot of stuff they use it for, even just having a ceremony in the band office, or the drum, and then you put the cedar down. They use it for a lot of stuff.*
>
> *Community member, Niisaachewan, AAK Group Interview, September 13, 2019.*

An Elder from Niisaachewan also shared that *giizhikag* (cedar) can be burned or hung inside a home for protection (AAK Individual Interview, August 15, 2019). An Elder from Washagamis Bay shared how he used *giizhikag* (cedar):

> *The only thing what, mostly was what they pick was cedar, was pretty well for everything really, when you think about it. You could make it into a tea, or you could*

> *make it into something... sniff it, and your headache's gone after a while. That's all my mother used to have to do.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

Giizhik (cedar) is also an important component of ceremony. An Elder from Niisaachewan shared how *giizhik* (cedar) is used during Pow Wows:

> *They'll leave some around where they have the dances at. Leave it on the ground and its part of the tradition.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

Giizhik (cedar) is also used in sweat lodge ceremonies, where *giizhik* (cedar) tea can be drank, and *giizhik* (cedar) leaves and branches are added to the fire. When *giizhik* (cedar) is added to the sacred fire, it produces a crackling sound. When this happens, it is said that the crackling is to call the attention of the spirits to the ceremony (Native Women's Association of Canada, 2014).

When someone passes away, *giizhik* (cedar) is used during the burial and funeral of the person. An Elder from Wauzhushk Onigum shared how *giizhik* (cedar) is used during a burial:

> *But recently what they do is line the grave with cedar and poplar and a blanket, and that's how they bury them. Especially the Elders, that's what their preference is.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, July 24, 2019.*

An Elder from Niisaachewan shared that *giizhik* (cedar) is used during funerals, and that it is laid out during the ceremony (AAK Individual Interview, August 15, 2019). A community member from Niisaachewan also shared that *giizhik* (cedar) is used during the funeral process (AAK Group Interview, September 13, 2019).

When picking *mashkikiwan* (medicines), it is important to take only what you needed. An Elder from Wauzhushk Onigum shared this story about picking *giizhikag* (cedar) with her grandmother:

> *I must have been about 12 years old and we were catching a cold during the summertime, because I used to stay with her during the summer holidays. There were some holidays where we camped out in a tent because we all stayed in tents at that time for the summer. We were catching a cold and she was digging around in her bags and she gave me tobacco [and to collect the] branches of cedar and put that tobacco in there. Of course, me being a kid I climbed up that cedar. She didn't tell me how much to pick so I just brought a whole bunch of them and then she says, "well we have to keep this, we can't throw it away, because that's what you went and got". And she kept it.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

5.5.4.2 Other *Mashkikiwan* (Medicines)

In addition to the *gichitwaa mashkikiwan* (four sacred medicines), there is an abundance of other traditional *mashkikiwan* (medicines) on the land. An Elder from Wauzhushk Onigum shared that there are over 400 different types of *mashkikiwan* (medicines) available in the bush. He shared:

> *So, there's inner medicines that kind of come together and produce a new form of medicines. We got all sorts of medicines for tooth aches…We have a lot of medicines that deal with headache, other medicines that deal with upset stomachs. I believe there is about 400 different types of plants that, so far, have been documented.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 17, 2019.*

5.5.4.2.1 *Wiikenh* (Sweet Flag, *Acorus* spp.)

Table 60. Names for Sweet Flag

Common Name	Sweet Flag, Rat Root, Weekay, Calamus, Seneca Root
Anishinaabemowin (singular)	*Wiikenh*
Anishinaabemowin (plural)	*Wiikenyag*
Scientific Name	*Acorus calamus; Acorus americanus*

5.5.4.2.1.1 About

Wiikenh (sweet flag, singular)/*wiikenyag* (sweet flag, plural)) is a flowering wetland plant from the family *Acoraceae*. *Wiikenh* (sweet flag) is a vital *mashkiki* (medicine) to the Anishinaabe tradition and is believed to be one of the sacred *mashkikiwan* (medicines) (Six Nations, 2020). With a multitude of uses, *wiikenh* (sweet flag) is an integral part of Anishinaabe *mashkikiwan* (medicines). An Elder from Washagamis Bay's statement echoed this. He shared that "that's the main one, *wiikenh*, that mostly everyone goes for" (AAK Individual Interview, August 22, 2019). *Wiikenh* (sweet flag) is traditionally used as a painkiller to treat headaches, stomach aches, and toothaches, as well as relieving heartburn. It is also used to treat colds and fevers, clearing sinuses, and providing relief. *Wiikenyag* (sweet flag) can also be used to treat anxiety. When combined with other *mashkikiwan* (medicines), *wiikenh* (sweet flag) is known to help fight infections and strengthen the immune system. As an Elder from Wauzhushk Onigum shared, "*wiikenh* is good for everything" (AAK Group Interview, July 23, 2019). As a result of being able to cure a variety of ailments, *wiikenh* (sweet flag) continues to be an important *mashkiki* (medicine) to the Anishinaabeg. Two species of *wiikenyag* (sweet flag) grow on *Mikinaak Minis* (Turtle Island), *Acorus calamus*, an introduced Eurasian species, and *Acorus americanus*, the *wiikenh* (sweet flag) variety native to *Mikinaak Minis* (Turtle Island) (Wenzel, n.d.). Both species are referred to as the Anishinaabemowin name, *wiikenh* (sweet flag), or the common English name, sweet flag.

Wiikenh (sweet flag) plants can grow up to 2 m tall. With a similar look to a cattail or bulrush, *wiikenh* (sweet flag) plants have long and slender green leaves, similar to grass, and produce a green coloured cylindrical flower roughly 6 cm long (Hashmat, Zarnigar, Mohd, Ghulamuddin, & Azad, 2013). The leaves (called *aniibiish* (singular) or *aniibiishan* (plural)) of *wiikenh* (sweet flag) plants can be used as a traditional *mashkiki* (medicine), but its true healing powers lie in the roots (called *ojiibik* (singular) or *ojiibikan* (plural)) (Hashmat, Zarnigar, Mohd, Ghulamuddin, & Azad, 2013). An Elder from Wauzhushk Onigum shared her observations of *wiikenyag* (sweet flag):

> *You just look for the green leaves, but they're greener and you just go over there and follow it, and the roots are big and then just break it, and that's wiikenh.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 19, 2019.*

An Elder from Washagamis Bay shared that most *wiikenh* (sweet flag) *ojiibikan* (roots) grow very long (AAK Individual Interview, August 22, 2019). With a similar look to ginger root, *wiikenh* (sweet flag) *ojiibikan* (roots) are thick with a collection of smaller fibrous roots, a white interior, and brown exterior.

Wiikenhyag (sweet flag) are perennial species. They reproduce either through their seeds or root s (Ministry of Forestry, Lands, and Natural Resource Operations, 2015). The seeds can be transported to new areas either by wind, water currents, small mammals and waterfowl that consume *wiikenyag* (sweet flag), or by humans (Ministry of Forestry, Lands, and Natural Resource Operations, 2015). *Wiikenh* (sweet flag) was noted to be ready for picking at different points throughout the year. An Elder from Shoal Lake 40 shared that *wiikenh* (sweet flag) was collected in the spring and fall but was not ideal in the summer months (AAK Individual Interview, May 23, 2019). An Elder from Washagamis Bay shared that *wiikenyag* (sweet flag) is ready for harvest around October (AAK Individual Interview, August 22, 2019). Another Elder from Washagamis Bay shared:

> *You get it in the spring once it's fresh and you just put it on the string until it dries up.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 22, 2019.*

An Elder from Shoal Lake 40 shared the importance of going picking at the right time:

> *The best time to pick it is when the ice melts. When that ice melts, the wiikenh, iris, or root of the lily pad start to float up. And when they float up, they are very light, and that's the best time to pick them. You can't just pick it anytime. There's certain time to pick everything. You just can't go and pick it, there has to be a certain time for everything.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.*

5.5.4.2.1.2 Habitat

Wiikenh (sweet flag) grows in standing or slow-moving water, including wetlands, marshes, swamps, and the shores of lakes (Lansdown, 2013). An Elder from Wauzhushk Onigum shared that one can find

wiikenyag (sweet flag) growing in the mud (AAK Group Interview, July 23, 2019). An Elder from Niisaachewan shared that he could find *wiikenyag* (sweet flag) growing anywhere there was a swamp (AAK Group Interview, August 14, 2019). A community member from Shoal Lake 40 shared a similar sentiment, that as kids, her and her friends would go down to the swamp to pick *wiikenyag* (sweet flag) (AAK Individual Interview, May 22, 2019). An Elder from Washagamis Bay shared that he could harvest *wiikenyag* (sweet flag) all around the lake shores (AAK Group Interview, August 22, 2019). A community member from Niisaachewan shared that she could find *wiikenyag* (sweet flag) in the swampy areas where the water was just shallow enough that one could walk into (AAK Group Interview, September 13, 2019). She said that one could often find *wiikenyag* (sweet flag) "along the area where the wild rice would be" (AAK Group Interview, September 13, 2019). An Elder from Shoal Lake 40 shared that *wiikenh* (sweet flag) grows near the dike on Freedom Road (AAK Group Interview, May 23, 2019). An Elder shared her favourite place to collect *wiikenyag* (sweet flag)*:*

> *You can get it where that canal is where Freedom Road goes. But it's coming out this way instead of going into Snake Lake. You come out this way because it's undisturbed, nobody goes there.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.*

Because of its use in ceremony, trade, and as a *mashkiki* (medicine)*,* it is widely thought that Indigenous people have played a major role in the distribution of *wiikenyag* (sweet flag) (Wenzel, n.d.)*. Wiikenyag* (sweet flag) can be found across *Mikinaak Minis* (Turtle Island) but are more common in central and eastern Canada, as well as the midwestern United States (Ministry of Forestry, Lands, and Natural Resource Operations, 2015; Wenzel, n.d.).

5.5.4.2.1.3 Population Changes

Wiikenh (sweet flag) has been on *Aki* (Earth) since it was placed by *Kizhe Manitou* (the Creator). It is classified as a species of least concern on the International Union for Conservation of Nature ("IUCN") Red List for Threatened Species because of its abundancy and widespread range (Lansdown, 2013). The species does not carry an at-risk designation under the Species at Risk in Ontario ("SARO") list under the Ontario *Endangered Species Act, 2007*. Its current population trend is increasing (Lansdown, 2013). A community member from Shoal Lake 40 shared that *wiikenh* (sweet flag) is still a common *mashkiki* (medicine) found today (AAK Individual Interview, June 11, 2019).

An Elder from Niisaachewan shared that *wiikenyag* (sweet flag) can be found anywhere (AAK Group Interview, August 14, 2019). Even though *wiikenh* (sweet flag) is still common, some picking areas are no longer accessible or desired. Another Elder from Niisaachewan shared that it is difficult to access areas where they once picked *wiikenyag* (sweet flag)*:*

> *It's hard to park off the main highway, so you've got to find a spot…you got to designate certain areas where they can pull over without getting rammed by vehicles.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 19, 2019.*

An Elder from Shoal Lake 40 shared a similar sentiment:

> *[You can pick it] in the bush. Just kidding, but you do have to go quite a ways to get it, you can't just pick it off the roads because it's not good. You have to go further out away where there's no traffic.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.*

5.5.4.2.1.4 Wiikenyag (sweet flag) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *wiikenyag* (sweet flag). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

As an all around *mashkiki* (medicine), *wiikenh* (sweet flag) has held great value in the Anishinaabe culture and continues to do so into the present day. By itself, *wiikenh* (sweet flag) has many uses. As an Elder from Washagamis Bay shared, "it's good medicine. You can use it for all kinds of ways when you feel ill like a headache, stomach cramps or the heart, heartburn…it's good for everything" (AAK Group Interview, July 23, 2019). One of the main uses is as a painkiller. An Elder from Washagamis Bay shared that one could use *wiikenyag* (sweet flag) for headaches and toothaches:

> *You could chew it. You could even burn it and breathe in the smoke from it.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.*

An Elder from Niisaachewan shared that he also uses *wiikenyag* (sweet flag) for headaches and toothaches (AAK Individual Interview, August 19, 2019). *Wiikenh* (sweet flag) is also used to help with colds and to reduce fevers. An Elder from Washagamis Bay shared that:

> *We use it for colds and also for... when we have a fever. We boil it, we scrape it, and to fine... we grind it until very fine. Then, we boil it, then we drink that just like any other medicine. We also use it for other purposes. The wiikenh, they're about this long, it's hard. We carry it all the time, then we chew it. That's part of medicine.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

An Elder from Shoal Lake 40 shared how he prepares *wiikenyag* (sweet flag) for treating colds:

> *It's about this long. They split it this way, or cut it up, or sometimes you dry it first. It's better to dry it then after you put it in hot water, boil it... not really boil it, just simmer water.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.*

An Elder from Shoal Lake 40 shared that in addition to treating colds, *wiikenyag* (sweet flag) can also be used for treating stomach ailments (AAK Individual Interview, May 23, 2019). An Elder from Wauzhushk Onigum shared how she uses *wiikenyag* (sweet flag) for her stomach:

> *You chew it. It just dries out; you chew it and that's for your stomach.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 19, 2019.*

An Elder from Niisaachewan shared that *wiikenh* (sweet flag) is also useful for treating cancer and arthritis (AAK Group Interview, August 14, 2019). A community member from Niisaachewan shared that she uses *wiikenyag* (sweet flag) to help with anxiety:

> *I had anxiety when I used to go to sweat, that feeling of wanting to get out, so I just chewed it.*
>
> *Community member, Niisaachewan, AAK Group Interview, September 13, 2019.*

Wiikenyag (sweet flag) can also be combined with other medicines to help with other ailments or for other purposes. An Elder from Wauzhushk Onigum shared how she uses *wiikenyag* (sweet flag) and other *mashkikiwan* (medicines) for smudging:

> *I use mine for smudging, I grind it with my sage. My grandmother used to use beaver castors. They dry them up and then they grind them. It turns to powder then you put your sage, your wiikenh, tobacco and the beaver castors and burn them. Even sweetgrass, you burn it all together and it has this smell. A nice smell.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

To some, *wiikenh* (sweet flag) resembles ginger root in flavour and look. An Elder from Washagamis Bay shared that *wiikenh* (sweet flag) is also called wild ginger (AAK Individual Interview, August 22, 2019). Another Elder from Washagamis Bay shared that *wiikenh* (sweet flag) is very bitter in flavour (AAK Individual Interview, August 21, 2019). An Elder from Washagamis Bay shared that *wiikenh* (sweet flag) is spicy in flavour and that "if you endure the taste, you swallow it, it's good for you" (AAK Group Interview, July 23, 2019).

In the times before colonization, *wiikenh* (sweet flag) was a player in the Medicine Wars. An Elder from Wauzhushk Onigum shared this story about the Sioux Medicine Wars:

> *When the Sioux came up here, what they were after was our medicines. Water has to do with the Medicine Wars because we had all the medicines, the wiikenh and all those things. But they didn't have much of that. But they did come up the way up the [Saulteaux], Sioux Narrows, Massacre Island, Lake of the Woods, and all that. Eventually, chased back to the reserves in North Dakota.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, August 14, 2019.*

Wiikenh (sweet flag) is one of the most popular and important *mashkikiwan* (medicines) of Anishinaabe culture. It holds great importance to healing, family ties, and the land. *Wiikenh* (sweet flag) continues to be a resource for healing for all four of the Niiwin Wendaanimok communities.

5.5.4.2.2 *Oziisigobiminzh* (Willow, *Salix* spp.)

Table 61. Names for Willow

Common Name	Willow
Anishinaabemowin (singular)	*Oziisigobiminzh*
Anishinaabemowin (plural)	*Oziisigobiminzhiig*
Scientific Name	*Salix* spp.

Oziisigobiminzh (willow, singular)/*oziisigobiminshiig* (willow, plural) is a deciduous *mitig* (tree) species that grows across *Mikinaak Minis* (Turtle Island). More information on *oziisigobiminzhiig* (willow) regarding habitat, population trends, and wildlife usage can be found in Section 5.5.3.7. *Oziisigobiminzh* (willow) is an important *mashkiki* (medicine) to the Anishinaabeg. An Elder from Wauzhushk Onigum shared how *oziisigobiminzhiig* (willow) treated one of his wounds:

> *I got a big cut over here. It's about this long and I was [inaudible 01:19:57], I still have the scar here. It was about that long. It was right to the bone. I was about five years old, and I was swimming, and I hit a sharp rock. But you can't get to the hospital. So, the Elders just ... what they did was they took a willow, they chewed that and some other plants...turns into a pulp. They use a special kind of mud. Of course, they chewed the willow first and then, they used a special kind of mud and you put it here. And that's what did it. So, they put a little bit of mud on there just to stop the bleeding, on the outside. And so, they wrapped it up and that was it. I still got the scar on my leg, in my knee. But that's how they survived all those years.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, August 14, 2019.*

Oziisigobiminzh (willow) also acts as a pain reliever. An Elder from Washagamis Bay shared how the traditional use of *oziisigobiminzhiig* (willow) inspired western medicine:

> *Willow tree, American tribes discovered that, to relieve pain. In North America, discovered how to relieve pain from the willow tree. It became a form of aspirin. Then now days, after that, you have Tylenol come out of that aspirin. And now they simply... the pharmaceutical company, and the government simply added a few ingredients into it, so it became an aspirin.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

5.5.4.2.3 Wiigwaas (White Birch, *Betula papyrifera*)

Table 62. Names for White Birch

Common Name	White Birch
Anishinaabemowin (singular)	*Wiigwaas*
Anishinaabemowin (plural)	*Wiigwaasag*
Scientific Name	*Betula papyrifera*

Wiigwaas (white birch, singular)/*wiigwaasag* (white birch, plural) is a deciduous *mitig* (tree) that grows throughout Ontario. More information on the habitat, population trends, and wildlife usage of *wiigwaas* (white birch) can be found in Section 5.5.3.12. In addition to its use in constructing items, *wiigwaas* (white birch) is also used as a *mashkiki* (medicine). “Birch” was discussed in the context of “Medicines” three times, as a community member from Grassy Narrows shared, *wiigwaas* (white birch) sap was used as a *mashkiki* (medicine) to help cure ailments. An Elder from Shoal Lake 40 shared that *wiigwaas* (white birch) bark could be used to treat cancer:

> *You take off the bark, and where it's green... green, not green. Orange. You scrape, then she told me about this much, she said, then you put it in so much water, I can't remember how much is... and if you drink that, it's good for cancer, she says.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, May 22, 2019.*

5.5.4.2.4 *Baapaagimaa* (Black Ash, *Frazinus nigra*)

Table 63. Names for Black Ash

Common Name	Black Ash
Anishinaabemowin (singular)	*Baapaagimaak*
Anishinaabemowin (plural)	*Baapaagimaakoog*
Scientific Name	*Fraxinus nigra*

Baapaagimaak (black ash, singular)/*baapaagimaakoog* (black ash, plural) is a deciduous *mitig* (tree) species which grows across the Treaty 3 territory. Information on the habitat and wildlife uses of *baapaagimaak* (black ash) can be found in Section 5.5.3.13. “Black Ash” was brought up in the context of “Medicines” four times and was discussed in the context of the healing properties it had for wounds and its cleansing properties.

An Elder from Wauzhushk Onigum shared that *baapaagimaak* (black ash) is mixed with *oziisigobiminzh* (willow) and mud to treat bleeding from a wound (AAK Individual Interview, August 14, 2019). He also

shared that its use in cleansing the inside of the body (AAK Individual Interview, August 14, 2019). An Elder from Washagamis Bay shared how his mother used *baapaagimaakoog* (black ash) to treat a blood infection:

> *My mom used that on me when I was a little boy. I had a really bad infection. I had a bite. Well, a leech got on me and it stayed there for hours and hours until I woke up the next day. From that there, I had a blood infection, and it was going up my leg. I was having a fever…she pounded that and put it on my sore where … right at that sore, see, of the infection. And, within 24 hours that infection was gone. I was out of bed.*
>
> *Elder, Washagamis Bay, AAK Group Interview, June 23, 2019.*

5.5.4.2.5 *Zesegaandag, Gaawaandagoog* (Black Spruce and White Spruce, *Picea* spp.)

Table 64. Names for Spruce

Common Name	Black Spruce	White Spruce
Anishinaabemowin (singular)	*Zesegaandag*	*Gaawaandag*
Anishinaabemowin (plural)	*Zesegaandagoog*	*Gaawaandagoog*
Alternative Anishinaabemowin Spelling		*Mina'ig, Mina'igoog*
Scientific Name	*Picea mariana*	*Picea glauca*

Zesegaandag (black spruce, singular)/*zesegaandagoog* (black spruce, plural) and *gaawaandag* (white spruce, singular)/*gaawaandagoog* (white spruce, plural) are both coniferous evergreen *mitigoog* (trees) that grow throughout the Treaty 3 territory. Information on the habitat, population changes, and wildlife usage of these species can be found in Section 5.5.3.2. "Spruce" was discussed in the context of "Medicines" three times as the *mitig* (tree) species has medicinal properties. An Elder from Washagamis Bay shared one of the ways that the species is has healing properties:

> *The spruce trees, they have that little bubble. You take that and when you have cuts anywhere, you put that, and you cover it, and it heals pretty fast.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 22, 2019.*

5.5.4.2.6 *Ookwemin* (Chokecherry, *Prunus virginiana*)

Table 65. Names for Chokecherry

Common Names	Choke cherry
Anishinaabemowin (singular)	*Ookwemin*
Anishinaabemowin (plural)	*Ookweminan*
Scientific Name	*Prunus virginiana*

Ookwemin (chokecherry) is a deciduous shrub species on *Mikinaak Minis* (Turtle Island). Information on the distribution and wildlife usage can be found in Section 5.5.2. *Ookweminan* (chokecherries) are primarily a food source for various animals, but also serve as a medicinal source for humans. An Elder from Shoal Lake 40 shared that *ookweminan* (chokecherries) are good for the stomach (AAK Group Interview, May 23, 2019). An Elder from Washagamis Bay shared how her grandmother used *ookweminan* (chokecherries)*:*

> *My grandma taught me how to make the juice… it helps to clear the phlegm inside.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 22, 2019.*

5.5.4.2.7 *Akandamoo* (Root of the Lily pad)

Table 66 Names for Root of the Lily pad

Common Names	Root of the Lily pad, Lily pad Root, Iris Root
Anishinaabemowin (singular)	*Akandamoo*
Anishinaabemowin (plural)	*Akandamoog*

Akandamoo (root of the lily pad, singular)/*akandamoog* (root of the lily pad, plural) is a *mashkiki* (medicine) of the Anishinaabeg. *Akandamoo* (root of the lily pad) is used to heal a multitude of ailments, including treating cancer and stomach ailments.

An Elder from Shoal Lake 40 shared that *akandamoo* (root of the lily pad) is boiled and used to treat the stomach (AAK Group Interview, May 23, 2019). An Elder from Shoal Lake 40 also shared that *akandamoo* (root of the lily pad) is used to treat the stomach (AAK Individual Interview, June 10, 2019). She shared how she prepares *akandamoog* (root of the lily pad):

> *The other is the smallest one and it's called the root of a lily pad, we call it that because we don't really know what it's called, they're very small. If you mix that with strong tea and then you peel off the – or clean off the iris first, clean it up and wash it, hang it up just like a necklace. You hang it up like that and that's how you make it, and you just let it dry like that.*

Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.

The Elder also shared that the best time to pick *akandamoog* (root of the lily pad) is when the ice melts, and the plants begin to float to the surface (AAK Individual Interview, June 10, 2019). An Elder from Washagamis Bay shared that *akandamoog* (root of the lily pad) are deep under the water:

> *It's brown and it's yellow. It's got bunches on it. It's deep under the lily pad… You have to get a hook, or something, to retrieve it from the bottom. It's hard to get out of deep water in the bays. That's what I have to do to extract them.*
>
> *Elder, Washagamis Bay, AAK Group Interview, August 22, 2019.*

"Beavers" were brought up in the context of "Medicines" four times, as *amikwag* (beavers) were noted to use some of the same *mashkikiwan* (medicines) as humans. An Elder from Washagamis Bay shared how *akandamoo* (root of the lily pad) is used, and an example of how the *amik* (beaver) also uses *akandamoog* (root of the lily pad):

> *Under those lily pads…It's yellow, and that's used for ceremonies, and most for our healing. Yeah. Not only that, beavers around there, they use, like us, to medicine. They eat that. During the winter they harvest that for their feeding ponds in the fall because they use that stuff during winter.*
>
> *Elder, Washagamis Bay, AAK Group Interview, August 22, 2019.*

5.5.4.2.8 Labrador Tea (*Rhododendron groenlandicum)*

Labrador tea is a herbal *mashkiki* (medicine) made from *Rhododendron groenlandicum.* The plant species grows throughout *Mikinaak Minis* (Turtle Island) in all provinces and territories, as well is into the northern United States. The tea is made from the evergreen leaves of the plant, which are brewed in boiling water. Labrador tea serves a purpose for many ailments. An Elder from Shoal Lake 40 shared how she uses Labrador tea:

> *Labrador tea is really good for sleep, it probably has many medicinal purposes but it's good for calming a person. Like camomile tea. It's picked along Freedom Road… Another person pointed out at Falcon Lake somewhere in that area, they found a whole bunch. I really like it because it really does help you sleep and calm you.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

5.5.4.2.9 *Name* (Lake Sturgeon)

Table 67 Names for Sturgeon

Common Name	Lake sturgeon; sturgeon
Anishinaabemowin (singular)	*Name*

Anishinaabemowin (plural)	*Namewag*
Scientific Name	*Acipenser fulvescens*

Namewag (lake sturgeon) are a freshwater *giigoonh* (fish) species living on Turtle Island. Information on the habitat, diet, and population trends of *namewag* (lake sturgeon) can be found in Section 5.6.3.1.7. In addition to its former usage in the commercial fishing industry, *namewag* (lake sturgeon) also carry a medicinal purpose. An Elder from Wauzhushk Onigum shared how *namewag* (lake sturgeon) was used to heal:

> *The other one they used quite a bit was sturgeon. A little piece of sturgeon meat, chew that and it cleanses you right up, but don't take too much.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, 2019*

The Elder also shared how one has to be careful when using *namewag* (lake sturgeon) for medicinal purposes:

> *We used to eat sturgeon once in a while. Its kind of a detox thing. You just ate a little bit- it was just filled with- not grease but that fatty stuff. And that's where it is, it cleans you right out. But you don't eat too much of that otherwise you spend a whole night in the- you know.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, 2019*

5.5.4.2.10 Adikameg (Whitefish)

Table 68 Names for Whitefish

Common Name	Lake whitefish; whitefish
Anishinaabemowin (singular)	*Adikameg*
Anishinaabemowin (plural)	*Adikamegwag*
Scientific Name	*Coregonus clupeaformis*

Adikamegwag (whitefish) are a freshwater *giigoonh* (fish) species. Information regarding the Section 5.6.3.1.9. In addition to its commercial value and use for sustenance, *adikamegwag* (whitefish) also carry a medicinal purpose. An Elder from Wauzhushk Onigum shared how *adikameg* (whitefish) is used as a *mashkiki* (medicine)*:*

> *We ate all kinds of stuff like say a whitefish. What we used to do is cut a shape like a pipe down there [on the stomach]… But what you would do is cut it down the middle*

and take all the waste out and clean it right up and boil it. And that's what we used when we were constipated.

Elder, Wauzhushk Onigum, AAK Individual Interview, 2019

5.5.5 *Asiniig* (Rocks)

The Anishinaabe understanding of *Aki* (Earth) incorporates interconnectedness between all aspects of the land. Communication between animate entities such as water, *bagidanaamowin* (the air), animals, plants, rocks, the wind, the four directions, and human beings is a vital element of the Anishinaabe worldview and speaks to the importance of relationship and dependence upon each other (Geniusz, 2009; Sinclair, 2013). *Asin* (rock, singular)/*asiniig* (rocks, plural) are considered animate beings with spirit and knowledge, related to all other beings with spirit and knowledge (Manning, 2017). For instance, an *asin* (rock) might provide vital habitat to a plant, as described by an Elder from Washagamis Bay, who, in describing wild onions, said:

…they grow up big against the rocks there. We used to pull those up and eat those when we [were kids].

Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.

Language for the Anishinaabeg is essential in providing a unique view of the world. Linguistic evidence exists within the Anishinaabe language, Anishinaabemowin, in which verbs and nouns are divided into the animate and inanimate. In this way, the same language used to describe the actions undertaken by a human being (animate) are used to describe the actions of other objects, such as *asiniig* (rocks) and *mitigoog* (trees), indicating their status as animate beings as well (Geniusz, 2009). Respect for *asiniig (*rocks) as living beings play an important role in Anishinaabe ceremony. Referred to as *gimishoomisinaanig* (our grandfathers) during the sweat ceremony, *asemaa* (tobacco) is offered to the carefully selected *asiniig (*rocks). These *asiniig (*rocks) are spoken of in an animate manner—in the way one would refer to human grandfathers (Geniusz, 2009). A community member from Niisaachewan described the process:

You go and pick your grandfathers. Depending on the sweat carrier... they have certain spots where you [go] and pick. But there's one, we went to the quarry in Dalles, there, to pick.

Community member, Niisaachewan, AAK Individual Interview, September 13, 2019.

Asiniig (rocks) are similarly represented in the *Opwaaganag* (Pipe) of Peace smoking ceremony—representative of *Aki* (Earth), whose elemental substance is *asin* (rock) (Johnston, 1976, p. 135). More information on the Anishinaabe *madoodiswan* (sweat lodge) ceremony is found in Section 5.7.2.5.

Butterflies are also said to have been born of beautiful stones *Kizhe Manitou* (the Creator) placed amongst the *asiniig* (rocks) and mountains admired by the Anishinaabeg (Johnston, 1976, p. 168).

Asiniig (rocks) represent a significant medium through which Anishinaabe history and culture have been historically preserved. The Anishinaabe petroforms of Bannock Point in the Whiteshell Provincial Park demonstrate the cultural and ceremonial importance of *asin* (rock). An Elder from Washagamis Bay described the petroforms, saying "our ancestors… marked that area, [made] stone markings" (AAK Group Interview, July 23, 2019). Locations at which pictographs are found may represent sacred sites for ceremony, such as fasting (AAK Group Interview, July 25, 2019). Pictographs and fossils found on *asiniig* (rocks) throughout the Kenora/Lake of the Woods region are of historical importance to the Anishinaabeg. Specific *asiniig* (*r*ocks) have also been used as way markers or landmarks. The Elder went on to describe:

> *…all kinds of markings... You'll see some stuff on the rocks where people traveled [a] long time ago... at the west end there, [we've] seen little footprints about feet about the stone. It's like something walked.*
>
> *Elder, Niisaachewan, AAK Group Interview, July 23, 2019.*

An Elder from Niisaachewan also discussed the use of *asiniig* (rocks) as way markers:

> *[Rock paintings] that's where the little people used to sit and point the directions many years ago, around the 1800s. That's where they used to sit and tell them where to go…*
>
> *Elder, Niisaachewan, AAK Group Interview, August 14, 2019.*

He went on to say:

> *…those rocks... they're like maps.*
>
> *Elder, Niisaachewan, AAK Group Interview, August 15, 2019.*

Another Elder from Niisaachewan described leaving offerings at *asiniig* (rocks) with pictographs, for the purpose of ensuring safe travels:

> *The pictographs, my dad waited until [the water went down]. And then see the meaning of the pictographs above it... So, we just put... food... [as an] offering. The reason why is for safe travels.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 19, 2019.*

A community member from Wauzhushk Onigum described a sacred painted *asin* (rock):

> *[The Devils Gap Rock] was one of the main routes when you travel. People had visions a long time ago. So, it wasn't painted at that time. Just the rock where I guess some battles took place between Sioux and Ojibwe. But then they started seeing visions, so*

people from way back left items, offerings, tobacco, every time they go by there for safe passage.

Community member, Wauzhushk Onigum, AAK Individual Interview, June 17, 2019.

The Anishinaabe use of waterways as the main route for travel is discussed in Section 5.7.4.

An Elder from Wauzhushk Onigum described the use of rock paintings by individual *ndotem* (clans):

[On] a lot of these high cliffs, you'll see hands—that means I can't go there. It's restricted... And the other ones, they have their clans, you could see rock painting in these clans. You'll see a moose or a sturgeon.

Elder, Wauzhushk Onigum, AAK Group Interview, August 14, 2019.

He went on to discuss the implications of *asin* (rock) paintings found on the history of trade:

More to the east, about maybe a half a mile, there's a big flat rock. Probably the size of this thing, and they have all these [spiral] pictographs on the rock... in Ontario... As a matter of fact, seen those in the Pueblo countries... But, there's a lot of trade back and forth anyway in the Mississippi River, all the way to Lake of the Woods' Rainy River.

Elder, Wauzhushk Onigum, AAK Group Interview, August 14, 2019.

He described the sacred use of *asiniig* (rocks):

…they have sacred items that are brought to this high rock, and what you do is you climb down, and you find the hole and that's where you have your sacred items... you put the sacred items inside your rock... [we've] been doing that since time immemorial…

Elder, Wauzhushk Onigum, AAK Group Interview, April 7, 2019.

Many sacred *asin* (rock) locations have been destroyed—often for navigation purposes. Indian Bridge, at which important fossils were present, were removed by blasting. "It's gone now," An Elder from Washagamis Bay said:

All those areas. They destroyed a lot of that area. They were just talking about our teachings about that muskrat and how that name became very prominent in the area here. They talked about that muskrat visiting our area, the spirit of the muskrat, the muskrat itself and they really like the area because of the way that people treated them. And there's tracks, which will be the fossilized tracks and whatnot.

Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.

The Anishinaabeg share an understanding of *Aki* (Earth) in which all beings are interconnected and related to each other. An important part of this understanding involves environmental aspects,

Knowledge of the Waters

5.6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives

commonly regarded as inanimate, as being imbued with knowledge and spirit. *Asiniig* (rocks) are animate beings which have a role in Anishinaabe tradition as important landmarks, through use in ceremony, and as valued cultural mediums.

5.6 Knowledge of the Waters

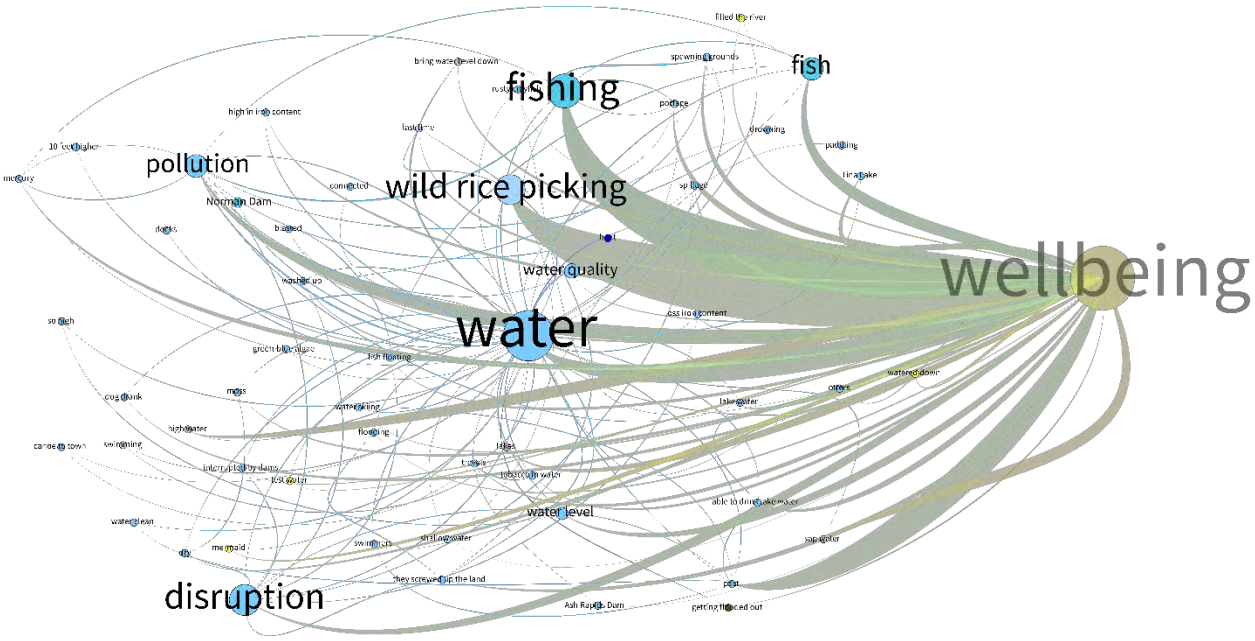


Figure 43: Connections of Water to Anishinaabe Wellbeing

In AAK interviews, Niiwin Wendaanimok community members shared their knowledge of the waters, including knowledge of various fish species and their spawning grounds, notably *ogaawag* (walleye), *namebinag* (white sucker), *adikamegwag* (whitefish), and *namewag* (lake sturgeon), and the places they can be caught by net or rod (discussed in Section 5.7.5). **Map 26** highlights areas near the project site that Niiwin Wendaanimok community members have fished, as well as the location of spawning grounds.

5.6.1 *Nibi* (Water)

The Lake of the Woods/Kenora region is rich in *nibi* (water) resources. Inland lakes are predominantly found within the Canadian Shield, dominated by bedrock, thin soils, and forested areas. The acidic bedrock and thin soils indicate nutrient-poor and clear lakes with generally good *nibi* (water) quality (Government of Ontario, 2014). The majority of watercourses and waterbodies along the proposed alignment are small tributaries and wetlands draining to larger waterbodies. The larger waterbodies nearest to the immediate Project area are Royal Lake, Moth Lake, the Whiteshell River, and Baubee Lake (WSP, 2019). For more information on the immediate Project Area refer to Section 2.2.

Limited aquatic ecosystem information exists within the Project area. Connecting streams may potentially support spawning, rearing, or migratory habitats for species present in the region. A study

undertaken in 2009 identified potential spawning habitats in three locations, including one at a tributary to Baubee Lake (WSP, 2019). For more information on spawning sites identified by the Niiwin Wendaanimok communities, refer to Section 5.7.5.4.

Key factors affecting inland lake *nibi* (water) quality in the Lake of the Woods/Kenora region include beaver activity, shoreline development, contaminants, invasive species, acid rain, and climate change (Government of Ontario, 2014).

5.6.1.1 Surface Water and Drainage

The Water Survey of Canada ("WSC") has a three-level hierarchy of drainage areas for monitoring *nibi* (water) levels and flow rates. These include: Major Drainage Areas, Sub Drainage Areas, and Sub-sub Drainage Areas (Esri Canada, 2015). At the Major Drainage Area level, the Project falls within the Nelson River Drainage Area, which spans from the eastern end of the Rocky Mountains to the eastern end of Highway 17 in Ontario. The drainage area reaches as far north as Port Nelson in Manitoba and extends south into North Dakota and Minnesota. Within this region, the Project resides in the Hudson Bay Sub Drainage Area, which extends from the southeast edge of Manitoba beyond Lake of the Woods towards Thunder Bay in the east and reaches south into the northern portion of Minnesota. At the Sub-sub Drainage Area level, Phase 1 of the Project falls along the southern edge of the Whiteshell River Watershed, which drains north into West Hawk Lake. Later phases of the Project will extend into the Winnipeg River Drainage Basin, which drains into Lake Winnipeg to the northwest. **Map 27** shows the location of the Project relative to the Whiteshell River Watershed.

5.6.1.2 Nibi (water) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *nibi* (water). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

The Anishinaabeg share a reciprocal and unique relationship with *nibi* (water). Anishinaabe Elder Francis Nepinak describes the Anishinaabe relationship with Creation well: "The oceans, the lakes, the rivers, it's similar to a blood vein in your body. It's like that. It's like the water on Earth is its blood. And the plants like hair. Also, the ground is the same as your flesh" (Doris Pratt, Harry Bone and Treaty & Dakota Elders of Manitoba, 2014). *Nibi* (water) is sacred, representing the blood that flows through Mother Earth, providing her with nourishment and purification (Benton-Banai, 1988, p. 5). The relationship with *nibi* (water) extends beyond economic necessity into a deep sense of identity on personal, *ndotem* (clan), community, national, and spiritual levels (McGregor, 2008). *Nibi* (water) plays a constant theme throughout traditional stories, particularly those involving Creation and migration (Kozich, Halvorsen, & Mayer, 2018). As such, the northward historical Anishinaabe migration to the Great Lakes region of Ontario followed a prophecy to seek *manoomin* (wild rice), which is the food that grows on the *nibi* (water) (Benton-Banai, 1988, p. 101). Pre-treaty seasonal movements to ensure sustenance were also often determined through the proliferation of fish species of importance (Kozich, Halvorsen, & Mayer, 2018). Many medicinal plants still used by the Anishinaabeg today are also found

in wetland habitats (Kozich, Halvorsen, & Mayer, 2018). The Anishinaabe ceremonial *mitigwagik* (waterdrum) represents the life-giving force of Mother Earth (Benton-Banai, 1988, p. 68).

Nibi (water) is closely associated with the female, as women, like Mother Earth, are gifted with life-giving powers, and carry children in *nibi* (water) in the womb (McGregor, 2008). Anishinaabe women therefore share the special responsibility of caring for, paying respect to, and speaking for the *nibi* (water) (McGregor, 2008). This involves taking only what is needed, refraining from wasting *nibi* (water), and sharing excess with others (Szach, 2013). As such, women are often the first to notice the degradation of *nibi* (water). An Elder from Wauzhushk Onigum said:

> *The water's getting sick. My grandmother, she used to say, she was 106 years old when she left us in 1962, 63 or 62. Then, there was no sicknesses around here, in Canada.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

The nature of the inexorable link between the Anishinaabeg and *nibi* (water) has often resulted in the Anishinaabeg being the first to suffer from the pollution. A community member from Grassy Narrows described the effects of severe *nibi* (water) quality degradation:

> *So, they used to dump mercury into the river from the paper mill. It's a heavy metal, so it stayed. They found out recently that they were still dumping mercury. So that's 40 years of mercury exposure to three places... It's a neurological disease, so a lot of people in my community suffer with shakes, seizures, cerebral palsy, even schizophrenia, psychosis... It's like a progressing disease, too. So, because I was born with mercury in my blood as a baby, throughout my life, I'm going to start showing more signs. So, today in my life, I have a hard time opening water bottles sometimes, or I can't even sometimes hold, like, a cup. So, that's part of the effects. And also, coordination is kind of off. So, like walking. I can't probably walk a straight line. I could step on my other foot.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

An Elder from Washagamis Bay reminisced a time when:

> *…we can just get a cup and just drink from the lake before pollutants went into the water. Nowadays, we have to buy water. The world has gone crazy.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, July 25, 2019.*

An Elder from Washagamis Bay described the effects of *nibi* (water) pollution on *giigoonh* (fish) populations relied up by the Anishinaabeg:

> *Anyways, over the years, certain species of fish have disappeared in this area... it's because of pollution of the lake, and the ecosystem being damaged by pollution of the water. Water pollution.*

Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.

The waterways of Lake of the Woods have undergone significant changes resulting in long-standing impacts to the land. With *nibi* (water) being a resource that is thoroughly intertwined with the lives of the Anishinaabeg, changes to the waterways do not go unnoticed. One change that has been observed within the Lake of the Woods is how it is *nibi* (water) levels are now controlled by dam systems under the Canadian Lake of the Woods Board and the International Lake of the Woods Board (Lake of the Woods Convention and Protocol , 1925). An Elder from Niisaachewan shared how the implementation of the dams resulted in changes to the natural fluctuations of the waterways which played a role in the flooding during the 1950s:

> *[The river] flooded and then dried out. That's because the dam water control … the international water control board controls the water level … They control a whole river; they control it through White Dog Falls.*
>
> *Elder, Niisaachewan, AAK Group Interview, September 17, 2019.*

Unnatural fluctuations of the waterways have inflicted permanent changes to the structure of the lake. An Elder from Niisaachewan noted changes to the lake bottom around Hay Island and Needle Point over his lifetime. He explained how a dramatic decrease in lake depth has left the area with an exposed *asin* (rock) bottom, inhibiting the growth of vegetation. This loss has also resulted in loss of biodiversity of small mammals and *bineshiinyag* (birds) that relied on the lake's marshes:

> *If I was to go back here and look, all that stuff that was at the bottom of the river, or the bay is all kind of washed away. I think maybe 15 to 20 years ago you could actually paddle into the bay and stick a paddle into where it's all muddy … I think at that time they had beavers, muskrats all over living there. Even you can see those birds that hang out in the bays, and the blackbirds. And then they feed on the rice fields … But today, all you see is all rock bottom. There's nothing left because everything is so washed away, you know? Then you can see the forming of the shoreline how deep the water was because along the level of the water, you can see the markings on the shoreline where I remember we used to park. And that was in boats. Even to walk around the shoreline, everything is so dried up now. It's all kind of drained out, because I can see there's not much life left that I can see.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

Additionally, an Elder from Washagamis Bay explained how the changes to lake *nibi* (water) levels from the dams has resulted in lasting impacts for the health of the waterways:

> *They do a lot of damage to ecosystem … species of fish, turned upside down and die from pollution, the water pollution … They always mention that the outputs from different lakes that moves into the Lake of the Woods, also the Rainy River water basin.*

> *And it goes into the Lake of the Woods, and the Lake of the Woods dam. Kenora dam releases that water towards Winnipeg River. There's another dam, if you have not known that there's another dam, White Dog dam, that controls the water flow. So, it's done a lot of damage on that Lake of the Woods, also a little on Lake Winnipeg. So, all that pollution, it goes down. That's created in Lake of the Woods, that's streamed down to Lake Winnipeg, and it hits Lake Winnipeg. Now we have a problem with Lake Winnipeg, water problem, pollution. And Winnipeg is in big trouble right now.*
>
> *Elder, Washagamis Bay, AAK Group Interview, August 21, 2019.*

An Elder from Wauzhushk Onigum also shared his observations on how the health of the lakes have degraded over time as a result of algal blooms and factories which add contaminants to the *nibi* (water):

> *And then the water has changed and it's getting warm, due to pollution. All that pollution is coming from the American side, farming, plus the paper mills and the mines … you come here, and sometimes, there's that green, blue algae … You can smell that stuff from here.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, July 25, 2019.*

He continued to explain how climate change has also altered the time of year that the ice-roads freeze over leading towards the Northwest angle, a common shortcut instead of going to East Braintree:

> *[The lake was previously safe from] the first week in January probably until the middle of March. But it's global warming... when we were kids, we'd skate on the lake in the woods as kid, probably in November. But now it's still open till late November, the water. You can still travel by water up to November.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, July 25, 2019.*

The spiritual connection with the *nibi* (water) is essential to the wellbeing, strength, and affirmation of the identity of the Anishinaabeg (Bolton, 2012). Negative impacts to *nibi* (water) quality resulting in effects on household *nibi* (water) availability impact Anishinaabe culture and spirituality (Kozich, Halvorsen, & Mayer, 2018). The construction of an aqueduct in the early 1900s to provide Winnipeg, Manitoba, with clean drinking water resulted in the isolation of generations of Anishinaabeg living in Shoal Lake 40 (Bolton, 2012). The construction of the aqueduct altered hydrological cycles of Shoal Lake resulting in decreased *nibi* (water) quality and *nibi* (water) level fluctuations, impacting fisheries and *manoomin* (wild rice) harvest (Bolton, 2012). Shoal Lake 40 has also lived under a boil *nibi* (water) advisory since 1997 (Crabb, 2017). Additional changes to the flow of the waterways has been a result of rock blasting, such as blasting of Ash Rapids which altered the flow between Shoal Lake and Lake of the Woods. As a result, changes to the *nibi* (water) level and to *manoomin* (wild rice) growth was were inflicted. An Elder from Shoal Lake 40 explained how the change to *nibi (*water) level impacted surrounding *manoomin* (wild rice):

> *...my dad used to tell me, right here, Snowshoe Bay, he said point out would be just completely full of wild rice. And that was before that opening of Ash Rapids. They blasted away that area. And of course, on this side here, that would be full also. Falcon Bay. And now I bet you there's only little pockets of wild rice left because of the water level being and so high, and so low, and so high.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 23, 2019.*

Nibi (water) is sacred to the Anishinaabeg, representing the blood of Mother Earth which purifies and gives life. *Nibi* (water) is inexorably interwoven with Anishinaabe culture and tradition, and Anishinaabeg women share a close connection with *nibi* (water) as mothers, caregivers, and teachers. The degradation of *nibi* (water) therefore results in detrimental cultural effects in addition to affecting *nibi* (water) security. It is important that this sacred resource be closely guarded and protected in order that it may provide for future generations.

5.6.2 *Manoomin* (Northern Wild Rice, *Zizania palustris*)

Table 69 Names for Wild Rice

Common Name	Northern Wild Rice
Anishinaabemowin	*Manoomin*
Scientific Name	*Zizania palustris*

5.6.2.1 About the Species

Manoomin (wild rice) is a monoecious aquatic grass with historical and modern value as a food source for humans and other animals including waterfowl. *Manoomin* (wild rice) also has significant ecological value across *Mikinaak Minis* (Turtle Island) as a widespread wetland species that provides habitat to support biodiversity. *Manoomin* (wild rice) seeds germinate in the spring and appear on the panicles in late August (Biesboer, 2019). There is a strong correlation between the volume of a *manoomin* (wild rice) crop and water levels throughout the growing season, as the grass is especially sensitive to flooding during this time (Indian Commission of Ontario, 1981). Harvesting generally takes place in September and has historically been a large social event with notable cultural significance to the Anishinaabeg.

Manoomin (wild rice) was a significant topic of discussion among members of the four communities. In analyzing the interviews, a co-occurrence model was created that shows intersections of “Wild Rice” with other components. This model is illustrated in Figure 44. “Wild Rice” co-occurrence with other components.. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting “Wild Rice” and any given component shows the number of times “Wild Rice” was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 44 shows that in total “Wild Rice” was brought up 205 times, and “Loss of Tradition” was brought up 255 times. Of the 205 times “Wild Rice”

was brought up, 67 of those times it was in the context of “Loss of Tradition”. According to Figure 44 “Wild Rice” was most discussed in relation to “Loss of Tradition”, followed by “Family Ties”, “Berries”, “Intra-Community Ties”, and “Livelihood” respectively. This suggests that *manoomin* (wild rice) and associated practices have strong social components and are currently at risk.

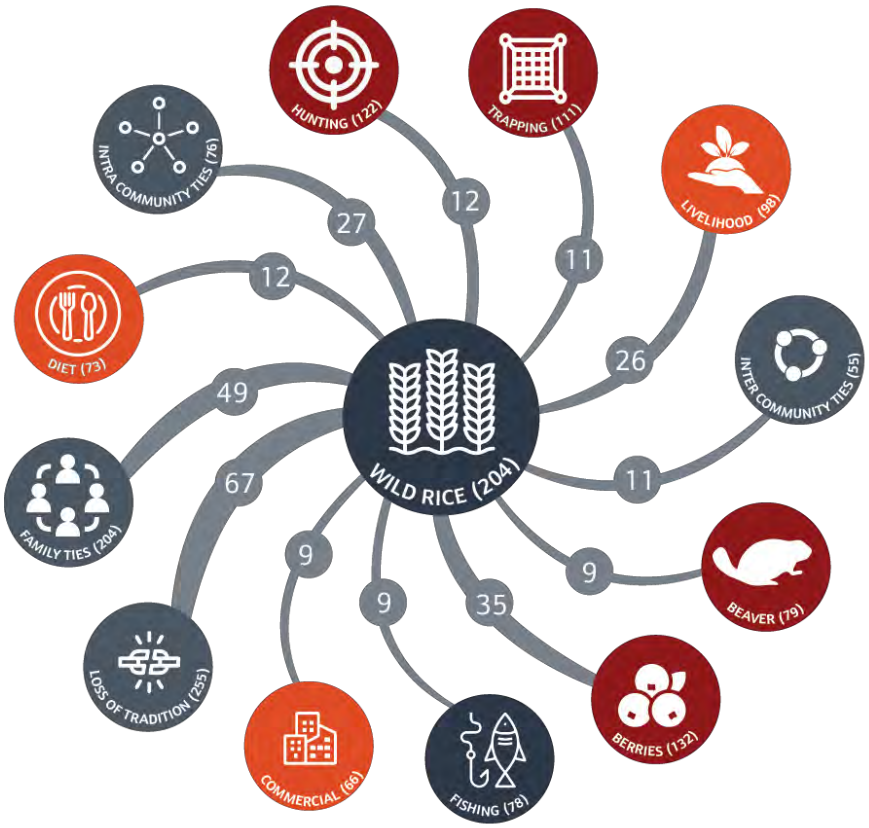


Figure 44. “Wild Rice” co-occurrence with other components.

5.6.2.2 Habitat and Range

Manoomin (wild rice) has a widespread geographic range that extends across *Mikinaak Minis* (Turtle Island). This includes modern-day Canada from British Columbia to Nova Scotia as well as disjoint locations of the eastern and western United States. *Manoomin* (wild rice) is native to northwestern Ontario and can be dated back at least 2,000 years in the region (Indian Commission of Ontario, 1981). *Manoomin* (wild rice) continues to grow extensively throughout the area today, and the Kenora district was noticed to be highly regarded for producing *manoomin* (wild rice) of superior quality (Dore, 1969). Habitat for *manoomin* (wild rice) consists of shallow, still, or slow-moving water, which includes fresh tidal marshes, brackish or salt marshes, ponds, and shores of rivers and lakes (Maiz-Tome, 2016). Additional habitat requirements include the presence of shallow water from a depth of 0.1 to 1 m and low turbidity (Biesboer, 2019).

5.6.2.3 Loss of *Manoomin* (wild rice)

Manoomin (wild rice) is classified as least concern on a global scale according to the International Union for Conservation of Nature ("IUCN") Red List of Threatened Species but is notably declining in many parts of its range (Maiz-Tome, 2016). Community members from the Niiwin Wendaanimok nations have witnessed a substantial decline in *manoomin* (wild rice) in their traditional territories over recent years. This has largely been due to increased flooding, out competition from other grasses, mechanical harvesting practices, and pollution, which are known to commonly affect *manoomin* (wild rice) (Biesboer, 2019).

Manoomin (wild rice) requires a habitat of shallow water and is highly sensitive to flooding. A major cause of flooding in the region is dam development. An Elder from Shoal Lake 40 detailed the implications of this flooding for *manoomin* (wild rice) and associated harvesting practices:

> *We wouldn't pick wild rice every year. It depended on the lake level. If it was too high, the rice didn't grow. It had to be shallow or just right. Nobody could control that except for the dam in Norman.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.*

An Elder from Washagamis Bay explained that *manoomin* (wild rice) has been depleted as a result of the raising and lowering of water levels by the Lake of the Woods Control Board (LWCB). The Elder and several other community members noted that the water levels are adjusted to provide recreational benefits to cottagers and tourists rather than suiting the sustenance needs of Anishinaabeg. He highlighted the significant effect flooding has had on this traditional food source:

> *I haven't been able to pick wild rice for the past 15 years because of the high water… We had about 15 rice fields that are under water right now.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

The blasting of Ash Rapids is believed to be another major contributor to the flooding experienced in the region. The channel connecting Shoal Lake to Lake of the Woods was deepened and widened around the turn of the 20th century to accommodate water-based transportation for timber and mining operations (Shoal Lake Watershed Working Group, 2002). A community member from Shoal Lake 40 suggested another factor:

> *The first original Cecilia Jeffrey Residential School was right there. That was a reason why that was blown up was so that they could get supplies. They needed a waterway big enough. That's why they blasted Ash Rapids.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, April 25, 2019.*

Flooding has not only prohibited *manoomin* (wild rice) from growing, but it has also given other grasses a competitive advantage. Grasses with a greater tolerance to deep water have begun to outcompete *manoomin* (wild rice). A community member from Niisaachewan explained this:

> *There was lots of wild rice last year in these spots and now back here there's these bogs. There's bogs taking over. I don't know how they come to be, but it seems like there's more bogs back there than there is anything now. But I think it's from the water raising and lowering… no one has really done any picking in the last few years.*
>
> *Community member, Niisaachewan, AAK Individual Interview, August 14, 2019.*

Similarly, An Elder from Niisaachewan shared that "since the bog set in, [there] hasn't been any rice" (AAK Group Interview, September 17, 2019). He explained that the bog has been an issue since the 1960s and flooding since the 1950s. More recently, mechanical harvesting has posed a third issue affecting *manoomin* (wild rice) growth. An Elder from Shoal Lake 40 explained:

> *I think [it was the] 70s or 80s... when the machines started coming out. Everybody was using canoes before, but now they're using machines.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 11, 2019.*

Community members from all Niiwin Wendaanimok nations have indicated that mechanical harvesting negatively impacts *manoomin* (wild rice) for a variety of reasons. An Elder from Niisaachewan explained one way in which the machines damage *manoomin* (wild rice):

> *You see lots of rice machines there. You know what happens when you use a rice machine? You're killing the roots at the bottom. The machine is ripping it apart.*
>
> *Elder, Niisaachewan, AAK Group Interview, September 17, 2019.*

An Elder from Shoal Lake 40 expressed a similar narrative, stating:

> *These machines, they kill off the rice fields. They rip out everything and it's sad to see that.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

In addition to the harsh harvesting process, a community member from Niisaachewan shared that the boats used to collect *manoomin* (wild rice) also have an impact:

> *They damage the rice. The boats do. That's why you go in with a canoe, because you're running over the rice. You're not going through it with a motor, or a deeper boat.*
>
> *Community member, Niisaachewan, AAK Group Interview, September 13, 2019.*

Another issue with mechanical harvesting is that it inhibits the natural seeding process that traditional harvesting encourages. An Elder from Washagamis Bay shared how *manoomin* (wild rice) is traditionally harvested in canoes:

> *We get two [people] to harvest wild rice. One paddles in the front, or with a pole at the back, and the person thrashes… with two sticks, about two and a half feet long. They're pointy, you get two of them, and then, as we move along, we zigzag where wild rice is…That's how we pick wild rice. We pick about four to six bag a day if you have a good partner that really knows how.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

The traditional harvesting approach results in some *manoomin* (wild rice) falling outside of the canoe, which facilitates seed dispersal and allows the resource to replenish. An Elder from Shoal Lake 40 contrasted this process with mechanical harvesting:

> *They use machines now to pick the wild rice. That's why we don't see hardly any wild rice growing. Because of the machines. The machines… pick every bit, every grain of rice. But when you pick with your sticks… the rice goes into the next side of the canoe. Left and right. You plant more rice that way.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, May 22, 2019.*

An Elder from Shoal Lake 40 indicated that the intensive removal by mechanical harvesting directly affects traditional practices by leaving nothing left to harvest:

> *But now, whoever has a rice machine takes everything. You have a canoe and you want to go out there, you have no chance.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.*

Community members noted that mechanical harvesting created several other barriers for traditional harvesters as well. A community member from Shoal Lake 40 explained how timing was one of these barriers:

> *They did it every year. We used to go out. When the machines came in, they kind of got greedy and they wouldn't give them that leeway time… It started dissolving for the hand-pickers because the machines wouldn't wait... They would give the hand-pickers two weeks or three weeks to harvest, then people got greedy and the machines went in there and wouldn't give them a chance.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, June 11, 2019.*

Another community member from Shoal Lake 40 explained that the two harvesting methods could not be done simultaneously because of safety:

"We couldn't go [rice picking] because we were afraid that they might hit us."

Community member, Shoal Lake 40, AAK Individual Interview, May 23, 2019.

Mechanical harvesting increased the supply of *manoomin* (wild rice) and used less labour resulting in reduced prices. Selling *manoomin* (wild rice) had served as a livelihood for many community members and was no longer viable through traditional harvesting. For example, An Elder from Niisaachewan explained that *manoomin* (wild rice) "used to be two dollars a pound a long time ago. Now, it's maybe 75 cents for it, because they're using machines." (AAK Group Interview, September 17, 2019)

Due to the threat that current conditions and practices pose to the existence and health of *manoomin* (wild rice), it is vital that species management efforts are in place.

5.6.2.4 Management

Traditionally, the Anishinaabeg had various methods of ensuring that *manoomin* (wild rice) was managed sustainably for future generations. A central concept of traditional management was the practice of "letting the rice rest", as an Elder from Shoal Lake 40 explained (AAK Individual Interview, June 12, 2019). This involved alternating harvest sites and designating time for regrowth in between harvests.

Another important aspect of traditional management involved replanting *manoomin* (wild rice) after harvesting. An Elder from Niisaachewan discussed a method of planting *manoomin* (wild rice) that he used and taught his daughter; *manoomin* (wild rice) seeds would be contained within a clay ball that, when thrown into the lake, would break apart in the water and disperse the seeds (AAK Individual Interview, August 15, 2019). Other community members, like this Elder from Shoal Lake 40, replanted *manoomin* (wild rice) by dumping bags of harvested seeds directly into the lake, she explained:

After the rice picking season was over, my mom and dad used to go around and dump four bags of rice all over so it would regrow again. I don't see anybody do that anymore.

Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.

Traditional *manoomin* (wild rice) practices were guided by a designated member of the community known as the Chief of *Manoomin* (wild rice). An Elder from Shoal Lake 40 revealed how *manoomin* (wild rice) was managed when his father was *Manoomin* (wild rice) Chief:

I got to know quite a bit of the wild rice knowledge from my Dad and the leadership and Elders. He was the head of the wild rice and he would check all the traditional wild rice picking areas. He would keep the communities informed in terms of how well the crops are looking and start to pass that knowledge of where the good crops were at each particular season and he would manage the rice. People looked up to him and he would always live on the rice lakes – keep an eye on it, see what rice crops are doing good, and let the community know. And once he identified the crops that needed to be

managed, a particular good season, he would tell the people through the flag system he used at the entry points of rice fields and rice lakes. He would flag up when it was good to go, and because there was a transition of traditional and mechanical harvesting back in the day, he needed to give the traditional pickers kind of a head start. So, he would have a flag system at each wild rice harvesting area and then he would also shut it down. People followed what the Chief of Wild Rice Program was recommending in terms of when to close it, when to open it for traditional, and when to finally leave it open for mechanical harvesting. It wasn't until the mid 80s where I started to see a little bit of a change from traditional picking to more mechanical. Yeah, so probably mid seventies to early 80s, yeah that was the point that people saw change in terms of wild rice harvesting.

Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.

With the noted changes in *manoomin* (wild rice) harvesting, the title of *Manoomin* (wild rice) Chief was no longer a role in the Niiwin Wendaanimok communities. However, the effectiveness of past Anishinaabe management strategies present opportunities to ensure future efforts protect *manoomin* (wild rice) for future use.

5.6.2.5 Manoomin (wild rice) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *manoomin* (wild rice). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Manoomin (wild rice) is regarded as a sacred gift to the Anishinaabeg from *Kizhe Manitou* (the Creator) (Benton-Banai, 1988, p. 101). As such, *manoomin* (wild rice) has been a staple in the diets of the Anishinaabeg throughout history and remains a valued food source today. For example, two Elders from Washagamis Bay explained how their mother used to prepare *manoomin* (wild rice). The Elder recalled:

What I miss with the rice picking, my mom would cook that rice in a big pan just until the [chaff] came off and then she would sift it. After that, if that didn't work, she would get someone to dance on that rice so that all that stuff would come off, then she would sift it again.

Elders, Washagamis Bay, AAK Group Interview, July 24, 2019.

One of the Elders further explained the process:

What we used to do is we had this area out in the field, and we would harvest the rice and bring it home. Then we would make a fire outside with one of those big galvanized tubs. They would put the rice in there and they would make the fire… they would heat

it up and stir it with a paddle. Then when it was all dried they would dig a circular hole about a foot and a half across, going down and she would make a canvas pouch that would fit in there with flaps that would lay over the ground so nothing else would get in. Then they would put the rice in there and my mom would make some canvas moccasins for me and I would go and dance in the rice, and the movement of my feet would get all the chaff and stuff off the rice. Then they would pour that all into a birch bark basket, and she would go on the hill and go like this in the wind and the chaff would all blow away. Then with the wild rice we would put some away and store it... Wild rice will keep forever if it's stored properly.

Elder, Washagamis Bay, AAK Group Interview, July 24, 2019.

Manoomin (wild rice) can be prepared for consumption in a variety of ways, including boiling like traditional rice and frying like popcorn. An Elder from Washagamis shared that her mother used to make "Indian popcorn" (AAK Group Interview, July 24, 2019). Another Washagamis Bay Elder explained how this was made:

You get wild rice and you get a frying pan and you just put a light coating of oil on there, or butter, whatever you want, and you put the wild rice on there – just a thin layer. Then you put a cover on it, and it pops the same way as popcorn.

Elder, Washagamis Bay, AAK Group Interview, July 24, 2019.

In addition to being a traditional source of sustenance, *manoomin* (wild rice) was also a livelihood to the Anishinaabeg. An Elder from Washagamis Bay expressed that changes to *manoomin* (wild rice) have resulted in widespread loss of opportunities that deprive the Anishinaabeg and exacerbate social issues including discontentment, conflict, and a lack of hope (AAK Group Interview, July 24, 2019). An Elder from Niisachewan emphasized the dependence that his grandparent's generation had on *manoomin* (wild rice) for survival:

They did lots of rice picking. That was their livelihood. There was no welfare at the time. If you wanted groceries, you had to work for it. Everything that was tradition was done. It was amazing how they lived.

Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.

An Elder from Wauzhushk Onigum also expressed that harvesting *manoomin* (wild rice) was an important livelihood, but highlighted the social value associated with the grass as well:

We had to pick rice to make some money and to buy clothing, you know. Other than sustenance gathering, a lot of it was a social gathering. Families getting together for three weeks, playing cards or whatever they did.

Elder, Wauzhushk Onigum, AAK Individual Interview, June 17, 2019.

The Elder later went on to explain:

> *The family unit would manage their own sustenance. They would manage their own wild rice… that's how they'd sustain the generations.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, July 24, 2019.*

Manoomin (wild rice) has traditionally held a strong association with relationships and cohesion, as harvesting was an activity that brought together families and communities. Many community members and Elders fondly recounted stories of *manoomin* (wild rice) harvesting. For example, An Elder from Shoal Lake 40 shared:

> *They'd have tents everywhere, and you could see people getting up early in the mornings and heading out [to the rice fields]. And they'd be gone all day, they'd come back and dump the rice and then they'd go back again. It is a lot of hard work… but I remember the kids used to play around, I know it was a time of family being together … the kids would play, and they would look after each other. Sometimes an Elder would be there to look after all the kids, and they would rotate… and in the evenings after everybody would come back from the rice fields, all the adults would visit and share stories.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

A community member from Shoal Lake 40 recalled a similar account from his childhood:

> *We'd actually be out there for the whole season. People would have their canvas tents out there. The whole family would be there – the grandparents, the kids – I remember because I was a kid running around… The ladies would be cooking throughout the day… Husbands and wives would go out and pick, kids too, grandparents, everyone… There would be people there who are dancing on the rice. When we were done, at nights, there'd be card games. People sitting around the fire.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, April 25, 2019.*

Manoomin (wild rice) harvesting was an annual occurrence that was fundamental for building relationships and facilitating cultural education. It was an opportunity for youth to gain skills and knowledge on traditional practices. *Manoomin* (wild rice) was also used for ceremonial purposes and continues to hold spiritual value today. *Manoomin* (wild rice) has a key role in feasts, such as the Fall Harvest, and other ceremonies. For example, An Elder from Shoal Lake 40 shared that they used to have Rice Ceremonies at Snake Lake (AAK Group Interview, May 23, 2019).

On an individual level, community members have noted the role that *manoomin* (wild rice) harvesting has played in healing from trauma and connecting with nature, community, and tradition. For example, An Elder from Shoal Lake 40 revealed that following a history of residential school and foster care, picking *manoomin* (wild rice) allowed her to rebuild relationships and relearn traditions:

> *When I came back, I jumped into everything that I remembered, and wild rice was one of them.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

Manoomin (wild rice) has been a sacred and necessary component of Anishinaabe culture since time immemorial. Throughout history and to this day, *manoomin* (wild rice) has played a key role in the sustenance, livelihoods, education, relationships, ceremonies, traditions, and wellbeing of the Anishinaabeg and is vital to protect.

5.6.3 *Giigoonh* (Fish)

Table 70. Names for Fish

Common Name	Fish
Anishinaabemowin (singular)	*Giigoonh*
Anishinaabemowin (plural)	*Giigoonyag*

The *giigoonh ndotem* (Fish Clan), was one of the *ototaimimaug* (the original clans) of the Anishinaabeg. Sometimes referred to as the *nibi ndotem* (Water Clan), the *giigoonh ndotem* (Fish Clan) was headed by the *Mishikken* (turtle) (Benton-Banai, 1988, p. 75). The *odoidaymiwan* (the clan system) was developed by *Kizhe Manitou* (the Creator) to allow the Anishinaabeg to govern themselves in an orderly way (Benton-Banai, 1988, p. 74). Between the two chief *ndotem* (clans), *ajijaak* (Crane) and *maang* (Loon), was the *giigoonh ndotem* (Fish Clan), which was made up of the intellectuals of the Anishinaabeg. This clan would settle disputes between the *ajijaak* and *maang ndotem* (Crane and Loon Clans), as they were known for constantly pursuing mediation between people and groups, specifically the two chief *ndotem* (clans) (Benton-Banai, 1988, p. 74). The mediation abilities of the *giigoonh ndotem* (Fish Clan) greatly benefitted the *odoidaymiwan* (the clan system), as differences were now able to be resolved (Benton-Banai, 1988, p. 74). As a whole, *giigoonyag* (fish) were chosen as emblems for teaching because of their ability to remain hidden and unseen in the water while staying steadfast in the changing current (Johnston, 1976, p. 70).

Giigoonyag (fish) play an important role in the Anishinaabe way of life. Not only have they provided a stable food source across the history of the Anishinaabeg, but they had also ensured the livelihoods of Anishinaabeg through the commercial fishing industry. Additionally, *giigoonyag* (fish) hold immense cultural significance to the Anishinaabeg. From the history through the *giigoonh ndotem* (Fish Clan), to the ties between families and communities that fishing brought, *giigoonyag* (fish) continue to be a crucial element of Anishinaabe wellbeing.

5.6.3.1 Species

This chapter provides context on the following *giigoonyag* (fish) species:

- *Ginoozhe* (Northern Pike, *Esox lucius*)
- *Awaazisii* (Brown Bullhead, *Ameiurus nebulosis*)
- *Asaawe* (Yellow Perch, *Perca flavescens*)
- *Namegos* (Lake Trout, *Salvelinus namaycush*)
- *Gidagagwadaashi* (Black Crappie, *Pomoxis nigromaculatus*)
- *Ogaa* (Walleye, *Sander vitreus*)
- *Name* (Lake Sturgeon, *Acipenser fulvescens*)
- *Namebin* (White Sucker, *Castostomus commersoni*)
- *Adikameg* (Whitefish, *Coregonus clupeaformis*)
- *Ashigan* (Largemouth Bass) and *Noosa'owesi* (Smallmouth Bass) (Centrarchidae Family)
- Fathead *Giigoozen* (Fathead Minnow, *Pimephales promelas*)
- Brassy *Giigoozen* (Brassy Minnow, *Hybognathus hankinsoni*)
- Spottail Shiner (*Notropis hudsonius)*
- Central Mudminnow (*Umbra limi)*
- Finescale Dace (*Chrosomus neogaeus*)
- Iowa Darter (*Etheostoma exile*)

5.6.3.1.1 *Ginoozheg* (Northern Pike, *Esox lucius*)

Table 71. Names for Northern Pike/Jackfish

Common Name	**Northern Pike, Pike, Jackfish**
Anishinaabemowin (singular)	*Ginoozhe*
Anishinaabemowin (plural)	*Ginoozheg*
Scientific Name	*Esox lucius*

5.6.3.1.1.1 About

Ginoozhe (northern pike, singular)/*ginoozheg* (northern pike, plural) is a large freshwater *giigoonh* (fish) species from the Esocidae family. They have a large and elongated body that is between dark green or brown in colour (Ministry of Natural Resources and Forestry, 2019). *Ginoozheg* (northern pike) scales also feature yellow or white spots (Ministry of Natural Resources and Forestry, 2019). The length of *ginoozheg* (northern pike) ranges between 45 to 75 cm and on average weigh between 1 to 5 kg, although weights reaching upwards of 18 kg have been noted (Ministry of Natural Resources and Forestry, 2019). *Ginoozheg* (northern pike) are a popular sport *giigoonh* (fish) and are a sought-after species for fishermen. *Ginoozheg* (northern pike) diet mainly consists of smaller *giigoonyag* (fish) and invertebrates. *Ginoozheg* (northern pike) lay their eggs during the spring. During the spawning season, *ginoozheg* (northern pike) will swim through shallow and vegetated water to scatter their eggs, which will then cling to the surrounding vegetation (Fisheries and Oceans Canada, 2018).

In analysing the interviews, a co-occurrence model was created, that shows intersections of “Northern Pike/Jackfish” with other components. This model is illustrated in Figure 45. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting “Northern Pike/Jackfish” and any given component shows the number of times “Northern Pike/Jackfish” was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 45 shows that in total “Northern Pike/Jackfish” was brought up 26 times, and “Fishing” was brought up 78 times. Of the 26 times “Northern Pike/Jackfish” was brought up, 12 of those times it was in the context of “Fishing”. Throughout the AAK interview process, the names Northern Pike and Jackfish were used interchangably. “Northern Pike/Jackfish” was most frequently mentioned when discussing “Fishing”, followed by “Walleye”, “Spawning”, and “Whitefish”. The frequency of these code co-occurrences shows the imporantance of *ginoozheg* (northern pike) to other *giigoonh* (fish) species and to activites like fishing.

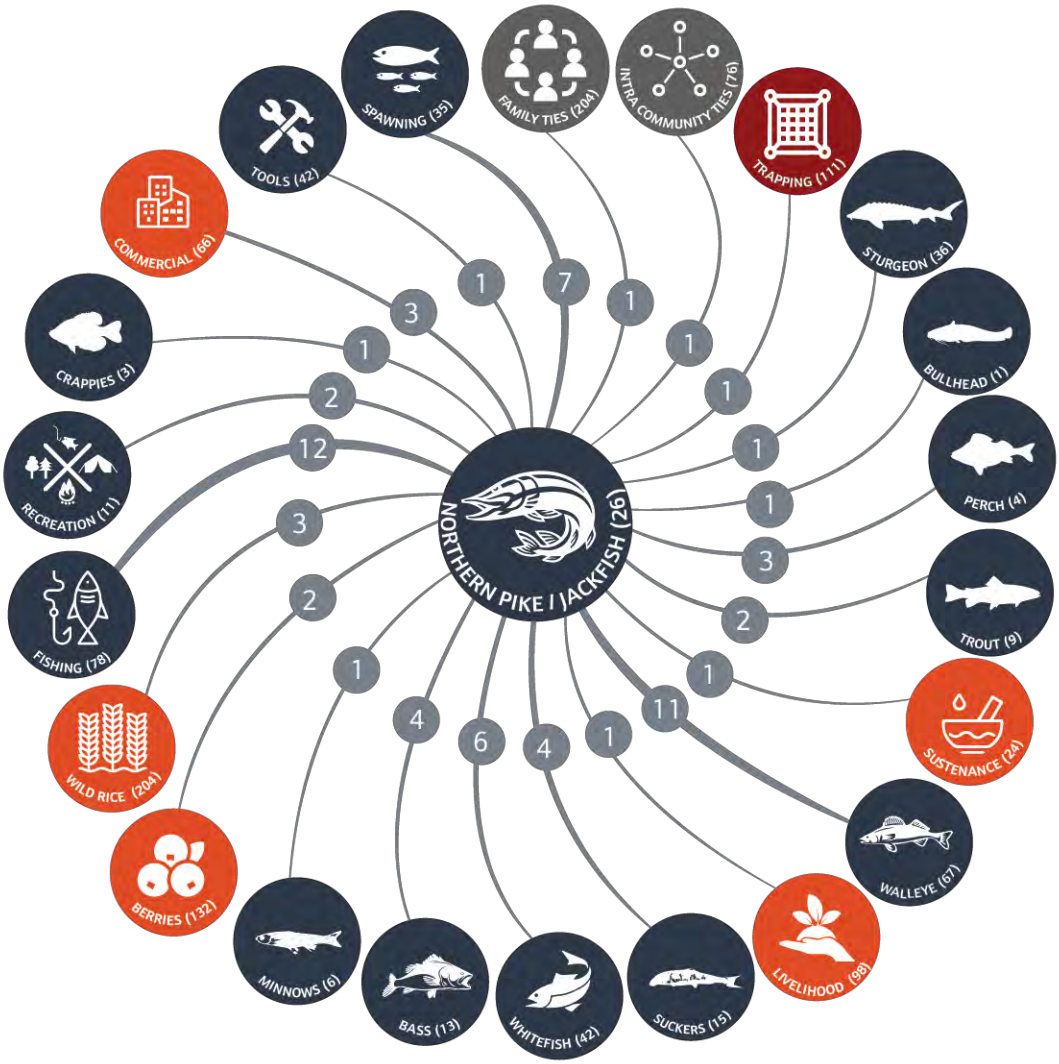


Figure 45. “Northern Pike/Jackfish” co-occurrence with other components.

5.6.3.1.1.2 Habitat

Across *Mikinaak Minis* (Turtle Island), *ginoozheg* (northern pike) live in the freshwater and brackish waterways of present-day Canada, Eastern Europe, and into Asia. *Ginoozheg* (northern pike) live in shallow and vegetated areas on the shores of lakes and rivers, creeks, and streams (Ministry of Natural Resources and Forestry, 2020). These shallow areas are ideal for ambushing prey and spawning (Ministry of Natural Resources and Forestry, 2020). In the summer months after spring spawning, *ginoozheg* (northern pike) relocate to cool deep water (Ministry of Natural Resources and Forestry, 2020).

Across Treaty 3 territory, *ginoozheg* (northern pike) inhabit a variety of locations. An Elder from Washagamis Bay shared that the shores along Washagamis Bay were a good spot to find *ginoozheg* (northern pike) (AAK Individual Interview, August 21, 2019). *Ginoozheg* (northern pike) make great use of rivers and creeks to travel to and from spawning areas. An Elder from Shoal Lake 40 shared that the *ginoozheg* (northern pike) found in Falcon Lake originate from Shoal Lake (AAK Individual Interview, May 23, 2019). He also identified the Snake Lake and High Lake creek systems as ideal spawning grounds for *ginoozheg* (northern pike) (AAK Individual Interview, May 23, 2019). He also noted the creek systems surrounding Love Lake were popular *ginoozheg* (northern pike) spawning locations, along with Bag Bay and Claga Bay near Shoal Lake (AAK Individual Interview, May 23, 2019). He also noted that Shoal Lake and the surrounding areas of Snake Lake, High Creek, and Mud Lake were full of *ginoozheg* (northern pike) and other *giigoonh* (fish) species*:*

> *Other than the whole Shoal Lake area, the Shoal Lake Basin. Of course, we would have Snake Lake. A little fishing in there. And along that whole creek system, there'd be a lot of fish in there too. Spawning grounds for White sucker, Northern Pike, and the Walleye. They go up all the way up there to do their spawning…High Creek and past this way towards Mud.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 23, 2019.*

5.6.3.1.1.3 Diet

Ginoozheg (northern pike) are top predators of many waterways, and feed on *giigoonh* (fish) species such as *asaaweg* (yellow perch), *odoonibiinsag* (cisco), and rainbow smelt, an invasive species in Treaty 3 territory (Margenau, AveLallemant, Giehtbrock, & Schram, 2008; Minnesota Department of Natural Resources and Ontario Ministry of Natural Resources and Forestry, 2017). In their early years, *ginoozheg* (northern pike) will feed on zooplankton, which is facing population reductions due to the invasive presence of the spiny waterflea (*Bythotrephes longimanus)* (Minnesota Department of Natural Resources and Ontario Ministry of Natural Resources and Forestry, 2017). *Ginoozheg* (northern pike) are also highly territorial and will attack and consume unwanted visitors to their domain, including *ashaageshiinyag* (crayfish), *waawaabiganoojinyag* (mice), waterfowl, *wauzhushkwag* (muskrat), and *omagakiig* (frogs) (Fisheries and Oceans Canada, 2018).

5.6.3.1.1.4 Population Trends

Ginoozheg (northern pike) are a common species and listed as a species of least concern on the IUCN Red List of Threatened Species (NatureServe, 2011). Surveys spanning 2003-2010 generally indicate a slight decline in overall abundance accompanied by an increase in size (Minnesota Department of Natural Resources & Ontario Ministry of Natural Resources and Forestry, 2017). According to some community members, *ginoozheg* (northern pike) have been decreasing in abundance and quality. An Elder from Wauzhushk Onigum stated that *ginoozheg* (northern pike) used to spawn in the area of Poplar Bay but that he has not seen any there for years (AAK Group Interview, April 8, 2019).

As indicated in **Map 28**, the Treaty 3 territory spans across Fishery Management Zones 4 and 5 (FMZ-4 and FMZ-5). The Fishery Management Zones are set by the Ontario Ministry of Natural Resources and Forestry ("MNRF"). MNRF has identified *ginoozheg* (northern pike) as a common species in the Treaty 3 territory, specifically in Shoal Lake and Lake of the Woods (Ministry of Natural Resources and Forestry, 2020). *Ginoozheg* (northern pike) are a popular sport fishing species and is the second most frequently harvested species in Treaty 3 territory after *ogaawag* (walleye) (Minnesota Department of Natural Resources and Ontario Ministry of Natural Resources and Forestry, 2017). Although the *ginoozheg* (northern pike) population continues to increase, a slower overall growth rate of *ginoozheg* (northern pike) has been noted in northern Ontario (Ministry of Natural Resources and Forestry, 2020).

5.6.3.1.1.5 Ginoozheg (northern pike) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *ginoozheg* (northern pike). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Fishing has been a source of culture, food, and income for the Anishinaabeg for generations. "Northern Pike/Jackfish" was discussed 12 times in the context of "Fishing". "Northern Pike/Jackfish" was also mentioned seven times in the context of "Spawning". *Ginoozheg* (northern pike) are an actively harvested species and are frequently caught with other species. In many cases, different species would be harvested in the same areas at the same time. Several species of fish were discussed in the context of "Northern Pike/Jackfish" several times, with "Walleye" discussed 11 times, "Whitefish" six times, "Bass" four times, and "Suckers" four times. An Elder from Shoal Lake 40 shared that High Lake was a good location to fish for *namegosag* (lake trout), *adikamegwag* (whitefish), and *ginoozheg* (northern pike) (AAK Individual Interview, May 23, 2019). An Elder from Washagamis Bay shared that in the bays near Washagamis Bay, it was easy to catch any type of fish, including *adikamegwag* (whitefish), *maashkinoozheg* (muskellunge), *namewag* (lake sturgeon), bass, and *ginoozheg* (northern pike) (AAK Individual Interview, August 22, 2019). An Elder from Niisaachewan noted that Sandy Lake was a good area to catch *adikamegwag* (whitefish), *ginoozheg* (northern pike), and *asaaweg* (yellow perch) (AAK Individual Interview, September 18, 2019). In addition to areas that were common fishing spots for many species, some locations were more ideal to catch *ginoozheg* (northern pike). An Elder from Shoal Lake 40 shared that the waters surrounding the Whitedog Dam could produce "five-foot jacks […] [at least] three-foot always" (AAK Individual Interview, June 11, 2019).

Fishing for *ginoozheg* (northern pike) was done for recreation and for sustenance but it was not always a common commercially fished species. While fishing recreationally, *ginoozheg* (northern pike) was used as a teaching tool. A community member from Washagamis Bay shared that he would go fishing for *ginoozheg* (northern pike) around Washagamis Bay with his uncles to have fun and learn from them (AAK Individual Interview, July 25, 2019). For many, heading out onto the lake for recreational *ginoozheg* (northern pike) fishing was an activity that brought joy. An Elder from Shoal Lake 40 shared this story about the joy that fishing for *ginoozheg* brought to her family:

> *I remember my brother-in-law, he was telling us... we're out on a boat, he was showing us this huge jackfish they caught in a net, it was just huge. And we're snapping pictures of it and after we just floated around a lake just visiting each other. I remember him saying, he said, "I love the lake." He said, "If I ever die, I want my ashes thrown out here in the lake." That's what he was saying to us. He says, "I just love it out here."*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

G*inoozheg* (northern pike) was also used as a tool for education. An Elder from Shoal Lake 40 shared that he used to go blueberry picking with his grandfather when he was younger, who also taught him how to clean and fillet *ginoozheg* (northern pike) (AAK Individual Interview, May 24, 2019). In this case, *ginoozheg* (northern pike) was used as a vessel to share knowledge on filleting and preparing a *giigoonh* (fish). In the present day, *ginoozheg* (northern pike) is not as common as it used to be for consumption. A community member from Washagamis Bay shared how *ginoozheg* (northern pike) were once a heavily consumed species but are no longer. He shared that *ginoozheg* (northern pike) used to be edible when he was a child, but is now no longer palatable (AAK Individual Interview, July 25, 2019). An Elder from Washagamis Bay shared a similar story, that there used to be "a fair amount of jacks, but nobody really wants them…most people don't like it" (AAK Individual Interview, August 21, 2019).

Ginoozheg (northern pike) used to be commercially fished commonly but are not anymore. An Elder from Shoal Lake 40 shared that his family has not set commercial fishing nets in over five years, but when they did, they would often catch *ginoozheg* (northern pike) (AAK Group Interview, May 23, 2019). An Elder from Washagamis Bay shared that his family relied on commercially fishing species like *ginoozheg* (northern pike):

> *We fish to survive… We would sell lots of fish... There's jack fish, whitefish, everything we sell.*
>
> *Elder, Washagamis Bay, AAK Group Interview, August 22, 2019.*

An Elder from Niisaachewan shared that fishing for *ginoozheg* (northern pike) was often an activity shared within the community and within families, particularly at Sandy Lake. She shared that:

> *We used to look at the map and say, by five o'clock or six o'clock, we'll meet together." That's what we used to have all the time. Everybody would be right there. And then, we'd say where we're going to pitch up the tent. We had lots of fun.*

Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.

An Elder from Niisaachewan shared that in Poplar Portage, fishing and *manoomin* (wild rice) collecting would occur in the same areas (AAK Group Interview, September 17, 2019). In analyzing the interviews, "Wild Rice" and "Northern Pike/Jackfish" were brought up together three times, emphasizing that activities such as picking *manoomin* (wild rice) and fishing would occur in the same areas. Similar to collecting *manoomin* (wild rice), fishing for *ginoozheg* (northern pike) was also associated with berry picking. An Elder from Washagamis Bay recalled travelling with their grandparents up the Winnipeg River, where they would pick *miinan* (blueberries) and fish for *ginoozheg* (AAK Group Interview, July 23, 2019). The Elder shared that they would spend their whole summers out on the river with their grandparents (AAK Group Interview, July 23, 2019).

Ginoozheg play a role in Anishinaabe tradition through the *odoidaymiwan* (the clan system). *Odoidaymiwan* (the clan system) was developed by *Kizhe Manitou* (the Creator) to give strength and order to *Aki's* (Earth's) people and help them govern themselves (Benton-Banai, 1988, p. 74). Each animal was given wisdom in the form of a character trait which would instruct and benefit the Anishinaabeg in the future (Benton-Banai, 1988, p. 7). *Ginoozheg* (northern pike) are represented in the *odoidaymiwan* (the clan system), representing swiftness and elegance (Johnston, 1976, p. 53).

Ginoozheg have a long history with the Anishinaabeg. Through fishing, *ginoozheg* (northern pike) acted as a food and income resource, a teaching tool, and a way for families and communities to spend time together. Although use has changed over time, *ginoozheg* (northern pike) continues to be an important component in the Anishinaabe way of life.

5.6.3.1.2 *Maanameg* (Catfish, Order Siluriformes)

Table 72. Names for Catfish

Common Name	**Catfish**
Anishinaabemowin (singular)	*Maanameg*
Anishinaabemowin (plural)	*Maanamegwag*
Alternative Anishinaabemowin Spelling	*Mizi*
Scientific Name	Siluriformes order (various)

5.6.3.1.2.1 About

Maanamegwag (catfish) are a family of ray-finned *giigoonh* (fish) from the order Siluriformes. Their most prominent feature distinguishing them from other fish is their barbels, which resemble the whiskers of a cat. In general, *maanamegwag* (catfish) are nocturnal bottom feeders. *Maanamegwag* (catfish) once inhabited every continent at some point, with a majority of species living in North and South America. Three species of *maanamegwag* (catfish) can be found in the Treaty 3 territory, including the brown *awaazisiig* (bullhead), black *awaazisiig* (bullhead), and the tadpole madtom

(Ministry of Natural Resources and Forestry, 2020). In Anishinaabe tradition, *maanamegwag* are symbols of breadth, scope, and learning (Johnston, 1976, p. 53).

5.6.3.1.2.2 *Awaazisiig* (Brown Bullhead, *Ameiurus nebulosis*)

Table 73. Names for Brown Bullhead

Common Name	Brown Bullhead
Anishinaabemowin (singular)	Brown *Awaazisii*
Anishinaabemowin (plural)	Brown *Awaazisiig*
Scientific Name	*Ameiurus nebulosis*

5.6.3.1.2.2.1 *About*

Brown *awaazisiig* (bullheads) are a medium-sized bullhead *maanamegwag* (catfish) species from the family Ictaluridae. Brown *awaazisiig* (bullheads) are brown and green in colour and have a notable square tail (Ministry of Natural Resources and Forestry, 2019). The species usually grows between 20 to 36 cm in length and weighs an average of 3 to 4 kg (Ministry of Natural Resources and Forestry, 2019). Brown *awaazisiig* (bullheads) are a popular sport *giigoonh* (fish).

In analysing the interviews, a co-occurrence model was created, that shows intersections of “Bullhead” with other components. This model is illustrated in Figure 46. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting “Bullhead” and any given component shows the number of times “Bullhead” was brought up in the context of that component. The width of the line visually represents this as well. For example,

Figure 46 shows that in total “Bullhead” was brought up once, and “Fishing” was brought up 78 times. Of the single time “Bullhead” was brought up, it was in the context of “Fishing”.

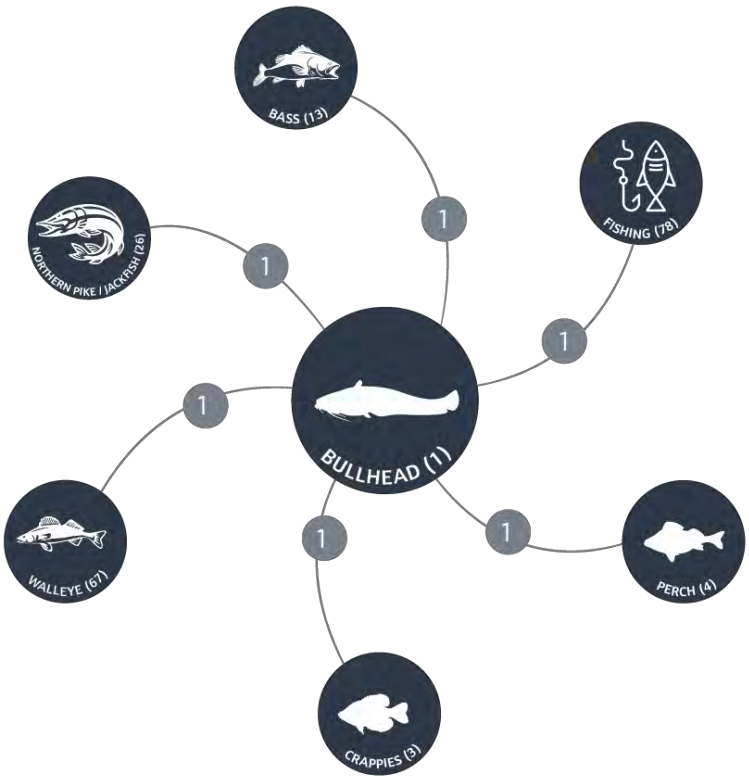


Figure 46. “Bullhead” co-occurrence with other components.

5.6.3.1.2.2.2 Habitat

Brown *awaazisiig* (bullheads) can be found throughout southern Ontario and in the Treaty 3 territory south of Highway 17 (Ministry of Natural Resources and Forestry, 2019). Brown *awaazisiig* (bullheads) are bottom feeders and generally prefer warm and slow waters for their habitat (Ministry of Natural Resources and Forestry, 2019). In addition to warm and slow waters, Brown *awaazisiig* (bullheads) also prefer areas that are heavily vegetated and have bottoms made up of soft substrates, such as mud, sand, and silt. (NatureServe, 2011). Brown *awaazisiig* (bullheads) will burrow into these substrates during winter months where they will remain inactive for the season (NatureServe, 2011). Eggs are laid similarly in sand, but are usually under the shelter of vegetation, burrows, or logs (NatureServe, 2011).

5.6.3.1.2.2.3 Diet

Brown *awaazisiig* (bullheads) are nocturnal omnivores. As with many *maanameg* (catfish) species, brown *awaazisiig* (bullheads) are bottom feeders. Living in heavily vegetated waters, brown *awaazisiig* (bullheads) consume zooplankton, plants, *manidoons* (insect) larvae, small *giigoonyag* (fish), *giigoonh*

(fish) eggs, *ashaageshiinyag* (crayfish), *zagaskwayag* (leeches), and *mooseg* (worms) (Rechulicz & Wojciech, 2017)

5.6.3.1.2.2.4 Population Trends

Brown *awaazisiig* (bullheads) were introduced to Rainy Lake in the 1920s and have since made their way into the Lake of the Woods and surrounding lake (Minnesota Department of Natural Resources and Ontario Ministry of Natural Resources and Forestry, 2017). Brown *awaazisiig* (bullheads) have a population of over one million, with the numbers and range increasing as introductions outside of the native range occur. Brown *awaazisiig* (bullheads) are listed as a species of least concern on the International Union for Conservation of Nature's ("IUCN") Red List of Threatened Species (NatureServe, 2011).

5.6.3.1.2.2.5 Awaazisiig (bullheads) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *awaazisiig* (bullheads). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Brown *awaazisiig* (bullheads) are closely associated with fishing and with other *giigoonh* (fish) species. An Elder from Niisaachewan noted that brown *awaazisiig* (bullheads) could be found with bass, *ginoozheg* (northern pike), *ogaawag* (walleye), *gidagagwadaashiwag* (black crappies), and *asaaweg* (yellow perch) in the area of Poplar Portage (AAK Individual Interview, September 17, 2019). As with other *giigoonh* (fish) species, brown *awaazisiig* (bullheads) were a food source for the Anishinaabeg. Brown *awaazisiig* (bullheads) are important to the Anishinaabe culture because of the role the general *maanamegwag* (catfish) family holds.

5.6.3.1.3 Asaaweg (Yellow Perch, *Perca flavescens*)

Table 74. Names for Asaaweg (Yellow Perch)

Common Name	Yellow Perch, Perch
Anishinaabemowin (singular)	*Asaawe*
Anishinaabemowin (plural)	*Asaaweg*
Scientific Name	*Perca flavescens*

5.6.3.1.3.1 About

Asaaweg (yellow perch) are freshwater *giigoonh* (fish) belonging to the family Percidae native to *Mikinaak Minis* (Turtle Island) with an almost circumpolar distribution in the northern hemisphere. *Asaaweg* (yellow perch) vary latitudinally in growth rate, size, and age as a result of day length and water temperature variations (Fisheries and Oceans Canada, 2018). Adult *asaaweg* (yellow perch) range from 10 to 25 cm in length and can live up to ten years. *Asaaweg* (yellow perch) are light yellow with six to eight dark, vertical bands on either side and a white underside. A large mouth extends to below the

middle of the eye, and the two dorsal fins are separate (Fisheries and Oceans Canada, 2018; Government of Ontario, 2014).

Spawning occurs in spring (April through May) in southern Canada, and up until July in northern regions. *Asaaweg* (yellow perch) do not build nests, but females lay strings of eggs in the shallows amid aquatic plants, looping strings over vegetation. Egg strings can extend to up to 2 m in length and 1 kg in weight and contain approximately 23,000 eggs (Crossman, Perch, 2006).

In analysing the interviews, a co-occurrence model was created that shows intersections of “Perch” with other components. This model is illustrated in Figure 47. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting “Perch” and any given component shows the number of times “Perch” was brought up in the context of the component. The width of the line visually represents this as well. For example, Figure 47 shows that in total “Perch” was brought up four times, and “Fishing” was brought up 78 times. Of the four times “Perch” was brought up, two of those times occurred in the context of “Fishing”.

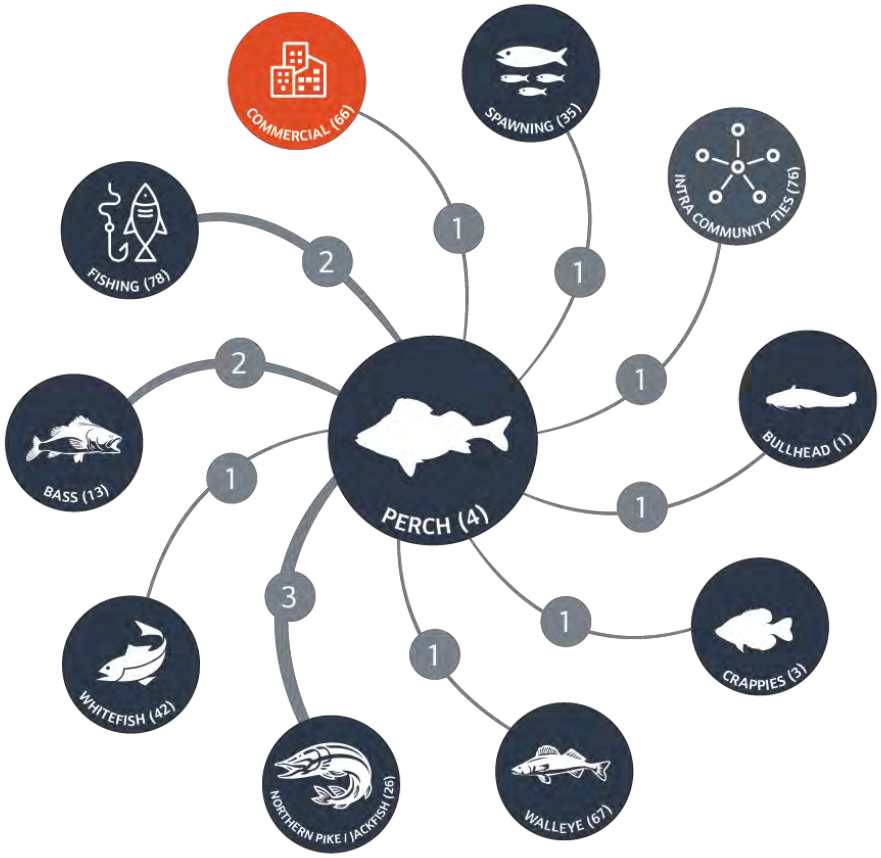


Figure 47. "Perch" co-occurrence with other components.

5.6.3.1.3.2 Habitat

Asaaweg (yellow perch) are a cool-water species which tolerate a wide temperature and habitat range. Preferring areas of open water, moderate vegetation, clear water, and bottoms of muck, sand, or gravel, *asaaweg* (yellow perch) often share habitat with *ogaawag* (walleye) and *ashiganag* (largemouth bass) (Fisheries and Oceans Canada, 2018; Government of Ontario, 2014). An Elder from Washagamis Bay noted that there were *asaaweg* (yellow perch) spawning areas near Poplar Bay (AAK Individual Interview, September 17, 2019).

5.6.3.1.3.3 Diet

Asaaweg (yellow perch) are carnivorous *giigoonh* (fish) and adults feed on invertebrates, *ginoozheg* (fish) eggs, *ashaageshiinyag* (crayfish), mysid shrimp, and juvenile *giigoonh* (fish). Larval and young

asaaweg (yellow perch) feed on zooplankton, shifting to macroinvertebrates by age one (Brown, Runciman, Bradford, & Pollard, 2009).

5.6.3.1.3.4 Population Trends

Asaaweg (yellow perch) populations are influenced by predators, prey, and the environment. *Asaaweg* (yellow perch) are preyed on by most warm to cool water predatory *giigoonh* (fish) (Brown, Runciman, Bradford, & Pollard, 2009). *Asaaweg* (yellow perch) serve as the main prey for *ogaawag* (walleye), and the relationship between these two is tightly coupled (Brown, Runciman, Bradford, & Pollard, 2009). The higher the *asaaweg* (yellow perch) quality, the higher the relative abundance and lower stock density of *ashiganag* (largemouth bass) (Paukert, Willis, & Klammer, 2001).

Asaaweg (yellow perch) are listed as a species of least concern on the International Union for Conservation of Nature's ("IUCN") Red List of Threatened Species (NatureServe, 2013). The *Asaaweg* (yellow perch) population trend is stable (NatureServe, 2013).

5.6.3.1.3.5 Asaaweg (yellow perch) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *asaaweg* (yellow perch). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Asaaweg (yellow perch) are closely associated with Anishinaabe fishing and with other *giigoonh* (fish) species such as *ginoozheg* (northern pike), *ogaawag* (walleye), *adikamegwag* (whitefish), crappies, *awaazisiig* (brown bullhead), *ashiganag* (largemouth bass), and *noosa'owesiwag* (smallmouth bass).

5.6.3.1.4 Namegosag (Lake Trout, *Salvelinus namaycush*)

Table 75. Names for Namegosag (Lake Trout)

Common Name	Lake Trout, Trout
Anishinaabemowin (singular)	*Namegos*
Anishinaabemowin (plural)	*Namegosag*
Scientific Name	*Salvelinus namaycush*

5.6.3.1.4.1 About

Namegosag (lake trout) are the largest freshwater char belonging to the family Salmonidae with a wide distribution in the cooler northern regions of *Mikinaak Minis* (Turtle Island) (Fisheries and Oceans Canada, 2016). With a relatively narrow distribution, *namegosag* (lake trout) are native only to northern *Mikinaak Minis* (Turtle Island) but have been widely introduced into global non-native waters (Lane, 2006). *Namegosag* (lake trout) are highly prized as both a game *giigoonh* (fish) and as a food *giigoonh* (fish).

Namegosag (lake trout) have an elongated body, an indented tail, and a large mouth. Coloration varies from brown to grey to olive, is dappled with white or yellow spots, and is white on the underside

(Fisheries and Oceans Canada, 2016; Government of Ontario, 2014). Adult *namegosag* (lake trout) can grow up to a metre in length and weigh over 20 kg, however on average range between 38 to 51 cm in length and weigh approximately 4.5 kg. *Namegosag* (lake trout) can live to be over 20 years of age (Fisheries and Oceans Canada, 2016). There are three species of *namegosag* (lake trout)—common *namegosag* (lake trout), siscowet *namegosag* (lake trout), and rush *namegosag* (lake trout). *Namegosag* (lake trout) have also crossbred with brook trout, creating the hybrid known as 'splake' (Lane, 2006).

Spawning occurs in fall of every second or third year, with *namegosag* (lake trout) tending to return annually to the same spawning areas. Spawning occurs on rocky shoals and in river mouths at lesser depths (Fisheries and Land Resources, 2019). Breeding activity is at its peak between dusk and midnight. Spawning activity can take place from anywhere between two to three nights to two to three weeks and is dependant upon environmental conditions (Esteve, McLennan, & Gunn, 2007). *Namegosag* (lake trout) migrate far from the spawning beds following spawning, providing no parental care to the eggs (Fisheries and Land Resources, 2019).

In analysing the interviews, a co-occurrence model was created that shows intersections of "Trout" with other components. This model is illustrated in Figure 48. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Trout" and any given component shows the number of times "Trout" was brought up in the context of the component. The width of the line visually represents this as well. For example, Figure 48 shows that in total "Trout" was brought up nine times, and "Fishing" was brought up 78 times. Of the nine times "Trout" was brought up, five of those times occurred in the context of "Fishing".

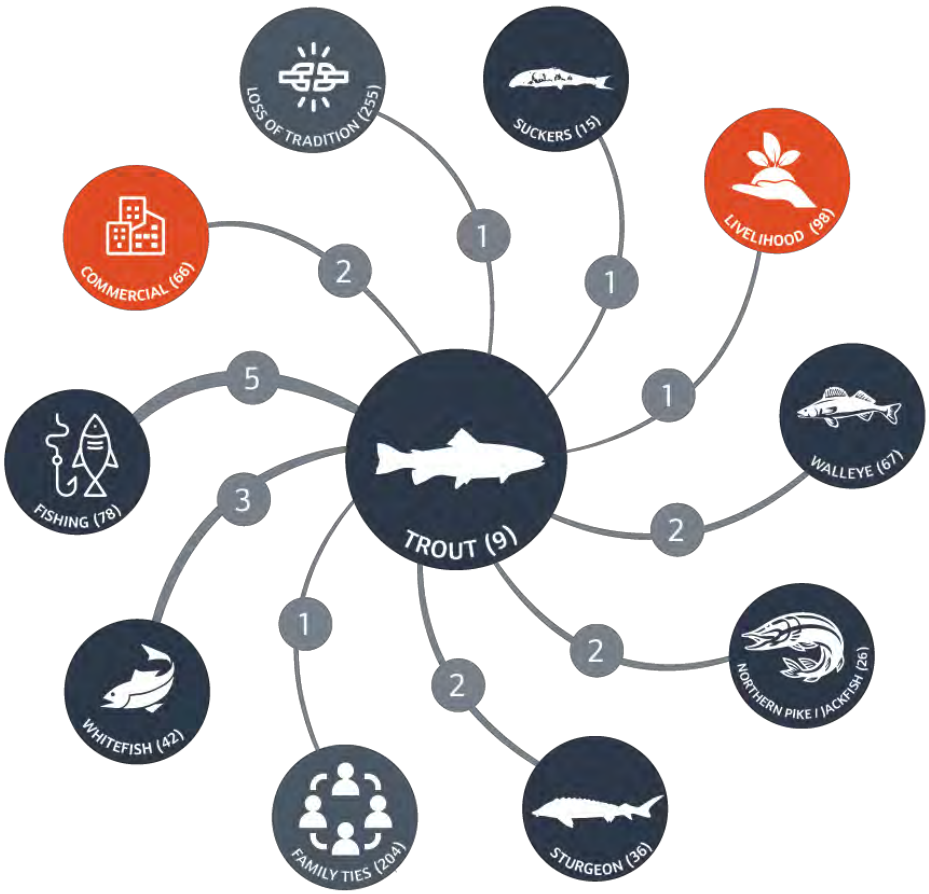


Figure 48. "Trout" co-occurrence with other components.

5.6.3.1.4.2 Habitat

Namegosag (lake trout) are a cold-water species with pelagic periods during summer stratification of dimictic lakes (Jackson L. J., 1997). *Namegosag* (lake trout) prefer oxygen-rich waters, and predominantly inhabit large, deep, lakes with a depth of greater than 15 m, however they are occasionally found in shallower bodies of water and large rivers (Government of Ontario, 2014; Sellers, Parker, Schindler, & Tonn, 1998). An Elder from Washagamis Bay noted that there were *namegosag* (lake trout) and splake found in High Lake (AAK Individual Interview, May 23, 2019). An Elder from Washagamis Bay mentioned fishing for *namegosag* (lake trout) at Big Poplar as well (AAK Individual Interview, August 22, 2019).

5.6.3.1.4.3 Diet

Namegosag (lake trout) are piscivorous *giigoonh* (fish) and feed on *namebinag* (white suckers), *mizayag* (burbot), *adikamegwag* (whitefish), and *ginoozheg* (northern pike) (Fisheries and Land Resources, 2019). In the absence of pelagic forage *giigoonh* (fish) during the summer stratification period, *namegosag* (lake trout) become planktivory. Planktivorous populations grow very slowly and mature at smaller sizes, whereas piscivorous populations grow quickly, mature at larger sizes, and are less abundant (Bernatchez, et al., 2014).

5.6.3.1.4.4 Population Trends

Overfishing has, at varying points in time, reduced stocks of *namegosag* (lake trout), as they are highly valued by anglers (Selinger, Lowman, Kaufman, & Malette, 2006). Predation by lampreys and environmental pollution have added pressure on *namegosag* (lake trout). Ontario populations of *namegosag* (lake trout) are limited, necessitating coordinated strategies to protect the rare species (Ontario Ministry of Natural Resources and Forestry, 2015). *Namegosag* (lake trout) are not listed on the International Union for Conservation of Nature's ("IUCN") Red List of Threatened Species.

5.6.3.1.4.5 Namegosag (lake trout) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *namegosag* (lake trout). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Namegosag (lake trout) are closely associated with Anishinaabe sustenance and commercial fishing. *Namegosag* (lake trout) are also associated with other *giigoonh* (fish) species such as *ginoozheg* (northern pike), *ogaawag* (walleye), *namewag* (lake sturgeon), *namebinag* (white suckers), and *adikamegwag* (whitefish).

5.6.3.1.5 Gidagagwadaashiwag (Black Crappie, *Centrarchidae* Family)

Table 76. Names for Crappie

Common Name	Crappie
Anishinaabemowin (singular)	*Gidagagwadaashi* (Black Crappie)
Anishinaabemowin (plural)	*Gidagagwadaashiwag* (Black Crappies)
Scientific Name	*Centrarchidae* family (various)

5.6.3.1.5.1 About

Crappies are a genus, *Pomoxis*, of freshwater *giigoonhyag* (fish) belonging to the sunfish family *Centrarchidae*. There are two species recognized in this genus: the white crappie (*Pomoxis annularis*) and the *gidagagwadaashi* (*Pomoxis nigromaculatus*) (black crappie). Crappies are native to *Mikinaak Minis* (Turtle Island) and although originally specific to eastern United States and Canada, have spread

widely through transplantation (American Expedition, 2015). Crappies are a very popular game and food *giigoonh* (fish).

Crappies are small, deep-bodied *giigoonh* (fish), similar in size, shape, and habits, regardless as to the species. Crappie weight averages between 200 to 400 g and length averages between 20 to 30 cm (American Expedition, 2015; Government of Ontario, 2014). The white crappie is lighter in colour with vertical black stripes (Government of Ontario, 2014). *Gidagagwadaashiwag* (black crappies) are darker in colour with blue or green iridescence with a pattern of black spots, and more dorsal spines than its white counterpart (Bridges, 2017; Government of Ontario, 2014). In both *gidagagwadaashiwag* (black crappies) and white crappies, a large mouth extends below the middle of the eye.

Spawning occurs between May and June. Male crappies make an indented nest on the ground in shallow water in which female crappies lay between 5,000 to 60,000 eggs. Eggs hatch after a two to five-day incubation period (American Expedition, 2015). In the right environment, crappies can quickly overpopulate an area to the detriment of all inhabiting species (Bridges, 2017).

In analysing the interviews, a co-occurrence model was created that shows intersections of “Crappies” with other components. This model is illustrated in Figure 49. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting “Crappies” and any given component shows the number of times “Crappies” was brought up in the context of the component. The width of the line visually represents this as well. For example, Figure 49 shows that in total “Crappies” was brought up three times, and “Fishing” was brought up 78 times. Of the three times “Crappies” was brought up, two of those times occurred in the context of “Fishing”.

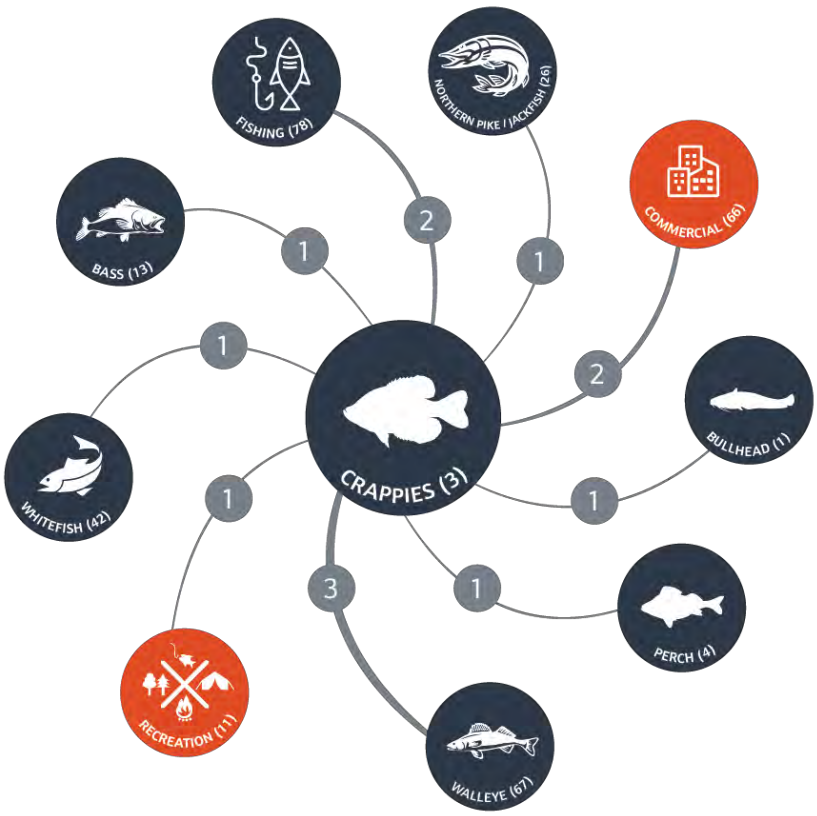


Figure 49. "Crappie" co-occurrence with other components.

5.6.3.1.5.2 Habitat

Crappies occupy freshwater bodies of water such as ponds, lakes, and rivers in which there is plenty of underwater brush, weeds, and rocks. Sheltered areas with water and little current are preferred (Government of Ontario, 2014). *Gidagagwadaashiwag* (black crappies) tend to prefer clear water, while the white crappie does not exhibit this preference (Bridges, 2017). Summer months are spent in deeper water, with spring months spent occupying shallower waters (American Expedition, 2015; Government of Ontario, 2014).

5.6.3.1.5.3 Diet

Crappies feed early in the morning between midnight and approximately 2:00 AM. Crappies are carnivorous *giigoonh* (fish) and individuals of less than 16 cm in length feed on planktonic crustaceans and dipterous larvae, while individuals greater than 16 cm feed on small *ginoozheg* (fish) such as shad, *giigoozensag* (minnows), small bluegill (Bridges, 2017; Hatch, 2002). Larval and young crappies feed on copepods and water fleas, adding tiny *manidoons* (insect) larvae by the time a length of 25 mm is achieved (Hatch, 2002). Feeding occurs most between June through October, with moderate feeding occurring in spring and activity slowing during winter months (Tingle, 2015).

5.6.3.1.5.4 Population Trends

Crappie populations are influenced by predators, prey, and the environment. Newly hatched and young crappies serve as prey for *asaaweg* (yellow perch), *ogaawag* (walleye), *ashiganag* (largemouth bass), and *ginoozheg* (northern pike). Adult crappies are preyed on by *ashiganag* (largemouth bass), *ginoozheg* (northern pike) and *maashkinoozheg* (muskellunge). Predatory birds such as great *zhashagiwag* (Blue Heron), *anzigwag* (American merganser), and *ogiishkimanisiig* (belted kingfishers) may prey on *gidagagwadaashiwag* (black crappies) as well. *Nigigwag* (otters) and *zhaangweshiwag* (minks) fish for crappies through winter ice (Hatch, 2002). An Elder from Niisaachewan noted that the crappie population has been slowly diminishing (AAK Individual Interview, August 15, 2019).

Crappies are popular game and food *giigoonh* (fish) to humans and are often included in fisheries' management plans. *Gidagagwadaashiwag* (black crappies) and white crappies are both listed as species of least concern on the International Union for Conservation of Nature's ("IUCN") Red List of Threatened Species and the population trends are considered to be stable (NatureServe, 2013; NatureServe, 2013).

5.6.3.1.5.5 Black Crappies and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with crappies. The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Crappies are closely associated with Anishinaabe recreational and commercial fishing. Crappies are also associated with other *giigoonh* (fish) species such as brown *awaazisiig* (brown bullhead), *asaaweg* (yellow perch), *ogaawag* (walleye), *ginoozheg* (northern pike), *adikamegwag* (whitefish) and bass.

5.6.3.1.6 *Ogaawag* (Walleye, *Sander vitreus*)

Table 77. Names for Walleye

Common Name	Walleye
Anishinaabemowin (singular)	*Ogaa*
Anishinaabemowin (plural)	*Ogaawag*
Scientific Name	*Sander vitreus*

5.6.3.1.6.1 About

Ogaa (walleye, singular)/*oogawag* (walleye, plural) is a species of freshwater perciform *giigoonh* (fish) belonging to the Percidae family. *Ogaawag* (walleye) are native to present-day Canada, the Great Lakes, the upper Mississippi River basin, and the Missouri River basin. Populations have been transplanted into western and northeastern United States (The National Wildlife Federation, n.d.). *Ogaawag* (walleye) vary through genetic distinction across watersheds, however genetic distinctiveness of populations has faced reductions through artificial propagation into existing populations or non-native waters.

Ogaawag (walleye) are a very popular game and food *giigoonh* (fish). Colloquially known as “pickerel” in parts of English-speaking Canada, *ogaawag* (walleye) are nevertheless unrelated to true pickerels.

Ogaawag (walleye) are large and elongated and of a bright golden to brownish green colour with darker markings. The lower tip of the caudal fin is milk white as well as the belly. *Ogaawag* (walleye) have one spiny and one soft-rayed dorsal fin and the mouth is large with fan-like canine teeth (Crossman, Walleye, 2007; Department of Natural Resources, 2020; The National Wildlife Federation, n.d.). The eyes of *ogaawag* (walleye) are specially adapted to low light intensities to help find prey at night. Length averages between 0.35 to 1 m long, and weight can vary between 1 to 9 kg (The National Wildlife Federation, n.d.; Government of Ontario, 2014).

Spawning occurs in late winter and early spring, in streams and along lake bottoms. As broadcast spawners, eggs and milt are deposited via river shoals through wave action and river currents as male and female *ogaawag* (walleye) swim alongside each other. Fertilized eggs settle in spaces between rocks and pebbles for an 18-21-day incubation period prior to hatching (Government of Alberta, 2020).

In analysing the interviews, a co-occurrence model was created that shows intersections of “Walleye” with other components. This model is illustrated in Figure 50. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting “Walleye” and any given component shows the number of times “Walleye” was brought up in the context of the component. The width of the line visually represents this as well. For example, Figure 50 shows that in total “Walleye” was brought up 67 times, and “Fishing” was brought up 78 times. Of the 67 times “Walleye” was brought up, 27 of those times occurred in the context of “Fishing”.

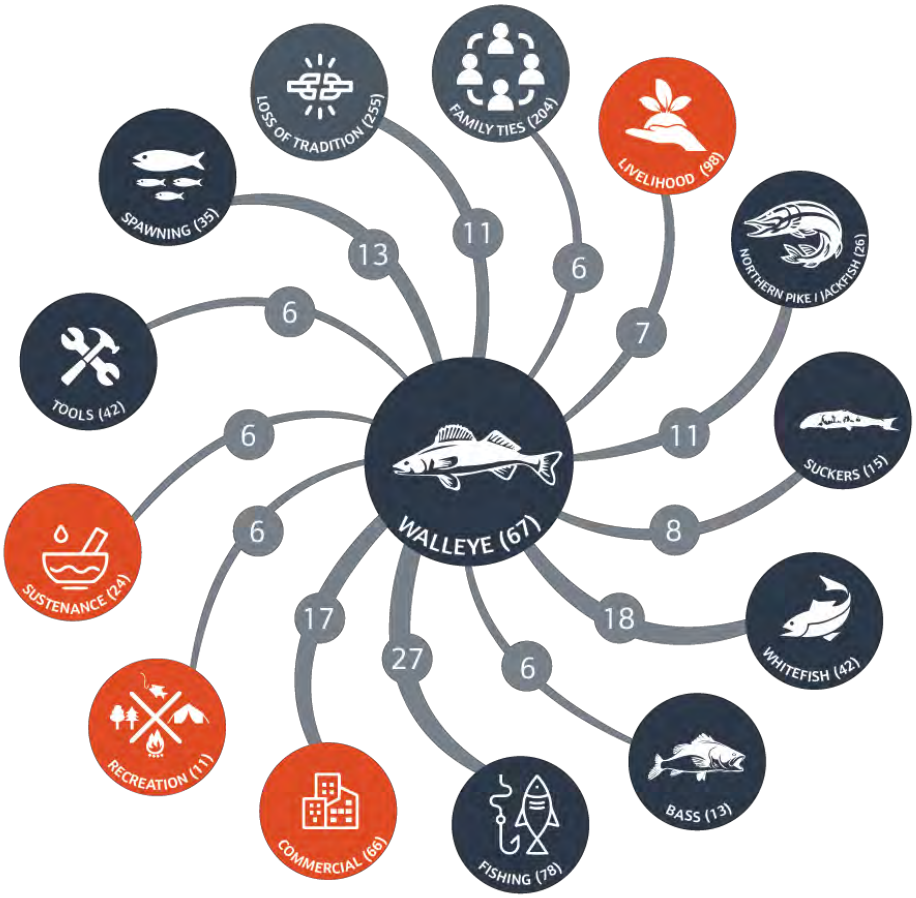


Figure 50. "Walleye" co-occurrence with other components.

5.6.3.1.6.2 Habitat

Ogaawag (walleye) occupy a range of river and lake conditions, with preferences varying between cold, clear water to warm, weedy, and stained water, and soft mud bottoms to flooded timer, rubble, or bedrock (Government of Ontario, 2014). Deeper water is preferred over shallow water, however *ogaawag* (walleye) are known to inhabit shallows water as well (Government of Alberta, 2020).

An Elder from Washagamis Bay recalled seeing *ogaawag* (walleye) spawning at Norman Dam (AAK Individual Interview, October 17, 2019). Another Elder from Washagamis Bay mentioned fishing for *ogaawag* (walleye) at Washagamis Bay (AAK Individual Interview, August 21, 2019). An Elder from Shoal Lake 40 also mentioned *ogaawag* (walleye) fishing at Royal Lake and Shoal Lake, and spawning grounds at Snake Lake near High Creek, Watson Creek, Bag Bay, Peter Creek, Love Lake and Claga Bay (AAK Individual Interview, May 23, 2019). An Elder from Niisaachewan mentioned *ogaawag* (walleye) fishing in the Powder Puff area near Lock Bay (AAK Individual Interview, August 14, 2019). An Elder from Wauzhushk Onigum described Dog Tooth Lake: "the whole lake is [filled with] walleye" (AAK Individual Interview, July 15, 2019). Refer to Section 5.7.5.1 for specific *ogaawag* (walleye) spawning locations.

5.6.3.1.6.3 Diet

Ogaawag (walleye) are carnivorous predators and feed on a variety of invertebrates, *manidoonsag* (insects) and *giigoonh* (fish) including *ashiganag* (largemouth bass) and *noosa'owesiwag* (smallmouth bass), *namegosag* (lake trout), *ginoozheg* (northern pike), *asaaweg* (yellow perch), and sunfish (Department of Natural Resources, 2020). Feeding occurs primarily at dawn and dusk (Froese & Pauly, 2019).

5.6.3.1.6.4 Population Trends

Ogaawag (walleye) populations are relatively stable. Threats to the status of the population of *ogaawag* (walleye) include climate change, channelization, erosion, overfishing, and decline in water quality. An *ogaa* (walleye) subspecies, the blue *ooga* (walleye) (*Sander vitreus vitreus*) is believed to be extinct (The National Wildlife Federation, n.d.). Non-native aquatic species habitat expansion due to climate change has affected *ogaawag* (walleye) populations by competing for food sources. Rising temperatures adjust internal water cycling and can result in oxygen-deficient zones which affect *ogaawag* (walleye) prey species such as *odoonibiinsag* (cisco) (The National Wildlife Federation, n.d.). An Elder from Washagamis Bay discussed the translocation of *ogaawag* (walleye) populations to an area formerly without, over a 20 to 30-year period:

> *The strange [thing] though is, this guy used to fish over here a long time ago, 20, 30 years ago. I never used to catch any walleye over here... but we catch them now. I know, I don't understand that. So, I don't know what happened... because my parents used to fish, never used to catch any walleye either. We used to fish by rod, too, we never caught no walleye. But now everybody's catching, with nets and rods.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 22, 2019.*

A community member from Grassy Narrows expressed worry about the level of mercury in lakes, affecting the *giigonhyag* (fish):

> *We prefer walleye... [They are plentiful where [I] fish]. And for my area, it's like knowing which lakes aren't affected by mercury.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

An Elder from Shoal Lake 40 echoed this sentiment, describing fishing for *oogawag* (walleye) with his grandfather:

> *Yes, it was a lot of fun. Catching a lot of walleyes. Walleyes were pretty good back in the day, not sure about now because there's a lot of people talking about that mercury contamination in lakes and rivers.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

An Elder from Shoal Lake 40 talked about the disappearance of *ogaawag* (walleye) spawning grounds:

We studied all seven walleye spawning grounds. Six. There used to be 11, now there's six. Now there's only five... since '88".

Elder, Shoal Lake 40, AAK Individual Interview, June 11, 2019.

An Elder from Niisaachewan talked about the changing water levels and how *ogaa* (walleye) populations have been affected:

But today, all you see is rock bottom. There's nothing left because everything is so washed away, you know. Then you can see the forming of the shoreline [and] how deep the water was because along the level of the water, you can see the markings on the shoreline where I remember we used to park. And that was in boats. Even to walk around the shoreline, everything is so dried up now. It's all kind of drained out, because I can see there's not much life left that I can see. You can hear all the birds and the loons and stuff like that. It seems like maybe certain spots you can find them. But you're not going to find a whole bay full of them. I see it in my time. You and your pals can go out fishing for walleyes there, but without our rod it would be like hunting for them. The walleyes and whatever you're after, they're not going to be there anymore

Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.

Ogaawag (walleye) are one of the most economically important inland Canadian *giigoonh* (fish) species for sport and food. In a 2017 and 2018 survey, *ogaawag* (walleye) were identified as the primary target species for anglers and had the highest harvest rate during the creel survey (Danco, 2019). Overfishing in the past in the Great Lakes regions have resulted in the need to manage *ogaa* (walleye) populations through habitat protection, rearing, stocking, and fishery management regulations (U.S. Fish & Wildlife Service, n.d.). Currently, the *ogaa* (walleye) population trend is stable (NatureServe, 2013). *Ogaawag* is listed as a species of least concern on the International Union for Conservation of Nature ("IUCN") Red List of Threatened Species (NatureServe, 2013).

5.6.3.1.6.5 Ogaawag (walleye) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *ogaawag* (walleye). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

The Shoal Lake *ogaa* (walleye) fishery was significant to the Anishinaabeg of Shoal Lake. Not only did the fishery provide the community with financial means but also allowed the sharing of cultural and traditional knowledge through generations. Shoal Lake 40 community members were adversely affected by *ogaa* (walleye) fishery closures of 1983. An Elder from Shoal Lake 40 said:

[The ministry] came to the conclusion that the lake was being overfished, and of course [to] our people, including the [fishermen], it's not overfished... they [took] the livelihood away from the First Nation communities that were making a good livelihood out of it...

> *my Dad always said, it's not overfished, it's just…Because the fisherman had a tremendous amount of respect in our community because they knew the fishery... they know the movement of the fisheries, the fishing. Habitat and just the way they move, each particular species... our fisherman were saying, we know where to set nets, where we won't touch pickerel if any, and we can set our nets at specific locations for specific species, and MNR said, 'No you can't, there's no way of you guys being able to do that.' And our people, who know the lake inside and out, say 'Oh yeah we can,' they say, 'we can fish for specific species and not touch another specific species.' And MNR, for some reason, they kind of undermined, I guess the people that lived off the land, our fisherman and our people here that used the fishery.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

A Shoal Lake 40 resident echoed these sentiments:

> *They said that the area was over-fished, but I know at that time that it wasn't over-fished, because the families would go out with rods and they were still catching them. But they did shut it down and it hasn't been open since then... my uncle used to guide out here before he passed away and once, they caught a strange fish and it was a smelt. And once smelts come into the lake from the river, they're going to have a feast on the eggs and wipe out the walleyes... now it's just whitefish.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, May 21, 2019.*

She went to share her experience with seeing ulcers on *ogaawag* (walleye):

> *He says [the pipeline is] why there's stuff happening to the animals, you see ulcers on them. You see the fish have ulcers on them. Just last week, when they were doing that fish derby for the guys, I saw that one walleye there had an ulcer on it. They're even mutated, a mutation, you see part of a fish with another fish, and you wonder how that happened.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, June 11, 2019.*

Ogaawag (walleye) bear historical and cultural significance to the Anishinaabeg as a source of inter-community fellowship and as a teaching tool. Additionally, *ogaawag* (walleye) serve as a source of food and income for Anishinaabe communities. The Shoal Lake *ogaa* (walleye) fishery closure of 1983 caused devastating consequences to the communities of Shoal Lake. Although no longer commercially fished, *ogaawag* (walleye) continues to be an important component in the Anishinaabe way of life.

5.6.3.1.7 *Namewag* (Lake Sturgeon, *Acipenser fulvescens*)

Table 78. Names for Lake Sturgeon

Common Name	Lake sturgeon, sturgeon

Anishinaabemowin (singular)	*Name*
Anishinaabemowin (plural)	*Namewag*
Scientific Name	*Acipenser fulvescens*

5.6.3.1.7.1 About

A *name* (lake sturgeon, singular)/*namewag* (lake sturgeon, plural) is one of Canada's largest temperate freshwater fish of the family Acipenseridae, and one of five *namewag* (lake sturgeon) species found in across Canada. *Namewag* (lake sturgeon) are restricted to *Mikinaak Minis* (Turtle Island) and have a Canadian range stretching from Alberta to the west, St. Lawrence River estuary to the east, the Hudson Bay to the north, and the boundary waters to the south (COSEWIC, 2017). *Namewag* (lake sturgeon) are distinct in that they have ancestral ties to related species dating back 200 million years and are a very long-lived species, with the oldest recorded *name* (lake sturgeon) found to be 155 years old (Government of Ontario, 2014).

Namewag (lake sturgeon) have a large, torpedo-shaped body covered with five rows of bony scutes, a large swim bladder, a heterocercal tail, and a single dorsal fin. Adult *namewag* (lake sturgeon) are uniform light to dark shades of grey or brown in colour with white ventral surfaces and smooth scutes, while young have large, dark olive, brown, grey, or black blotches and bony scutes (Government of Ontario, 2014). *Namewag* (lake sturgeon) have four sensory organs dangling near its extended snout and mouth, called barbels, which help locate prey. *Namewag* (lake sturgeon) can weigh up to 180 kg and may become over 2 m long. The skeletons of *namewag* (lake sturgeon) are made of cartilage rather than bones (Government of Ontario, 2014).

Namewag (lake sturgeon) are slow to mature and do not reproduce prior to reaching 15 years of age (males) and 25 years of age (females). Spawning follows a five-year cycle and takes place in late spring (Government of Alberta, 2020). Spawning occurs in relatively shallow, fast-flowing water, often beneath rapids, waterfalls, or dams (Government of Ontario, 2014). Eggs are deposited in the river current and male *namewag* (lake sturgeon) swim near females to drum her sides and assist in the egg depositing process. Milt simultaneously fertilizes the eggs as they are deposited, and fertilized eggs sink to the rocky bottom. Female *namewag* (lake sturgeon) produce on average 500,000 eggs (Government of Alberta, 2020; Manitoba Hydro, n.d.). Hatching occurs after an 8 to 14-day incubation period (COSEWIC, 2017).

In analysing the interviews, a co-occurrence model was created that shows intersections of "Sturgeon" with other components. This model is illustrated in Figure 51. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Sturgeon" and any given component shows the number of times "Sturgeon" was brought up in the context of the component. The width of the line visually represents this as well. For example, Figure 51 shows that in total "Sturgeon" was brought up 36 times, and "Fishing" was brought up 78 times. Of the 36 times "Sturgeon" was brought up, eight of those times occurred in the context of "Fishing".

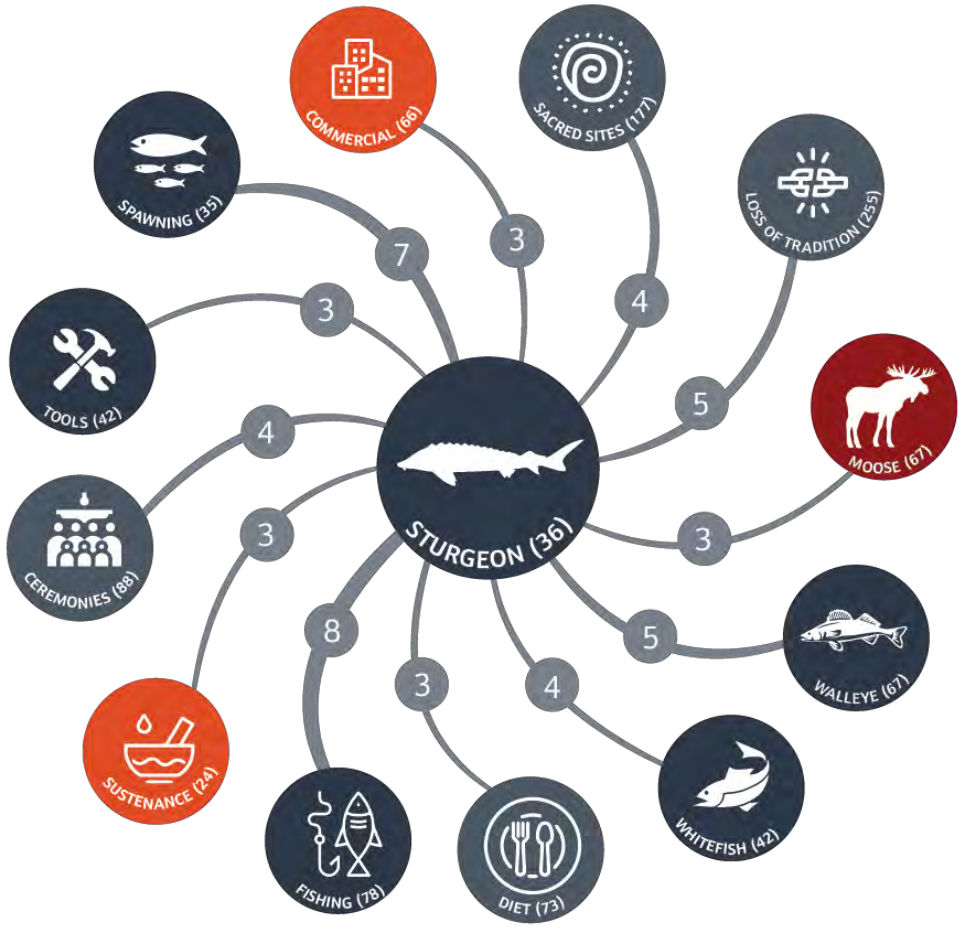


Figure 51. "Sturgeon" co-occurrence with other components.

5.6.3.1.7.2 Habitat

Namewag (lake sturgeon) inhabit freshwater lakes and rivers with soft bottoms of mud, gravel, or sand, at a depth of 5 to 20 m (Government of Ontario, 2014). Habitat devoid of aquatic vegetation is preferred (COSEWIC, 2017). *Namewag* (lake sturgeon) habitat may change to accommodate food availability, spawning ground suitability, and environmental conditions.

An Elder from Washagamis Bay recalled fishing for *namewag* (lake sturgeon) in the Clear Water Bay area (AAK Individual Interview, July 25, 2019). An Elder from Niisaachewan mentioned seeing *namewag* (lake sturgeon) at Sandy Bay and at Norman Dam (AAK Individual Interview, August 14,2019).

5.6.3.1.7.3 Diet

Namewag (lake sturgeon) are a benthic generalist species with a diet that diversifies with age and size (COSEWIC, 2017). Juvenile *namewag* (lake sturgeon) are known to consume a mixed diet of amphipods, ephemeropteran larvae, trichopteran larvae, molluscs, dipteran larvae, chironomids, *ashaageshiinyag* (crayfish), *biimiskodisiig* (snails), and leeches, while adult *namewag* (lake sturgeon) feed at higher trophic levels (COSEWIC, 2017).

5.6.3.1.7.4 Population Trends

Namewag (lake sturgeon) are threatened by overfishing, regulated water flows from dams and other river barriers, habitat loss and fragmentation, and poor water quality (Government of Ontario, 2014). Anishinaabe fisheries managed *namewag* (lake sturgeon) for over 2,000 years (Hannibal-Paci, 2000). Transitional mixed fisheries between 1750 and 1890 served to sustain the Anishinaabeg as a food source in addition to serving as an object of trade. Radical alteration of the fisheries occurred after 1800, following an increase in sedentary population establishment, and fisheries began targeting *namewag* (lake sturgeon) when the value of flesh, roe and isinglass was realized (Hannibal-Paci, 2000). This, in addition to the construction of flood control measures and decline in water quality led to a depletion of stocks from which certain populations have not been able to recover (Conservation and Water Stewardship, 2012; Mcallister, 2006).

Currently, the *name* (lake sturgeon) population is considered "threatened" by the Species at Risk in Ontario ("SARO") list according to the *Endangered Species Act, 2007* (Government of Ontario, 2007). According to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), the Western Hudson Bay and Saskatchewan-Nelson River populations are considered "endangered", the Southern Hudson Bay-James Bay populations are considered to be of "special concern", and the Great Lakes-Upper St. Lawrence populations are considered "threatened" (COSEWIC, 2017). An Elder from Niisaachewan mentioned "…the sturgeons. We used to hear them whistle before. But now, they disappeared" (AAK Individual Interview, September 18, 2019). An Elder from Washagamis Bay echoed that sentiment, reminiscing a time when *namewag* (lake sturgeon) were still found in the Winnipeg River (AAK Individual Interview, July 23, 2019).

Namewag entering Treaty 3 territory arrive from the Rainy Lake region of Ontario (Minnesota Department of Natural Resources and Ontario Ministry of Natural Resources and Forestry, 2017). When the *namewag* (lake sturgeon) population in Rainy Lake collapsed, it greatly impacted the *namewag* (lake sturgeon) population in Treaty 3 territory. As of 2014, there is an estimated 92,000 *namewag* (lake sturgeon) in the Lake of the Woods and Rainy River region, compared to an estimated 59,000 *namewag* (lake sturgeon) in 2005, indicating that the populations numbers are on the rise (Minnesota Department of Natural Resources and Ontario Ministry of Natural Resources and Forestry, 2017). A Recovery Strategy and Management Plan was created in 2011 to ensure healthy numbers of *namewag* (lake sturgeon) return to Ontario.

5.6.3.1.7.5 Namewag (lake sturgeon) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *namewag* (lake sturgeon). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Namewag (lake sturgeon) play a role in Anishinaabe tradition through the *odoidaymiwan* (the clan system). *Odoidaymiwan* (the clan system) was developed by *Kizhe Manitou* (the Creator) to give strength and order to *Aki's* (Earth's) people and help them govern themselves (Benton-Banai, 1988, p. 74). Each animal was given wisdom in the form of a character trait which would instruct and benefit the

Anishinaabeg in the future (Benton-Banai, 1988, p. 7). *Namewag* (lake sturgeon) are represented in the *odoidaymiwan* (the clan system), representing depth and strength (Johnston, 1976, p. 53). *Namewag* (lake sturgeon) have been depicted through pictographs on rocks at sacred sites around Lake of the Woods (AAK Individual Interview, June 17, 2019).

Namewag (lake sturgeon) are of cultural and traditional significance to the Anishinaabeg. An Elder from Wauzhushk Onigum shared about using *name* for cleansing:

> *The other one they used quite a bit was sturgeon. A little piece of sturgeon meat, chew that and it cleanses you right up, but don't take too much.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, August 14, 2019.*

He went on to address the misuse of the *name* (lake sturgeon) population and subsequent fishery collapse that led to the eventual commercial fishery closure:

> *Especially around Lake of the Woods area. You see pictures back in probably 1920's and 30's of sturgeon. Piles and piles of sturgeon. You know what they took? Just the caviar. Left the rest to rot. But some of them were used in steamboats for the oil.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, July 24, 2019.*

An Elder from Niisaachewan also discussed the collapse of the *name* (lake sturgeon) population:

> *Before they did the blasting... [there were] sturgeon in our lake... There's some big ones, but we did repopulation back in 2000. Did a five-year plan... [the sturgeon population] it was fished out... from [the] Lake of the Winter fishery…*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 17, 2019.*

Another Elder from Niisaachewan, agreed with the above, saying:

> *What guys, they fished it out in five years. They used it for fuel in the steam ships.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 17, 2019.*

Another Elder from Niisaachewan joined the conversation, sharing:

> *…the sturgeon migration was interrupted by these dams. And basically, [there] so much sturgeon on the Winnipeg River before the dams came around. And before the commercial fishermen came down. Before they destroyed the sturgeon fishery on the Winnipeg river. And when they do make it through here, they get chopped up by the dam. The smaller ones make it through, but they keep going through the Whitedog Dam, and they can't make it back here. So that's a problem.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 17, 2019.*

Namewag (lake sturgeon) bear historical and cultural significance to the Anishinaabeg, from ancient pictographs to current traditional remedies. Although no longer commercially fished or readily available, *namewag* (lake sturgeon) continue to be an important component in the Anishinaabe way of life.

5.6.3.1.8 *Namebinag* (White Sucker, *Castostomus commersoni*)

Table 79. Names for White Sucker

Common Name	White sucker
Anishinaabemowin (singular)	*Namebin*
Anishinaabemowin (plural)	*Namebinag*
Scientific Name	*Catostomus commersoni*

5.6.3.1.8.1 About

Namebin (white sucker, singular)/*namebinag* (white sucker, plural) is a freshwater *giigoonh* (fish) species belonging to the Catostomidae family and is native to the upper Midwest and Northeast *Mikinaak Minis* (Turtle Island). *Namebin* (white sucker) activity is crepuscular and social; young are known to associate with similar sized species to form mixed schools (NatureNorth, n.d.).

Namebinag (white suckers) are torpedo-shaped *giigoonh* (fish)with round cross-sections and cycloid scales across the body apart from the head (Pennsylvania Fish & Boat Commission, 2020). With large, reflective scales, *namebinag* (white suckers) can have a dark green, grey, copper, brown or black sheen accompanied by a white underbelly—the colour of adult *giigoonyag* (fish) vary across the *Mikinaak Minis* (Turtle Island) range (NatureNorth, n.d.). Colours are darker and more intense during spawning and males develop a lateral cream coloured band which fades following the spawning period (NatureNorth, n.d.). The lower lip is greater in width than length and is split into two parts, with the rounded snout barely projecting beyond the tip of the upper lip, and they do not have teeth. The single dorsal fin has 10 to 13 soft rays. (Pennsylvania Fish & Boat Commission, 2020). *Namebinag* (white suckers) are a moderate sized *giigoonh* (fish) which reach up to 50 cm in length and average 1 kg in weight (NatureNorth, n.d.). They may live up to 15 years (NatureNorth, n.d.).

Spawning runs, or migrations, occur in spring once water temperatures approximate 10 degrees Celsius. Spawning occurs between May and June along lake edges or on shallow shoals (Pennsylvania Fish & Boat Commission, 2020). Migrations and spawning both take place at night, with male *namebinag* (white suckers) pressing against females and releasing milt as eggs are released. Anywhere between 20,000 to 50,000 eggs are scattered over the gravel, adhering to rocks, or drifting downstream. Spawning motions disturb the gravel and provide moderate egg cover (Pennsylvania Fish & Boat Commission, 2020). Eggs hatch following a 14-day incubation period and are uncared for. Young remain in the safety of gravel for a short period of time prior to dispersal (NatureNorth, n.d.; Pennsylvania Fish & Boat Commission, 2020). Adult *namebinag* (white suckers) return to their place of hatching to spawn, if possible (NatureNorth, n.d.).

In analysing the interviews, a co-occurrence model was created that shows intersections of “Suckers” with other components. This model is illustrated in Figure 52. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting “Suckers” and any given component shows the number of times “Suckers” was brought up in the context of the component. The width of the line visually represents this as well. For example, Figure 52 shows that in total “Suckers” was brought up 15 times, and “Fishing” was brought up 78 times. Of the 15 times “Suckers” was brought up, six of those times occurred in the context of “Fishing”.

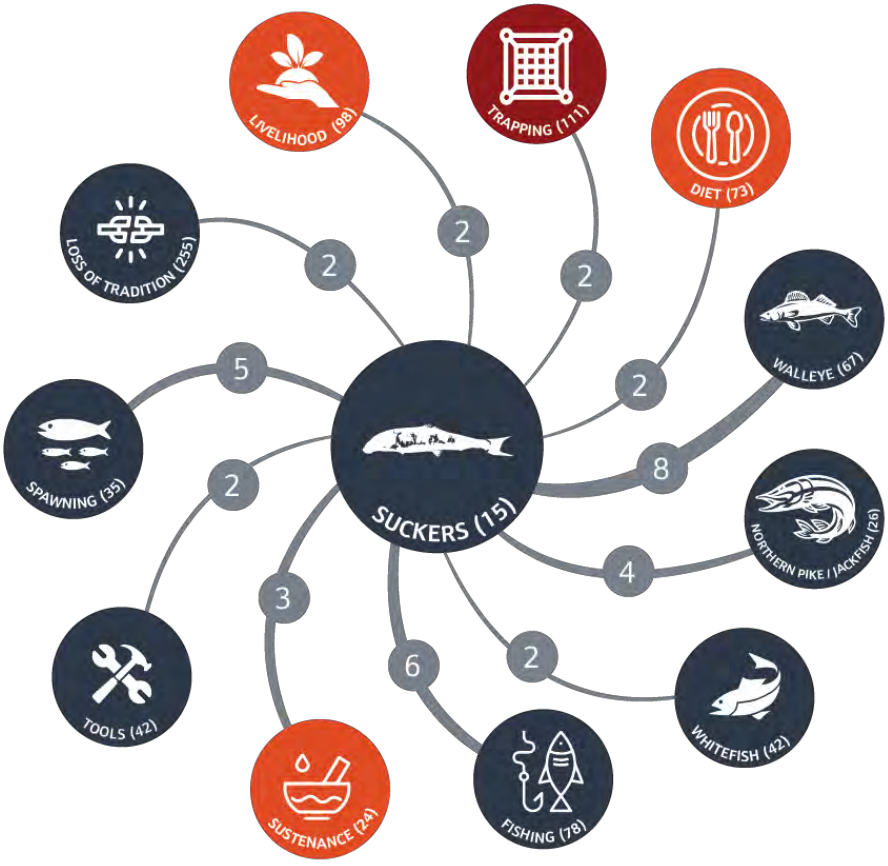


Figure 52. “Suckers” co-occurrence with other components.

5.6.3.1.8.2 Habitat

Tolerant of pollution, low oxygen levels, and silted water, *namebinag* (white suckers) occupy a range of habitats, varying from cool, clear headwater streams to warm river, to ponds, lakes, and reservoirs (NatureNorth, n.d.; Pennsylvania Fish & Boat Commission, 2020). They may be found in dense weed beds or the riffles and rock beds of streams (Pennsylvania Fish & Boat Commission, 2020).

An Elder from Shoal Lake 40 recalled spearing for *namebinag* (white suckers) in the past at Rice Bay:

> *…And you know what, we did, we used to go there, and we made spears, wooden spears. My husband and my brother and his wife, we speared those suckers... that's how we fished.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 22, 2019.*

An Elder from Washagamis Bay recalled fishing for *namebinag* (white suckers) in Clearwater Bay and discussed the effects of road construction on *namebinag* habitat:

> *…we used to sucker fish there. But the suckers don't come there anymore... They built a road, and there's no more suckers. The suckers don't run there anymore... There was another road there. Suckers used to go past that road. They built a second road, now they just completely stopped now. Yeah. There's none there. So, suckers need homes, too, eh?*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 22, 2019.*

An Elder from Shoal Lake 40 mentioned fishing for *namebinag* (white suckers) in Shoal Lake, Snake Lake, High Creak and High Lake (AAK Individual Interview, May 23, 2019). Watson Creek was mentioned as a spawning ground for *namebinag* (white suckers) as well. Another Elder from Shoal Lake 40 described Gundy Lake Road as a place where *namebinag* (white suckers) spawn (AAK Individual Interview, May 24, 2019).

5.6.3.1.8.3 Diet

Namebinag (white suckers) are omnivorous bottom feeders, preying on *manidoonsag* (insects), crustaceans, molluscs, zooplankton, and annelids. Feeding occurs by sucking up food and swallowing it. Feeding occurs primarily at dusk and dawn (Pennsylvania Fish & Boat Commission, 2020).

5.6.3.1.8.4 Population Trends

Populations of *namebinag* (white suckers) are stable, as they are highly adaptable to different habitats and changing environments (NatureServe, 2013). With a vast host of predators, *namebinag* (white suckers) are preyed upon by predatory fishes including *ginoozheg* (northern pike), *ashiganag* (largemouth bass), *noosa'owesiwag* (smallmouth bass), *maashkinoozheg* (muskellunge), and *ogaawag* (walleye), and are a popular game and bait *giigoonh* (fish) (NatureNorth, n.d.). *Namebinag* (white suckers) are listed as a species of least concern on the International Union for Conservation of Nature's ("IUCN") Red List of Threatened Species (NatureServe, 2013).

5.6.3.1.8.5 Namebinag (white suckers) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *namebinag* (white suckers). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Namebinag (white suckers) play a role in Anishinaabe tradition through the *odoidaymiwan* (the clan system). *Odoidaymiwan* (the clan system) was developed by *Kizhe Manitou* (the Creator) to give strength and order to *Aki's* (Earth's) people and help them govern themselves (Benton-Banai, 1988, p. 74). Each animal was given wisdom in the form of a character trait which would instruct and benefit the Anishinaabeg in the future (Benton-Banai, 1988, p. 7). *Namebinag* (white suckers) are represented in the *odoidaymiwan* (the clan system), representing calmness and grace (Johnston, 1976, p. 53). *Namebinag* (white suckers) are also used for sustenance by the Anishinaabeg.

5.6.3.1.9 *Adikamegwag* (Whitefish, *Coregonus clupeaformis*)

Table 80. Names for Whitefish

Common Name	Lake whitefish, whitefish
Anishinaabemowin (singular)	*Adikameg*
Anishinaabemowin (plural)	*Adikamegwag*
Scientific Name	*Coregonus clupeaformis*

5.6.3.1.9.1 About

Adikameg (lake whitefish, singular)/*adikamegwag* (lake whitefish, plural) are a freshwater *giigoonh* (fish) species belonging to the Coregonus family, with a wide distribution across *Mikinaak Minis* (Turtle Island) including much of present-day Canada and the northern United States (Fisheries and Aquaculture Department, 2020). They have been known to occur across the northern land masses of Asia and Europe as well (Fisheries and Aquaculture Department, 2020). *Adikamegwag* (lake whitefish) are commercially valued for both their meat and roe.

Adikamegwag (lake whitefish) are a deep-bodied *giigoonh* (fish) with an oval shaped cross-section. The mouth is inferior and overhung by the blunt snout, and there are two flaps of skin between the nostrils (Government of Ontario, 2014). *Adikamegwag* (lake whitefish) colour is silvery with pigmentation that varies according to population distribution—fins of the Great Lakes populations are lightly pigmented, while fins of the northerly populations are darker and often black tipped (COSEWIC, 2005). Adult *adikamegwag* (lake whitefish) can grow to a length of 65 cm and can reach a weight of 1.8 kg (Government of Ontario, 2014).

In analysing the interviews, a co-occurrence model was created that shows intersections of "Whitefish" with other components. This model is illustrated in Figure 53. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Whitefish" and any given component shows the number of times "Whitefish" was brought up in the context of the component. The width of the line visually represents this as well. For example, Figure 53 shows that in total "Whitefish" was brought up 42 times, and "Fishing" was brought up 78 times. Of the 42 times "Whitefish" was brought up, 14 of those times occurred in the context of "Fishing".

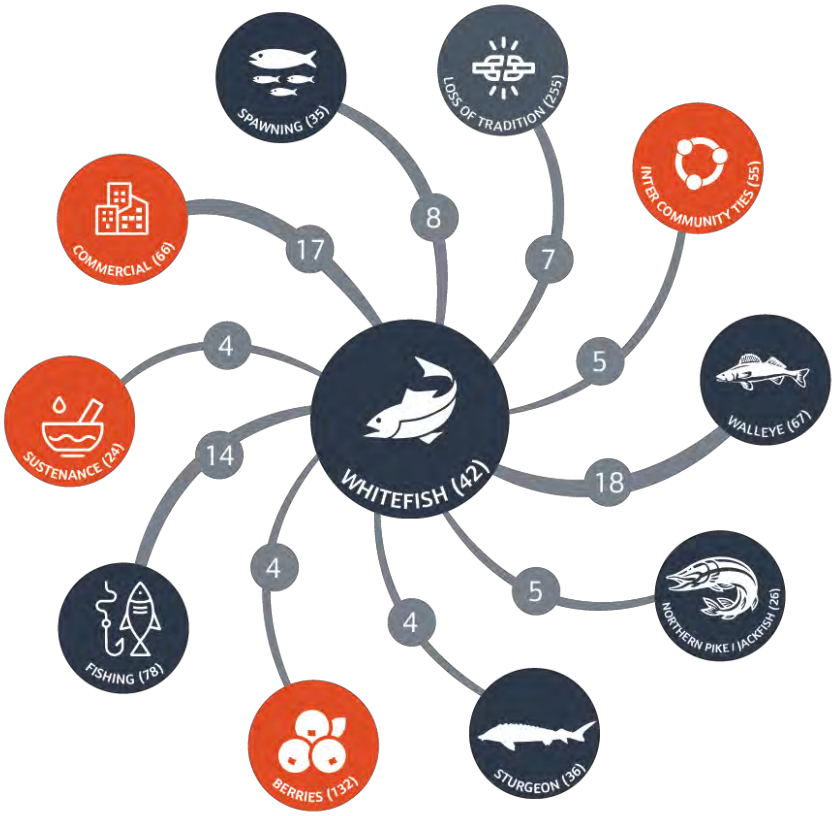


Figure 53. "Whitefish" co-occurrence with other components.

5.6.3.1.9.2 Habitat

Adikamegwag (lake whitefish) are a cold-water species that prefer the deep sections of large, freshwater lakes and their drainage basins, and are known to enter brackish water. They can be found at average water depths of 15 to 37 m (Dewey, 2020). Movement in large lakes consists of four stages including: spring movement from deep to shallow water; summer movement returning to deep water as shoal water warms; fall and early winter migration to shallow spawning areas; and post-spawning returning to deeper water (Luna, 2008).

Spawning occurs at night between fall and early winter. Thousands of eggs are broadcast over the shoals and settle to the bottom, hatching following an approximately 133-day incubation period (Dewey, 2020). Hatching time is inversely related to water temperature and can take as little as 41 days and as long as 182 days (Dewey, 2020). Larvae are approximately 13.25 mm upon hatching and grow rapidly in their first season.

An Elder from Niisaachewan recalled fishing for *adikamegwag* (lake whitefish) at Gun Lake (AAK Individual Interview, September 18, 2019). Another Elder from Niisaachewan, discussed fishing for *adikamegwag* (lake whitefish) at Poplar Portage (AAK Individual Interview, September 18, 2019). An Elder from Shoal Lake 40 described *adikamegwag* (lake whitefish) as being fished at High Lake (AAK Individual Interview, May 23, 2019). An Elder from Niisaachewan also recalled fishing for *adikamegwag*

(lake whitefish) at Little Dalles and Big Dalles (AAK Individual Interview, August 15, 2019). A community member from Niisaachewan described Lock Bay as having *adikamegwag* (lake whitefish) (AAK Individual Interview, August 14, 2019). An Elder from Shoal Lake 40 remembered fishing for *adikamegwag* (lake whitefish) at Robinson's Point (AAK Individual Interview, May 22, 2019). An Elder from Wauzhushk Onigum described Poplar Bay as being a breeding ground for *adikamegwag* (lake whitefish) in autumn (AAK Individual Interview, June 19, 2019).

5.6.3.1.9.3 Diet

Adikamegwag (lake whitefish) are carnivorous *giigoonyag* (fish) and feed on small prey, including aquatic *manidoonsag* (insects), amphipods, *giigoonh* (fish) eggs and fry. Foraging occurs near the lake bottom (Dewey, 2020).

5.6.3.1.9.4 Population Trends

Adikamegwag (lake whitefish) eggs, juveniles and adults are prey for many other *giigoonh* (fish) species, including *asaaweg* (yellow perch), *odoonibiinsag* (ciscoes), *namegosag* (lake trout), *ginoozheg* (northern pike), *mizayag* (burbot), and *ogaawag* (walleye). *Adikamegwag* (lake whitefish) are predators of crustaceans, mollusks, and aquatic *manidoonsag* (insects) (Dewey, 2020).

Adikamegwag (lake whitefish) are commercially valued for both their meat and roe. They are not commonly sought as game *giigoonh* (fish). Environmental degradation and overfishing have placed pressure on *adikamegwag* (lake whitefish) populations in the Great Lakes in the past, however water quality improvements and fishery management have improved populations. *Adikamegwag* are not listed by the International Union for Conservation of Nature's ("IUCN") Red List of Threatened Species.

5.6.3.1.9.5 Adikamegwag (lake whitefish) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *adikamegwag* (lake whitefish). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Adikamegwag (lake whitefish) play a role in Anishinaabe tradition through the *odoidaymiwan* (the clan system). *Odoidaymiwan* (the clan system) was developed by *Kizhe Manitou* (the Creator) to give strength and order to *Aki's* (Earth's) people and help them govern themselves (Benton-Banai, 1988, p. 74). Each animal was given wisdom in the form of a character trait which would instruct and benefit the Anishinaabeg in the future (Benton-Banai, 1988, p. 7). *Adikamegwag* (lake whitefish) are represented in the *odoidaymiwan* (the clan system), representing abundance, fertility, and beauty (Johnston, 1976, p. 53).

Adikamegwag (lake whitefish) are closely associated with Anishinaabe sustenance, recreational and commercial fishing. *Adikamegwag* (lake whitefish) are also associated with other *giigoonh* (fish) species such as *ginoozheg* (northern pike), *ogaawag* (walleye), and *namewag* (lake sturgeon).

5.6.3.1.10 Ashiganag and *Noosa'owesiwag* (Bass, *Centrarchidae* Family)

Table 81. Names for Bass

Common Name	Largemouth bass, smallmouth bass, bass
Anishinaabemowin (singular)	*Ashigan; Noosa'owesi*
Anishinaabemowin (plural)	*Ashiganag; Noosa'owesiwag*
Scientific Name	Centrarchidae family

5.6.3.1.10.1 About

Bass are a freshwater sunfish in the Centrarchidae family, native to eastern *Mikinaak Minis* (Turtle Island). Their range stretches as far north as Quebec, present day Canada, and as far south as northern Mexico (Steed, 2015). 12 species of sunfish occur in Canada, with *ashiganag* (largemouth bass) and *noosa'owesiwag* (smallmouth bass) being highly sought after as game *giigoonh* (fish). Species in this family have also been introduced outside their native range to Europe, Africa, South America, and Asia (Steed, 2015).

Bass are medium-sized, deep-bodied *giigoonh* (fish) with a green to olive back and sides and a yellow to white belly (Government of Ontario, 2014). Some species are characterized by a broken horizontal stripe along the body, while others have dark vertical bars along the body. Most species have 9 to 11 dorsal fin spines with deep or shallow notches between spines. The upper jaw extends beyond the eye (Government of Ontario, 2014). On average, adult bass reach between 25 to 55 cm length, weigh between 0.7 to 1.8 kg, and live between 15 to 23 years (Steed, 2015).

Spawning occurs in late winter between January and February in southern United States and in late spring between May and June in northern areas. Spawning generally occurs in water between 0.6 to 2 m deep with a hard-packed sand and mud substrate (Steed, 2015). Males prepare a nest in the substrate with hard packed sand, gravel, marl, or clay with a thin layering of mud. External fertilization occurs once the female has dropped between 3,000 to 45,000 eggs into the nest (Steed, 2015). Eggs hatch following a one to five-day incubation period, and fry reach independence in seven to ten days (Steed, 2015).

In analysing the interviews, a co-occurrence model was created that shows intersections of "Bass" with other components. This model is illustrated in Figure 54. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Bass" and any given component shows the number of times "Bass" was brought up in the context of the component. The width of the line visually represents this as well. For example, Figure 54 shows that in total "Bass" was brought up 13 times, and "Fishing" was brought up 78 times. Of the 13 times "Bass" was brought up, nine of those times occurred in the context of "Fishing".

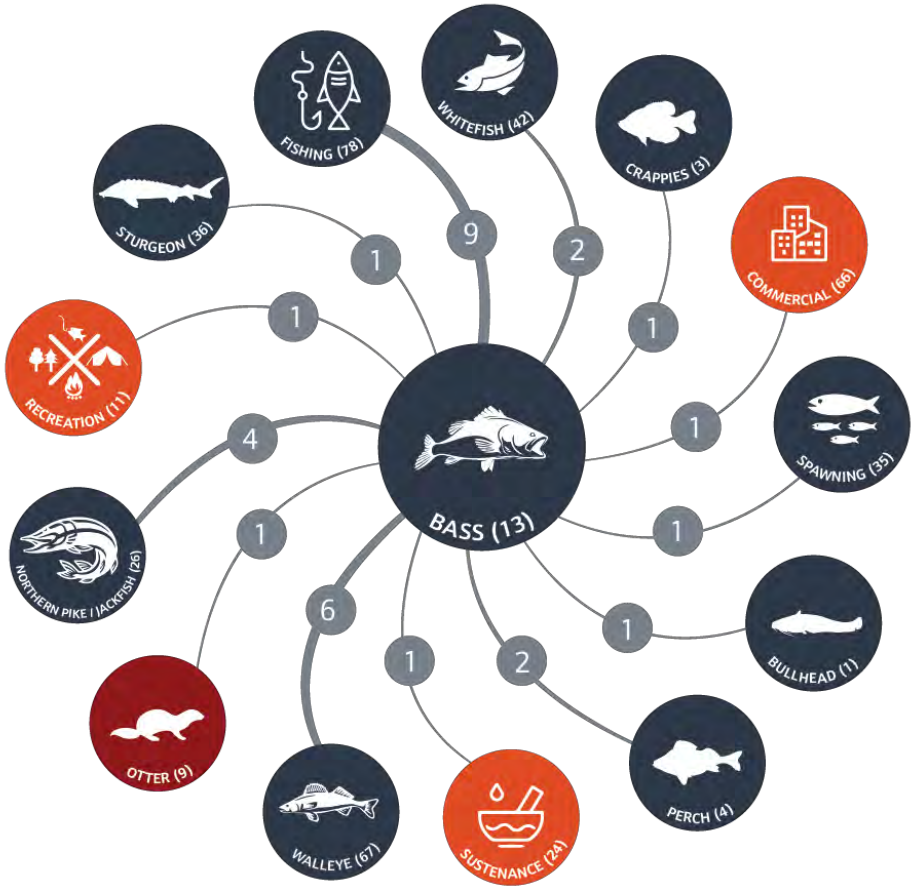


Figure 54. "Bass" co-occurrence model with other components.

5.6.3.1.10.2 Habitat

Bass enjoy an optimal habitat of quiet, clear, slow moving water with shallow, soft substrates—mainly found in lakes, rivers, ponds, and streams. Dense vegetation is preferred in order to facilitate finding prey and avoiding predation (Government of Ontario, 2014). Shallower waters are preferred, with a depth between 0.3 to 4 m, however winter migration bring bass to deeper waters of a depth of 5 to 15 m (Steed, 2015). Although the native distribution of *ashiganag* (largemouth bass) and *noosa'owesiwag* (smallmouth bass) overlap significantly, *noosa'owesiwag* (smallmouth bass) are typically found in cooler waters, with rocky or sandy substrates (Whitlock, 2004).

The predominant bass species found in Lake of the Woods include *ashiganag* (largemouth bass) and *noosa'owesiwag* (smallmouth bass) (Government of Ontario, 2014; Gustafson, 2019).

An Elder from Niisaachewan recalled fishing for bass at Gun Lake (AAK Individual Interview, September 18, 2019). A community member from Shoal Lake 40 described Indian Bay and Snowshoe Bay as being good for bass fishing as well (AAK Individual Interview, June 12, 2019). Another community member

from Shoal Lake 40 mentioned bass fishing at Cash Island on Big Lake (AAK Individual Interview, May 22, 2019).

5.6.3.1.10.3 Diet

Bass are carnivorous fish with adults feeding on *ashaageshiinyag* (crayfish), bluegill, green *agwadaashi* (sunfish), microcrustaceans, frogs, and young bass, and young eating mainly zooplankton and aquatic *manidoonsag* (insects) (Steed, 2015). Feeding occurs throughout the day with early morning and late evening peaks. Metabolism slows during cooler months and feeding ceases completely when temperatures drop below five degrees Celsius. Eating also ceases during spawning (Steed, 2015).

5.6.3.1.10.4 Population Trends

Adult bass have very few predators, however juveniles are targeted by *zhashagiwag* (Blue Heron), *ginoozheg* (northern pike), *ogaawag* (walleye), *maashkinoozheg* (muskellunge), *asaaweg* (yellow perch), *maanamegwag* (channel catfish), northern water snake, *gidagagwadaashiwag* (black crappie), common carp, American eel, *ogiishkimanisiig* (belted kingfishers), and *mooshka'osiwag* (American bittern). Adult bass are targeted by *migiziwag* (Bald Eagles) and humans.

Bass have the potential to become invasive when introduced to non-native bodies of water. Introduction may dramatically alter the native food web and cause extinction of native species (Fisheries and Oceans Canada, 2018). *Ashiganag* and *noosa'owesiwag* are both listed as species of least concern on the International Union for Conservation of Nature's ("IUCN") Red List of Threatened Species, and both population trends are stable (NatureServe, 2019; NatureServe, 2013). Populations of both species have increased since the opening of Ash Rapids (Bolton, 2012).

5.6.3.1.10.5 Ashiganag (largemouth bass) and Noosa'owesiwag (smallmouth bass) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *ashiganag (largemouth bass) and noosa'owesiwag (smallmouth bass).* The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Bass are used for sustenance and recreation by the Anishinaabeg.

5.6.3.1.11 *Giigoozensag* (Minnows, *Cyprinidae* Family)

Table 82. Names for Minnows

Common Name	Minnow
Anishinaabemowin (singular)	*Giigoozens*
Anishinaabemowin (plural)	*Giigoozensag*
Scientific Name	*Cyprinidae* family (various)

Giigoozensag (minnows) are small variety of *giigoonyag* (fish) that belong to the *Cyprinidae* family. *Giigoozensag* (minnows) are characterized by having one single dorsal fin, having abdominal pelvic fins, and thin lips (Fisheries and Oceans Canada, 2018). The *Cyprinidae* family is the largest family of *giigoonyag* (fish) in North America (Kraft, Carlson, & Carlson, 2006). *Giigoozensag* (minnows) can occupy a wide variety of habitats, with the majority of them inhabiting freshwater environments (Kraft, Carlson, & Carlson, 2006). These include wetlands, marshes, lakes, rivers, streams, and ponds in cold or warm water and with varying degrees of vegetation cover (Kraft, Carlson, & Carlson, 2006). *Giigoozensag* (minnows) are important in the function of an ecosystem, acting as a source of food for larger species thus reducing predation on young sport species (Kraft, Carlson, & Carlson, 2006).

Giigoozensag (minnows) are not usually sought after in sport fishing but are frequently used as bait for larger species (Kraft, Carlson, & Carlson, 2006). Catching *giigoozensag* (minnows) provided a source of income for some community members as they would sell the *giigoozensag* (minnows) to passing fishermen. A community member from Shoal Lake 40 recalled their father owning a *giigoozens* (minnow) business, which they would go out and catch *giigoozensag* (minnows) at night and then sell (AAK Group Interview, May 24, 2019). An Elder from Wauzhushk Onigum shared that people would catch *giigoozensag* (minnows) and sell them in the marina before a license was required to do so (AAK Group Interview, July 23, 2019). An Elder from Shoal Lake 40 shared how her brother would catch *giigoozensag* (minnows) in the lake while growing up:

> *As he was growing up, he'd spend hours and hours down by the lake. We weren't well off and he used to have a stick, my dad taught him, he'd have a stick and he'd put a thread on it and he had a hook, and he'd stand there all day and catch minnows. He had a tub, he put holes in that tub, he put it in the water and every minnow he would catch he threw it in there, yeah. And he just enjoyed that, and he'd stand there all day and do that… it was really interesting, interesting to watch that.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

5.6.3.1.11.1 Fathead Minnow (Pimephales promelas)

The fathead *giigoozens* (minnow) (*Pimephales promelas)* is a small to medium sized *giigoozens* (minnow) species in the genus *Pimrphales* in the family Cyprinidae. They are characterized by a stockier build with a blunt snout (Fisheries and Oceans Canada, 2018). The species grows between 5 and 10 cm (Fisheries and Oceans Canada, 2018). The fathead *giigoozens* (minnow) is common throughout the central regions of Canada and the United States and is found throughout Treaty 3 territory (Daniels, 2018). The fathead *giigoozens* (minnow) prefers still water but can be found across a wide range of habitats (Fisheries and Oceans Canada, 2018). The species is occasionally used as a bait *giigoonh* (fish) (Fisheries and Oceans Canada, 2018). The fathead *giigoozens* (minnow) is listed as a species of least concern on the International Union for Conservation of Nature's ("IUCN") Red List for Threatened Species (Daniels, 2018).

5.6.3.1.11.2 Brassy Minnow (Hybognathus hankinsoni)

The brassy *giigoozens* (minnow) (*Hybognathus hankinsoni*) is a medium-sized *giigoozens* (minnow) in the genus *Hybognathus* in the family *Cyprinidae*. The species is brassy-yellow in colour and grows between 6.5 and 9.6 cm (Fisheries and Oceans Canada, 2018). The brassy *giigoozens* (minnow) can be found throughout the Treaty 3 territory and into Southern Ontario (Fisheries and Oceans Canada, 2018). The species prefers small streams with weeds and muddy bottoms (Fisheries and Oceans Canada, 2018). It is not actively used as a bait *giigoonh* (fish) (Fisheries and Oceans Canada, 2018). The brassy *giigoozens* is listed as a species of least concern on the International Union for Conservation of Nature's ("IUCN") Red List for Threatened Species (NatureServe, 2012).

5.6.3.1.11.3 Spottail Shiner (*Notropis hudsonius)*

The spottail shiner (*Notropis hudsonius)* is a small to medium sized *giigoozens* (minnow) from the genus *Notropis* in the family *Cyprinidae*. The species has an elongated body dark silver in colour and grows between 7 and 14.2 cm (Fisheries and Oceans Canada, 2018). The species is common across Ontario throughout the Treaty 3 territory and lives in large lakes and streams with little vegetation (Fisheries and Oceans Canada, 2018). The spottail shiner is the most frequently used bait *giigoonh* (fish) in Ontario (Fisheries and Oceans Canada, 2018). The species is listed as a species of least concern on the International Union for Conservation of Nature's ("IUCN") Red List for Threatened Species (NatureServe, 2012).

5.6.3.1.11.4 Central Mudminnow (*Umbra limi*)

The central mudminnow (*Umbra limi*) is a small to medium sized *giigoozens* (minnow) from the genus *Umbra* in the family Umbridae. The species is dark brown in colour and grows between 7.5 and 14 cm in length (Fisheries and Oceans Canada, 2018). Central mudminnows are common in the Treaty 3 territory, extending into Southern Ontario (NatureServe, 2012). They prefer heavily vegetated and mud-bottomed streams and ponds in slow moving or still waters (Fisheries and Oceans Canada, 2018). The species is a hardy baitfish and popular among fishermen (Fisheries and Oceans Canada, 2018). The central mudminnow is listed as a species of least concern on the International Union for Conservation of Nature's ("IUCN") Red List for Threatened Species (NatureServe, 2012).

5.6.3.1.12 Finescale Dace (*Chrosomus neogaeus*)

The finescale dace (*Chrosomus neogaeus*) are a small *giigoonh* (fish) species from the genus *Chrosomus* in the family *Cyprinidae*. The finescale dace has very small scales and grows between 7.5 and 10.6 cm (Fisheries and Oceans Canada, 2018). The species has a wide range across Ontario and can be found in the Treaty 3 territory (Fisheries and Oceans Canada, 2018). Finescale dace prefers cloudy water near vegetation and can often be found within beaver ponds (Fisheries and Oceans Canada, 2018). The finescale dace is a common baitfish and is listed as a species of least concern on the International Union for Conservation of Nature's ("IUCN") Red List for Threatened Species (NatureServe, 2011).

5.6.3.1.13 Iowa Darter (*Etheostoma exile*)

The Iowa darter (*Etheostoma exile*) is a small *giigoonh* (fish) species from the genus *Etheostoma* in the family *Percidae*. It has a long and slender body with a notable red band on its dorsal fin (Fisheries and Oceans Canada, 2018). The species grows to a maximum of 5 to 7 cm long (Fisheries and Oceans Canada, 2018). It has a widespread range throughout the Treaty 3 territory, extending into Western Canada and the Northern United States (NatureServe, 2011). The Iowa darter lives in clear vegetated waters over substrates of organic matter or sand (NatureServe, 2011). During the breeding season, the Iowa darter moves from deeper waters into shallow shores to lay its eggs (NatureServe, 2011). The Iowa darter is listed as a species of least concern on the International Union for Conservation of Nature's ("IUCN") Red List for Threatened Species (NatureServe, 2011). The Iowa darter is often used as a bait fish for other species (Fisheries and Oceans Canada, 2018).

5.6.4 Mishiikenh (Turtles)

5.6.4.1 *Mikinaak* (Snapping Turtle, *Chelydra serpentina*) and *Miskwaadesi* (Western Painted Turtle, *Chrysemys picta belli*)

Table 83: Names for Turtle, Snapping Turtle and Western Painted Turtle

Common Name	Turtle	Snapping turtle	Western Painted turtle
Anishinaabemowin (singular)	*Mishiikenh*	*Mikinaak*	*Miskwaadesi*
Anishinaabemowin (plural)	*Mishiikenyag*	*Mikinaakwag*	*Miskwaadesiwag*
Scientific Name	Order Testudines	*Chelydra serpentina*	*Chrysemys picta bellii*

5.6.4.1.1 About

The *mikinaak* (snapping turtle, singular)/*mikinaakwag* (snapping turtle, plural) and the *miskwaadesi* (Western painted turtle, singular)/*miskwaadesiwag* (Western painted turtle, plural) are the two most prominent *mishiikenh* (turtle, singular) species within the area. In this document, *mikinaak* (snapping turtle) will refer to the common snapping turtle (*Chelydra serpentina*) and *miskwaadesi* (Western painted turtle) will refer to the Western painted turtle (*Chrysemys picta belli*), specifically the Canadian Shield population seen throughout Alberta, Saskatchewan, Manitoba, and Ontario. *Mishiikenyag* (turtles) are classified as reptiles under the class Reptilia, order Testudines and are one of the oldest reptiles existing on *Aki* (Earth). Fossil records as far back as the Triassic period (251-199 Mya) show evidence of *mishiikenyag* (turtles) on *Aki* (Earth) (Lichtig, Lucas, Klein, & Lovelace, 2017). From then, fossil record for the *Chelydridae* family emerged in the Cretaceous period (145-66 Mya) which would

eventually lead to the evolution of *mikinaakwag* (snapping turtles). Further on, fossil record for the *Emydidae* family emerged later in the Paleogene period (66-23 Mya) which would lead to the evolution of *miskwaadesiwag* (Western painted turtles) (Crawford, et al., 2015).

Mishiikenyag (turtles) have a long history within Anishinaabe culture, and they appear in many of the traditional stories as a symbol for *Aki* (Earth). *Mishiikenh* (turtle) is popularly known from the story of the Great Flood, where *mishiikenh* (turtle) offered his back for the small piece of earth that had been collected by *wauzhushk* (muskrat). Variations of the story depict Original Man or *Gizhigookwe* (Sky Woman) who spread the bit of earth around the *emikwaan* (turtle shell) which continued to grow as the wind blew from the four directions allowing for the island to grow (Benton-Banai, 1988, p. 33; Wagamese, 2019, p. 90). Among others, *mishiikenyag* (turtles) are also referred to as a symbol of communication and a representation of the moon (Johnston, 1976, p. 53).

The *mikinaak* (snapping turtle) is Canada's largest freshwater *mishiikenh* (turtle) with males weighing an average of 18 kg and females an average of 9 kg (Environment and Climate Change Canada, 2016). The carapace (hard upper shell) of a male can reach nearly 50 cm in length, and a female nearly 37 cm in length. Adults will have either a dark black, brown, or olive coloured shell with serrated edges. In Canada, *mikinaakwag* (snapping turtles) are limited near the southern border running from Saskatchewan to Nova Scotia. However, a wide range of its population runs through much of the United States (Ernst & Lovich, 2010). *Mikinaakwag* (snapping turtles) were assessed as being of special concern by Committee on the Status of Endangered Wildlife in Canada ("COSWEIC") in November of 2008. *Mikinaak* (snapping turtle) populations within Manitoba and Ontario both carry a NatureServe Conservation Status of S3, meaning the *mikinaak* (snapping turtle) populations are vulnerable with a moderate risk of extirpation. It also states that the few populations that persist have seen recent and widespread declines (Environment and Climate Change Canada, 2016). The S3 rank indicates 100 or fewer reported occurrences of the species within Manitoba and Ontario (COSEWIC, 2008).

The *miskwaadesi* (Western painted turtle) is *Mikinaak Minis'* (Turtle Island's) most widespread *mishiikenh (turtle)*, covering distances from southern Canada down into northern Mexico. *Miskwaadesiwag* (Western painted turtles) are a pond turtle from the Emydidae family and have four subspecies spread across *Mikinaak Minis* (Turtle Island). Ontario's *miskwaadesi* (Western painted turtle) populations are of the Western painted turtle (*C. p. bellii*) subspecies, specifically the Canadian Shield population which extends from southeastern Alberta to the Algoma region of northern Ontario (COSEWIC, 2016). This *miskwaadesi* (Western painted turtle) is the largest of all other subspecies with a carapace which can reach up to 25 cm in length, with females tending to be larger than males (COSEWIC, 2016). *Miskwaadesiwag* (Western painted turtles) are easily recognized by the distinct orange, black and yellow markings that appear on their ventral shell. Their limbs and head also carry a distinct pattern of yellow stripes. The population of *miskwaadesiwag* (Western painted turtles) in the Canadian Shield was assessed in November of 2016 and assigned as being not at risk by the Committee on the Status of Species at Risk in Ontario ("COSEWIC") (COSEWIC, 2016).

In analysing the interviews, a co-occurrence model was created, that shows intersections of "Turtle" with other components. Each number in parentheses shows the number of times that component

appeared collectively in all interviews. The number on the line connecting “Turtle” and any given component shows the number of times “Turtle” was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 55 shows that in total “Turtle” was brought up four times, and “Sacred Sites” was brought up 177 times. Of the 16 times “Turtle” was brought up, three of those times it was in the context of “Sacred Sites”.

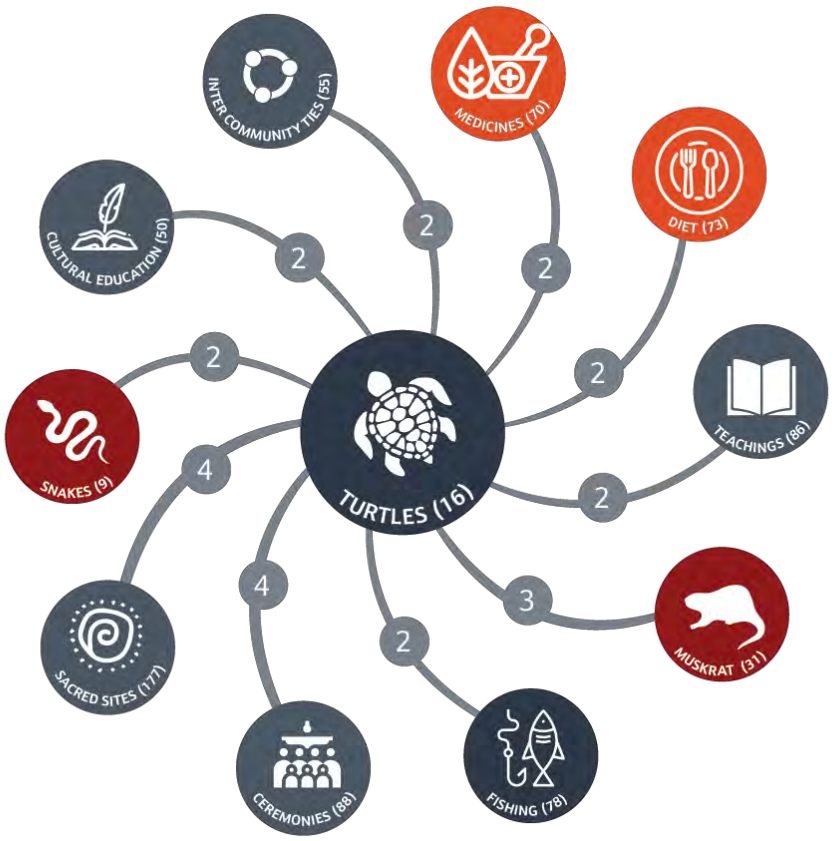


Figure 55. “Turtles” co-occurrence with other components.

5.6.4.1.2 Habitat

Mikinaakwag (snapping turtles) are found in aquatic habitats of shallow ponds or along lake and river edges with slow-moving water with a mud or sand basin (COSEWIC, 2008). Most feeding and mating activities are carried out in the water, however *mikinaakwag* (snapping turtles) will often make use of adjacent terrestrial habitats. Dense aquatic vegetation surrounding the water body is also preferred. Similarly, *miskwaadesiwag* (Western painted turtles) are a highly aquatic species found in bodies of slow-moving waters such as ponds, marshes, streams, rivers, and adjacent terrestrial habitat (COSEWIC, 2016). They also prefer habitats with a mud bottom, surrounding vegetation and naturally floating objects such as logs or branches for basking (Ernst & Lovich, 2010). Both *mikinaakwag* (snapping turtles) and *miskwaadesiwag* (Western painted turtles) hibernate over winter thus requiring

a waterbody with a soft substrate at the bottom, such as mud or sand, to bury themselves (Meeks & Ultsch, 1990; Ernst & Lovich, 2010; COSEWIC, 2016).

Mikinaakwag (snapping turtles) and *miskwaadesiwag* (Western painted turtles) prefer loose substrate such as dirt, sand, or gravel for nesting as it allows females to easily dig a shallow nest (Steen & Gibbs, 2004). Preference is given to locations with small plants with minimal overgrowth to ensure the eggs are not overly shaded (Maltby, 2000). For these reasons, often roadsides make for an attractive nesting site. Low vegetative cover in particular is an important criterion because shade can impact the surrounding soil temperatures which could ultimately affect the sex of the hatchlings (Ewert, Lang, & Nelson, 2005; Janzen, 1994). Higher percentages of female hatchlings correlate with warmer temperatures while higher percentages of male hatchlings correlate with cooler temperatures (Ewert, Lang, & Nelson, 2005).

For *mikinaakwag* (snapping turtles), mating most frequently occurs during the spring and fall months, with nesting occurring from late May into early July. Under normal conditions, *mikinaak* (snapping turtle) eggs will hatch between 65 to 95 days (Harding, 1997). However, warmer periods can shorten this duration while cooler periods could elongate the duration. Similarly, *miskwaadesiwag* (Western painted turtles) will mate during the spring months with the eggs hatching during the late summer and early fall months. However, late *miskwaadesi* (Western painted turtle) hatchlings will remain in their nest for the winter as they are well adapted to hypoxic or anoxic conditions emerging above ground the following spring (Packard & Packard, 2001).

5.6.4.1.3 Diet

Both *mikinaakwag* (snapping turtles) and *miskwaadesiwag* (Western painted turtles) are omnivorous and opportunistic feeders. *Mikinaakwag* (snapping turtles) will commonly consume vegetation such as algae and vascular plants and prey upon *ashaageshiinyag* (crayfish), *manidoonsag* (insects), *biimiskodisiig* (snails), *giigoonyag* (fish), amphibians, and other reptiles (Environment and Climate Change Canada, 2016). *Mikinaakwag* (Western painted turtles) will also prey upon nearby waterfowl and small mammals (Ernst & Lovich, 2010). As juveniles, *miskwaadesiwag* (Western painted turtles) tend to prey more often on *manidoonsag* (insects), *ashaageshiinyag* (crayfish), *biimiskodisiig* (snails), *omagakiig* (frogs) and *giigoonyag* (fish). However, as adults they will incorporate more vegetation into their diet such as algae and other aquatic plants (MacCulloch & Secoy, 1983).

5.6.4.1.4 Population Trends

Both *mikinaakwag* (snapping turtles) and *miskwaadesiwag* (Western painted turtles) are threatened by anthropogenic changes to their habitat which may alter or drain aquatic habitats (COSEWIC, 2016; Environment and Climate Change Canada, 2016). Most notably, road networks are a significant cause of mortality for both *mikinaakwag* (snapping turtles) and *miskwaadesiwag* (Western painted turtles) because of vehicular collisions. This is a risk for populations both near and distant from roadways as *mikinaakwag* (snapping turtles) and *miskwaadesiwag* (Western painted turtles) migrate out of their home range for nesting. During their migration, many female *mikinaakwag* (snapping turtles) and *miskwaadesiwag* (Western painted turtles) move from aquatic to terrestrial habitats, crossing over

roads in search of a nesting site. These nesting habits not only put the adults at risk of vehicular collision, but also increase the chances of hatchlings crossing the roadways as well (COSEWIC, 2016; Haxton, 2000). Additionally, increased human activity within *mikinaak* (snapping turtle) and *miskwaadesi* (Western painted turtle) habitats carry the risk of increased nest disturbance and predation. Lastly, chemical runoff into surrounding aquatic habitats has been identified as a potential threat to both *mikinaak* (snapping turtle) and *miskwaadesi* (Western painted turtle) populations (COSEWIC, 2008; COSEWIC, 2016).

Within Ontario, *mikinaakwag* (snapping turtles) were ranked S3 provincially by NatureServe (2015) which indicates 100 or fewer observed individuals (Environment and Climate Change Canada, 2016). This is a serious concern as *mikinaak* (snapping turtle) populations are at a risk of severe decline if the adult populations continue to decline. As a result of high mortality and delayed maturation, *mikinaak* (snapping turtle) populations have been identified as being unable to recover from long-term adult mortality (Cunnington & Brooks, 1996). Depletion of local *mishiikenyag* (turtle) populations due to development in the area was noted by this Elder from Niisaachewan:

> *It made a lot of difference after they blasted. Oh, you should have seen it. All sticks, everything floating around here… people always ask me 'what happened to the turtles?' I said, 'I wouldn't know what happened to these snapping turtles.'*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 17, 2019.*

Miskwaadesiwag (Western painted turtles) have an estimated population of 10,000 adults within the Canadian Shield region (Alberta, Saskatchewan, Manitoba, Ontario). Similar to *mikinaakwag* (snapping turtles), declines in local populations are likely to be a result of habitat loss and development, which can carry serious repercussions for the overall population (COSEWIC, 2016). For both species, the effects of adult mortality are significant as both reach sexual maturity a late age. *Mikinaakwag* (snapping turtles) have been estimated to have an age of sexual maturity between 16 to 19 years (Galbrath, Brooks, & Obbard, 1989). Although data is limited, *miskwaadesiwag* (Western painted turtles) have been estimated to attain sexual maturity between 12 to 15 years old (COSEWIC, 2016). Both species were estimated to have a lifespan of around 40 years. However, survival up until this point can be difficult resulting in a large impact on the abundance of *mishiikenh* (turtle) populations (Cunnington & Brooks, 1996).

5.6.4.1.5 Mikinaakwag (snapping turtles) and the Anishinaabeg

This section describes *inawendiwag* ("they are related to each other") of the Anishinaabeg with *mikinaakwag* (snapping turtles). The nature of the relationship cannot be described as purely cultural, spiritual, social, economic, health, or otherwise. Instead, it is all these together holistically.

Many members from the Niiwin Wendaanimok Nations told of their encounters and stories of *mikinaakwag* (snapping turtles) and *miskwaadesiwag* (Western painted turtles), species which are both very prominent freshwater *mishiikenyag* (turtles) around those areas. The *Anishinaabe Aki Kakendamowin* interviews also identified the prominence of *mishiikenyag* (turtles) in Anishinaabe

teachings and cultural education (Figure 55). For many Anishinaabeg, the *mishiikenh* (turtle) is an important symbol of *Aki* (Earth). This is largely due to the important role of *mishiikenyag* (turtles) in the story of the Great Flood where *mishiikenyag* (turtles) bore the weight of the *Aki* (Earth) on his back, ultimately allowing life to flourish once again for *Aki's* (Earth's) second people (Benton-Banai, 1988, p. 33). The importance of *mishiikenyag* (turtles) in the Anishinaabe creation story was discussed by a community member from Grassy Narrows as she explained the meaning behind the name of *Mikinaak Minis* (Turtle Island):

> *It was Gizhigookwe, Sky Woman, that came to the Earth first. She was the one who came to the turtles back–Turtle Island. When she came, she had life in her belly. She brought seeds. She brought medicines with her…the tobacco, sage, cedar, sweet grass, and even foods…She was the one who gave birth to the first Anishinaabe.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

This story is important to the Anishinaabeg for many reasons; however, it is incredibly special as it is a story that takes place very close to home. She continued to explain the ties of the *Gizhigookwe* (Sky Woman) to the Whiteshell region:

> *They say that, Gizhigookwe, when she came it wasn't very far from this place. It's in the Whiteshell. That's where she first came. When you think about it geographically, that make sense. That's like the center of the turtle's back.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, August 14, 2019.*

Mishiikenyag (turtles) are also discussed in Anishinaabe teachings and cultural education as a symbol of communication, having the power to communicate to beings of different dimensions and times (Johnston, 1976, p. 171). An Elder from Niisaachewan spoke to this:

> *I was setting my net and all of a sudden, I see bubbles all over…. I become scared; my boat started lifting. And so, I asked one of the Elders who said, 'you must've been a big snapping turtle, an old snapping turtle…he was telling you to be careful.'*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

Physical representation of the *mishiikenh* (turtle) can be seen in many ways throughout the Anishinaabe culture. *Mikinaakwag* (snapping turtles) and *miskwaadesiwag* (Western painted turtles) both bear 13 scutes, the scale-like features on their hard-outer shell. The 13 scutes of a *mishiikenh* (turtle) are said to refer to the 13 full moons of the year and are often represented in Indigenous ceremony. The co-occurrence model (Figure 55) demonstrates how community members discussed "Turtles" in the context of "Ceremonies" four times. An Elder from Wauzhushk Onigum explained how representation of the *mishiikenh* (turtle) can be seen in the infrastructure of ceremonial buildings:

> *On the turtles back, you have 13 equal markings, symbols of the 13 moons in the year. You go to the Roundhouse in Rat Portage, it has 13 sides. 13 equal sides. I don't know if you ever notice that. Same thing with these sweat lodges. Always related to North America's third island. It's part of our spirituality.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, August 14, 2019.*

"Turtles" also came up in discussions of "Sacred Sites" (Figure 55). An Elder from Shoal Lake 40 shared memories of seeing *mishiikenyag* (turtles) sunbathing along the rocks of a sacred site that he used to visit with his grandfather near Ash Rapids:

> *You see [the turtles] on the south sides of the rocks, all sorts of turtles, those orange ones. There must be thousands there, they congregate on the whole shoreline and that's where they go for offerings.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

Furthermore, *mishiikenyag* (turtles) have provided themselves as a source of food for the Anishinaabeg, with some mentioning "Turtles" in the context of "Diet" and "Fishing" during the AAK interviews. (Figure 55). Two Elders from Washagamis Bay told of how *mishiikenyag* (turtles) have been used as a source of food for themselves and their family members (AAK Individual Interview, August 21, 2019). Additionally, the non-edible parts of *mishiikenyag* (turtles), such as the shell, can be made into rattles for use in ceremonies and in sweat lodges (Environment and Climate Change Canada, 2016; Watson, 2016).

Wellbeing

5.7

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives

5.7 Wellbeing

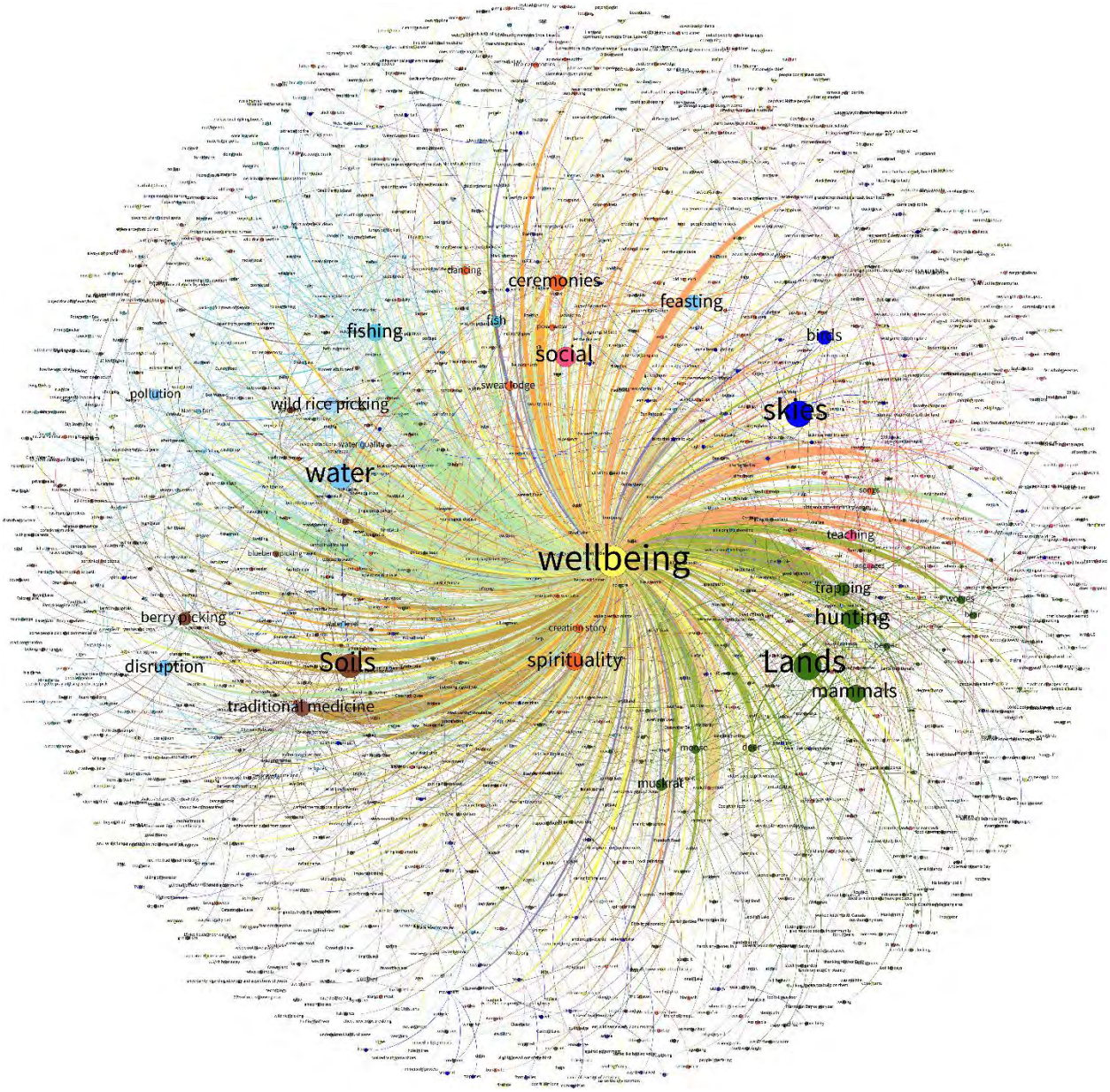


Figure 56: Web of Anishinaabe Wellbeing

"The cultural values, sacred knowledge, language, and practices of First Nations are essential determinants of individual, family, and community health and wellness" (Health Canada, 2015). Wellbeing must be perceived from a holistic standpoint in which both individual and communal aspects of wellbeing involve a balance of mental, spiritual, emotional, and physical health (Health Canada, 2015).

One key aspect of Anishinaabe culture is Anishinaabemowin, the "living dynamic [language] composed of all the social institutions that ensure the transference of beliefs, values […] and traditions"

(Partridge, 2013, p. 41). Anishinaabemowin words are deeply and deliberately interwoven within each other. For instance, *De* means "Heartbeat" and "Centre", symbolizing the union of thought, heart, and sound in all things. From *De,* we are given *Ma**de**we,* "Sound", *Mi**de**wiwin,* "Anishinaabe Spiritual Society", ***De**we'igan,* "Drum", *Ishko**de***, "Fire", and *Ndo**de**m,* "Kinship" (an alternate spelling for the term *ndotem* – clan) (Borrows, 2018, pp. 4-5).

During the era of Indian Residential Schools, thousands of children were removed from their homes and relocated to residential schools, where speaking Indigenous languages and practicing Indigenous culture was forbidden (TRC, n.d.). This period contributed to a great loss of language (ICT, 2019). The loss of language is intrinsically linked to the loss of history, tradition, and culture (ICT, 2019). Language is a key social determinant of wellbeing, closely connected to the Anishinaabe linguistic and cultural history. It is important that Anishinaabe culture act as a foundation, guiding all levels and aspects of wellbeing, fostering a strong sense of identity and community ownership. Important cultural aspects contributing to individual and community health and wellbeing are discussed in this chapter. These include:

- *Odoidaymiwan* (the clan system)
- Ceremonies
- Sacred Sites
- Travel
- Fishing
- Gathering
- Hunting
- Trapping
- Gardening

5.7.1 *Odoidaymiwan* (The Clan System)

The *odoidaymiwan* (the clan system) represents the spiritual kinship and sacred relationship shared by Anishinaabeg and all other living beings. It refers to the adoption of the Anishinaabeg by all spiritual beings, forming the *ototaimimaug* (the original clans) (Castellano, Archibald, & DeGagné, 2008, p. 38). The *ototaimimaug* (the original clans) exist as a symbol, marking sacred kinship between the Anishinaabeg and the "four leggeds; the winged ones; the water dwellers; and the crawlers" (Grand Council Treaty #3, 2003, p. 2). The *odoidaymiwan* (the clan system) is "absolutely vital to [Anishinaabeg] spiritual identity" and provides the framework by which Anishinaabe society is arranged (Castellano, Archibald, & DeGagné, 2008, p. 38). Each *ndotem* (clan) bears a function and represents one of humanity's five basic needs: leadership, protection, sustenance, learning, and physical wellbeing (Johnston, 1976, p. 59). Historically, the *odoidaymiwan* (the clan system) may have also taken precedence over the tribe, community, immediate family, or other considerations (Johnston, 1976, p. 60).

The *odoidaymiwan* (the clan system) is still in use today. It is customary during an introduction, for an Anishinaabeg person to state their name, their Anishinaabemowin name, their *ndotem* (clan), and

where they are from. For example, a community member from Niisaachewan introduced herself, stating:

> *My name's [redacted]. My nee name's [redacted]. Okoadonaam is my clan, and I'm from Dalles.*
>
> *Community member, Niisaachewan, AAK Individual Interview, September 13, 2019.*

5.7.2 Ceremonies

Integral to the development and wellbeing of Anishinaabe identity are ceremonies, serving as multi-faceted sources of knowledge, guidance, and support passed down through the generations by the ancestors (Simpson L. , 2000). Anishinaabe author Richard Wagamese (2019, p. 72) writes, "ceremony is […] a way to bring our energy into the great flow of creative energy that is the universe". An Elder from Washagamis Bay described the feeling associated with conducting ceremonies:

> *… You can do a ceremony here in the spring. You can do one in the fall. The springtime is more natural because of the bird families coming together for the summer at that time and the animals, fish, everybody... We do offerings for that for the feeling of greatness of the power of [the] Creator…*
>
> *Elder, Washagamis Bay, AAK Individual Interview, July 25, 2019.*

The Anishinaabe method of teaching is largely holistic and encompasses physical, spiritual, emotional, and intellectual dimensions, in which teachings are shared through oral tradition and participation in ceremony (Simpson L. , 2000). In this way, spiritually derived knowledge is fully integrated into traditional practices and forms the foundation on which the Anishinaabe cultural understanding is based (Gallagher, 2013; Simpson L. , 2000). A community member from Grassy Narrows described the intuitive learning process associated with ceremony:

> *…I found an eagle feather when I was a kid, and I did a ceremony with that feather. Nobody ever showed me how to do those things. I was just doing them.*
>
> *Community member, Grassy Narrows, AAK Group Interview, September 13, 2019.*

The *Indian Act, 1876* and its subsequent amendments forbade Indigenous Nations from expressing Indigenous identity through the practice of religious ceremonies and dancing (Henderson, 2006). During this period, the practice of religious ceremonies and dancing was taken underground. An Elder from Wauzhushk Onigum described emerging from an Indian Residential School program and realizing all ceremonies had been outlawed:

> *So, we came out of residential school, that was in probably '64, '65... our sacred ceremonies are outlawed. Our sweats are all outlawed. Our naming ceremonies were outlawed. All spirituality was outlawed... But they're still existing.*

Elder, AAK Individual Interview, July 24, 2019.

It is important to recognize the many people over the decades who risked their own wellbeing and safety to preserve and transmit this vital cultural knowledge for future generations. Several Anishinaabe ceremonies are outlined in the following sections.

5.7.2.1 *Waawiindaasowinan* (The Naming Ceremony)

Waawiindaasowinan (the Naming Ceremony) is the ceremonial process by which young Anishinaabeg are given their name, which has been obtained by an Elder through a long period of meditation and deliberation (Swan, Ceremonies: Manidookewinan, n.d.). This is "the most important event in a person's life," and the "receiving of [one's] identity" (Johnston, 1987, p. 15). *Waawiindaasowinan* (the Naming Ceremony) affirms a child's identity as Anishinaabe and instils a sense of community-belonging (Nahwegahbow, 2013). *Waawiindaasowinan* (the Naming Ceremony) is often concluded with a feast and a giveaway (Swan, Ceremonies: Manidookewinan, n.d.).

5.7.2.2 *Peendaukoodjigewin* (Tobacco Offering)

Asemaa (tobacco) has many ceremonial uses for the Anishinaabeg. Representing the "unifying thread of communication between humans and the spiritual powers", it is presented as a sacred offering to convey sincerity and gratitude (Swan, Uses of Asemaa, n.d.). This is often performed when taking from Mother Earth through the gathering of wood, food or *mashkikiwan* (medicines), collection of water, or the taking of an animal's life (Johnston, 1987, p. 33; Swan, Uses of Asemaa, n.d.) An Elder from Washagamis Bay described the significance of this process, saying:

> *This is why people offer tobacco—to respect the spirit of the land. That's why Anishinaabe people respect the land and the water—water quality.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, July 25, 2019.*

In ceremony, an offering of *asemaa* (tobacco) is made to the fire, placed on the earth, or placed in a container at the centre of the circle (Swan, Uses of Asemaa, n.d.). Before asking an Elder to share their knowledge, it is important to offer *asemaa* (tobacco). This exchange is akin to a contract between two parties in which the Elder agrees to share knowledge, and the one offering *asemaa* (tobacco) has the obligation of respecting the Teachings and the Teacher (Swan, Uses of Asemaa, n.d.).

Asemaa (tobacco) is a sacred medicine. More information on the *asemaa* (tobacco) plant and its use for medicinal purposes can be found in Section 5.5.4.

5.7.2.3 *Nookweziganoon* (The Smudging Ceremony)

Nookweziganoon (the Smudging Ceremony) is a purification ceremony, in which the smoke of any of the *gichitwaa mashkiki* (four sacred medicines) are used to purify the mind, body and spirit (Swan, Ceremonies: Manidookewinan, n.d.). Carefully picked from Mother Earth for the explicit purpose of purification, *gichitwaa mashkikiwan* (four sacred medicines) include *asemaa* (tobacco), *wiingashk* (sweetgrass), *mashkodewashk* (sage), and *giizhik* (cedar) (Swan, Ceremonies: Manidookewinan, n.d.).

Smudging can occur at any time and is often performed before a gathering. An Elder from Shoal Lake 40 described ceremonial use of smudging before a *jiingtamok* (Pow Wow):

> *If you're not feeling good, "did you smudge?" is often the question. You've got to smudge your regalia, [the] day before you go out there.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 22, 2019.*

5.7.2.4 *Jiingtamok* (Pow Wow)

Jiingtamok (pow wow) is a ceremonial gathering in which Indigenous cultural heritage, community, and spirituality are celebrated through the sharing of music, dances, regalia, food, and handiwork (Simpson & Filice, 2016). The music of the *dewe'igan* (drum), dances, and regalia represent sacred elements of the *jiingtamok* (pow wow) and tell important stories about cultural and personal history (Simpson M. J., Powwow Dances, 2016). A *jiingtamok* (pow wow) is often a cross-cultural event, in which various Indigenous Nations gather to celebrate song and dance together (Simpson & Filice, 2016). *Giiizhik* (cedar) may be hung during a *jiingtamok* (pow wow) as described by an Elder from Niisaachewan:

> *Cedar's for burning or hanging inside your house... Even Pow Wows, they'll leave some around where they have the dances at. Leave it on the ground and it's part of the tradition.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

5.7.2.5 *Madoodiswan* (Sweat Lodge)

The *madoodiswan* (sweat lodge) ceremony is a sacred event which "brings you spiritually to the womb of Mother Earth and physically tests you with earth, air, fire and water" (Swan, Etiquette, n.d.). Designed to physically revitalize and purify, a sweat also strengthens the spirit and purifies the mind (Laframboise, 2008; Swan, Etiquette, n.d.) *Madoodiswan* (the sweat lodge) is a place of teaching, praying, singing, planning, and communing with others. A sweat is often held in preparation for or following completion of other ceremonies (Laframboise, 2008).

An important aspect of this ceremony includes the intentional selection of the right location and materials for the *madoodiswan* (sweat lodge). The materials from which a *madoodiswan* (sweat lodge) is made are chosen carefully, as they carry significant meaning. *Gimishoomisinaanig* (our grandfathers) are rocks selected prayerfully for the *madoodiswan* (sweat lodge) and are presented with *asemaa* (tobacco) (Geniusz, 2009, p. 56). The number of *gimishoomisinaanig* (our grandfathers) vary depending on the Elder leading the sweat, and the intention of the ceremony (Laframboise, 2008). Inside the *madoodiswan* (sweat lodge), there is a pit at the centre where the *gimishoomisinaanig* (our grandfathers) are placed, and water is poured over them to create steam (Anishnawbe Health Toronto, 2000). The *madoodiswan* (sweat lodge) ceremony is often followed by a feast (Laframboise, 2008). A community member from Grassy Narrows described the process, saying:

…the preparation of it, having to go and get the trees to build the lodge, to go gather the medicines that we need, to gather the grandfathers or grandmothers for the lodge. That's like the first part of it, is preparing it. And then I guess, going in. When we're in the lodge, we go through four rounds of…Like when we're in the lodge. And the one that I specifically run is kind of like a re-birthing, I guess. There are the teachings that I have has to do with Creation, has to do with our Creation Story.

Community member, Grassy Narrows, AAK Group Interview, September 13, 2019.

5.7.2.6 Feasting & Giveaways

Feasts and giveaways are important aspects of Anishinaabe culture. Held throughout the year, these events acknowledge the help received from the spirit world, ancestors, and from the greater community (Anishnawbe Health Toronto, 2000). Feasting provides the opportunity to express gratitude and respect towards those who have offered assistance and support (Anishnawbe Health Toronto, 2000).

Feasting may be done individually or as a community, with drumming, singing, and dancing often taking place during larger gatherings. *Asemaa* (tobacco) is offered at the commencement of the feast. Foods served at the feast vary according to the reason for feasting, as feasts are often held following a ceremony (Anishnawbe Health Toronto, 2000). An Elder from Wauzhushk Onigum shared:

…And I always remember this as part of our customs and traditions... We always had in the fall, you'd have a feast—a ceremony—before we started hunting again, there's always that sacredness—the sacred fire—so we had to do that prior to getting onto the practice. Of course, in the spring, you would have a ceremony again... So there's always these practices in our spirituality.

Elder, Wauzhushk Onigum, AAK Individual Interview, June 17, 2019.

Giveaways often accompany feasts. *Asemaa* (tobacco) is offered to express gratitude for what has been received, and a giveaway is a way of thanking those who have come to offer support (Anishnawbe Health Toronto, 2000). Feasting and giveaways nourish both the body and the spirit.

5.7.2.7 *Pagidaendijigewin* (The Ritual of the Dead)

Pagidaendijigewin (the Ritual of the Dead) is the traditional Anishinaabe burial ceremony in which the spirit of the deceased is ushered to the Land of Souls (Johnston, 1987, p. 134). Traditionally, a death is followed by a wake extending over several days. A specially appointed Elder may guide the spirit onward to eternity. The body is dressed in moccasins and is accompanied by a small pouch holding objects the spirit will require for this journey, as well as a lining of *giizhik* (cedar) and *maanazaadi* (poplar) (AAK Individual Interview, July 19, 2019; AAK Individual Interview, July 24, 2019). The deceased is buried oriented between north and south, and the individuals *ndotem* (clan) is often placed alongside the grave (AAK Individual Interview, July 19, 2019). Once someone has been buried, it is important to

continue moving forward and without "looking back" (AAK Individual Interview, July 19, 2019). Land becomes sacred following interment (AAK Individual Interview, June 11, 2019), and it is important that burial ground remain untouched (AAK Individual Interview, July 19, 2019).

5.7.3 Sacred Sites

For the Anishinaabeg, cultural survival, nationhood, and relationship with the land are all intertwined. This representation of identity is celebrated through oral tradition, storywork, ceremonies, and traditional and cultural practices. Although all of Mother Earth is sacred, there are certain areas of greater sacred significance. These may include sites where ceremonies such as sweats are conducted at present or have been conducted in the past, cemeteries or ancestral burial sites, locations inhabited by spirits or spiritual beings, locations where fossils, petroforms or petroglyphs are found, or areas where an event of significance occurred at some point in the past or present—just to name a few examples.

Many sacred sites have been destroyed in the interest of development. An Elder from Niisaachewan recalled:

> *…There's a pictograph here somewhere, I don't know exactly where it is... It's underwater now... Yeah, because of the flooding.*
>
> *Elder, Niisaachewan, AAK Group Interview, August 15, 2019.*

An Elder from Washagamis Bay described a sacred site, saying:

> *…But, if you look off to the side there, before you there, you'll see an area that's all flat there and that's an area where they used to do ceremonies there a long time ago, too. You can tell. It's very evident that area has been [in]habited or used for something in the past.*
>
> *Cherry, J., AAK Group Interview, July 23, 2019.*

The *Indian Act, 1876* had the goal of assimilating Indigenous people across Canada. In seeking to achieve this goal, cultural activities were outlawed, forcing people to continue traditions underground. The forced removal and relocation of thousands of Indigenous children to Indian Residential Schools resulted in severing the intergenerational transmission of traditional knowledge for many, including knowledge about locations of many sacred sites. For this reason, known sacred sites are often highly guarded and protected by community members. An Elder from Wauzhushk Onigum described the importance of keeping sacred sites protected:

> *[This is a place no one should come] Except for ceremonial [purposes]. Because in a lot of these places, when they die, after they die, they put their sacred items with them [to] take them to the spirit world... what would happen is that some people found out and*

they started taking these items, and took them as souvenirs, or they ended up in the archives.

Elder, Wauzhushk Onigum, AAK Group Interview, September 17, 2019.

An Elder from Washagamis Bay shared a similar sentiment:

…But as for Anishinaabe people, they always keep that secret area, traditionally, from the rest of the world.

Elder, Washagamis Bay, AAK Individual Interview, July 25, 2019.

Sacred locations to the Anishinaabeg are found across the Kenora/Lake of the Woods region, and it is imperative that that these sites remain in their original state—undisturbed and intact. Given the interwoven nature of culture and the land, the destruction of a sacred site is akin to the destruction of Anishinaabe culture itself.

5.7.4 Travel

5.7.4.1 Safe Passage through Anishinaabe Lands: Travel and Sovereignty

In 1870, Wemyss Simpson was assigned as an Indian Agent to secure safe passage for troops bound for the Red River Colony to quell a Métis uprising and establish order in the newly "acquired" interior of *Mikinaak Minis* (Turtle Island). The negotiation of a right-of-way through Anishinaabe territory would form the basis for treaty negotiations from 1869 to 1873, culminating in the signing of Treaty 3. As explained in greater detail in Section 4.2, the Anishinaabeg maintained a diplomatic policy of openness to sharing resources and territory in economic cooperation as permitted and regulated by Anishinaabe law and sovereignty. This is most clearly embodied in the institutions that developed concerning travel leading up to the signing of Treaty 3.

Water is a core part of the Anishinaabe identity. The thousands of lakes, rivers and channels are deeply rooted within Anishinaabe culture, traditions, stories, and knowledge (Parent, 2012). This relationship is distinguished by living in harmony within the ecosystem in the region since time immemorial. Apart from giving and maintaining life for the Anishinaabeg, water was also the main mode of transportation. It was the waterways that allowed the Anishinaabeg to interact with other Indigenous nations of *Mikinaak Minis* (Turtle Island) and to develop political, social, and economic relationships. An Elder from Niisaachewan recalled how the Anishinaabeg would participate in trading activities near Fort Island and Tunnel Island where the water was heavily travelled:

…they used to come there and trade and barter around that area, in Fort Island and Tunnel Island. So those are very important islands there. It's where kind of crossroads … Lake of the woods to the river here. And it used to be like a highway before, people used to travel through there. Different tribes and stuff like that.

Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.

When Europeans arrived, they followed the Indigenous waterways and trading routes, initially respecting existing trading relationships. Europeans first establishing trading posts in Anishinaabe territory in the late 18th century sought to leverage the wealth of resources and countless water "highways" that make up the territory west of Lake Superior (Unterman McPhail Associates, 2009, pp. 2-4). With the Rainy River in the East linking Lake of the Woods to Lake Superior, Europeans could then take several routes to access fertile farming territory in the Red River Valley to the West. One of these routes was through the Winnipeg River, which drained into Lake Winnipeg and provided direct river-access to Fort Garry and the Forks of the Red and Assiniboine Rivers.

As explained by this Elder from Niisaachewan, to conduct these "exploratory" expeditions, Europeans were largely reliant upon the Anishinaabeg and Indigenous guides to traverse the water highways and portage routes:

> *Well see, what happened was, when [the voyageurs] used to travel ... They used to take some of our people with them, and they would make it back. What would happen was, say they take some guy from here to travel with them, to as far as Thunder Bay. Those guys would come back, and we'd get another crew coming this way. They would go towards Winnipeg and so on. All points west. These people were used for guidance and everything because they knew the river system.*
>
> *Elder, Niisaachewan, AAK Group Interview, September 17, 2019.*

These expeditions regularly offered gifts to the Anishinaabeg they encountered in their travels, a convention that appears to have lasted well into the latter part of the 19th century until Treaty 3 was signed and reserves established (cf. Butler, 1872 / 2005; Hind, 1860; Mainville, 2007). The action of gift giving by foreigners travelling through Anishinaabe lands was an indication of mutual recognition and respect for the Anishinaabeg's ownership over their territory.

Similarly, the Anishinaabeg tracked and enforced controls to limit freedom of movement for foreigners. A powerful example of this occurred when one of the parties to the 1857 Expedition was intercepted on Garden Island at Northwest Angle. The Expedition split up into separate groups at various points to survey several routes to the Red River colony through Anishinaabe territory (see Section 4.2.3 for further details of this expedition). Not only did the Anishinaabeg warriors know the location of the other groups, which was at that time many kilometers away, they communicated that the research being conducted by the Expedition was both suspicious and unwelcome. They were ordered to take the route that colonists had traversed previously – the Winnipeg River. In Hind's account, this was literally referred to by the Anishinaabeg group as "the old road" (Hind, 1860, p. 99).

By the time of the Red River Rebellion, the new Dominion of Canada had already been engaged in diplomatic talks intended to strengthen peaceful relations with the Anishinaabeg (Daugherty, 1986, pp. 3-4). When Simpson arrived to negotiate the passage of troops, the Anishinaabeg were already prepared with a comprehensive conception of a treaty. This conception revolved around the evolution of the

institutions of travel – in exchange for payment and ceremony, the Anishinaabeg would "…allow the Queen's subjects the right to pass through our lands, to build and run steamers, build canals and railroads and take up sufficient land for buildings and Government use…" (Robert J. Pither (1870) As cited in Mainville, 2007, p. 33). Although this conception flatly rejected settlement, it did involve strengthening the ties of economic cooperation and upholding Ansihinaabe sovereignty.

Ultimately, the troops passed through Anishinaabe territory in the summer of 1870 unhindered and treaty negotiations ensued. The core Anishinaabe terms remained largely consistent up to the day before the signing of Treaty 3 (Daugherty, 1986). After the signing and confinement of the Anishinaabeg to reserves, new colonial institutions governing travel replaced the old Anishinaabe ones. Where the old institutions were predicated upon economic cooperation as permitted and regulated by Anishinaabe law and sovereignty, the new ones were predicated upon displacement, economic marginalization, and restriction of movement.

Travel is a core theme in the history of Anishinaabe-settler relations. As explained by Mainville (2007, p. 48), profound misunderstandings about Anishinaabe culture, society, and law contributed to the lack of recognition of Anishinaabe sovereignty and the misapplication of treaty. Because of its connection to sovereignty, responsibility, and economic rights, ideas surrounding travel have proven to be powerful starting points for relationship-building and for beginning to clarify these profound misunderstandings that have continued to lead to profound missteps.

5.7.4.2 Travel by Canoe

> *For six months the canoe is the home of the Ojibbeway [sic]. While the trees are green, while the waters dance and sparkle, while the wild rice bends its graceful head in the lake and the wild duck dwells amidst the rush-covered mere, the Ojibbeway's home is the birch-bark canoe. When the winter comes and the lake and rivers harden beneath the icy breath of the north wind, the canoe is put carefully away; covered with branches and with snow, it lies through the long dreary winter until the wild swan and the wavy, passing northward to the polar seas, call it again from its long icy sleep.*
>
> *(Butler, 1872 / 2005)*

Throughout the AAK process, the Elders shared many stories about water being essential for foraging for *manoomin* (wild rice), picking *miinan* (blueberries), picking *mashkikiwan* (medicines), trapping, or hunting for food. It also continues to be a way for communities to engage and socialize. Even though developments in infrastructure and technology have increased reliance on vehicles and motorized boats, the Anishinaabeg still cherish their unique relationship with the water.

Northwestern Ontario is made up of many lakes, rivers, and streams. For the Anishinaabeg situated around Kenora, Lake of the Woods has provided a contiguous network of waterways with over 100,000 km of shoreline, which has historically acted as the best means of transportation (Ministry of the Environment, Conservation and Parks, 2020). The Treaty 3 territory is a part of a much larger continent-wide network that connects Ontario, Minnesota and Manitoba through major watersheds

that extend from sea to sea. These water 'highways' are interrupted by land, rapids, and waterfalls, where historic portage routes provide overland connections. These routes have been passed on through generations. Many Elders sharing various portage locations that are spread throughout the lakes such as Poplar Portage, Evergreen Portage, and Pine Portage. An Elder from Niisaachewan recalled how Poplar Portage was commonly used to avoid a dangerous section of rapids:

> *Instead of going that way, murder rapids, or the Dalles rapids, they take the portage here on Poplar Portage and with their canoes and such. You get away from the turbulent rapids. This is a route that they have been using for thousands of years.*
>
> *Elder, Niisaachewan, AAK Group Interview, September 17, 2019.*

Travelling the waterways was traditionally done in birchbark canoes, crafted with *wiigwaas* (white birch), *gaawaandag* or *zesegaandag* (spruce), and *giizhik* (cedar), (Price, 2000). The waterways of *Mikinaak Minis* have allowed the Anishinaabeg to engage in economic exchange and communication for those who used the waterways to travel by canoe (Benton-Banai, 1988, p. 94). In spring, community members would travel to various locations to fish, forage, or hunt. Additionally, this travel also presented social opportunities for the Anishinaabeg to engage with others and participate in ceremony and other cultural activities (Manore, 2016). Warmer weather allowed the Anishinaabeg to enjoy long trips on the water and camp along the way. An Elder from Niisaachewan shared how travelling the lakes by canoe continues to be an important social activity. She shared her memories of people travelling by canoe into town:

> *… Yeah, we traveled a lot by canoes a long time ago … You could see all the tents by the river … lived wherever they want. They did whatever they want. There was no transfers that time. There was none. Everything was good, eh. Everybody got along. It was lots of fun. Playing poker … making their own moccasins … everything like that.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

Many community members have personal experiences relying on their canoes as being the best way to travel the lakes. An Elder from Niisaachewan recalled:

> *When I was pregnant, I went to the hospital by lake. We had to break the ice to get to town … that was the only way … they had me in a canoe on a mattress … Everybody had boats in those days. Now, everybody has vehicles.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

Most community members have spent the majority of their lives within the Winnipeg River watershed area. The lakes and rivers are routes that they have travelled many times over the years and are therefore able to navigate these waters without maps or signs. In fact, as indicated in Figure 57 the Winnipeg River watershed defines the national, political, and jurisdictional area of the Anishinaabeg as it signifies the boundaries of the treaty with the Canadian Crown.

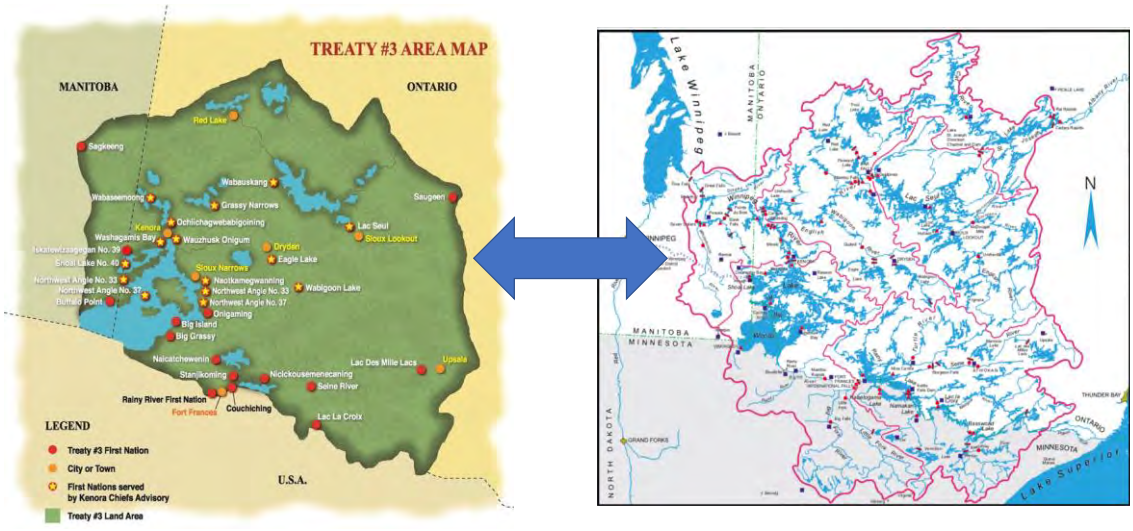


Figure 57: Anishinaabeg Territory in Treaty 3 and the Winnipeg River Watershed

This intergenerational knowledge was highlighted by this Elder from Niisaachewan, who explained that some community members used to know the waterways so well that they could navigate in the dark:

> *Not in the old days. Never needed that. We always knew what we're doing right. We navigated out there in the dark you can see almost everything like you really know your area. Like this guy here. Yeah, he can travel at night. [Redacted]. Yeah, you can travel at night…*
>
> *Elder, Niisaachewan, AAK Group Interview, August 15, 2019.*

5.7.4.3 Travel for Sustenance

Lakes and rivers continue to be a major food resource playing a central role in the Anishinaabe economy (Manore, 2016). Fishing has remained a core part of the Anishinaabe way of life, with many community members speaking to the importance of fishing for sustenance, providing economic opportunity and keeping up with traditions. This section will discuss the importance of travelling the lakes with regards to fishing, however more information on fishing is outlined in Section 5.7.5. Many community members shared their favourite fishing spots that were widespread throughout the Lake of the Woods region. This demonstrated that access to *giigoonyag* (fish) requires travelling all parts of the waterways. This Elder from Shoal Lake 40 explained:

> *Because the fisherman had a tremendous amount of respect in our community because they knew the fishery… not only pickerel or walleye, but they knew all the walleye and sorts of species and different types of fish. So, they know the movement of the fisheries, the fishing habitat and just the way they move, each particular species. Our fisherman were so knowledgeable … and [the fisherman] knew the lake and the fish and the patterns, how they moved around.*

Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.

Manoomin (wild rice) is an important resource that is of great importance to the Anishinaabeg and continues to be incorporated in present day. *Manoomin* (wild rice) grows best in the shallow water of freshwater marshes, ponds, lake shores or river shores, where water is either still or slow-moving (Maiz-Tome, 2016). It is native to the area and continues to grow extensively throughout the waterways of the Kenora District (Dore, 1969). More information on *manoomin* (wild rice) is outlined in Section 5.6.2. Given its aquatic habitat, *manoomin* (wild rice) is most accessible by travelling in canoe, or more recently, motorized watercraft. Many stories of *manoomin* (wild rice) harvest were shared in the AAK interviews, such as one Elder from Washagamis Bay, who explained how he harvests *manoomin* (wild rice) in a traditional manner with a canoe:

> *We get two persons to harvest wild rice. One paddles in the front, or with a pole at the back. And the person that thrashes, he just over thrashing with two sticks, about two and a half feet long. They're pointy, you get two of them, and then, as we move along, we zigzag where wild rice is. The person that controls the angle of the canoe, is the one that's... He sees where wild rice is, it is heavy. The wild rice... And then you just thrash them. Left, right, left, right, just thrash them. That's how we pick wild rice. We pick about four, six bag a day.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

Just as harvesting *manoomin* (wild rice) is facilitated by travelling the waterways in canoe, such is also the case for those who travel long distances to harvest *miinan* (blueberries). The connectivity between the lakes and rivers of northwestern Ontario provides communities with access to *miinan* (berries) that may not grow near their areas. An Elder from Shoal Lake 40 shared an example of how his mother would canoe to Ena Lake where *miinan* (blueberries) grew:

> *I remember my mom telling me there wasn't that many blueberries along here in this area. So, they had to travel all the way to a place called Ena, Ontario … from Shoal Lake, travel the river system, creek systems. Falcon Lake, over the highways, and then follow the lake systems until you got to Ena, by Redditt.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.*

Furthermore, travel by water provided the opportunity for hunting. This allows people to distance themselves from busier areas and facilitates movement to the many islands of Lake of the Woods. The canoe is also a good way of transporting the animal after it has been hunted. An Elder from Washagamis Bay recalled him and his brothers hunting *moozoog* (moose):

> *We had to travel three days back to haul [the moose] back out … we had to portage and carry it piece by piece … we had to portage maybe about six times. Some of them were long too. It was a good three of four hours work just to haul it from one side of the lake to the other side.*

Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.

However, this hard work was well worth the effort as it allowed for entire communities to eat. He shared that even families from the north would join to have some of the meat. He continued:

> *So, what we did was, if we make a kill like that, they'd spread... they give pieces of, chunks of it to families and stuff like that. So, we fed the whole community. Even when my Dad used to catch fish, he'd somehow get someone to go tell the whole community.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019*

Another Elder from Washagamis Bay also shared how he heavily relied on travelling by boat for hunting. It gave him access to move around the many different habitats that exist within Lake of the Woods and locate different game species:

> *Like me, I used to travel with the boat. I used to hunt ducks and everything. Yeah. I go hunting ducks, and kill moose... There used to be moose and deer. There usually is lots of deer, but moose, I think the last one was here quite a while ago. They all died out. But all the deer, lots of deer around there, across the lake.*
>
> *Elder, Washagamis Bay. AAK Group Interview, August 22, 2019.*

An Elder from Shoal Lake 40 shared how his grandparents would canoe three days to get to Kenora and would hunt for food on their way back:

> *Usually takes about three days to paddle there. Yeah, because you got to stop and get through angles. But they had nothing to eat, the only thing they ever go to town for was just salt and pepper. Salt, pepper, and sugar. Everything that was okay because they hunted on the way back. Ducks, beaver, whatever they need to get on the way home.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, June 11, 2019.*

Lastly, an Elder from Washagamis Bay shared that he would travel across the water to get access to marshes where he could collect eggs:

> *I used to go on canoe with my sisters, there used to be floating marsh over here, and we used to go get seagull and duck eggs to eat. Yeah, we would just paddle across and get them.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 24, 2019.*

For many Anishinaabeg, being able to travel the waterways of Lake of the Woods plays an essential role to access food. Before settler development occurred, the water acted as the primary method of transportation. For the Anishinaabeg, water provides access to *giigoonyag* (fish), *manoomin* (wild rice),

and provides hunting opportunities. Thus, being able to travel the waterways has been a key component in the livelihoods and ongoing success of the Anishinaabeg within the area.

5.7.4.4 Modernization of Travel

The Anishinaabe transportation methods have evolved as new technologies have become common. In the late 18th century until the mid-to-late 20th century, horses and dog sleds were key methods of hauling and transporting goods and equipment on and off-reserve. As explained by this Elder from Niisaachewan, horses were important assets in the harvesting of wood pulp:

> *We'd have teams of horses too. Some people ride horses. They used to scatter... that's before I remember had tractors. Skidders, they called them. Pulled the wood out from the bush. They used horses and stuff. Yeah, you can pull a lot more weight than a human trying to pull logs out of the bush. And then, of course, the seasonal stuff like blueberry picking.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

In the middle-to-late 20th century, automobiles and snowmobiles became increasingly prominent modes of transportation for the Anishinaabeg. This motorized transportation has provided quicker and easier access within and between communities and other population centres. In some cases, and often combined with other forms of transportation such as watercraft, this has aided in accessing and transporting traditionally or culturally valuable resources, such as *manoomin* (wild rice), fishing, hunting, picking *miinan* (berries), and picking *mashkikiwan* (medicines), among others.

With that said, road and other automobile infrastructure at the scales observed in the present-day are enormously land use intensive. Automobile infrastructure entails externalities like *bagidanaamowin* (air) and water pollution, wildlife displacement, ecological change, and many others. Growth in transportation infrastructure is also intimately related to growth in land use, both responding to and encouraging new or higher intensity development along a transportation network (Rodrigue, Comtois, & Slack, 2006, p. 182). This cycle of increasing development demand related to transportation has had a cumulative effect on the health, quality, access, and in many cases, destruction of resources long relied upon by the Anishinaabeg. As explained by this Elder from Washagamis Bay,

> *Yeah. I remember when they put in the bypass here. We used to rice pick at Middle Lake, and there's no more rice there, after they put the bypass through there. Middle Lake goes right through the bypass. Yeah.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 22, 2019.*

Waterborne travel continues to be an integral part of the Anishinaabe identity. Motorized boats have largely replaced the canoe for all but recreational or cultural purposes. They have reduced the amount of time it takes to travel waterways and have provided the opportunity to haul larger or heavier equipment and transport larger catches. More information on commercial fishing and fishing for

sustenance is outlined in Section 5.7.5.3. Despite the trend toward the mechanization of water travel, traditional insights and practices are interwoven into these contemporary transportation methods.

An Elder from Washagamis Bay explained that while motorboats facilitate travelling by water, completing a portage is still sometimes necessary work. He shared the route he would take when travelling towards Kenora or to Keewatin:

> *But I remember, I used to drag 15 foot boat, and I carry a 20 horse motor same time, when I go through that portage…Then I'd have to go back and get the gas tanks…But that was their way of life of doing it. It was just like a normal thing for you, a day. But you'd be gone all day. To go to town, you'd be gone all day. You'd come back late in the evening…Once you're in the lake, it only [takes] you about a half hour. Yeah. Half hour by motor, about 20 horse, and... Yeah. But to do the work at the portage and stuff, you need all day for that. You know?*
>
> *Elder, Washagamis Bay, AAK Group Interview, August 22, 2019.*

This Elder from Shoal Lake 40 recalled his mother sharing about a time when Ash Rapids was a popular site to visit, known for being an area rich in resources. Trips to Ash Rapids were a family affair only accessible by travelling the water by canoe:

> *I learned from Elders that the whole lake was used. Even my Mom, who I lost just a couple years ago, but she gave me so much knowledge of the good old days and how people used to canoe from Shoal Lake to Ash Rapids route, to town. They would spend a whole day canoeing to Ash Rapids, camp there overnight. And these were families, coming into Kenora to do whatever they needed to do … go to Kenora and come back, same thing, spend the night at Ash Rapids and come back. A lot of these people canoed; it was the only mode of travel back in the day. The whole area's amazingly rich with traditional land use.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

For the first time in hundreds of years, the Anishinaabeg are watching their relationship with the water change as a result a decline in the health of the lake. The waterways of north-western Ontario have acted as the best mode of transportation for thousands of years. This connection to the water can be traced far back down family lineages where travelling the lakes was a necessity in subsisting on this land by fishing, foraging, and hunting. Over time, Traditional Knowledge was shared to help guide European colonizers, facilitate trade agreements, and most importantly allowed communities to socialize and grow together. However, this control has been lost through decades of non-consensual development on Anishinaabe lands. Therefore, it is important to listen to the many Anishinaabe who express concerns for the lake as it is they who know these areas the best and are observing the changes first-hand.

5.7.4.5 Winter Travel

Winter roads refer to transportation corridors that are only available in colder seasons. As it relates to the Lake of the Woods area, these exclusively refer to roads established on the ice. Community members often shared their memories of using the frozen lakes as a means of winter travel. An Elder from Washagamis Bay shared how people walk from Wauzhushk Onigum (Rat Portage) to Washagamis Bay in winter using the frozen lake:

> *It was lots of hard work, but I survived. Lots of people survived that. They used to come visit right from the portage, all the way from Rat Portage. In the winter they walked from Rat Portage to here, yeah, by lake in the winter. Yeah. Man, it's a walk.*
>
> *Elder, Washagamis Bay, AAK Group Interview, August 22, 2019.*

Winter roads provided unique opportunities for transportation, enabling community members to use horse sleds or dogsleds, and later snowmobiles and automobiles to access destinations quicker and easier than by boat or over land. It also permitted community members to walk to visit neighbouring communities and family members. However, winter roads can also be dangerous if used during the shoulder months when the ice is not yet thick enough or thinning in the spring. Prior to the construction of Freedom Road, for example, the community of Shoal Lake 40 was entirely dependent upon watercraft transportation in the warmer seasons and winter roads in the colder ones for access and egress to the community. Over the years, several community members have fallen through the ice in the fringe months of winter when the use of watercraft was impossible.

5.7.5 Fishing

5.7.5.1 Fishing for Recreation

The recreational fishery is the largest sector of the inland fisheries of *Mikinaak Minis* (Turtle Island) (Cooke & Murchie, 2013). This involves the widely promoted catch-and-release method of fishing and may extend to harvesting for sustenance (Fisheries and Oceans Canada, 2019). The predominant method of fishing for sport is angling, with approximately 1.27 million anglers fishing in the province of Ontario every year (Government of Ontario, 2014). The province is divided into 20 fisheries management zones ("FMZs"), with the Lake of the Woods, Shoal Lake, Rainy Lake, Rainy River, Eagle Lake, Wabigoon Lake, Dinorwic Lake, and the Winnipeg River system all falling within FMZ 5 (**Map 28**) (Government of Ontario, 2014). Common species recreationally fished for in the Ontario FMZ 5 area include *ogaawag* (walleye), *noosa'owesiwag* (smallmouth bass), *maashkinoozheg* (muskellunge), *ginoozheg* (northern pike), *gidagagwadaashiwag* (black crappie), and *adikamegwag* (whitefish) (Government of Ontario, 2014).

In analysing the interviews, a co-occurrence model was created that shows intersections of fishing for "Recreation" with other components. This model is illustrated in Figure 58. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting fishing for "Recreation" and any given component shows the number of times that

fishing for “Recreation” was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 58 shows that in total fishing for “Recreation” was brought up 11 times, and “Walleye” was brought up 67 times. Of the 67 times the “Walleye” was brought up, six of those times it was in the context of fishing for “Recreation”.

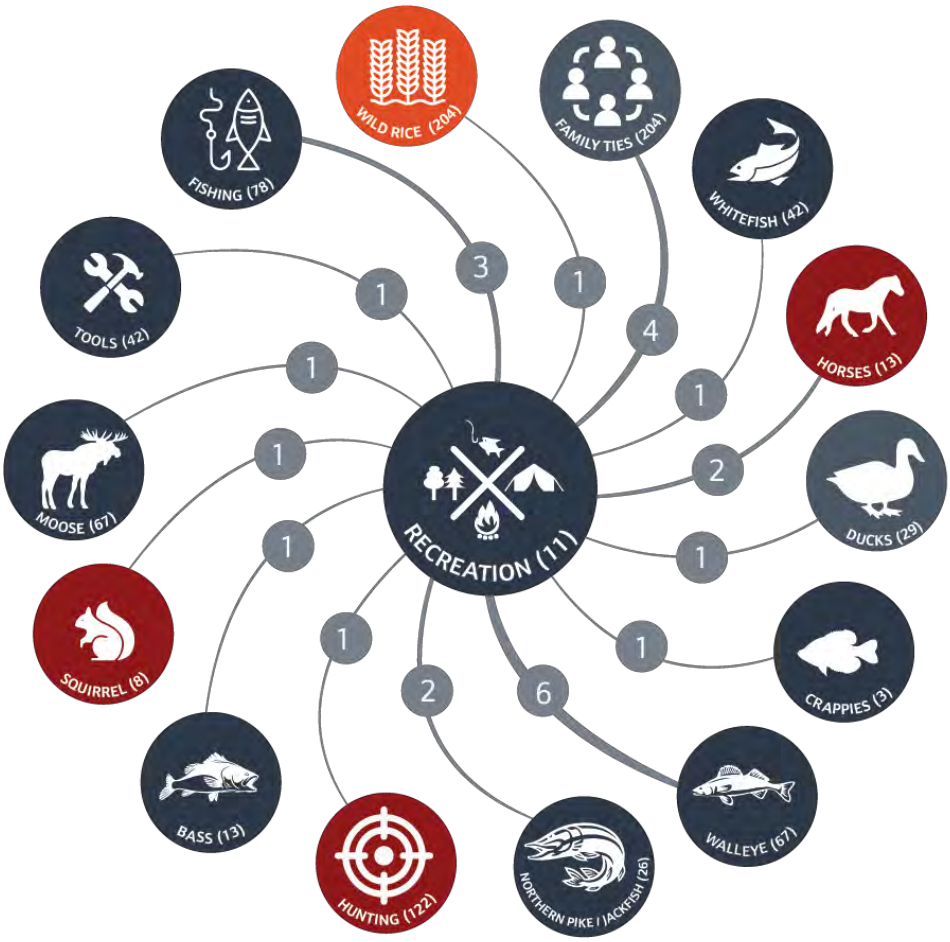


Figure 58. Fishing for "Recreation" co-occurrence with other components.

Recreational fishing has many benefits for mental and physical wellbeing and strongly influences long term health outcomes (Bennett, Piatt, & Van Puymbroeck, 2017). Recreational therapy programs often utilize fishing as a key method of stress and physical recovery (McManus, Hunt, Storey, & White, 2011). The Anishinaabeg have long partaken in recreational fishing for the various benefits it provides. Personal enjoyment is a common experience commented on by members of Washagamis Bay and Shoal Lake 40, who described recreational fishing as being “fun” (AAK Individual Interview, August 22, 2019; AAK Individual Interview, July 25, 2019; AAK Individual Interview, May 22, 2019). This Elder from Shoal Lake 40 shared:

> *I remember my brother-in-law, he was telling us…we’re out on a boat, he was showing us this huge jackfish they caught in a net, it was just huge. And we’re snapping pictures*

of it and after we just floated around a lake just visiting [with] each other. I remember him saying "I love the lake." He said, "If I ever die, I want my ashes thrown out here in the lake." That's what he was saying to us. He says, "I just love it out here."

Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.

Fishing is of central importance to Anishinaabeg identity and culture. Prior to European contact, fishing was an essential aspect of Anishinaabeg sustenance, adapting over time to community needs within the changing environmental, economic, and political climate (Bolton, 2012). Fishing practices often began in early childhood, with children being delegated limited duties to assist their fishing families. Through observation and participation in fishing activities, knowledge about *giigoonyag* (fish) species locations, seasonal *giigoonyag* (fish) movements, and *asab* (net) setting and pulling was shared and gained (Bolton, 2012) In addition, fishing was an important way to share knowledge of the water and land and provided the opportunity to deepen one's spiritual connection to Creation. This spiritual connection is essential to the wellbeing, strength, and affirmation of the identity of the Anishinaabeg. (Bolton, 2012). An Elder from Shoal Lake 40 described this important relationship:

…I was here to learn all these stuffs. I was happy to learn all this whole lake, this whole area. To fish, to hunt, and everything, to supply myself. Everything, that's what I lived off. Fish, hunting, deer meat, all that stuff. I know the whole area, the whole lake. I know where the deepest parts are on every inch of this lake, on this lake here.

Elder, AAK Individual Interview, June 11, 2019.

By spending time on the water, individuals connect with the lake and pay homage to the spirits present at sacred sites. An Elder from Niisaachewan spoke about this connection and the role of the Anishinaabeg as "keepers of the river". He described the importance of putting out tobacco at sacred sites:

They've been doing that for centuries... the warriors... [that] used to go by there, they used to leave offerings for safe travels to go down river and upriver so that the spirits would look after them as they… Because the river in those days it was pretty hectic at times and stuff like that and they traveled by night so, you know that would help them through going either way, traveling either way. So that was one of the most important areas we left tobacco and things like that. And that was like a church for our reserve because this is our piece of, what [do] you call, where were designated to stay and stuff like that. Where we made our homes. And going back to Ride out Bay, they got legends there about... [a] bobcat... walking on the river.

Elder, Niisaachewan, AAK Group Interview, August 15, 2019.

Recreational fishing plays an important role in sustaining and strengthening family and community connections. Of the 11 times fishing for "Recreation" was mentioned in discussions with community members, four times was in the context of "Family Ties". Traditional fishing knowledge is shared by

exposing younger generations to cultural and recreational practices, thereby strengthening intergenerational relationships (Bolton, 2012). In talking to community members, the importance of family was noted to be a central theme in recalling past fishing activities. An Elder from Washagamis Bay described fishing from a canoe with his grandparents (AAK Individual Interview, July 23, 2019). A community member from Shoal Lake 40 also shared— "[my son and I] go fishing once in a while…" (AAK Individual Interview, June 12, 2019). An Elder from Washagamis Bay also shared memories of fishing at Big Poplar with his mother (AAK Individual Interview, August 22, 2019).

Winter ice derbies and summer fishing competitions held by communities serve as a means of strengthening broader social structures and increasing a personal sense of belonging (Bolton, 2012). An Elder from Wauzhushk Onigum described:

> *… [there are] these big ice fish derbies through the winter. There's three of them. That started about 30 years ago. Win prizes, people come and gather and share with people their good spot fishing.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, August 14, 2019.*

Recreational fishing plays an important role in Anishinaabe culture through ensuring mental and physical wellbeing, encouraging the intergenerational sharing of traditional knowledge, strengthening family relationships across generations, and reinforcing social cohesion.

5.7.5.2 Fishing for Sustenance

Fishing for sustenance is a widely practiced resource harvesting activity that has taken place for thousands of years (Bishop, 2008). Fishing for sustenance occurs year-round and plays a vital role in fulfilling nutritional needs for families and the broader community, and in sharing cultural and spiritual teachings (Bolton, 2012; Coastal Learning Communities Network, 2008).

In analysing the interviews, a co-occurrence model was created that shows intersections of fishing for "Sustenance" with other components. This model is illustrated in Figure 59. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting fishing for "Sustenance" and any given component shows the number of times that fishing for "Sustenance" was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 59 shows that in total fishing for "Sustenance" was brought up 25 times, and "Diet" was brought up 73 times. Of the 73 times the "Diet" was brought up, eight of those times it was in the context of fishing for "Sustenance".

Figure 59. Fishing for "Sustenance" co-occurrence with other components.

Fisheries that operate for sustenance purposes only constitute a significant, locally important sector of approximately one-tenth the size of the inland commercial fisheries of Canada (Berkes, 1990). Fisheries that operate for sustenance stand in contrast with commercial fisheries, though this distinction is not always easily made, as most Indigenous fisheries are not monolithic and at some point, have had both components of commercial fishing and fishing for sustenance (Coastal Learning Communities Network, 2008; Islam & Berkes, 2016). Fisheries that are purely for sustenance refer to "local, non-commercial fisheries, oriented not primarily for recreation but for the procurement of fish for consumption of the fishers, their families and community" (Islam & Berkes, 2016). In contrast, commercial fishing is the activity of harvesting aquatic resources for commercial profit (Borgstrom, et al., 2019). Fisheries used for sustenance and fisheries used commercial purposes may depend on the same resource base.

The introduction of Canadian fisheries policies in the final half of the 20th century focused on economic efficiency and used privatization of access as a means of achieving this goal (Coastal Learning Communities Network, 2008). Under this commercialized value system, fishing for sustenance and its

role in local and regional economies are often underestimated, when in fact, both fisheries contribute to food security either directly or indirectly (Islam & Berkes, 2016). Of the 25 times fishing for "Sustenance" was mentioned in discussions with community members, three times it was in the context of "Livelihood" and eight times were in the context of "Diet". An Elder from Shoal Lake 40 aptly described the vital role of fishing for sustenance in Anishinaabe livelihood: "That's survival for us, to get to live off the land. That's survival" (AAK Individual Interview, May 22, 2019).

This restrictive and discretionary approach to fishing privileges limited access for Indigenous people, while often leaving fisheries open to commercial and sport fishing (Durette, 2007). *R. v. Sparrow*, [1990] 1 SCR 1075, also known as the "Sparrow Decision" of the Supreme Court of Canada guaranteed Indigenous Nations' fisheries used for sustenance by law (Coastal Learning Communities Network, 2008). In practice, the legal definition is very narrow, providing a negligible contribution to Anishinaabe livelihood. Of the 25 times fishing for "Sustenance" was mentioned in discussions with community members, six times it was in the context of "Loss of Tradition". An Elder from Wauzhushk Onigum described the community shift:

> *…So, even for sustenance, we weren't allowed to fish for sustenance. Okay. It was against the law. And so, that's why our people today on sustenance... So, what happens is that we used to be hunters and gatherers... So, now what began to happen at the…now we got these people with money, and they want to make [money]…commercialize the fish, commercialize the timber, commercialize the fur trapping. So, all those fur trapping areas were starting to be taken over by the needy people. So now, where do you go? What do you do? Can't get a job in town because you're not allowed. As a matter of fact, you need a permit, the Indians, to get off-reserve... So, now, anywhere you go, you're caught against the law. Discriminatory laws, I suppose... No prior submission process there, so they want [you] to give... up your land... We had a treaty. They got to hunt and gather whatever they want. That's what the commissioner said. "You go hunt and trap whatever you want."*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, August 14, 2019.*

In Ontario, Indigenous community members are presently permitted to fish without a licence when fishing within traditional or treaty area, or taking fish for food, social or ceremonial purposes (Government of Ontario, 2014).

The closure of the Shoal Lake *Ogaawag* (walleye) fisheries of 1983 greatly impacted commercial fishing for the Anishinaabeg (Bolton, 2012). Of the 25 times fishing for "Sustenance" was mentioned in discussions with community members, six times it was in the context of "Walleye". Many Anishinaabeg fishers continue to fish for the sustenance of themselves and their family. Fisherman that continued fishing for sustenance suggested that walleye was being harvested at similar rates as prior to the fishery closure and did not perceive drastic population declines (Bolton, 2012). A community member from Shoal Lake 40 recalled this:

> *They were just told [that the fishery was closed]. They just said that the area was over-fished, but I know at that time that it wasn't over-fished, because the families would go out with rods and they were still catching them. But they did shut it down and it hasn't been open since then.*
>
> *Community member, Shoal Lake 40., AAK Individual Interview, May 21, 2019.*

Fisheries that operate for sustenance purposes play an important role in Anishinaabe communities. Not only do they provide a means of obtaining a livelihood but also play a vital role in the transmission of cultural and spiritual teachings. An Elder from Washagamis Bay described the Anishinaabe relationship with fishing: "we usually fish for ourselves […] [with] fishing nets" (AAK Individual Interview, August 21, 2019). The act of sharing *giigoonyag* (fish) has also long been an important aspect of Anishinaabe culture (Bolton, 2012). Traditional feasts held by family groups or the larger community keep ceremonial traditions alive and teach younger generations about harvesting and preparing traditional foods. It was once common for community members to share freshly caught *giigoonyag* (fish) with family members, Elders, or other community members (Bolton, 2012). This Elder from Niisaachewan recalled the process:

> *…they would teach us how to fish, stuff like that and even cut the fish. And how even inside of the fish how we could utilize all the stuff, and not throw so [much] stuff away like they do now. So, we make use of everything that they killed for food and they would trade and barter with that fileted fish to the locals in the town. I used to walk around with my dad in town to sell the filet to families up in the hills there and in return we would get bread or food sometimes or a little bit of money so we can go to the store and get stuff.*
>
> *Elder, Niisaachewan, AAK Group Interview, August 15, 2019.*

Anishinaabe fishing for sustenance requires intimate knowledge of the land and waters and is an important aspect of stewardship (Thoms, 2004). Fishing method and tools used are largely dependent on season. A large supply of *giigoonyag* (fish) was traditionally amassed during the late autumn months in preparation for winter months, while summer fishing occurred all season (Thoms, 2004). An Elder from Niisaachewan shared how she prepared for the colder months: "…lots of sturgeons, and stock up before winter […] You put that away for the winter, so it lasts all winter" (AAK Individual Interview, September 18, 2019).

A study undertaken on Anishinaabe fishing for sustenance on Shoal Lake identified *ogaawag* (walleye) as the preferred species for summer consumption, followed by *adikamegwag* (whitefish), *ginoozheg* (northern pike) and *ashiganag* (largemouth bass) or *noosa'owesiwag* (smallmouth bass) (Bolton, 2012). A popular springtime species is *namebinag* (white sucker) (Bolton, 2012). Historically, fishing for sustenance has involved various tools. These have included the *anit* (spear), seine net, and fish trap, and have presently expanded to include the gillnet and *wewebanaabaanan* (fishing rod) (Bolton, 2012;

Dibaajimowin, 2018) Throughout history, Anishinaabe women have actively participated in fishing by using a *asab* (net) (Buffalohead, 1983). An Elder from Niisaachewan described this:

> *[We did lots of fishing with] nets... In the evenings, they would use rods. Not for the … I still [have] a net, so I want to set it up one of these days. I want to go where I usually catch walleyes.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

5.7.5.3 Commercial Fishing

With 24% of Canada's freshwater, the province of Ontario is presently host to the largest global freshwater commercial fisheries (Government of Ontario, 2014). Commercial fishing accounts for over 600 active licenses and contributes more than $230 million annually to the provincial economy (Government of Ontario, 2014). At present, commercial Indigenous fisheries are found in Ontario on the Great Lakes, Lake Nipissing, Lake Nipigon, and lakes of northwestern Ontario (Government of Ontario, 2019). The Lake of the Woods and Shoal Lake both also have long histories of commercial fishing (Bolton, 2012; Dobie, 1957).

In analysing the interviews, a co-occurrence model was created that shows intersections of "Commercial" fishing with other components. This model is illustrated in Figure 60. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Commercial" fishing and any given component shows the number of times that "Commercial" fishing was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 60 shows that in total "Commercial" fishing was brought up 66 times, and "Livelihood" was brought up 98 times. Of the 98 times "Livelihood" was brought up, 19 of those times it was in the context of "Commercial" fishing.

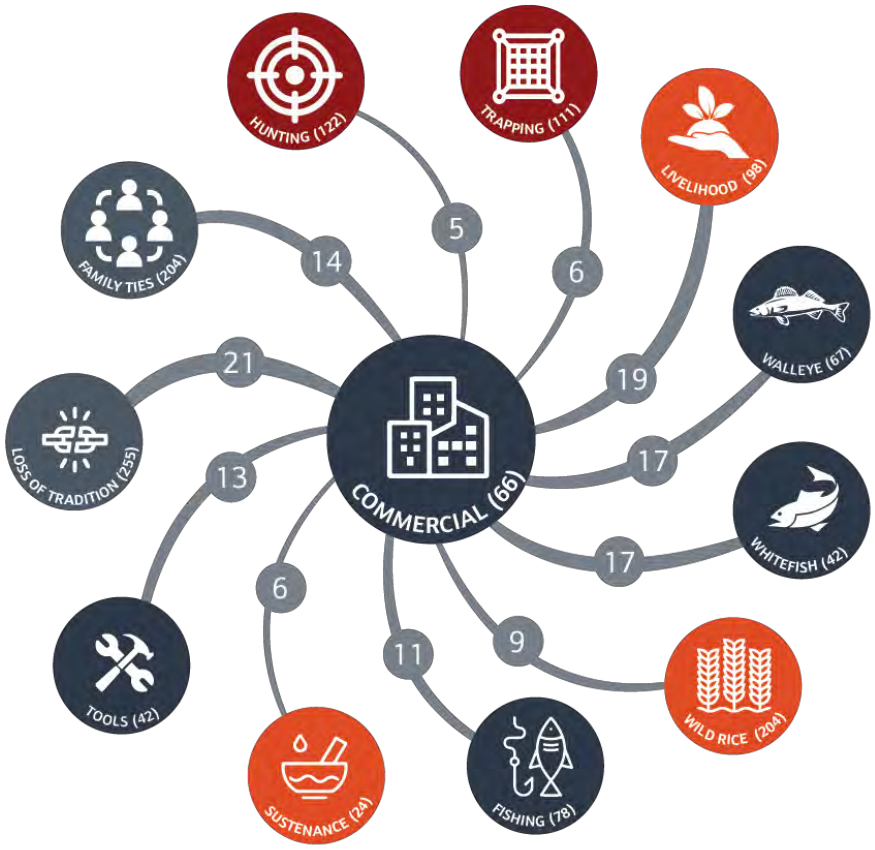


Figure 60. "Commercial" fishing co-occurrence with other components.

The Anishinaabe shift to fishing for commercial purposes occurred as a natural extension of fishing for sustenance. Equipped with the knowledge to survive off the land through fishing, early commercial Anishinaabe fisheries were able to sell a surplus of fish and thereby gain financial independence—of the 66 times "Commercial" fishing was mentioned in discussions with community members, 19 of those times occurred in the context of "Livelihood" (Bolton, 2012). Commercial fishing was also accompanied by a strong sense of community purpose and wellbeing through the provision of a variety of social and cultural benefits, promoting "a healthy lifestyle that encouraged a strong work ethic and respect for older generations that were knowledgeable about the land and the water" (Bolton, 2012). Commercial fishing fostered a sense of family and community belonging—of the 66 times "Commercial" fishing was mentioned in discussions with community members, 14 times it was in the context of "Family Ties". Many community members remember fishing commercially with family and community members—for instance, this Elder from Niisaachewan fondly recalled:

> *[Fort Island is] where we used to stay long time ago between seasons like blueberry season and rice picker [season]. We came from blueberry picking, and then that was done and then we go into rice picking again and they would scatter out to the rice fields. It was just like a meeting place, then we move on from there. And we commercial*

> *fish around that area, and we stayed on that island because there was a lot of young people around and that was almost like a babysitting area they'd have a few adults around and they would keep an eye on the kids so they don't hurt themselves and stuff like that. There's a big open area there, where everything took place there. They went to town from there, they would filet their fish and sell them to people that were…that their husbands were working in the railroad.*
>
> *Elder, Niisaachewan, AAK Group Interview, August 15, 2019.*

Another Elder from Niisaachewan, had similar warm memories of fishing with her grandfather around Patty Lake:

> *My grandfather…we would move together. We tell each other where we're going to be fishing, commercial fishing, blueberries and stuff like that [around Patty Lake]... we did [commercial fishing] there. Yeah. [People don't fish there]... anymore... Not this place. Yeah, Patty Lake that was a good spot. Yeah, Poplar Portage.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

The Elder went on to talk about fishing with her father around Gun Lake— "My dad made a little shack there. That's where we did a lot of commercial fishing, a lot of trapping there too" (AAK Individual Interview, September 18, 2019). "Commercial" fishing was brought up six times in the context of "Trapping"—indicating that the two were often undertaken in conjunction with each other. An Elder from Niisaachewan had similar memories of traditional practices undertaken as a community:

> *…So, we do our commercial fishing and stuff. As a community we get together, and we help each other out or teach the younger ones. We usually teach somebody else that's willing to come and teach them how to hunt and fish and cut up deer or fish. So, they can carry on the traditional life.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

The implementation of fishery policies by Ontario's Ministry of Natural Resources and Forestry ("MNRF") in the 1970s jeopardized the economic inputs from the commercial fishery, which supported local indigenous economies (Bolton, 2012). A commercial catch quota was introduced on Shoal Lake for *ogaawag* (walleye) in 1979 (Bolton, 2012). Community members were drastically affected by limitations on fishing which increased competition amongst local fisheries and made sustaining a livelihood increasingly difficult (Bolton, 2012). The indefinite *ogaawag* (walleye) closure of 1983 came as a great shock and was a cause of great distress to communities relying on the commercial fishery for supporting the local economy (Bolton, 2012). An Elder from Shoal Lake 40 recalled the day the community found out the fishery was being closed: "…They just showed up one day […] [and said] No more fishing. That's it" (AAK Individual Interview, May 22, 2019).

An Elder from Washagamis Bay shared the frustration experienced by Indigenous commercial fishers:

> *You know what happened? We were allowed to commercial fish; we were allowed to set nets. What happened is we were doing so good, until they commercialized it [with] all the licensing. Permits, who gets a licence. So, we relegated to sustenance then. That's what happened.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.*

Another Elder joined the discussion, saying:

> *The last change anyway to commercial fish? The same thing happened in [Manito Rapids], the river system. Because all the steamboats just go through there, and what happens is that they have farmers growing potatoes. And so, the farmers used to sell the potatoes to people who were going south. So, the people in that area caught on, so they started doing potatoes, I guess better potatoes. So, these travelers bought all the potatoes from native people. Okay, so guess what happens? A new law came in that you're not supposed to buy from a native guy. See, that's what happened. Same thing here with these fish stations.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.*

5.7.5.3.1 Shoal Lake

The Ministry of Natural Resources and Forestry ("MNRF") bought out the non-Indigenous commercial fishing licenses on Shoal Lake to provide some financial compensation for the fisheries closure. No monetary compensation was provided to Shoal Lake Anishinaabe communities on behalf of the MNRF (Bolton, 2012). Indian and Northern Affairs Canada ("INAC") eventually purchased two non-Indigenous licenses on behalf of Shoal Lake 40 and Iskatewizaagegan 39, who shared a joint licence at the time of the closure. This did little to alleviate hardships related to the fisheries closure, as non-Indigenous licenses decreased the amount of *adikamegwag* (lake whitefish) and *ginoozheg* (northern pike) fishers were able to commercially harvest and increased inter-community competition (Bolton, 2012). An Elder of Shoal Lake 40 discussed the current state of Indigenous commercial fisheries on Shoal Lake:

> *There's only two commercial fishermen, one [from Iskatewizaagegan 39], and one my brother, Ronnie. He does commercial fishing in the summertime... they sell the fish, especially white fish.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.*

A community member from Shoal Lake 40 echoed these sentiments:

> *Not too many people [commercial fish], maybe a few families. It's always the same people that go, if you want a big fish fry for your family, it's all the same people you go and ask. So, there's not too many people.*
>
> *Community member, Shoal Lake 40, AAK Group Interview, June 12, 2019.*

5.7.5.3.2 The Lake of the Woods

The introduction of the Lake of the Woods Control Board ("LWCB") in 1919 impacted the commercial fisheries and undermined the intimate Anishinaabe relationship to the land and waters (LWCB, 2020). This Elder from Washagamis Bay described the impacts to the ecosystem:

> *The city... [of] Kenora... is with the Water Control Board. Lake of the Woods Water Control Board controls the level of that water. Every spring, the water flow of the dam, they slow it down and bring the water up in the spring. All because of the tourism, because tourism bringing them millions of dollars into the economy of Kenora. Like fishing tournaments, fish cottagers, tourists, and all that goes with it. So, in the fall, now as we're speaking, they're bringing it down now, they bring the water down now, because the tourists [are] starting to go away. So, what happens in the spring again, the same thing happens again. As a result, at the same time when they leave the water up high in the spring, they do a lot of damage to [the] ecosystem. That... difference between species of fish, turned upside down and die from pollution, the water pollution. It's what creates when you bring that water up, disturb the whole ecosystem of fish, they move different…When I'm fishing, when I do commercial fishing, or when I set the nets up, sometimes the fish are not there were I used to catch them before. They move to different spots, so you got to keep locating a spot where you can catch them. It just does a lot of damage of Kenora, and also Lake of the Woods Water Control Board. Their defense is, they use data that's outdated and not compatible to today's water control surveys... we should be compensated.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

Another Elder from Washagamis Bay also noticed habitat shifts over time:

> *[We usually catch] walleye or whitefish. The strange thing though is, this guy used to fish over here a long time ago, 20, 30 years ago. I never used to catch any walleye over here... but... we catch them now. I know, I don't understand that. So, I don't know what happened.*
>
> *Elder, Washagamis Bay. AAK Individual Interview, August 22, 2019.*

5.7.5.3.3 Commercial Fishing and the Anishinaabeg

Of the 66 times "Commercial" fishing was mentioned in discussions with community members, 21 times it was in the context of "Loss of Tradition". An Elder from Shoal Lake 40 shared insight into the intimate relationship between the Anishinaabe commercial fishermen and the lakes on which they fished:

> *I think people that know the fishery and the patterns of each specific species in the lake, and where they go, and seasonally, and how to set... for specific species and not affect catching other ones that they don't want to catch. And it was well proven that our local*

fishermen with a vast knowledge of the lake and the fish and every species.... I've always said, no matter how knowledgeable you are about the lake... the so-called fish experts I think they got educated from people that live and had to live off the land through [fishing] and hunting... It's sad when you can't fish and catch walleye for, before the turn of the 70s. It's sad you can't catch pickerel to make some money off of it, because that's how we used to sustain ourselves before. We were self-sustaining before... we're [not] over-fishing, we're not wiping out the walleye species as the experts at the MNR say. And I believe that to this day. Actually, in fact, it may, I don't know, I used to hear, it may actually affect it in the wrong way, by having it closed all these years, but that's from listening to the fisherman that live off the land, and water and fishery and hunting.

Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.

He also discussed the impact of the fisheries closure on the intergenerational trade he had been learning from his father:

So basically fishing…well, I was being trained to make a living on it and my dad was kind of educating me on it and just before it closed, he was starting to get me to go and do all the gill net fishing and lift the nets and clean the nets and cut the fish and everything else and then out of nowhere the moratorium came in, kicked in right then. They stopped the fishing...So that's the impact it gave me personally and basically just…I don't know, fishing everywhere, not everywhere in the lake, but my dad fished the whole lake.

Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.

He went on to discuss how he was never given the chance to learn the art of fishing with gill nets because of the fishery closure:

But I never had a chance to learn the art and skill of whitefish fishing or harvesting with gill nets... Now, young people being trained, and some particular families, but me, my dad always fished the big lake on his own. Probably with my older siblings back in the day, because he's taught my older brothers how to harvest wild rice, which usually meant further out of the community on to the big lake, the whole lake. But I never had the opportunity because the fishery was taken away... I never had that chance, but I was already on my way to learning gill net fishing, commercial fishing, and starting to clean fish and harvest and take it to whoever bought fish, wanted to buy fish. It was good money, good income. It was…people could sustain themselves through the fishery.

Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.

Not only did the commercial *ogaawag* (walleye) fishery have impacts on the Anishinaabe relationship to the land, but also affected community health and wellbeing. This Elder from Shoal Lake 40 said:

> *I used to fish just like my mom. She fished most of her life. She worked hard all her life and she didn't have diabetes like a lot of people because she was always on the move. Eating healthy. Then they took the fishing away most of the people that had been doing it for their whole lives went into a depression and my mom was one of them. Her livelihood was just taken away and you could see a decline in their health, their mental state once the commercial fishing was taken. Sad to see.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

An Elder from Shoal Lake 40 spoke out about how the fisheries closures signified the end of some community member's relationship with the lake:

> *[After the fishing stopped] a lot of people left, there was just nothing here for them, they were all just competing for the same little job, band office whatever and we're still doing it. This is all stuff that's kind of lost... I haven't gone on out on the lake for five or six years. I used to enjoy it. It's just something that we don't do anymore.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 22, 2019.*

Another Elder recalled leaving Shoal Lake 40 because there was no work:

> *People became poor because [fishing] was a livelihood for many people, so after that I didn't have a job, my dad didn't have a job. He started working at the band office, he was an education councillor. And me, I started working at the band office too, I started working much later as a secretary, then I went to Winnipeg. I had to move away because there was nothing here.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

Anishinaabe commercial fishing arose as a natural extension of fishing for sustenance practices on Shoal Lake and Lake of the Woods. Commercial fisheries unified communities through the provision of economic means and the intergenerational transmission of traditional fishing methods. The introduction and implementation of commercial catch quotas and subsequent fishery closures negatively impacted communities and families which were reliant on commercial fisheries as a means of obtaining a livelihood and transmitting cultural knowledge.

5.7.5.4 Fish Spawning

Spawning grounds are the locations at which *giigoonyag* (fish) produce their eggs (Levitan, 1998). Following spawning, young may remain in place or drift to new nursery grounds. Many species migrate to reach spawning grounds, necessitating the presence of *giigoonyag* (fish) ladders or bypass systems to allow navigation past water control structures (Office of Technological Assessment, 1995). The

identification and protection of spawning sites is important for conservation and recruitment of *giigoonyag* (fish) species (Bauer, Gräwe, Stepputtis, Zimmermann, & Hammer, 2014). This information can be used to assess recruitment, establish protected areas, and protect sensitive habitats. The spawning grounds of migratory *giigoonyag* (fish) species are believed to have generally fixed locations, and these locations are hotspots of productivity and therefore intuitive areas to protect (Bauer, Gräwe, Stepputtis, Zimmermann, & Hammer, 2014).

Spawning grounds are of cultural importance to the Anishinaabeg. In addition to being a vital source of food, *namewag* (lake sturgeon) and *adikamegwag* (white fish), *namebinag* (white sucker), and *ginoozheg* (northern pike) are both of spiritual and cultural significance, representing totemic Anishinaabe symbols (Johnston, 1976, p. 53). The importance of *giigoonyag* (fish) to the Anishinaabeg is discussed in further detail in Section 5.7.5.3.3.

Several spawning sites were identified by community members throughout the course of discussions. Spawning sites were identified for *ogaawag* (walleye), *namewag* (lake sturgeon), *ginoozheg* (northern pike), *adikamegwag* (whitefish), and *namebinag* (white suckers). The following alphabetized list outlines the locations identified as spawning grounds as well as the species identified.

Table 84. Table identifying spawning locations and species identified in each location.

Location	Species
Bag Bay	Walleye, northern pike
Big Dalles	Whitefish, walleye, lake sturgeon
Big Poplar Bay	Whitefish
Black Sturgeon Lake/Black Sturgeon Rapids	Whitefish, walleye, lake sturgeon
Blind River (Birch Lodge)	Whitefish, walleye
Caution Lake	Northern pike
Gundy Lake Road	White suckers
High Creek	White sucker, northern pike, walleye
Hilly Lake	Northern pike
Little Dalles	Whitefish, walleye, lake sturgeon
Little Poplar Bay	Whitefish
Norman Dam	Lake sturgeon, walleye
Patty Lake	Walleye, white suckers
Peter Creek	Walleye, northern pike
Sandy Lake	Walleye
Shoal Lake	White sucker, northern pike, walleye
Squall Lake	Northern pike
Watson Creek	Walleye, northern pike, White sucker

In analysing the interviews, a co-occurrence model was created that shows intersections of “Spawning” sites with other components. This model is illustrated in Figure 61. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line

connecting “Spawning” sites and any given component shows the number of times that “Spawning” sites were brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 61 shows that in total “Spawning” sites were brought up 35 times, and “Walleye” was brought up 67 times. Of the 67 times the “Walleye” was brought up, 13 of those times it was in the context of “Spawning” sites.

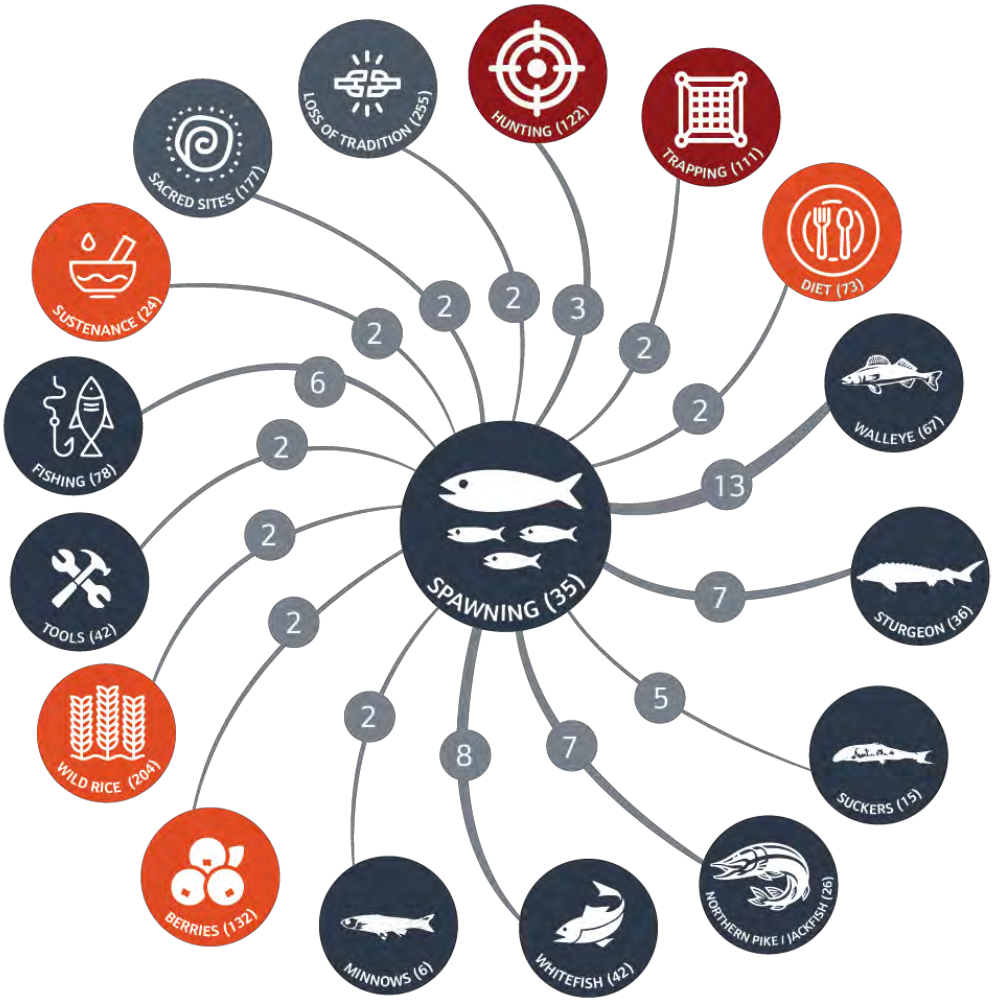


Figure 61. "Spawning" sites co-occurrence with other components.

High catch rates during predictable seasonal spawning time and locations may put species at risk of over-exploitation (Clarke, Bailey, & Wright, 2015). Another significant deterrent to maintaining healthy populations is loss of spawning and nursery habitat and blocking of migratory spawning routes (Auer, 1996). The loss of spawning and nursery habitat can be partially attributed to changing physical environmental conditions as a result of climate change, as temperature is one of the most important determinants for the growth of fish in early life stages (Shoji, et al., 2011). Increases in the ambient temperature directly affect *giigoonyag* (fish) early life stages by altering growth rates. An Elder from Shoal Lake 40 discussed the ideal spawning environment:

> *Anywhere on the north shore where the water warms up quicker, you'll see lots of spawning areas there. They need a temperature around the 50s to start... Any colder than that, they kind of…well, you'll see.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, September 22-24, 2019.*

Healthy spawning grounds were also indicative of robust *manoomin* (wild rice) patches, as an Elder from Wauzhushk Onigum recalled: "So, wherever it is they used to pick rice, there should be a place where fish used to spawn, too" (AAK Group Interview, April 8, 2019).

Giigoonyag (fish) species that can adapt to changes in spawning environments may do so because they have flexibility in what may be considered the spawning season and shifting of migration corridors. In other cases, *giigoonyag* (fish) species may be able to adapt to areas with a temperature similar to the optimal temperature (Shoji, et al., 2011). In the northern hemisphere, this has been reported to occur, with some migration corridors and spawning areas shifting northward with increasing ambient temperature (Shoji, et al., 2011). In the Fisheries Management Zone ("FMZ") 5 (Map **28**), this is of particular concern to *namewag* (lake sturgeon) species, which are presently considered "threatened" by the Species at Risk in Ontario ("SARO") list according to the *Endangered Species Act, 2007* (Government of Ontario, 2007). Dams directly impact *namewag* (lake sturgeon) by impeding movement at crucial times of the year, particularly during spawning. Many historic spawning tributaries are inaccessible to species due to dam and barrier construction (COSEWIC, 2017).

Anthropogenic changes to river and lake systems have resulted in deleterious effects on *giigoonyag* (fish) spawning (Hu, Hua, Zhou, Wu, & Wu, 2015). Large scale hydraulic dams, for example, are a major source of mortality for many *giigoonyag* (fish) species and may be attributed to historic declines and low population abundance by impeding *giigoonyag* (fish) passage, reducing water quality, degrading the productive capacity of habitats, and altering *giigoonyag* (fish) communities (Nieland, Sheehan, & Saunders, 2015).

Several water control structures exist in FMZ-4 and FMZ-5 (**Map 28**), including the Winnipeg River outlet control dam, the Rollerway—Norman dam, Kenora generating station and dam, Rainy River generating station and dam, Caribou Falls generating station and dam, and Whitedog Falls generating station and dam. Water management goals often include managing for hydroelectricity and tourism interest as opposed to protection of fisheries (Szach, 2013). An Elder from Niisaachewan discussed the impact of water level regulation on spawning grounds: "Because it's the same thing with the fish. Where they used to spawn, they're not going longer upstream, because the spawning grounds are all washed up too. So, they're not moving in the water or whatever that was there" (AAK Individual Interview, September 18, 2019).

Robust and accessible spawning grounds are important in ensuring *giigoonyag* (fish) spawning and recruitment. Spawning grounds are therefore important to the Anishinaabeg by permitting the survival and flourishing of *giigoonyag* (fish) species of traditional importance.

5.7.5.5 Fishing Tools

A variety of tools were used to fish, with each tool serving its own purpose. For commercial fishing, *bagida'wewin* (fishing with a net) was common, with gill nets being the *asab* (net) of choice. *Bagida'wewin* (fishing with a net) was also common for catching spawning *giigoonyag* (fish) during the spawning season, although a much smaller *asab* (net) called *gwaaba'waagan* (scoop net) was used. Fishing for recreation often came in the form of using a *wewebanaabaanan* (rod with a hook and line). Fishing for sustenance often used a variety of tools. This includes *asab* (net) and *wewebanaabaanan* (fishing rod). The tool being used was dependant upon which species was being sought. Traditionally, fishing with an *anit* (spear) was used to catch *namewag* (sturgeon) and *adikamegwag* (whitefish).

In analysing the interviews, a co-occurrence model was created, that shows intersections of fishing "Tools" with other components. This model is illustrated in Figure 62. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting fishing "Tools" and any given component shows the number of times that fishing "Tools" were brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 62 shows that in total fishing "Tools" were brought up 42 times, and "Commercial" was brought up 66 times. Of the 42 times that fishing "Tools" were brought up, 13 of those times it was in the context of commercial fishing.

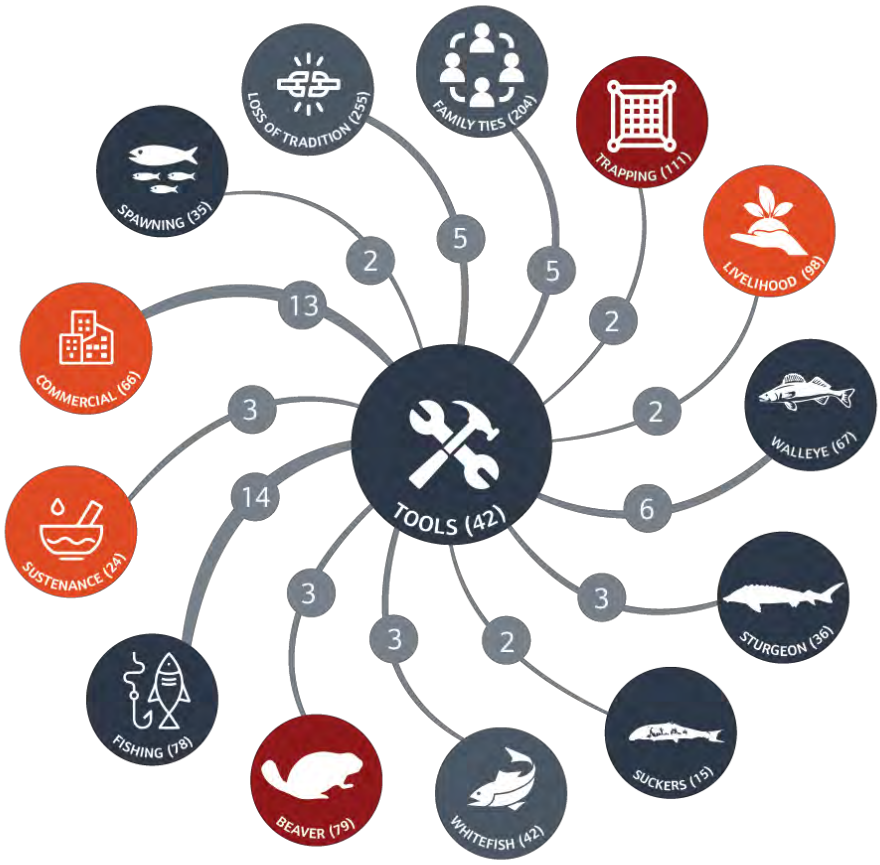


Figure 62. Fishing "Tools" co-occurrence with other components.

5.7.5.5.1 *Asabiig* (Nets)

Bagida'wewin (fishing with a net) was one of the most prominent forms of fishing for the Anishinaabeg. "Tools" was most frequently mentioned with "Fishing" (14 times) and "Commercial" fishing (13 times), as *asabiig* (nets) were the primary tool used for commercial fishing. *Bagida'wewin* (fishing with a net) allowed for catching a variety of *giigoonyag* (fish) at one time, limiting the amount of time needed for the activity.

5.7.5.5.1.1 Gill nets

The fishing method used by commercial fishermen is called "gill netting". Gill netting involves a large *asab* (net) attached to a line that hangs vertically in the water. The line is held up by floaters, which also indicate the location of the *asab* (net). Gill nets are weighted at the bottom to keep the *asabiig* (nets) in place. The *asabiig* (nets) are set up in a straight line, covering a larger distance. An Elder from Shoal Lake 40 recalled his family setting *asabiig* (nets) that were 50 ft in length (AAK Group Interview, 2019). Gill nets are usually made from a mesh or twine, with the spacing dependant on what *giigoonh* (fish) is

being caught. Gill nets were given their name because once a *giigoonh* (fish) swims through the openings in the *asab* (net), their gills become stuck, leaving the *giigoonh* (fish) in the *asab* (net) until a fisherman pulls them out.

Setting a gill net on open water requires the use of a boat unless gill netting underneath the ice during winter. A community member from Shoal Lake 40 shared that gill netting was a way of life for many people, and that her grandfather owned three boats and was devoted to the practice (AAK Individual Interview, May 21, 2019). An Elder from Shoal Lake 40 shared that when he was a teenager, he used a canoe for *bagida'wewin* (net fishing) *ogaawag* (walleye) (AAK Individual Interview, May 24, 2019).

Gill nets could be purchased pre-made or were made by hand. An Elder from Wauzhushk Onigum shared that they used to make gill nets by hand with twine for when they would go commercial fishing (AAK Group Interview, April 8, 2019). An Elder from Wauzhushk Onigum shared that her grandmother used to make her own *asabiig* (nets) as well, "before the white man came" (AAK Individual Interview, June 18, 2019). An Elder from Washagamis Bay shared that his family would use oil cans as floats on their gill nets, using whatever they had to get the job done (AAK Group Interview, July 24, 2019).

Setting gill nets required waters deep enough so that the *asabiig* (nets) would not touch the bottom of the lake. An Elder from Shoal Lake 40 shared that these *asabiig* (nets) could be set up everywhere (AAK Individual Interview, May 23, 2019). A community member from Shoal Lake 40 shared that when he is fishing by himself, he doesn't go out too far, as that is for the guys who fish with *asabiig* (nets) (AAK Individual Interview, May 22, 2019).

Often, families would travel together to set up *asabiig* (nets), making the trip span multiple days. Fishing "Tools" were brought up in the context of "Family Ties" five times, as family members would often work together to commercially fish. An Elder from Shoal Lake 40 shared this story about setting *asabiig* (nets) with her father and brother on Shoal Lake:

> *He would use nets all along our lake and towards the bigger lake. Me and my brother worked for him as well. He had boats and nets and my brother fished with four nets and I started off with four nets, but then I took it on full time I had like 16 nets that took me right from early morning till almost dark to get all those fish.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

An Elder from Wauzhushk Onigum shared that she used to set *asabiig* (nets) with her sisters in the area of Mackenzie Portage. An Elder from Shoal Lake 40 shared that she used to check the *asabiig* (nets) and clean the *giigoonyag* (fish) with her father:

> *We'd get up at four o'clock in the morning to go and do the nets. I'd be cutting them, cleaning them, boxing them with the ice. Remember that old icehouse we used to have? I was a very small girl, but I used to be able to lift the big box with fish in it.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.*

An Elder from Shoal Lake 40 shared that *bagida'wewin* (fishing with a net) was something that she enjoyed doing with her husband:

> *I never really used to fish except by net, but when my husband, when he started going out and he started teaching me how to do the fishing rods and stuff like that. Like I knew the net and all that stuff, and I began to really love fishing, and we'd spend hours up there just fishing.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

She also shared a story from when she was a child about her father's gill net and how community members would rely on their catch:

> *People used to come out from the main reserve to our place. They'd come for fish... because a lot of people knew that my dad had a net and when people run out of food, they'd come there and we would give whatever we happened to have, or I remember one day my dad said, "Go check the net." And we had to go across, me and my brother went across and we looked at that net and whatever we had we tried to help out as much as we can, yeah. Because in them days it was hard, when you ran out you ran out.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

Bagida'wewin (fishing with a net) was also a teaching tool for families. A community member from Shoal Lake 40 shared that her grandfather taught her everything she knew about where to set *asabiig* (nets):

> *He taught me a lot. He was on his death bed for about a month, but I got to spend nights with him, I did the night shift. He would get out his maps and tell me where you set nets this time of the year, your nets here, here, and here on the lake. He would say where to lay them in the springtime, the summertime, and the fall. In the wintertime you would set them there.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, June 11, 2019.*

After using the gill nets for fishing, they had to be cleaned and dried. An Elder from Shoal Lake 40 shared that her family used to use a large wooden structure to dry their *asabiig* (nets). She said:

> *They used to have this big thing outside and where they hang up the nets. Remember those? Yeah, they used to, when they bring the nets in to clean or dry [them], they hang them up on that thing. Clean them and they take them out and go out again.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 22, 2019.*

An Elder from Shoal Lake 40 shared a similar story about taking care of his uncle's *asabiig* (nets):

> *I did a lot of cleaning on a lot of nets when I was a little kid. That was quite a task… I had to clean probably four nets a day. It's a lot of work, you have to untangle it and if there's any rips you have to make patches. It was neat how they made fish nets, because I never knew how they worked on it and made it, but he was showing me the patterns.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

Gill nets were not used specifically for commercial fishing and could also be used for a family's fishing for their sustenance. In both scenarios, *bagida'wewin* (fishing with a net) supported the livelihoods of the Anishinaabe. "Livelihood" was brought up in the context of "Tools" twice. An Elder from Shoal Lake 40 shared that *bagida'wewin* (fishing with a net) played a very important role in supporting their livelihood. She shared that you'd "set a net and in a few days, you'd have your money to go buy furniture" (AAK Individual Interview, May 24, 2019).

Bagida'wewin (fishing with a net) was not just done for commercial fishing, but also for sustenance. An Elder from Washagamis Bay shared that his family would use *asabiig* (nets) to fish for their food (AAK Individual Interview, August 21, 2019). This Elder from Shoal Lake 40shared that by the canal on Shoal Lake, her parents would go *bagida'wewin* (fishing with a net) commercially and for themselves:

> *They would camp out there and set up a tent, and then early in the morning set their net and get the walleye.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

During the winter months, setting a gill net required additional equipment. To *ziibaaskobijige* (set a gill net underneath the ice), a *bagonezigwa'igan* (auger) was first used to drill two holes in the ice. To guide the fishing line underneath the ice, an ice jigger was used. An ice jigger is a board that guides a line between two holes in the ice. Once the line is in place underneath the ice, the gill net could be set in place. An Elder from Shoal Lake 40 shared that once the *asabiig* (nets) were set under the ice, it was easy to catch the frozen *giigoonyag* (fish) (AAK Group Interview, May 23, 2019). An Elder from Washagamis Bay shared a similar story of using a jigger to set his gill nets and that his *asabiig* (nets) and jiggers were frequently stolen by the Ministry of Natural Resources in Ontario (AAK Group Interview, August 22, 2019).

Gill netting was once a very common practice for communities involved in the commercial fishing industry. They were a key piece in the Anishinaabe livelihood and culture, connecting families and communities. Since the closure of the commercial fishing industry, gill netting has become a less common practice, with communities moving towards hook and line fishing, or abandoning the practice altogether.

5.7.5.5.1.2 G*waaba'waagan* (Scoop Net)

G*waaba'waagan* (scoop net) is an *asab* (net) used to scoop fish out of the water. Also called a hand net, it is used to either lift *giigoonyag* (fish) out of the water after being caught with a line, or it is used to

directly catch and pull *giigoonyag* (fish) out of the water. The g*waaba'waagan* (scoop net) is smaller than a gill net and is often used in shallower waters. Fishing with a *gwaaba'waagan* (scoop net) was common when catching spawning *giigoonyag* (fish), as they tended to group together. "Tools" were brought up in the context of "Spawning" twice. A less common form of *bagida'wewin* (fishing with a net), the *gwaaba'waagan* (scoop net) still supports the cultural living of the Anishinaabe who continue to fish for sustenance.

Fishing with a *gwaaba'waagan* (scoop net) did not always require the use of a boat and could be done on the sides of roads in culverts. *Namebinag* (suckers) were a sought-after species during the spawning season. "Suckers" were brought up in the context of "Tools" twice, as nets were a primary tool for catching them. An Elder from Shoal Lake 40 shared this story of her family fishing for spawning *namebinag* (suckers) from culverts:

> *There's another place, Gundy Lake Road, we also go there to collect suckers. They spawn and we scoop them up there. There's a highway right off there somewhere. Probably about 20 minutes off the road. My daughter goes there too now. There's a stream and a culvert and that's where we would scoop suckers with nets. Last time we had about 30 and we smoked them and kept a few for ourselves and then gave the Elders some because they love eating stuff like that.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

An Elder from Niisaachewan had a similar experience of fishing with a *gwaaba'waagan* (scoop net) during the spawning season at Black Sturgeon Rapids, part of his traditional territory (AAK Group Interview, August 14, 2019). He shared that he would catch many *adikamegwag* (whitefish) and *Ogaawag* (walleye) in this area with a *gwaaba'waagan* (scoop net), as the *giigoonyag* (fish) would cluster together as they were spawning (AAK Group Interview, August 14, 2019). An Elder from Niisaachewan shared that there would be lots of *giigoonyag* (fish) spawning at Sandy Lake in the spring and she would use a *gwaaba'waagan* (scoop net) to catch them:

> *We catch fish at the little creeks [when] they're spawning. You use the nets to grab them. Used to catch lots of them… But, that's the reason why we used to try to catch them when they're spawning in that creek… a whole bunch of them … you can feel them on your leg, traveling.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

An Elder from Shoal Lake 40 shared that she continues to fish with a *gwaaba'waagan* (scoop net) and has begun passing the practice onto her daughter:

> *Last year, the year before, the year before. Almost every year, but I didn't get to go this year. My daughter went though, with her friend… yeah, she's been there a lot already, almost every year.*

Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.

An Elder from Washagamis Bay shared a similar story of a child in the community:

> *He's just a small boy but he goes down to the lake with a net and he comes back with a crayfish. The water was so cold and he's walking around getting crayfish, the little guy. He's hunting already!*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 24, 2019.*

An Elder from Shoal Lake 40 shared that this activity was popular among other community members as well, with lots of different people *gwaaba'waagan* (scoop net) fishing together (AAK Individual Interview, May 24, 2019). Fishing with a *gwaaba'waagan* (scoop net) still remains a practice today, with its history rooted in sustenance practices and culture.

5.7.5.5.2 *Wewebanaabii* (Rod Fishing)

Wewebanaabii (fishing with a rod) is another popular form of fishing. Also called hook and line fishing, *wewebanaabii* (fishing with a rod) is one of the oldest forms of fishing. *Wewebanaabii* (fishing with a rod) was less common in commercial fishing as it yields a smaller catch. *Wewebanaabii* (fishing with a rod) became more common after the closure of the commercial fisheries, with its popularity among recreational fishermen increasing.

When the commercial fisheries were closed by the Ministry of Natural Resources and Forestry ("MNRF"), many community members were ordered to remove their *asabiig* (nets) from the water. Community members were often told that they were only allowed to use *wewebanaabaanan* (rods). This Elder from Washagamis Bay shared a story which echoed this:

> *We'd fish in that bay, before we get to Keewatin. The ministry used to come from Kenora, chase us out of there. Yeah, because we put nets. "It's okay to use fishing rods," they said, "but not nets." So, I would sit here, "Now, if you want to take my nets," I told them, "go ahead," I told them, "there's 14 of them out there." We tied them together, small ones, there's 14 all together. Oh, they were quick. Like I said, all day, by the time they had big boats and they could get around faster. That next day when we came back, our nets and everything were gone.*
>
> *Elder, Washagamis Bay, AAK Group Interview, August 22, 2019.*

A community member from Shoal Lake 40 shared that the commercial fisheries were closed because of MNRF's reasoning of the lakes being over-fished (AAK Individual Interview, May 21, 2019). Some community members felt that this was untrue, as many were still catching while *wewebanaabii* (fishing with a rod)*:*

> *They just said that the area was over-fished, but I know at that time that it wasn't over-fished, because the families would go out with rods and they were still catching them.*

> *But they did shut it down and it hasn't been open since then. The last time before my grandpa passed, he was hoping he would see it open again, so I don't even know if they will open it again.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, May 21, 2019.*

As people began *wewebanaabii* (fishing with a rod) recreationally, it became an enjoyable pastime. An Elder from Washagamis Bay shared that today he goes *wewebanaabii* (fishing with a rod) for his family and recreationally. When speaking about *ogaawag* (walleye), he said, "it's fun catching those fish with a rod" (AAK Individual Interview, August 22, 2019). An Elder from Wauzhushk Onigum shared a similar story about *wewebanaabii* (fishing with a rod) on Lake of the Woods:

> *We caught two tubs of walleye… it wasn't very far from the reserve. There's a big point there, and there's an island on the other side there, and it's just around the bay…Whenever I had the chance, I would go out fishing. No nets.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

Areas for *wewebanaabii* (fishing with a rod) are more accessible than when using a gill net, as deep water is not required. A community member from Shoal Lake 40 shared that at Robinson's Point, where there used to be net fishing, and along the coastline of Shoal Lake offered good fishing spots (AAK Individual Interview, May 22, 2019). An Elder from Shoal Lake 40shared that the old bridge by the canal used to be a great spot for *wewebanaabii* (fishing with a rod):

> *You know where the canal is? A lot of people used to like going there, they fish rock fish. We used to go there too and that's when the old bridge was there, so it was easy just to hang over the bridge and put your rod [in]. It was a nice place for people to go, especially people who don't have boats, because a lot of people don't have boats anymore. That was a favourite place for a lot of people. Now that the big bridge is there, I haven't gone there since.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

She went on to share a few of her favourite fishing spots, including the rocks and cliffs around Shoal Lake, but also that every place is special:

> *There's another little spot that they were talking about building like a picnic area where people can just sit around, and a dock where you can fish, and make it kind of a memorial. It looks really awesome and I think I would go there… when I first came down, we went all over. We would just stop at cliffs and climb. We had a lot of special places, but that was one, I guess. And another is probably the spot where they're going to build that park. I think all my special places would be from when I drive around with Margaret, because she knows so many things. We might go down Shoal Lake Road on*

the other side over there and we get out and stop to look at plants. I think every place is special.

Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.

When *wewebanaabii* (fishing with a rod), bait was used to lure the fish in. An Elder from Wauzhushk Onigum shared the way that they catch leeches by rod that are used as bait for other *giigoonyag* (fish):

You know how you catch them? You have aluminum foil, cut it about… I don't know... two feet by two feet. You cut it in half, turn it over, you put a piece of sucker in there, and then you throw it in the shallow bit. It looks like a football; you'll have so many leeches there and bloodsuckers. You just throw them in the pail, everything. You go out, you separate the bloodsuckers from the leeches. You just throw the leeches.

Elder, Wauzhushk Onigum, AAK Group Interview, September 18, 2019.

At other times, some community members would work as guides at fishing lodges, taking fishermen out *wewebanaabii* (fishing by rod). An Elder from Shoal Lake 40 shared that there used to be a fishing lodge in Portage Bay, where guides would go work from the community (AAK Individual Interview, May 23, 2019). An Elder from Shoal Lake 40 shared that he used to also work as a fishing guide (AAK Group Interview, May 22, 2019). Another Elder Shoal Lake 40 shared that when he was a guide, his customers would be catching 150 *ogaawag* (walleye) a day by *wewebanaabaanan* (fishing rod) (AAK Group Interview, June 11, 2019).

Wewebanaabii (fishing by rod) is also popular with ice fishing. A community member from Shoal Lake 40 shared that "that was something we'd do, go ice fishing. I never liked fishing in the summer" (AAK Individual Interview, May 22, 2019). The community member shared that she would go *wewebanaabii* (fishing by rod) for *ogaawag* (walleye) between the landings of Iskatewizaagegan 39 and Shoal Lake 40 (AAK Individual Interview, May 22, 2019).

5.7.5.5.3 *Anit* (Spear) Fishing

Fishing with an *anit* (spear) is a more traditional form of fishing that is less common in the present day. An *anit* (fishing spear) would be made with from a sharp object and used to spear *giigoonyag* (fish) that would have been rounded up. Elders often spoke about making a *bazhiba'igan* (harpoon) when they were younger, or shared stories of sacred sites where ancient *anit* (spear) heads had been found.

Fishing with an *anit* (spear) was a popular method when fishing for *namewag* (sturgeon). Once corralled into shallow water, it was easy to send an *anit* (spear), or a *bazhiba'igan* (harpoon), through the *giigoonyag* (fish) (Robertson & McCracken, 2003, p. 206). "Tools" were brought up in the context of "Sturgeon" three times. Of these, twice it was in the context of an *anit* (spear), emphasizing the importance this specific tool played in *namewag* (sturgeon) fishing. An Elder from Niisaachewan shared this story of spearing *namewag* (sturgeon) and *adikamegwag* (whitefish) at night in the ancient wars before colonial contact:

> *On the other side of that where the rock was blasted out, people were telling stories that they were spear fishing where the river is fast, not where they blasted but the other… They would tie [the spear] on a rope, and they would hang over and spear those fish while they were going by. And they had oil lamps, like we call them lights and we have rag of some kind or a hide and they would burn down oil so you can use that as a spotlight for white fish and sturgeon in those days.*
>
> *Elder, Niisaachewan, AAK Group Interview, August 15, 2019.*

An Elder from Niisaachewan shared that his people used to travel to do their fishing. They mentioned that "there's some spots, they fish there with a spear, like sturgeon" (AAK Group Interview, September 17, 2019). The Elder mentioned that there was a rock near Port Island that would be a popular place for using an *anit* (spear) to catch *namewag* (sturgeon) (AAK Group Interview, September 17, 2019).

Anitiin (spears) were typically made by hand by the Anishinaabeg. An Elder from Shoal Lake 40 shared how they made their own *anitiin* (spears) at Rice Bay in the 1960s*:*

> *We used to go there, and we made spears, wooden spears. My husband and my brother and his wife, we speared those suckers…That's how we fished… they will just come almost to the ground area, just a little bit of water there so that's how easy it was for us to catch them… We didn't do that all the time. We did that because we were hungry then, so we were trying to get some fish to eat, so we had no fishing rods or, no nets so, that's how we figured how to catch fish then. Spear them.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 22, 2019.*

An Elder from Shoal Lake 40 also shared that they used to make *anit* (spear) heads, and how the practice of making everything you use was important to their culture, and how this was taken away during blasting:

> *Spear heads, everything. Pottery and stuff, they used to make. We used to make that too. That's how important it was. It was like a community here; it was like a church… life and such. They blasted it away without even consulting the landowners here. That was more important to blast it, to ease the water move.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, September 17, 2019.*

"Loss of Tradition" was mentioned five times in the context of "Tools" in discussions with community members. This story told by the Elder in Niisaachewan shows that once the community lost their connection to the lands through blasting, they lost their tradition, including the traditional practice of *anit* (spear) making.

Anitiin (spears) were also left as offerings at sacred sites. An Elder from Niisaachewan shared that items such as *anitiin* (spears), bows, arrows, and on occasion, rifles, were left as offerings for guidance throughout their travels West (AAK Group Interview, August 15, 2019). He shared that Niisaachewan

were keepers of the river and had to look after people following the route towards the west (AAK Group Interview, August 15, 2019).

Using an *anit* (spear) to fish was once a common method. As *wewebanaabaanan* (fishing rods) and *asabiig* (nets) began to build a presence in communities as lifestyles changed, less people continued using *anitiin* (spears) to fish. Coinciding with the collapse of the *namewag* (sturgeon) fisheries and the drastic reduction in the *namewag* (sturgeon) population, *anitiin* (spears) began to disappear from daily use. *Anitiin* (spears) have nonetheless made a mark on Anishinaabe history, as stories involving *anitiin* (spears) date back thousands of years. They continue to hold traditional value in the stories they tell and the teachings they hold.

5.7.6 Gathering

5.7.6.1 Picking *Miinan* (Berries)

Miinan (berries) are a traditional source of sustenance and a gift to the Anishinaabeg from the Creator. For this reason, *miinan* (berries) of all varieties hold significant cultural and spiritual value. An Elder from Wauzhushk Onigum noted, "eating blueberries [is] sacred to us" (AAK Individual Interview, August 14, 2019). An Elder from Wauzhushk Onigum highlighted the importance of thanking the Creator when gathering *miinan* (berries) by leaving *asemaa* (tobacco) (AAK Individual Interview, June 28, 2019). In addition to sustenance, *miinan* (berries) serve various purposes in Anishinaabe tradition including use as a dye, medicine, and component of ceremony when eaten as part of a feast or used in a sweat ceremony (Davidson-Hunt, 2003). A community member from Grassy Narrows explained why *miinan* (berries) are important in sweat ceremonies:

> *I use berries because that was one of the gifts that Gizhigookwe brought. There was berries, tobacco, sage, cedar. Those are all the medicines that are used.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

In addition to the *miinan* (berries) themselves, other parts of the plants can also be used as a medicine. For example, the inner bark of certain cherry *mitigoog* (trees) can be used to make a tea that is a remedy for coughs (Smith H. H., 1932). When consumed as a traditional food, *miinan* (berries) can be eaten fresh or preserved to last for the winter months. One traditional method of preserving all kinds of *miinan* (berries) was drying. For example, an Elder from Wauzhushk Onigum shared that her great grandmother used to dry *bawa'iminaanan* (pin cherries) (AAK Group Interview, June 18, 2019). A community member from Shoal Lake 40 shared:

> *They would freeze them in the winter... They would harvest all their food, and then everything went underground, and it stayed cold.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, June 11, 2019.*

Making jam was another way to preserve different varieties of *miinan* (berries). For example, this Elder from Shoal Lake 40 recalled:

> *With my mom, she got blueberry jam ready for winter… And I used to watch how she did it and I tried it and it worked. I just had to watch, remember how she did it. It's a lot of work and I used to watch her, how she checked them… she put them upside-down, and then later on she'd check them for awhile, I don't know how long she left them down like that. But then she'd put them all up again, right-side up. And sometimes she would find one that's not turning up. Yeah, and I tried that too. I didn't see anything bad. So, I must've done something good, just by watching - Yeah and then we'd have that for like December. She was always sharing what she had, because, you know I never made as much as she did… We picked everything, ate from our land…God given food.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 22, 2019.*

As a readily available food source that can be preserved to last throughout the year, use of *miinan* (berries) extended beyond personal consumption. For many, *miinan* (berries) were also a livelihood. An Elder from Shoal Lake 40 recalled a story from her childhood of harvesting *miskominag* (raspberries) with her mother:

> *I remember one year too, we were running out of food and so she gathered all of us kids, and we went out into these bushes. And she said, "I want everyone to start collecting raspberries." And she said, "You got to make sure you look inside each one, make sure there's no worms in there, make sure they're clean and dry." And our containers had to be clean and dry too. So that's what we did. She had all of us do that, and we took them to the store there and we sold our raspberries there, so we can buy food.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

Selling *miinan* (berries) was a common practice and livelihood for community members and was not limited to a single *miin* (berry) variety. For example, an Elder from Shoal Lake 40 explained:

> *We did a lot of blueberry picking… We would get dropped off somewhere and set up our tents and we lived there for a week or a few weeks. We picked baskets and baskets, and again, we kept some but mostly sold them for income.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

As the main corridor and travel route through their territories, the highway has played a role in the sale of *miinan* (berries). An Elder from Shoal Lake 40 shared:

> *When we went berry picking too, we were living on the highways there. It's called Granite Lake. There was tents there. That was in '60s. We picked blueberries there. And my grandmother was there, and my mother. They used to make birch bark baskets… people used to make those where we put the blueberries and we sold them on the highway there. We put up a sign, "Blueberries for sale". People liked them, the baskets. Birch bark baskets.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.*

A community member from Shoal Lake 40 recounted similar memories:

> *People seemed to want their berries just because they were in those baskets. Used to take us all over, I remember going up Minaki highway too - my grandparents took me up there - I remember going as far as Sioux Lookout.*
>
> *Community member, Shoal Lake 40, AAK Group Interview, May 22, 2019.*

An Elder from Wauzhushk Onigum recalled her experience selling *miinan* (berries) after harvesting with her family near High Wind Lake:

> *We used to live out, used to bring a lot of people there. My dad and my mom, they were pretty good [at] picking blueberries. Me, I used to eat them… My dad… he picked ten baskets a day. That's how we made a living, we'd sell them. We had a buyer… he bought them and then he'd bring them to town and sell them. There was more, like it wasn't just one family, it's a group. Lots of people. That's one thing I like about picking berries that time. Like we used to walk, like till we find a hill and go up a hill and find a bunch of blueberries. That was fun.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

Many community members recalled fond memories of gathering *miinan* (berries). For example, A community member from Shoal Lake 40 shared:

> *There was also blueberry picking. We would go and make our camps. That's the funny thing, I was a July baby, and apparently my mum was pregnant with me and they were harvesting blueberries. She didn't tell my grandparents or my dad that she was in labour until she was ready for me to be born. She did that because she didn't want to leave camp… So, I was born out in the blueberry patch.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, June 11, 2019.*

Community members emphasized the important role *miinan* (berries) had in bringing people together. *Miinan* (berries) were traditionally harvested in large groups of families, friends, and communities, who would camp for several weeks during June and July, when *miinan* (berries) are ripe. *Miinan* (berries)

were gathered extensively throughout Treaty 3 territory, but some locations were particularly popular. An Elder from Wauzhushk Onigum recalled:

> *The whole community used to go to Red Cliff Bay. And blueberry picking used to be towards Sioux Narrows.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, April 8, 2019.*

Similarly, an Elder from Washagamis Bay highlighted another important site:

> *Ena Lake…Yeah there used to be a lot of blueberries that were over there where we used to pick there…So that used to be a gathering spot for all the First Nations.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.*

An Elder from Wauzhushk Onigum also recounted collecting *miinan* (berries) at Ena Lake:

> *And like today… I pick in Ena, the township called Ena… Yeah, I pick blueberries way up there. I have been picking there for years... And there is Jones road, there is a road called Caution Lake Road. That's where they are cutting trees and that's where I go picking for years too…. I have been there for years. Ena, Caution lake, picking blueberries all the time.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

An Elder from Washagamis Bay shared how their family would pick *miinan* (berries), moving with the seasons throughout the year:

> *But going back to when we were kids, we live with the four seasons. That's before automation, boats, motors, and cars. We still, in the spring, we go hunting beavers. After beaver hunting, then I go blueberry picking around June, July… When we were kids, like I said, before automation, they used to take us to migrate. We [were] migrating with the seasons. We move here and there, and sometimes four or five families would go. And this place called Redditt, that was one of the biggest blueberry picking areas. Redditt… Ena Lake.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

Historically, the location of *miin* (berry) sites were strongly tied to the seasonal movement of the Anishinaabeg. An Elder from Niisaachewan provided context on Fort Island and the relevance it had in the annual migration associated with both *miinan* (berries) and *manoomin* (wild rice):

> *We are doing things together, and that's what that island is named after… that's where we used to stay [a] long time ago between seasons like blueberry season and rice picking. We came from blueberry picking, and then that was done and then we go*

into rice picking again and they would scatter out to the rice fields. It was just like a meeting place, then we move on from there.

Elder, Niisaachewan, AAK Group Interview, August 15, 2019.

Many community members maintain the tradition of harvesting *miinan* (berries). For example, a community member from Shoal Lake 40 shared about her mother-in-law:

She still keeps up our tradition and she still picks berries, and my Mom too, she still does here all summer.

Community member, Shoal Lake 40, AAK Individual Interview, May 22, 2019.

An Elder from Wauzhushk Onigum shared that she also has family members who continue to pick *miinan* (berries):

My brother and them, they liked picking berries, blueberries, they go out, they go pick them and they sell them. I get mine from Walmart, No Frills, or Safeway. That's picking.

Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.

While some individuals continue to gather *miinan* (berries), several community members noted that this has changed significantly over recent years. One way it has changed is as a livelihood, as this Elder from Shoal Lake 40 indicated:

There are a few people that sell, but maybe just a few baskets. Mostly people just pick for themselves.

Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.

In addition, it is no longer common for large groups to camp at *miin* (berry) sites and migrate with the seasons as was traditionally done. An Elder from Shoal Lake 40 recalled:

Everybody went by boat. Took overnight to get to Kenora. Just to go blueberry and rice picking. I used to like it there, I was just small, five or six years old. I still remember that. They used to make bannock by the fire, and I used to like that camping out. The good old days. And now I don't think anybody's doing that anymore… Everything's too modern now.

Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.

Similarly, this Elder from Shoal Lake 40 explained:

I think the respect for the whole tradition has been trampled on- used to bring families together- you don't see that anymore. It's not a community event anymore… When you go blueberry picking that's what you do - you camp. I don't do any of that stuff

anymore. I don't know why I stopped. I have no idea. It's not as beautiful as it used to be.

Elder, Shoal Lake 40., AAK Individual Interview, May 22, 2019.

Community members indicated that this shift is largely due to changes in the landscape. For example, this Elder from Wauzhushk Onigum noted:

You could see the choke cherries, any kind of cherries. Now you don't see those anymore… there were wild cherries, stuff like that. I don't see them anymore… But before when my parents were picking, they picked a lot. I don't know how much a day. Now we don't see that anymore. Everything [is] just dead. Everything has disappeared.

Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.

Increased development in the area has resulted in the loss of several areas that were traditionally used. For example, an Elder from Washagamis Bay explained that many *miin* (berry) sites are "all gone because of tourists and cottages" and can no longer be accessed (AAK Group Interview, July 23, 2019). Similarly, an Elder from Shoal Lake 40 shared a story about a harvesting site near McConnel Lake and Clearwater Bay:

That's where we used to go blueberry pick with my mother. And then along down the line, we thought we'd go again. And when we got out from the boat, there was a dog barking. And then when we went up the hill where we were picking, there was a house there. So, we never went back again because of that.

Elder, Shoal Lake 40, AAK Individual Interview, May 22, 2019.

In addition to increased development, climate change may also have a role in the changes noted by community members. An Elder from Washagamis Bay explained:

The blueberries fluctuate. [Because of] climate change, things have altered. Climate change [has] altered the blueberry picking season. One summer, you'll find [a] bunch blueberries in one area. The next summer, [there] could be none, so forth, so forth.

Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.

Miinan (berries) have also been affected by the lack of traditional management strategies have used to be practiced. For example, this Elder from Wauzhushk Onigum explained:

Way back then they used to have prescribed burnings so the blueberries would grow. That was common practice, you would prescribe burnings on the islands and a couple years later the blueberries would grow. But that was stopped by forest companies, "you're burning our trees".

Elder, Wauzhushk Onigum, AAK Group Interview, July 24, 2019.

In another interview, the Elder shared:

> *There has always been prescribed burning- that was part of our practice… But we knew how to do a prescribed burning, and now because of the change in climate its sort of not conducive to how we describe prescribed burning.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 17, 2019.*

Another factor that affects traditional *miin* (berry) harvesting is increased interest from cottagers, tourists, and other groups in the area. For example, this Elder from Shoal Lake 40 described:

> *That was [an] awesome time where families would gather again. In my community they would go to the blueberry fields and they would camp there. That was around Jones area. Yeah, and they had big fields and they would just camp there until all the patches were all cleaned out. But now I heard that, I guess they're losing some of their patches because some of the Mennonites are going in there... So, by the time they get there they're already [harvested].*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

Whether by increased development, climate change, lack of prescribed burnings, or overharvesting from other groups, the practice of *miin* (berry) picking has been altered over time. Despite these changes, *miinan* (berries) continue to be harvested throughout Treaty 3 territory and are still regarded as a culturally and spiritually important resource to the Anishinaabeg.

5.7.6.2 Picking *Mashkikiwan* (Medicines)

When searching for *mashkikiwan* (medicines), one could sometimes search right in your own backyard. As an Elder from Wauzhushk Onigum shared, “we found them everywhere” (AAK Individual Interview, June 19, 2019). Although some specific *mashkikiwan* (medicines) could only be found in certain areas, many Elders shared that *mashkikiwan* (medicines) are abundant in the bush. An Elder from Washagamis Bay shared that all you had to do was “just go in the bush, just look. You have to recognize which ones you pick” (AAK Individual Interview, August 21, 2019).

Before harvesting these *mashkikiwan* (medicines), it is customary to make an offering to the ground you were taking from. Once an offering was made, the *mashkikiwan* (medicines) could be harvested and prepared for use. An Elder from Niisaachewan shared how his grandparents would make offerings when collecting *mashkikiwan* (medicines):

> *Of course, they had to do the offerings, too, before you take something off the bush. Put your tobacco down, it's one of our traditional ways of taking something off the forest. No matter what, it's the thing that passes on, you have to do your offering.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

Community members noted losing access to their traditional *mashkiki* (medicine) picking grounds because of development. An Elder from Shoal Lake 40 shared:

> *When they grade and put that salt, you have to go further from the highway to go and pick because it would be contaminated with whatever they use to sand the road in the winter.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.*

An Elder from Niisaachewan shared that the Elders and children still go *wiingwash* (sage) picking, and usually rent a bus to transport everyone (AAK Group Interview, August 14, 2019). The Elder shared that Bird's Hill Park in Manitoba is a place that his community likes to go *wiingwash* (sage) picking (AAK Group Interview, August 14, 2019). A community member from Shoal Lake 40 shared that the women from her community would often go *wiingwash* (sage) picking together near Portage La Prairie in Manitoba, and they were able to keep what they picked (AAK Group Interview, May 24, 2019). The community member shared going out with other ladies to pick it (AAK Group Interview, May 24, 2019). An Elder from Washagamis Bay shared that *wiingwashkoon* (sage) could be collected from the bush, and all people had to know was what they were looking for (AAK Individual Interview, August 21, 2019).

Although *wiingwash* (sage) is still collected today, the practice has become less common through the years. An Elder from Shoal Lake 40 shared that his brother used to collect *wiingwashkoon* (sage) in the bush near Freedom Road. He noted that that picking *wiingwashkoon* (sage) does not happen as often as it did in the past, perhaps because the community is losing its Elders (AAK Individual Interview, May 24, 2019).

Collecting *mashkikiwan* (medicines) is often an activity done between parents and their children, or between grandparents and grandchildren. An Elder from Wauzhushk Onigum shared how he would collect *wiikenyag* (sweet flag) with his grandmother:

> *The main one you would hear about is wiikenh… I can't remember most of them, but my gram used to show me and tell me different medicines even for the stomach and for aches and pains.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, June 17, 2019.*

An Elder from Washagamis Bay shared that his mother showed him the places to go *mashkiki* (medicine) picking, something that was also passed onto his own son (AAK Individual Interview, August 22, 2019). An Elder from Washagamis Bay had a similar experience, sharing that her grandmother taught her about where to pick and prepare *wiikenh* (sweet flag) (AAK Individual Interview, August 22, 2019).

When picking *mashkikiwan* (medicines), offerings often had to be made. An Elder from Wauzhushk Onigum shared this story of when she would pick *wiikenyag* (sweet flag) from the floating marshes:

> *The last time I picked some was when that thing landed on the shore… the marsh… My mother-in-law's boyfriend there, he said that's where you get the wiikenh from, so*

I went down there and he said, "Make sure you put the tobacco down." And so, I started digging.

Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.

An Elder from Wauzhushk Onigum shared this story about how a cup was used as an offering for *wiikenyag* (sweet flag):

I think it's this one here…We talked about that mint and wiikenh, and what that is, is that they stop and camp on that island all night. And what they do is they put that cup upside down with a spoon, and that's when they all pick all that stuff… That's an offering. They give a cup… You can still go on that little island. You can see cups here and there.

Elder, Wauzhushk Onigum, AAK Group Interview, July 23, 2019.

5.7.7 Hunting

The Anishinaabeg have long relied on the land and its resources. Together the land and all it is connected to is an inherent part of their wellbeing. An Elder from Shoal Lake 40 shared:

That's survival for us, to get to live off the land.

Elder, Shoal Lake 40, AAK Individual Interview, May 22, 2019.

The Anishinaabe worldview is that all animals are worth more than what they could provide for the people. They are "living beings entitled to life and existence" (Johnston, 1976, p. 55). As animals have to die for people to survive, the Anishinaabeg have to give back to the animal world in return. This is done through offerings or prayers that acknowledge the life that is taken (Johnston, 1976, p. 57). For example, a community member from Grassy Narrows said that you must be "offering tobacco for that life. Or giving thanks for that life that's going to feed your family" (AAK Individual Interview, September 13, 2019). An Elder from Washagamis Bay also noted the importance of the land and said that:

It's all kinds of sacred grounds, sacred areas, stories about the island or stories about the land here. This is why people offer tobacco to respect the spirit of the land.

Elder, Washagamis Bay, AAK Individual Interview, July 25, 2019.

An Elder from Washagamis Bay talked about the importance of caring for the animals:

We were kind of watching out for what happens to the land, like the water, and the animals, they are a significant part of our lives. The wolves have their place, the deer, the raccoons, the squirrels, all the living things. And we have to make a way for them, so they have a land base, as well.

Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.

Hunting is a traditional activity of the Anishinaabe that has been practiced from time immemorial and into the present day. Community members identified hunting as a critical part of their wellbeing, as it provided a source of food and income, goods for everyday use, and acted as a tool for cultural education and teachings. As hunting occurred out on the land, it offered an opportunity to connect with the land, which is an integral part of Anishinaabe wellbeing. Hunting also bridges a connection to the ancestors of the Anishinaabeg, who once also relied on hunting for their own survival. In the present day, hunting continues to be a crucial component of Anishinaabe culture and wellbeing.

In analysing the interviews, a co-occurrence model was created that shows intersections of "Hunting" with other components. This model is illustrated in Figure 63. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Hunting" and any given component shows the number of times "Hunting" was brought up in the context of that component. The width of the line visually represents this as well. For example, Figure 63 shows that in total "Hunting" was brought up 122 times, and "Moose" was brought up 67 times. Of the 122 times "Hunting" was brought up, 48 of those times it was in the context of "Moose".

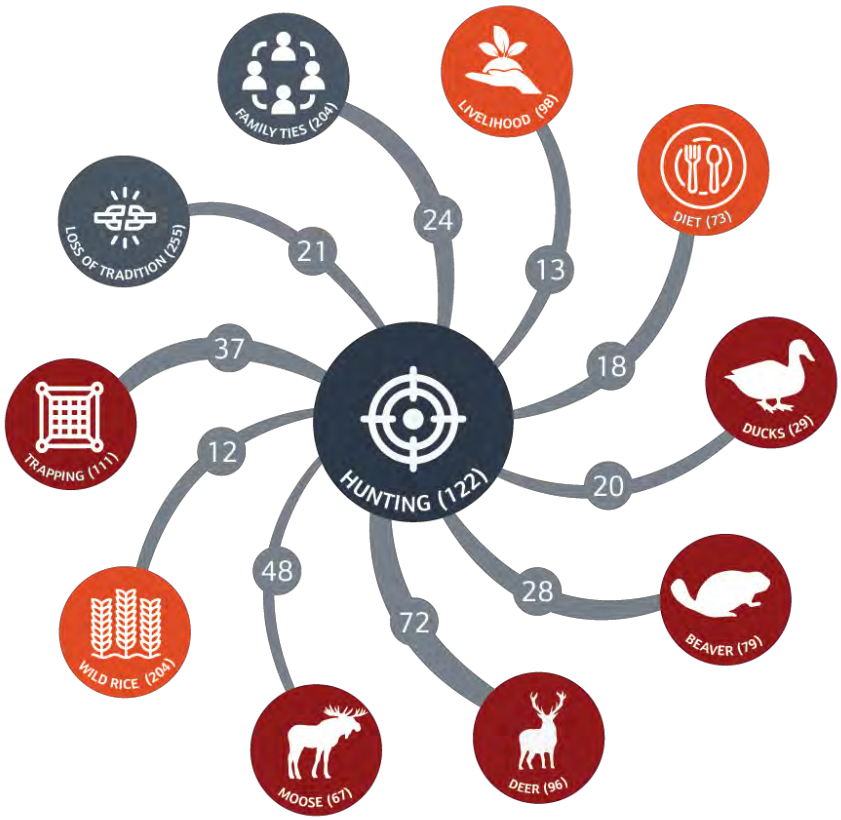


Figure 63. "Hunting" co-occurrence with other components.

The most frequently occurring codes with "Hunting" were "Deer" (occurred 72 times) and "Moose" (occurred 48 times). Both species were frequently hunted for food, hides, and as a source of cultural education and teachings. Information about *waawaashkeshiwag* (deer) can be found in Section 5.3.1.1.

Information about *moozoog* (moose) can be found in Section 5.3.1.2. Hunting both *waawaashkeshiwag* (deer) and *moozoog* (moose) contributed to the overall wellbeing of the Anishinaabeg as they were both integral parts of the Anishinaabe diet. *Zhiishiibag* (ducks) were another frequently hunted group of animals. “Ducks” were mentioned 20 times in the context of “Hunting”. Information about *zhiishiibag* (ducks) can be found in Section 5.4.2.1.

As hunting is a means of feeding one’s family, with a successful hunt sometimes becoming the deciding factor between life and death, it is an activity that is taken very seriously. An Elder from Niisaachewan shared that hunting is how he raised his family (AAK Individual Interview, August 15, 2019). An Elder from Shoal Lake 40 shared how hunting was necessary to prepare for the winter:

> *In the summertime, before the winter arrives, people will go out and hunt. I used to help my auntie… She had about four to five fires going, smoke all the fish, and then we had this big, huge white cotton blanket. You place your meat or fish or beaver or muskrat or whatever you’re drying up, it has to be dry food, so it’ll carry us through the winter. You wrap it and then you put another strip on there, then you wrap it. And then the bag is about this big and you’re able to carry it on your back. And its light because it’s smoked. Smoked fish, moose meat, deer meat, fish, all kinds of fish, muskrat, beaver. But that’s the truth. You’d be amazed at how much we did.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.*

The Anishinaabe belief is that every animal on *Aki* (Earth) has a soul and a purpose and must be treated with the utmost respect (Johnston, 1976, p. 49). Traditional hunting for sustenance was different from sport hunting, and required more patience, skill, and respect for the animal. An Elder from Wauzhushk Onigum described the importance of starting off the hunt in a respectful manner:

> *When you go moose hunting, there's a prayer that goes with that before you go out. They still do that. A prayer for those hunting.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, August 14, 2019.*

When animals are killed, such as a *waawaashkeshi* (deer), it is customary to use all parts of the animal to show respect. Anything that was unused was to be returned to the *Aki* (Earth). An Elder from Wauzhushk Onigum explained this:

> *When you kill a deer, you can’t feed the bones to the dogs, or the meat for that matter. Everything’s got to be sunken down to the wiikenh.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, August 14, 2019.*

After a *mooz* (moose) is killed, it is customary that the dewlap of the animal be removed and used in ceremony as a sign of respect. a community member from Grassy Narrows shared the reason behind this custom:

> *When you get a moose, there's certain parts that you have to hang on the tree to respect the animal. Or even just offering the tobacco for that life. Giving thanks for that life that's going to feed their families.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

An Elder from Wauzhushk Onigum further detailed the tradition:

> *When you kill a moose it's still a sacred ceremony… we split [the dewlap] in half and put the rack on there- and you put the four sacred colours and you hang that in a tree. So that's how we give thanks—there is a prayer that goes with it to thank the creator for the food that they give.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 17, 2019.*

The Elder also shared:

> *What we do is we cut that off and split that in half, put tobacco in there, and you hang that up with all sacred feathers. There's a prayer that goes with that too. Thanking the Creator and the animal.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, August 14, 2019.*

Careful movement and patience are required when hunting. The Elder shared:

> *For instance, you walk in the bush, you hear a squirrel there, but you don't see it. So, you walk again. He chirps again. He keeps chirping. So, next thing you know, he gets closer. Oh, there he is. You don't see him, but you got to trick him. Same with a partridge. When you're walking you hear [them] flapping their wings. Then, you'll stop. And what happens, you started walking again and you'll walk, and you stop, they'll flap their wings again. What the partridge doesn't [do] is he doesn't fly in the bush. [There's] too many branches. So, you try to tempt him to an open area. That's where you'll try to go is an open area because he will fly, but if you could wait for him in an open area ... you got something to eat.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, August 14, 2019.*

An Elder from Washagamis Bay recalled a similar story about having to travel far before finding *moozoog* (moose):

> *Me and my brothers went up there with one guy, and we must've traveled three days, barely had enough to eat, just kept going. Eventually, he shot a moose. That was something. We had to travel three days back to haul it back out. This was summertime, so we had to portage and carry it, piece by piece. Then we had to portage maybe about six times. Some of them were long too. It was a good three or four hours work just to*

haul it from one side of the lake to the other side. Each one of them. Took us a good two days.

Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.

During discussions with community members, "Hunting" was mentioned in the context of "Trapping" 37 times, as many families would do both activities in overlapping areas and throughout the same season. "Beaver" was mentioned in the context of "Hunting" 28 times in discussions with community members, as it was a species that was relied upon for its pelt and meat. While beaver was more commonly trapped, but also hunted in some cases. An Elder from Wauzhushk Onigum shared that her family turned to hunting *amikwag* (beavers) and *wauzhushkwag* (muskrats):

I finally killed my first beaver too when I lived with my husband in Wash Bay. That's the first time I ever shot a beaver, because we had no food and we had to go hunting so I shot beaver and skinned it, cooked the beaver and trade the fur. And muskrats. We shoot muskrats.

Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.

Often, the seasons for hunting and trapping would occur concurrently, with *wauzhushkwag* (muskrats) and *amikwag* (beaver) trapped during hunting trips for *moozoog* (moose) and *waawaashkeshiwag* (deer). An Elder from Niisaachewan shared a story about the last time he hunted for *wauzhushkwag* (muskrats)*:*

I'd say about a good 20 years at least too. Same thing. Because I did hunting myself. And the same thing happened. I had my favorite outings and my favorite hunting spots, but now... like I was saying earlier, I used to paddle through these areas by canoe, but now, like today, it's all covered. There're no more creeks or the lake would be... you can just see it's all mud now. It's all marsh. It's not a little lake you have access to. In that time when I was a teenager, I used to think it was a big lake. But today when I went back, it doesn't look the same. It looks so small. Everything is evaporating. It's all grown in, old brush… My main concern is the water. It's the main thing for me.

Elder, Niisaachewan, AAK Individual Interview, August 19, 2019.

Hunting built ties within a family. During discussions with community members, "Family Ties" was mentioned 24 times in the context of "Hunting". An Elder from Niisaachewan shared that she was taught how to hunt, skin an animal, and tan a hide by her parents and her brother, a skill she passed onto her own children (AAK Individual Interview, September 18, 2019). For many, hunting and skinning continues to be a communal activity with notable importance to families (AAK Individual Interview, August 15, 2019). It is an opportunity to pass down teachings about survival on the land. *Waawaashkeshiwag* (deer), for example, are used in many ways to teach. An Elder from Niisaachewan discussed this:

> *As a community we get together, and we help each other out or teach the younger ones. We usually teach somebody else that is willing to come [join] and teach them how to hunt and fish and cut up deer or fish. So, they can carry on the traditional life.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

Hunting is also a community activity, with many members of different households hunting together. An Elder from Washagamis Bay shared:

> *What would happen is the men would gather together, let's say maybe five of them, five family heads and then they would head out.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

The Elder also shared that hunting brought a closeness within a community (AAK Individual Interview, August 21, 2019). He shared that the community no longer hunts together like they used to:

> *And I think what happens is that it affects the community because at that time they were forced to share and interact. And I see a lot of division now, because those things don't exist anymore, the communities fractured and they don't have the closeness that used to have, you know?*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

Hunting was a means of feeding a family or a community. During discussions with community members, “Diet” was mentioned in the context of “Hunting” 18 times, as hunting was a main source of meat for communities. An Elder from Niisaachewan shared:

> *That's how we got our meals. Three square meals a day. I have a picture of my daughter. I taught her how to deer hunt. She beat me because I couldn't see deer. All I saw was antlers one time on the hydro line. During the winter we'd go out hunting. Yeah, I had a shotgun. He was sitting there, I left her there, says keep an eye and tell to let me know. "Okay daddy." So, she shot one, I still have pictures, and when it went by all she seen was the antlers, pow! She knocked it down. "Daddy I shot a deer!" Great big buck. We fed the whole reserve.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

A community member from Shoal Lake 40 shared a similar story about hunting *mooz* (moose) for food:

> *My husband was hired to fish for a guy from 39 side and I went with him to lift nets, and then we seen something swimming in the water. We were close by, that's a young moose. And then my husband says, "Make a noose." So, I made a noose and... "Put it over his head." And then so I did. And then after I did that, "Pull tight and really hard." And then he went driving in circles, we drowned it. But we ate the meat. We didn't kill it for nothing. That's how we killed our moose.*

Community member, Shoal Lake 40, AAK Individual Interview, May 22, 2019.

Over the generations, hunting has become less common within communities. During discussions with community members, "Loss of Tradition" was mentioned 21 times in the context of "Hunting". An Elder from Niisaachewan shared that hunting began to slow down in the 1960s as there were fewer people purchasing pelts and skins (AAK Individual Interview, September 18, 2019). A loss in the availability of hunting grounds has also led to a decline in the practice. An Elder from Shoal Lake 40 recalled losing their hunting grounds on the South shore of Shoal Lake:

> *Moose was mostly our game, and also the white-tailed deer. It was really good for hunting because anywhere you looked, you'd see a moose standing there. We had a lot of work put out for ourselves when we shot them. Now when we go out there it looks like a little town or community in this area. When my cousin came back a few years ago we went to go check out the lake and he was surprised to see all those cabins, he said, 'holy cow we used to hunt here! We're losing all our hunting lands.' And I said, 'yep'.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

Two community members from Shoal Lake 40 reminisced a time when:

> *We would cross over here sometimes, park the boat there, and we would walk down to the canal and find a spot to hunt ducks. That was years ago though, before we had a road.*
>
> *Community members, Shoal Lake 40, AAK Group Interview, May 22, 2019.*

Hunting also contributed to the livelihood of the Anishinaabeg. In discussions with community members, "Livelihood" was mentioned in the context of "Hunting" 13 times. Communities would often rely on selling parts of hunted animals to make an income. An Elder from Niisaachewan shared that a black bear in her community was shot:

> *They just cut them up here. They used them for rugs. If you want to keep their paws, you have to go around, leave the nails there. I was sitting there watching them skin the bear… Somebody wanted to make fur, wanted that good bear because of mitts or something like that. They wanted to make some mitts and sell them. Well, sometimes, they had to shoot the bear because bear fur makes a lot of material and things. Fur, mitts, jackets and rugs. But that's sad, though.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

An Elder from Shoal Lake 40 shared how her family hunted for an income, and that the Hudson's Bay Company would buy their furs:

> *They raised us up around these... living off the land with fish and deer and beaver, even partridges. I remember one year there, she was teaching my brother how to kill*

> *squirrels and they would get, I think it was two dollars a squirrel. And my brother would be out there, and you know she taught him how to clean it and how to lay it and he'd take his little squirrels to the bay and he'd get his money, yeah.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

"Hunting" was also associated with "Wild Rice". In discussions with community members, "Wild Rice" was mentioned in the context of "Hunting" 12 times, as often, hunting and collecting *manoomin* (wild rice) would occur during the same season, even during the same outing, to help prepare for the winter months. An Elder from Niisaachewan shared:

> *So, in our way, we would harvest here at a certain time of year, go over there to go and harvest because that's keeping that balance with nature. Not take too much from one area, otherwise [it'll] not be there anymore. So, you go from here, you might rice pick here, pick rice this year here, but next year we'll go down somewhere over there and pick that rice. Because everybody [that] met each other [that] day would share and say, "Oh yeah, that rice was good there's a lot to pick" and then somebody would say "Oh yeah, there's a big herd of moose over there." So, in that traditional way here, you would use the summer to get prepared for winter. So, you would harvest your foods that you're going to use for the winter.*
>
> *Elder, Niisaachewan, AAK Group Interview, August 15, 2019*

Throughout history, hunting has been a vital component of Anishinaabe wellbeing. It connects families and communities together, acts as a tool for teachings, provides a source of food and income, and helps foster a strong connection to the land and the Creator.

5.7.8 Trapping

Trapping has been practiced by the Anishinaabeg for generations. Trapping was traditionally done for food and for materials used in clothing and shelter. Trapping practices grew at the beginning of the fur trade, where furred animals, such as the *amik* (beaver), were highly sought after for their soft winter pelt. In discussions with the community members, they noted trapping to have been a critical part of their wellbeing, as it provided a source of food and income, goods for everyday use, and acted as a tool for cultural education and teachings. As trapping occurred out on the land, it offered an opportunity to connect with the land, which is an integral part of Anishinaabe wellbeing. In the present day, trapping continues to be a crucial component of Anishinaabe culture and wellbeing.

In analysing the interviews, a co-occurrence model was created that shows intersections of "Trapping" with other components. This model is illustrated in Figure 64. Each number in parentheses shows the number of times that component appeared collectively in all interviews. The number on the line connecting "Trapping" and any given component shows the number of times "Trapping" was brought up in the context of that component. The width of the line visually represents this as well. For example,

Figure 64 shows that in total “Trapping” was brought up 111 times, and “Beaver” was brought up 79 times. Of the 111 times “Trapping” was brought up, 42 of those times it was in the context of “Beaver”.

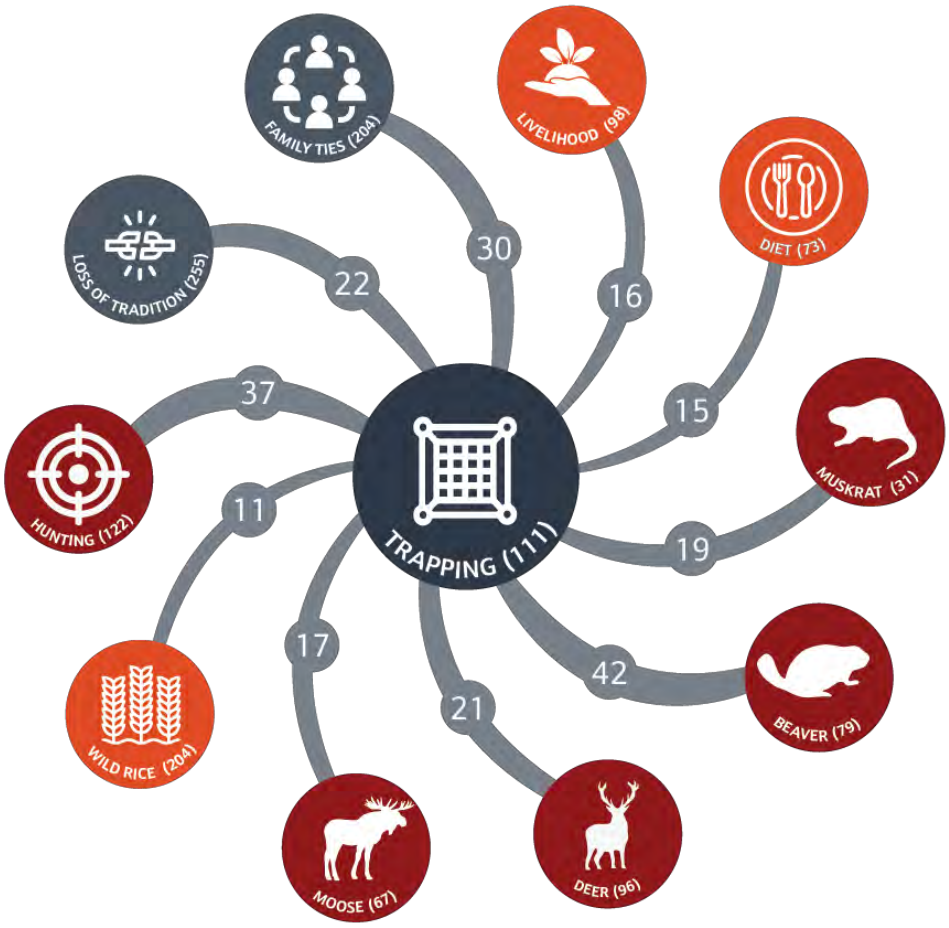


Figure 64. “Trapping” co-occurrence with other components.

Two of the most frequently occurring codes with “Trapping” were “Beaver” (occurred 42 times) and “Muskrat” (occurred 19 times). Both species were frequently trapped for food, pelts, and as a source of cultural education and teachings. Information about *amikwag* (beavers) can be found in Section 5.3.1.3. Information about *wauzhushkwag* (muskrats) can be found in Section 5.3.1.4. Trapping both *amikwag* (beavers) and *wauzhushkwag* (muskrats) contributed to the overall wellbeing of the Anishinaabeg as they were both integral parts of the Anishinaabe diet. “Trapping” was also mentioned frequently in the context of “Hunting” (occurred 37 times), “Deer” (occurred 21 times), and “Moose” (occurred 17 times). Hunting and trapping areas often overlapped and many species such as *waawaashkeshiwag* (deer) and *moozoog* (moose) were hunted throughout the trapping season.

Trapping and hunting both activities provided a source of food for families and communities. In discussions with community members, “Diet” was mentioned in the context of “Trapping” 15 times. An

Elder from Shoal Lake 40 shared that his family would trap for both consumption and selling the furs, utilizing all parts of the animal (AAK Individual Interview, May 23, 2019). When discussing trapping, an Elder from Shoal Lake 40 shared:

> *They eat what they caught, beaver and muskrat. I like muskrat. They used to dry them too, in the drying rack. That's what they did, to preserve their food.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 22, 2019.*

A community member from Shoal Lake 40 shared this story from when her and her brother set snares for *waaboozoog* (rabbits):

> *So, we caught a squirrel instead of a rabbit, but we still caught it. We cooked that squirrel, tasted pretty good, tastes like chicken.*
>
> *Community member, Shoal Lake 40, AAK Group Interview, June 12, 2019.*

When setting a trap, bait was used to lure animals in. An Elder from Washagamis Bay shared that he used *namebin* (white sucker) meat when setting his traps:

> *They pick a site and they put the trap in front of the bait. They kind of bury it, then they put a trap there, then the animal comes, and it gets caught.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 22, 2019.*

Trapping also provided income for families. In discussions with community members, "Livelihood" was mentioned in the context of "Trapping" 16 times. Many families held traplines, which could provide a substantial income over the winter months. An Elder from Wauzhushk Onigum recalled her grandmother having to send their furs away to sell them, which caused her family to go without pay for months (AAK Individual Interview, June 18, 2019). An Elder from Shoal Lake 40 shared that after her mother had trapped and prepared *wauzhushkwag* (muskrats), she would take them to the bay to purchase food (AAK Individual Interview, June 12, 2019). An Elder from Niisaachewan shared that she used to go trapping with her brother for *wauzhushkwag* (muskrats) to be able to buy food:

> *[Redacted] and me, we used to trap muskrats. Muskrats and weasels and squirrels. They were two dollars, $2.50 for one squirrel. Just to buy something, food, a little bit of food and stuff like that. Whatever you need.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

Trapping was frequently identified as an area where tradition had been lost. In discussions with community members, "Loss of Tradition" was mentioned in the context of "Trapping" 22 times. Declines in the populations of fur-bearing species such as a*mikwag* (beavers) and *wauzhushkwag* (muskrats) led to a decrease in the practice, as did the price of the furs and the availability of buyers. For example, an Elder from Washagamis Bay used to trap *amikwag* (beavers) every winter at his

stepfather's trapline. While he continues trapping today, he noted that the practice has declined significantly and is no longer a viable livelihood for community members:

> *The reason why I'm not trapping too much beaver these days is because [of] the real low price. It's not as viable anymore, like it used to be. The price is very low… You got to catch, like, 100 beavers in order to sustain a decent profit.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

An Elder from Niisaachewan also noted that because of low prices, trapping is no longer worthwhile for trappers to make a profit:

> *30 bucks, 20 bucks, 25 bucks for one beaver. It's not worth the trappers that go out there to do any trapping anymore.*
>
> *Elder, Niisaachewan, AAK Group Interview, September 17, 2019.*

An Elder from Niisaachewan expressed a similar narrative, stating:

> *The beaver was good at one time too. One good pelt would give you... the most I ever got was 260 bucks for one pelt, which is good. Nowadays it's peanuts. Not worth the time for the amount of time it takes to skin it, trap it, when you're getting ten dollars a pelt.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

Another example was shared by an Elder from Washagamis Bay, who used to trap on his mother's trapline:

> *I should be taking over, but I haven't. It's not worth it. Five dollars for a beaver pelt. All that stuff costs money.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 22, 2019.*

Similarly, an Elder from Shoal Lake 40 noted that:

> *Most people had traplines. Nowadays, I don't think anyone is trapping. No matter how big your beaver pelts, they're only priced at three or four dollars. Not worth it, they say.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.*

Communities have also lost access to trapping grounds. An Elder from Niisaachewan shared:

> *The water level, it's like a... Normally you'd see creek beds. But now to go [to] some places, it's all dried up. And then from there, you look further you can still see the old beaver dam and beaver houses which no longer live there anymore because of the water level and everything. It's just kind of washed away.*

Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.

Trapping was often a family activity, with children learning from their parents and grandparents. In discussions with community members, "Family Ties" was mentioned in the context of "Trapping" 30 times. An Elder from Wauzhushk Onigum also learned how to trap and skin *wauzhushkwag* (muskrats) from her grandmother. This, she reflected, was a difficult task that required patience (AAK Individual Interview, June 18, 2019). Some community members recalled setting traps for *wauzhushkwag* (muskrats) by themselves. An Elder from Shoal Lake 40 shared a story of a trap she set on her way to school:

> *We used to trap when we went to school, [redacted] and I. From our place to the school there's a path there, along the shore and we used to set our traps. The entire way up to the school there was a muskrat that got caught it was coming at us. One hit. We had to leave him there until we came back after school.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

Trapping was also a tool for cultural education. Many Elders recalled learning practical skills from trapping with their family. An Elder from Wauzhushk Onigum recalled:

> *And I lived those first six years of my life at a trap line in a bush. And learnt the customary and traditional practices at an early… The first six years of my life that was my sustenance.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 17, 2019.*

An Elder from Shoal Lake 40 shared this story about watching her mother trap:

> *My mom used to go out and she'd trap muskrats. I used to watch her going on to those beaver houses sometimes and even where the muskrats were… and she put snares there, little traps. She'd trap these things, and she'd prepare them.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

Trapping continues to be a tool for teaching youth about traditional practices and teachings. A community member from Shoal Lake 40 shared how her brother traps with youth to educate them on the practice:

> *He does it for the school. He came out here and showed the kids moles, muskrats, weasels. They use it just to teach the kids. It's part of the program across where they are putting the culture back in the teachings. They harvest their own meats, make their own pepperettes and that.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, May 21, 2019.*

An Elder from Shoal Lake 40shared a similar story of her brother:

> *He still does trapping, he fishes, and he teaches the community members, who's ever interested to come out.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

Trapping continues to act as a source of income, a tool for teaching, and as a connection between communities and the land. Although the practice is not as common as it used to be, it continues to be a vital component of Anishinaabe wellbeing.

5.7.9 Gardening

Gardening is a component of Anishinaabe wellbeing and culture. Gardening has offered an opportunity to grow food directly from the land on Treaty 3 territory. As food was traditionally gathered from the land through hunting, trapping, berry picking, and fishing, gardening has allowed the Anishinaabeg to reconnect with the land around them and access the nourishment that *Aki* (Earth) can provide. These home-grown foods have been noted to taste better than those commercially grown and have increased nutritional value. An Elder from Shoal Lake 40 shared:

> *When you compare it to the food we have today, the food that they planted is so much better and healthier, and it tasted real good compared to the store-bought stuff.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 10, 2019.*

Growing one's own food also offered and opportunity to eat organically. A community member from Grassy Narrows shared:

> *We try to do clean eating. I started collecting seeds because we're going to [plant] a traditional garden, with seeds from my husband's community and seeds that have been given to me from people, that have just been just real, pure, organic.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

For others, gardening provides a sense of accomplishment. An Elder from Washagamis Bay shared:

> *I can plant something. I can see the thing grow and I'll eat it after and have the reward. That works for me.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

Historically, *mandaamin* (corn) was a traditionally grown vegetable. *Mandaamin* (corn) is not native to the Treaty 3 territory but was believed to be part of the diet of the Anishinaabeg (Johnston, 1976, p. 38). A community member from Grassy Narrows shared that the Ojibwe of Treaty 3 territory had their own species of *mandaamin* (corn) that was white in colour and that it was a valued commodity in trade (AAK Individual Interview, 2019). An Elder from Shoal Lake 40 shared that the Ojibwe people in the Southern Ontario region grew large amounts of *mandaamin* (corn):

> *Ojibwe people over there grew so much corn. There was so much corn that you could eat, probably a big room like this for family. That's how much corn they were harvesting back in the day when we were chasing out the Sioux.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

A community member from Grassy Narrows shared that she grows some of this ancient *mandaamin* (corn):

> *I actually was given some seeds from somebody that has been collecting [for] generations and generations…he got it from the southern part.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

She shared that she grows three or four different varieties of *mandaamin* (corn) in her own garden at home (AAK Individual Interview, September 13, 2019). An Elder from Shoal Lake 40 also grows *mandaamin* (corn) that she received from an Elder*:*

> *I remember I used to work for this elderly couple, I used to go clean their home. And this one day there, he came and gave me a bag, and he had a little garden too, he was growing corn in different places and he came and gave me some wild rice and he gave me corn. I wonder[ed] where he was growing it. I said, "That's so nice." I really appreciated that, how he did that, and it is so touching to be given a gift from an Elder like that.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

During the interviews, community members discussed the Garden Islands, also called the Potato Islands, which are a collection of small islands in Indian Bay on Shoal Lake. These islands were each known to support gardening activities. In Shoal Lake 40, a community member noted that *mandaamin* (corn) would grow on the Garden Islands on Shoal Lake (AAK Individual Interview, April 25, 2019). The community member shared that everything would be planted on these islands, including different varieties of potatoes (AAK Individual Interview, April 25, 2019). An Elder from Shoal Lake 40 shared that families used to have gardens on the Potato Islands (AAK Individual Interview, 2019). This Elder from Shoal Lake 40 shared:

> *My grandma used to have a garden here. We used to go out and help and my Mom used to tell us they had gardens on the islands…. Garden Island, Potato Islands. They used to go to the little islands.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

She continued to share that she would help with her mother's garden:

> *I know my mom used to have a big garden up by the Point. I remember helping her. and I used to just collect the best potatoes, put them in the bag. Yeah, I remember that.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

An Elder from Washagamis Bay shared that the Garden Islands that were important to their community are located on and around the Zig Zag Islands, not far from Ash Rapids (AAK Group Interview, July 23, 2019). This Elder from Washagamis Bay shared:

> *So, the story is that they used to plant their gardens, potatoes, and all that, but in semi-isolation. So, that's how they sustained themselves. And what happens is that people started selling cottages and they were kicked out of there.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.*

Community members in Washagamis Bay noted that the whole community would grow food on the Garden Islands, and that maintaining the gardens was a shared responsibility (AAK Group Interview, August 22, 2019).

A community member from Shoal Lake 40 shared that members of her family had a garden the size of an arena near Waugh (AAK Individual Interview, June 11, 2019). She shared that they would grow potatoes and *bagesaanaatig* (wild plums). She shared:

> *They used to do their own potato garden there. It was fun, it was fun picking them out.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, June 11, 2019.*

An Elder from Shoal Lake 40 shared that his family had gardens near Robinson Point, where they grew *mashkikiwan* (medicines), potatoes, and other vegetables (AAK Group Interview, May 23, 2019). An Elder from Shoal Lake 40 shared:

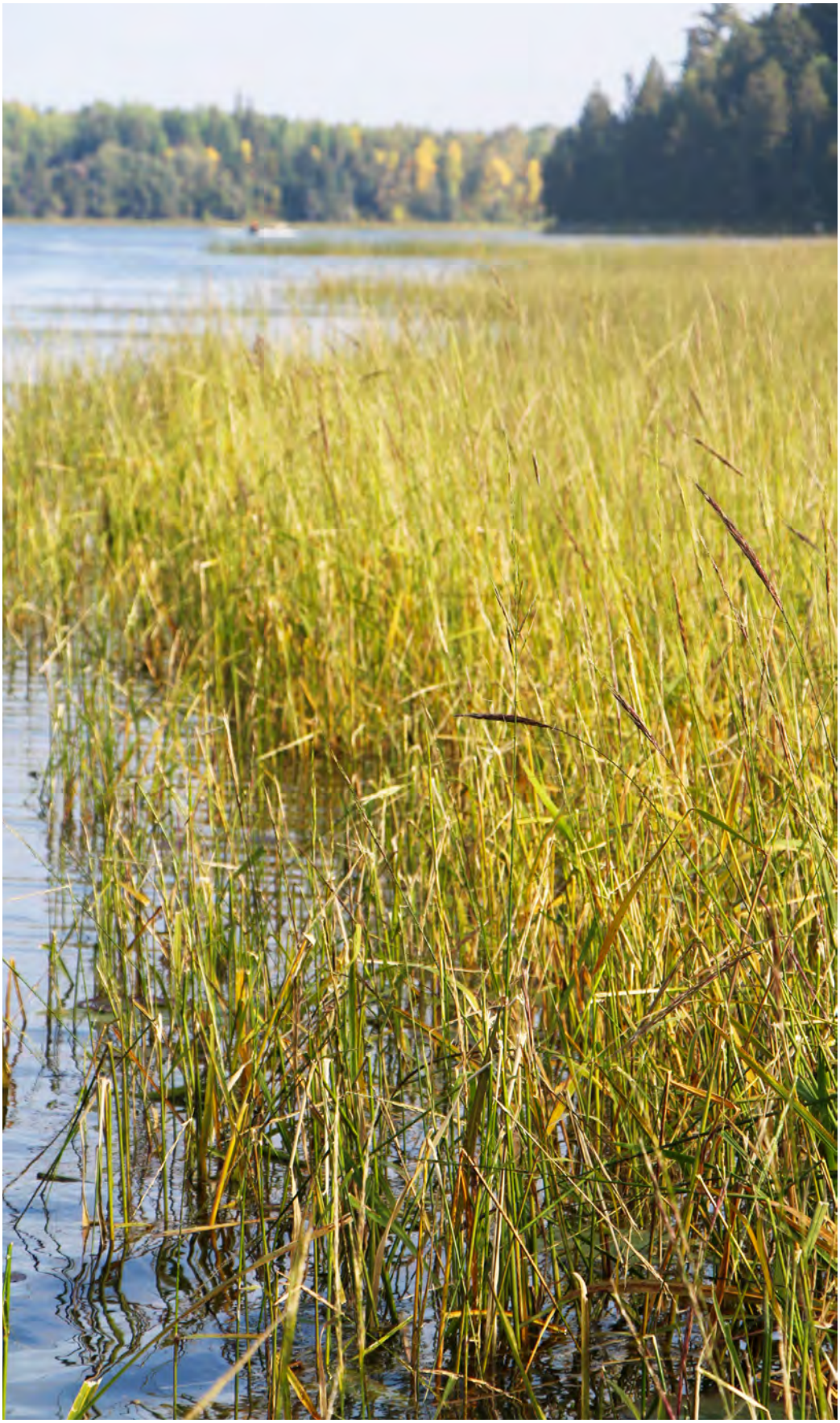
> *We did start a garden at Snowshoe Bay. The deer used to always come there and steal from the garden.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.*

Both of these Elders from Shoal Lake 40 shared that they had found artifacts while gardening:

> *We found some artifacts there when we were making a garden… mostly clay pots… where we used to live in Snowshoe Bay, Robinson Point. Anywhere over there you'd probably find artifacts over there.*
>
> *Elders, Shoal Lake 40, AAK Group Interview, May 23, 2019.*

For the Anishinaabeg, gardening offered an opportunity to learn from the land by growing one's own food. This offered a chance to connect with *Aki* (Earth) and receive nutrition in return. With historic ties to the land and to trade, gardening continues to be a piece of Anishinaabe identity.

6 Impacts & Mitigation



WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives

6 Impacts & Mitigation

6.1 Guidance for the Reader

Throughout history, the Anishinaabeg have shared a close relationship and intimate knowledge of the lands, the skies, the soils, and the waters. These lands, skies, soils, and waters have and continue to offer teachings that are sacred. Many projects have occurred on Anishinaabe lands since contact (as noted in Table 5). These projects have affected the lands, the skies, the soils, and the waters, and hence the Anishinaabeg. It is important that these lands, skies, soils, and waters be protected in order that future generations may also share in their benefits.

This chapter speaks to the impacts of this project. All proposed activities to be undertaken as a part of the project were shared with community members, who then provided guidance for mitigating impacts. The elders also noted the importance of making sure the lands, skies, soils, and water were being protected and the promises being made (e.g., the mitigation measures) were kept. To ensure this compliance, an Anishinaabe Guardians Program will be developed to monitor how the project is impacting the environment as well as the overall health of the lands, skies, soils, and water. Further, a Ceremonial Plan being developed by the Elders of the Niiwin Wendaanimok nations will help offer ongoing acknowledgement of the changes being made to the lands in return for a safe passage through these lands.

While the measures noted in this section offer a starting point to mitigate some of the impacts that will occur, there are outstanding ongoing and historical impacts that require appropriate accommodation. These are and will continue to be discussed with MTO under a Memorandum of Understanding signed in February 2020.

6.2 Impacts to the Lands

6.2.1 *Waawaashkeshiwag* (Deer)

For the Anishinaabeg, a *waawaashkeshi* (deer, singular)/*waawaashkeshiwag* (deer, plural) holds the power of grace, a power given to the species by *Kizhe Manitou* (the Creator) (Johnston, 1976, p. 57). *Wawasheshe* (the Deer Clan) was one of the *ototaimimaug* (the original clans) established. They represent a gentle and kind state that the Anishinaabeg sought to emulate within themselves. As symbols of sustenance and a totem of hunters, *waawaashkeshiwag* (deer) are a crucial component of Anishinaabe wellbeing. *Waawaashkeshiwag* (deer) are an emblem of success in hunting, as the species has continued to remain a staple source of food throughout time. As this Elder from Niisaachewan shared:

> *Before, you'd help out your fellow Anishinaabe, even for hunting. I'd give away deer here like crazy. Kill a deer or a moose, give some meat away.*

Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.

Waawaashkeshiwag (deer) prefer forested areas, as well as edge environments that provide ample cover and food sources. Conifer forests are identified as "significant wildlife habitat" for *waawaashkeshiwag* (deer) by the Significant Habitat Technical Guide (OMNR 2000) as they are used for wintering. Knowledge of the *waawaashkeshiwag* (deer) and the importance to the Anishinaabeg can be found in Section 5.3.1.1 with information on hunting the species in Section 5.7.7.

6.2.1.1 Pre-Construction

6.2.1.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. It is expected that approximately 24.1 ha of *mitig* (tree) covered area will be removed as a result of Phase 1 staging activities. Potential impacts are:

- Removing vegetation will remove *waawaashkeshiwag* (deer) habitat and food sources utilized year-round, including conifer forests which are relied on heavily for *waawaashkeshiwag* (deer) wintering. Changes to the habitat of *waawaashkeshiwag* (deer) could affect their populations, consequently affecting availability for hunting, and hence the wellbeing of the Anishinaabeg.
- Noise disturbance from equipment and haul traffic may disturb *waawaashkeshiwag* (deer), further displacing them.
- Accidental spills from equipment could enter the waterways used by *waawaashkeshiwag* (deer), such as shallow roadside water pockets used for drinking, as well as the soil, affecting *waawaashkeshiwag* (deer) health and habitat.
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *waawaashkeshiwag* (deer), negatively affecting *waawaashkeshiwag* (deer) population.

6.2.1.2 Construction

6.2.1.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. It is expected to be concentrated to highly compacted areas or areas predominantly composed of bedrock. Potential impacts are:

- Removing habitat and food sources found in edge habitats and forested areas may result in harm or death of *waawaashkeshiwag* (deer), negatively affecting their population. Changes to *waawaashkeshiwag* (deer) population will consequently affect the wellbeing of the Anishinaabeg.
- Ground vibrations, fragmented rock propelled into the *bagidanaamowin* (the air), noise, and dust produced during blasting can disturb *waawaashkeshiwag* (deer) and *waawaashkeshiwag* (deer) habitat, potentially further displacing them.

- Blasting chemicals used may leach into soils and waterways used by *waawaashkeshiwag* (deer), negatively affecting the health and habitat of *waawaashkeshiwag* (deer).

6.2.1.2.2 Installing Culverts & Realigning Watercourses

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation and dewatering procedures. Watercourse realignment will occur at four culvert sites. Potential impacts are:

- Pumping during dewatering, removing culverts, and installing culverts could disturb *waawaashkeshiwag* (deer) along edge habitats, further displacing them.
- Stripping, clearing, and grubbing involved in preparing and widening channels can introduce pollutants into the waterways (including surrounding pockets of water) and soils, negatively affecting *waawaashkeshiwag* (deer) health and habitat.

6.2.1.2.3 Building the Road

The construction process will involve excavating and hauling rock, and filling, levelling, and grading of the new highway, applying dust suppression measures, applying sediment and erosion control measures, installing signage and barriers, and using and fueling equipment. Construction waste will be generated during these procedures. Potential impacts are:

- Noise disturbance from increased presence of construction traffic may disturb *waawaashkeshiwag* (deer), further displacing them. Consequently, this could lower the *waawaashkeshiwag* (deer) population, affecting the wellbeing of the Anishinaabeg who rely on them as a source of food and identity.
- Accidental spills from equipment could enter the waterways used by *waawaashkeshiwag* (deer), such as shallow roadside water pockets for drinking, as well as the soil, affecting *waawaashkeshiwag* (deer) health and habitat.
- Dust and contaminants generated through the excavation, hauling and filling of rock could settle in the waterways and surrounding soils, contaminating *waawaashkeshiwag* (deer) habitat.
- Chemicals used in dust suppression may leach into waterways and soils, polluting *waawaashkeshiwag* (deer) habitat and food sources, as well as damaging *waawaashkeshiwag* (deer) health.
- Improper disposal of construction waste could result in the contamination of *waawaashkeshiwag* (deer) habitat.
- Temporary increase in haul traffic will increase the likelihood of vehicle collisions with *waawaashkeshiwag* (deer), negatively affecting *waawaashkeshiwag* (deer) populations.

6.2.1.2.4 Relocating Utilities

Relocating utilities will involve relocating a Bell underground fibre line and extending a hydro line. Relocating may involve stripping, clearing, grubbing, trenching, and drilling along the right-of-way. Potential impacts are:

- Removing vegetation will remove *waawaashkeshiwag* (deer) habitat and food sources utilized year-round, including conifer forests which are relied on heavily for *waawaashkeshiwag* (deer) wintering. Changes to the habitat of *waawaashkeshiwag* (deer) could affect their populations, consequently affecting availability for hunting, and hence the wellbeing of the Anishinaabeg.
- Noise disturbance and ground vibrations generated from equipment and drilling may disturb *waawaashkeshiwag* (deer), further displacing them.
- Accidental spills from equipment could enter the waterways used by *waawaashkeshiwag* (deer) as well as the soil, affecting *waawaashkeshiwag* (deer) health and habitat.
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *waawaashkeshiwag* (deer), negatively affecting *waawaashkeshiwag* (deer) populations.
- Dust and contaminants generated through drilling could settle in the waterways and surrounding soils contaminating *waawaashkeshiwag* (deer) habitat.

6.2.1.3 Demobilization & Restoration

6.2.1.3.1 Revegetating & Restoring

Revegetating will entail restoring all disturbed areas in accordance with the Revegetation Plan to be developed prior to construction. Potential impacts include:

- Creating new areas for *waawaashkeshiwag* (deer) to inhabit, positively affecting *waawaashkeshiwag* (deer).
- Creating new areas for *waawaashkeshiwag* (deer) food sources to grow, positively affecting *waawaashkeshiwag* (deer).

6.2.1.4 Operation

6.2.1.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected normal increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts include:

- The increase in road surface area will increase the likelihood of vehicle collisions with *waawaashkeshiwag* (deer), negatively affecting *waawaashkeshiwag* (deer) populations.

- Accidental spills can result in potential water quality and soil contamination, negatively affecting *waawaashkeshiwag* (deer) and *waawaashkeshiwag* (deer) habitat, consequently affecting the wellbeing of the Anishinaabeg who rely on them.

6.2.1.4.2 Maintaining the Right-of-Way

Maintaining the right-of-way involves the ongoing maintenance of the road, including snow removal, applying herbicides, applying ice-control measures, and maintaining pavements. Potential impacts include:

- Applying herbicides could result in leaching of chemicals into waterways and soils, affecting the health and habitat of *waawaashkeshiwag* (deer).
- Highway resurfacing may introduce pollutants and construction wastes into waterways and soils, contaminating *waawaashkeshiwag* (deer) habitat.
- Salt used in ice-control measures may attract wildlife, including *waawaashkeshiwag* (deer), to the roadway, which could increase the likelihood of *waawaashkeshiwag* (deer) related collisions, negatively affecting *waawaashkeshiwag* (deer) and *waawaashkeshiwag* (deer) populations.
- Similarly, salt used in ice-control measures may enter the waterways and soils, affecting *waawaashkeshiwag* (deer) and *waawaashkeshiwag* (deer) habitat.

6.2.1.5 Mitigation Measures to Protect *Waawaashkeshiwag*

The potential impacts to *waawaashkeshiwag* (deer) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Using sand/salt alternatives for controlling road ice to reduce wildlife attraction.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Avoiding drilling and blasting on windy days.
- Scheduling blasting to avoid hunting season.
- Developing and implementing a Construction Environmental Management Plan.
- Building wildlife corridors to facilitate the movement of animals.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Identifying and removing any mineral or salt licks.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law), that entails monitoring the effectiveness of the measures applied, monitoring the overall health of the lands, soils, waters, and skies, and developing opportunities to promote traditional practices.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.

- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Supporting additional investigations to identify areas of wildlife crossing and determine if wildlife corridors can be a viable option for subsequent phases of the project.
- Installing signage to note wildlife presence in the area.
- Limiting areas to be cleared as strictly necessary, revegetating *mitigoog* (trees) and other plants above what was removed in addition to developing a Revegetation Plan in collaboration with Niiwin Wendaanimok.
- Delineating right-of-way vegetation clearing zones and vegetation retention zones. No equipment, materials, or other construction activities will be permitted in these zones.
- Using a vertical alignment design that improves visibility and stopping sight distance for motorists which should reduce animal collisions, providing additional wildlife crossing signs, and keep vegetation clear to improve sightlines for motorists.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area.
- Using dust suppression measures during blasting, avoiding blasting on windy days, schedule blasting around the hunting season, avoid blasting near waterbodies, developing a blast specification to avoid potential impacts to school busses, and continually provide advanced notification of blasting activities.
- Monitoring blasting and drilling vibrations, as well as providing ongoing advanced blast notifications to limit disruption to hunting activities.
- Using large culvert designs to allow for the uninhibited movement of wildlife and water and using reusing old culverts when possible, to reduce waste.
- Using sand/salt alternatives for controlling road ice, using environmentally friendly herbicides, and using environmentally friendly materials on the road base.
- Managing salt impacted soil and groundwater, including removing mineral licks.

- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all applicable regulations.

Waawaashkeshiwag (deer) and hunting are of central importance to Anishinaabe identity and culture. Community knowledge about species habitat, movement habits, and hunting techniques has been ingrained in Anishinaabe culture for generations and is knowledge that continues to be passed on between families and communities. An Elder from Niisaachewan described this intimate relationship:

> *As a community we get together, and we help each other out or teach the younger ones. We usually teach somebody else that's willing, to come [join] and teach them how to hunt and fish, and cut up deer or fish. So, they can carry on the traditional life.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

Waawaashkeshiwag (deer) are greatly respected for their ability to continually nourish communities through food and teachings. *Waawaashkeshiwag (deer)* were given the power of grace as one of the *ototaimimaug* (the original clans). Additionally, as symbols of sustenance, they represent the Anishinaabe culture's ability to support its people throughout time, and to do so with grace and respect. In this way, *Waawaashkeshiwag* (deer) are essential to the wellbeing of the Anishinaabeg and their ability to endure for the generations to come.

6.2.2 *Moozoog* (Moose, *Alces alces*)

Moozoog (moose) are a symbol of endurance and strength because of what hunting them requires of the hunter (Johnston, 1976, p. 53). The hunter must be strong and able to endure an arduous hunt that could last many days. Similar to *waawaashkeshiwag* (deer), *moozoog* (moose) are also a symbol of sustenance and a totem of hunters (Johnston, 1976, p. 60). They are a crucial component of Anishinaabe wellbeing because of their value in the hunt and the nourishment they provide communities. *Moozoog* (moose) are an emblem of success in hunting, as the species has continued to remain a staple source of food throughout time. As this Elder from Shoal Lake 40 shared:

> *I know a story about Hay River here, my grandpa killed a moose with a hatchet. He went to go check his campground and saw a moose with its antler stuck on a tree. Took advantage of that. Had to paddle all the way back with a bunch of guys, fed the whole reserve. Saved everybody apparently that day, because I guess everyone was going hungry at the time. Killed a moose and everybody took a share.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, September 24, 2019.*

Moozoog (moose) utilize forested areas for cover and winter feeding and shallow aquatic areas for summer feeding. *Mooz* (moose) aquatic feeding areas and calving areas (upland islands, shorelines, or peninsulas) are identified as "significant wildlife habitat" for *moozoog* (moose) by the Significant Wildlife Habitat Technical Guide (Ontario Ministry of Natural Resources, 2000). Three areas in Phase 1 were identified as *mooz* (moose) aquatic feeding areas, each intersecting with the Project Site. *Mooz*

(moose) aquatic feeding areas can also be found on the shores of lakes, and rivers. Phase 1 of the Project falls within Wildlife Management Unit ("WMU") 7B in Cervid Ecological Zone D1. The goal of the Ministry of Natural Resources and Forestry is to keep a moderate to high density of *moozoog* (moose) in Cervid Ecological Zone D1 (Ontario Ministry of Natural Resources, 2000). Knowledge of the *moozoog* (moose) and their importance to the Anishinaabeg can be found in Section 5.3.1.2 with information on hunting the species in Section 5.7.7.

6.2.2.1 Pre-Construction

6.2.2.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. It is expected that approximately 24.1 ha of *mitig* (tree) covered area will be removed as a result of Phase 1 staging activities. In-water works will occur at five locations across the Project area. This includes the Baubee Lake tributary of the Whiteshell River and four additional Whiteshell River tributaries, as noted in **Appendix 5**. Potential impacts are:

- Removing vegetation will remove *mooz* (moose) habitat utilized year-round and for winter feeding. Changes to the habitat of *moozoog* (moose) could further affect their populations, consequently affecting availability for hunting, and hence the wellbeing of the Anishinaabeg.
- Similarly, removing vegetation within the vicinity of aquatic areas such as at the Baubee Lake tributary, an area identified as a *mooz* (moose) aquatic feeding area, and Whiteshell River tributaries, could also alter the drainage patterns of surface runoff, affecting vegetation and wetland areas around the Baubee Lake tributary and Whiteshell River tributaries, negatively affecting *mooz* (moose) habitat and access to food sources.
- Noise disturbance from equipment and haul traffic may disturb *moozoog* (moose), further displacing them.
- Accidental spills from equipment could enter the waterways used by *moozoog* (moose), as well as the soil, affecting *mooz* (moose) health and habitat.
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *moozoog* (moose), negatively affecting their population.

6.2.2.2 Construction

6.2.2.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. It is expected to be concentrated to highly compacted areas or areas predominantly composed of bedrock. Three areas in Phase 1 were identified as *mooz* (moose) aquatic feeding areas, each intersecting with the Project Site. These areas are all within 400 m of blasting locations. Potential impacts are:

- Removing habitat and food sources through blasting forested areas may result in harm or death of *moozoog* (moose), negatively affecting their population. Changes to *mooz* (moose) populations will consequently affect the wellbeing of the Anishinaabeg.
- Ground vibrations, fragmented rock propelled into the *bagidanaamowin* (air), noise, and dust produced during blasting can disturb *moozoog* (moose) and their habitat, potentially further displacing them.
- Blasting chemicals used may leach into soils and waterways used by *moozoog* (moose), negatively affecting the health and habitat of *moozoog* (moose).

6.2.2.2.2 Installing Culverts & Realigning Watercourses

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation and dewatering procedures. Watercourse realignment will occur at four culvert sites. In-water works will occur at five locations across the Project area. This includes the Baubee Lake tributary of the Whiteshell River and four additional Whiteshell River tributaries. The Baubee Lake tributary features a cattail marsh and is also identified as one of the three *mooz* (moose) aquatic feeding areas. Potential impacts are:

- Stripping, clearing, and grubbing involved in channel preparation and widening can introduce pollutants into the waterways and soils, negatively affecting *mooz* (moose) health and habitat downstream.
- Similarly, removing wetland vegetation from aquatic areas such as at the Baubee Lake tributary, an area identified as a *mooz* (moose) aquatic feeding area, could alter the drainage patterns of surface runoff, affecting vegetation and wetland areas around Baubee Lake tributary and Whiteshell River tributaries, negatively affect *mooz* (moose) habitat.

6.2.2.2.3 Building the Road

The construction process will involve excavating and hauling of rock, and filling, levelling, and grading of the new highway, applying dust suppression measures, applying sediment and erosion control measures, installing signage and barriers, and using and fueling equipment. Construction waste will be generated during these procedures.

In-water works will occur at five locations across the Project area. This includes the Baubee Lake tributary of the Whiteshell River and four additional Whiteshell River tributaries, as noted in **Appendix 5**. The Baubee Lake tributary features a cattail marsh and is also identified as one of the three *mooz* (moose) aquatic feeding areas. Cattail marshes were identified as to be partially or completely filled in to accommodate the new highway lanes. Potential impacts are:

- Noise disturbance from increased presence of construction traffic may disturb *moozoog* (moose), further displacing them. Consequently, this could lower the *mooz* (moose) population, affecting the wellbeing of the Anishinaabeg who rely on them as a source of food and identity.

- Accidental spills from equipment could enter the waterways used by *moozoog* (moose) for feeding, as well as into the soil, affecting *mooz* (moose) health and habitat.
- Partially or completely filling wetland areas will remove *mooz* (moose) habitat and food sources. Additionally, this could alter the drainage patterns of surface runoff, affecting vegetation and wetland areas downstream. Consequently, this could lower the *mooz* (moose) population, affecting the wellbeing of the Anishinaabeg.
- Dust and contaminants generated through the excavation, hauling and filling of rock could settle in the waterways and surrounding soils contaminating *mooz* (moose) habitat.
- Chemicals used in dust suppression may leach into waterways and soils, polluting *mooz* (moose) habitat and food sources, as well as damaging *mooz* (moose) health.
- The improper disposal of construction waste could result in the contamination of *mooz* (moose) habitat.
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *moozoog* (moose), negatively affecting their population.

6.2.2.2.4 Relocating Utilities

Relocating utilities will involve relocating a Bell underground fibre line and extending a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, and drilling along the right-of-way. Potential impacts are:

- Removing vegetation will remove *mooz* (moose) habitat and food sources utilized year-round. Changes to the habitat of *moozoog* (moose) could affect their populations, consequently affecting availability for hunting, and hence the wellbeing of the Anishinaabeg.
- Noise disturbance and ground vibrations generated from equipment and drilling may disturb *moozoog* (moose), further displacing them.
- Accidental spills from equipment could enter the waterways used by *moozoog* (moose), such as for feeding, as well as entering the soil, affecting *mooz* (moose) health and habitat.
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *moozoog* (moose), negatively affecting their populations.
- Dust and contaminants generated through drilling could settle in the waterways and surrounding soils contaminating *mooz* (moose) habitat.

6.2.2.3 Demobilization & Restoration

6.2.2.3.1 Revegetating & Restoring

Revegetating will entail revegetation in accordance with the Revegetation Plan to be developed prior to construction. Potential impacts are:

- Creating new areas for *moozoog* (moose) to inhabit, positively affecting *moozoog* (moose).
- Creating new areas for *mooz* (moose) food sources to grow, positively affecting *moozoog* (moose).

6.2.2.4 Operation

6.2.2.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected normal increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- Increased road surface area will increase the likelihood of vehicle collisions with *moozoog* (moose), negatively affecting *mooz* (moose) populations, consequently affecting availability for hunting, and hence the wellbeing of the Anishinaabeg.
- Accidental spills can result in potential water quality and soil contamination, negatively affecting *moozoog* (moose) and their habitat, consequently affecting the wellbeing of the Anishinaabeg who rely on them.

6.2.2.4.2 Maintaining the Right-of-Way

Maintaining the right-of-way involves the ongoing maintenance of the road, including snow removal, applying herbicides, applying ice-control measures, and maintaining pavements. Potential impacts are:

- Applying herbicides could result in leaching of chemicals into waterways and soils, affecting the health and habitat of *moozoog* (moose).
- Highway resurfacing may introduce pollutants and construction wastes into waterways and soils, contaminating *mooz* (moose) habitat.
- Salt used in ice-control measures may attract wildlife, including *moozoog* (moose), to the roadway, which could increase the likelihood of *mooz* (moose) related collisions, negatively affecting *moozoog* (moose) and their populations.
- Similarly, salt used in ice-control measures may enter the waterways and soils, affecting *moozoog* (moose) and their habitat.

6.2.2.5 Mitigation Measures to Protect *Moozoog* (Moose)

The potential impacts to *moozoog* (moose) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Using sand/salt alternatives for controlling road ice to reduce wildlife attraction.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Reusing or salvaging old culverts to reduce waste.
- Limiting areas to be cleared as strictly necessary.
- Installing wildlife crossing signs.
- Avoiding drilling and blasting on windy days.
- Scheduling blasting to avoid hunting season.

- Developing and implementing a Construction Environmental Management Plan.
- Building wildlife corridors to facilitate the movement of animals.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Identifying and removing any mineral or salt licks.
- Ensuring spills are cleaned up immediately.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, monitoring the overall health of the lands, soils, waters, and skies, and developing opportunities to promote traditional hunting practices.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Supporting additional investigations to identify areas of wildlife crossing and determine if wildlife corridors can be a viable option for subsequent phases of the project.
- Installing signage to note presence of wildlife in the area.
- Limiting areas to be cleared as strictly necessary, revegetating *mitigoog* (trees) and other plants above what was removed in addition to developing a Revegetation Plan in collaboration with Niiwin Wendaanimok.
- Delineating right-of-way vegetation clearing zones and vegetation retention zones. No equipment, materials, or other construction activities will be permitted in these zones.
- Using a vertical alignment design that improves visibility and stopping sight distance for motorists which should reduce animal collisions, providing additional wildlife crossing signs, and keep vegetation clear to improve sightlines for motorists.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area.

- Using dust suppression measures during blasting, avoiding blasting on windy days, schedule blasting around the hunting season, avoid blasting near waterbodies, developing a blast specification to avoid potential impacts to school busses, and continually provide advanced notification of blasting activities.
- Monitoring blasting and drilling vibrations, as well as providing ongoing advanced blast notifications to limit disruption to hunting activities.
- Using large culvert designs to allow for the uninhibited movement of wildlife and water and using reusing old culverts when possible to reduce waste.
- Using sand/salt alternatives for controlling road ice, using environmentally friendly herbicides, and using environmentally friendly materials on the road base.
- Managing salt impacted soil and groundwater, including removing mineral licks.
- Adhering to Special provision No. 101F23 - Timing of In-Water Works, Oversight Requirements, and Measures to Avoid Harm to Fish, a copy of which is included in **Appendix 5**.
- Applying approved herbicides (NAVIUS™ VM HERBICIDE, *Pest Control Products Act* Registration No. 31382) in accordance with the *Pesticides Act, 1990*, *Pest Control Products Act*, and all applicable regulations.

Moozoog (moose) and hunting are of central importance to Anishinaabe identity and culture. Community knowledge about species habitat, seasonal movements, and hunting techniques has been ingrained in Anishinaabe culture for generations and is knowledge that continues to be passed on between families and communities. Ongoing development in the Treaty 3 territory has reduced the numbers of *moozoog* (moose) that can be found, changing the dynamic the Anishinaabeg have with the land and hunting *moozoog* (moose). This Elder from Shoal Lake 40 described this loss in community tradition:

> *It was really good for hunting because anywhere you looked, you'd see a moose standing there. We had a lot of work cut out for ourselves when we shot them. Now when we go out there it looks like a little town or community in this area. When my cousin came back a few years ago we went to go check out the lake and he was surprised to see all those cabins, he said, 'holy cow we used to hunt here! We're losing all our hunting lands.' And I said, 'yep'.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

Moozoog (moose) are the gentle giants of the forest and are greatly respected for their ability to nourish entire communities through food and teachings. *Moozoog* (moose) hold the power of endurance and strength. *Moozoog* (moose) channel this power into the hunter so that they can feed their own families and communities. Additionally, as symbols of sustenance, they represent the Anishinaabe culture's ability to support its people throughout time, remaining strong while enduring hardship. In this way, *moozoog* (moose) are essential to the wellbeing of the Anishinaabeg and their ability to endure for the generations to come.

6.2.3 *Amikwag* (Beaver, *Castor canadensis*)

Amikwag (beaver) were given the power of resourcefulness by *Kizhe Manitou* (the Creator), which they remain a symbol of today. *Amikwag* (beaver) were given this power because of their ability to modify their environment (Johnston, 1976, p. 53). *Amikwag* (beaver) are also a symbol of sustenance, making them a crucial component of Anishinaabe wellbeing. For many years, *amikwag* (beaver) were trapped, and became staple source of income and food for Anishinaabe families. *Amikwag* (beaver) also represent wisdom because of how the species uses its natural gifts for survival. The tail of *amik* (Beaver) is believed to be the inspiration for Original Man when he created the first canoe paddle (Benton-Banai, 1988, p. 12). With strong historical ties to the Treaty 3 territory, *amikwag* (beaver) continue to be important to the Anishinaabe culture. As noted by this Elder from Niisaachewan in Section 5.3.1.3:

> *We hit the back roads, then spotted a beaver putting up a dam also. Middle of nowhere. 'How did he get up here?', I was thinking. Like he owns the whole territory, it's the way he lives. He's got a pond here and a pond up here, and it's like stairs. For him, he controls the water. And you see everything growing there. The same situation the beaver has – if we could control our own water, we'd have the same thing the beaver does. If his house was getting flooded out, he'd open the other creek and drain it out. It's all controlled. It would be nice to have if we had that on our side here somewhere.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 18, 2019.*

Amikwag (beaver) depend on both wetland and forested areas. *Amikwag* (beaver) will build lodges along the banks of streams, rivers, ponds, and lakes. *Amikwag* (beaver) are also known to dam culverts. Knowledge of the *amikwag* (beaver) and the importance to the Anishinaabeg can be found in Section 5.3.1.3 and information on trapping the species in Section 5.7.8.

6.2.3.1 Pre-construction

6.2.3.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. *Amikwag* (beaver) dams are to be removed where necessary. In-water works will occur at five locations across the Project area. This includes the Baubee Lake tributary of the Whiteshell River and four additional Whiteshell River tributaries. Shallow roadside water pockets have also been identified along the right-of-way that are the result of *amikwag* (beaver) activity. It is expected that approximately 24.1 ha of *mitig* (tree) covered area will be removed as a result of Phase 1 staging activities. Potential impacts are:

- Removing vegetation within forested areas and in the vicinity of Baubee Lake tributary and Whiteshell River tributaries, will remove the riparian habitat utilized by *amikwag* (beaver). *Amikwag* (beaver) rely on these areas for food and materials for building lodges and dams.

Changes to the habitat of *amikwag* (beaver) could affect their populations, consequently affecting availability for trapping, and hence the wellbeing of the Anishinaabeg.

- Similarly, removing vegetation within the vicinity of aquatic areas such as at the Baubee Lake tributary and Whiteshell River tributaries, could also alter the drainage patterns of surface runoff, affecting vegetation and wetland areas around the Baubee Lake tributary and Whiteshell River tributaries, negatively affect *amikwag* (beaver) habitat.
- Removing *amikwag* (beaver) dams will remove *amikwag* (beaver) habitat, and potentially alter water levels in surrounding waterbodies, affecting *amikwag* (beaver) populations and potentially further displacing them.
- Noise disturbance from equipment and haul traffic may disturb *amikwag* (beaver), further displacing them.
- Accidental spills from equipment could enter the waterways as well as the soil, affecting *amikwag* (beaver) health and habitat.
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *amikwag* (beaver), negatively affecting *amikwag* (beaver) populations.
- Dust generated through stockpiling and hauling materials and equipment can result in sedimentation and runoff, potentially negatively affecting water quality and therefore *amikwag* (beaver) habitat.

6.2.3.2 Construction

6.2.3.2.1 Blasting

Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect at the Baubee Lake tributary of the Whiteshell River and four additional Whiteshell River tributaries. Potential impacts are:

- Removing habitat and food sources through blasting of forests, riparian areas, and waterbodies may result in harm or death of *amikwag* (beaver), negatively affecting their populations. Changes to *amikwag* (beaver) populations will consequently affect the wellbeing of the Anishinaabeg.
- Ground vibrations, fragmented rock propelled into *bagidanaamowin* (the air), noise, and dust produced during blasting can disturb *amikwag* (beaver) and their habitat, potentially further displacing them.
- Blasting chemicals used may leach into waterways, negatively affecting the health and habitat of *amikwag* (beaver).

6.2.3.2.2 Building the Road

The construction process will involve the excavation and hauling of rock, and filling, levelling, and grading of the new highway, applying dust suppression measures, applying sediment and erosion

control measures, and using and fueling equipment. Construction waste will be generated during these procedures. Potential impacts are:

- Noise disturbance from increased presence of construction traffic may disturb *amikwag* (beaver), further displacing them. Consequently, this could lower the *amikwag* (beaver) population, affecting the wellbeing of the Anishinaabeg who rely on them as a source of food and identity.
- Accidental spills from equipment could enter the waterways and affect *amikwag* (beaver) health and habitat.
- Partially or completely filling wetland areas will remove *amikwag* (beaver) habitat and food sources. Additionally, this could alter the drainage patterns of surface runoff, affecting vegetation and wetland areas downstream.
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *amikwag* (beaver), negatively affecting *amikwag* (beaver) populations.
- Levelling and grading within the right-of-way may cause damage to surrounding culverts and ditches, negatively impacting *amikwag* (beaver) habitats.
- Dust and contaminants generated through the excavation, hauling and filling of rock could settle in the waterways causing sedimentation and contamination of *amikwag* (beaver) habitat.
- Chemicals used in dust suppression may leach into waterways, polluting *amikwag* (beaver) habitat and food sources, as well as damaging *amikwag* (beaver) health.
- The improper disposal of construction waste could result in the contamination of *amikwag* (beaver) habitat.

6.2.3.3 Installing Culverts & Realigning Watercourses

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation and dewatering procedures. Watercourse realignment will occur at four culvert sites. MTO has indicated that the majority of the watercourses and waterbodies throughout the project area and along the proposed alignment are small, warmwater tributaries or wetlands that ultimately drain to larger systems. Many these features are modified by *amikwag* (beaver) activity. Potential impacts include:

- Removing vegetation in culverts will negatively impact *amikwag* (beaver) health and habitat by removing food sources. Consequently, this could lower the *amikwag* (beaver) population, affecting the wellbeing of the Anishinaabeg.
- Similarly, dewatering may cause a change in water levels of surrounding waterbodies, negatively affecting *amikwag* (beaver) habitat.
- Pumping during dewatering could result in noise disturbance to the *amikwag* (beaver), resulting in further displacement of *amikwag* (beaver).

- Stripping, clearing, and grubbing involved in channel preparation and widening can introduce sediment and pollutants into the waterway, negatively affecting *amikwag* (beaver) health and habitat.

6.2.3.4 Relocating utilities

Relocating utilities will involve relocating a Bell underground fibre line and extending a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, and drilling along the right-of-way. Potential impacts include:

- Removing vegetation during stripping, clearing, and grubbing can cause damage to *amikwag* (beaver) habitat and food sources, negatively impacting *amikwag* (beaver). Consequently, this could lower the *amikwag* (beaver) population, affecting the wellbeing of the Anishinaabeg.
- Similarly, removing vegetation could also change the drainage patterns within riparian areas, changing water levels and negatively affect *amikwag* (beaver) habitat.
- Noise and ground vibrations generated from construction activity may disturb *amikwag* (beaver).
- Accidental spills from equipment could enter the waterways and affect *amikwag* (beaver) health and habitat.
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *amikwag* (beaver), negatively affecting *amikwag* (beaver) populations.
- Dust and contaminants generated through the excavation, hauling and filling of rock could settle in the waterways causing sedimentation and contamination of *amikwag* (beaver) habitat.

6.2.3.5 Demobilizing and Restoring

6.2.3.5.1 Revegetating & Restoring

Revegetating will entail revegetation in accordance with the Revegetation Plan to be developed prior to construction. Site restoration along the edge of the waterways will include the restoration of the riparian zone. The Restoration Plan will entail restoring old and abandoned pits to provide a net benefit to the environment (pits are yet to be identified and the plan to be developed). Potential impacts include:

- Creating new areas for *amikwag* (beaver) to inhabit, positively affecting *amikwag* (beaver).
- Creating new areas for *amikwag* (beaver) food sources to grow, positively affecting *amikwag* (beaver).

6.2.3.6 Operation

6.2.3.6.1 Using the new highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected normal increases in traffic volumes. Although the new highway

is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts include:

- Increased road surface area will increase the likelihood of vehicle collisions with *amikwag* (beaver), negatively affecting *amikwag* (beaver) populations.
- Accidental spills can result in potential water quality contamination, negatively affecting *amikwag* (beaver) and *amikwag* (beaver) habitat, consequently affecting the wellbeing of the Anishinaabeg who rely on them.
- Dust generated through the operation of vehicles can result in sedimentation and runoff, affecting water quality along the highway and therefore *amikwag* (beaver) habitat.

6.2.3.6.2 Maintaining right-of-way

Maintaining the right-of-way involves the ongoing maintenance of the road, including snow removal, applying herbicides, applying ice-control measures, and maintaining pavements. Potential impacts include:

- Snow clearing may push debris and other contaminants into ditches or culverts, damaging *amikwag* (beaver) habitat.
- Maintaining culverts may disturb or damage *amikwag* (beaver) habitat and food sources.
- Applying herbicides could result in leaching of chemicals, affecting the health and habitat of *amikwag* (beaver).
- Highway resurfacing may introduce pollutants and construction wastes into waterways, contaminating *amikwag* (beaver) habitat.

6.2.3.7 Mitigation Measures to Protect *Amikwag* (Beaver)

The potential impacts to *amikwag* (beaver) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Using sand/salt alternatives for controlling road ice to reduce wildlife attraction.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Reusing or salvaging old culverts to reduce waste.
- Ensuring new culverts are large enough to allow for *amikwag* (beaver) to freely move.
- Limiting areas to be cleared as strictly necessary.
- Installing wildlife crossing signs.
- Avoiding drilling and blasting on windy days.
- Scheduling blasting to avoid hunting season.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Identifying and removing any mineral or salt licks.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law), that entails monitoring the effectiveness of the

measures applied, monitoring the overall health of the lands, soils, waters, and skies, and developing opportunities to promote traditional trapping practices.

- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Supporting additional investigations to identify areas of wildlife crossing and determine if wildlife corridors can be a viable option for subsequent phases of the project.
- Installing signage to note presence of wildlife in the area.
- Limiting areas to be cleared as strictly necessary, revegetating *mitigoog* (trees) and other plants above what was removed in addition to developing a Revegetation Plan in collaboration with Niiwin Wendaanimok.
- Delineating right-of-way vegetation clearing zones and vegetation retention zones. No equipment, materials, or other construction activities will be permitted in these zones.
- Using a vertical alignment design that improves visibility and stopping sight distance for motorists which should reduce animal collisions, providing additional wildlife crossing signs, and keep vegetation clear to improve sightlines for motorists.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area.
- Using dust suppression measures during blasting, avoiding blasting on windy days, schedule blasting around the hunting season, avoid blasting near waterbodies, developing a blast specification to avoid potential impacts to school busses, and continually provide advanced notification of blasting activities.
- Monitoring blasting and drilling vibrations, as well as providing ongoing advanced blast notifications to limit disruption to hunting activities.

- Using large culvert designs to allow for the uninhibited movement of wildlife and water and using reusing old culverts when possible, to reduce waste.
- Using sand/salt alternatives for controlling road ice, using environmentally friendly herbicides, and using environmentally friendly materials on the road base.
- Managing salt impacted soil and groundwater, including removing mineral licks.
- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all applicable regulations.

Amikwag (beaver) and trapping are of central importance to the Anishinaabeg. Community knowledge about species habitat, lodging and denning habits, and trapping techniques has been ingrained in Anishinaabe culture for generations and is knowledge that continues to be passed on between families and communities. *Amikwag* (beaver) served many purposes to the Anishinaabeg. An Elder from Wauzhushk Onigum described this:

> *I used to go with my dad when he used to hunt beaver. And I used to go with my mom when she used to trap beaver. But I learned how to skin beaver from my grandma. And I finally killed my first beaver too when I lived with my husband in Wash Bay. That's the first time I ever shot a beaver, because we had no food and we had to go hunting so I shot beaver and skinned it, cooked the beaver and traded the fur.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

Amikwag (beaver) are greatly for their resourcefulness and ability to adapt their environment to fit their own needs. The symbol of resourcefulness and adaptability is also such of the Anishinaabeg, who have been able to adapt to the changing times throughout history. As one of the most popular trapped species, *amikwag* (beaver) has remained a symbol of sustenance for the Anishinaabeg. The species has an inherent spiritual value, making them essential to the wellbeing of the Anishinaabeg and their continued ability to adapt to the changing environment.

6.2.4 *Wauzhushkwag* (Muskrats, *Ondatra zibethicus*)

Wauzhushkwag (muskrats) were given the power of endurance, which they remain a symbol of today (Johnston, 1976, p. 53). With Original Man, *wauzhushkwag* (muskrats) played a particularly important role in the creation of *Aki* (Earth). After the Great Flood, a *wauzhushk* (muskrat) swam to the bottom of the waters and retrieved a piece of earth for Original Man to create the new land with. Today, *wauzhushkwag* (muskrats) continue to make their nests in the water to honour their history (Benton-Banai, 1988, p. 34). Given their critical role in the Creation Story and strong historical ties to the Treaty 3 territory, *wauzhushkwag* (muskrats) continue to be important to the Anishinaabe culture. As noted by this Elder from Washagamis Bay in Section 5.3.1.4:

> *Those areas had fossilized muskrat and things like that on the rock there that they blasted all away there when they built that stuff… They destroyed a lot of that area. They were just talking about our teachings about that muskrat and how that name*

became very prominent in the area here. They talked about that muskrat visiting our area, the spirit of the muskrat, the muskrat itself really like the area because of the way that people treated them. And there's tracks, which will be the fossilized tracks and whatnot. And the story's told the muskrat left from there and went north and said it would return one day, but it hasn't returned.

Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.

Wauzhushk (muskrat) inhabit shallow aquatic areas with ample vegetation. *Wauzhushkwag* (muskrats) will den in the banks of streams, rivers, ditches, and culverts. Knowledge of the *wauzhushk* (muskrat) and the importance to the Anishinaabeg can be found in Section 5.3.1.4 and information on trapping the species in Section 5.7.8.

6.2.4.1 Pre-construction

6.2.4.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. In-water works will occur at five locations across the Project area. This includes the Baubee Lake tributary of the Whiteshell River and four additional Whiteshell River tributaries, as noted in **Appendix 5**. Shallow roadside water pockets have also been identified along the right-of-way. Potential impacts are:

- Removing vegetation in the vicinity of Baubee Lake tributary and Whiteshell River tributaries, will remove the riparian habitat utilized by *wauzhushkwag* (muskrats) during juvenile dispersion and forced relocation due to fighting. Changes to the habitat of *wauzhushkwag* (muskrats) could affect their populations, consequently affecting availability for trapping, and hence the wellbeing of the Anishinaabeg.
- Similarly, removing vegetation within the vicinity of aquatic areas such as at the Baubee Lake tributary and Whiteshell River tributaries, could also alter the drainage patterns of surface runoff, affecting vegetation and wetland areas around the Baubee Lake tributary and Whiteshell River tributaries, negatively affect *wauzhushk* (muskrat) habitat.
- Noise disturbance from equipment and haul traffic may disturb *wauzhushkwag* (muskrats), further displacing them.
- Accidental spills from equipment could enter the waterways and affect the health and habitat of *wauzhushkwag* (muskrats).
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *wauzhushkwag* (muskrats), negatively affecting *wauzhushk* (muskrat) populations.
- Dust generated through stockpiling and hauling materials and equipment can result in sedimentation and runoff, potentially negatively affecting water quality and therefore *wauzhushk* (muskrat) habitat.

6.2.4.2 Construction

6.2.4.2.1 Blasting

Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect at the Baubee Lake tributary of the Whiteshell River and four additional Whiteshell River tributaries. Additionally, blasting will intersect at any shallow roadside water pockets along the right-of-way. Potential impacts are:

- Removal of habitat and food sources through blasting of tributaries and waterbodies, which may result in harm or death of *wauzhushkwag* (muskrats), negatively affecting their population. Changes to *wauzhushk* (muskrat) populations will consequently affect the wellbeing of the Anishinaabeg.
- Ground vibrations, fragmented rock propelled into *bagidanaamowin* (the air), noise, and dust produced during blasting can disturb *wauzhushkwag* (muskrats) and *wauzhushk* (muskrat) habitat. *Wauzhushkwag* (muskrats) may be forced to temporarily relocate or due to repeated noise disruptions.
- Blasting chemicals used may leach into waterways, negatively affecting the health and habitat of *wauzhushkwag* (muskrats).

6.2.4.2.2 Building the Road

The construction process will involve the excavation and hauling of rock, and filling, levelling, and grading of the new highway, applying dust suppression measures, applying sediment and erosion control measures, and using and fueling equipment. Construction waste will be generated during these procedures. Potential impacts are:

- Noise disturbance from increased presence of construction traffic may disturb *wauzhushkwag* (muskrats), further displacing them. Consequently, this could lower the *wauzhushk* (muskrat) populations, affecting the wellbeing of the Anishinaabeg who rely on them as a source of food and identity.
- Accidental spills from equipment could enter the waterways and affect the health and habitat of *wauzhushkwag* (muskrats).
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *wauzhushkwag* (muskrats), negatively affecting the *wauzhushk* (muskrat) population.
- Levelling and grading within the right-of-way may cause damage to surrounding culverts and ditches, negatively impacting the habitat of *wauzhushkwag* (muskrats).
- Dust and contaminants generated through the excavation, hauling and filling of rock could settle in the waterways causing sedimentation and contamination of *wauzhushk* (muskrat) habitat.
- Chemicals used in dust suppression may leach into waterways, polluting *wauzhushk* (muskrat) habitat and food sources, as well as damaging the health of *wauzhushkwag* (muskrats).

- The improper disposal of construction waste could result in the contamination of the habitat of *wauzhushk* (muskrats).

6.2.4.3 Installing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation and dewatering procedures. Watercourse realignment will occur at four culvert sites. Potential impacts include:

- Removal of vegetation in culverts, will negatively impact the health and habitat of *wauzhushkwag* (muskrats) by removing food sources. Consequently, this could lower the *wauzhushk* (muskrat) population, affecting the wellbeing of the Anishinaabeg.
- Similarly, dewatering may cause a change in water levels of surrounding waterbodies, negatively affecting the habitat of *wauzhushkwag* (muskrats).
- Pumping during dewatering could result in noise disturbance to *wauzhushkwag* (muskrats), resulting in further displacement of *wauzhushkwag* (muskrats).
- Stripping, clearing, and grubbing involved in channel preparation and widening can introduce sediment and pollutants into the waterway, negatively affecting the health and habitat of *wauzhushkwag* (muskrats).
- Installing nine new culverts will introduce new areas for *wauzhushkwag* (muskrats) to inhabit, positively affecting *wauzhushkwag* (muskrats) and *wauzhushk* (muskrat) populations.

6.2.4.4 Relocating Utilities

Utility relocation will involve the relocation of a Bell underground fibre line and the extension of a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, and drilling along the right-of-way. Potential impacts include:

- Removing vegetation during stripping, clearing, and grubbing can cause damage to the habitat and food sources of *wauzhushkwag* (muskrats), negatively impacting *wauzhushkwag* (muskrats). Consequently, this could lower the *wauzhushk* (muskrat) population, affecting the wellbeing of the Anishinaabeg.
- Similarly, removing vegetation could also change the drainage patterns within the riparian area, changing water levels and negatively affect the habitat of *wauzhushkwag* (muskrats).
- Noise and ground vibrations generated from construction activity may disturb *wauzhushkwag* (muskrats).
- Accidental spills from equipment could enter the waterways and affect the health and habitat of *wauzhushkwag* (muskrats).
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *wauzhushkwag* (muskrats), negatively affecting *wauzhushk* (muskrat) populations.

- Dust and contaminants generated through the excavation, hauling and filling of rock could settle in the waterways causing sedimentation and contamination of *wauzhushkwag* (muskrat) habitat.

6.2.4.5 Demobilizing and Restoring

6.2.4.5.1 Revegetating & Restoring

Revegetating will entail revegetation in accordance with the Revegetation Plan to be developed prior to construction. Site restoration along the edge of the waterway will include the restoration of the riparian zone. Potential impacts include:

- Creating new areas for *wauzhushkwag* (muskrats) to inhabit, positively affecting *wauzhushkwag* (muskrats).
- Creating new areas for food sources for *wauzhushkwag* (muskrats) to grow, positively affecting *wauzhushkwag* (muskrats).

6.2.4.6 Operation

6.2.4.6.1 Using the new highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected normal increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts include:

- Increase in road surface area will increase the likelihood of vehicle collisions with *wauzhushkwag* (muskrats), negatively affecting *wauzhushk* (muskrat) population.
- Accidental spills can result in potential water quality contamination, negatively affecting *wauzhushkwag* (muskrats) and *wauzhushk* (muskrat) habitat, consequently affecting the wellbeing of the Anishinaabeg who rely on them.
- Dust generated through the operation of vehicles can result in sedimentation and runoff, affecting water quality along the highway and therefore *wauzhushk* (muskrat) habitat.

6.2.4.6.2 Maintaining right-of-way

Maintaining the right-of-way involves the ongoing maintenance of the road, including snow removal, applying herbicides, applying ice-control measures, and maintaining pavements. Potential impacts include:

- Snow clearing may push debris and other contaminants into ditches or culverts, damaging the habitat of *wauzhushkwag* (muskrats).
- Maintaining culverts may disturb or damage the habitat and food sources of *wauzhushkwag* (muskrats).
- Applying herbicides could result in leaching of chemicals, affecting the health and habitat of *wauzhushkwag* (muskrats).

- Highway resurfacing may introduce pollutants and construction wastes into waterways, contaminating *wauzhushk* (muskrat) habitat.

6.2.4.7 Mitigation Measures to Protect *Wauzhushkwag* (Muskrats)

The potential impacts to *wauzhushkwag* (muskrats) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Using sand/salt alternatives for controlling road ice to reduce wildlife attraction.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Reusing or salvaging old culverts to reduce waste.
- Ensuring new culverts are large enough to allow for *wauzhushkwag* (muskrats) to freely move.
- Limiting areas to be cleared as strictly necessary.
- Installing wildlife crossing signs.
- Avoiding drilling and blasting on windy days.
- Scheduling blasting to avoid hunting season.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Identifying and removing any mineral or salt licks.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, monitoring the overall health of the lands, soils, waters, and skies, and developing opportunities to promote traditional trapping practices.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.

- Developing and implementing a Revegetation Plan.
- Supporting additional investigations to identify areas of wildlife crossing and determine if wildlife corridors can be a viable option for subsequent phases of the project.
- Installing signage to note presence of wildlife in the area.
- Limiting areas to be cleared as strictly necessary, revegetating *mitigoog* (trees) and other plants above what was removed in addition to developing a Revegetation Plan in collaboration with Niiwin Wendaanimok.
- Delineating right-of-way vegetation clearing zones and vegetation retention zones. No equipment, materials, or other construction activities will be permitted in these zones.
- Using a vertical alignment design that improves visibility and stopping sight distance for motorists which should reduce animal collisions, providing additional wildlife crossing signs, and keep vegetation clear to improve sightlines for motorists.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area.
- Using dust suppression measures during blasting, avoiding blasting on windy days, schedule blasting around the hunting season, avoid blasting near waterbodies, developing a blast specification to avoid potential impacts to school busses, and continually provide advanced notification of blasting activities.
- Monitoring blasting and drilling vibrations, as well as providing ongoing advanced blast notifications to limit disruption to hunting activities.
- Using large culvert designs to allow for the uninhibited movement of wildlife and water and using reusing old culverts when possible, to reduce waste.
- Using sand/salt alternatives for controlling road ice, using environmentally friendly herbicides, and using environmentally friendly materials on the road base.
- Managing salt impacted soil and groundwater, including removing mineral licks.
- Adhering to Special provision No. 101F23 - Timing of In-Water Works, Oversight Requirements, and Measures to Avoid Harm to Fish, a copy of which is provided in **Appendix 5**.
- Applying approved herbicides (NAVIUS™ VM HERBICIDE, *Pest Control Products Act* Registration No. 31382) in accordance with the *Pesticides Act, 1990*, *Pest Control Products Act*, and all applicable regulations.

Wauzhushkwag (muskrats) and trapping are of central importance to Anishinaabe identity and culture. Community knowledge about the species' habitat, seasonal dispersions, and trapping techniques has been ingrained in Anishinaabe culture for generations and is knowledge that continues to be passed on between families and communities. A community member from Shoal Lake 40 described this intimate relationship her brother is teaching to the youth succinctly:

> *He does it for the school. He came out here and showed the kids moles, muskrats, weasels. They use it just to teach the kids. It's part of the program across where they are putting the culture back in the teachings.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, May 21, 2019.*

Wauzhushkwag (muskrats) are greatly respected for their role in the Creation Story. *Wauzhushkwag* (muskrats) were given the power to endure throughout hardship – representative of the endurance of the Anishinaabe identity throughout time. In this way, *wauzhushkwag* (muskrats) are essential to the wellbeing of the Anishinaabeg and their ability to endure for the generations to come.

6.2.5 *Ma'iinganag* (Wolves, *Canis lupus*)

Ma'iinganag (wolves) were given the power of defense by *Kizhe Manitou* (the Creator) (Johnston, 1976, p. 60). *Ma'iinganag* (wolves) are animals of fierce disposition and are totems of warriors. In addition to their fierce demeanor, *ma'iinganag* (wolves) are also totems of perseverance and guardianship, protecting their families at all costs (Johnston, 1976, p. 53). With the power *ma'iinganag* (wolves) hold in their spirituality and way of life, *ma'iinganag* (wolves) are a crucial component of Anishinaabe wellbeing. *Ma'iinganag* (wolves) also hold their importance through the companionship they provide to the Anishinaabeg and within their own packs. Original Man and a *ma'iingan* (wolf) formed a comradeship when Original Man was first sent to *Aki* (Earth) by *Kizhe Manitou* (the Creator), creating a lasting relationship between humans and the animal world. A story this Elder from Niisaachewan shared about a bond with a *ma'iingan* (wolf) emulates this:

> *[The wolf pup] eventually became the leader of a pack…he actually brought a deer hindquarter for me… he dragged it over to me and I pushed it towards him, then he'd bring it back again.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

Ma'iinganag (wolves) are habitat generalists, requiring only the essentials of food, shelter, and denning sites. *Ma'iinganag* (wolves) shadow the movements of their prey and rely on the availability of them to remain established in an area. These species include *waawaashkeshiwag* (deer) and *moozoog* (moose). The Eastern Wolf is listed as "Threatened" by the Committee on the Status of Endangered Wildlife in Canada ("COSEWIC") and a "Species of Special Concern" under the *Species Act Risk Act, 2002*. Knowledge of the *ma'iinganag* (wolves) and the importance to the Anishinaabeg can be found in Section 5.3.1.5 with information on hunting and trapping the species in Section 5.7.8.

6.2.5.1 Pre-Construction

6.2.5.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. Potential impacts are:

- Removing vegetated areas utilized by *ma'iinganag* (wolves) while hunting and in the rearing season may disturb *ma'iinganag* (wolves), potentially further displacing them.
- Similarly, removing vegetation will remove habitat and food sources utilized year-round by *waawaashkeshiwag* (deer) and *moozoog* (moose). Changes to the habitat of

waawaashkeshiwag (deer) and *moozoog* (moose) could further impact their populations, affecting prey availability for *ma'iinganag* (wolves). Consequently, this could affect *ma'iingan* (wolf) populations, affecting hunting, and hence the wellbeing of the Anishinaabeg.

- Noise disturbance and dust generated from equipment and haul traffic may disturb *ma'iinganag* (wolves) and prey species, further displacing them.
- Accidental spills from equipment could enter the waterways used by *ma'iinganag* (wolves) prey species, such as shallow roadside water pockets used for drinking, as well as the soil, affecting *ma'iingan* (wolf) health and habitat.
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *ma'iinganag* (wolves), negatively affecting *ma'iingan* (wolf) populations. The increased likelihood in vehicle collisions with other wildlife will attract *ma'iinganag* (wolves) to roadkill, further putting the species at risk for vehicle collisions.
- Clearing for the new highway corridor will create a new access corridor for *ma'iinganag* (wolves), increasing the species' access to prey, positively affecting *ma'iinganag* (wolves) and *ma'iingan* (wolf) populations.

The potential impacts to *ma'iinganag* (wolves) from staging during construction can be mitigated by limiting areas to be cleared as strictly necessary and revegetating stripped areas once construction is complete. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Developing a Revegetation Plan in collaboration with Niiwin Wendaanimok.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Delineating right-of-way vegetation clearing zones and vegetation retention zones. No equipment, materials, or other construction activities will be permitted in these zones.
- Carrying out vehicle maintenance and fueling at defined locations or at commercial garages.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.2.5.2 Construction

6.2.5.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. It is expected to be concentrated to highly compacted areas or areas predominantly composed of bedrock. Potential impacts are:

- Removing habitat and food sources may disturb *ma'iinganag* (wolves), negatively affecting their population. Additionally, *ma'iinganag* (wolves) will face strains on their populations when prey species such as *waawaashkeshiwag* (deer) and *moozoog* (moose) are faced with loss of

their own habitat and food sources, straining their populations. Changes to *ma'iingan* (wolf) populations will consequently affect the wellbeing of the Anishinaabeg.
- Similarly, blasting rock will remove crevices between rocks and rock overhangs that *ma'iinganag* (wolves) use for denning. The removal of denning locations may lead to further displacement of the species.
- Ground vibrations, fragmented rock propelled into the *bagidanaamowin* (air), noise, and dust produced during blasting can disturb *ma'iinganag* (wolves) and *ma'iingan* (wolf) habitat, potentially further displacing them.
- Blasting chemicals used may leach into soils and waterways used by *ma'iinganag* (wolves), negatively affecting the health and habitat of *ma'iinganag* (wolves).

The potential impacts to *ma'iinganag* (wolves) from blasting during construction can be mitigated by applying dust suppression during blasting, avoiding blasting on windy days, and by training community members in monitoring water quality. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Using dust control measures (e.g. water, calcium chloride, approved chemical suppressants)
- Monitoring dust levels to ensure dust does not enter an environmentally significant area.
- Monitoring blast vibrations.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.2.5.2.2 Installing Culverts & Realigning Watercourses

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation and dewatering procedures. Watercourse realignment will occur at four culvert sites. The main concerns are:

- Stripping, clearing, and grubbing involved in preparing and widening channels can introduce pollutants into the waterways (including surrounding pockets of water) and soils, negatively affecting *ma'iingan* (wolf) health and habitat.
- Similarly, removing wetland vegetation from aquatic areas such as at the Baubee Lake tributary, will remove habitat for *moozoog* (moose), a prey species that *ma'iinganag* (wolves) rely on.

The potential impacts to *ma'iinganag* (wolves) from installing culverts during construction can be mitigated by developing and implementing an Anishinaabe Guardians Program, limiting areas to be cleared as strictly necessary, revegetating cleared areas, and reusing old culvert designs to reduce waste. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Retaining existing culverts that are in satisfactory condition and considered to have adequate hydraulic capacity.
- Developing a Revegetation Plan in collaboration with Niiwin Wendaanimok.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.2.5.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. The construction process will involve the excavation and hauling of rock and filling, levelling, and grading of the new highway. Construction waste will be generated during these procedures. The main concerns are:

- Noise disturbance from increased presence of construction traffic may disturb *ma'iinganag* (wolves), further displacing them. Consequently, this could lower the *ma'iingan* (wolf) population, affecting the wellbeing of the Anishinaabeg who rely on them as a source of identity. This may also impact the availability of prey species, further putting *ma'iinganag* (wolves) populations at risk.
- Accidental spills from equipment could enter the waterways used by *ma'iinganag* (wolves), such as shallow roadside water pockets for drinking, as well as the soil, affecting *ma'iingan* (wolf) health and habitat.
- Dust and contaminants generated through the excavation, hauling and filling of rock could settle in the waterways and surrounding soils, contaminating *ma'iingan* (wolf) habitat.
- Chemicals used in dust suppression may leach into waterways and soils, polluting *ma'iingan* (wolf) habitat and food sources, as well as damaging *ma'iingan* (wolf) health.
- Improper disposal of construction waste could result in the contamination of *ma'iingan* (wolf) habitat. Improper disposal of food waste produced may also attract *ma'iinganag* (wolves) to the construction site, putting *ma'iinganag* (wolves) at risk for vehicle collisions or becoming acquainted or reliant on human presence.
- Temporary increase in haul traffic will increase the likelihood of vehicle collisions with *ma'iinganag* (wolves), negatively affecting *ma'iingan* (wolves) populations. The increased likelihood in vehicle collisions with other wildlife will attract *ma'iinganag* (wolves) to roadkill, further putting the species at risk for vehicle collisions.

The potential impacts to *ma'iinganag* (wolves) from building the road during construction can be mitigated by installing wildlife crossings, removing any mineral or salt licks that attract prey species, and applying dust control measures. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Minimizing excess material generation through salvage and reuse.

- Carrying out vehicle maintenance and fueling at designated locations or at commercial garages.
- Installing wildlife signage and barriers to limit wildlife access to road.
- Identifying and removing mineral licks along the right-of-way that attract *ma'iingan* (wolf) prey species to reduce the risk of collisions and mortality.
- Explore wildlife crossings through further research and investigations in subsequent phases of the Project.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.2.5.2.4 Relocating Utilities

Relocating utilities will involve relocating a Bell underground fibre line and extending a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, and drilling along the right-of-way. The main concerns are:

- Removing vegetation will remove *ma'iingan* (wolf) habitat and food sources utilized year-round. Changes to the habitat of *ma'iinganag* (wolves) could affect their populations, consequently affecting availability for hunting, and hence the wellbeing of the Anishinaabeg.
- Similarly, removing vegetation will remove habitat and food sources utilized year-round by *waawaashkeshiwag* (deer) and *moozoog* (moose). Changes to the habitat of *waawaashkeshiwag* (deer) and *moozoog* (moose) could affect their populations, affecting prey availability for *ma'iinganag* (wolves). Consequently, this could affect *ma'iingan* (wolf) populations, affecting hunting, and hence the wellbeing of the Anishinaabeg.
- Noise disturbance and ground vibrations generated from equipment and drilling may disturb *ma'iinganag* (wolves), further displacing them.
- Accidental spills from equipment could enter the waterways used by *ma'iinganag* (wolves), such as for feeding, as well as entering the soil, affecting *ma'iingan* (wolf) health and habitat.
- The temporary increase in traffic will increase the likelihood of vehicle collisions with *ma'iinganag* (wolves), negatively affecting *ma'iingan* (wolf) populations.
- Dust and contaminants generated through drilling could settle in the waterways and surrounding soils contaminating *ma'iingan* (wolf) habitat.
- Extending the hydro line will create a new access corridor for *ma'iinganag* (wolves), increasing the species access to prey, positively affecting *ma'iinganag* (wolves) and *ma'iingan* (wolf) populations.

The potential impacts to *ma'iinganag* (wolves) from relocating utilities during construction can be mitigated by using dust suppression during drilling and blasting, by avoiding drilling and blasting on windy days, conducting pre-construction wildlife surveys, revegetation of *mitigoog* (trees) and other plants beyond what was removed, and by preparing a Construction Environmental Management Plan. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Using dust control measures (e.g. water, calcium chloride, approved chemical suppressants)
- Monitoring drill and blast vibrations.
- Developing a Revegetation Plan in collaboration with Niiwin Wendaanimok.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Delineating right-of-way vegetation clearing zones and vegetation retention zones. No equipment, materials, or other construction activities will be permitted in these zones.
- Carrying out vehicle maintenance and fueling at designated areas or at commercial garages.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.2.5.3 Demobilization & Restoration

6.2.5.3.1 Site Revegetation

Revegetating will entail revegetation in accordance with the Revegetation Plan to be developed prior to construction. Potential impacts are:

- Creating new areas for *ma'iinganag* (wolves) to inhabit, positively affecting *ma'iinganag* (wolves).
- Similarly, revegetating new areas will create new habitat for *waawaashkeshiwag* (deer) and *moozoog* (moose). This will introduce new hunting grounds for *ma'iinganag* (wolves), positively affecting *ma'iinganag* (wolves).

6.2.5.4 Operation

6.2.5.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected normal increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- Increased road surface area will increase the likelihood of vehicle collisions with *ma'iinganag* (wolves), negatively affecting *ma'iingan* (wolf) populations. Additionally, this will increase the likelihood of vehicle collisions with other wildlife, attracting *ma'iinganag* (wolves) to roadkill, further putting the species at risk for vehicle collisions, consequently affecting availability for hunting, and hence the wellbeing of the Anishinaabeg.
- Accidental spills can result in potential water quality and soil contamination, negatively affecting *ma'iinganag* (wolves) and *ma'iingan* (wolf) habitat.
- The new highway will create a new access corridor for *ma'iinganag* (wolves), increasing the species access to prey, positively affecting *ma'iinganag* (wolves) and *ma'iingan* (wolf) populations.

The potential impacts to *ma'iinganag* (wolves) from using the highway during operation can be mitigated by installing wildlife corridors and ensuring spills are cleaned up immediately. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Identifying and removing mineral licks along the right-of-way that attract wildlife, including *ma'iinganag* (wolves) prey species, to reduce wildlife mortality risks.
- Implementing a road design that improves visibility and stopping sight distance for motorists which should reduce animal collisions.
- Installing additional wildlife crossing signs and barriers at locations where historical data or local knowledge identifies concerns.
- Clearing vegetation along the right-of-way, improving sightlines for motorists, and reducing potential for wildlife collisions.
- Identifying in collaboration with the Niiwin Wendaanimok appropriate and feasible locations for wildlife corridors in subsequent phases of the Twinning project.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.2.5.4.2 Maintaining the Right-of-Way

Maintaining the right-of-way involves the ongoing maintenance of the road, including snow removal, applying herbicides, applying ice-control measures, and maintaining pavements. Potential impacts include:

- Applying herbicides could result in leaching of chemicals into waterways and soils, affecting the health and habitat of *ma'iinganag* (wolves) and *ma'iingan* (wolf) prey species.
- Highway resurfacing may introduce pollutants and construction wastes into waterways and soils, contaminating *ma'iinganag* (wolves) and *ma'iingan* (wolf) prey species habitat.
- Salt used in ice-control measures may attract wildlife, including *ma'iinganag* (wolves), to the roadway, which could increase the likelihood of *ma'iingan* (wolf) related collisions, negatively affecting *ma'iinganag* (wolves) and *ma'iingan* (wolf) populations. Additionally, this will increase the likelihood of vehicle collisions with other wildlife, attracting *ma'iinganag* (wolves) to roadkill, further putting the species at risk for vehicle collisions.
- Similarly, salt used in ice-control measures may enter the waterways and soils, affecting *ma'iinganag* (wolves) and *ma'iingan* (wolf) habitat. Additionally, this will affect the health and habitat of *ma'iingan* (wolf) prey species.

The potential impacts to *ma'iinganag* (wolves) from maintaining the right-of-way during operation can be mitigated by through using sand/salt alternatives for controlling road ice to reduce wildlife attraction and using sawdust as an alternative to herbicides on the right-of-way. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Managing salt-impacted soil and groundwater appropriately, as there are currently no viable alternatives to the use of road salt/sand as part of winter maintenance.
- Developing an Environmental Incident Management Plan in collaboration with any contractor contracted to carry out maintenance on the right-of-way. MTO advises that spills occurring during routine maintenance are the responsibility of the contractor to address.
- Identifying and removing mineral licks along the right-of-way that attract wildlife, including *waawaashkeshiwag* (deer), to reduce wildlife mortality risks.
- Applying approved herbicides in accordance with the *Pesticides Act,* and all applicable regulations.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.2.5.5 Mitigation Measures to Protect *Ma'iinganag* (Wolves)

The potential impacts to *ma'iinganag* (wolves) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Using sand/salt alternatives for controlling road ice to reduce wildlife attraction.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Reusing or salvaging old culverts to reduce waste.
- Limiting areas to be cleared as strictly necessary.
- Installing wildlife crossing signs.
- Avoiding drilling and blasting on windy days.
- Scheduling blasting to avoid hunting season.
- Developing and implementing a Construction Environmental Management Plan.
- Building wildlife corridors to facilitate the movement of animals.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Identifying and removing any mineral or salt licks.
- Ensuring spills are cleaned up immediately.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law), that entails monitoring the effectiveness of the measures applied, monitoring the overall health of the lands, soils, waters, and skies, and developing opportunities to promote an even deeper understanding of traditional teachings about *ma'iinganag* (wolves) as well as traditional hunting practices.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.

- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Supporting additional investigations to identify areas of wildlife crossing and determine if wildlife corridors can be a viable option for subsequent phases of the project.
- Installing signage to note presence of wildlife in the area.
- Limiting areas to be cleared as strictly necessary, revegetating *mitigoog* (trees) and other plants above what was removed in addition to developing a Revegetation Plan in collaboration with Niiwin Wendaanimok.
- Delineating right-of-way vegetation clearing zones and vegetation retention zones. No equipment, materials, or other construction activities will be permitted in these zones.
- Using a vertical alignment design that improves visibility and stopping sight distance for motorists which should reduce animal collisions, providing additional wildlife crossing signs, and keep vegetation clear to improve sightlines for motorists.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area.
- Using dust suppression measures during blasting, avoiding blasting on windy days, schedule blasting around the hunting season, avoid blasting near waterbodies, developing a blast specification to avoid potential impacts to school busses, and continually provide advanced notification of blasting activities.
- Monitoring blasting and drilling vibrations, as well as providing ongoing advanced blast notifications to limit disruption to hunting activities.
- Using large culvert designs to allow for the uninhibited movement of wildlife and water and using reusing old culverts when possible, to reduce waste.
- Using sand/salt alternatives for controlling road ice, using environmentally friendly herbicides, and using environmentally friendly materials on the road base.
- Managing salt impacted soil and groundwater, including removing mineral licks.
- Applying approved herbicides (NAVIUS™ VM HERBICIDE, *Pest Control Products Act* Registration No. 31382) in accordance with the *Pesticides Act, 1990*, *Pest Control Products Act*, and all applicable regulations.

Ma'iinganag (wolves) are greatly respected for their companionship and spiritual significance. *Ma'iinganag* (wolves) were given the power of defense by *Kizhe Manitou* (the Creator) and are known to be fierce protectors of their packs. Like *ma'iinganag* (wolves), the Anishinaabeg continue to defend their families, lands, and rights. In this way, *ma'iinganag* (wolves) are essential to the wellbeing of the Anishinaabeg and their ability to defend their identity for generations to come. Both the Anishinaabeg and *ma'iinganag* (wolves) are family oriented, relying on the support and protection of their community. Because of *ma'iinganag* (wolves), the Anishinaabeg established a relationship between the human and animal world that will continue throughout the time to come. As this Elder from Wauzhushk Onigum shared:

> *The creator brought us down to Earth. That's part of our DNA as Anishinaabe people… But it's the creation story where the wolf becomes involved in that process.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, August 21, 2019.*

6.3 Impacts to the Skies

6.3.1 *Bagidanaamowin* (Air) Quality

Bagidanaamowin (air) is critical to supporting vegetation, wildlife, and human life on *Aki* (Earth), however the quality of *bagidanaamowin* (air) will be reflected in the health of all other forms of life in which it supports. Industrial developments and vehicular traffic passing through the Lake of the Woods region have the potential to cause a variety of *bagidanaamowin* (air) quality, noise, and odour pollution. Such activities can have an impact on the health of the Anishinaabeg, the ability to hunt, forage and hold ceremonies. Unfortunately, past developments have left communities and their traditional practices impacted by pollution. As noted by this Elder from Wauzhushk Onigum in Section 6.3.1,

> *They use spraying teams or planes, airplanes, jets. You know—all kinds of stuff like that. Even the big trucks, transports. You can see the thing[s] coming out. And trains, the smoke coming out.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

In Anishinaabemowin, *bagidanaamowin* (air) is synonymous to "breathe", demonstrating that *bagidanaamowin* (air) is not simply a component of the environment but is required to support life on *Aki* (Earth). Clean *bagidanaamowin* (air) is depended upon to ensure vegetation, animals and humans can exist on *Aki* (Earth).

The quality of *bagidanaamowin* (air) depends on a variety of pollutants such as particulate matter and dusts, noise, odours, and light. Transportation related pollutants are a large contributor to the degradation of *bagidanaamowin* (air) quality. Primary pollutants such as carbon monoxide ("CO"), nitrogen oxides ("NOx"), volatile organic compounds ("VOCs") particulate matter, and ground level ozone affect the health of humans and wildlife. Dust particles can suspend within *bagidanaamowin* (air)

as a result of transportation, construction, and blasting activities, as well as under the presence of smoke and other emissions. Impacts to human health may include respiratory irritation, complications, and diseases. Noise pollution can also arise from transportation related sources such as vehicular traffic. Noise pollution can travel through *bagidanaamowin* (air), negatively impacting the Anishinaabeg as it can disrupt hunting opportunities and ceremonial practices. Vehicles can also alter the odour of *bagidanaamowin* (air), particularly odours associated with nitrogen dioxide and sulphur dioxide pollutants. Light can also contribute as a pollutant to *bagidanaamowin* (air) as it is obtrusive to the night skies. Interstellar features are a critical aspect of Anishinaabe tradition, with some ceremonies centered around the sun, moon, and stars.

Knowledge of the *bagidanaamowin* (air) quality in the Project region can be found in Section 6.3.1.

6.3.1.1 Pre-Construction

6.3.1.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. Such activities can contribute to the suspension of particulate materials into *bagidanaamowin* (air) through exposing soils and sediments, transporting and storing aggregate materials and increasing road dust from vehicular activity. Additionally, extensive vehicular and equipment use can contribute to local emission concentrations. These factors can have an impact to human health by contributing to respiratory problems, endocrine disruption, vulnerability to stress, among others. Potential impacts are:

- Generating dust through hauling and stockpiling materials and equipment which can suspend additional particulate matter in *bagidanaamowin* (air). Inhalation of such particulate matter can have repercussions to the health of the Anishinaabeg.
- Increasing emission of primary pollutants from vehicular exhaust on the Project site from hauling materials. Primary pollutants include carbon monoxide (“CO”), nitrogen oxides (“NOx”) and volatile organic compounds (“VOCs”) are cumulative and can negatively impact local *bagidanaamowin* (air) quality for the Anishinaabeg, the global atmosphere and climate.
- Increasing suspended particulate matter as a result of improper stockpiling of aggregate materials, notably in the presence of wind.
- Increasing suspended particulate matter as a result of exposed soils, sediments, and erosion, notably in the presence of wind.
- Increasing noise disturbances around the Project site for nearby humans, residential dwellings, and animals. Disruptions from noise can negatively impact the Anishinaabeg through disruption to hunting and ceremonies.
- Emitting odours associated with the operation of vehicles and equipment such as nitrogen dioxide and sulphur dioxide pollution can negatively impact memory, attention, and reaction times in humans. Additionally, wildlife can be sensitive to odours as behaviours and responses can be affected.

- Decreasing *mitig* (tree) abundance can negatively impact overall *bagidanaamowin* (air) quality and atmospheric temperatures with less absorption of gases such as carbon dioxide.

6.3.1.2 Construction

6.3.1.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect with aquatic habitats at five locations. Potential impacts are:

- Generating dusts and other sediments from blasting activities contributing to the release of particulate matter into *bagidanaamowin* (air).
- Increasing suspended particulate matter as a result of exposed soils, sediments, and erosion, notably in the presence of wind.
- Exposing soils that may contain Blastomyces dermatitidis fungus, which can negatively impact the health of *bagidanaamowin* (air) and health of the Anishinaabeg in the area.
- Releasing hazardous fumes from chemical composition of the explosives used.
- Increasing noise disturbances around the Project site for people, and animals. Disruptions from noise can negatively impact the Anishinaabeg through disruption to hunting and ceremonies.

6.3.1.2.2 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. The construction process will involve excavating and hauling rock, filling, leveling, and grading the new highway. The use of vehicles and equipment will take place on the construction site with sand, gravel and crushed rock being vital materials used in road construction. When needed, dust suppressants may be used. Construction waste will be generated during these procedures. Potential impacts are:

- Generating dust through excavating and hauling rock as well as filling, levelling, and grading the new highway which can suspend additional particulate matter in *bagidanaamowin* (air). Inhalation of such particulate matter can have repercussions to the health of local populations such as the Anishinaabeg.
- Increasing emissions of primary pollutants from vehicular exhaust on the Project site from hauling materials. Primary pollutants include carbon monoxide (“CO”), nitrogen oxides (“NOx”) and volatile organic compounds (“VOCs”) and can negatively impact local *bagidanaamowin* (air) quality, the global atmosphere, and climate.
- Increasing emissions of vehicular exhaust and primary pollutants on the Project site from increased traffic congestion as a result of lane closures. Associated pollutants such as CO, NO_x, and VOCs are cumulative and can have negative impacts on local *bagidanaamowin* (air) quality, the global atmosphere and climate.
- Releasing of toxic fumes and emissions on the Project site from processes such as laying asphalt and cement.

- Increasing noise disturbances around the Project site for people, and animals. Disruptions from noise can negatively impact the Anishinaabeg through disruption to hunting and ceremonies.
- Emitting odours associated with the operation of vehicles and equipment such as nitrogen dioxide and sulphur dioxide pollution can negatively impact memory, attention, and reaction times in humans. Additionally, wildlife can be sensitive to odours as behaviours and responses can be affected.

6.3.1.2.3 Disposing of wastes

Upon completion of construction, wastes (both construction and solid) will need to be disposed. Improper disposal of wastes can have the following potential impacts:

- Generating dust and particulate matter through improperly disposed excess materials that can become suspended in *bagidanaamowin* (air), notably in the presence of wind. Inhalation of such particulate matter can have repercussions to the health of local populations such as the Anishinaabeg.
- Releasing contaminants and fumes into *bagidanaamowin* (air) by open burning of excess materials.
- Releasing contaminants and fumes into *bagidanaamowin* (air) from improper disposal of chemical wastes or spills.

6.3.1.2.4 Relocating Utilities

Relocating utilities will involve the relocation of a Bell underground fibre line and extending a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, drilling, and blasting along the right-of-way. Such activities can contribute to the suspension of particulate materials in *bagidanaamowin* (air) through exposing soils and sediments, transporting and storing aggregate materials and increasing road dust from vehicular activity. Additionally, extensive vehicular and equipment use can contribute to local emission concentrations. These factors can impact human health by contributing to respiratory problems, endocrine disruption, vulnerability to stress, among others. Potential impacts are:

- Generating dust through hauling and stockpiling materials and equipment which can suspend additional particulate matter in *bagidanaamowin* (air). Inhalation of such particulate matter can have repercussions to the health of local populations such as the Anishinaabeg.
- Increasing emission of primary pollutants from vehicular exhaust on the Project site from hauling materials. Primary pollutants include carbon monoxide (“CO”), nitrogen oxides (“NOx”) and volatile organic compounds (“VOCs”) and can negatively impact local *bagidanaamowin* (air) quality for the Anishinaabeg.
- Increasing emission of primary exhaust and associated pollutants on the Project site from hauling materials. Associated pollutants such as CO, NO_x, and VOCs are cumulative and can have negative impacts on the global atmosphere and climate.

- Increasing suspended particulate matter as a result of improper stockpiling of aggregate materials, notably in the presence of wind.
- Increasing suspended particulate matter as a result of exposed soils, sediments, and erosion, notably in the presence of wind.
- Increasing noise disturbances around the Project site for people, and animals. Disruptions from noise can negatively impact the Anishinaabeg through disruption to hunting and ceremonies.
- Decreasing *mitig* (tree) abundance can negatively impact overall *bagidanaamowin* (air) quality and atmospheric temperatures with less absorption of gases such as carbon dioxide.
- Emitting odours associated with the operation of vehicles and equipment such as nitrogen dioxide and sulphur dioxide pollution can negatively impact memory, attention, and reaction times in humans. Additionally, wildlife can be sensitive to odours as behaviours and responses can be affected.
- Exposing soils through blasting activities that may contain Blastomyces dermatitidis fungus, which can negatively impact the health of *bagidanaamowin* (air) and health of the Anishinaabeg in the area.
- Releasing hazardous fumes from chemical composition of the explosives used.

6.3.1.3 Demobilization & Restoration

6.3.1.3.1 Site Revegetation

Prior to operation, activities following construction will include demobilizing equipment and restoring the site through revegetation. This will involve restoring the riparian zone along the edge of the waterway, re-stabilizing, and re-seeding exposed surfaces, and revegetating *mitigoog* (trees) and other significant plants. This will positively impact the quality of *bagidanaamowin* (air), which will ultimately benefit the Anishinaabeg. Positive impacts include:

- Increasing *mitig* (tree) abundance can positively impact overall *bagidanaamowin* (air) quality and atmospheric temperatures with increased absorption of gases such as carbon dioxide.
- Minimizing the migration of particulate matter through the use of vegetative groundcover which runs adjacent to the highway. Vegetation along the right-of-way can have a buffering influence by filtering airborne particulate matter and intercepting migration further outside of the right-of-way.

6.3.1.4 Operation

6.3.1.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Adjacent vegetation can act as a buffer for sediments generated from road usage. The majority of vegetation communities directly adjacent to the highway consist of cultural meadow (dominated by grasses and herbs) and cultural thicket. Potential impacts are:

- Generating particulate matter from road dusts, vehicle brake and tire wear through use of the road which can suspend in *bagidanaamowin* (air). Inhalation of such particulate matter can have repercussions to the health of the Anishinaabeg.
- Increasing emission of primary pollutants from vehicular exhaust. Primary pollutants include carbon monoxide ("CO"), nitrogen oxides ("NOx"), and volatile organic compounds ("VOCs") and can negatively impact local *bagidanaamowin* (air) quality, the global atmosphere and climate.
- Increasing noise disturbances around the Project site for people, and animals. Disruptions from noise can negatively impact the Anishinaabeg through disruption to hunting and ceremonies.
- Disrupting night skies from highway lighting, impacting the visibility of culturally significant interstellar features for the Anishinaabeg.

6.3.1.4.2 Maintaining the Right-of-Way

The ongoing maintenance of the right-of-way will include removing snow, debris, and dangerous *mitigoog* (trees). Pavement maintenance such as marking and resurfacing procedures can take place. It also includes cleaning culverts and applying herbicides to prevent plant growth on highway shoulders. Winter de-icing methods are also included such as the application of salt and sand. Potential impacts are:

- Dispersing herbicidal solutions and sprays outside of the location of application, contributing to chemical contamination of *bagidanaamowin* (air) and decreasing local *bagidanaamowin* (air) quality.
- Releasing of toxic fumes and emissions on the Project site from resurfacing processes such as laying asphalt or cement, decreasing local *bagidanaamowin* (air) quality.

6.3.1.5 Mitigation Measures to Protect *Bagidanaamowin* (Air)

The decades of damage already done to *bagidanaamowin* (air) and consequentially to the Anishinaabeg will continue to be addressed through ongoing discussion being held between the Ministry of Transportation ("MTO") and Niiwin Wendaanimok. Potential impacts to *bagidanaamowin* (air) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Using sand/salt alternatives for controlling road ice to reduce wildlife attraction.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Limiting areas to be cleared as strictly necessary.
- Avoiding drilling and blasting on windy days.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.

- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Conducting a pre-blast rock sampling to understand human health risks.
- Ensuring Blastomyces fungus is identified in the contract provisions as a potential concern. Contractor and Contract Administrator will develop a health and safety best practices mitigation strategy.
- Increasing public awareness, education, and communication on blastomycosis as a part of the Anishinaabe Guardians Program.
- Ensuring people nearby do not come into enter the designated blast area. This will be done by clearing all vehicular traffic, pedestrian traffic, posting signs to inform public and using audible blast warnings. See a copy of regulations (OPSS 0120) in **Appendix 5**.
- Adhering to product regulations only using explosives approved for use in Canada as per OPSS 0120, a copy of which is included in **Appendix 5**.
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions as per OPSS 0100, a copy of which is included in **Appendix 5.**
- Monitoring blasting and drilling vibrations.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area, per Part B of the CAITM (Contract Administration Inspection Task Manual), a copy of which is included in **Appendix 5**. This manual also requires for checking that earth, mud, aggregates, and other debris are not tracked onto the roadway by construction vehicles and requires for monitoring and documentation of the frequency of application of dust suppressants.

- Implementing an Erosion and Sediment Control Plan to minimize the impacts of blasting on *bagidanaamowin* (air) quality and suspended particulate matter.
- Adhering to guidelines for stockpiling erodible construction materials and excess or surplus materials as per OPSS 0805. See copy of regulations in **Appendix 5**.
- Applying approved herbicides (NAVIUS™ VM HERBICIDE, *Pest Control Products Act* Registration No. 31382) in accordance with the *Pesticides Act, 1990*, *Pest Control Products Act*, and all applicable regulations.
- Requiring contractors to keep idling of construction equipment to a minimum maintain equipment in good working order.
- Adhering to Conditions on Management by Disposal as Non-Hazardous Solid Industrial or Commercial Waste and Open Burning as per OPSS 0180, a copy of which is provided in **Appendix 5**.

With healthy *bagidanaamowin* (air) being critical to supporting the Anishinaabeg and the Treaty 3 territory, it is important that it be protected at all stages of development. For the Anishinaabeg, an impact to *bagidanaamowin* (air) is an impact to the ability to breathe. A Shoal Lake 40 Elder explained how pollution has negatively impacted the wildlife that has traditionally been depended upon for food:

> *Another thing that's not really taught enough is about the pollution and how fast the earth is being polluted. The whole world is changing drastically… the streams and rivers and creeks are disappearing… people are starting to get sick off the food that we eat from the land.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

However, the Anishinaabeg continue to advocate for the protection of *bagidanaamowin* (air) and its importance for supporting life. An Elder from Shoal Lake 40 shared his pride in being Anishinaabe:

> *That's why I like being Anishinaabe, it taught me a lot, how to respect people and things, and everything in the air.*
>
> *Elder, Shoal Lake 40, AAK Group Interview, June 10, 2019.*

Ensuring respect is given to *bagidanaamowin* (air) during project developments will subsequently ensure the health of the Anishinaabeg is protected, along with the ability to participate in traditional and cultural practices.

6.3.2 *Zhiishiibag* (Ducks, *Anatidae* family)

Zhiishiibag (Ducks, plural), *zhiishiib* (ducks, singular) are integrated within Anishinaabe hunting traditions and hold cultural symbolism in the *odoidaymiwan* (the clan system). Representing depth, black *zhiishiibag* (ducks) bring strength and order to *Aki's* (Earth's) people and their self-governance. *Zhiishiibag* (ducks) have traditionally been hunted by the Anishinaabeg. Primarily hunted for their meat, the fat, eggs, feathers, and bones can also be used. *Ininishiibag* (wild mallards, *Anas platyrhynchos,*

ininishiib (sin.)) are one of the most common *zhiishiibag* (ducks) as well as the most heavily hunted of *Mikinaak Minis* (Turtle Island). Over time *ininishiibag* (wild mallard) populations have shifted, become less abundant in areas where they were once very common. As noted in Section 5.4.2.1 by this Elder from Niisaachewan, *ininishiibag* (wild mallard) population shifts are largely a result of marshland habitat loss:

> *Like today if you were to go out hunting for ducks, it's not like years ago. You can see flocks of ducks but now it's not the same. You can probably see ten ducks at a time…*
>
> *This is Matson Bay, and all from my point of view to this spot here, there used to be good for duck hunting, which [it] is no longer. You don't have marsh there anymore… we normally have ducks that normally hang out to feed.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 18, 2019.*

Zhiishiibag (ducks) are listed under the *Migratory Birds Convention Act, 1994* as a migratory game bird. *Mikinaak Minis* (Turtle Island) contains at least 36 native or established *zhiishiibag* (duck) species. Within Ontario, dabbling *zhiishiibag* (ducks) include species such as *ininishiibag* (wild mallards), Northern Pintails, Gadwalls, Green-winged Teals and Wood *zhiishiibag* (ducks). Ontario's diving *zhiishiibag* (ducks) include the species of Canvasback, Bufflehead, Common Goldeneye and Lesser Scaup. However, *ininishiibag* (wild mallards) are the most widespread and abundant across *Mikinaak Minis* (Turtle Island) with populations cycling between 5 and 11 million depending on wet or dry seasons.

Knowledge of *zhiishiibag* (ducks) and a comprehensive list of *zhiishiibag* (duck) species of importance to the Anishinaabeg found in the Project region can be found in Section 5.4.2.1.

6.3.2.1 Pre-Construction

6.3.2.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. *Zhiishiibag* (ducks) inhabit forests of all types, nesting in *mitig* (tree) branches, *mitig* (tree) cavities, vegetation or in burrows. Habitats in which they can be commonly found include riparian zones, freshwater marshes, and wooded swamps. Potential impacts of Project staging are:

- Clearing vegetation near water passages can decrease foraging habitats such as marshes, riparian zones and wooded swamps and deplete *zhiishiib* (duck) dietary components such as invertebrates, grasses, leaves, stems, and roots of aquatic plants.
- Disturbing and displacing nesting *zhiishiibag* (ducks) with increased noise may result in less *zhiishiib* (duck) activity within the Project area, subsequently lowering hunting and food opportunities for the Anishinaabe.
- Disturbing and displacing *zhiishiibag* (ducks) during late summer moult periods when flight can be impaired.

6.3.2.2 Construction

6.3.2.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect tributaries of the Whiteshell River, Royal Lake, and Baubee Lake. These aquatic features support vegetation used for feeding and nesting by *zhiishiibag* (ducks). The main concerns are:

- Removing habitat for ground dwelling, nesting and burrowing *zhiishiibag* (ducks) *which* may result in less *zhiishiib* (duck) activity within the Project area, subsequently lowering hunting and food opportunities for the Anishinaabeg.
- Disturbing and displacing nesting *zhiishiibag* (ducks) with increased noise may result in less *zhiishiib* (duck) activity within the Project area, subsequently lowering hunting and food opportunities for the Anishinaabeg.
- Removing *zhiishiib* (duck) dietary components such as invertebrates, and vegetation such as grasses and the leaves, stems, and roots of aquatic plants.
- Disturbing and displacing *zhiishiibag* (ducks) during late summer moult periods when flight can be impaired.
- Damaging aquatic vegetation that is used and consumed by *zhiishiibag* (ducks) as a result of erosion and sediment run off, negatively impacting the health and development of *zhiishiibag* (ducks).

6.3.2.2.2 Installing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation and dewatering procedures. Watercourse realignment will occur at four culvert sites. Affected vegetation includes wetland communities of Cattail Marsh, Blue-joint Grass Meadow Marsh, Black Ash Swamp, Speckled Alder Thicket Swamp, and other small open water pockets at the roadside. Potential impacts are:

- Altering marshland habitat used by *zhiishiibag* (ducks) can decrease *zhiishiib* (duck) activity within the Project area, subsequently lowering hunting and food opportunities for the Anishinaabeg.
- Stripping, clearing, and grubbing involved in channel preparation can remove any present vegetation eaten by *zhiishiibag* (ducks) in the Project site. Changes to natural feeding habits can negatively impact *zhiishiib* (duck) development, health, and abundance in the Project area.
- Stripping, clearing, and grubbing involved in channel preparation can introduce sediment and pollutants into the waterway, altering water chemistry and damaging vegetation. This would negatively affect *zhiishiib* (duck) diet, development, and abundance in the area.

- Dewatering can cause sediment build-up in waterways, altering water quality and negatively affecting the semi-aquatic and aquatic vegetation eaten by *zhiishiibag* (ducks).

6.3.2.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. The process of building the road will involve the excavation and hauling of rock and filling, levelling, and grading of the new highway. The use of vehicles and equipment will take place on the construction site. When needed, dust suppressants may be used. The main concerns are:

- Spilling, leaking, or leaching of chemicals applied during the construction process can contaminate near-by aquatic habitats. This can negatively impact *zhiishiib* (duck) health if contaminants are ingested or contaminated vegetation and invertebrates are ingested.
- Spilling, leaking, or leaching of oils used by vehicles and equipment into aquatic environments can damage *zhiishiib* (duck) feathers immobilizing *zhiishiibag* (ducks) from flying or swimming.
- Applying chemical dust suppressants along the Project site can run-off and contaminate near-by aquatic habitats that *zhiishiibag* (ducks) rely on. This can negatively impact *zhiishiib* (duck) health if contaminants are ingested or contaminated vegetation and invertebrates are ingested.

6.3.2.2.4 Disposing of wastes

Upon completion of construction, wastes (both construction and solid) will need to be disposed. Improper disposal of wastes can have the following potential impacts:

- Spilling, leaking, or leaching of disposed chemicals and materials into the environment can contaminate near-by aquatic habitats. This can negatively impact *zhiishiibag* (duck) health if contaminants are ingested or contaminated vegetation and invertebrates are ingested.
- Spilling, leaking, or leaching of disposed oils into the environment can damage *zhiishiibag* (duck) feathers immobilizing *zhiishiibag* (ducks) from flying or swimming.

6.3.2.2.5 Relocating Utilities

Relocating utilities will involve relocating a Bell underground fibre line and extending a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, and drilling along the right-of-way. The main concerns are:

- Clearing vegetation near water passages can decrease viable foraging and nesting habitat near marshes and riparian habitats. Subsequently, this can decrease *zhiishiib* (duck) activity within the Project area and lower hunting and food opportunities for the Anishinaabeg.
- Disturbing and displacing nesting *zhiishiibag* (ducks) with increased noise may result in less *zhiishiib* (duck) activity within the Project area, subsequently lowering hunting and food opportunities for the Anishinaabeg.
- Disturbing and displacing *zhiishiibag* (ducks) during late summer moult periods when flight can be impaired.

- Damaging aquatic vegetation that is used and consumed by *zhiishiibag* (ducks) as a result of erosion and sediment run off, negatively impacting *zhiishiib* (duck) health and development.

6.3.2.3 Demobilization & Restoration

6.3.2.3.1 Site Revegetation

Prior to operation, activities following construction will include demobilizing equipment and restoring the site through revegetation. This will involve restoring the riparian zone along the edge of the waterway, re-stabilizing and re-seeding exposed surfaces, and revegetating *mitigoog* (trees) and other significant plants. This will positively impact *zhiishiibag* (ducks) by regenerating the disturbed area and by improving the quality of *zhiishiib* (duck) habitat, which will ultimately benefit the Anishinaabeg. Positive impacts include:

- Creating new areas for *zhiishiibag* (ducks) to nest, either in the branches, cavities, or nest boxes, increasing the presence of *zhiishiibag* (ducks) in the area.
- Creating new areas for *zhiishiibag* (ducks) to forage for food such as riparian vegetation and *manidoonsag* (insects), positively affecting *zhiishiib* (duck) populations.

6.3.2.4 Operation

6.3.2.4.1 Maintaining the Right-of-Way

The ongoing maintenance of the right-of-way will include removing snow, debris, and dangerous *mitigoog* (trees). It also includes cleaning culverts and the application of herbicides to prevent plant growth on highway shoulders. Winter de-icing methods are also included such as the application of salt and sand. *Zhiishiibag* (ducks) primarily feed on vegetation and the ingestion of toxins could have repercussions on *zhiishiib* (duck) health. Potential impacts are:

- Ingesting vegetation dosed in herbicides leading to the consumption of toxic concentrations through bioaccumulation.
- Ingesting road salts leading to the consumption of toxic concentrations of salts.
- Damaging the natural waterproofing of *zhiishiib* (duck) feathers from the application of road salts that can pool along the right-of-way or run-off into near-by aquatic environments. If the *zhiishiib* (duck) is in contact with the salts for prolonged periods of time, the solution can adhere to and damage the feathers.
- Applying salt for controlling ice could degrade the quality of the soil and water surrounding the highway, which could in turn affect *zhiishiib* (duck) abundance, negatively impacting the Anishinaabeg.

6.3.2.5 Mitigation Measures to Protect *Zhiishiibag* (Ducks)

The decades of damage already done to *zhiishiibag* (ducks) and consequentially to the Anishinaabeg will continue to be addressed through ongoing discussions being held between the Ministry of Transportation (“MTO”) and Niiwin Wendaanimok. Potential impacts to *zhiishiibag* (ducks) from the

activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Conducting a pre-construction survey of new nest activity since the initial 2009 survey.
- Using sand/salt alternatives for controlling road ice to reduce wildlife attraction.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Limiting areas to be cleared as strictly necessary.
- Avoiding drilling and blasting on windy days.
- Avoiding blasting near waterbodies.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Avoid clearing and structure works during the breeding bird season (approximately April 21st to August 31st).
- Adhering to the regulations concerning clearing and construction in the presence of species protected under the *Migratory Birds Convention Act, 1994* which orders the protection of the species, species' residence, and critical habitat and can be found in **Appendix 5**.
- Surveying for nests and implementing a buffer around active nests to avoid disturbing the *zhiishiibag* (ducks).
- Avoiding blasting near water bodies where *zhiishiibag* (ducks) may be active.

- Adhering to blasting requirements listed in OPSS 0120 and Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, **Appendix 5**.
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions as per OPSS 0100, **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area, per Part B of the CAITM (Contract Administration Inspection Task Manual), a copy of which is included in **Appendix 5**. This manual also requires for checking that earth, mud, aggregates, and other debris are not tracked onto the roadway by construction vehicles and requires for monitoring and documentation of the frequency of application of dust suppressants.
- Implementing an Erosion and Sediment Control Plan to minimize the impacts of blasting on *bagidanaamowin* quality and suspended particulate matter.
- Applying approved herbicides (NAVIUS™ VM HERBICIDE, *Pest Control Products Act* Registration No. 31382) in accordance with the *Pesticides Act, 1990*, *Pest Control Products Act*, and all applicable regulations.
- Managing salt impacted soil in accordance with provincial environmental regulations specified in Special Provision ENVR0001, a copy of which is included in **Appendix 5**.

Zhiishiibag (ducks) hold ecological and cultural significance for the Anishinaabeg. Over time, *zhiishiib* (duck) habitat has been affected by anthropological disturbances and habitat loss which has negatively impacted Anishinaabe hunting practices. As noted in Section 5.4.2.1, community members have noticed changes to the abundance and quality of *zhiishiibag* (ducks) in the Kenora area. This Elder from Niisaachewan commented the shift in *zhiishiibag* (duck) population in recent years:

> *At one time, there used to be thousands of them. I don't know what happened. It kind of slowed down.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

Additionally, a community member of Shoal Lake 40 spoke to the quality of duck meat:

> *Even the geese and the ducks don't taste like they used to.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

It is important that *zhiishiibag* (ducks) remain healthy and abundant in order to be an accessible resource to Anishinaabe communities. Hunting *zhiishiibag* (ducks) has provided nutritional means for the Anishinaabeg while also allowing traditional hunting knowledge to be passed down to younger generations. The loss of this traditional practice is a subsequent loss to Anishinaabe culture. Furthermore, *zhiishiibag* (ducks) hold ecological importance as indicators of the health of the marshes. As community members have noted, the loss of healthy marshland has had a direct negative impact to the abundance of *zhiishiibag* (ducks) in the area and to the Anishinaabeg.

6.3.3 *Migiziwag* (Bald Eagles, *Haliaeetus leucocephalus*)

The *migizi* (Bald Eagle, *Haliaeetus leucocephalus*) has strong ties to Anishinaabe traditions and lands. *Migiziwag* (bald eagles) have been said to hold a strong presence within the Project area and region (AAK Group Interview, April 8, 2019). Impacts from the Project risk permanent loss and alteration to land inhabited and used by *migiziwag* (bald eagles). *Migiziwag* (bald eagles) are important in ceremonial practices of the Anishinaabeg. Such can be seen in the use and representation of *migiziwag* (bald eagles) in ceremonial instruments, honorable gifts, dance, and regalia. *Migiziwag* (bald eagles) also hold spiritual significance by assisting the movement of Anishinaabeg who have passed into the spirit world. As such, *migiziwag* (bald eagles) hold ties between family and the spirit world. This was noted in Section 5.4.2.2 when a community member from Niisaachewan shared his experience seeing a *migizi* (bald eagle) during a ceremony and how it provided reassurance from his ancestors:

> *There was one experience where I saw an eagle flapping his wings…It's a good experience, and I feel that my ancestors are in there, the people that have passed on…that maybe they're protecting me.*
>
> *Community member, Niisaachewan, AAK Group Interview, July 23, 2019.*

Migiziwag (bald eagles) are provincially designated as a species of special concern by the Committee on the Status of Species at Risk in Ontario ("COSSARO") and provincially protected under Ontario's *Endangered Species Act, 2007.* These protective measures have allowed *migizi* (bald eagle) populations to recover from risks of decimation and near extinction in the past. While populations are now considered to be stable, *migiziwag* (bald eagles) are vulnerable to population loss through high mortality rates, susceptibility to chemical contaminants, and sensitivity to human disturbances. *Migiziwag* (bald eagles) can typically be found around the lakeshores of the boreal forest, often nesting in large old-growth conifer and hardwood *mitigoog* (trees). *Migiziwag* (bald eagles) will defend their surrounding nest area up to 2 km^2.

Knowledge of the *migiziwag* (bald eagles) found in the Project region can be found in Section 5.4.2.2.

6.3.3.1 Pre-Construction

6.3.3.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. Potential impacts are:

- Clearing *mitigoog* (trees) can decrease viable nesting habitat such as large conifers and pines found in old growth forests near waterbodies.
- Clearing *mitigoog* (trees) can decrease habitat that may potentially be used by *migiziwag* (bald eagles) for perching. Significant habitat features include supercanopy *mitigoog* (trees) of pine species.

- Clearing *mitigoog* (trees) can also impact habitat that is defended by *migiziwag* (bald eagles).
- Noise during staging activities can disrupt nesting *migiziwag* (bald eagles).

6.3.3.2 Construction

6.3.3.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect with a small waterbody, a tributary of the Whiteshell River, a tributary of Royal Lake, and a tributary of Baubee Lake. These features are connected to the boreal forest lakeshore habitats that support *migiziwag* (bald eagles). Potential impacts are:

- Disturbing nesting *migiziwag* (bald eagles) because of increased noise during construction.
- Contaminating the aquatic habitat used by *migiziwag* (bald eagles) by erosion and sediment run off.

6.3.3.2.2 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. The construction process will involve the excavation and hauling of rock and filling, levelling, and grading of the new highway. The use of vehicles and equipment will also take place on construction site. Construction waste will be generated during these procedures. When needed, dust suppressants may be used. The main concerns are:

- Any potential spills from vehicles and equipment, or any chemicals that leach from using dust suppressants can result in contamination of waterbodies that *migiziwag* (bald eagles) rely on. Since *migiziwag* (bald eagles) rely on fish for food, toxins in water bodies can bioaccumulate, potentially harming *migiziwag* (bald eagles).

6.3.3.2.3 Disposing of Wastes

Upon completion of construction, wastes (both construction and solid) will need to be disposed. Improper disposal of wastes can result have the following potential impacts:

- Any potential chemical leaks from construction wastes can result in contamination of waterbodies that *migiziwag* (bald eagles) rely on. Since *migiziwag* (bald eagles) rely on fish for food, toxins in water bodies can bioaccumulate, potentially harming *migiziwag* (bald eagles).
- Attracting *migiziwag* (bald eagles) to the Project area by leftover food scraps, potentially disrupting their natural behaviours for nutrition.

6.3.3.2.4 Relocating Utilities

Relocating utilities will involve relocating a Bell underground fibre line and the extending a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, and drilling along the right-of-way. Potential impacts are:

- Clearing of vegetation may remove the habitat and nesting sites of *migiziwag* (bald eagles).

6.3.3.3 Operation

6.3.3.3.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. The main concerns are:

- Increasing vehicular collisions with wildlife which may attract *migiziwag* (bald eagles) to the highway.
- Increasing vehicular collision with *migiziwag* (bald eagles) who opportunistically feed on roadside carrion.

6.3.3.3.2 Maintaining the Right-of-Way

The ongoing maintenance of the right-of-way will include removing snow, debris, and dangerous *mitigoog* (trees). It also includes cleaning culverts and the application of herbicides to prevent plant growth on highway shoulders. Winter de-icing methods are also included such as the application of salt and sand. *Migiziwag* (bald eagles) are sensitive to chemical contaminants through the processes of bioaccumulation which may result in mortality as a result of ingestion or poisoning. As a result, potential impacts are:

- Bioaccumulation of herbicides and salts solutions within *migiziwag* (bald eagles) prey risking toxic concentrations upon ingestion.

6.3.3.4 Mitigation Measures to Protect *Migiziwag* (Bald Eagles)

The decades of damage already done to *migiziwag* (bald eagles) and consequentially to the Anishinaabeg will continue to be addressed through ongoing discussions being held between the Ministry of Transportation ("MTO") and Niiwin Wendaanimok. Potential impacts to *migiziwag* (bald eagles) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Conducting a pre-construction survey of new nest activity since the initial 2009 survey.
- Using sand/salt alternatives for controlling road ice to reduce wildlife attraction.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Limiting areas to be cleared as strictly necessary.
- Avoiding drilling and blasting on windy days.
- Avoiding blasting near waterbodies.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.

- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Implementing a roadside carrion surveillance strategy as part of the Anishinaabe Guardians Program to ensure effective disposal.
- Building artificial nesting stations for *migiziwag* (bald eagles).
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Avoid clearing and structure works during the breeding bird season (approximately April 21st to August 31st).
- Acting in accordance with Ontario's *Endangered Species Act, 2007* to cease all activities that could harm *migiziwag* (bald eagles).
- Adhering to the regulations concerning clearing and construction in the presence of species protected under the *Migratory Birds Convention Act, 1994* which orders the protection of the species, species' residence, and critical habitat. See copy of listed provisions in **Appendix 5**.
- Surveying for nests and implementing a buffer around active nests to avoid disturbing *migiziwag* (bald eagles).
- Avoiding blasting near water bodies where *migiziwag* (bald eagles) may be active.
- Adhering to blasting requirements listed in OPSS 0120 and Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, copies of which is included in **Appendix 5**.
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions as per OPSS 0100, a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.

- Monitoring dust levels to ensure dust does not enter an environmentally significant area, per Part B of the CAITM (Contract Administration Inspection Task Manual), a copy of which is included in **Appendix 5**. This manual also requires for checking that earth, mud, aggregates, and other debris are not tracked onto the roadway by construction vehicles and requires for monitoring and documentation of the frequency of application of dust suppressants.
- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all applicable regulations.
- Managing salt impacted soil in accordance with provincial environmental regulations specified in Special Provision ENVR0001, a copy of which is included in **Appendix 5**.

Being a sacred animal, any and all landscapes used by *migiziwag* (bald eagles) are in themselves considered sacred. In Anishinaabe culture, *migiziwag* (bald eagles) are symbolic of family, respect and honour and should be treated as such. Not only are *migiziwag* (bald eagles) important culturally and spiritually, but they are a notable feature of the Treaty 3 territory. Many members of Niiwin Wendaanimok expressed that the presence *migiziwag* (bald eagles) around their homes are important to maintain. This was noted in Section 5.4.2.2 when this Elder from Washagamis Bay shared:

> *I used to take people out by the lake in the summer and we'd always see eagles…It means a lot when somebody sees an eagle swoop down and grab a fish out of the water right close to the spot they're looking at. I've had many experiences like that at the lake.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.*

As a result of *migiziwag* (bald eagles) being thoroughly integrated with Anishinaabe culture, tradition, and Treaty 3 territory itself, any direct or residual impacts to *migiziwag* (bald eagles) are considered to have a direct impact to the Anishinaabe.

6.3.4 *Nikag* (Canada Geese, *Branta canadensis*)

Nikag (Canada geese) are a species that continues to be used in Anishinaabe culture and tradition. For the Anishinaabe, *nikag* (Canada geese) are represented in the totems of the *odoidaymiwan* (the clan system). *Nikag* (Canada geese) are considered a totemic manifestation of "prudence", or "wisdom in the way of caution and provision". Traditionally, the Anishinaabe have hunted *Nikag* (Canada geese) for food, cooking, smoking, or drying the meat. The fat and eggs have also been eaten while the feathers and bones have been used for other purposes. An Elder from Shoal Lake 40 shared the importance of hunting *nikag* (Canada geese) and how it provides Anishinaabe with economic opportunities:

> *Not only with me and my family but other people that came from the [reserve]. Because they knew that was deer country, moose country, ducks, and geese … both, selling the furs and eating…. So, they sold to them and eventually later on we found, what do you call that? International Fur Market around Sudbury. Around there. And then we got*

more money…Yeah, have it shipped out and they'd get it one day later. But we made money, though.

Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.

Nikag (Canada geese) are the most widely distributed and abundant goose on *Mikinaak Minis* (Turtle Island). With a reported population size of 5.6 million in 2015 with 400,000 *nikag* (Canada geese) residing in Ontario. *Nikag* (Canada geese) are known for being well adapted to urban and impacted landscapes, as lawns, golf courses, and parks all provide adequate habitat. This has ultimately led to growing *nikag* (Canada geese) populations across Canada. With such a widespread abundance, *nikag* (Canada geese) are not listed under as a species at risk, however they are migratory and are protected under the *Migratory Birds Convention Act, 1994.*

Knowledge of the *nikag* (Canada geese) found in the Project region can be found in Section 5.4.2.3.

6.3.4.1 Pre-Construction

6.3.4.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. *Nikag* (Canada geese) nearly always nest near water such as lakes, ponds, and marshes, typically no further than 100 m away. Nests can be built on the ground in vegetation, upon *wauzhushk* (muskrat) houses, or platforms. Potential impacts are:

- Clearing vegetation near water passages can decrease foraging habitats such as marshes and riparian zones and deplete dietary components of the *nikag* (Canada geese) such as grass stems and shoots, sedges, and aquatic plants.
- Increased noise may disturb nesting *nikag* (Canada geese) further displacing them, consequentially lowering opportunities for the Anishinaabe to hunt for sustenance.
- Disturbing and displacing *nikag* (Canada geese) during late summer moult periods when flight can be impaired.

6.3.4.2 Construction

6.3.4.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect with a small waterbody, a tributary of the Whiteshell River, a tributary of Royal Lake, and a tributary of Baubee Lake. These aquatic features support vegetation used for feeding and nesting by *nikag* (Canada geese). Potential impacts are:

- Removing habitat for ground nesting *nikag* (Canada geese) which may result in less *nikag* (Canada geese) activity within the Project area, consequentially affecting opportunities for the Anishinaabeg to hunt the species for sustenance.
- Disturbing and displacing nesting *nikag* (Canada geese) with increased noise may result in less *nikag* (Canada geese) activity within the Project area, subsequently lowering hunting and food opportunities for the Anishinaabeg.
- Removing dietary components of the *nikag* (Canada geese) such as invertebrates, and vegetation such as grass stems and shoots, sedges, and aquatic plants.
- Disturbing and displacing *nikag* (Canada geese) during late summer moult periods when flight can be impaired.
- Damaging aquatic vegetation that is used and consumed by *nikag* (Canada geese) as a result of erosion and sediment run off, negatively impacting health and development of the *nikag* (Canada goose).

6.3.4.2.2 Installing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation, dewatering procedures, and possible watercourse realignment. Affected vegetation includes wetland communities of Cattail Marsh, Blue-joint Grass Meadow Marsh, Black Ash Swamp, Speckled Alder Thicket Swamp, and other small open water pockets at the roadside. Potential impacts are:

- Altering wetland habitat used by *nikag* (Canada geese) can decrease *nika*g (Canada geese) activity within the Project area, subsequently lowering hunting and food opportunities for the Anishinaabe.
- Stripping, clearing, and grubbing involved in channel preparation can reduce the availability of food used by *nikag* (Canada geese) in the Project site. Changes to natural feeding habits can negatively impact development, health, and abundance of *nikag* (Canada geese) in the Project area.
- Stripping, clearing, and grubbing involved in channel preparation can introduce sediment and pollutants into the waterways, altering water chemistry and damaging vegetation. This would negatively affect diet, development, and abundance of *nikag* (Canada geese) in the area.
- Dewatering can cause sediment build-up in waterways, altering water quality and negatively affecting the semi-aquatic and aquatic vegetation eaten by *nikag* (Canada geese).

6.3.4.2.3 Building the Road

The Project will involve the twinning of a 6.5km section of Highway 17. The construction process will involve the excavation and hauling of rock and filling, levelling, and grading of the new highway. The use of vehicles and equipment will take place on construction site. When needed, dust suppressants may be used. Potential impacts are:

- Spilling, leaking, or leaching of chemicals applied during the construction process can contaminate near-by aquatic habitats. This can negatively impact the health of *nikag* (Canada geese) if contaminants are ingested or contaminated vegetation and invertebrates are ingested.
- Spilling, leaking, or leaching of oils used by vehicles and equipment into aquatic environments can damage the feathers of a *nika* (Canada goose), immobilizing them from flying or swimming.
- Applying chemical dust suppressants along the Project site can run-off and contaminate near-by aquatic habitats that *nikag* (Canada geese) rely on. This can negatively impact the health of *nikag* (Canada geese) if contaminants are ingested or contaminated vegetation and invertebrates are ingested.

6.3.4.2.4 Disposing of Wastes

Upon completion of construction, wastes (both construction and solid) will need to be disposed. Improper disposal of wastes can have the following potential impacts:

- Spilling, leaking, or leaching of disposed chemicals and materials into the environment can contaminate near-by aquatic habitats. This can negatively impact *nikag* (Canada goose) health if contaminants are ingested or contaminated vegetation and invertebrates are ingested.
- Spilling, leaking, or leaching of disposed oils into the environment can damage *nikag* (Canada geese) feathers immobilizing them from flying or swimming.

6.3.4.2.5 Relocating Utilities

Relocating utilities will involve relocating a Bell underground fibre line and the extending a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, and drilling along the right-of-way. Potential impacts are:

- Clearing vegetation near water passages can decrease viable foraging and nesting habitat near marshes and riparian habitats. Subsequently, this can decrease *nikag* (Canada geese) activity within the Project area and lower hunting and food opportunities for the Anishinaabe.
- Disturbing and displacing nesting *nikag* (Canada geese) with increased noise may result in less *nikag* (Canada geese) activity within the Project area, subsequently lowering hunting and food opportunities for the Anishinaabe.
- Disturbing and displacing *nikag* (Canada geese) during late summer moult periods when flight can be impaired.
- Damaging aquatic vegetation that is used and consumed by *nikag* (Canada geese) as a result of erosion and sediment run off, negatively impacting *nika* health and development.

6.3.4.3 Demobilization & Restoration

6.3.4.3.1 Site Revegetation

Prior to operation, activities following construction will include demobilizing equipment and restoring the site through revegetation. This will involve restoring the riparian zone along the edge of the waterway, re-stabilizing and re-seeding exposed surfaces, and revegetating *mitigoog* (trees) and other significant plants. This will positively impact *nikag* (Canada geese) by regenerating the disturbed area and by improving the quality of their habitat, which will ultimately provide positive affects for the Anishinaabeg. Positive impacts include:

- Creating new areas for *nikag* (Canada geese) to nest, either in the branches or around ground vegetation, increasing the presence of *nikag* (Canada geese) in the area.
- Creating new areas for *nikag* (Canada geese) to forage for food such as marsh and riparian vegetation, positively affecting *nikag* (Canada geese) populations.

6.3.4.4 Operation

6.3.4.4.1 Maintaining the Right-of-Way

The ongoing maintenance of the right-of-way will include removing snow, debris and dangerous *mitigoog* (trees). It also includes cleaning culverts and the application of herbicides to prevent plant growth on highway shoulders. Winter de-icing methods are also included such as the application of salt and sand. *Nikag* (Canada geese) primarily feed on vegetation and the ingestion of toxins could have repercussions on *nikag* (Canada geese) health. Potential impacts are:

- Ingesting vegetation dosed in herbicides leading to the consumption of toxic concentrations through bioaccumulation.
- Ingesting road salts leading to the consumption of toxic concentrations of salts.
- Damaging the natural waterproofing of *nikag* (Canada goose) feathers from the application of road salts that can pool along the right-of-way or run-off into near-by aquatic environments. If the *nika* (Canada goose) is in contact with the salts for prolonged periods of time, the solution can adhere to and damage its feathers.
- Applying salt to control ice could degrade the quality of the soil and water surrounding the highway, which could in turn affect the abundance of *nikag* (Canada geese), negatively impacting the Anishinaabe.

6.3.4.5 Mitigation Measures to Protect *Nikag* (Canada geese)

The decades of damage already done to *nikag* (Canada geese) and consequentially to the Anishinaabeg will continue to be addressed through ongoing discussions being held between the Ministry of Transportation (“MTO”) and Niiwin Wendaanimok. Potential impacts to *nikag* (Canada geese) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Conducting a pre-construction survey of new nest activity since the initial 2009 survey.
- Using sand/salt alternatives for controlling road ice to reduce wildlife attraction.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Limiting areas to be cleared as strictly necessary.
- Avoiding drilling and blasting on windy days.
- Avoiding blasting near waterbodies.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Implementing a roadside carrion surveillance strategy as part of the Anishinaabe Guardians Program to ensure effective disposal.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Avoid clearing and structure works during the breeding bird season (approximately April 21st to August 31st).
- Acting in accordance with Ontario's *Endangered Species Act, 2007* to cease all activities that could harm *nikag* (Canada geese).
- Adhering to the regulations concerning clearing and construction in the presence of species protected under the *Migratory Birds Convention Act, 1994*.
- Surveying for nests and implementing a buffer around active nests to avoid disturbing *nikag* (Canada geese).

- Avoiding blasting near water bodies where *nikag* (Canada geese) may be active.
- Adhering to blasting requirements listed in OPSS 0120 and Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, copies of which is included in **Appendix 5**.
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions as per OPSS 0100, a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area, per Part B of the CAITM (Contract Administration Inspection Task Manual), a copy of which is included in **Appendix 5**. This manual also requires for checking that earth, mud, aggregates, and other debris are not tracked onto the roadway by construction vehicles and requires for monitoring and documentation of the frequency of application of dust suppressants.
- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all applicable regulations.
- Managing salt impacted soil in accordance with provincial environmental regulations specified in Special Provision ENVR0001, a copy of which is included in **Appendix 5**.

Nikag (Canada geese) have traditionally played a valued role in Anishinaabe culture and tradition. For this reason, understanding what may influence *nikag* (Canada geese) population shifts over time is important in order to predict how such changes may affect the Anishinaabe's ability to hunt the species for sustenance. The AAK interviews demonstrated *nikag* (Canada geese) are important for the tradition of hunting. Hunting encompasses cultural education and community while also providing sustenance to the Anishinaabe. Hunting *nikag* (Canada geese) was noted in Section 5.4.2.3 by a community member from Wauzhushk Onigum. She shared that during feasts, *nika* (Canada goose) was often eaten (AAK Individual Interview, June 19, 2019). However, some community members have noticed a decrease in meat quality and taste:

> *Even the geese and the ducks don't taste like they used to. I don't know why, but it's probably the pollution.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

Changes to the health and abundance of *nikag* (Canada geese) may be an indication of the environment in which they live. Despite *nikag* (Canada geese) populations growing and persisting in more urban landscapes, the Anishinaabe have noted their health to be decreasing. As a result, impacts to *nikag* (Canada goose) habitats can also impact the traditional hunting practices of the Anishinaabe.

6.3.5 *Bineshiinyag* (Birds)

Bineshiinyag (birds) are widespread throughout Treaty 3 territory. *Bineshiinyag* (birds) hold considerable importance to the Anishinaabe, particularly in their symbolism of family ties. *Bineshiinyag* (birds) are integrated into the lives of Anishinaabe through ceremonies, through hunting, and through trapping practices, welcoming the start of spring when these practices and the birds all come together. The return of *bineshiinyag* (birds) in the spring marks the beginning of many spring ceremonies for the

Anishinaabe and the beginning of new life. As noted in Section 5.4.2.4, an Elder from from Washagamis Bay explained that it is these ceremonies that bring people together:

> *Well, you can do a ceremony here in the spring. The springtime is more natural because of the bird families coming together for the summer … whatever [humans] believe in, either Christianity or the Anishinaabe way, your heritage, your belief, whatever you believe in. We do offerings for that for the feeling of greatness of the power of [the] Creator.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 25, 2019.*

The Project site borders Ontario's Bird Conservation Region 12 (south) and Bird Conservation Region 8 (north). These Bird Conservation Regions contain a total of 489 species of *bineshiinyag* (birds) that are regularly active in the area. Of these *bineshiinyag* (birds), 171 species are identified as being a priority species. Furthermore, 36 of the priority species have been assessed by the Committee on the Status of Endangered Wildlife in Canada ("COSEWIC") as being at risk, 26 are listed under the *Species at Risk Act, 2002*, and 37 are listed under Ontario's *Endangered Species Act 2007* (Collins & Smith, 2014; Collins & Smith, 2014). *Bineshiinyag* (birds) within the Project region are made up of landbirds, waterbirds, waterfowl, and shorebirds. Habitats such as dense coniferous and mixed wood forests, wetlands, large waterbodies, and riparian habitats are extensively used.

Knowledge of the *bineshiinyag* (birds) and a comprehensive list of the *bineshiinyag* (birds) species of importance to the Anishinaabe found in the Project region can be found in Section 5.4.2.4.

6.3.5.1 Pre-Construction

6.3.5.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. *Bineshiinyag* (birds) inhabit forests of all types, nesting in the branches, vegetation, in interior cavities, or in burrows. Potential impacts of Project staging are:

- Clearing vegetation will decrease food opportunities for *bineshiinyag* (birds) who rely on forested landscapes to foraging for vegetation, fruits, seeds, and prey upon invertebrates and other small animals.
- Increasing open areas, such as along the right-of-way, can increase the ability for *bineshiinyag* (birds) such as *gookooko'oog* (owls), merlins, and American kestrels to spot prey.
- Clearing vegetation will remove nesting habitats of *bineshiinyag* (birds) through the removal of vegetation that provide branches, cavities, burrows, or cover.

6.3.5.2 Construction

6.3.5.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect tributaries of the Whiteshell River, Royal Lake, and Baubee Lake. Potential impacts are:

- Removing habitat for ground dwelling, nesting, and burrowing such as *maangwag* (common loons), *ogiishkimanisiig* (belted kingfishers), northern harriers, or *bineshiinyag* (birds) who nest on rocks such as *wiinaangeg* (turkey vultures) may result in less *bineshiinh* (bird) activity in the Project area.
- Disturbing and displacing nesting *bineshiinyag* (birds) with increased noise can result in less *bineshiinh* (bird) activity within the Project area, negatively impacting hunting, and spiritual practices of the Anishinaabe.
- Damaging aquatic vegetation, *giigoonyag* (fish), and invertebrates that are consumed by *bineshiinyag* (birds) as a result of erosion and sediment run off, negatively impacting the health and development of *bineshiinyag* (birds).

6.3.5.2.2 Installing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation and dewatering procedures. Watercourse realignment will occur at four culvert sites. Affected vegetation includes wetland communities of Cattail Marsh, Blue-joint Grass Meadow Marsh, Black Ash Swamp, Speckled Alder Thicket Swamp, and other small open water pockets at the roadside. Potential impacts are:

- Increasing attractive nesting opportunities inside culverts and activity within the right-of-way, which can subsequently increase mortality because of vehicular collisions.
- Altering wetland habitat used by species such as the yellow warbler and northern harrier, potentially displacing these species until the wetlands can be restored to pre-disturbance conditions.
- Stripping, clearing, and grubbing involved in channel preparation can reduce the availability of food used by *bineshiinyag* (birds) in the Project site. Changes to natural feeding habits can negatively impact the development of *bineshiinyag* (birds), their health, and abundance in the Project area.
- Eroding bank structure and depleting vegetation used for nesting by *bineshiinyag* (birds) such as *ogiishkimanisiig* (belted kingfishers), *maangwag* (common loons), and northern harriers.
- Stripping, clearing, and grubbing involved in channel preparation can introduce sediment and pollutants into the waterway, altering water chemistry and damaging vegetation. This would

negatively affect the diet, development, and abundance of *bineshiinyag* (birds) who rely on aquatic prey.
- Dewatering can cause sediment build-up in waterways, altering water quality and negatively affecting the semi-aquatic and aquatic vegetation eaten by *nikag* (Canada geese).

6.3.5.2.3 Building the Road

The Project will involve twinning of a 6.5 km section of Highway 17. The process of building the road will involve the excavation and hauling of rock and filling, levelling, and grading of the new highway. The use of vehicles and equipment will take place on construction site. When needed, dust suppressants may be used. Potential impacts are:

- Spilling, leaking, or leaching of chemicals applied during the construction process can contaminate near-by aquatic habitats that *bineshiinyag* (birds) rely on. Since *biijigigwane* (osprey), *ogiishkimanisiig* (belted kingfishers) and *maangwag* (common loons) rely on *giigoonyag* (fish) for food, toxins in water bodies can bioaccumulate with potential to cause harm.
- Spilling, leaking, or leaching of oils used by vehicles and equipment into aquatic environments can damage *bineshiinyag* (bird) feathers, immobilizing them from flying or swimming.
- Applying chemical dust suppressants along the Project site can run-off and contaminate near-by aquatic habitats that *bineshiinyag* (birds) rely on. This can negatively impact *bineshiinyag* (bird) health if contaminants are ingested or contaminated vegetation and invertebrates are ingested.

6.3.5.2.4 Disposing of wastes

Upon completion of construction, wastes (both construction and solid) will need to be disposed. Improper disposal of wastes can have the following potential impacts:

- Spilling, leaking, or leaching of chemicals applied during the construction process can contaminate near-by aquatic habitats that *bineshiinyag* (birds) rely on. Since *biijigigwane* (osprey), *ogiishkimanisiig* (belted kingfishers), and *maangwag* (common loons) rely on *giigoonyag* (fish) for food, toxins in water bodies can bioaccumulate with potential to cause harm.
- Spilling, leaking, or leaching of oils used by vehicles and equipment into aquatic environments can damage *bineshiinyag* (bird) feathers, immobilizing them from flying or swimming.
- Attracting *bineshiinyag* (birds) such as *gaagaagiwag* (common ravens) to the Project area by food scraps, potentially disrupting their natural behaviours for nutrition.

6.3.5.2.5 Relocating Utilities

Utility relocation will involve the relocation of a Bell underground fibre line and the extension of a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, and drilling along the right-of-way. Potential impacts are:

- Clearing vegetation will decrease food opportunities for *bineshiinyag* (birds) who rely on forested landscapes to foraging for vegetation, fruits, and seeds, and prey upon invertebrates and other small animals.
- Increasing open areas, such as along the right-of-way, can increase the ability for *bineshiinyag* such as *gookooko'oog* (owls), merlins, and American kestrels to spot prey.
- Clearing vegetation will remove nesting habitats of *bineshiinyag* (birds) through the removal of vegetation that provide branches, cavities, burrows, or cover.
- Removing habitat for ground dwelling, nesting, and burrowing species such as *maangwag* (common loons), *ogiishkimanisiig* (belted kingfishers), Northern harriers, or other *bineshiinyag* (birds) who nest on rocks such as *wiinaangeg* (turkey vultures) may result in less activity of *bineshiinyag* (birds) in the Project area.
- Disturbing and displacing nesting *bineshiinyag* (birds) with increased noise can result in less *bineshiinyag* (birds) being active within the Project area, negatively impacting hunting, and spiritual practices of the Anishinaabe.
- Damaging aquatic vegetation, *giigoonyag* (fish) and invertebrates that are consumed by *bineshiinyag* (birds) as a result of erosion and sediment run off, negatively impacting *bineshiinyag* (bird) health and development.

6.3.5.3 Demobilization & Restoration

6.3.5.3.1 Site Revegetation

Prior to operation, activities following construction will include demobilizing equipment and restoring the site through revegetation. This will involve restoring the riparian zone along the edge of the waterway, re-stabilizing and re-seeding exposed surfaces, and revegetating *mitigoog* (trees) and other significant plants. This will positively impact *bineshiinyag* (birds) by regenerating the disturbed area and by improving the quality of habitat, which will ultimately provide positive affects for the Anishinaabeg. Positive impacts include:

- Creating new areas for *bineshiinyag* (birds) to nest, either in the branches, cavities or around ground vegetation, increasing the presence of *bineshiinyag* (birds) in the area.
- Creating new areas for *bineshiinyag* (birds) to forage for food such as vegetation, invertebrates, and small animals, positively affecting *bineshiinyag* (bird) populations.

6.3.5.4 Operation

6.3.5.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- Increasing vehicular collisions with wildlife which may attract *bineshiinyag* (birds) who feed on roadside carrion to the highway.
- Increasing vehicular collision with *bineshiinyag* (birds) who opportunistically feed on roadside carrion such as *wiinaangeg* (turkey vultures), *gwiingwiishiwag* (Canada jays), *gaagaagiwag* (common raven).

6.3.5.4.2 Maintaining the Right-of-Way

The ongoing maintenance of the right-of-way will include removing snow, debris, and dangerous *mitigoog* (trees). It also includes cleaning culverts and the application of herbicides to prevent plant growth on highway shoulders. Winter de-icing methods are also included such as the application of salt and sand. Potential impacts are:

- Ingesting vegetation dosed in herbicides leading to the consumption of toxic concentrations through bioaccumulation.
- Ingesting road salts, either by the grain or in pools along the right-of-way, leading to the consumption of toxic concentrations of salts.

6.3.5.5 Mitigation Measures to Protect *Bineshiinyag* (Birds)

The decades of damage already done to *bineshiinyag* (birds) and consequentially to the Anishinaabeg will continue to be addressed through ongoing discussions being held between the Ministry of Transportation ("MTO") and Niiwin Wendaanimok. Potential impacts to *bineshiinyag* (birds) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Conducting a pre-construction survey of new nest activity since the initial 2009 survey.
- Using sand/salt alternatives for controlling road ice to reduce wildlife attraction.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Limiting areas to be cleared as strictly necessary.
- Avoiding drilling and blasting on windy days.
- Avoiding blasting near waterbodies.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law), that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Implementing a roadside carrion surveillance strategy as part of the Anishinaabe Guardians Program to ensure effective disposal.
- Building artificial nesting structures.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.

- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Avoid clearing and structure works during the breeding *bineshiinh* (bird) season (approximately April 21st to August 31st).
- Acting in accordance with Ontario's *Endangered Species Act, 2007* to cease all activities that could harm the *bineshiinyag* (birds).
- Adhering to the regulations concerning clearing and construction in the presence of species protected under the *Migratory Birds Convention Act, 1994*.
- Building culverts with designs that impair nest construction.
- Surveying for nests before commencing construction and implementing a buffer zone around active nests to avoid disturbing the *bineshiinyag* (birds).
- Avoiding blasting near water bodies where *migiziwag* (bald eagles) may be active.
- Adhering to blasting requirements listed in OPSS 0120 and Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, copies of which is included in **Appendix 5**.
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions as per OPSS 0100, a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area, per Part B of the CAITM (Contract Administration Inspection Task Manual), a copy of which is included in **Appendix 5**. This manual also requires for checking that earth, mud, aggregates, and other debris are not tracked onto the roadway by construction vehicles and requires for monitoring and documentation of the frequency of application of dust suppressants.
- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all applicable regulations.
- Managing salt impacted soil in accordance with provincial environmental regulations specified in Special Provision ENVR0001, a copy of which is included in **Appendix 5**.

Bineshiinyag (birds) of all kinds inhabit the forests, marshes, lakes, and wetlands that make up the shared lands of the Niiwin Wendaanimok Nations. *Bineshiinyag* (birds) are important in many ways to the Anishinaabe, whether it be for spiritual or for sustenance purposes. As noted in Section 5.4.2.4, an Elder from Wauzhushk Onigum shared how the presence of *bineshiinyag* (birds) has changed over time:

> *I used to hear a bird…when I was walking around with my dog. I used to hear that bird, summer bird. I don't hear that noise anymore. It's gone. I don't know where he is. I used to stand there, listen to him, him or her. That noise. That voice.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 18, 2019.*

Bineshiinyag (birds) are a gift to *Aki* (Earth) from *Kizhe Manitou* (the Creator) and are to be respected by those on *Aki* (Earth). *Bineshiinyag* (birds) represent the spirit of *bagidanaamowin* (the air) that is provided to humans, *bagidanaamowin* (the air) that is given to cycle through the lungs of those on *Aki* (Earth). Being the spirit of *bagidanaamowin* (air), *bineshiinyag* (birds) should be protected in efforts to protect the health of the *bagidanaamowin* (air) that humans depend upon.

6.4 Impacts to the Soils

6.4.1 *Miinan* (Berries)

Miinan (berries) are a sacred gift from *Kizhe Manitou* (the Creator) that have been valued by the Anishinaabeg since time immemorial. *Miinan* (berries) are used for a variety of purposes by the Anishinaabeg and are an important component of traditional sustenance, cohesion, healing, and spirituality. As noted in Section 5.7.6.1, a community member from Grassy Narrows explained the role of *miinan* (berries) in ceremony:

> *I use berries because that was one of the gifts that Gizhigookwe brought. There were berries, tobacco, sage, cedar. Those are all the medicines that are used.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

Miinan (berries) have an important ecological role and are a significant food source for a wide variety of wildlife. *Miinan* (berries) can be found across a diverse range of habitats in the Project Region including forests, clearings, rocky outcroppings, and riparian areas. Many varieties of *miinan* (berries) are early successional species that are often found in post-disturbance sites and along the edges of roadways.

Knowledge of the *miinan* (berries) and a comprehensive list of the *miin* (berry) species discussed in the AAK Interviews that are present in the Project region can be found in Section 5.5.2. The cultural significance of *miinan* (berries) is further described in Section 5.7.6.1.

6.4.1.1 Pre-Construction

6.4.1.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. *Miinan* (berries) are abundant throughout the Project Region and approximately 41.8 ha of *miin* (berry) habitat will be cleared as a result of Phase 1 staging activities. Certain varieties of *miinan* (berries) are also known to congregate in stands that have historically played a vital role in Anishinaabe wellbeing. One particularly significant harvesting site near the new highway is High Lake. Potential impacts are:

- Clearing vegetation from the vicinity of the highway will remove *miinan* (berries) and their habitat, causing a direct negative affect to *miinan* (berries) in the short-term. However, many varieties of *miinan* (berries) are early-successional species that thrive in recently cleared habitats. For this reason, while there may be a temporary loss of *miinan* (berries), they are likely to return shortly if the area is left undisturbed. While this is a positive impact for the Anishinaabeg, an abundance of *miinan* (berries) may also attract more cottagers, tourists, and other interested groups to the resource, which could reduce the availability of *miinan* (berries) for traditional gathering. An abundance of berries upon their return along the highway could also attract wildlife including *bineshiinyag* (birds), small mammals, *waawaashkeshiwag* (deer), and *makwag* (black bears), potentially increasing the risk of vehicle collisions with animals.
- Similarly, dust generated through stockpiling and hauling materials and equipment can result in sedimentation and runoff, which could negatively affect water quality. This could impact soil quality in riparian zones, where various species of *miinan* (berries) can be found, including *bawa'iminaan* (pin cherry) and *ookwemin* (choke cherry).

6.4.1.2 Construction

6.4.1.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect aquatic habitat in five locations: at four tributaries of the Whiteshell river and at one tributary of Baubee Lake leading to the Whiteshell river. *Miinan* (berries) are often found on rocky outcroppings, and near water streams. Potential impacts are:

- Blasting will negatively impact *miinan* (berries) by directly removing their habitat. Changes to *miinan* (berries) could consequently affect the wellbeing of the Anishinaabeg who rely on this resource.
- Similarly, dust generated from blasting could be deposited in waterways, causing changes in sediment concentration, and impacting the riparian soils that many varieties of *miin* (berry) depend on.

6.4.1.2.2 Replacing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation and dewatering procedures. Watercourse realignment will occur at four culvert sites. Potential impacts are:

- Dewatering may temporarily result in altered water quality, consequently affecting nearby habitat for *miinan* (berries).
- Similarly, stream realignment may cause long-term changes to the surrounding habitat for *miinan* (berries) that could in turn affect *miinan* (berries), depending on the species and its soil requirements. These changes would consequently affect the wellbeing of the Anishinaabeg.

6.4.1.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. Activities associated with building the road will include excavating, hauling, filling, levelling, and grading. Construction and solid waste will be generated during these procedures. Additionally, the activities will involve the ongoing use and fueling of vehicles and equipment throughout construction. Potential impacts are:

- Dust and contaminants generated during excavating, hauling, filling, leveling, and grading could contaminate the habitat of *miinan* (berries), consequently affecting the wellbeing of the Anishinaabeg.
- Similarly, possible leaking, spilling, or leaching of contaminants associated with activities such as using and fueling vehicles and equipment, applying dust suppression, and disposing of construction waste, could impact the habitat of *miinan* (berries).

6.4.1.2.4 Relocating Utilities

Utility relocation will involve the relocation of a Bell underground fibre line and the extension of a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, drilling, and blasting along the right-of-way. Potential impacts are:

- Removing vegetation will directly remove *miinan* (berries) or their habitat, consequentially affecting the local ecology and the wellbeing of the Anishinaabeg.
- Similarly, dust generated through drilling and blasting could contaminate the habitat of *miinan* (berries), particularly in riparian zones where water quality could be impacted.

6.4.1.3 Demobilizing and Restoring

6.4.1.3.1 Site Revegetation

Prior to operation, activities following construction will include demobilizing equipment and restoring the site through revegetation. This will involve restoring the riparian zone along the edge of the waterway, re-stabilizing and re-seeding exposed surfaces, revegetating *mitigoog* (trees) and other significant plants, and restoring old and abandoned pits to provide a net benefit to the environment.

This will positively impact *miinan* (berries) by regenerating the disturbed area and by improving the quality of their habitat, which will ultimately provide positive affects for the Anishinaabeg.

6.4.1.4 Operation

6.4.1.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade route across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- With greater capacity and safety, the new highway will provide increased access to *miinan* (berries) sites near the highway. This could benefit the Anishinaabeg by allowing traditional harvesting practices to take place with greater ease. However, improved access will also apply to other interested groups like tourists and cottagers, which could ultimately lead to the depletion of this resource if not managed carefully. This could consequently pose adverse effects to the wellbeing of the Anishinaabeg.
- Accidental spills could negatively impact water and soil quality, which could subsequently impact *miinan* (berries) as well as the Anishinaabeg.

6.4.1.4.2 Maintaining the Right-of-Way

Project activities associated with maintaining the right-of-way include applying herbicides to manage vegetation growth along highway shoulders, applying sand and salt in the winter to manage ice on the roadway, marking and filling pavements to provide repairs when needed, and clearing snow, brush, and debris from the right-of-way. Potential impacts are:

- Activities like clearing brush and applying herbicides could adversely affect the long-term growth of *miinan* (berries) in the area, consequently impacting the wellbeing of the Anishinaabeg.
- Similarly, applying salt for controlling ice could degrade the quality of the soil and water surrounding the highway, which could in turn affect *miinan* (berries) and the Anishinaabeg.
- Applying sand for controlling ice could offer benefits to *miinan* (berries), as certain species like blueberries grow well in sandy soils. However, as previously noted, increased growth of *miinan* (berries) along the right-of-way could lead to increased collisions with wildlife as well as increased harvesting by the Anishinaabe and others.

6.4.1.5 Mitigation Measures to Protect *Miinan* (Berries)

The decades of damage already done to *miinan* (berries) and consequentially to the Anishinaabeg will continue to be addressed through ongoing discussions being held between the Ministry of Transportation (“MTO”) and Niiwin Wendaanimok. Potential impacts to *miinan* (berries) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Using sand/salt alternatives for controlling road ice.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Limiting areas to be cleared as strictly necessary.
- Avoiding drilling and blasting on windy days.
- Avoiding blasting near waterbodies.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Building culverts large enough to allow for the uninhibited movement of water.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Implementing a regional resource management plan to protect *miinan* (berries) for traditional use.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Supporting development of a regional resource management plan as more *Anishinaabe Aki Kakendamowin* is documented in subsequent phases of the project.
- Clearly delineating right-of-way vegetation clearing zones and retention zones prior to clearing and grading.
- Retaining existing culverts that are in satisfactory condition and considered to have adequate hydraulic capacity.
- Designing culverts to prevent long-term alterations to water flow.

- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions as per OPSS 0100, a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area, per Part B of the CAITM (Contract Administration Inspection Task Manual), a copy of which is included in **Appendix 5**. This manual also requires for checking that earth, mud, aggregates, and other debris are not tracked onto the roadway by construction vehicles and requires for monitoring and documentation of the frequency of application of dust suppressants.
- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all applicable regulations.
- Managing salt impacted soil in accordance with provincial environmental regulations specified in Special Provision ENVR0001, a copy of which is included in **Appendix 5**.
- Adhering to product regulations only using explosives approved for use in Canada as per OPSS 0120, **Appendix 5**.
- Developing and implementing an Environmental Incident Management Plan.
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions (OPSS 0100), a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Adhering to guidelines for stockpiling erodible construction materials and excess or surplus materials as per OPSS 0805. See copy of regulations in **Appendix 5**.
- Adhering to Conditions on Management by Disposal as Non-Hazardous Solid Industrial or Commercial Waste and Open Burning as per OPSS 0180, a copy of which is provided in **Appendix 5**.

As a traditional food source and medicine that is strongly associated with social gatherings and ceremonies, *miinan* (berries) are a vital resource for the Anishinaabeg. As noted in Section 5.7.6.1, an Elder from Wauzhushk Onigum shared, "eating blueberries [is] sacred to us" (AAK Individual Interview, August 14, 2019). For this reason, *miinan* (berries) are an important component of the Anishinaabe identity, culture, and wellbeing that must be protected.

6.4.2 *Mitigoog* (Trees)

Mitigoog (trees) are integral to the Anishinaabeg. The Anishinaabeg have immense knowledge about the many varieties of *mitigoog* (trees) in the Project Area. *Mitigoog* (trees) are used by the Anishinaabeg for various purposes including as *mashkikiwan* (medicines), as building material, and as an offering in ceremony, and are an important piece in many traditional stories. As noted in Section 5.5.3.1, a community member from Niisaachewan shared a few of the many ways *giizhik* (cedar) is traditionally used in ceremonies, around the house and as a *mashkiki* (medicine):

> *Cedar tea, cedar baths, just having cedar hanging over your door [to] protect your entry ways, windows, your Pow Wows…Your funerals…even just having a ceremony*

in the band office, or the drum, and then you put the cedar down. They use it for a lot of stuff.

Community member, Niisaachewan, AAK Group Interview, September 13, 2019.

Mitigoog (trees) are vital to the ecological structure and integrity of the habitats found within the Project Area. *Mitigoog* (trees) have many ecosystem functions that include storing carbon, cycling nutrients, purifying water and the *bagidanaamowin* (air), stabilizing soils and riverbanks, and providing wildlife habitat. Many species of *mitigoog* (trees) with considerable importance to the Anishinaabeg can be found in wetlands and riparian zones, including *oziisigobiminzh* (willow), *zesegaandag* (white spruce), and *baapaagimaak* (black ash), while several others such as *azaadiwag* (trembling aspen), *biisaandago-zhingwaakwag* (eastern white pine), *wiigwaas* (white birch) are early successional species that thrive in post-disturbance sites.

Knowledge of the *mitigoog* (trees) and a comprehensive list of the species of importance to the Anishinaabeg found in the Project region can be found in Section 5.5.3.

6.4.2.1 Pre-Construction

6.4.2.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. It is expected that approximately 24.1 ha of habitat of *mitigoog* (trees) will be removed as a result of Phase 1 staging activities. Potential impacts are:

- Clearing will cause long-term negative impacts to *mitigoog* (trees) through the direct removal of species within the project area. This will have consequential impacts to the surrounding ecology and wellbeing of the Anishinaabeg.
- Stockpiling aggregate and other materials at the Project site could adversely affect water quality through the accumulation of dust and other contaminants, which could in turn impact varieties of *mitigoog* (trees) that grow in riparian zones.

6.4.2.2 Construction

6.4.2.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment. Potential impacts are:

- Blasting may negatively impact *mitigoog* (trees) though the loss of viable soils and could cause direct damage to *mitigoog* (trees) from flying debris. This could consequently affect the wellbeing of the Anishinaabeg who rely on this resource.

- Dust generated from blasting may impact the photosynthetic ability of *mitigoog* (trees), impacting their health, and consequently the wellbeing of the Anishinaabeg who rely on this resource.
- Similarly, dust generated from blasting could be deposited in waterways, causing changes in sediment concentration and soil quality along riparian zones, thus impacting *mitigoog* (trees).

6.4.2.2.2 Replacing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation and dewatering procedures. Watercourse realignment will occur at four culvert sites. Potential impacts are:

- Dewatering may temporarily result in altered water quality, consequently affecting nearby soils and valuable habitat of *mitigoog* (trees).
- Similarly, stream realignment may cause long-term changes to habitat of *mitigoog* (trees) that could in turn have varied affects to *mitigoog* (trees), depending on the species. Some varieties like *oziisigobiminzh* (willow) are known to grow on the banks of streams and rivers and would be particularly affected by changes to stream alignment. *Mitigoog* (trees) preferring drier soils could also be affected if streams are redirected into new areas where streams were previously absent.

6.4.2.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. Activities associated with building the road will include excavating, hauling, filling, levelling, and grading. Construction waste and solid waste will be generated during these procedures. Additionally, there will be ongoing use and fueling of vehicles and equipment throughout construction. Potential impacts are:

- Dust and contaminants generated during excavating, hauling, filling, leveling, and grading could contaminate habitat for *mitigoog* (trees), particularly in riparian areas, which would consequently pose negative impacts to the wellbeing of the Anishinaabeg.
- Similarly, the possible leaking, spilling, or leaching of contaminants associated with activities such as using and fueling vehicles and equipment, applying dust suppression, and disposing of waste, could impact soil quality and surrounding *mitigoog* (trees).

6.4.2.2.4 Relocating Utilities

Utility relocation will involve the relocation of a Bell underground fibre line and the extension of a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, drilling, and blasting along the right-of-way. Potential impacts are:

- Removing vegetation will directly remove *mitigoog* (trees), consequentially affecting the local ecology and the wellbeing of the Anishinaabeg.

- Similarly, dust generated through drilling and blasting could contaminate habitat for *mitigoog* (trees), particularly in riparian zones where water quality could be impacted.

6.4.2.3 Demobilizing and Restoring

6.4.2.3.1 Site Revegetation

Prior to operation, activities following construction will include demobilizing equipment and restoring the site through revegetation. This will involve restoring the riparian zone along the edge of the waterway, re-stabilizing and re-seeding exposed surfaces, revegetating *mitigoog* (trees) and other significant plants, and restoring old and abandoned pits to provide a net benefit to the environment. This will positively impact *mitigoog* (trees) by regenerating the disturbed area and by improving the quality of habitat for *mitigoog* (trees), which will ultimately provide positive affects for the Anishinaabeg.

6.4.2.4 Operation

6.4.2.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade route across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- Accidental spills could negatively impact water and soil quality, which could subsequently impact *mitigoog* (trees) as well as the Anishinaabeg.

6.4.2.4.2 Maintaining the Right-of-Way

Project activities associated with maintaining the right-of-way include applying herbicides to manage vegetation growth along highway shoulders, applying sand and salt in the winter to manage ice on the roadway, marking and filling pavements to provide repairs when needed, and clearing snow, brush, and debris from the right-of-way. Potential impacts are:

- Activities like clearing *mitigoog* (trees) and applying herbicides could adversely affect the long-term growth of *mitigoog* (trees) in the area, consequently impacting the wellbeing of the Anishinaabeg.
- Similarly, applying salt for controlling ice could degrade the quality of the soil and water surrounding the highway, which could in turn affect *mitigoog* (trees) and the Anishinaabeg. Certain species of *mitigoog* (trees) like *giizhik* (eastern white cedar) are particularly vulnerable when exposed to road salts (MNRF, 2019) and have high cultural value to the Anishinaabeg.

6.4.2.5 Mitigation Measures to Protect *Mitigoog* (Trees)

The decades of damage already done to *mitigoog* (trees) and consequentially to the Anishinaabeg will continue to be addressed through ongoing discussions being held between the Ministry of Transportation (“MTO”) and Niiwin Wendaanimok. Potential impacts to *mitigoog* (trees) from the

activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Using sand/salt alternatives for controlling road ice.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Limiting areas to be cleared as strictly necessary.
- Avoiding drilling and blasting on windy days.
- Avoiding blasting near waterbodies.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Building culverts large enough to allow for the uninhibited movement of water.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Supporting development of a regional resource management plan as more *Anishinaabe Aki Kakendamowin* is documented in subsequent phases of the project.
- Clearly delineating right-of-way vegetation clearing zones and retention zones prior to clearing and grading.
- Retaining existing culverts that are in satisfactory condition and considered to have adequate hydraulic capacity.
- Designing culverts to prevent long-term alterations to water flow.
- Setting aside timber for local communities.

- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions as per OPSS 0100, a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area, per Part B of the CAITM (Contract Administration Inspection Task Manual), a copy of which is included in **Appendix 5**. This manual also requires for checking that earth, mud, aggregates, and other debris are not tracked onto the roadway by construction vehicles and requires for monitoring and documentation of the frequency of application of dust suppressants.
- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all applicable regulations.
- Managing salt impacted soil in accordance with provincial environmental regulations specified in Special Provision ENVR0001, a copy of which is included in **Appendix 5**.
- Adhering to product regulations only using explosives approved for use in Canada as per OPSS 0120, a copy of which is included in **Appendix 5**.
- Developing and implementing an Environmental Incident Management Plan.
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions (OPSS 0100), a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Conducting further research and applying appropriate measures to address the salt lick along the highway during subsequent phases of the project.
- Adhering to guidelines for stockpiling erodible construction materials and excess or surplus materials as per OPSS 0805. See copy of regulations in **Appendix 5**.
- Adhering to Conditions on Management by Disposal as Non-Hazardous Solid Industrial or Commercial Waste and Open Burning as per OPSS 0180, a copy of which is provided in **Appendix 5**.

Mitigoog (trees) are a sacred resource to the Anishinaabeg that are a valued source of healing, as a community member from Grassy Narrows noted in Chapter Section 5.5.3:

> *But actually, all the trees have medicine. So even the pine, the white pine, every tree has medicines.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

In addition to medicine, *mitigoog* (trees) are used for many purposes by the Anishinaabeg and are an important component of the Anishinaabe identity, culture, and wellbeing that must be protected.

6.4.3 *Mashkikiwan* (Medicines)

Mashkikiwan (medicines) have been used by the Anishinaabeg to treat ailments of the body, mind, and spirit since time immemorial. The term *mashkikiwan* (medicines) translates to "strength from the Earth" and encompasses a many species of plants as well as some animals. There are four sacred

mashkikiwan (medicines) in Anishinaabe tradition, titled the *gichitwaa mashkikiwan* (four sacred medicines): *giizhik* (cedar), *mashkodewashk* (sage), *wiingashk* (sweet grass), and *asemaa* (tobacco). Another sacred *mashkiki* (medicine) of the Anishinaabe is *wiikenh* (sweet flag), which is used for healing various ailments. In addition to these, there are many other *mashkikiwan* (medicines) that are strongly interconnected and used for purposes such as healing, cleansing, and offering. As noted in Section 5.5.4 an Elder from Wauzhushk Onigum spoke to the immense number of *mashkikiwan* (medicines) used by the Anishinaabeg:

> *So, there's inner medicines that kind of come together and produce a new form of medicines. We got all sorts of medicines for tooth aches…We have a lot of medicines that deal with headaches, other medicines that deal with upset stomachs. I believe there is about 400 different types of plants that, so far, have been documented.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 17, 2019.*

Mashkikiwan (medicines) have important ecological roles within their environments. Many medicinal plants used by the Anishinaabeg are also used by various wildlife species, and the healing properties of many *mashkikiwan* (medicines) were initially discovered by observing how animals used these plants. For example, an Elder from Washagamis Bay shared that *akandamoo* (root of the lily pad) is a particularly important food source for *amikwag* (beavers) (AAK Group Interview, August 21, 2019). *Mashkikiwan* (medicines) are distributed across a diverse range of habitats in the Project Area. Many varieties of *mashkikiwan* (medicines) are present in wetlands, marshes, and riparian zones, including *wiingashk* (sweetgrass), *wiikenh* (sweet flag), and *oziisigobiminzh* (willow). There are also various *mashkikiwan* (medicines) present in aquatic environments, such as *name* (lake sturgeon), *adikameg* (whitefish), and *akandamoo* (root of a lily pad). Additionally, many *mashkikiwan* (medicines) including *wiigwaas* (birch), *baapaagimaak* (black ash), and *mashkodewashk* (sage), are early-successional terrestrial species that prefer post-disturbance sites like roadsides.

Knowledge of the *mashkikiwan* (medicines) and a comprehensive list of the *mashkiki* (medicine) species discussed in the AAK Interviews that are present in the Project region can be found in Section 5.5.4.

6.4.3.1 Pre-Construction

6.4.3.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. *Mashkikiwan* are abundant throughout the Project Region and approximately 41.8 ha of *mashkiki* (medicine) habitat will be cleared as a result of Phase 1 staging activities. Potential impacts are:

- Clearing vegetation from the vicinity of the highway will remove *mashkiki* (medicine) habitat, causing a direct negative affect to *mashkikiwan* (medicines) in the short-term with consequential impacts to the Anishinaabeg. However, certain varieties of *mashkikiwan*

(medicines) are early-successional species that thrive in recently cleared habitats. For this reason, while there may be a temporary loss of *mashkikiwan* (medicines), some are likely to return shortly if the area is left undisturbed.

- Similarly, dust generated through stockpiling and hauling materials and equipment can result in sedimentation and runoff, which could negatively affect water quality and *mashkiki* (medicine) habitat.

6.4.3.2 Construction

6.4.3.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect aquatic habitat in five locations: at four tributaries of the Whiteshell river and at one tributary of Baubee Lake leading to the Whiteshell river. *Mashkikiwan* (medicines) are often found on rocky outcroppings, and in wetland and aquatic habitats. Potential impacts are:

- Blasting will negatively impact *mashkikiwan* (medicines) by directly removing their habitat. Changes to *mashkikiwan* (medicines) could consequently affect the wellbeing of the Anishinaabeg who rely on them.
- Similarly, dust generated from blasting could be deposited in waterways, causing changes in sediment concentration, and impacting the aquatic habitats and riparian soils that many varieties of *mashkikiwan* (medicines) depend on.

6.4.3.2.2 Replacing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation and dewatering procedures. Watercourse realignment will occur at four culvert sites. Potential impacts are:

- Dewatering may temporarily result in altered water quality, consequently affecting *mashkiki* (medicine) habitat.
- Similarly, stream realignment may cause long-term changes to the *mashkiki* (medicine) habitat that could in turn affect *mashkikiwan* (medicines) found in wetland or aquatic habitats. These changes would consequently affect the wellbeing of the Anishinaabeg.

6.4.3.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. Activities associated with building the road will include excavating, hauling, filling, levelling, and grading. Construction and solid waste will be generated during these procedures. Additionally, the activities will involve the ongoing use and fueling of vehicles and equipment throughout construction. Potential impacts are:

- Dust and contaminants generated during excavating, hauling, filling, leveling, and grading could contaminate *mashkiki* (medicine) habitat, consequently affecting the wellbeing of the Anishinaabeg.
- Similarly, possible leaking, spilling, or leaching of contaminants associated with activities such as using and fueling vehicles and equipment, applying dust suppression, and disposing of construction waste, could impact *mashkiki* (medicine) habitat.

6.4.3.2.4 Relocating Utilities

Utility relocation will involve the relocation of a Bell underground fibre line and the extension of a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, drilling, and blasting along the right-of-way. Potential impacts are:

- Removing vegetation will directly remove *mashkikiwan* (medicines) and *mashkiki* (medicine) habitat, consequentially affecting the local ecology and the wellbeing of the Anishinaabeg.
- Similarly, dust generated through drilling and blasting could contaminate *mashkiki* (medicine) habitat, particularly in riparian zones and aquatic environments where water quality could be impacted.

6.4.3.3 Demobilizing and Restoring

6.4.3.3.1 Site Revegetation

Prior to operation, activities following construction will include demobilizing equipment and restoring the site through revegetation. This will involve restoring the riparian zone along the edge of the waterway, re-stabilizing and re-seeding exposed surfaces, revegetating *mitigoog* (trees) and other significant plants, and restoring old and abandoned pits to provide a net benefit to the environment. This will positively impact *mashkikiwan* (medicines) by regenerating the disturbed area and by improving the quality of *mashkiki* (medicine) habitat, which will ultimately benefit the Anishinaabeg.

6.4.3.4 Operation

6.4.3.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade route across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- With greater capacity and safety, the new highway will provide increased access to *mashkiki* (medicine) sites near the highway. This could benefit the Anishinaabeg by allowing traditional harvesting practices to take place with greater ease.
- Accidental spills could negatively impact water and soil quality, which could subsequently impact *mashkikiwan* (medicines) as well as the Anishinaabeg.

6.4.3.4.2 Maintaining the Right-of-Way

Project activities associated with maintaining the right-of-way include applying herbicides to manage vegetation growth along highway shoulders, applying sand and salt in the winter to manage ice on the roadway, marking and filling pavements to provide repairs when needed, and clearing snow, brush, and debris from the right-of-way. Potential impacts are:

- Activities like clearing brush and applying herbicides could adversely affect the long-term growth of *mashkikiwan* (medicines) in the area, consequently impacting the wellbeing of the Anishinaabeg.
- Similarly, applying salt for controlling ice could degrade the quality of the soil and water surrounding the highway, which could in turn affect *mashkikiwan* (medicines) and the Anishinaabeg.

6.4.3.5 Mitigation Measures to Protect *Mashkikiwan* (Medicines)

The decades of damage already done to *mashkikiwan* (medicines) and consequentially to the Anishinaabeg will continue to be addressed through ongoing discussions being held between the Ministry of Transportation ("MTO") and Niiwin Wendaanimok. Potential impacts to *mashkikiwan* (medicines) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Using sand/salt alternatives for controlling road ice.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Limiting areas to be cleared as strictly necessary.
- Avoiding drilling and blasting on windy days.
- Avoiding blasting near waterbodies.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Building culverts large enough to allow for the uninhibited movement of water.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law), that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Implementing a regional resource management plan to protect *mashkikiwan* (medicines) for traditional use.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.

- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Supporting development of a regional resource management plan as more *Anishinaabe Aki Kakendamowin* is documented in subsequent phases of the project.
- Clearly delineating right-of-way vegetation clearing zones and retention zones prior to clearing and grading.
- Retaining existing culverts that are in satisfactory condition and considered to have adequate hydraulic capacity.
- Designing culverts to prevent long-term alterations to water flow.
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions as per OPSS 0100, a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area, per Part B of the CAITM (Contract Administration Inspection Task Manual), a copy of which is included in **Appendix 5**. This manual also requires for checking that earth, mud, aggregates, and other debris are not tracked onto the roadway by construction vehicles and requires for monitoring and documentation of the frequency of application of dust suppressants.
- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all applicable regulations.
- Managing salt impacted soil in accordance with provincial environmental regulations specified in Special Provision ENVR0001, a copy of which is included in **Appendix 5**.
- Adhering to product regulations only using explosives approved for use in Canada as per OPSS 0120, a copy of which is included in **Appendix 5**.
- Developing and implementing an Environmental Incident Management Plan.
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions (OPSS 0100), a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Adhering to guidelines for stockpiling erodible construction materials and excess or surplus materials as per OPSS 0805. See copy of regulations in **Appendix 5**.

- Adhering to Conditions on Management by Disposal as Non-Hazardous Solid Industrial or Commercial Waste and Open Burning as per OPSS 0180, a copy of which is provided in **Appendix 5.**

For their role in traditional healing and ceremony, *mashkikiwan* (medicines) are an important component of the Anishinaabe identity, culture, and wellbeing that must be protected. An Elder from Washagamis Bay explained the historical value of *mashkikiwan* (medicines), as noted in Chapter Section 5.5.4

> *There's so many medicines, there's thousands of medicines that way we have now. Before colonial times, we were never sick because we always ate the wild food.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

6.4.4 *Asiniig* (Rocks)

In the Anishinaabe view of the *Aki* (Earth), *asiniig* (rocks) are considered animate entities with spirit and knowledge (Manning, 2017). Anishinaabe ceremony is centralized around this important understanding, with *asiniig* (rocks) playing an important role in ceremonies such as the sweat lodge ceremony. A community member from Niisaachewan described the sacred process of selecting *asiniig* (rocks), or *gimishoomisinaanig* (our grandfathers), for the sweat ceremony in Section 5.5.5:

> *You go and pick your grandfathers. Depending on the sweat carrier…they have certain spots where you [go] and pick. But there's one, we went to the quarry in Dalles, there, to pick.*
>
> *Community member, Niisaachewan, AAK Individual Interview, September 13, 2019.*

Asiniig (rocks) have also traditionally represented a medium through with Anishinaabe history and culture have been preserved. Petroforms and petroglyphs demonstrate the cultural importance of *asiniig* (rocks), indicating sites where sacred events or ceremonies may have taken place in the past, or even serving as way markers to guide travelers on their way. To invoke changes to the natural environment often requires the correct ceremony to explain to the animate entities the reason for causing them to shift in physical form (Geniusz, 2009, p. 58).

The surficial geology of the project area consists of glacial sediments, glaciolacustrine sediments, organic deposits, and exposed bedrock, which is largely the result of the advancement and retreat of glacial Lake Agassiz (Minning, Cowan, Sharpe, & Warman, 1994). A thin and discontinuous veneer of mixed glacial sediments makes up approximately 43 percent of the area. Portions of this veneer may include exposed bedrock. Another 2 percent of the project area consists of a thicker blanket of glacial sediments. Approximately 13 percent of the project area consists of offshore glaciolacustrine sediments, which contains clay, silt, and stones. Another 9 percent of the project area consists of exposed bedrock, which is defined as areas with more than 75 percent rock outcrop. Finally, organic

deposits make up approximately 4 percent of the project area. These organic deposits may contain peat, muck, and other sediments. **Map 29** highlights the surficial geology of the project area.

Type	Area (km²)	% of Project Area*
Bedrock - Undifferentiated	591.95	9.4%
Glacial sediments - Blanket	137.51	2.2%
Glacial sediments - Veneer	2,708.19	43.3%
Glaciolacustrine sediments - Offshore sediments	852.73	13.6%
Organic deposits - Undifferentiated deposits	259.28	4.1%

*Total project area is 6,259 km², as shown in **Map 29**.

The Project region is underlain by bedrock of Precambrian age which can be classified into two geological subprovinces within the Superior Province of the Canadian Shield. Metavolcanics and metasediments of the Wabigoon (Keewatin) Subprovince outcrop in a northeast-trending wedge extending from the Lake of the Woods into Pettypiece Township (King, 1969). North of the wedge are rocks of the English River Subprovince consisting predominantly of gneissic felsic to intermediate supracrustal rocks (King, 1969). Baseline cultural information on *asiniig* (rocks) present in the Project can be found in Section 5.5.5.

6.4.4.1 Construction

6.4.4.1.1 Blasting

Blasting will be required to penetrate and break *asin* (rock) for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment. Potential impacts are:

- Blasting will fragment and transform *asin* (rock) into an alternate physical form.
- Blasting may destroy sacred sites, sites where *asiniig* (rocks) are selected for ceremony, or rocks of spiritual importance to the Anishinaabeg, consequentially affecting the wellbeing of the Anishinaabeg to whom they are of importance.
- Blasting *asin* (rock) will cause alterations in topography which will alter surface water drainage, consequentially impacting water quality and quantity in water courses.
- Blasting will result in the loss of rocky outcrops, which provide habitat for avian and *miin* (berry) species, sources of salt and minerals for ungulates, and sunbathing locations for reptiles.
- Removing rocky outcrops will destroy the topographic barriers to species movement, allowing free species movement from one area to another.
- Removing rocky outcrops will remove the inaccessible ecological refuge and stable micro-climate providing habitat for flora and fauna.
- Removing rocky outcrops will remove the fuel break which could inhibit and slow wildfires.

- Blasting *asin* (rock) to realign the watercourse can cause permanent changes in water levels and result in partial or complete infill of wetland areas supporting open water, or shallow aquatic conditions. This will impact species dependant on water for habitat or sustenance, consequentially impacting the Anishinaabeg, who rely on them.

6.4.4.1.2 Relocating Utilities

Relocating utilities will involve relocating a Bell underground fibre line and extending a hydro line. Relocation may involve drilling and blasting along the right-of-way. Potential impacts are:

- Drilling and blasting will fragment and transform *asin* (rock) into an alternate physical form.
- Drilling and blasting *asin* (rock) will cause alterations in topography which will alter surface water drainage, consequentially impacting water quality and quantity in watercourses.
- Drilling and blasting will result in the loss of rocky outcrops, which provide habitat for avian and berry species, sources of salt and minerals for ungulates, and sunbathing locations for reptiles.
- Removing rocky outcrops will destroy the topographic barriers to species movement, allowing free species movement from one area to another.
- Removing rocky outcrops will remove the inaccessible ecological refuge and stable micro-climate providing habitat for flora and fauna.
- Removing rocky outcrops will remove the fuel break which could inhibit and slow wildfires.
- Drilling and blasting may destroy sacred sites, sites where *asiniig* (rocks) are selected for ceremony, or *asiniig* (rocks) of spiritual importance to the Anishinaabeg, consequentially affecting the wellbeing of the Anishinaabeg to whom they are of importance.

6.4.4.2 Mitigation Measures to Protect *Asiniig* (Rocks)

The decades of damage already done to *asiniig* (rocks) and consequentially to the Anishinaabeg will continue to be addressed through ongoing discussions being held between the Ministry of Transportation ("MTO") and Niiwin Wendaanimok. Potential impacts to *asiniig* (rocks) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Implementing a regional resource management plan to protect *asiniig* (rocks) for traditional use.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.

- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Following appropriate protocols to allow for implementation of the Ceremonial Plan through the course of construction.
- Contacting the Anishinaabe Guardians if any archeological discoveries are found in the construction area.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.

The Anishinaabeg share an understanding of the Earth in which interconnectedness lies at the centre of all animate beings. Environmental aspects commonly viewed as being inanimate, such as *asiniig* (rocks), are, in fact, imbued with knowledge and spirit, and may home spiritual beings, as described by this Elder from Niisaachewan, in Section 5.5.5.

> *That's where the little people used to sit and point the directions many years ago, around the 1800s. That's where they used to sit and tell them where to go.*
>
> *Elder, Niisaachewan, AAK Group Interview, August 14, 2019.*

Asiniig (rocks) hold a valued role in Anishinaabe culture through use in ceremony, as homes for spiritual beings, and as important historical landmarks. It is important to preserve these sacred sites for the use of future generations.

6.5 Impacts to the Waters

6.5.1 *Nibi* (Water)

The Anishinaabe relationship with *nibi* (water) is one of holistic reciprocity. *Nibi* (water) is the sacred representation of the blood that flows through Mother Earth, providing nourishment and purification (Benton-Banai, 1988, p. 2). For the Anishinaabeg living amidst this ecologically rich environment flowing with lakes, rivers, and wetlands, *nibi* (water) is an inseparable aspect of life, inexorably interwoven with social and economic wellbeing and the persistence of cultural vitality and resilience. *Nibi* (water) is a living entity to be respected, not simply a resource to be used (Wilson & Inkster, 2018). These interwoven

relationships are exemplified through the following comment made by an Elder from Shoal Lake 40 in Section 5.7.5.1. He said:

> *I was happy to learn all this whole lake, this whole area. To fish, to hunt, and everything, to supply myself. Everything, that's what I lived off. Fish, hunting, deer meat, all that stuff. I know the whole area, the whole lake. I know where the deepest parts are on every inch of this lake.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 11, 2019.*

The close connection between the Anishinaabeg and *nibi* (water) has often led to early identification of pollution and contamination, and the cultural reliance on *giigoonyag* (fish), medicinal plants, and *manoomin* (wild rice) for sustenance has placed many Anishinaabeg communities in difficult positions of being unable to rely on traditional methods of nourishment. It is therefore critical that this invaluable entity be respected and protected for future generations.

Baseline *nibi* (water) information on waterways present in the Project region can be found in Section 5.6.1. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well.

6.5.1.1 Pre-Construction

6.5.1.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. Potential impacts are:

- Removing vegetation from the banks of the tributaries will remove the riparian habitat that would otherwise act as a barrier to sedimentation and erosion. This could negatively affect *nibi* (water) quality, thereby affecting the species reliant on *nibi* (water) as habitat, for sustenance, and as spawning grounds, consequentially affecting the wellbeing of the Anishinaabeg who rely on them.
- Similarly, dust generated through hauling and stockpiling materials and equipment could result in sedimentation and runoff, potentially negatively affecting *nibi* (water) quality.

6.5.1.2 Construction

6.5.1.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is

expected to occur along the full extent of the proposed highway alignment and will intersect with aquatic habitat in five major locations: at four tributaries of the Whiteshell River and at one tributary of Baubee Lake leading to the Whiteshell River. Potential impacts are:

- Fragmented rock propelled into *bagidanaamowin* (the air) during explosions can contaminate *nibi* (water), which can cause consequential impacts to all other beings that rely on *nibi* (water).
- Dust generated through blasting could be deposited in waterways causing changes in sediment concentration, thereby affecting the species reliant on *nibi* (water) as habitat, consequentially affecting the wellbeing of the Anishinaabeg who rely on them.

6.5.1.2.2 Installing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement may include cofferdam installation and will include dewatering procedures. Watercourse realignment will occur at four culvert sites. Potential impacts are:

- Realigning streams can cause changes in *nibi* (water) levels and result in partial or complete infill of wetland areas supporting open *nibi* (water) or shallow aquatic conditions, negatively affecting species inhabiting the area, consequently affecting the Anishinaabeg who rely on them.
- Dewatering can cause sediment build-up in waterways, altering *nibi* (water) quality.
- Similarly, stripping, clearing, and grubbing involved in channel preparation can introduce sediment and pollutants into the waterway, negatively affecting *nibi* (water) quality.
- Realigning streams can cause changes in *nibi* (water) levels and result in partial or complete infill of wetland areas supporting open *nibi* (water) or shallow aquatic conditions.

6.5.1.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. The construction process will involve excavating and hauling rock, filling, leveling, and grading the new highway. Construction waste will be generated during these procedures. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. Potential impacts are:

- Dust and contaminants generated during excavating, hauling, and filling of rock could settle in the waterways causing *nibi* (water) sedimentation and contamination.
- Similarly, dust generated during leveling and grading of the new length of road could settle in the waterways causing a build up of sedimentation. This could negatively affect *nibi* (water) quality, thereby affecting the species reliant on *nibi* (water) as habitat and for sustenance, consequentially affecting the wellbeing of the Anishinaabeg who rely on them.
- Improper disposal of construction waste could result in the contamination of *nibi* (water).

6.5.1.2.4 Relocating Utilities

Relocating utilities will involve the relocation of a Bell underground fibre line and the extension of a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, drilling, and blasting along the right-of-way. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. Potential impacts are:

- Removing riparian vegetation from the banks of the tributaries will remove the barrier to sedimentation and erosion, negatively affecting *nibi* (water) quality.
- Fragmented rock propelled into *bagidanaamowin* (the air) during explosions can contaminate *nibi* (water).
- Dust generated through blasting could be deposited in waterways causing changes in sediment concentration, thereby affecting the species reliant on *nibi* (water) as habitat and for sustenance, consequentially affecting the wellbeing of the Anishinaabeg who rely on them.

6.5.1.3 Demobilization & Restoration

6.5.1.3.1 Site Revegetation

Site restoration along the edge of the waterways will include the restoration of the riparian zone. This will positively impact *nibi* (water) quality by reducing erosion and sedimentation. Restoring the riparian zone will also regulate water temperature and support aquatic invertebrate communities which provide an important food source for other species (e.g. *giigoonyag* (fish)). Additional restoration will occur through the Restoration Plan developed in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.

6.5.1.4 Operation

6.5.1.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- Dust generated through the operation of vehicles can result in sedimentation and runoff, potentially negatively affecting *nibi* (water) quality.
- Accidental spills can result in potential *nibi* (water) quality contamination, thereby affecting the species reliant on *nibi* (water) as habitat and for sustenance, consequentially affecting the wellbeing of the Anishinaabeg who rely on them.

6.5.1.4.2 Maintaining the Right-of-Way

The ongoing maintenance of the right-of-way will include applying herbicides to prevent plant growth on highway shoulders, and winter de-icing including applying salt and sand. Potential impacts are:

- Applying herbicides and salt can result in runoff accessing waterways, affecting *nibi* (water) quality in the case of salt and sand, and introducing toxins in the case of herbicides.
- Applying herbicides improperly or excessively can alter *nibi* (water) chemistry.

6.5.1.4.3 Maintaining Pavements

The ongoing maintenance of the pavement will include the regular removal of snow and debris from the highway, marking pavements, as well as future resurfacing procedures. Potential impacts are:

- Transferring snow, salt, and debris to the outer edge of the right-of-way could introduce contaminants, negatively affecting *nibi* (water) quality, thereby affecting the species reliant on *nibi* (water) as habitat and for sustenance, consequentially affecting the wellbeing of the Anishinaabeg who rely on them.
- Painting could result in toxic substances entering the waterway, negatively affecting *nibi* (water) quality.
- Similarly, resurfacing the highway could result in pollutants, construction waste, and sediment entering and contaminating *nibi* (water).

6.5.1.5 Mitigation Measures to Protect *Nibi* (Water)

The decades of damage already done to *nibi* (water) and consequentially to the Anishinaabeg will continue to be addressed through ongoing discussions being held between the Ministry of Transportation ("MTO") and Niiwin Wendaanimok. Potential impacts to *nibi* (water) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Using sand/salt alternatives for controlling road ice.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Limiting areas to be cleared as strictly necessary.
- Avoiding drilling and blasting on windy days.
- Avoiding blasting near waterbodies.
- Disposing of construction wastes properly.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Reusing old culverts to minimize in-stream work.
- Building culverts large enough to allow for the uninhibited movement of water.

- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Supporting development of a regional resource management plan as more *Anishinaabe Aki Kakendamowin* is documented in subsequent phases of the project.
- Clearly delineating right-of-way vegetation clearing zones and retention zones prior to clearing and grading.
- Retaining existing culverts that are in satisfactory condition and considered to have adequate hydraulic capacity.
- Designing culverts to prevent long-term alterations to water flow.
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions as per OPSS 0100, a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area, per Part B of the CAITM (Contract Administration Inspection Task Manual), a copy of which is included in **Appendix 5**. This manual also requires for checking that earth, mud, aggregates, and other debris are not tracked onto the roadway by construction vehicles and requires for monitoring and documentation of the frequency of application of dust suppressants.
- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all applicable regulations.
- Managing salt impacted soil in accordance with provincial environmental regulations specified in Special Provision ENVR0001, a copy of which is included in **Appendix 5**.

- Developing and implementing an Environmental Incident Management Plan.
- Shifting re-aligned channel sections as far as possible from the existing highway to maximize opportunities for highway runoff filtration prior to entering the watercourse.
- Designing culverts to prevent long-term alterations to *nibi* (water) flow.
- Placing only clean materials in water for temporary construction measures (e.g. cofferdams, geotextiles, sheet piles, or other clean materials) or permanent works (e.g. substrate material or scour protection).
- Implementing stormwater management practices (SWMPs) for drainage protection and to minimize environmental degradation such as management of *nibi* (water) quality drainage to off-site.
- Protecting *nibi* (water) quality such that it can continue to support *giigoonh* (fish) species in accordance with the (OPSS 120) Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, a copy of which is included in **Appendix 5**.
- Adhering to Conditions on Management by Disposal as Non-Hazardous Solid Industrial or Commercial Waste and Open Burning (OPSS 0180), a copy of which is provided in **Appendix 5**.

Nibi (water) is sacred to the Anishinaabeg, with whom it shares a reciprocal relationship. This relationship, extending beyond that of simple economic necessity, has cultivated a deep sense of personal, communal, and spiritual identity, leading to *nibi* (water) being a constant theme in traditional stories and teachings, as described by an Elder from Washagamis Bay:

> *It's all kinds of sacred ground, sacred areas, stories about the island or stories about the land here. This is why people offer tobacco to respect the spirit of the land. That's why Anishinaabe people respect the land and the water, water quality.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, July 25, 2019.*

The degradation of *nibi* (water) causes detrimental effects to not only the environment but to Anishinaabe culture and tradition as well. The Elder went on to say in Section 5.6.1.2:

> *It used to be [that] we [could] get a cup and just drink from the lake before pollutants went into the water. Nowadays, we have to buy water. The world has gone crazy.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, July 25, 2019.*

As the sacred gift that connects all life, *nibi* (water) represents the blood of the *Aki* (Earth). It is important to recognize the importance of respecting *nibi* (water) and protecting this valuable gift from pollution and waste, that it may be relied upon by future generations.

6.5.2 *Manoomin* (Wild rice, *Zizania palustris*)

Manoomin (Northern Wild Rice; *Zizania palustris*) is a sacred gift to the Anishinaabeg from *Kizhe Manitou* (the Creator) (Benton-Banai, 1988, p. 101). Harvesting *manoomin* (wild rice) is an important cultural

practice which plays a major role in the lives of the Anishinaabeg and is deeply integrated with community cohesion, as recounted by a community member from Shoal Lake 40 in Section 5.6.2:

> *We'd actually be out there for the whole season. People would have their canvas tents out there. The whole family would be there—the grandparents, the kids—I remember because I was a kid running around… The ladies would be cooking throughout the day…Husbands and wives would go out and pick, kids too, grandparents, everyone… There would be people there who are dancing on the rice. When we were done, at nights, there'd be card games. People sitting around the fire.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, April 25, 2019.*

Described as "generous to those who gather and use her in a respectful way", *manoomin* (wild rice) has been a staple for the sustenance and nutrition of the Anishinaabeg throughout history (Benton-Banai, 1988, p. 102). *Manoomin* (wild rice) is mentioned in early Anishinaabe teachings and stories as the prophesized "food which grows up on the water", and remains a vital component of Anishinaabe spiritual, cultural, and traditional life (Benton-Banai, 1988, p. 101).

Manoomin (wild rice) habitat consists of shallow, still, or slow-moving waters, included ponds and shores of rivers and lakes. Low turbidity and a water depth of 0.1 to 1 m are preferred. Knowledge of the *manoomin* (wild rice) found in the Project region can be found in Section 5.6.2.

The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. *Manoomin* (wild rice) stands are present within the Project area along the Whiteshell River corridor to the northeast of the Project site.

6.5.2.1 Pre-Construction

6.5.2.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment to the site, and hauling and storing aggregate at the site. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. *Manoomin* (wild rice) stands are present within the Project area along the Whiteshell River corridor to the northeast of the Project site. Potential impacts are:

- Removing riparian vegetation from the banks of the tributaries will remove the barrier to sedimentation and erosion, negatively affecting water quality and therefore affecting the substrate in which *manoomin* (wild rice) grows. Changes to the substrate could affect growth of *manoomin* (wild rice) stands, consequentially affecting the wellbeing of the Anishinaabeg who rely on *manoomin* (wild rice).

- Similarly, dust generated through hauling and stockpiling materials and equipment could result in sedimentation and runoff, potentially negatively affecting water quality and substrate composition and therefore *manoomin* (wild rice) habitat.

6.5.2.2 Construction

6.5.2.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect aquatic habitat in five locations: at four tributaries of the Whiteshell river and at one tributary of Baubee Lake leading to the Whiteshell river. *Manoomin* (wild rice) stands are present within the Project area along the Whiteshell River corridor to the northeast of the Project site. Potential impacts are:

- Water overpressures and vibrations during blasting can damage *manoomin* (wild rice) roots and plants.
- Fragmented rock propelled into *bagidanaamowin* (the air) during explosions can damage *manoomin* (wild rice) and *manoomin* (wild rice) habitat.
- Dust generated through blasting could be deposited in waterways causing changes in sediment concentration and habitat structure, negatively affecting *manoomin* (wild rice), consequently affecting the wellbeing of the Anishinaabeg who rely on *manoomin* (wild rice).

6.5.2.2.2 Installing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement may include cofferdam installation and will include dewatering procedures. Watercourse realignment will occur at four culvert sites. *Manoomin* (wild rice) stands are present within the Project area along the Whiteshell River corridor to the northeast of the Project site. Potential impacts are:

- Dewatering can cause sediment build-up in waterways, altering water quality and negatively affecting *manoomin* (wild rice) habitat.
- Realigning streams will cause changes in water levels that can permanently alter *manoomin* (wild rice) habitat.
- Stripping, clearing, and grubbing involved in channel preparation can necessitate the removal of any present *manoomin* (wild rice) plants in the Project site.
- Similarly, stripping, clearing, and grubbing involved in channel preparation can introduce sediment and pollutants into the waterway, altering water chemistry and negatively affecting *manoomin* (wild rice).

6.5.2.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. The construction process will involve excavating and hauling rock, filling, leveling, and grading the new highway. Construction waste will be generated during these procedures. Potential impacts are:

- Dust and contaminants generated during excavating, hauling, and filling of rock could settle in the waterways causing sedimentation and contamination of *manoomin* (wild rice) habitat, negatively affecting *manoomin* (wild rice) plants.
- Similarly, dust generated during leveling and grading of the new length of road could settle in the waterways causing a build up of sedimentation in *manoomin* (wild rice) habitat, negatively affecting *manoomin* (wild rice) stands.
- Improper disposal of construction waste could result in the contamination of *manoomin* (wild rice) habitat, negatively affecting *manoomin* (wild rice), consequently affecting the wellbeing of Anishinaabeg who rely on *manoomin* (wild rice).

6.5.2.2.4 Relocating Utilities

Relocating utilities will involve the relocation of a Bell underground fibre line and the extension of a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, drilling, and blasting along the right-of-way. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. *Manoomin* (wild rice) stands are present within the Project area along the Whiteshell River corridor to the northeast of the Project site. Potential impacts are:

- Removing riparian vegetation from the banks of the tributaries will remove the barrier to sedimentation and erosion, negatively affecting water quality and therefore affecting the substrate in which *manoomin* (wild rice) grows. Changes to the substrate could affect growth of *manoomin* (wild rice) stands, consequentially affecting the wellbeing of the Anishinaabeg who rely on *manoomin* (wild rice).
- Water overpressures and vibrations during drilling and blasting can damage *manoomin* (wild rice) roots and plants.
- Fragmented rock propelled into *bagidanaamowin* (the air) during explosions can damage *manoomin* (wild rice) and *manoomin* (wild rice) habitat.
- Dust generated through drilling and blasting could be deposited in waterways causing changes in sediment concentration and habitat structure, negatively affecting *manoomin* (wild rice), consequently affecting the wellbeing of the Anishinaabeg who rely on *manoomin* (wild rice).

6.5.2.3 Demobilization and Restoration

6.5.2.3.1 Site Revegetation

Site restoration along the edge of the edge of the waterways will include the restoration of the riparian zone. This will positively impact *manoomin* (wild rice) plants by reducing habitat sedimentation. Revegetating *manoomin* (wild rice) in traditional harvesting designated areas once construction is complete can mitigate potential impacts as well.

6.5.2.4 Operation

6.5.2.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- Dust generated through the operation of vehicles can result in sedimentation and runoff, negatively affecting water quality and therefore affecting the substrate in which *manoomin* (wild rice) grows.
- Accidental spills can result in potential water quality contamination, thereby negatively affecting *manoomin* (wild rice) strands, consequently affecting the wellbeing of the Anishinaabeg who rely on *manoomin* (wild rice).

6.5.2.4.2 Maintaining the Right-of-Way

The ongoing maintenance of the right-of-way will include applying herbicides to prevent plant growth on highway shoulders, and winter de-icing including applying salt and sand. Potential impacts are:

- Applying herbicides and salt can result in runoff accessing waterways, affecting water quality in the case of salt and sand, and introducing toxins in the case of herbicides, which in turn can impede *manoomin* (wild rice) growth.
- Applying herbicides improperly or excessively can damage *manoomin* (wild rice) and *manoomin* (wild rice) habitat.

6.5.2.4.3 Maintaining Pavements

The ongoing maintenance of the pavement will include the regular removal of snow and debris from the highway, marking pavements, as well as future resurfacing procedures. Potential impacts are:

- Transferring snow, salt, and debris to the outer edge of the right-of-way could introduce contaminants, negatively affecting water quality and therefore affecting the substrate in which *manoomin* (wild rice) grows. Changes to the substrate could affect growth of *manoomin* (wild rice) stands, consequentially affecting the wellbeing of the Anishinaabeg who rely on *manoomin* (wild rice).

- Painting could result in toxic substances entering the waterway, negatively affecting *manoomin* (wild rice) habitat.
- Similarly, resurfacing the highway could result in pollutants, construction waste, and sediment entering and contaminating the substrate in which *manoomin* (wild rice) grows.

6.5.2.5 Mitigation Measures to Protect *Manoomin* (Wild Rice)

The decades of damage already done to *manoomin* (wild rice) and consequentially to the Anishinaabeg will continue to be addressed through ongoing discussions being held between the Ministry of Transportation ("MTO") and Niiwin Wendaanimok. Potential impacts to *manoomin* (wild rice) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Using sand/salt alternatives for controlling road ice.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Limiting areas to be cleared as strictly necessary.
- Avoiding drilling and blasting on windy days.
- Avoiding blasting near waterbodies.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Building culverts large enough to allow for the uninhibited movement of water.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law), that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed. This plan can incorporate revegetating *manoomin* (wild rice).
- Developing a regional resource management plan to protect *manoomin* (wild rice) as a traditional resource.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.

- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Supporting development of a regional resource management plan as more *Anishinaabe Aki Kakendamowin* is documented in subsequent phases of the project.
- Developing *manoomin* (wild rice) mitigation in collaboration with Niiwin Wendaanimok through further discussions.
- Clearly delineating right-of-way vegetation clearing zones and retention zones prior to clearing and grading.
- Retaining existing culverts that are in satisfactory condition and considered to have adequate hydraulic capacity.
- Designing culverts to prevent long-term alterations to water flow.
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions as per OPSS 0100, a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area, per Part B of the CAITM (Contract Administration Inspection Task Manual), a copy of which is included in **Appendix 5**. This manual also requires for checking that earth, mud, aggregates, and other debris are not tracked onto the roadway by construction vehicles and requires for monitoring and documentation of the frequency of application of dust suppressants.
- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all applicable regulations.
- Managing salt impacted soil in accordance with provincial environmental regulations specified in Special Provision ENVR0001, a copy of which is included in **Appendix 5**.
- Adhering to product regulations only using explosives approved for use in Canada as per OPSS 0120, a copy of which is included in **Appendix 5**.
- Developing and implementing an Environmental Incident Management Plan.
- Adhering to guidelines for stockpiling erodible construction materials and excess or surplus materials as per OPSS 0805. See copy of regulations in **Appendix 5**.
- Adhering to Conditions on Management by Disposal as Non-Hazardous Solid Industrial or Commercial Waste and Open Burning (OPSS 0180), a copy of which is provided in **Appendix 5**.

Manoomin (wild rice) is a core aspect of Anishinaabe identity and epistemology. Harvesting *manoomin* (wild rice) is a traditional activity with strong intra-community ties, as described by this Elder from Shoal Lake 40 in Section 5.6.2:

> *They'd have tents everywhere, and you could see people getting up early in the mornings and heading out [to the rice fields]. And they'd be gone all day, they'd come back and dump the rice and then they'd go back again. It is a lot of hard work…but I remember the kids used to play around, I know it was a time of family being*

> *together…the kids would play, and they would look after each other. Sometimes an Elder would be there to look after all the kids, and they would rotate…and in the evenings after everybody would come back from the rice fields, all the adults would visit and share stories.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

Throughout history, the Anishinaabeg have shared a close cultural, traditional, and spiritual relationship with the grass, using *manoomin* (wild rice) as a tool for teaching traditional ways and in narratives as a prophesized gift from *Kizhe Manitou* (the Creator). In this way, *manoomin* (wild rice) is essential to the wellbeing, strength, and affirmation of the Anishinaabe identity.

6.5.3 *Giigoonyag* (Fish)

One of the *ototaimimaug* (the original clans) of the Anishinaabeg, the *giigoonh ndotem* (Fish Clan) represented the intellectual members of the population and was traditionally known for settling disputes and pursuing mediation (Benton-Banai, 1988, p. 74). *Giigoonyag* (fish) are also totemically represented by the Anishinaabeg for the ability to remain hidden in water and remaining steadfast in the changing current (Johnston, 1976, p. 70). *Giigoonyag* (fish) are of great cultural significance to the Anishinaabeg, in part as a means of transmitting traditional knowledge, through the provision of sustenance through fishing, and as a means of obtaining a financial livelihood. Spending time on the water contributes to Anishinaabe identity, as recounted by this Elder from Shoal Lake 40 in Section 5.6.3:

> *I remember my brother-in-law, he was telling us… [we] we're out on a boat, he was showing us this huge jackfish they caught in a net, it was just huge. And we're snapping pictures of it and after we just floated around a lake just visiting [with] each other. I remember him saying "I love the lake." He said, "If I ever die, I want my ashes thrown out here in the lake." That's what he was saying to us. He says, "I just love it out here."*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

Giigoonyag (fish) of the Project region live in a variety of habitats. Different species are adapted for different habitats: for example, *ginoozheg* (northern pike) prefer shallow and vegetated shores of lakes and rivers, creeks, and streams, while brown *awaazisiig* (brown bullheads) favour warm and slow-moving waters with soft, silty, substrates. Knowledge of the *giigoonyag* (fish) and a comprehensive list of the *giigoonh* (fish) species of importance to the Anishinaabeg found in the Project region can be found in Section 5.6.3. Provincially designated g*iigoonh* (fish) species of concern according to the *Endangered Species Act, 2007* include the *name* (lake sturgeon) population which is deemed "threatened".

The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. The survey undertaken in 2009 identified these connecting streams as potentially supporting important habitats (e.g. spawning,

rearing and migration), and young-of-the-year *ginoozheg* (northern pike) were found at the tributary to Baubee Lake (WSP, 2019).

6.5.3.1 Pre-Construction

6.5.3.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. Potential impacts are:

- Removing vegetation from the five tributaries connected to Baubee Lake and the Whiteshell River waterways, which support *giigoonh* (fish) species, will remove the riparian habitat that would otherwise act as a barrier to sedimentation and erosion. This could negatively affect water quality and therefore affect *giigoonh* (fish) habitat. Changes to *giigoonh* (fish) habitat could affect *giigoonh* (fish) populations, consequentially affecting the wellbeing of the Anishinaabeg who rely on them.
- Similarly, dust generated through stockpiling and hauling materials and equipment can result in sedimentation and runoff, potentially negatively affecting water quality and therefore *giigoonh* (fish) habitat.

6.5.3.2 Construction

6.5.3.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect with aquatic habitat in five major locations: at four tributaries of the Whiteshell River and at one tributary of Baubee Lake leading to the Whiteshell River. Potential impacts are:

- Water overpressures and ground vibrations during blasting can injure or kill *giigoonyag* (fish).
- Fragmented rock propelled into *bagidanaamowin* (the air) during explosions can injure or kill *giigoonyag* (fish) and impede *giigoonh* (fish) habitat.
- Dust generated through blasting could be deposited in waterways causing changes in sediment concentration and habitat structure, negatively affecting *giigoonh* (fish) populations, consequentially affecting the wellbeing of the Anishinaabeg who rely on them.

6.5.3.2.2 Installing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way.

Culvert installation and replacement may include cofferdam installation and will include dewatering procedures. Watercourse realignment will occur at four culvert sites. Potential impacts are:

- Dewatering will result in temporary obstruction of *giigoonh* (fish) passage.
- Dewatering may require *giigoonh* (fish) salvages, removing fish from their habitat.
- Pumping during the dewatering process could result in *giigoonh* (fish) entrainment or pump impingement causing mortality.
- Dewatering can cause sediment build-up in waterways, altering water quality and *giigoonh* (fish) habitat, negatively affecting *giigoonh* (fish) populations and sites at which spawning activity takes place.
- Stream realignment will temporarily impede passage and can cause changes in water levels and result in partial or complete infill of wetland areas supporting open water or shallow aquatic conditions, negatively affecting *giigoonh* (fish) habitat and spawning sites, potentially affecting permanent change to *giigoonh* (fish) populations.
- Stripping, clearing, and grubbing involved in channel preparation and widening can introduce sediment and pollutants into the waterway, negatively affecting water quality and habitat structure, negatively affecting *giigoonh* (fish) populations.

6.5.3.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. The construction process will involve excavating and hauling rock, filling, levelling, and grading the new highway. Construction waste will be generated during these procedures. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. Potential impacts are:

- Dust and contaminants generated during excavating, hauling, and filling of rock could settle in the waterways causing sedimentation and contamination of *giigoonh* (fish) habitat, negatively affecting *giigoonh* (fish) populations.
- Similarly, dust generated during leveling and grading of the new length of road could settle in the waterways causing a build up of sedimentation in *giigoonh* (fish) habitat, negatively affecting *giigoonh* (fish) populations.
- Improper disposal of construction waste could result in the contamination of *giigoonh* (fish) habitat and obstruction of passage, negatively affecting *giigoonh* (fish) populations, consequently affecting the wellbeing of the Anishinaabeg who rely on them.

6.5.3.2.4 Relocating Utilities

Utility relocation will involve the relocation of a Bell underground fibre line and the extension of a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, drilling, and blasting along the right-of-way. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell

River. There are numerous small lakes and beaver ponds in the Project region as well. Potential impacts are:

- Removing vegetation from the vicinity of the waterway will remove the riparian habitat which would otherwise act as a barrier to sedimentation and erosion, negatively affecting water quality and therefore affecting *giigoonh* (fish) habitat. Changes to *giigoonh* (fish) habitat could affect *giigoonh* (fish) populations, consequentially affecting the wellbeing of the Anishinaabeg who rely on them.
- Water overpressures and ground vibrations during drilling and blasting can injure or kill *giigoonyag* (fish).
- Fragmented rock propelled into *bagidanaamowin* (the air) during explosions can injure or kill *giigoonyag* (fish) and impede *giigoonh* (fish) habitat.
- Dust generated through drilling and blasting could be deposited in waterways causing changes in sediment concentration and habitat structure, negatively affecting *giigoonh* (fish) populations, consequently affecting the wellbeing of the Anishinaabeg who rely on them.

6.5.3.3 Demobilization & Restoration

6.5.3.3.1 Site Revegetation

Site restoration along the edge of the waterways will include the restoration of the riparian zone. This will positively impact *giigoonyag* (fish) and *giigoonh* (fish) habitat by reducing sedimentation. Restoring of the riparian zone will also regulate water temperature and support the aquatic invertebrate communities which provide an important food source for *giigoonyag* (fish).

6.5.3.4 Operation

6.5.3.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- Dust generated through the operation of vehicles can result in sedimentation and runoff, potentially negatively affecting water quality and therefore *giigoonh* (fish) habitat.
- Accidental spills can result in potential water quality contamination, thereby negatively affecting *giigoonh* (fish) populations, consequently affecting the wellbeing of the Anishinaabeg who rely on them.

6.5.3.4.2 Maintaining the Right-of-Way

The ongoing maintenance of the right-of-way will include applying herbicides to prevent plant growth on highway shoulders, and winter de-icing including applying salt and sand. Potential impacts are:

- Applying herbicides and salt can result in runoff accessing waterways, affecting water quality in the case of salt and sand, and introducing toxins in the case of herbicides, which in turn can affect the health of *giigoonyag* (fish).
- Applying herbicides improperly or excessively can harm *giigoonyag* (fish) and *giigoonh* (fish) habitat.

6.5.3.4.3 Maintaining Pavements

The ongoing maintenance of the pavement will include the regular removal of snow and debris from the highway, marking pavements, as well as future resurfacing procedures. Potential impacts are:

- Transferring snow, salt, and debris to the outer edge of the right-of-way could impede *giigoonh* (fish) passage and introduce contaminants to *giigoonh* (fish) habitat, negatively affecting *giigoonh* (fish) populations.
- Painting could result in toxic substances entering the waterways, negatively affecting *giigoonh* (fish) populations.
- Similarly, resurfacing the highway could result in pollutants, construction waste, and sediment entering and contaminating *giigoonh* (fish) habitat and impeding *giigoonh* (fish) passage, negatively affecting *giigoonh* (fish) populations, consequently affecting the wellbeing of the Anishinaabeg who rely on them.

6.5.3.5 Mitigation Measures to Protect *Giigoonyag* (Fish)

The decades of damage already done to *giigoonyag* (fish) and consequentially to the Anishinaabeg will continue to be addressed through ongoing discussions being held between the Ministry of Transportation ("MTO") and Niiwin Wendaanimok. Potential impacts to *giigoonyag* (fish) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Identifying what species are present to ensure culverts can be appropriately designed to allow for *giigoonyag* (fish) passage.
- Using sand/salt alternatives for controlling road ice.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Limiting areas to be cleared as strictly necessary.
- Avoiding drilling and blasting on windy days.
- Avoiding blasting near waterbodies.
- Disposing of construction wastes properly.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Reusing old culverts to minimize in-stream work.
- Building culverts large enough to allow for the uninhibited movement of water.

- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Supporting development of a regional resource management plan as more *Anishinaabe Aki Kakendamowin* is documented in subsequent phases of the project.
- Shifting re-aligned channel sections as far as possible from the existing highway to maximize opportunities for highway runoff filtration prior to entering the watercourse.
- Designing culverts to prevent long-term alterations to water flow.
- Screening all hoses drawing water from a watercourse supporting fish use to prevent potential entrainment.
- Retaining existing culverts that are in satisfactory condition and considered to have adequate hydraulic capacity.
- Managing salt impacted soil in accordance with provincial environmental regulations specified in Special Provision ENVR0001, a copy of which is included in **Appendix 5**.
- Developing and implementing an Environmental Incident Management Plan.
- Conducting instream works during cool water construction timing window (July 16 to March 30).
- Placing only clean materials in water for temporary construction measures (e.g. cofferdams, geotextiles, sheet piles, or other clean materials) or permanent works (e.g. substrate material or scour protection).
- Timing construction appropriately to protect resident and migratory *giigoonh* (fish) populations.

- Designing culverts at watercourses where *giigoonh* (fish) have been identified to allow for *giigoonh* (fish) passage.
- Carrying out *giigoonh* (fish) salvage at isolated work zones for culvert replacements and new installations with *giigoonyag* (fish) being transferred, unharmed, to a downstream location.
- Shifting re-aligned channel sections as far as possible from the existing highway to maximize opportunities for highway runoff filtration prior to entering the watercourse.
- Protecting *giigoonyag* (fish) and *giigoonh* (fish) habitat in accordance with the (OPSS 120) Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters.
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions as per OPSS 0100, a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area, per Part B of the CAITM (Contract Administration Inspection Task Manual), a copy of which is included in **Appendix 5**. This manual also requires for checking that earth, mud, aggregates, and other debris are not tracked onto the roadway by construction vehicles and requires for monitoring and documentation of the frequency of application of dust suppressants.
- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all applicable regulations.

Giigoonyag (fish) and fishing are of central importance to Anishinaabe identity and culture. Community knowledge about species habitat, seasonal migrations, spawning sites, and fishing techniques are taught in early childhood to assist in the family's ability to fish for sustenance or for commercial purposes, as described by this Elder from Niisaachewan in Section 5.6.3:

> *So, we do our commercial fishing and stuff. As a community we get together, and we help each other out or teach the younger ones. We usually teach somebody else that's willing to come and [we] teach them how to hunt and fish and cut up deer or fish. So, they can carry on the traditional life.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

Giigoonyag (fish) are greatly respected for their ability to remain hidden and steadfast in a changing current—representative of the Anishinaabeg resilience throughout history. In this way, *giigoonyag* (fish) are essential to the wellbeing, strength, and affirmation of the Anishinaabe identity.

6.5.4 *Mishiikenyag* (Turtles, Order Testudines)

Symbolizing *Aki* (Earth), *mishiikenh* (turtle, singular)/*mishiikenyag* (turtle, plural) play a prominent role in Anishinaabe history, culture, and traditional stories, in particular in the story of the Great Flood in which the *mishiikenh* (turtle) offered its back to hold the earth collected from the watery depths by the *wauzhushk* (muskrat), on which the present *Aki* (Earth) grew (Benton-Banai, 1988, p. 33). This telling of the Creation Story contributes to a strong sense of Anishinaabe identity and is alluded to in many Anishinaabe teachings and ceremonies. In addition, the 13 scutes on a *mishiikenh* (turtle) shell

represent the 13 full moons of the year, often physically represented through artwork and in traditional infrastructure.

Mishiikenyag (turtles) are represented in the *odoidaymiwan* (the clan system) as leaders of the *Giigoonh ndotem* (Fish Clan) (Benton-Banai, 1988, p. 75). As totemic symbols of communication, *mishiikenyag* (turtles) are said to have the power to communicate to being of different dimensions and times (Johnston, 1976, p. 53). An Elder from Niisaachewan recounted a personal encounter of this nature this in Section 5.6.4:

> *I was setting my net and all of a sudden, I see bubbles all over…I became scared; my boat started lifting. And so, I asked one of the Elders who said, "you must've seen a big snapping turtle, an old snapping turtle…he was telling you to be careful".*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

Mishiikenyag (turtles) of the Project region are found in aquatic habitats including shallow ponds, and the edges of lakes or rivers with slow-moving water and a basin of sand or mud. Vegetated surroundings and the presence of naturally occurring floating objects such as logs, or branches are preferred for basking. *Mishiikenyag* (turtles) over-winter through hibernation in the soft substrate of a waterbody. Although the feeding and mating activities of *mishiikenyag* (turtles) take place out in the water, adjacent terrestrial habitats are used for nesting. Knowledge of the *mishiikenyag* (turtles) and a comprehensive list of the *mishiikenh* (turtle) species of importance to the Anishinaabe found in the Project region can be found in Section 5.6.4. Provincially designated *mishiikenh* (turtle) species of concern according to the *Endangered Species Act, 2007* and *Species at Risk Act* include the *mikinaak* (snapping turtle) population which is deemed to be of "special concern".

The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. *Mishiikenyag* (turtles) have the potential to utilize wetland habitat present along the Project site, in addition to the highway shoulders, which provide ideal nesting habitat for the *mikinaak* (snapping turtle) species.

6.5.4.1 Pre-Construction

6.5.4.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. Potential Impacts are:

- Removing vegetation from the five tributaries connected to Baubee Lake and the Whiteshell River waterways, which support *mishiikenh* (turtle) sustenance and habitat, will remove the

riparian habitat that would otherwise act as a barrier to sedimentation and erosion. This could negatively affect water quality, thereby impacting *mishiikenh* (turtle) habitat and the aquatic vegetation on which they feed. Changes to *mishiikenh* (turtle) habitat could affect *mishiikenh* (turtle) populations, consequentially affecting the wellbeing of the Anishinaabeg, to whom they are of great importance.

- Similarly, dust generated through stockpiling and hauling materials and equipment can result in sedimentation and runoff, potentially negatively affecting water quality and therefore *mishiikenh* (turtle) habitat.
- Hauling equipment and materials puts mobile *mishiikenyag* (turtles) at risk of wildlife-vehicle collisions.
- Hauling and storing equipment and materials over the nesting season (May-August) puts nesting *mishiikenyag* (turtles) at risk of wildlife-vehicle collision, as *mishiikenyag* (turtles) are commonly more mobile during this period and often nest at minimally vegetated roadsides.

6.5.4.2 Construction

6.5.4.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect with aquatic habitat in five major locations: at four tributaries of the Whiteshell River and at one tributary of Baubee Lake leading to the Whiteshell River. Potential impacts are:

- Disturbing *mishiikenyag* (turtles) with increased noise.
- Water overpressures and ground vibrations during blasting can injure or kill *mishiikenyag* (turtles).
- Fragmented rock propelled into *bagidanaamowin* (the air) during explosions can injure or kill *mishiikenyag* (turtles) and destroy *mishiikenh* (turtle) habitat.
- Dust generated through blasting could be deposited in waterways causing changes in sediment concentration and habitat structure, negatively affecting *mishiikenh* (turtle) populations, consequentially affecting the wellbeing of the Anishinaabeg, to whom they are of great importance.

6.5.4.2.2 Installing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement may include cofferdam installation and will include dewatering procedures. Watercourse realignment will occur at four culvert sites. Potential impacts are:

- Conducting in stream procedures over winter put hibernating *mishiikenyag* (turtles) at risk of being crushed.

- Pumping during the dewatering process could result in *mishiikenh* (turtle) entrainment or pump impingement causing mortality.
- Dewatering can cause sediment build-up in waterways, altering water quality and *mishiikenh* (turtle) habitat, negatively affecting *mishiikenh* (turtle) populations and sites at which hibernation takes place.
- Stream realignment will temporarily impede passage and can cause changes in water levels and result in partial or complete infill of wetland areas supporting open water or shallow aquatic conditions, negatively affecting *mishiikenh* (turtle) habitat, potentially affecting permanent change to *mishiikenh* (turtle) populations.
- Stripping, clearing, and grubbing involved in channel preparation and widening can introduce sediment and pollutants into the waterway, negatively affecting water quality, habitat structure, and sources of *mishiikenh* (turtle) food, negatively affecting *mishiikenh* (turtle) populations.

6.5.4.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. The construction process will involve excavating and hauling rock, filling, levelling, and grading the new highway. Construction waste will be generated during these procedures. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. Potential impacts are:

- Using construction equipment and heavy machinery puts mobile *mishiikenyag* (turtles) at risk of wildlife-vehicle collisions.
- Dust and contaminants generated during excavating, hauling, and filling of rock could settle in the waterways causing sedimentation and contamination of *mishiikenh* (turtle) habitat, negatively affecting *mishiikenh* (turtle) populations.
- Similarly, dust generated during leveling and grading of the new length of road could settle in the waterways causing a build up of sedimentation in *mishiikenh* (turtle) habitat, negatively affecting *mishiikenh* (turtle) populations.
- Improper disposal of construction waste could result in the contamination of *mishiikenh* (turtle) habitat and obstruction of passage, negatively affecting *mishiikenh* (turtle) populations, consequently affecting the wellbeing of the Anishinaabeg, to whom they are of great importance.
- Spilling, leaking, or leaching of chemicals from construction wastes or use of dust suppressants may lead to the contamination of the aquatic habitat relied upon by *mishiikenyag* (turtles).

6.5.4.2.4 Relocating Utilities

Relocating utilities will involve relocating a Bell underground fibre line and extending a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, drilling, and blasting along the right-of-way. The Project site intersects with waterways in six major locations: at four tributaries of the

Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. Potential impacts are:

- Removing vegetation from the five tributaries connected to Baubee Lake and the Whiteshell River waterways, which support *mishiikenh* (turtle) sustenance and habitat, will remove the riparian habitat that would otherwise act as a barrier to sedimentation and erosion. This could negatively affect water quality, thereby impacting *mishiikenh* (turtle) habitat and the aquatic vegetation on which they feed. Changes to *mishiikenh* (turtle) habitat could affect *mishiikenh* (turtle) populations, consequentially affecting the wellbeing of the Anishinaabeg, to whom they are of great importance.
- Disturbing *mishiikenyag* (turtles) with increased noise during drilling or blasting.
- Water overpressures and ground vibrations during drilling or blasting can injure or kill *mishiikenyag* (turtles).
- Fragmented rock propelled into *bagidanaamowin* (the air) during explosions can injure or kill *mishiikenyag* (turtles) and destroy *mishiikenh* (turtle) habitat.
- Dust generated through drilling or blasting could be deposited in waterways causing changes in sediment concentration and habitat structure, negatively affecting *mishiikenh* (turtle) populations, consequentially affecting the wellbeing of the Anishinaabeg, to whom they are of great importance.
- Using construction equipment and heavy machinery puts mobile *mishiikenyag* (turtles) at risk of wildlife-vehicle collisions.

6.5.4.3 Demobilization & Restoration

6.5.4.3.1 Site Revegetation

Site restoration along the edge of the waterways will include the restoration of the riparian zone. This will positively impact *mishiikenyag* (turtles) and *mishiikenh* (turtle) habitat by reducing sedimentation. Restoring the riparian zone will also regulate water temperature and support the aquatic plant and invertebrate communities which provide an important food source for *mishiikenyag* (turtles). Additional restoration will occur through the Restoration Plan developed in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.

6.5.4.4 Operation

6.5.4.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- Vehicular traffic puts mobile *mishiikenh* (turtle) at risk of wildlife-vehicle collisions.
- Dust generated through the operation of vehicles can result in sedimentation and runoff, potentially negatively affecting water quality and therefore *mishiikenh* (turtle) habitat.
- Accidental spills can result in potential water quality contamination, thereby negatively affecting *mishiikenh* (turtle) populations, consequently affecting the wellbeing of the Anishinaabeg who rely on them.

6.5.4.4.2 Maintaining the Right-of-Way

The ongoing maintenance of the right-of-way will include applying herbicides to prevent plant growth on highway shoulders, and winter de-icing including applying salt and sand. Potential impacts are:

- Ingesting herbicide-contaminated vegetation.
- Applying herbicides and salt can result in runoff accessing waterways, affecting water quality in the case of salt and sand, and introducing toxins in the case of herbicides, which in turn can affect the health of *mishiikenyag* (turtles).
- Applying herbicides improperly or excessively can harm *mishiikenyag* (turtles) and their habitat.

6.5.4.4.3 Maintaining Pavements

The ongoing maintenance of the pavement will include the regular removal of snow and debris from the highway, marking pavements, as well as future resurfacing procedures. Potential impacts are:

- Transferring snow, salt, and debris to the outer edge of the right-of-way could impede *mishiikenh* (turtle) passage and introduce contaminants to *mishiikenh* (turtle) habitat, negatively affecting *mishiikenh* (turtle) populations.
- Painting could result in toxic substances entering the waterway, negatively affecting *mishiikenh* (turtle) populations.
- Similarly, resurfacing the highway could result in pollutants, construction waste, and sediment entering and contaminating *mishiikenh* (turtle) habitat and food sources, negatively affecting *mishiikenh* (turtle) populations, consequently affecting the wellbeing of the Anishinaabeg, to whom they are of great importance.

6.5.4.5 Mitigation Measures to Protect *Mishiikenyag* (Turtles)

The decades of damage already done to *mishiikenyag* (turtles) and consequentially to the Anishinaabeg will continue to be addressed through ongoing discussions being held between the Ministry of Transportation (“MTO”) and Niiwin Wendaanimok. Potential impacts to *mishiikenyag* (turtles) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Identifying what species are present to ensure culverts can be appropriately designed to allow for *mishiikenh* (turtle) passage.
- Using sand/salt alternatives for controlling road ice.
- Using sawdust as an alternative to herbicides on the right-of-way.

- Using dust suppression during drilling and blasting.
- Limiting areas to be cleared as strictly necessary.
- Avoiding drilling and blasting on windy days.
- Avoiding blasting near waterbodies.
- Disposing of construction wastes properly.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Reusing old culverts to minimize in-stream work.
- Building culverts large enough to allow for the uninhibited movement of water.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Refraining from operations during the *mishiikenh* (turtle) nesting season (May-August), during which *mishiikenyag* (turtles) are more active.
- Notifying the Anishinaabe Guardians if any *mishiikenyag* (turtles) or other reptiles are found in the construction area.
- Designing culverts at watercourses where *mishiikenyag* (turtles) are present to allow for *mishiikenh* (turtle) passage.
- Timing construction activities appropriately to protect resident *mishiikenh* (turtle) populations.
- Shifting re-aligned channel sections as far as possible from the existing highway to maximize opportunities for highway runoff filtration prior to entering the watercourse.
- Designing culverts to prevent long-term alterations to water flow.

- Screening all hoses drawing water from a watercourse supporting fish use to prevent potential entrainment.
- Retaining existing culverts that are in satisfactory condition and considered to have adequate hydraulic capacity.
- Managing salt impacted soil in accordance with provincial environmental regulations specified in Special Provision ENVR0001, a copy of which is included in **Appendix 5**.
- Developing and implementing an Environmental Incident Management Plan.
- Placing only clean materials in water for temporary construction measures (e.g. cofferdams, geotextiles, sheet piles, or other clean materials) or permanent works (e.g. substrate material or scour protection).
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions as per OPSS 0100, a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area, per Part B of the CAITM (Contract Administration Inspection Task Manual), a copy of which is included in **Appendix 5**. This manual also requires for checking that earth, mud, aggregates, and other debris are not tracked onto the roadway by construction vehicles and requires for monitoring and documentation of the frequency of application of dust suppressants.
- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all applicable regulations.

Mishiikenyag (turtles) are symbols of central importance to Anishinaabe traditional teachings and culture, representing both the *Aki* (Earth) through stories of Creation and the Great Flood, and the lunar calendar through the scutes on their backs. A community member from Grassy Narrows described the symbolic significance of *mishiikenyag* (turtles) and explained the meaning behind the name *Mikinaak Minis* (Turtle Island) in Section 5.6.4:

> *It was Gizhigookwe, Sky Woman, that came to the Earth first. She was the one who came to the turtle's back—Turtle Island. When she came, she had life in her belly. She brought seeds. She brought medicines with her…the tobacco, sage, cedar, sweet grass, and even foods…She was the one who gave birth to the first Anishinaabe.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

Mishiikenyag (turtles) are greatly respected for their ability to communicate with beings of other times and dimensions. As symbols of Anishinaabe tradition and culture, the wellbeing of *mishiikenh* (turtle) populations is essential to the wellbeing and affirmation of the Anishinaabe identity.

6.6 Impacts to Wellbeing

6.6.1 Ceremonies

Anishinaabe ceremonies are multi-faceted intergenerational sources of knowledge, guidance, and support that are integral to the development and wellbeing of Anishinaabe identity. Through ceremony, spiritually derived knowledge is fully integrated into traditional practices and teachings are passed on to future generations. As sacred undertakings, ceremonies may be conducted individually or collectively, and often coincide with sacred sites, as described in Section 5.7.3. Ceremonies are also often conducted to reaffirm one's connection to Creation, as described by an Elder from Washagamis Bay, who said in Section 5.7.2:

> *You can do a ceremony here in the spring. You can do one in the fall. The springtime is more natural because of the bird families coming together for the summer at that time and the animals, fish, everybody…We do offerings for that for the feeling of greatness of the power of [the] Creator.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, July 25, 2019.*

The practice of ceremony is closely connected to the Anishinaabe relationship with the lands, waters, skies, and soils. Ceremony can be undertaken in any place, at any time, through an established practice such as a sweat lodge, or individually through a display of gratitude for Creation. For this reason, it is important that the natural environment remain intact and undisturbed. More information on the significance of ceremony can be found in Section 5.7.2.

6.6.1.1 Pre-Construction

6.6.1.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment to the site, and hauling and storing aggregate at the site. Potential impacts of staging are:

- Impeding access to traditional lands, thereby preventing ceremonies from taking place.
- Altering or destroying locations where ceremonies take place.
- Altering and transforming the natural environment and affecting species inhabiting the Project site, thereby impacting the wellbeing of the Anishinaabeg who share a close relationship with Creation.

6.6.1.2 Construction

6.6.1.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is

expected to occur along the full extent of the proposed highway alignment. Potential impacts of blasting are:

- Disturbing those performing ceremonies with excessive noise.
- Altering or destroying locations where ceremonies take place.
- Altering and transforming the natural environment and affecting species inhabiting the Project site, thereby impacting the wellbeing of the Anishinaabeg who share a close relationship with Creation.

6.6.1.2.2 Installing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Watercourse realignment will occur at four culvert sites. Potential impacts of installing culverts are:

- Impeding access to traditional lands, thereby preventing ceremonies from taking place.
- Altering and transforming the natural environment and affecting species inhabiting the Project site, thereby impacting the wellbeing of the Anishinaabeg who share a close relationship with Creation.

6.6.1.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. The construction process will involve excavating and hauling rock, filling, leveling, and grading the new highway. Construction waste will be generated during these procedures. Potential impacts from activities associated with building the road are:

- Impeding access to traditional lands, thereby preventing ceremonies from taking place.
- Altering or destroying locations where ceremonies take place.
- Improper disposal of construction waste could result in water contamination and site degradation.
- Altering and transforming the natural environment and impact species inhabiting the Project site, thereby impacting the wellbeing of the Anishinaabeg who share a close relationship with Creation.

6.6.1.2.4 Relocating Utilities

Relocating utilities will involve relocating a Bell underground fibre line and extending a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, drilling, and blasting along the right-of-way. Potential impacts from activities that will be undertaken to relocate utilities are:

- Impeding access to traditional lands, thereby preventing ceremonies from taking place.
- Altering or destroying locations where ceremonies take place.
- Disturbing those performing ceremonies with excessive noise.

- Altering and transforming the natural environment and affecting species inhabiting the Project site, thereby impacting the wellbeing of the Anishinaabeg who share a close relationship with Creation.

6.6.1.3 Demobilization & Restoration

6.6.1.3.1 Demobilizing Equipment

Demobilizing equipment seasonally and at Project completion will include shutting down the Project site and restoring Project construction areas to their former states. This will positively impact ceremonies by restoring access to natural areas and by no longer altering and transforming the natural environment.

6.6.1.3.2 Revegetating the Site

Site restoration will include the restoration of previously forested areas and the riparian zone. Additional restoration will occur through the Restoration Plan developed in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment. This will positively impact ceremonies by restoring access to natural areas and by no longer altering and transforming the natural environment.

6.6.1.4 Operation

6.6.1.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- Increasing access to traditional lands, increasing potential for environmental degradation.
- Accidental spills can contaminate the surrounding environment, thereby altering and transforming the natural environment and impacting species inhabiting the Project site. This will consequentially impact the wellbeing of the Anishinaabeg who share a close relationship with Creation.

6.6.1.5 Mitigation Measures to Protect Ceremonies

The decades of damage already done to the Anishinaabeg and their ceremonies will continue to be addressed through ongoing discussions being held between the Ministry of Transportation (“MTO”) and Niiwin Wendaanimok. Impacts can be mitigated by protecting the integrity of the waters, soils, skies, and species present in the area. Specifically, this can be done by adhering to species and resource specific mitigation measures identified in Sections 6.2 to 6.5 and building a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory. MTO has agreed to supporting the development of this plan.

Ceremonies play an important role in Anishinaabe daily life. A community member from Grassy Narrows described the importance of the *madoodiswan* (sweat lodge) ceremony:

> *It's a very important part of who we are as Anishinaabe. It's like our church, I guess. That's probably the best way I can explain it. It's like a place for us to go and be grounded. A place for us to go for prayers. A place for us to, I guess, feel comfort. The same reasons why people would go to church.*
>
> *Community member, Grassy Narrows, AAK Individual Interview, September 13, 2019.*

Given the close relationship between the Anishinaabeg and Creation, ceremonies can take place at anytime, in any location. For this reason, it is important that the integrity of the natural environment is maintained.

6.6.2 Sacred Sites

Sacred sites are Anishinaabe areas of significance. A site may be considered sacred through the historic or current practice of ceremonies, the presence of a cemetery or ancestral burial ground, presence of a spirit or spiritual being, a location at which fossils, petroforms or petroglyphs are found, or simply a site where an event of significance took place. The exact locations of sacred sites are closely guarded by community members. This is due, in part, to prevent vandalism and theft, as well a consequence of the widespread loss of traditional knowledge through forced assimilation practices undertaken in compliance with the *Indian Act, 1876.* An Elder from Wauzhushk Onigum described the importance of sacred sites in Section 5.7.3:

> *[This is a place no one should come] Except for ceremonial [purposes]. Because in a lot of these places, when they die, after they die, they put their sacred items with them [to] take them to the spirit world…what would happen is that some people found out and they started taking these items, and took them as souvenirs, or they ended up in the archives.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, September 17, 2019.*

The cultural meaning of sacred sites is deeply interwoven with the Anishinaabe close relationship with the land and understanding of Creation in which all beings are imbued with spirit and knowledge. For this reason, sacred sites must remain undisturbed and environmentally intact to preserve the cultural and spiritual integrity of traditional Anishinaabe knowledge.

Sites sacred to the Anishinaabeg are dotted across the Kenora/Lake of the Woods region. More information on the cultural significance of sacred sites can be found in Section 5.7.3.

The Anishinaabeg maintain intimate knowledge of the surrounding environment and locations sacred to them. While no specific sacred sites were noted Project site, many sacred sites were noted in the area. Yet others may not have been shared by those who shared their stories, either because the knowledge

is no longer in the active memory of the participants, or the participants did not trust that the information would be safeguarded. Where knowledge of certain sites was shared, a large buffer was drawn around it to allow for protection of that knowledge. Pre-construction, construction, and demobilization Project activities can potentially impact sacred sites, with consequential impacts to the wellbeing of the Anishinaabeg.

6.6.2.1 Pre-Construction

6.6.2.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment to the site, and hauling and storing aggregate at the site. Potential impacts are:

- Impeding access to sacred sites further away from the existing highway.
- Altering or destroying sacred sites.
- Altering and transforming the natural environment and affecting species inhabiting the Project site, thereby impacting the wellbeing of the Anishinaabeg who share a close relationship with Creation.

6.6.2.2 Construction

6.6.2.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment. Potential impacts are:

- Disturbing those visiting sacred sites with excessive noise.
- Altering or destroying sacred sites.
- Alter and transform the natural environment and affecting species inhabiting the Project site, thereby impacting the wellbeing of the Anishinaabeg who share a close relationship with Creation.

6.6.2.2.2 Installing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Watercourse realignment will occur at four culvert sites. Potential impacts are:

- Altering or impeding access to sacred sites.
- Causing changes in water levels resulting in partial or complete infill of wetland areas supporting open water or shallow aquatic conditions. This will alter and transform the natural environment and may flood sacred sites, thereby impacting the wellbeing of the Anishinaabeg who share a close relationship with Creation.

6.6.2.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. The construction process will involve excavating and hauling rock, filling, leveling, and grading the new highway. Construction waste will be generated during these procedures. Potential impacts from activities associate with building the road are:

- Impeding access to traditional lands and sacred sites.
- Altering or destroying sacred sites.
- Improper disposal of construction waste could result in water contamination and site degradation.
- Building the road will permanently transform the natural environment and species inhabiting the Project site, thereby impacting the wellbeing of the Anishinaabeg who share a close relationship with Creation.

6.6.2.2.4 Relocating Utilities

Relocating utilities will involve the relocation of a Bell underground fibre line and the extension of a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, drilling, and blasting along the right-of-way. Potential impacts are:

- Impeding access to sacred sites.
- Altering or destroying sacred sites.
- Altering and transforming the natural environment and habitat of species inhabiting the Project site.
- Disturbing those visiting sacred sites with excessive noise.
- Causing permanent changes in water levels resulting in partial or complete infill of wetland areas supporting open water, or shallow aquatic conditions. This will alter and transform the natural environment and species inhabiting the Project site, thereby impacting the wellbeing of the Anishinaabeg who share a close relationship with Creation.

6.6.2.3 Demobilization & Restoration

6.6.2.3.1 Demobilizing Equipment

Demobilizing equipment seasonally and at Project completion will include shutting down the Project site and restoring Project construction areas to their former states. This will positively impact sacred sites by restoring access to sacred sites and by no longer altering and transforming the natural environment.

6.6.2.3.2 Revegetating the Site

Site restoration will include the restoration of previously forested areas and the riparian zone. Additional restoration will occur through the Restoration Plan developed in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the

environment. This will positively impact sacred site by restoring access to natural areas and by no longer altering and transforming the natural environment.

6.6.2.4 Operation

6.6.2.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- Increasing access to traditional lands, and therefore sacred sites.
- Accidental spills can result in potential water quality contamination, thereby altering and transforming the natural environment and impacting species inhabiting the Project site, thereby impacting the wellbeing of the Anishinaabeg who share a close relationship with Creation.

6.6.2.5 Summary of Mitigation Measures to Protect Sacred Sites

The decades of damage already done to the sacred sites will continue to be addressed through ongoing discussions being held between the Ministry of Transportation ("MTO") and Niiwin Wendaanimok. Impacts can be mitigated by protecting the integrity of the waters, soils, skies, and species present in the area. Specifically, this can be done by adhering to species and resource specific mitigation measures identified in Sections 6.2 to 6.5, and in particular:

- Avoiding sacred sites.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, and monitoring the overall health of the lands, soils, waters, and skies.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Contacting the Anishinaabe Guardians immediately if any archaeological materials are uncovered during construction.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

For the Anishinaabeg, culture and identity are inexorably connected to a close relationship with the land. Though all of Creation is sacred, sacred sites, at which events of significance have taken place or continue to take place, especially need to be celebrated and protected, as described by an Elder from Washagamis Bay, who said in Section 5.7.3:

> *But, if you look off to the side there, you'll see an area that's all flat there and that's an area where they used to do ceremonies there a long time ago, too. You can tell. It's very evident that area has been [in]habited or used for something in the past.*
>
> *Elder, Washagamis Bay, AAK Group Interview, July 23, 2019.*

6.6.3 Fishing

Fishing is of central importance to Anishinaabe identity and culture. The three types of fishing undertaken by the Anishinaabeg include fishing for sustenance, which acts an essential source of nutrition for communities, commercial fishing, which provides communities with financial livelihood, and recreational fishing, which is an important influence on mental and physical wellbeing. All three types of fishing are crucial for the intergenerational transmission of knowledge of the waters and to deepen one's spiritual connection to Creation and with each other, as described by an Elder from Niisaachewan, who said in Section 5.7.5:

> *We commercial fished around that area, and we stayed on [Fort Island] because there was a lot of young people around. That was almost like a babysitting area. They'd have a few adults around and they would keep an eye on the kids, so they don't hurt themselves and stuff like that. There's a big open area there, where everything took place there. They went to town from there, they would filet their fish and sell them to people [whose] husbands were working on the railroad.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

The health of fisheries is dependent on healthy *giigoonyag* (fish) populations, which are in turn dependent on the availability of clean water. Several *giigoonh* (fish) species inhabit the Project region in a variety of habitats. Baseline information of *giigoonyag* (fish) and a comprehensive list of *giigoonh* (fish) species of importance to the Anishinaabeg found in the Project region can be found in Section 5.6.3. Baseline cultural information on Anishinaabe fisheries and their importance can be found in Section 5.7.5. Knowledge of the waterways present in the Project region can be found in Section5.6.1. Provincially designated *giigoonh* (fish) species of concern according to the *Endangered Species Act, 2007* include the *name* (lake sturgeon) population which is deemed "threatened".

The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. The survey undertaken in 2009 identified these connecting streams as potentially supporting important habitats (e.g. spawning,

rearing and migration), and young *ginoozheg* (northern pike) were found at the tributary to Baubee Lake that year (WSP, 2019).

6.6.3.1 Pre-Construction

6.6.3.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. Potential impacts are:

- Removing vegetation from the banks of the tributaries will remove the riparian habitat that would otherwise act as a barrier to sedimentation and erosion. This could negatively affect water quality, thereby affecting *giigoonh* (fish) habitat, including areas of importance such as spawning grounds. Changes to habitat could affect *giigoonh* (fish) populations, consequentially affecting fishing practices and therefore the wellbeing of the Anishinaabeg.
- Similarly, dust generated through stockpiling and hauling materials and equipment can result in sedimentation and runoff, potentially negatively affecting water quality and therefore *giigoonh* (fish) habitat.

6.6.3.2 Construction

6.6.3.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the extent of the proposed highway alignment and will intersect with aquatic habitat in five major locations: at four tributaries of the Whiteshell River and at one tributary of Baubee Lake leading to the Whiteshell River. Potential impacts are:

- Impeding access to fishing locations.
- Altering water levels such that remote fishing locations cease to exist.
- Disturbing regional fishing practices with increased noise.
- Water overpressures and ground vibrations during blasting can injure or kill *giigoonyag* (fish).
- Fragmented rock propelled into *bagidanaamowin* (the air) during explosions can injure or kill *giigoonyag* (fish) and destroy or impede *giigoonh* (fish) habitat, preventing fishing from taking place.
- Dust generated through blasting could be deposited in waterways causing changes in sediment concentration and habitat structure, negatively affecting *giigoonh* (fish) populations, affecting fishing practices and therefore the wellbeing of the Anishinaabeg.

6.6.3.2.2 Installing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement may include cofferdam installation and will include dewatering procedures. Watercourse realignment will occur at four culvert sites. Potential impacts are:

- Dewatering will temporarily obstruct *giigoonh* (fish) passages, impacting the availability of *giigoonyag* (fish) at fishing spots.
- Pumping during the dewatering process could result in *giigoonh* (fish) entrainment or pump impingement causing mortality.
- Dewatering can cause sediment build-up in waterways, altering water quality and *giigoonh* (fish) habitat, negatively affecting *giigoonh* (fish) populations and consequentially impacting the wellbeing of Anishinaabeg who practice fishing.
- Stripping, clearing, and grubbing involved in channel preparation and widening can introduce sediment and pollutants into the waterway, negatively affecting water quality and habitat structure, negatively affecting *giigoonh* (fish) populations.
- Stream realignment will temporarily impede passage and can cause changes in water levels and result in partial or complete infill of wetland areas supporting open water or shallow aquatic conditions, negatively affecting *giigoonh* (fish) habitat and spawning sites, potentially affecting permanent change to *giigoonh* (fish) populations, consequentially affecting fishing practices and therefore the wellbeing of the Anishinaabeg.

6.6.3.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. The construction process will involve excavating and hauling rock, filling, leveling, and grading the new highway. Construction waste will be generated during these procedures. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. Numerous small lakes and beaver ponds are present in the Project region as well. Potential impacts are:

- Dust and contaminants generated during excavating, hauling, and filling of rock could settle in the waterways causing sedimentation and contamination of *giigoonh* (fish) habitat, negatively affecting *giigoonh* (fish) populations, consequentially affecting fishing practices.
- Similarly, dust generated during leveling and grading of the new length of road could settle in the waterways causing a build up of sedimentation in *giigoonh* (fish) habitat, negatively affecting *giigoonh* (fish) populations.
- Improper disposal of construction waste could result in the contamination of *giigoonh* (fish) habitat and obstruction of passage, negatively affecting *giigoonh* (fish) populations, consequently affecting fishing practices and therefore the wellbeing of the Anishinaabeg.

6.6.3.2.4 Relocating Utilities

Relocating utilities will involve the relocation of a Bell underground fibre line and the extension of a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, drilling, and blasting along the right-of-way. The Project site intersects with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well. Potential impacts are:

- Removing vegetation from the banks of the tributaries will remove the riparian habitat that would otherwise act as a barrier to sedimentation and erosion. This could negatively affect water quality, thereby affecting *giigoonh* (fish) habitat, including areas of importance such as spawning grounds. Changes to *giigoonh* (fish) habitat could affect *giigoonh* (fish) populations, consequentially affecting fishing practices and therefore the wellbeing of the Anishinaabeg.
- Impeding access to fishing locations.
- Altering water levels such that remote fishing locations cease to exist.
- Disturbing regional fishing practices with increased noise.
- Water overpressures and ground vibrations during drilling and blasting can injure or kill *giigoonyag* (fish).
- Fragmented rock propelled into *bagidanaamowin* (the air) during explosions can injure or kill *giigoonyag* (fish) and destroy or impede *giigoonh* (fish) habitat, preventing fishing from taking place.
- Dust generated through drilling and blasting could be deposited in waterways causing changes in sediment concentration and habitat structure, negatively affecting *giigoonh* (fish) populations, consequentially affecting fishing practices and therefore the wellbeing of the Anishinaabeg.

6.6.3.3 Demobilization & Restoration

6.6.3.3.1 Site Revegetation

Site restoration along the edge of the waterways will include the restoration of the riparian zone. This will positively impact fishing through positive impacts to *giigoonyag* (fish) and their habitat by reducing sedimentation. Restoring of the riparian zone will also regulate water temperature and support the aquatic invertebrate communities which provide an important food source for *giigoonyag* (fish), benefiting fishers who rely on healthy *giigoonh* (fish) populations.

6.6.3.4 Operation

6.6.3.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is

expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- Increasing access to traditional lands, in particular those supporting Anishinaabe fisheries.
- Dust generated through the operation of vehicles can result in sedimentation and runoff, potentially negatively affecting water quality and therefore *giigoonh* (fish) habitat.
- Accidental spills can result in potential water quality contamination, thereby negatively affecting *giigoonh* (fish) populations, consequently affecting fishing practices and therefore the wellbeing of the Anishinaabeg.

6.6.3.4.2 Maintaining the Right-of-Way

The ongoing maintenance of the right-of-way will include applying herbicides to prevent plant growth on highway shoulders, and winter de-icing including applying salt and sand. Potential impacts are:

- Applying herbicides and salt can result in runoff accessing waterways, affecting water quality in the case of salt and sand, and introducing toxins in the case of herbicides, which in turn can affect the health of *giigoonyag* (fish), consequentially affecting fishing practices and therefore the wellbeing of the Anishinaabeg.
- Similarly, applying herbicides improperly or excessively can harm *giigoonh* (fish) and their habitat.

6.6.3.4.3 Maintaining Pavements

The ongoing maintenance of the pavement will include the regular removal of snow and debris from the highway, marking pavements, as well as future resurfacing procedures. Potential impacts are:

- Transferring snow, salt, and debris to the outer edge of the right-of-way could impede *giigoonh* (fish) passages and introduce contaminants to *giigoonh* (fish) habitat, negatively affecting *giigoonh* (fish) populations.
- Painting could result in toxic substances entering the waterway, negatively affecting *giigoonh* (fish) populations.
- Similarly, resurfacing the highway could result in pollutants, construction waste, and sediment entering and contaminating *giigoonh* (fish) habitat and impeding their passage, negatively affecting *giigoonh* (fish) populations, consequently affecting fishing practices and therefore the wellbeing of the Anishinaabeg.

6.6.3.5 Summary of Mitigation Measures to Protect Fishing

The decades of damage already done to *giigoonyag* (fish) and consequentially to fishing continue to be addressed through ongoing discussions being held between the Ministry of Transportation (“MTO”) and Niiwin Wendaanimok. Potential impacts to *giigoonyag* (fish) from the activities noted above during construction and operation can be mitigated by the following list of measures offered by community members:

- Identifying what species are present to ensure culverts can be appropriately designed to allow for *giigoonh* (fish) passage.
- Using sand/salt alternatives for controlling road ice.
- Using sawdust as an alternative to herbicides on the right-of-way.
- Using dust suppression during drilling and blasting.
- Limiting areas to be cleared as strictly necessary.
- Avoiding drilling and blasting on windy days.
- Avoiding blasting near waterbodies.
- Disposing of construction wastes properly.
- Developing and implementing a Construction Environmental Management Plan.
- Building an Indigenous-led spill response team to ensure spills are cleaned up immediately.
- Reusing old culverts to minimize in-stream work.
- Building culverts large enough to allow for the uninhibited movement of water.
- Developing and implementing a comprehensive Anishinaabe Guardians Program rooted in the *Manito Aki Inakonigaawin* (Great Earth Law*)*, that entails monitoring the effectiveness of the measures applied, monitoring the overall health of the lands, soils, waters, and skies, and promoting fishing as a traditional practice.
- Developing a regional resource use plan to sustain fishing as a traditional activity.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok, that entails revegetation of *mitigoog* (trees) and other plants beyond what was removed.
- Developing and implementing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails rehabilitating abandoned pits along the highway, thereby offering a net benefit to the environment.
- Developing and Implementing a Ceremonial Plan with the Elders to acknowledge the changes being made to the lands, soils, waters, and skies in return for a safe passage through Anishinaabe territory.
- Providing appropriate accommodation for cumulative impacts because of past projects undertaken on Anishinaabe lands.

Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Supporting development of an Anishinaabe Guardians Program.
- Supporting development of a Ceremonial Plan.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Developing and implementing a Revegetation Plan.
- Supporting development of a regional resource management plan as more *Anishinaabe Aki Kakendamowin* is documented in subsequent phases of the project.
- Shifting re-aligned channel sections as far as possible from the existing highway to maximize opportunities for highway runoff filtration prior to entering the watercourse.

- Designing culverts to prevent long-term alterations to water flow.
- Screening all hoses drawing water from a watercourse supporting *giigoonh* (fish) use to prevent potential entrainment.
- Providing advanced notifications to limit disruption to fishing activities.
- Retaining existing culverts that are in satisfactory condition and considered to have adequate hydraulic capacity.
- Managing salt impacted soil in accordance with provincial environmental regulations specified in Special Provision ENVR0001, a copy of which is included in **Appendix 5**.
- Developing and implementing an Environmental Incident Management Plan.
- Conducting instream works during cool water construction timing window (July 16 to March 30).
- Placing only clean materials in water for temporary construction measures (e.g. cofferdams, geotextiles, sheet piles, or other clean materials) or permanent works (e.g. substrate material or scour protection).
- Timing construction appropriately to protect resident and migratory *giigoonh* (fish) populations.
- Designing culverts at watercourses where *giigoonyag* (fish) have been identified to allow for *giigoonh* (fish) passage.
- Carrying out *giigoonh* (fish) salvages at isolated work zones for culvert replacements and new installations with *giigoonyag* (fish) being transferred, unharmed, to a downstream location.
- Shifting re-aligned channel sections as far as possible from the existing highway to maximize opportunities for highway runoff filtration prior to entering the watercourse.
- Protecting *giigoonyag* (fish) and *giigoonh* (fish) habitat in accordance with the (OPSS 120) Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters.
- Applying water or approved chemical suppressants to control dust, in accordance with MTO's General Conditions as per OPSS 0100, a copy of which is included in **Appendix 5**.
- Monitoring blasting and drilling vibrations.
- Monitoring dust levels to ensure dust does not enter an environmentally significant area, per Part B of the CAITM (Contract Administration Inspection Task Manual), a copy of which is included in **Appendix 5**. This manual also requires for checking that earth, mud, aggregates, and other debris are not tracked onto the roadway by construction vehicles and requires for monitoring and documentation of the frequency of application of dust suppressants.
- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all applicable regulations.

Fishing plays an important role in Anishinaabe tradition and culture. Fishing for sustenance, fishing for recreation, and commercial fishing, are important aspects of Anishinaabe community cohesion and intergenerational knowledge transmission, as described by an Elder from Niisaachewan, in Section 5.7.5:

> *They would teach us how to fish, stuff like that and even how to cut the fish. And how even inside of the fish how we could utilize all the stuff, and not throw so [much] stuff away like they do now. So, we make use of everything that they killed for food and they would trade and barter with that fileted fish to the locals in the town.*
>
> *Elder Niisaachewan, AAK Individual Interview, August 15, 2019.*

Through the intergenerational transmission of traditional fishing knowledge, family relationships are strengthened, and mental and physical wellbeing are benefitted. It is important to recognize the importance of protecting water quality and *giigoonyag* (fish) to ensure that fishing may be enjoyed by the future generations to come.

6.6.4 Hunting

Hunting is of central importance to Anishinaabe identity and culture. For thousands of years, the Anishinaabe have relied on hunting to provide food, materials for tools, and income for their families. Within Anishinaabe communities, no role is considered more valued than that of the hunter. Those who kept their families and communities fed are always met with the utmost respect (Johnston, 1976, p. 66). Hunting also has a ceremonial and spiritual aspect to it, as ceremonies were often conducted before and after a hunt, with offerings left to give thanks for the life taken. Hunting also offers an opportunity to connect with the land and allows for the intergenerational transfer of knowledge. In the present day, hunting has remained a vital component of Anishinaabe wellbeing. As this Elder from Niisaachewan shared:

> *That's how we got our meals. Three square meals a day. I have a picture of my daughter. I taught her how to deer hunt. She beat me because I couldn't see deer. All I saw was antlers one time on the hydro line. During the winter we'd go out hunting. Yeah, I had a shotgun. He was sitting there, I left her there, says keep an eye and tell to let me know. "Okay daddy." So, she shot one, I still have pictures, and when it went by all she seen was the antlers, pow! She knocked it down. "Daddy I shot a deer!" Great big buck. We fed the whole reserve.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

Hunting is dependent on healthy populations of game species and continued access to traditional hunting grounds. Game species include *waawaashkeshiwag* (deer) and *moozoog* (moose). Avian species such as *zhiishiibag* (*ducks*) and *nikag* (Canada geese) are also frequently hunted. All game species inhabit the Project region in forested and aquatic areas, as well as in edge habitats. Knowledge of the *waawaashkeshiwag* (deer) can be found in Section 5.3.1.1 with impacts to the species found in Section 6.2.1. Knowledge of the *moozoog* (moose) can be found in Section 5.3.1.2 with impacts to the species found in Section 6.2.2. Knowledge of the *zhiishiibag* (ducks) can be found in Section 5.4.2.1 with impacts to the species found in Section 6.3.2. Knowledge of the *nikag* (Canada geese) can be found in

Section 5.4.2.3 with impacts to the species found in Section 6.3.4. Baseline cultural information on the importance of hunting to the Anishinaabe can be found in Section 5.7.7.

Areas of traditional hunting identified in Phase 1 are south of Highway 17 between Baubee Lake and Highway 673. *Moozoog* (moose) aquatic feeding areas and *moozoog* (moose) calving areas (upland islands, shorelines, or peninsulas) are identified as "significant wildlife habitat" for *moozoog* (moose) by the Significant Habitat Technical Guide (OMNR 2000). Three areas in Phase 1 were identified as *moozoog* (moose) aquatic feeding areas, each intersecting with the Project Site. Conifer forests are identified as "significant wildlife habitat" for *waawaashkeshiwag* (deer) by the Significant Habitat Technical Guide (OMNR 2000) as they are used for wintering. *Zhiishiibag* (ducks) *and nikag* (Canada geese) are protected under the *Migratory Birds Convention Act, 1994* as a migratory game bird.

6.6.4.1 Pre-Construction

6.6.4.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. It is expected that approximately 24.1 ha of *mitig* (tree) covered area will be removed as a result of Phase 1 staging activities. In-water works will occur at five locations across the Project area. This includes the Baubee Lake tributary of the Whiteshell River and four additional Whiteshell River tributaries. Potential impacts include:

- Stripping and clearing within the right-of-way will result in the loss of traditional hunting areas, negatively impacting the wellbeing of the Anishinaabe.
- Removing terrestrial and aquatic vegetation will remove habitat and food sources used by *waawaashkeshiwag* (deer) and *moozoog* (moose) year-round. Changes to the habitat of *waawaashkeshiwag* (deer) and *moozoog* (moose) could further affect their populations, consequently affecting availability for hunting, and hence the wellbeing of the Anishinaabe.
- Similarly, removing terrestrial and aquatic vegetation will remove habitat and food sources used by *zhiishiibag* (ducks) and *nikag* (Canada geese) during the warmer months, potentially negatively affecting their populations, affecting their availability for hunting.
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with game species, negatively affecting their populations. This will reduce the number of species available for hunting, negatively impacting the wellbeing of the Anishinaabe.
- Noise disturbance from equipment and haul traffic may disturb game species, further displacing them and resulting in less species available for hunting, negatively affecting the wellbeing of the Anishinaabe.
- Dust generated through stockpiling and hauling materials and equipment can result in sedimentation and runoff, potentially negatively affecting water quality and therefore the habitat of *zhiishiibag* (ducks) and *nikag* (Canada geese), negatively impacting their populations.

The potential impacts to hunting from staging during construction can be mitigated by limiting areas to be cleared as strictly necessary and revegetating stripped areas once construction is complete. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Developing and implementing a comprehensive Anishinaabe Guardians Program that allows for opportunities to promote hunting as a traditional practice.
- Developing a Revegetation Plan in collaboration with Niiwin Wendaanimok.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Delineating right-of-way vegetation clearing zones and vegetation retention zones. No equipment, materials, or other construction activities will be permitted in these zones.
- Using dust control measures (e.g. water, calcium chloride, approved chemical suppressants) to ensure dust does not enter an environmentally sensitive area.
- Setting time constraints to avoid clearing and structure works during the breeding bird season (approximately April 21st to August 31st).
- Surveying for nests and implementing a buffer around active nests to avoid disturbing *zhiishiibag* (ducks) and *nikag* (Canada geese).
- Adhering to the Special Provisions concerning clearing in the presence of species protected under the *Migratory Birds Convention Act, 1994* which orders the protection of the species, species' residence, and critical habitat. See copy of listed provisions in **Appendix 5**.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.6.4.2 Construction

6.6.4.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. It is expected to be concentrated to highly compacted areas or areas predominantly composed of bedrock. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect tributaries of the Whiteshell River, Royal Lake, and Baubee Lake. These aquatic features support vegetation used for feeding and nesting by *nikag* (Canada geese) and *zhiishiibag* (ducks). Three areas in Phase 1 were identified as *moozoog* (moose) aquatic feeding areas, each intersecting with the Project Site. These areas are all within 400 m of blasting locations. Potential impacts include:

- Blasting areas within the right-of-way will result in the loss of traditional hunting areas, negatively impacting the wellbeing of the Anishinaabe.

- Removing and damaging habitat and food sources utilized by game species, negatively affecting their populations. Changes to these populations will consequently affect the wellbeing of the Anishinaabe.
- Ground vibrations, fragmented rock propelled into *bagidanaamowin* (the air), noise, and dust produced during blasting can disturb the habitat of game species, potentially further displacing them. This can also result in injury or death to game species, negatively affecting their populations and availability for hunting.
- Blasting chemicals used may leach into soils and waterways used by game species, negatively affecting their health, habitat, and consequentially their abundance and availability for hunting.

The potential impacts to hunting from blasting during construction can be mitigated by avoiding blasting during the hunting season, applying dust suppression during blasting, avoiding blasting during windy days, avoiding blasting near waterbodies, developing and implementing an Anishinaabe Guardians Program, and by conducting a pre-construction survey of new nest activity since the initial survey conducted in 2009. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Developing and implementing a comprehensive Anishinaabe Guardians Program that allows for opportunities to promote trapping as a traditional practice.
- Implementing time constraints to avoid construction and structure works during the breeding bird season (approximately April 21st to August 31st).
- Using dust control measures (e.g. water, calcium chloride, approved chemical suppressants).
- Monitoring dust levels to ensure dust does not enter an environmentally significant area.
- Monitoring blast vibrations.
- Providing ongoing advanced blast notifications to limit disruption to hunting activities.
- Surveying for nests and implementing a buffer around active nests to avoid disturbing *zhiishiibag* (ducks) and *nikag* (Canada geese).
- Adhering to blasting requirements listed in OPSS 0120 and Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, copies of which is included in **Appendix 5**.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.6.4.2.2 Installing Culverts & Realigning Watercourses

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation and dewatering procedures. Watercourse realignment will occur at four culvert sites. In-water works will occur at five locations

across the Project area. This includes the Baubee Lake tributary of the Whiteshell River and four additional Whiteshell River tributaries. Potential impacts include:

- Altering marshland habitat and food sources used by *zhiishiibag* (ducks) and *nikag* (Canada geese) may disturb the species, displacing them and reducing their populations. Changes to these populations will consequently affect the wellbeing of the Anishinaabe due to decreased availability for hunting.
- Similarly, removing wetland vegetation from aquatic areas such as at the Baubee Lake tributary, an area identified as a *moozoog* (moose) aquatic feeding area, could alter the drainage patterns of surface runoff, affecting vegetation and wetland areas around Baubee Lake tributary and Whiteshell River tributaries, negatively affecting *moozoog* (moose) and other game species habitat.
- Pumping during dewatering, removing culverts, and installing culverts could create a noise disturbance for game species, further displacing them.
- Stripping, clearing, and grubbing involved in preparing and widening channels can introduce sediment and pollutants into the waterways and soils, negatively affecting the health and habitat of game species.

The potential impacts hunting from installing culverts during construction can be mitigated by avoiding construction during the hunting season, conducting a pre-construction survey of new nest activity since the initial survey was conducted in 2009, limiting areas to be cleared as strictly necessary, revegetating cleared areas, and reusing old culvert designs to reduce waste. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Developing and implementing a comprehensive Anishinaabe Guardians Program that allows for opportunities to promote hunting as a traditional practice.
- Implementing time constraints to avoid construction and structure works during the breeding bird season (approximately April 21st to August 31st).
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Retaining existing culverts that are in satisfactory condition and considered to have adequate hydraulic capacity.
- Implementing an Erosion/Sediment Control Plan by the Contractor and monitoring controls as per OPSS 0120 to minimize the impacts of construction on watercourses, a copy of which is included in **Appendix 5**.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.6.4.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. The construction process will involve the excavation and hauling of rock and filling, levelling, and grading of the new highway. Construction waste will be generated during these procedures. The use of vehicles and equipment will take place on construction site. The Baubee Lake tributary features a cattail marsh and is also identified as one of the three *moozoog* (moose) aquatic feeding areas. Cattail marshes were identified as to be partially or completely filled in to accommodate the new highway lanes. Potential impacts include:

- Noise disturbance from increased presence of construction traffic may disturb game species, further displacing them. Consequently, this could lower their populations, affecting their availability for hunting. This will affect the wellbeing of the Anishinaabe who rely on them as a source of food and identity.
- Accidental spills from equipment could enter the waterways and soils used by game species for feeding, negatively impacting their health and habitat.
- Partially or completely filling wetland areas will remove habitat and food sources for *moozoog* (moose), *zhiishiibag* (ducks), and *nikag* (Canada geese). Additionally, this could alter the drainage patterns of surface runoff, affecting vegetation and wetland areas downstream.
- Dust and contaminants generated through the excavation, hauling, and filling of rock could settle in the waterways and surrounding soils contaminating *moozoog* (moose)*, zhiishiibag* (ducks)*, and nikag* (Canada geese) habitat.
- Chemicals used in dust suppression may leach into waterways and soils, polluting the habitat and food sources for game species, as well as damaging their health.
- The improper disposal of construction waste could result in the contamination of the habitat of game species.
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *moozoog* (moose) and *waawaashkeshiwag* (deer), negatively affecting *moozoog* (moose) and *waawaashkeshiwag* (deer) populations.
- Building the road will create new access to hunting areas, positively impacting the wellbeing of the Anishinaabe.

The potential impacts to hunting from building the road can be mitigated by avoiding construction during the hunting season, developing and implementing an Anishinaabe Guardians Program, removing any mineral or salt licks, installing wildlife crossings, and applying dust control measures. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation (“MTO”) have advised that the following mitigation measures will be applied to address these impacts:

- Developing and implementing a comprehensive Anishinaabe Guardians Program that allows for opportunities to promote hunting as a traditional practice.
- Minimizing excess material generation through salvage and reuse.

- Carrying out vehicle maintenance and fueling at designated locations or at commercial garages.
- Installing wildlife signage and barriers to block wildlife access to road.
- Identifying and removing mineral licks along the right-of-way that attract wildlife, including *moozoog* (moose), to reduce wildlife mortality risks.
- Explore wildlife crossings through further research and investigations in subsequent phases of the Project.
- Using dust control measures (e.g. water, calcium chloride, approved chemical suppressants)
- Monitoring dust levels to ensure dust does not enter an environmentally significant area.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.6.4.2.4 Relocating Utilities

Relocating utilities will involve relocating a Bell underground fibre line and extending a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, and drilling along the right-of-way. The main concerns are:

- Stripping and clearing for utility relocation will result in the loss of access to traditional hunting areas, negatively impacting the wellbeing of the Anishinaabe.
- Removing terrestrial and aquatic vegetation will remove habitat and food sources used by *waawaashkeshiwag* (deer) and *moozoog* (moose) year-round. Changes to the habitat of *waawaashkeshiwag* (deer) and *moozoog* (moose) could further affect their populations, consequently affecting availability for hunting, and hence the wellbeing of the Anishinaabe.
- Similarly, removing terrestrial and aquatic vegetation will remove habitat and food sources used by *zhiishiibag* (ducks) and *nikag* (Canada geese) during the warmer months, potentially negatively affecting their populations, affecting their availability for hunting.
- The temporary increase in construction traffic will increase the likelihood of vehicle collisions with game species, negatively affecting their populations. This will reduce the number of species available for hunting, negatively impacting the wellbeing of the Anishinaabe.
- Noise disturbance from equipment and haul traffic may disturb game species, further displacing them and resulting in less species available for hunting, negatively affecting the wellbeing of the Anishinaabe.
- Dust generated through stockpiling and hauling materials and equipment can result in sedimentation and runoff, potentially negatively affecting water quality and therefore the habitat of *zhiishiibag* (ducks) and *nikag* (Canada geese).

The potential impacts to hunting from relocating utilities during construction can be mitigated by avoiding construction during the hunting season, using dust suppression during drilling and blasting,

by avoiding drilling and blasting on windy days, developing and implementing an Anishinaabe Guardians Program, revegetation of *mitigoog* (trees) and other plants beyond what was removed, and by preparing a Construction Environmental Management Plan. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Developing and implementing a comprehensive Anishinaabe Guardians Program that allows for opportunities to promote trapping as a traditional practice.
- Surveying for nests and implementing a buffer zone around active nests to avoid disturbing *zhiishiibag* (ducks) and *nikag* (Canada geese).
- Setting time constraints to avoid clearing and structure works during the breeding *bineshiinh* (bird) season (approximately April 21st to August 31st).
- Adhering to the Special Provisions concerning construction in the presence of species protected under the *Migratory Birds Convention Act, 1994* which orders the protection of the species, species' residence, and critical habitat. See copy of listed provisions in **Appendix 5**.
- Developing and implementing a Revegetation Plan in collaboration with Niiwin Wendaanimok.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.
- Using dust control measures (e.g. water, calcium chloride, approved chemical suppressants)
- Monitoring drill and blast vibrations.
- Delineating right-of-way vegetation clearing zones and vegetation retention zones. No equipment, materials, or other construction activities will be permitted in these zones.
- Carrying out vehicle maintenance and fueling at designated areas or at commercial garages.
- Developing a Restoration Plan in collaboration with Niiwin Wendaanimok that entails restoring old and abandoned pits to provide a net benefit to the environment.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.6.4.3 Demobilization & Restoration

6.6.4.3.1 Site Revegetation

Revegetating will entail restoring all disturbed areas in accordance with the Revegetation Plan to be developed prior to construction. Potential impacts include:

- Creating new areas for game species to inhabit, positively affecting their populations.

- Creating new areas for game species food sources to grow, positively affecting their populations.

6.6.4.4 Operation

6.6.4.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected normal increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts include:

- Increased road surface area will increase the likelihood of vehicle collisions with *moozoog* (moose) and *waawaashkeshiwag* (deer), negatively affecting *moozoog* (moose) and *waawaashkeshiwag* (deer) populations, consequently affecting availability for hunting, and hence the wellbeing of the Anishinaabe.
- Accidental spills can result in potential water quality and soil contamination, negatively affecting the health and habitat of game species, consequently affecting the wellbeing of the Anishinaabeg who rely on them.
- Using the new highway will allow for increased access to traditional hunting areas, positively impacting Anishinaabe wellbeing.

The potential impacts to hunting from using the highway during operation can be mitigated by the construction of wildlife corridors and ensuring spills are cleaned up immediately. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Developing and implementing a comprehensive Anishinaabe Guardians Program that allows for opportunities to promote hunting as a traditional practice.
- Identifying and removing mineral licks along the right-of-way that attract wildlife, including *moozoog* (moose) and *waawaashkeshiwag* (deer), to reduce wildlife mortality risks, thereby increasing the availability for hunting.
- Implementing a highway design that improves visibility and stopping sight distance for motorists, thereby reducing the risk of animal collisions.
- Installing additional wildlife crossing signs and barriers installed at locations where historical data or local knowledge identifies concerns.
- Clearing vegetation along the right-of-way, improving sightlines for motorists and reducing potential for wildlife collisions.
- Identifying in collaboration with the Niiwin Wendaanimok appropriate and feasible locations for wildlife corridors in subsequent phases of the Twinning project.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.6.4.4.2 Maintaining the Right-of-Way

Maintaining the right-of-way involves the ongoing maintenance of the road, including snow removal, applying herbicides, applying ice-control measures, and maintaining pavements. Potential impacts include:

- Developing and implementing a comprehensive Anishinaabe Guardians Program that allows for opportunities to promote hunting as a traditional practice.
- Applying herbicides could result in leaching of chemicals into waterways and soils, affecting the health and habitat of game species. This could decrease population numbers, negatively impacting traditional hunting practices that rely on healthy species.
- Highway resurfacing may introduce pollutants and construction wastes into waterways and soils, contaminating game species habitat.
- Salt used in ice-control measures may attract wildlife to the roadway, which could increase the likelihood of wildlife related collisions, negatively affecting games species and their populations.
- Similarly, salt used in ice-control measures may enter the waterways and soils, affecting the health and habitat of game species.

The potential impacts to hunting from maintaining the right-of-way during operation can be mitigated by using sand/salt alternatives for controlling road ice to reduce wildlife attraction and using sawdust as an alternative to herbicides on the right-of-way. Of the measures noted by the Niiwin Wendaanimok Partnership, the Ministry of Transportation ("MTO") have advised that the following mitigation measures will be applied to address these impacts:

- Applying approved herbicides in accordance with the *Pesticides Act, 1990*, and all other applicable regulations.
- Managing salt impacted soil and groundwater appropriately, as there are currently no viable alternatives to the use of road salt/sand as part of winter maintenance.
- Identifying and removing mineral licks along the right-of-way that attract wildlife, including *moozoog* (moose) and *waawaashkeshiwag* (deer), to reduce wildlife mortality risks.
- Developing an Environmental Incident Management Plan in collaboration with any contractor contracted to carry out maintenance on the right-of-way. MTO advises that spills occurring during routine maintenance are the responsibility of the contractor to address.

The effectiveness of the mitigation measures noted will be monitored during construction under the Anishinaabe Guardians Program, which is under development in collaboration with MTO.

6.6.4.5 Summary of Mitigation Measures to Protect Hunting

Over the past few generations, hunting practices have been on the decline. Communities can no longer rely on hunting to feed their families due to lower numbers of game species with lower quality meat. Hunting practices will continue to be impacted through ongoing development in the Treaty 3 territory.

To prevent ongoing damage to this practice, it is important to prevent further impacts to *waawaashkeshiwag* (deer)*, moozoog* (moose)*, ma'iinganag* (wolves), *zhiishiibag* (ducks), and *nikag* (Canada geese) as outlined in Sections 6.2.1 to 6.2.5 and Sections 6.3.2 and 6.3.4, to promote hunting as a traditional activity, and develop an Anishinaabe Guardians Program to monitor the overall health of the land, soils, waters, and skies. MTO has agreed to supporting the development and implementation of this program.

Hunting continues to play an important role in Anishinaabe communities. The practice demands great skill, patience, and care for the species and the land. It offers an opportunity for communities to connect with the land, their families, and their ancestors. The practice creates a connection with the human and spirit world and facilitates the transfer of knowledge between generations. In the present day, hunting remains a vital component of Anishinaabe wellbeing. As this Elder from Washagamis Bay shared:

> *Me and my brothers went up there with one guy, and we must've traveled three days, barely had enough to eat, just kept going. Eventually, he shot a moose. That was something. We had to travel three days back to haul it back out. This was summertime, so we had to portage and carry it, piece by piece. Then we had to portage maybe about six times. Some of them were long too. It was a good three or four hours work just to haul it from one side of the lake to the other side. Each one of them. Took us a good two days.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, August 21, 2019.*

6.6.5 Trapping

Trapping is of central importance to the Anishinaabe. For generations, the Anishinaabe have been trapping for food and livelihood. The practice has helped sustain families by providing vital income during winter months. As trapping occurs out on the land, it offers an opportunity to connect with the nature, which is an integral part of Anishinaabe wellbeing. In the present day, trapping continues to be a crucial component of Anishinaabe culture and wellbeing. An Elder from Wauzhushk Onigum shared:

> *And I lived those first six years of my life at a trap line in a bush. And learnt the customary and traditional practices at an early… The first six years of my life that was my sustenance.*
>
> *Elder, Wauzhushk Onigum, AAK Individual Interview, June 17, 2019.*

Trapping is dependent on healthy species and continued access to traditional trapping grounds. Species most frequently trapped include *amikwag* (beavers) and *wauzhushkwag* (muskrats). Knowledge of *amikwag* (beavers) can be found in Section 5.3.1.3 with impacts to the species found in Section 6.2.3. Knowledge of *wauzhushkwag* (muskrats) can be found in Section 5.3.1.4 with impacts to the species found in Section 6.2.4. Knowledge of the importance of trapping to the Anishinaabeg can

be found in Section 5.7.8. Areas of traditional trapping identified in the Phase 1 Project Region includes the entire area immediately north of Highway 17.

6.6.5.1 Pre-Construction

6.6.5.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. It is expected that approximately 24.1 ha of *mitig* (tree) covered area will be removed as a result of Phase 1 staging activities. In-water works will occur at five locations across the Project area. This includes the Baubee Lake tributary of the Whiteshell River and four additional Whiteshell River tributaries. Potential impacts include:

- Stripping and clearing within the right-of-way will result in the loss of traditional trapping areas, negatively impacting the wellbeing of the Anishinaabeg.
- Removing vegetation within forested areas and in the vicinity of Baubee Lake tributary and Whiteshell River tributaries, will remove the riparian habitat utilized by *amikwag* (beavers) and *wauzhushkwag* (muskrats). *Amikwag* (beavers) rely on these areas for food and materials for building lodges and dams, while *wauzhushkwag* (muskrats) use these areas for seasonal dispersion. Changes to the habitat of *amikwag* (beavers) and *wauzhushkwag* (muskrats) could affect their populations, consequently affecting availability for trapping, and hence the wellbeing of the Anishinaabeg.
- Similarly, removing vegetation within the vicinity of aquatic areas such as at the Baubee Lake tributary and Whiteshell River tributaries, could also alter the drainage patterns of surface runoff, affecting vegetation and wetland areas around the Baubee Lake tributary and Whiteshell River tributaries, negatively affect *wauzhushk* (muskrat) and *amik* (beaver) habitat and food sources.
- Removing *amik* (beaver) dams will remove *amik* (beaver) habitat, and potentially alter water levels in surrounding waterbodies, affecting *amik* (beaver) populations and potentially further displacing them. Changes in water levels will also affect *wauzhushk* (muskrat) habitat, potentially further displacing them as well.
- Noise disturbance from equipment and haul traffic may disturb *amikwag* (beavers) and *wauzhushkwag* (muskrats), further displacing them.
- Accidental spills from equipment could enter the waterways and affect the health and habitat of *amikwag* (beavers) and *wauzhushkwag* (muskrats).
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *amikwag* (beavers) and *wauzhushkwag* (muskrats), negatively affecting their populations.
- Dust generated through stockpiling and hauling materials and equipment can result in sedimentation and runoff, potentially negatively affecting water quality and therefore *amik* (beaver) and *wauzhushk* (muskrat) habitat and health.

6.6.5.2 Construction

6.6.5.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. It is expected to be concentrated to highly compacted areas or areas predominantly composed of bedrock. Potential impacts include:

- Blasting areas within the right-of-way will impede access to traditional trapping areas, negatively impacting the wellbeing of the Anishinaabeg.
- Disturbing regional trapping practices with increased noise.
- Removing and damaging habitat and food sources utilized by *amikwag* (beavers) and *wauzhushkwag* (muskrats), negatively affecting their populations. Changes to these populations will consequently affect their availability for trapping and the wellbeing of the Anishinaabeg.
- Ground vibrations, fragmented rock propelled into the *bagidanaamowin* (air), noise, and dust produced during blasting can disturb the habitat of *amikwag* (beavers) and *wauzhushkwag* (muskrats), potentially further displacing them. This can also result in injury or death to *amikwag* (beavers) and *wauzhushkwag* (muskrats), negatively affecting their populations and availability for trapping.
- Blasting chemicals used may leach into soils and waterways used by *amikwag* (beavers) and *wauzhushkwag* (muskrats), negatively affecting their health and habitat.

6.6.5.2.2 Installing Culverts & Realigning Watercourses

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation and dewatering procedures. Watercourse realignment will occur at four culvert sites. The majority of the watercourses and waterbodies throughout the project area and along the proposed alignment, are small, warmwater tributaries or wetlands that ultimately drain to larger systems. A large number of these features are modified by *amik* (beaver) activity. Potential impacts include:

- Removal of vegetation in culverts, will negatively impact *wauzhushk* (muskrat) and *amik* (beaver) health and habitat by removing food sources. Consequently, this could lower their populations, affecting the wellbeing of the Anishinaabeg.
- Similarly, dewatering may cause a change in water levels of surrounding waterbodies, negatively affecting the habitat of *amikwag* (beavers) and *wauzhushkwag* (muskrats).
- Pumping during dewatering could result in noise disturbance to *amikwag* (beavers) and *wauzhushkwag* (muskrats), resulting in further displacement of them.

- Stripping, clearing, and grubbing involved in channel preparation and widening can introduce sediment and pollutants into the waterway, negatively affecting the health and habitat of *amikwag* (beavers) and *wauzhushkwag* (muskrats).
- Accumulation of solid waste or debris in culverts and ditches may disturb *amikwag* (beavers) and *wauzhushkwag* (muskrats).
- Installing nine new culverts will introduce new areas for *amikwag* (beavers) and *wauzhushkwag* (muskrats) to inhabit and food sources to grow, positively affecting their populations and increasing availability for trapping.

6.6.5.2.3 Building the Road

The construction process will involve the excavation and hauling of rock, and filling, levelling, and grading of the new highway, applying dust suppression measures, applying sediment and erosion control measures, and using and fueling equipment. Construction waste will be generated during these procedures. Potential impacts are:

- Noise disturbance from increased presence of construction traffic may disturb *wauzhushkwag* (muskrats) and *amikwag* (beavers), further displacing them. Consequently, this could lower the populations of *wauzhushkwag* (muskrats) and *amikwag* (beavers), affecting the wellbeing of the Anishinaabeg who rely on them as a source of food and identity.
- Partially or completely filling wetland areas will remove habitat and food sources used by *amikwag* (beavers) and *wauzhushkwag* (muskrats). Additionally, this could alter the drainage patterns of surface runoff, affecting vegetation and wetland areas downstream.
- Accidental spills from equipment could enter the waterways and affect the health and habitat of *amikwag* (beavers) and *wauzhushkwag* (muskrats).
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *amikwag* (beavers) and *wauzhushkwag* (muskrats), negatively affecting their populations.
- Levelling and grading within the right-of-way may cause damage to surrounding culverts and ditches, negatively impacting the health and habitat of *amikwag* (beavers) and *wauzhushkwag* (muskrats) who use them.
- Dust and contaminants generated through the excavation, hauling and filling of rock could settle in the waterways causing sedimentation and contamination of *amik* (beaver) and *wauzhushk* (muskrat) habitat.
- Chemicals used in dust suppression may leach into waterways, polluting habitat and food sources of *amikwag* (beavers) and *wauzhushkwag* (muskrats), as well as damaging their health.
- The improper disposal of construction waste could result in the contamination of *amik* (beaver) and *wauzhushk* (muskrat) habitat.

6.6.5.2.4 Relocating Utilities

Relocating utilities will involve relocating a Bell underground fibre line and extending a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, and drilling along the right-of-way. Potential impacts include:

- Stripping and clearing for utility relocation will result in the loss of traditional trapping areas, negatively impacting the wellbeing of the Anishinaabeg.
- Removing vegetation during stripping, clearing, and grubbing can cause damage to the habitat and food sources of *amikwag* (beavers) and *wauzhushkwag* (muskrats), negatively impacting *amikwag* (beavers) and *wauzhushkwag* (muskrats). Consequently, this could lower their populations, affecting the wellbeing of the Anishinaabeg.
- Similarly, removing vegetation could also change the drainage patterns within the riparian area, changing water levels and negatively affect *amik* (beaver) and *wauzhushk* (muskrat) habitat.
- Noise and ground vibrations generated from construction activity may disturb *amikwag* (beavers) and *wauzhushkwag* (muskrats).
- Accidental spills from equipment could enter the waterways and affect the health and habitat of *amikwag* (beavers) and *wauzhushkwag* (muskrats).
- The temporary increase in haul traffic will increase the likelihood of vehicle collisions with *amikwag* (beavers) and *wauzhushkwag* (muskrats), negatively affecting their populations.
- Dust and contaminants generated through the excavation, hauling and filling of rock could settle in the waterways causing sedimentation and contamination of *amik* (beaver) and *wauzhushk* (muskrat) health and habitat.

6.6.5.3 Demobilization & Restoration

6.6.5.3.1 Site Revegetation

Revegetating will entail restoring all disturbed areas in accordance with the Revegetation Plan to be developed prior to construction. Potential impacts include:

- Creating new areas for *amikwag* (beavers) and *wauzhushkwag* (muskrats) to inhabit, positively affecting their populations and increasing their availability for trapping.
- Creating new areas for *amikwag* (beavers) and *wauzhushkwag* (muskrats) food sources to grow, positively affecting their populations and increasing their availability for trapping.

6.6.5.4 Operation

6.6.5.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected normal increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts include:

- Increased road surface area will increase the likelihood of vehicle collisions with *amikwag* (beavers) *and wauzhushkwag* (muskrats)*,* negatively affecting their populations, consequently affecting availability for trapping, and hence the wellbeing of the Anishinaabeg.
- Accidental spills can result in potential water quality and soil contamination, negatively affecting the health and habitat of *amikwag* (beavers) and *wauzhushkwag* (muskrats), consequently affecting the wellbeing of the Anishinaabeg who rely on them.
- Dust generated through the operation of vehicles can result in sedimentation and runoff, affecting the water quality along the highway and therefore the health and habitat of *amikwag* (beavers) and *wauzhushkwag* (muskrats)*.*

6.6.5.4.2 Maintaining the Right-of-Way

Maintaining the right-of-way involves the ongoing maintenance of the road, including snow removal, applying herbicides, applying ice-control measures, and maintaining pavements. Potential impacts include:

- Snow clearing may push debris and other contaminants into ditches or culverts, damaging the habitat of *amikwag* (beavers) and *wauzhushkwag* (muskrats).
- Maintaining culverts may disturb or damage *amik* (beaver) and *wauzhushk* (muskrat) habitat and food sources.
- Applying herbicides could result in leaching of chemicals into waterways and soils, affecting the health and habitat of *amikwag* (beavers) and *wauzhushkwag* (muskrats). This could decrease population numbers, negatively impacting traditional trapping practices that rely on healthy species and populations.
- Highway resurfacing may introduce pollutants and construction wastes into waterways and soils, contaminating *amik* (beaver) and *wauzhushk* (muskrat) habitat.
- Salt used in ice-control measures may attract wildlife to the roadway, which could increase the likelihood of wildlife related collisions, negatively affecting *amikwag* (beavers) and *wauzhushkwag* (muskrats) and their populations.
- Similarly, salt used in ice-control measures may enter the waterways and soils, affecting the health and habitat of *amikwag* (beavers) and *wauzhushkwag* (muskrats).

6.6.5.5 Summary of Mitigation Measures to Protect Trapping

Over the past few generations, trapping practices have been on the decline. A decline in populations coupled with the decline in pelt value, trapping cannot be relied on for food and income alone. Trapping practices will continue to be impacted through ongoing development in the Treaty 3 territory. To prevent ongoing damage to this practice, it is important to prevent further impacts to *amikwag* (beavers) and *wauzhushkwag* (muskrats) as outlined in Section 6.2.3 and 6.2.4, respectively, to promote trapping as a traditional activity, and develop an Anishinaabe Guardians Program to monitor the overall health of the land, soils, waters, and skies. MTO has agreed to supporting the development and implementation of this program.

Trapping is a traditional activity that continues to build connections between families and communities. It supports livelihoods in addition to nutrition and teachings. As a multifaceted activity, trapping remains to be of great significance to the Anishinaabeg. Traditional trapping grounds span large distances, with the intricacies of the land and the animals memorized by the trapper. These skills continue to be a component of Anishinaabe wellbeing and are passed on to the youth of today, ensuring their own wellbeing. A community member, from Shoal Lake 40 shared how her brother traps with youth to educate them:

> *He does it for the school. He came out here and showed the kids moles, muskrats, weasels. They use it just to teach the kids. It's part of the program where they are putting the culture back in the teachings. They harvest their own meats.*
>
> *Community member, Shoal Lake 40, AAK Individual Interview, May 21, 2019.*

6.6.6 Gathering

Gathering is a traditional activity amongst the Anishinaabeg that has contributed to their overall wellbeing as it incorporates cultural values, sacred knowledge, and community. Gathering is largely associated with picking *miinan* (berries) and *mashkikiwan* (medicines). Gathering takes place throughout many locations in Treaty 3 territory in a variety of environments. Berries such as *miinan* (blueberries), *miskominag* (raspberries), *ookwemin* (choke cherries), and *bawa'iminaan* (pin cherries) serve as important components of the Anishinaabe diet for many community members, but are also used in ceremonies, handicrafts, and as *mashkikiwan* (medicines). Some community members could rely on *miinan* (blueberries) for income and would dedicate a lot of their time to gathering, as noted in Section 5.7.6, when this Elder from Shoal Lake 40 explained:

> *We did a lot of blueberry picking… We would get dropped off somewhere and set up our tents and we lived there for a week or a few weeks. We picked baskets and baskets, and again, we kept some but mostly sold them for income.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, May 24, 2019.*

Similarly, *mashkikiwan* (medicines) are not only consumed for medicinal relief but used in ceremonies or as offerings. Collecting *mashkikiwan* (medicines) is a cultural tradition that is passed from parents to children, or grandparents to grandchildren. As noted in Section 5.7.6, this Elder from Wauzhushk Onigum shared how he would collect the *mashkiki* (medicine) called *wiikenh* (sweet flag) with his grandmother:

> *The main one you would hear about is wiikenh… I can't remember most of them, but my gram used to show me and tell me different medicines for the stomach and for aches and pains.*
>
> *Elder, Wauzhushk Onigum, AAK Group Interview, June 17, 2019.*

Miinan (blueberries) grow well on disturbed landscapes as they are early successional species. Historically, Indigenous people would practice prescribed burns upon landscapes to encourage the growth of *miinan* (blueberries) and provide additional gathering opportunities for all. Despite their resiliency, the growth of *miinan* (blueberries) has decreased over time as development has increased and the impacts of climate change have become more prominent (AAK Individual Interview, August 21, 2019). *Mashkikiwan* (medicines) can be harvested from vegetation and animals. Plant *mashkikiwan* (medicines) come from all types of vegetation such as *mitigoog* (trees), shrubs, grasses, leaves, bark, and roots. Additionally, these *mashkikiwan* (medicines) grow in a variety of habitats such as forests, wetlands, or marshes, among others. Like *miinan* (berries)*, mashkikiwan* (medicines) have been negatively impacted by increased development and climate change.

Knowledge of the *miin* (berry) and *mashkiki* (medicine) gathering practices and a comprehensive list of the species of importance to the Anishinaabe found in the Project region can be found in Section 5.7.6.

6.6.6.1 Pre-Construction

6.6.6.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. *Miinan* (berries) and *mashkikiwan* (medicines) can be found throughout Treaty 3 territory, occupying aquatic, wetland, and forest environments. Gathering is an activity that many Anishinaabeg have depended upon for sustenance, income, enjoyment, and continuing cultural traditions. Potential impacts of Project staging are:

- Impeding access to traditional lands for gathering.
- Removing *miin* (berry) and *mashkiki* (medicine) habitat, causing a direct negative affect to the Anishinaabeg as a result of decreased gathering opportunities.
- Destabilizing soils resulting in sedimentation and runoff which may negatively impact vegetation growth and quality in riparian zones.

6.6.6.2 Construction

6.6.6.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect tributaries of the Whiteshell River, Royal Lake, and Baubee Lake. Potential impacts are:

- Removing *miin* (berry) and *mashkiki* (medicine) habitat, causing a direct negative affect to the Anishinaabeg as a result of decreased gathering opportunities.
- Releasing particulate matter into the *bagidanaamowin* (air), introducing risks for Elders and those who may have underlying health issues while participating in outside gatherings on the Project site.

- Disturbing those gathering with excessive noise.

6.6.6.2.2 Installing Culverts

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way. Culvert installation and replacement includes cofferdam installation and dewatering procedures. Watercourse realignment will occur at four culvert sites. Affected vegetation includes wetland communities of Cattail Marsh, Blue-joint Grass Meadow Marsh, Black Ash Swamp, Speckled Alder Thicket Swamp, and other small open water pockets at the roadside. Potential impacts are:

- Dewatering, stripping, clearing, and grubbing involved in channel preparation can cause sediment build-up in waterways, altering water quality and negatively affecting *miinan* (berries) and *mashkikiwan* (medicines) that grow in such environments. A decrease in their abundances can negatively impact the Anishinaabeg who rely on gathering for sustenance, income, enjoyment and continuing cultural traditions.

6.6.6.2.3 Building the Road

The Project will involve twinning of a 6.5 km section of Highway 17. The process of building the road will involve excavating and hauling of rock and filling, levelling, grading of the new highway, and using vehicles and equipment. When needed, dust suppressants may be used. Upon completion of construction, wastes (both construction and solid) will need to be properly disposed of. Potential impacts are:

- Spilling, leaking, or leaching of chemicals applied during the construction process can contaminate aquatic, semi-aquatic, and forested habitats in which *miinan* (berries) and *mashkikiwan* (medicines) grow.
- Emitting carbon monoxide ("CO"), nitrogen oxides ("NO_x") and ("VOCs") through vehicular exhaust as a result of construction vehicles, equipment and traffic congestion, as well as from toxic fumes resulting from laying asphalt and cement.
- Increasing suspended particulate matters such as road dusts, aggregates and exposed soils may arise through excavating rock, hauling rock, filling, levelling, and grading the new highway. Inhalation of particulate matter can pose risks to respiratory health.

6.6.6.2.4 Relocating Utilities

Utility relocation will involve the relocation of a Bell underground fibre line and the extension of a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, blasting, and drilling along the right-of-way. Potential impacts are:

- Impeding access to traditional lands for gathering.
- Removing *miin* (berry) and *mashkiki* (medicine) habitat, causing a direct negative affect to the Anishinaabe as a result of decreased gathering opportunities.

- Destabilizing soils resulting in sedimentation and runoff which may negatively impact vegetation growth and quality in riparian zones.
- Increasing emissions of primary pollutants from vehicular exhaust on the Project site.
- Increasing suspended particulate matters such as dusts, aggregates, sediments, and exposed soils may arise from clearing, blasting, stockpiling and increased vehicular activity on the Project site.
- Disturbing those gathering with excessive noise.

6.6.6.3 Demobilization & Restoration

6.6.6.3.1 Site Revegetation

Prior to operation, activities following construction will include demobilizing equipment and restoring the site through revegetation. This will involve restoring the riparian zone along the edge of the waterway, re-stabilizing and re-seeding exposed surfaces, and revegetating *mitigoog* (trees) and other significant plants. This will positively impact gathering by increasing possible habitat for vegetation such as *miinan* (berries) and *mashkikiwan* (medicines) allowing for the Anishinaabe to continue cultural traditions.

6.6.6.4 Operation

6.6.6.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- Increasing access to traditional lands and sources of gathering.
- Accidental spills could negatively impact water and soil quality, which could impact the abundance of *miinan* (berries) and *mashkikiwan* (medicines) consequentially decreasing gathering opportunities for the Anishinaabe.

6.6.6.4.2 Maintaining the Right-of-Way

The ongoing maintenance of the right-of-way will include removing snow, debris, and dangerous *mitigoog* (trees). Pavement maintenance such as marking and resurfacing procedures can take place. It also includes cleaning culverts and the application of herbicides to prevent plant growth on highway shoulders. Winter de-icing methods are also included such as the application of salt and sand. Potential impacts are:

- Activities like clearing brush and applying herbicides can adversely affect the long-term growth of *miinan* (berries) and *mashkikiwan* (medicines) in the area, consequently impacting the ability for the Anishinaabe to participate in gathering.

- Applying salt for controlling ice could degrade the quality of the soil and water surrounding the highway, which could in turn decrease the growth and gathering opportunities of *miinan* (berries) and *mashkikiwan* (medicines).

6.6.6.5 Summary of Mitigation Measures to Protect Gathering

The decades of damage already done to *miinan* (berries) and *mashkikiwan* (medicines) and consequentially to opportunities to access, gather, and celebrate the practice of gathering will continue to be addressed through ongoing discussions being held between the Ministry of Transportation ("MTO") and Niiwin Wendaanimok. Potential impacts to gathering can be mitigated by implementing the measures outlined in Section 6.4.1 and Section 6.4.3 to protect *miinan* (berries) and *mashkikiwan* (medicines), respectively. This should be done in combination with the Ceremonial Plan to ensure ongoing acknowledgement of this traditional practice. Efforts should be made to promote gathering as a traditional activity. MTO has agreed to supporting the development and implementation of the Ceremonial Plan and the Anishinaabe Guardians Program, which will allow Niiwin Wendaanimok to ensure compliance with the commitments being made.

Gathering *miinan* (berries) and *mashkikiwan* (medicines) is a core part of Anishinaabe culture, tradition, and identity. Gathering contributes to the overall wellbeing of the Anishinaabe as it is integrated in family, community, and sacred ceremonies. Many community members explained how gathering is important in the education of youth and ensuring they can continue such traditions into future generations. Gathering is a spiritual experience, a time for the Anishinaabe to give thanks to the land through offerings. As noted in Section 5.7.6, an Elder from Niisaachewan explained the process of offering when gathering*:*

> *Of course, they had to do the offerings, too, before you take something off the bush. Put your tobacco down, it's one of our traditional ways of taking something off the forest. No matter what, it's the thing that passes on, you have to do your offering.*
>
> *Elder, Niisaachewan, AAK Individual Interview, August 15, 2019.*

Unfortunately, community members expressed concerns that the traditional gathering of *miinan* (berries) and *mashkikiwan* (medicines) have become less common. As a result, the protection of *miinan* (berries) and *mashkikiwan* (medicines) from the impacts of future developments also protects the sacred practice of traditional gathering.

6.6.7 Gardening

Gardening has provided the Anishinaabeg with the ability to grow their own sources of food. In doing so, the Anishinaabeg have been able to provide quality food and food security to their families and communities. Gardening is largely associated with community involvement as maintenance of community gardens was a shared responsibility (AAK Group Interview, August 22, 2019). Additionally, gardening allows the Anishinaabe to connect with the soils, sustaining and strengthening cultural, traditional, and spiritual ties to the land. Community members shared that gardens often included

mandaamin (corn), *opiniig* (potatoes), *okaadaakoon* (carrots), and *bagesaanaatig* (wild plums), amongst others. Traditionally, many community gardens were located on islands known as "Garden Islands" and produce was often a commodity used in trade. However, as cottage development increased in Treaty 3 territory, the islands became desirable property. The Anishinaabeg were eventually forced to abandon the land. This was noted in Section 5.7.9 by this Elder from Washagamis Bay who recalled the loss of the gardens around the Zig Zag Islands:

> *So, the story is that they used to plant their gardens, potatoes, and all that, but in semi-isolation. So, that's how they sustained themselves. And what happens is that people started selling cottages and they were kicked out of there.*
>
> *Elder, Washagamis Bay, AAK Individual Interview, July 23, 2019.*

Increasing development in Treaty 3 territory contributes to a larger historical pattern of loss of treaty lands for the Anishinaabe. All existing developments have cumulative effects by restricting land and land use from the Anishinaabe. Garden lands and islands that belonged to the Anishinaabe been taken away and developed. This loss of access to gardens has resulted in a loss of food, loss of enjoyment, and loss of cultural tradition, largely impacting the overall wellbeing of the Anishinaabe. For these reasons, gardening must be safe-guarded and treated with respect in an effort to restore tradition and promote its continuation into future generations.

Knowledge of gardening and crops of importance to the Anishinaabe found in the Project region can be found in Section 5.7.9.

6.6.7.1 Pre-Construction

6.6.7.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. The Anishinaabeg have planted personal and communal gardens throughout Treaty 3 territory on mainland and on islands. Gardening is an activity that many Anishinaabe have depended upon for sustenance, enjoyment, and continuing cultural traditions. Potential impacts of Project staging are:

- Increasing emissions of primary pollutants from vehicular exhaust on the Project site. Primary pollutants such as carbon monoxide ("CO"), nitrogen oxides ("NOx"), volatile organic compounds ("VOCs"), as well as suspended particulate matter such as road dust, aggregates, and exposed soils from clearing and stockpiling, can all impact local *bagidanaamowin* (air) quality and pose respiratory health risks. Such risks can hinder the ability of the Anishinaabeg, notably Elders and those who may have underlying health issues, to participate in gardening in the area.

- Increasing noise from pre-construction activities can negatively impact the Anishinaabeg by disrupting gardening. Many community members expressed gardening as being an opportunity to give thanks to *Aki* (Earth) and spend quality time with family.
- Emitting odours associated with the operation of vehicles and equipment such as nitrogen dioxide and sulphur dioxide can spread outside of the Project site. This would negatively impact the Anishinaabe who may be gardening in proximity to the Project site as such emissions can irritate those sensitive to smells.

6.6.7.2 Construction

6.6.7.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment. Potential impacts are:

- Generating dust, sediments, and exposed soils from blasting can contribute to the release of particulate matter into the *bagidanaamowin* (air) and lead to health risks upon inhalation. Such risks can hinder the ability of the Anishinaabe, notably Elders and those who may have underlying health issues, to participate in gardening near the Project site.
- Increasing noise from blasting activities can negatively impact the Anishinaabeg by disrupting gardening.

6.6.7.2.2 Building the Road

The Project will involve twinning of a 6.5 km section of Highway 17. The process of building the road will involve using vehicles and equipment on site, excavating, and hauling of rock, and filling, levelling, and grading of the new highway. When needed, dust suppressants may be used. Upon completion of construction, wastes will need to be properly disposed of. Potential impacts are:

- Spilling, leaking, or leaching of chemicals applied during the construction process can contaminate aquatic, semi-aquatic, and forested habitats in the area where gardens can be placed. Such contaminants can be toxic to vegetation and diminish gardening opportunities for the Anishinaabeg. Loss of gardening opportunities can negatively impact the Anishinaabeg who rely on gardening for sustenance, enjoyment and for the continuation of cultural traditions.
- Increasing emissions of primary pollutants from vehicular exhaust on the Project site. Primary pollutants such as carbon monoxide (“CO”), nitrogen oxides (“NOx”), volatile organic compounds (“VOCs”), as well as suspended particulate matter such as road dust, aggregates, and exposed soils from clearing and stockpiling, can all impact local *bagidanaamowin* (air) and pose respiratory health risks. Such risks can hinder the ability of the Anishinaabeg, notably Elders and those who may have underlying health issues, to participate in gardening in the area.

- Emitting odours associated with the operation of vehicles and equipment such as nitrogen dioxide and sulphur dioxide can spread outside of the Project site. This would negatively impact the Anishinaabe who may be gardening within proximity to the Project site as such emissions can irritate those sensitive to smells as well as impact the attention and reaction time for humans.
- Increasing noise from construction activities can negatively impact the Anishinaabeg by disrupting gardening.

6.6.7.2.3 Relocating Utilities

Utility relocation will involve relocating a Bell underground fibre line and extending a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, drilling, and blasting along the right-of-way. Potential impacts are:

- Increasing emission of primary pollutants from vehicular exhaust on the Project site. Primary pollutants such as carbon monoxide ("CO"), nitrogen oxides ("NOx") volatile organic compounds ("VOCs"), as well as suspended particulate matter such as road dust, aggregates, and exposed soils from clearing and stockpiling, can all impact local *bagidanaamowin* (air) quality and pose respiratory health risks. Such risks can hinder the ability of the Anishinaabeg, notably Elders and those who may have underlying health issues, to participate in gardening in the area.
- Emitting odours associated with the operation of vehicles and equipment such as nitrogen dioxide and sulphur dioxide can spread outside of the Project site. This would negatively impact the Anishinaabe who may be gardening within proximity to the Project site as such emissions can irritate those sensitive to smells as well as impact the attention and reaction time for humans.
- Increasing noise from construction activities can negatively impact the Anishinaabeg by disrupting gardening.

6.6.7.3 Operation

6.6.7.3.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- Accidental spills that enter the water column could negatively impact water quality, which could impact the health and growth of planted vegetation.
- Generating suspended particulate matter from road dusts through the use of the road can negatively impact gardening activities as inhalation of such particulate matter can pose risks to respiratory health. Such risks can hinder the ability of the Anishinaabe, notably

Elders and those who may have underlying health issues, to participate in gardening near the new highway.

- Increasing emissions of primary pollutants from vehicular exhaust on the Project site. Primary pollutants such carbon monoxide ("CO"), nitrogen oxides ("NOx"), and volatile organic compounds ("VOCs") can impact local *bagidanaamowin* (air) quality and pose respiratory health risks. Such risks can hinder the ability of the Anishinaabe, notably Elders and those who may have underlying health issues, to participate in gardening near the Project site.

6.6.7.3.2 Maintaining the Right-of-Way

The ongoing maintenance of the right-of-way will include removing snow, debris, and dangerous *mitigoog* (trees). Pavement maintenance such as marking and resurfacing procedures can take place. It also includes cleaning culverts and the application of herbicides to prevent plant growth on highway shoulders. Winter de-icing methods are also included such as the application of salt and sand. Potential impacts are:

- Activities like clearing brush and applying herbicides can adversely affect the long-term growth of vegetation and water quality in the area.
- Dispersing herbicidal solutions and sprays outside of the location of application as a result of wind or natural *bagidanaamowin* (air) movement can carry outside of the right-of-way. This could decrease gardening locations and opportunities for the Anishinaabe. Additionally, movement of herbicides outside of the right-of-way can cause respiratory irritation if inhaled. Such risks can hinder the ability of the Anishinaabe, notably Elders and those who may have underlying health issues, to participate in gardening near the highway.
- Applying salt for controlling ice could degrade water quality in the area.

6.6.7.4 Summary of Mitigation Measures to Protect Gardening

Impacts to gardening can be mitigated by applying the measures outlines to protect the *bagidanaamowin* (air) as outlined in Section 6.3.1, to the soils as outlined in Section 6.4, and to the water as outlined in Section 6.5.1. These measures in combination with the Ceremonial Plan being developed by the Elders will offer ongoing acknowledgement of the many benefits that the lands, the skies, the soils, and the water provide. The Anishinaabe Guardians Program should also explore opportunities to promote gardening as a traditional activity, in addition to making sure that the commitments made by way of mitigation measures are being adhered to. MTO has agreed to supporting the development and implementation of both the Anishinaabe Guardians Program and the Ceremonial Plan.

Gardening is an activity that has allowed the Anishinaabe to grow healthy sources of food while also providing food security. Traditionally gardening has been a communal activity with families sharing gardens along islands, such as near the Zig Zag Islands and Garden Islands in Lake of the Woods. As noted in Section 5.7.9, *mandaamin* (corn), *opiniig* (potatoes), *okaadaakoon* (carrots), and *bagesaanaatig* (wild plums) could be shared, gifted, or traded with other community members. An

Elder from Shoal Lake 40 was gifted *mandaamin* (corn) seeds from an Elder as a thank you for helping with his house maintenance:

> *And this one day there, he came and gave me a bag, and he had a little garden too, he was growing corn in different places and he came and gave me some wild rice and he gave me corn. I wonder where he was growing and it's in different places. I said, "That's so nice." I really appreciated that, how he did that, and it is so touching to be given a gift from an Elder like that.*
>
> *Elder, Shoal Lake 40, AAK Individual Interview, June 12, 2019.*

Many Elders and adults in the four communities shared memories of helping their parents or grandparents with gardening. Unfortunately, these traditions have began to disappear because of development in Treaty 3 territory. An influx in cottagers and summer visitors have rendered previously isolated islands to become sought after property forcing the Anishinaabe to lose their family gardens. Historically, developments within Treaty 3 territory have contributed to the ongoing loss of Anishinaabe traditions. For these reasons, the practice of gardening deserves to be safe-guarded and treated with respect to restore tradition and promote its continuation into future generations.

6.6.8 Travel

Travel is rooted in Anishinaabe identity. For many communities, travel is often required to reach areas for hunting, trapping, *manoomin* (wild rice) picking, *miin* (berry) picking, and *mashkiki* (medicine) picking. Travel is also required to reach sacred sites and areas used for ceremonies. Travel is most closely associated with the waterways across Treaty 3 territory. An abundance of lakes, rivers, wetlands, and channels allows for access to all parts of the region. Historically, travel also occurred on foot, by dogsled, and by horse to reach areas inaccessible by water. Through extensive travel, the Anishinaabeg were able to build relationships with other communities, strengthening social, political, and economic ties. Travel is also key to the foundation of Treaty 3, as the Government of Canada needed permission from the Anishinaabeg for safe passage through their territory to establish trade relations in the West. With a strong historical component and its continued use to access traditional lands, travelling is an essential component of Anishinaabe wellbeing. The importance to the social and cultural component of travelling is exemplified by this Elder from Niisaachewan in Section 5.7.4:

> *Yeah, we traveled a lot by canoes a long time ago … You could see all the tents by the river … lived wherever they want. They did whatever they want. There were no transfers that time. There was none. Everything was good, eh. Everybody got along. It was lots of fun. Playing poker … making their own moccasins … everything like that.*
>
> *Elder, Niisaachewan, AAK Individual Interview, September 18, 2019.*

Knowledge of travelling the lands and the waterways in the Project region can be found in Section 5.7.4. Knowledge of the waters and the life they support can be found in Section 5.6. The Project site intersects

with waterways in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. There are numerous small lakes and beaver ponds in the Project region as well.

Pre-construction and construction Project activities can potentially impact the ability to travel and access important sites and areas for exercise of various activities, with consequential impacts to the wellbeing of the Anishinaabe. Potential impacts are identified in the following sections.

6.6.8.1 Pre-Construction

6.6.8.1.1 Staging

Project activities involved in staging include stripping, clearing, grubbing, stockpiling materials for future use, hauling equipment and materials to the site, and storing equipment and materials at the Project site. The Project site intersects with aquatic habitat in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. Numerous small lakes and beaver ponds are present in the Project region as well. Potential impacts include:

- Staging activities within the vicinity of the Whiteshell river may impede access to the navigable waterway. This may negatively impact the Anishinaabe who use the river for travel by canoe, consequently affecting their wellbeing.
- Staging of equipment and vehicles on the roadside during staging may create excess traffic, impeding access to portage routes and boat launches. This may negatively impact the Anishinaabe who rely on these routes and boat launches to reach areas for resource harvesting and cultural areas, consequently affecting their wellbeing.
- Operating equipment on access roads during staging may create excess traffic, impeding access to portage routes and boat launches.

6.6.8.2 Construction

6.6.8.2.1 Blasting

Blasting will be required to penetrate and break rock for excavation at the Project site. Blasting will entail the controlled use of explosives to clear the proposed site for road construction. Blasting is expected to occur along the full extent of the proposed highway alignment and will intersect with aquatic habitat in five major locations: at four tributaries of the Whiteshell River and at one tributary of Baubee Lake leading to the Whiteshell River. Potential impacts include:

- Staging of equipment and vehicles on the roadside during blasting may create excess traffic, impeding access to portage routes and boat launches.

6.6.8.2.2 Installing Culverts & Watercourse Realignment

12 centreline culverts are present within the Project area. Eight culverts will be replaced, and three existing culverts will be retained. 15 new culverts will be installed along the proposed right-of-way.

Culvert installation and replacement may include cofferdam installation and will include dewatering procedures. Watercourse realignment will occur at four culvert sites. The majority of the watercourses and waterbodies throughout the project area and along the proposed alignment, are small, warmwater tributaries or wetlands that ultimately drain to larger systems. Potential impacts are:

- Staging of equipment and vehicles on the roadside during culvert installation and removal may create excess traffic, impeding access to portage routes and boat launches.

6.6.8.2.3 Building the Road

The Project will involve the twinning of a 6.5 km section of Highway 17. The construction process will involve excavating and hauling rock, filling, leveling, and grading the new highway. Construction waste will be generated during these procedures. The Project site intersects with aquatic habitat in six major locations: at four tributaries of the Whiteshell River, at one tributary of Baubee Lake leading to the Whiteshell River, and at the Whiteshell River. Numerous small lakes and beaver ponds are present in the Project region as well. Potential impacts are:

- Construction activities within the vicinity of the Whiteshell River may impede access to the navigable water. This may negatively impact the Anishinaabe who use the river for travel by canoe, consequently affecting their wellbeing.
- Staging of equipment and vehicles during construction may create excess traffic, impeding access to portage routes and boat launches.
- Operating equipment on access roads during construction may create excess traffic, impeding access to portage routes and boat launches.

6.6.8.2.4 Relocating Utilities

Relocating utilities will involve the relocation of a Bell underground fibre line and the extension of a hydro line. Relocation may involve stripping, clearing, grubbing, trenching, drilling, and blasting along the right-of-way. The Project site intersects with aquatic habitat in five major locations: at four tributaries of the Whiteshell River and at one tributary of Baubee Lake leading to the Whiteshell River. Numerous small lakes and beaver ponds are present in the Project region as well. Potential impacts are:

- Construction activities involved with relocating utilities within the vicinity of the Whiteshell river may impede access to the navigable water. This may negatively impact the Anishinaabe who use the river for travel by canoe, consequently affecting their wellbeing.
- Staging of equipment and vehicles during utility relocation region may create excess traffic, impeding access to portage routes and boat launches.
- Operating equipment on access roads during utility relocation may create excess traffic, impeding access to portage routes and boat launches.

6.6.8.3 Demobilization & Restoration

6.6.8.3.1 Site Revegetation

Demobilizing equipment seasonally and at Project completion will include shutting down the Project site and restoring Project construction areas to their former states. This will positively impact travel by removing construction staging and traffic from the Project.

6.6.8.4 Operation

6.6.8.4.1 Using the New Highway

The new highway will continue to serve as a main transportation and trade corridor across Canada and is designed to accommodate projected increases in traffic volumes. Although the new highway is expected to improve road safety, it does not eliminate the risk of collisions and spills. Potential impacts are:

- The new highway may increase access to waterways used for travel, positively impacting the Anishinaabe.

6.6.8.5 Summary of Mitigation Measures to Protect Travel

The following measures were noted by community members as mitigation measures for disruption to travel:

- Installing appropriate signage showcasing the seven teachings.
- Installing signage that shows the traveller where they are in relation to treaty territory.
- Developing and implementing traffic management plans to avoid disruption to access roads used to access hunting, trapping, fishing, gathering, and ceremonial sites.
- Providing advance notification of potential disruptions to traffic.
- Developing and implementing a Ceremonial Plan with the elders to offer ongoing acknowledgement of safe passage through Anishinaabe lands.

While MTO has agreed to supporting the development of a Ceremonial Plan, discussions on appropriate accommodation for passage through Anishinaabe territory will continue under a Memorandum of Understanding signed in February 2020.

Throughout time, travelling has allowed the Anishinaabe to access traditional areas used for ceremonies, resources harvesting, and to visit sacred sites. As well, travelling the Treaty 3 territory has allowed for relationship building with other communities. As methods of travel have changed, its purpose of accessing traditional areas has remained constant. The ability to travel has contributed to Anishinaabe identity and the ability to connect with the lands and the waters. Knowledge of travel routes has been passed on through families and communities.

An Elder from Shoal Lake 40 shared a story in Section 5.7.4 that embodied this:

I remember my mom telling me there weren't that many blueberries along here in this area. So, they had to travel all the way to a place called Ena, Ontario … from Shoal Lake, travel the river system, creek systems. Falcon Lake, over the highways, and then follow the lake systems until you got to Ena, by Redditt.

Elder, Shoal Lake 40, AAK Group Interview, May 23, 2019.

7 Path Forward

WAUZHUSHK ONIGUM
NIISAACHEWAN
WASHAGAMIS BAY
SHOAL LAKE 40

narratives

7 Path Forward

Over the past several months, Niiwin Wendaanimok has continued to have discussions with MTO. All discussions have been guided by the *Manito Aki Inakonigaawin* (the Great Earth Law). While we have come a long way, we still have a long way to go. Niiwin Wendaanimok confirmed a Memorandum of Understanding (MOU) with the Government of Ontario on February 5th, 2020. Leadership from the four Nations, along with Minister of Transportation Caroline Mulroney and Kenora MPP Greg Rickford, signed the MOU in ceremony in the Wauzhushk Onigum Roundhouse. Through this sacred ceremony, participating governments confirmed their relationship under *Manito Aki Inakonigaawin* and committed to a respectful, collaborative working relationship. The MTO has agreed to observance of the *Manito Aki Inakonigaawin*, which forms a basis for a Treaty-based relationship with the Crown, in exchange for safe passage through Anishinaabe lands.

While the mitigation measures noted in this report offer a starting point for some of the impacts that will occur, there are outstanding ongoing and historical impacts that require appropriate accommodation. The MOU will continue to guide both parties in this important relationship. As such this document does not represent the consent of the Anishinaabeg. It serves as one part of the overall decision-making framework as informed by the *Manito Aki Inakonigaawin*.

At the signing ceremony for the MOU on February 5, 2020, moccasins were given to the representatives of the Government of Ontario, along with an important reminder and commitment to walk together. As reminded several times prior to that signing ceremony and after:

> *"We gave you moccasins. It is a reminder to walk together. If you get ahead of us, you wait for us. If we get ahead of you, we wait for you."*
>
> *Elder, Wauzhushk Onigum, Meeting with the Crown, March 4, 2020.*

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9 Anishinaabemowin Glossary

English	Anishinaabemowin (singular)	Anishinaabemowin (plural)	Alternative Anishinaabemowin Spelling
Air	*Bagidanaamowin*		
Acorn	*Mitigomin*	*Mitigominan*	
American Bittern	*Mooshka'Osi*	*Mooshka'Osiwag*	
American Elk	*Omashkooz*	*Omashkoozoog*	
American Merganser	*Anzig*	*Anzigwag*	
Animal	*Awensi*	*Aya'Aawish*	
Ant	*Enigoons*	*Enigoonsag*	
Auger	*Bagonezigwa'Igan*		
Bald Eagle	*Migizi*	*Migiziwag*	
Bald Eagle Feather	*Migiziwigwan*	*Migiziwigwanag*	
Balsam Fir	*Zhingob*	*Zhingobiig*	
Bass, Largemouth	*Ashigan*	*Ashiganag*	
Bass, Smallmouth	*Noosa'Owesi*	*Noosa'Owesiwag*	
Bat	*Apakwaanaajiinh*	*Apakwaanaajiinyag*	
Beaver	*Amik*	*Amikwag*	
Bee	*Aamoo*	*Amoog*	
Belted Kingfisher	*Ogiishkimanisii*	*Ogiishkimanisiig*	
Berry	*Miin*	*Miinan*	
Birch			*Wiigwaasi-Miitig*
Birch, White	*Wiigwaas*	*Wiigwaasag*	
Bird	*Bineshiinh*	*Bineshiinyag*	*Bineshii*
Black Ash	*Baapaagimaak*	*Baapaagimaakoog*	*Aagimaak*
Black Bear	*Makwa*	*Makwag*	
Black Crappies	*Gidagagwadaashi*	*Gidagagwadaashiwag*	
Black-Capped Chickadee	*Gijigijigaaneshiinh*	*Gijigijigaaneshiinyag*	
Blue Heron	*Zhashagi*	*Zhashagiwag*	
Blue Jay	*Diindiisi*	*Diindiisiwag*	
Blueberry	*Miin*	*Miinan*	
Brown Bullhead	*Awaazisii*	*Awaazisiig*	
Buck	*Ayaabe*	*Ayaabeg*	
Bull Moose	*Naabe-Mooz*	*Naabe-Moozoons*	
Burbot	*Mizay*	*Mizayag*	
Canada Goose	*Nika*	*Nikag*	
Canada Jay	*Gwiingwiishi*	*Gwiingwiishiwag*	
Catfish	*Maanameg*	*Maanamegwag*	*Mizi*
Cedar	*Giizhik*		*Kiishkaandak* (as a medicine)
Cedar, Eastern White	*Giizhik*	*Giizhikag*	
Cedar, Red	*Miskwaawaak*	*Miskwaawaakwag*	
Chipmunk	*Agongos*	*Agongosag*	
Choke Cherry	*Ookwemin*	*Ookweminan*	*Asasaweminagaawanzh*
Cisco	*Odoonibiins*	*Odoonibiinsag*	
Clam/Mussel	*Es*	*Esag*	
Common Loon	*Maang*	*Maangwag*	
Common Raven	*Gaagaagi*	*Gaagaagiwag*	*Kaagaagi*
Corn	*Mandaamin*	*Mandaaminag*	
Cow Moose	*Noozhe-Mooz*	*Noozhe-Moozoons*	
Crayfish	*Ashaageshiinh*	*Ashaageshiinhyag*	
Deer Clan	*Wawasheshshe*		
Deer Hide	*Waawaashkeshiwayaan*	*Waawaashkeshiwayaanag*	
Deer Meat	*Waawaashkeshiwi-Wiiyaas*		
Doe	*Oniijaaniw*	*Oniijaaniwag*	
Dragonfly	*Oboodashkwaanishiinh*	*Oboodashkwaanishiinyag*	
Drum	*Dewe'Igan*	*Dewe'Iganag*	
Duck	*Zhiishiib*	*Zhiishiibag*	
Duck (Female)/Hen	*Noozheshib*	*Noozheshibag*	
Duck (Male)/Drake	*Zhiishiibag*	*Zhiishiibag*	
Earth	*Aki*		
Fawn	*Gidagaakoons*	*Gidagaakoonsag*	
Fish	*Giigoonh*	*Giigoonyag*	*Giigooh*
Fishing with a net	*Bagida'Wewin*		
Fishing with a rod/hook and line fishing	*Wewebanaabii*		
Fishing Hook/Fishing Pole	*Wewebanaabaan*	*Wewebanaabaanan*	*Migiskanaak*
Four sacred medicines		*Gichitwaa Mashkikiwan*	
Frog	*Omagakii*	*Omagakiig*	
Grand Chief	*Ogichidaa*		
Grand Medicine Society	*Midewiwin*		

Grandmother	*Nokomis*		
Grey Wolf	*Ma'lingan*	*Ma'linganag*	*Mah'lingan*
Groundhog	*Akakojiishag*		
Grouse	*Bine*		*Partridge;*
Gull	*Gayaashk*	*Gayaashkwag*	
Hawk	*Gekek*	*Gekekwag*	*Gaakaabishii*
Hawk, Broad-Winged	*Broad-Winged Gekek*	*Broad-Winged Gekekwag*	
Helper	*Oshkaabewis*		
Hole in the Sky	*Paagonekiizhig*		
Insect	*Manidoons*	*Manidoonsag*	
Island	*Minis*	*Minisi*	
Lake Sturgeon	*Name*	*Namewag*	
Lake Trout	*Namegos*	*Namegosag*	
"Listen"	*Biiziindun*		
Leech	*Zagaskway*	*Zagaskwayag*	*Zagaskwaajime; Ozagaskwaajime*
Maple	*Aninaatig*	*Aninaatigoog*	
Medicine	*Mashkiki*	*Mashkikiwan*	
Minnows	*Giigoozens*	*Giigoozensag*	
Mink	*Zhaangweshi*	*Zhaangweshiwag*	
Mole	*Nenaapaajinikesi*	*Nenaapaajinikesiwag*	
Moose	*Mooz*	*Moozoog*	*Moonz*
Moose Antler	*Moozweshkan*	*Moozweshkanag*	
Mouse	*Waawaabiganoojiinh*	*Waawaabiganoojiinyag*	
Muskellunge	*Maashkinoozhe*	*Maashkinoozheg*	
Muskrat	*Wauzhushk*	*Wauzhushkwag*	
Muskrat (Female)	*Noozhezhashk*	*Noozhezhashkoog*	
Muskrat (Male)	*Naabezhashk*	*Naabezhashkoog*	
Net (For Fishing)	*Asab*	*Asabiig*	
Naming Ceremony	*Waawiindaasowinan*		
Northern Lights	*Waussnodae*		
Northern Pike/Jackfish	*Ginoozhe*	*Ginoozheg*	
Oak	*Mitigomizh*	*Mitigomizhiig*	
Original Clans	*Ototaimimaug*		
Osprey	*Biijigigwane*	*Biijigigwaneg*	
Otter	*Nigig*	*Nigigwag*	
Owl	*Gookooko'Oo*	*Gookooko'Oog*	*Kookooko'Oo*
Owl, Boreal	*Boreal Gookooko'Oo*	*Boreal Gookooko'Oog*	
Owl, Great Gray	*Great Gray Gookooko'Oo*	*Great Gray Gookooko'Oog*	
Owl, Northern Hawk	*Northern Hawk Gookooko'Oo*	*Northern Hawk Gookooko'Oog*	
Owl, Northern Saw-Whet	*Northern Saw-Whet Gookooko'Oo*	*Northern Saw-Whet Gookooko'Oog*	
Paypom Treay/Sacred Paper	*Manitoo Mazina'igan*		
Perch			*Ashigan*
Perch, Yellow	*Asaawe*	*Asaaweg*	
Pin Cherry	*Bawa'Iminaan*	*Bawa'Iminaanan*	
Pine	*Zhingobiiwaatig*	*Zhingobiiwaatigoog*	*Zhingwaak*
Pine, Eastern White	*Biisaandago-Zhingwaak*	*Biisaandago-Zhingwaakwag*	*Bawa'Imnagaawanzh*
Pine, Jack	*Okikaandag*	*Okikaangagoog*	*Wakikaandag*
Pine, Red	*Wenda-Zhingwaak*	*Wenda-Zhingwaakwag*	
Pipe	*Opawaagan*	*Opwaaganag*	
Poplar			*Azaadi*
Poplar, Balsam	*Maanazaadi*	*Maanazaadiwag*	
Porcupine	*Gaag*	*Gaagwag*	
Pow Wow	*Jiingtamok*		
Rabbit/Hare	*Waabooz*	*Waaboozoog*	
Raspberry	*Miskomin*	*Miskominag*	
Raccoon	*Esiban*	*Esibanag*	
Red Fox	*Waagosh*	*Waagoshwag*	
Ritual Of The Dead	*Pagidaendijigewin*		
Rock	*Asin*	*Asiniig*	
Root of a Lilypad	*Akandamoo*	*Akandamoog*	
Sacred Earth Law, Great Earth Law	*Manito Aki Inakonigaawin*		
Sage	*Mashkodewashk*	*Mashkodewashkoon*	*Mashkotewashk*
Sasquatch	*Sabe*		
Scoop Net	*Gwaaba'Waagan*	*Gwaaba'Waaganag*	
Setting A Net Under The Ice (Using An Ice Jigger)	*Ziibaaskobijige*		
Seven Grandfathers		*Niizhwaaswi Mishomis*	

Seven Sacred Teachings	*Niizhwaaswi Gagiikwewin*		
Skunk	*Zhigaag*	*Zhigaagwag*	
Sky Woman	*Gizhigookwe*		
Smudging Ceremony	*Nookweziganoon*		
Snail	*Biimiskodisii*	*Biimiskodisiig*	
Snowshoe Hare	*Waabooz*	*Waaboozoog*	
Spear	*Anit*	*Anitiins*	
Spiritual Beings	*Manitou*		*Manidoo (sing) Manitoog (pl)*
Spruce Roots	*Waadabiig*		
Spruce, Black	*Zesegaandag*	*Zesegaandagoog*	
Spruce, White	*Gaawaandag*	*Gaawaandagoog*	*Mina'I (sing); Mina'Igoog (pl)*
Squirrel	*Ajidamoo*	*Ajidamoog*	
Stewardship	*Bimiikamaagewin*		
Sunfish	*Agwadaash*	*Agwadaashiwag*	
Swan	*Waabizii*	*Waabiziig*	
Sweat Lodge	*Madoodiswan*	*Madoodiswanan*	*Madoodison*
Sweat Rocks			*Kimishoomisinaakoga*
Sweet Flag	*Wiikenh*	*Wiikenyag*	
Sweet Flag Leaves	*Aniibiish*	*Aniibiishan*	
Sweet Flag Roots	*Ojiibik*	*Ojiibikan*	
Sweet Grass	*Wiingashk*	*Wiingashkoon*	
Tamarack	*Mashkiigwaatig*	*Mashkiigwaatigoog*	
The Clan System	*Odoidaymiwan*		
The Creator or Great Spirit	*Kizhe Manitou*		*Kitche Manitou*
Thunderbird	*Animikii*	*Animikiig*	
Tobacco	*Asemaa*	*Asemaans*	
Tobacco Offering	*Peendaukoodjigewin*		
Totem/Clan	*Ndotem*		
Tree	*Mitig*	*Mitigoog*	
Trembling Aspen	*Trembling Aspen*	*Azaadi*	*Azaadiwag*
Turkey		*Gichi-Binewag*	
Turkey Vulture	*Wiinaange*	*Wiinaangeg*	
Turtle	*Mishiikenh*	*Mishiikenyag*	
Turtle Island	*Mikinaak Minis*		
Turtle Shell	*Emikwaan*		
Turtle, Snapping	*Mikinaak*	*Mikinaakwag*	
Turtle, Western Painted	*Miskwaadesi*	*Miskwaadesiwag*	
Walleye	*Ogaa*	*Ogaawag*	*Ogaanh*
Warbler, Yellow	*Ozaawibineshi*	*Ozaawibineshiinyag*	
Water	*Nibi*	*Nibiing*	
Waterdrum	*Mitigwagik*		
White Sucker	*Namebin*	*Namebinag*	
Whitefish	*Adikameg*	*Adikamegwag*	
White-Tailed Deer	*Waawaashkeshi*	*Waawaashkeshiwag*	
Wild Mallard	*Ininishiib*		
Wild Rice	*Manoomin*		
Willow	*Oziisigobiminzh*	*Oziisigobiminzhiig*	
Willow, Red	*Miskwaabiimizh*	*Miskwaabiimizhiig*	*Miskwaabiimag*
Woodland Caribou	*Adik*	*Adikwag*	
Woodpecker	*Baapaase*	*Baapaaseg*	*Paapaase*
Woodpecker, Hairy	*Hairy Baapaase*	*Hairy Baapaaseg*	
Woodpecker, Pileated	*Meme*	*Memeg*	
Worm	*Moose*	*Mooseg*	

APPENDICES

APPENDIX 1: MAPS

Map 1: Boundaries of Treaty #3 in Relation to Mikinaak Minis (Turtle Island) and Canada

LEGEND

Nation-to-Nation Treaties of Canada (Pre-1975)

- Treaty #3
- Nation-to-Nation Treaties (Pre-1975)

Mikinaak Minis (Turtle Island)

- Mikinaak Minis
- Canada

0 250 500 1,000 1,500 km

North America Lambert Conformal Conic 1:25,000,000

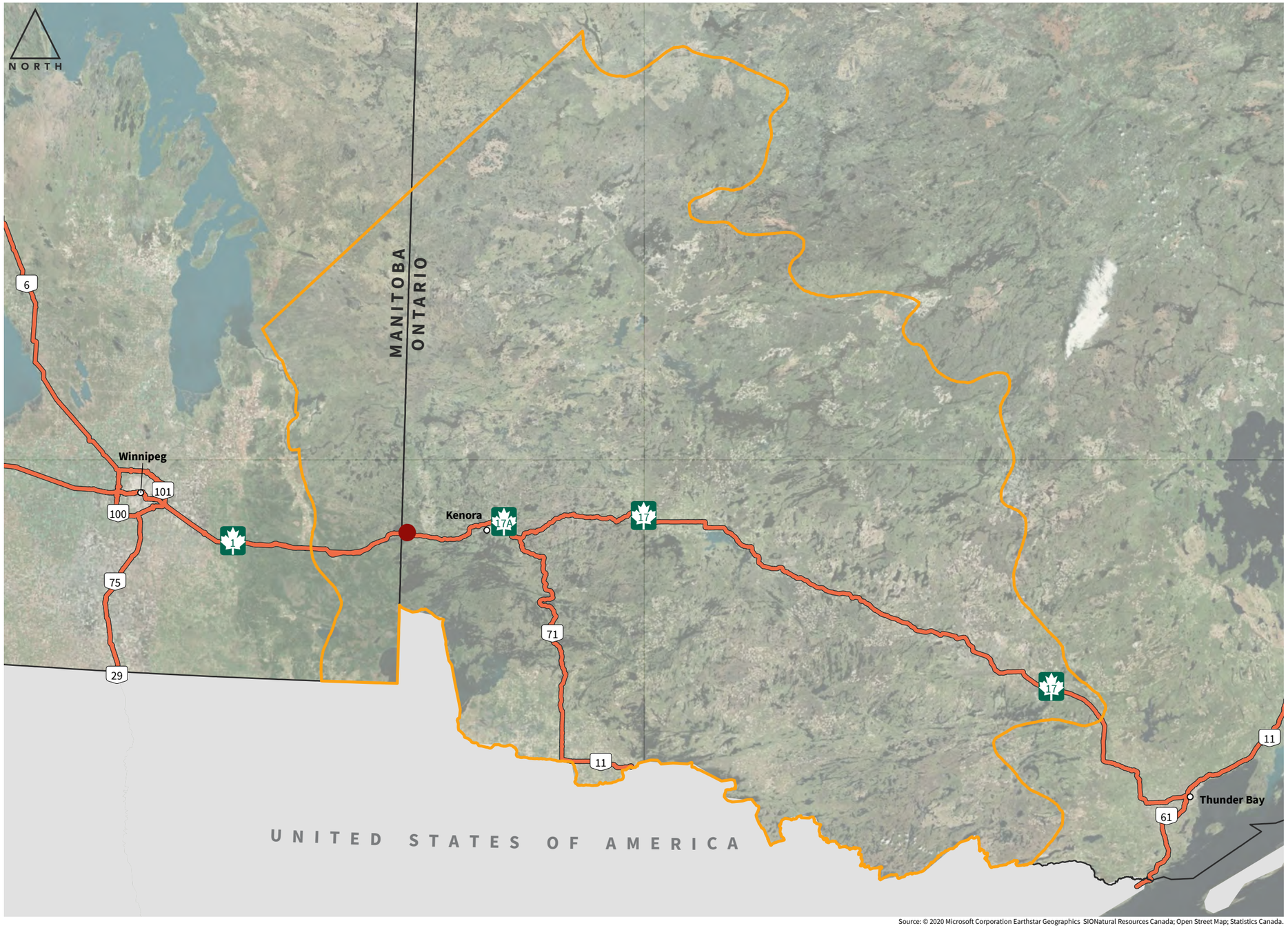
Source: Historical First Nations Treaties in Canada from 1725-1930, Natural Resources Canada; The Wyoming Student Atlas Online, University of Wyoming; World Administrative Boundaries, ESRI.

Map 01: Boundaries of Treaty #3 in Relation to *Mikinaak Minis* (Turtle Island) and Canada

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives

Map 2: Proposed Phase 1 Twinning of the TransCanada Highway in Treaty 3



Source: © 2020 Microsoft Corporation Earthstar Geographics SIONatural Resources Canada; Open Street Map; Statistics Canada.

LEGEND

Project

Proposed Project in Treaty 3

Administrative Boundaries

Treaty #3

Roads

Primary Highway

0 25 50 100 km

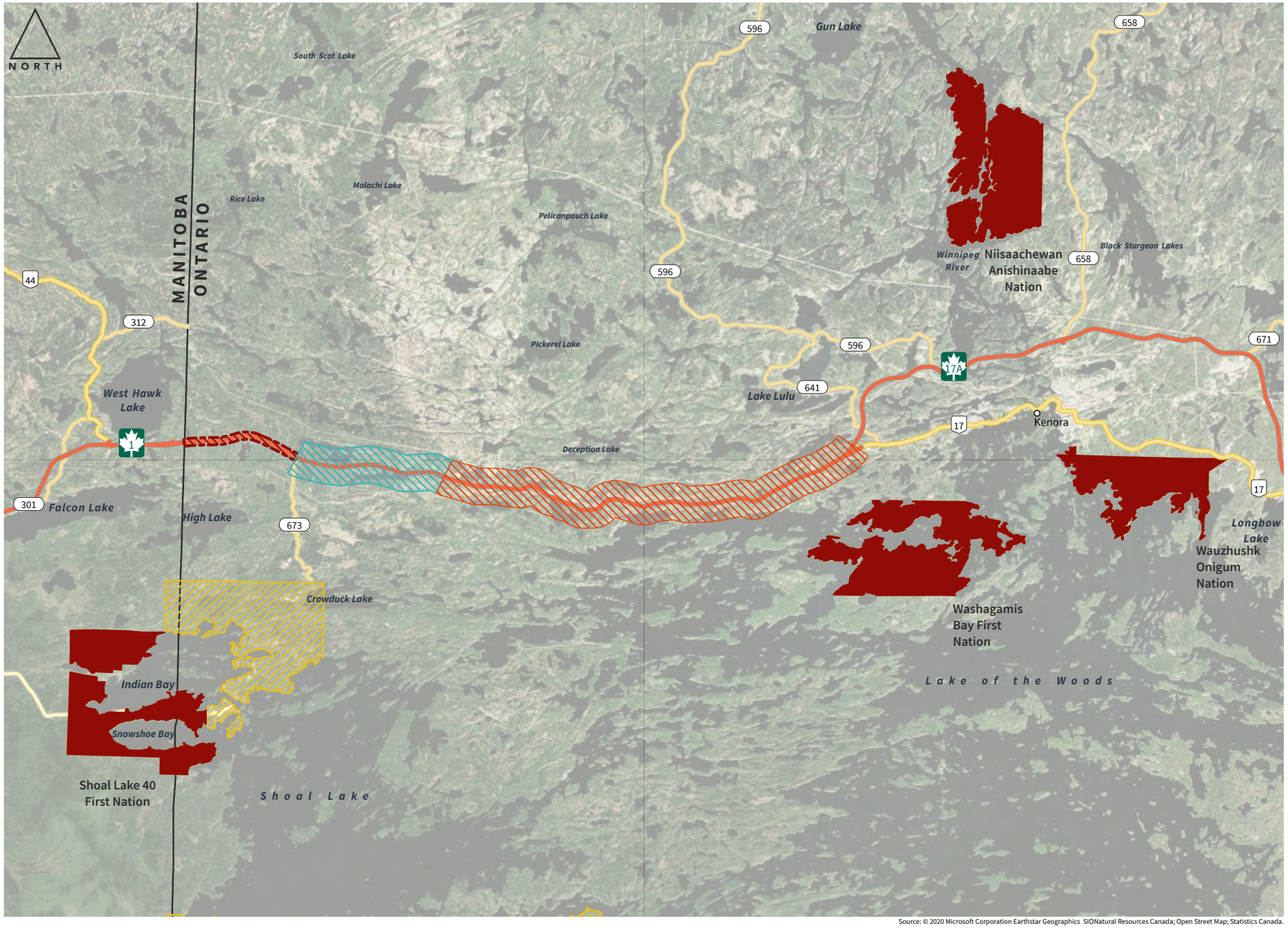
NAD 1983 UTM Zone 15N 1:2,250,000

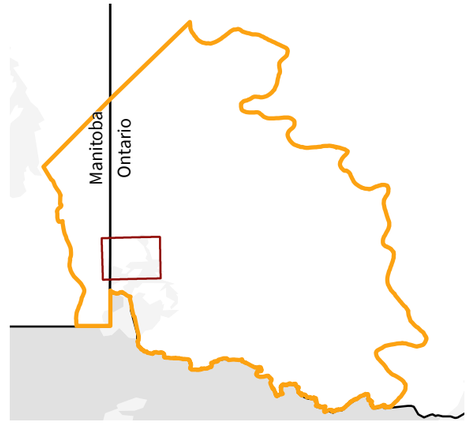
Map 02 - Proposed Phase 1 Twinning of the TransCanada Highway in Treaty 3

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
NIISAACHEWAN
SHOAL LAKE 40

narratives

Map 3: Proposed Corridors for Phases 1, 2, and 3 of the Twinning of the TransCanada Highway





LEGEND

Phase Boundaries
- Phase 1
- Future Phase 2
- Future Phase 3

Administrative Boundaries
- Niiwin Wendaanimok Nations
- Indigenous Reserve Territory
- Treaty #3

Roads
- Primary Highway
- Secondary Highway
- Tertiary Highway

Provinces of Canada

0 2.5 5 10 15 km

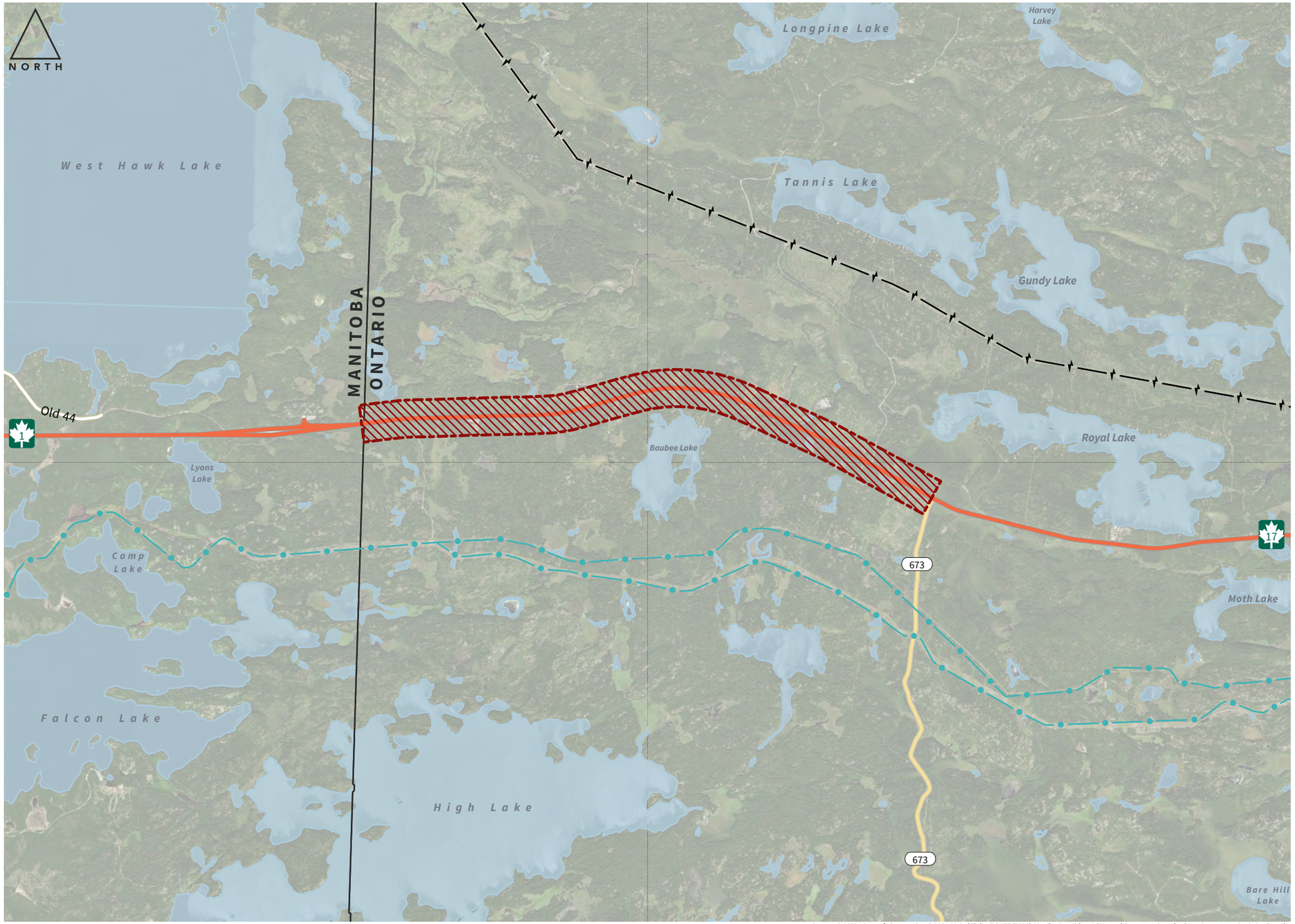
NAD 1983 UTM Zone 15N 1:225,000

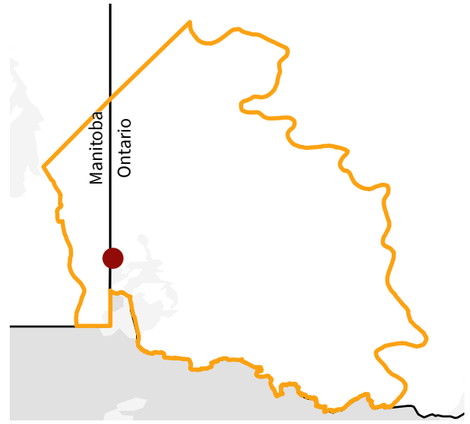
Source: © 2020 Microsoft Corporation Earthstar Geographics SIONatural Resources Canada; Open Street Map; Statistics Canada.

Map 03 - Proposed Corridors for Phases 1, 2, and 3 of the Twinning of the TransCanada Highway

narratives

Map 4: Proposed Location for Phase 1 of the Twinning of the TransCanada Highway





LEGEND

Project
- Phase 1 Corridor

Administrative Boundaries
- Treaty #3

Map Features
- Existing Power Line Corridor
- Existing Pipeline Corridor

Roads
- Primary Highway
- Tertiary Highway
- Regional Road

0 250 500 1,000 1,500 2,000 m

NAD 1983 UTM Zone 15N 1:44,565

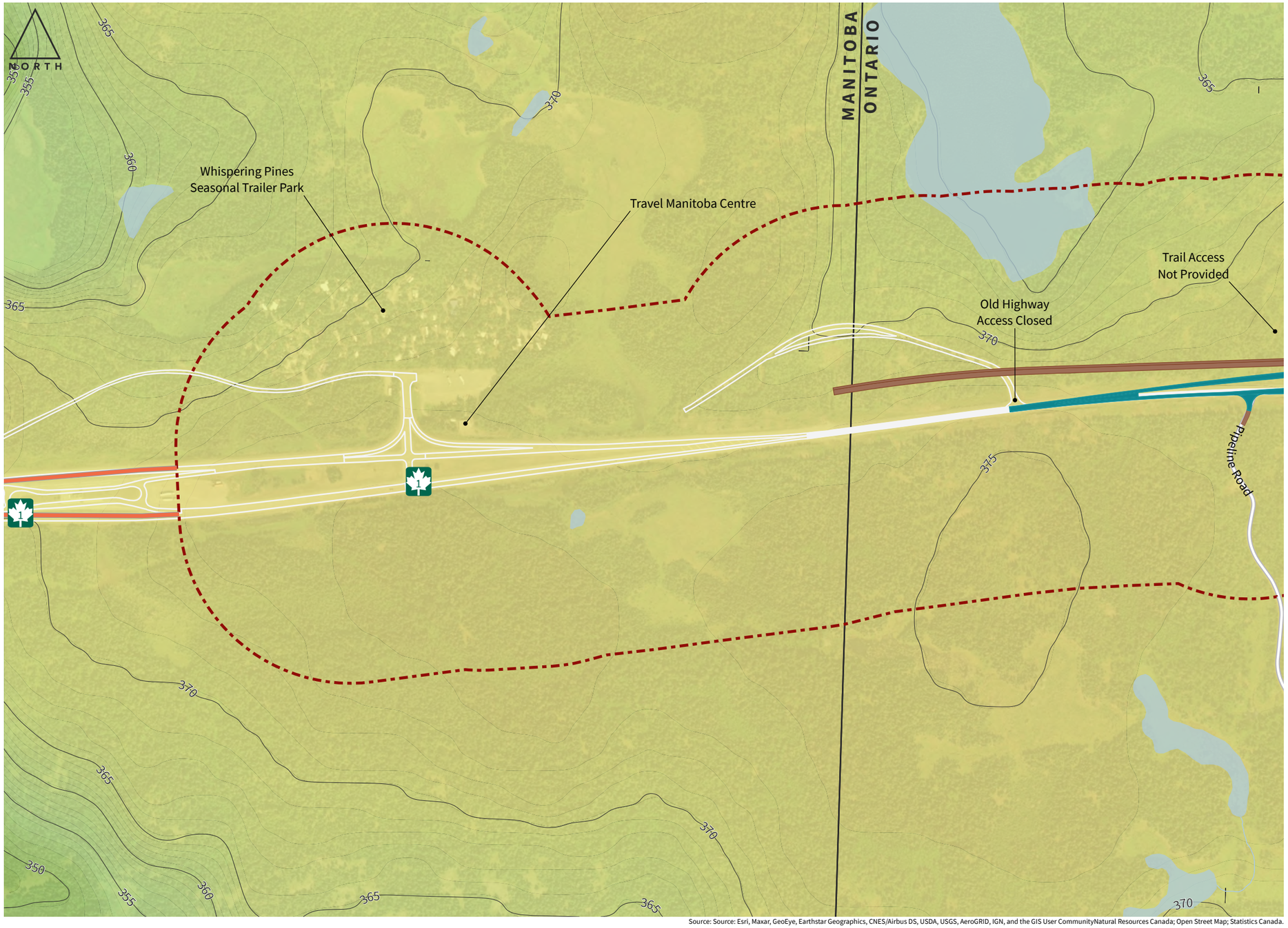
Source: © 2020 Microsoft Corporation © 2020 DigitalGlobe ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

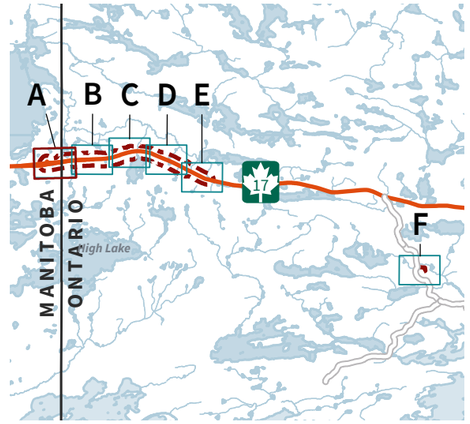
Map 04 - Proposed Location for Phase 1 of the Twinning of the TransCanada Highway

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives

Map 5: Elevation for Phase 1 of the TransCanada Highway Twinning Project





LEGEND

Proposed Project

- Project Site
- Proposed Road Surface
- Proposed Gravel Surface
- Existing Road Surface
- Treaty #3

Roads

- Primary Highway
- Regional Road
- Local Road

Elevation Profile

METRES ABOVE SEA LEVEL

323 m

414 m

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

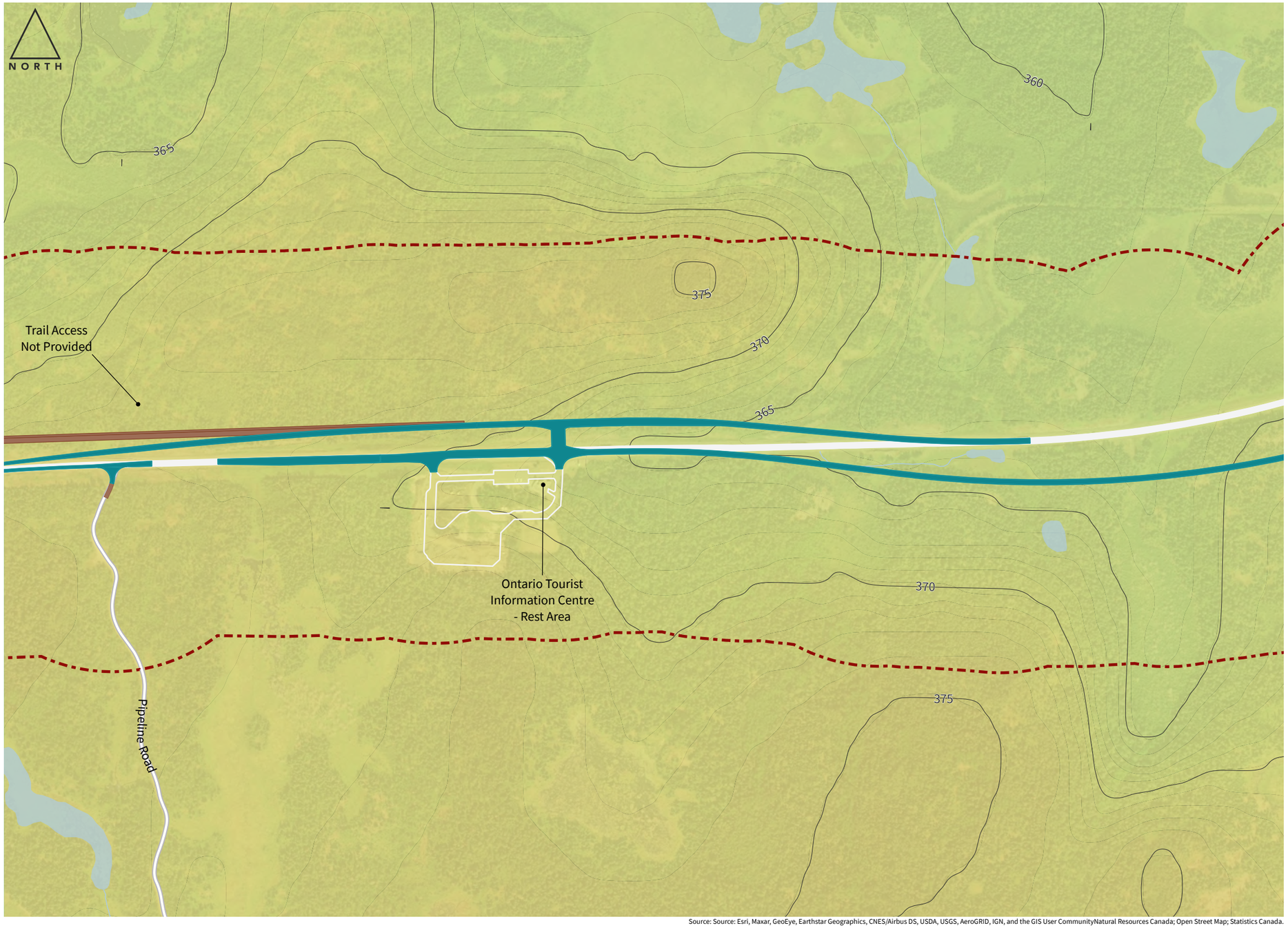
Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User CommunityNatural Resources Canada; Open Street Map; Statistics Canada.

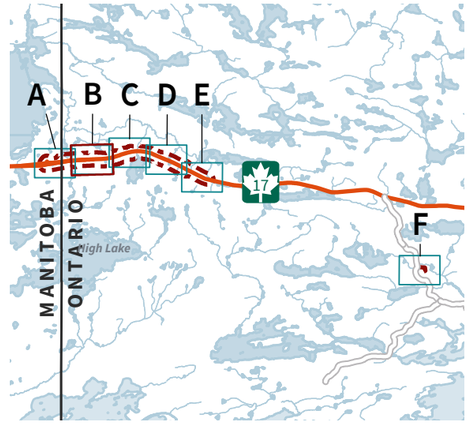
Map 5.1 - Elevation for Phase 1 of the TransCanada Highway Twinning Project

Map 1 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives





LEGEND

Proposed Project

- Project Site
- Proposed Road Surface
- Proposed Gravel Surface
- Existing Road Surface
- Treaty #3

Roads

- Primary Highway
- Local Road

Elevation Profile

METRES ABOVE SEA LEVEL

323 m

414 m

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

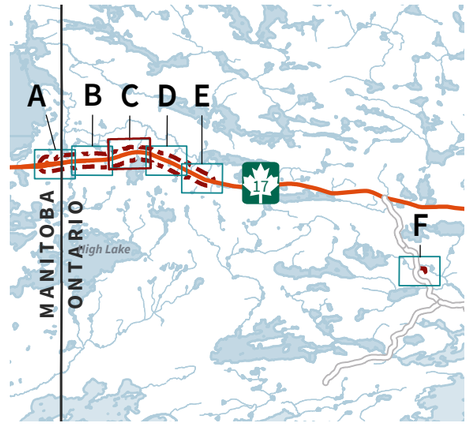
Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User CommunityNatural Resources Canada; Open Street Map; Statistics Canada.

Map 5.2 - Elevation for Phase 1 of the TransCanada Highway Twinning Project

Map 2 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives



LEGEND

Proposed Project

- Project Site
- Proposed Road Surface
- Existing Road Surface
- Treaty #3

Roads

- Primary Highway
- Local Road

Elevation Profile

METRES ABOVE SEA LEVEL

323 m

414 m

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

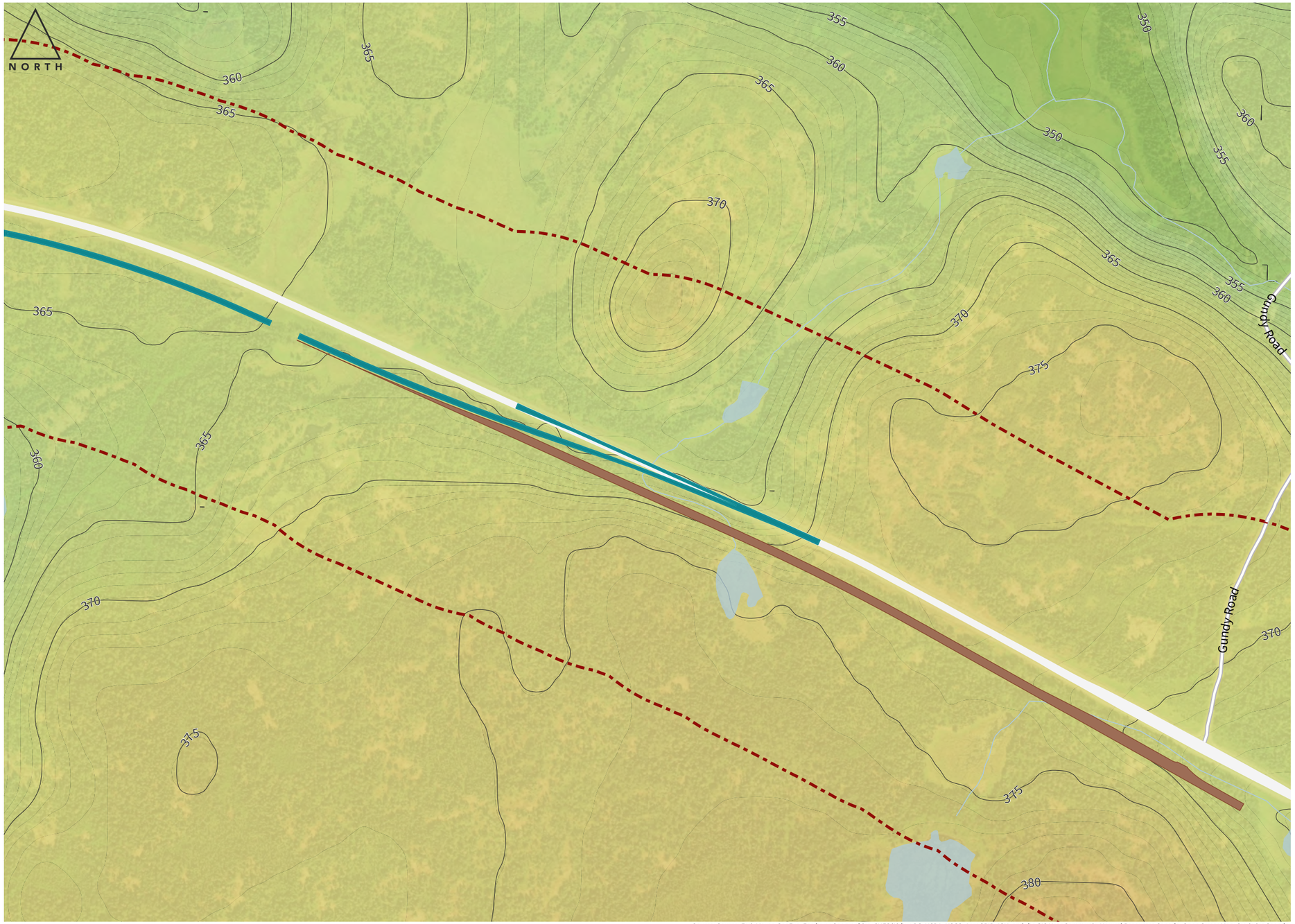
Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User CommunityNatural Resources Canada; Open Street Map; Statistics Canada.

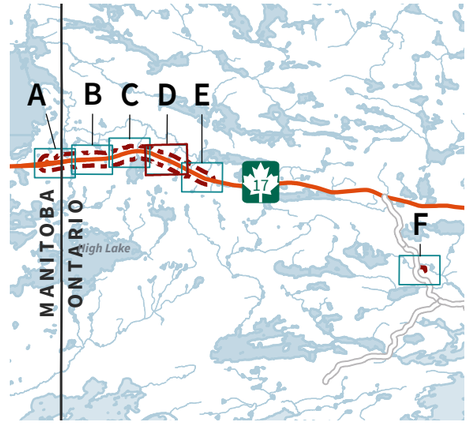
Map 5.3 - Elevation for Phase 1 of the TransCanada Highway Twinning Project

Map 3 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives





LEGEND

Proposed Project

- Project Site
- Proposed Road Surface
- Proposed Gravel Surface
- Existing Road Surface
- Treaty #3

Roads

- Primary Highway
- Local Road

Elevation Profile

METRES ABOVE SEA LEVEL

323 m

414 m

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

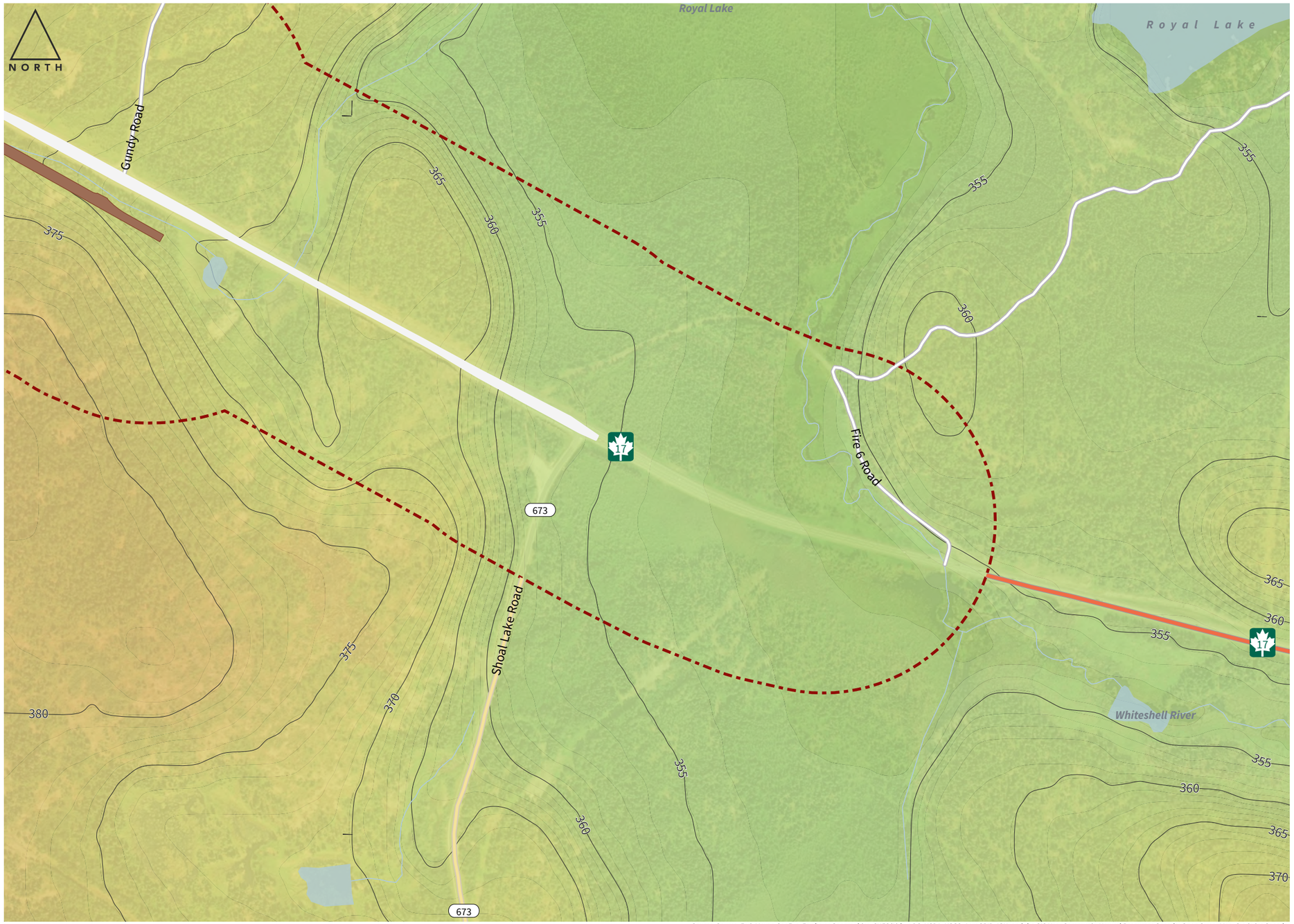
Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User CommunityNatural Resources Canada; Open Street Map; Statistics Canada.

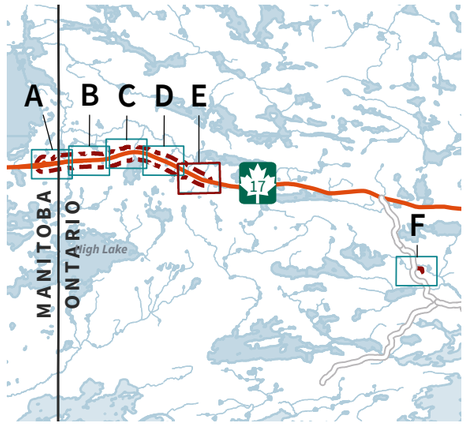
Map 5.4 - Elevation for Phase 1 of the TransCanada Highway Twinning Project

Map 4 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives





LEGEND

Proposed Project

- Project Site
- Proposed Gravel Surface
- Existing Road Surface
- Treaty #3

Roads

- Primary Highway
- Tertiary Highway
- Local Road

Elevation Profile

METRES ABOVE SEA LEVEL

323 m

414 m

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

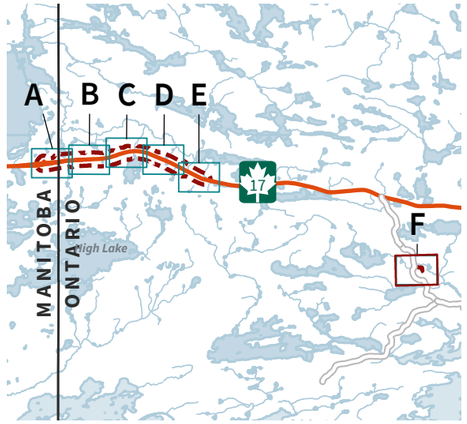
Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User CommunityNatural Resources Canada; Open Street Map; Statistics Canada.

Map 5.5 - Elevation for Phase 1 of the TransCanada Highway Twinning Project

Map 5 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives



LEGEND

Proposed Project

Project Site

Treaty #3

Roads

Local Road

Elevation Profile

METRES ABOVE SEA LEVEL

323 m

414 m

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User CommunityNatural Resources Canada; Open Street Map; Statistics Canada.

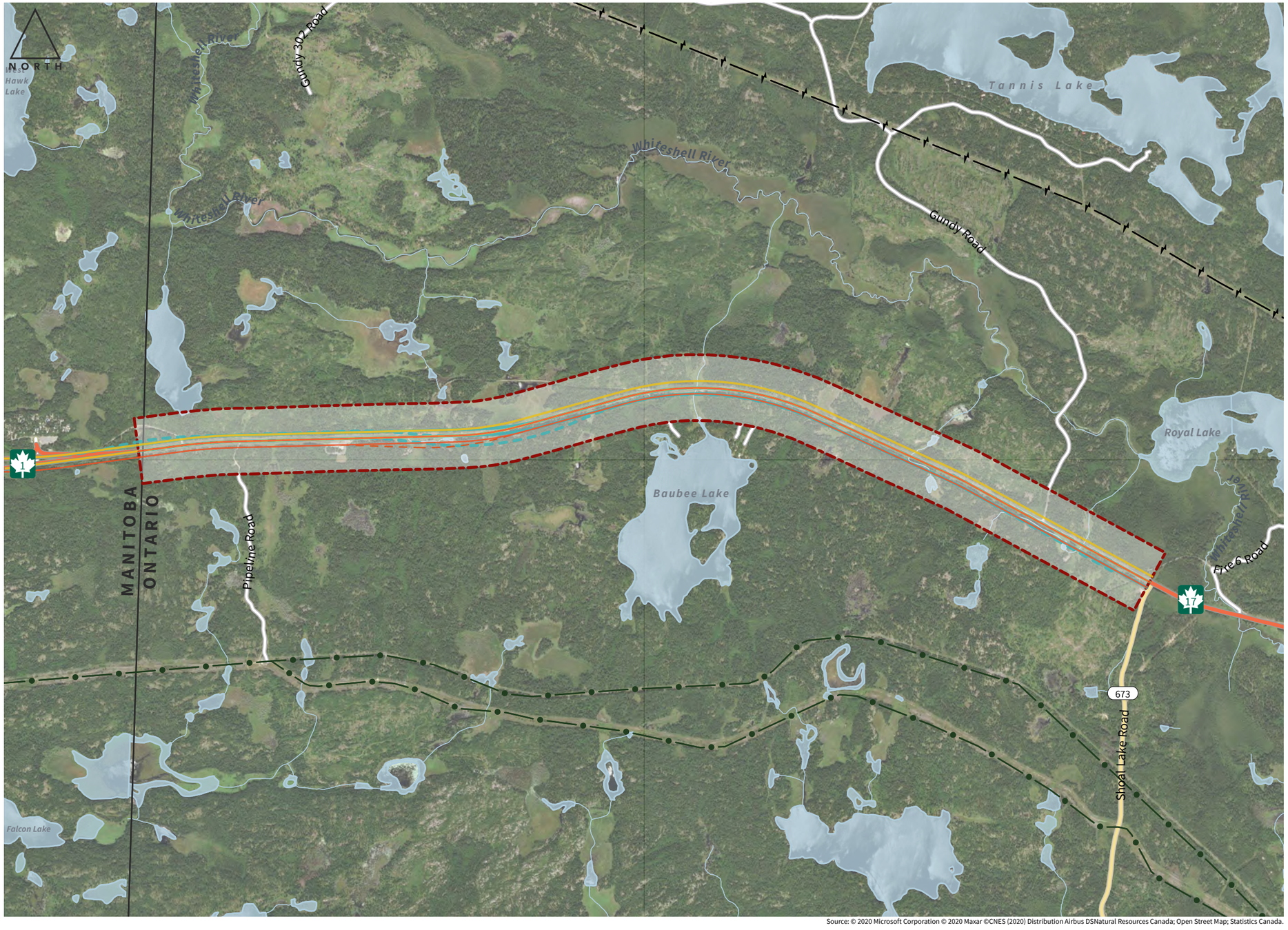
Map 5.6 - Elevation for Phase 1 of the TransCanada Highway Twinning Project

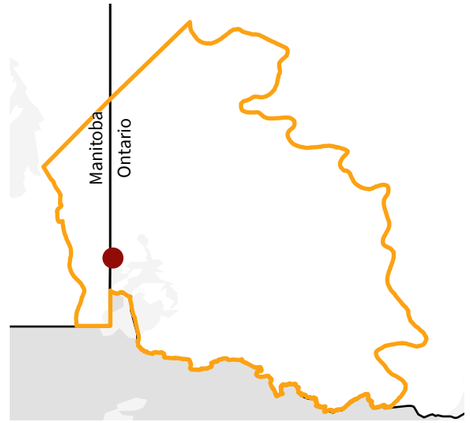
Map 6 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives

Map 6: Alternatives Considered for Phase 1 of the TransCanada Highway Twinning Project





LEGEND

Phase Boundaries
- Phase 1 Corridor

Design Alternatives
- Alternative 1A
- Alternative 1B
- Alternative 2
- Alternative 3A
- Alternative 3B

Administrative Boundaries
- Treaty #3

Map Features
- Existing Power Line Corridor
- Existing Pipeline Corridor

Roads
- Primary Highway
- Tertiary Highway
- Regional Road
- Local Road

0 250 500 1,000 1,500 m

NAD 1983 UTM Zone 15N 1:25,000

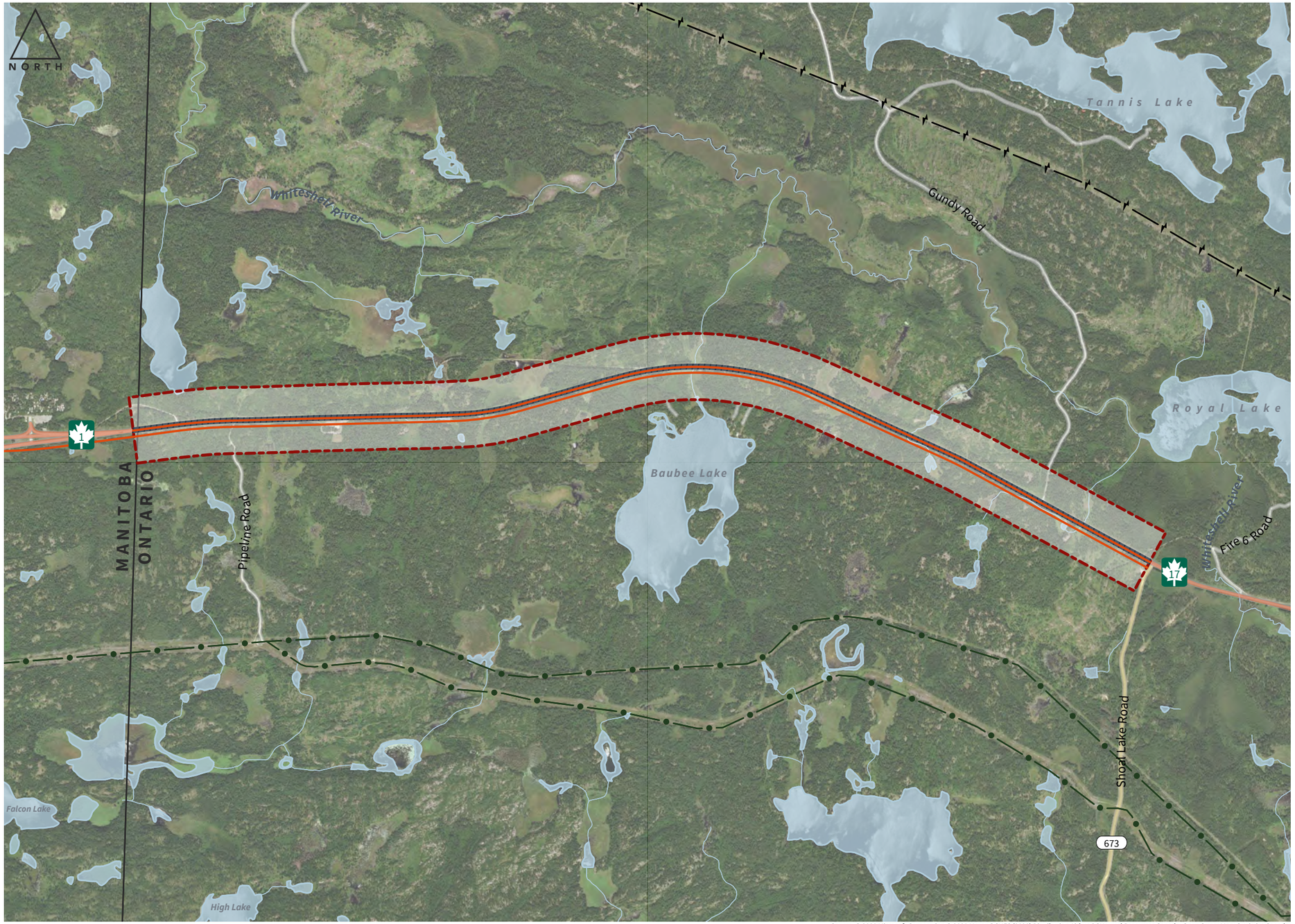
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

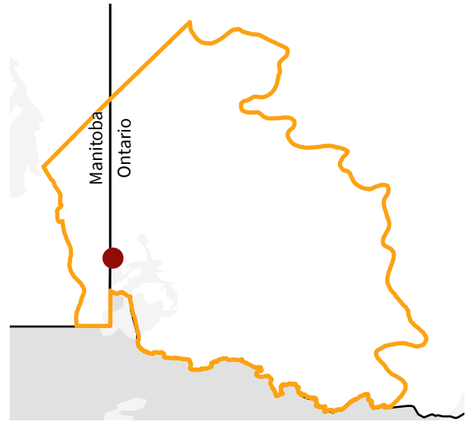
Map 06 - Alternatives Considered for Phase 1 of the TransCanada Highway Twinning Project

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives

Map 7: Alternative 1A Considered for Phase 1 of the TransCanada Highway Twinning Project





LEGEND

Phase Boundaries
- Phase 1 Corridor

Alternative 1A
- Road Centreline
- Existing Road

Administrative Boundaries
- Treaty #3

Map Features
- Existing Power Line Corridor
- Existing Pipeline Corridor

Roads
- Primary Highway
- Tertiary Highway
- Regional Road
- Local Road

0 250 500 1,000 1,500 m

NAD 1983 UTM Zone 15N 1:25,000

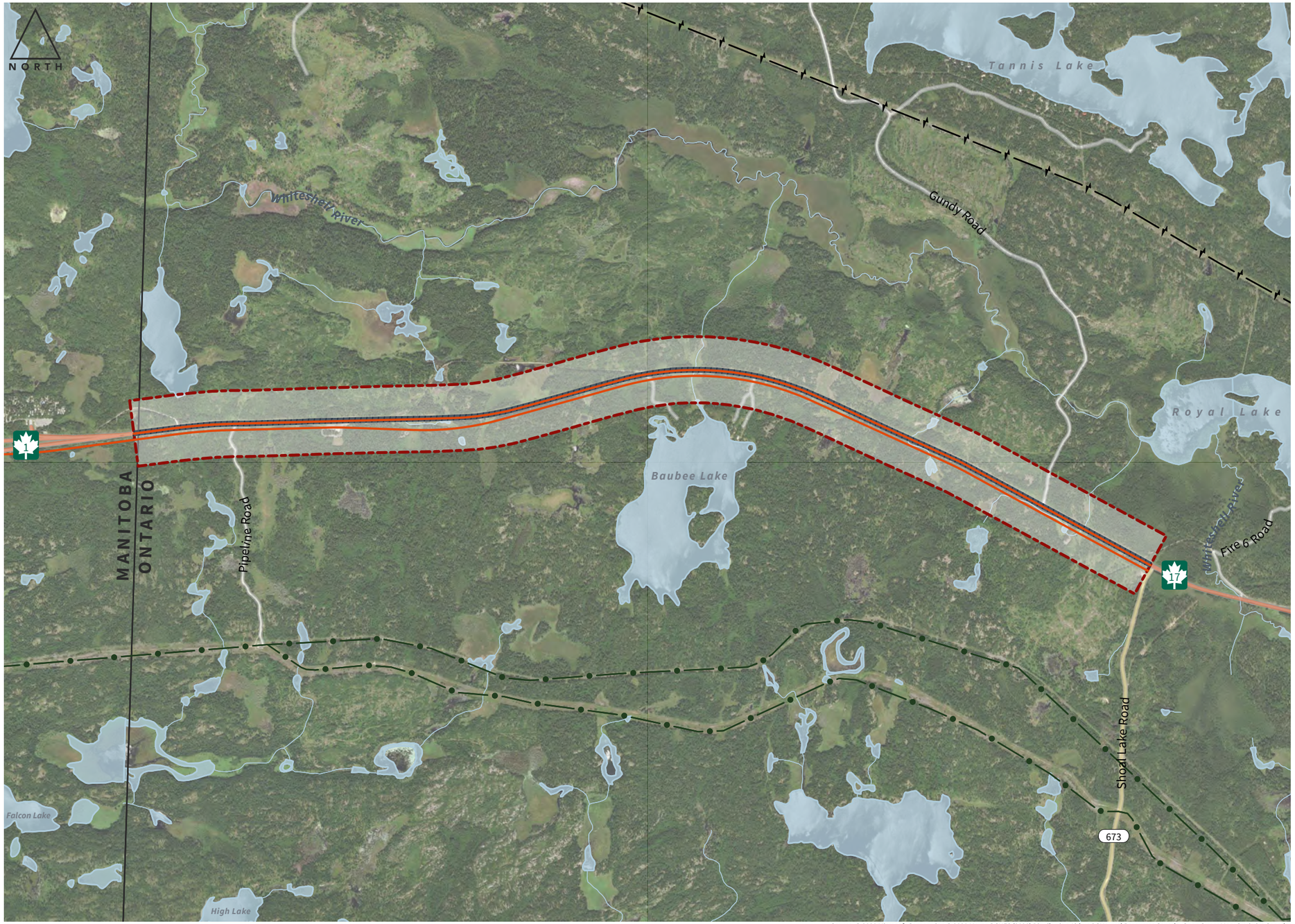
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

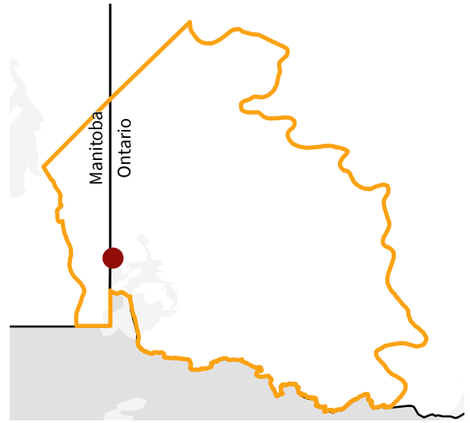
Map 07 - Alternative 1A Considered for Phase 1 of the TransCanada Highway Twinning Project

WAUZHUSHK ONIGUM
NISAACHEWAN
WASHAGAMIS BAY
SHOAL LAKE 40

narratives

Map 8: Alternative 1B Considered for Phase 1 for the TransCanada Highway Twinning Project





LEGEND

Phase Boundaries
- Phase 1 Corridor

Design Alternatives
- Alternative 1B
- Existing Road

Administrative Boundaries
- Treaty #3

Map Features
- Existing Power Line Corridor
- Existing Pipeline Corridor

Roads
- Primary Highway
- Tertiary Highway
- Regional Road
- Local Road

0 250 500 1,000 1,500 m

NAD 1983 UTM Zone 15N 1:25,000

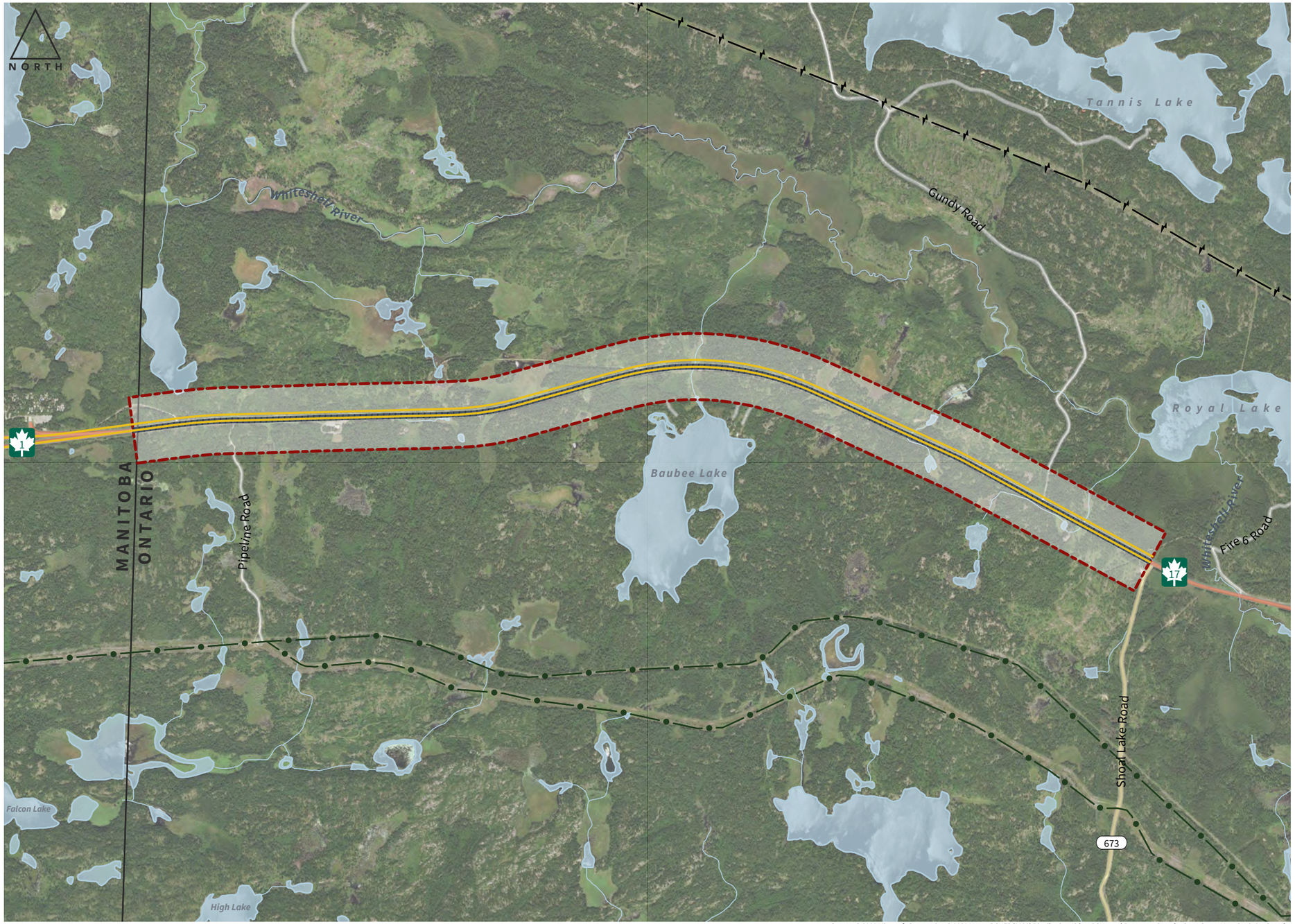
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

Map 08 - Alternative 1B Considered for Phase 1 for the TransCanada Highway Twinning Project

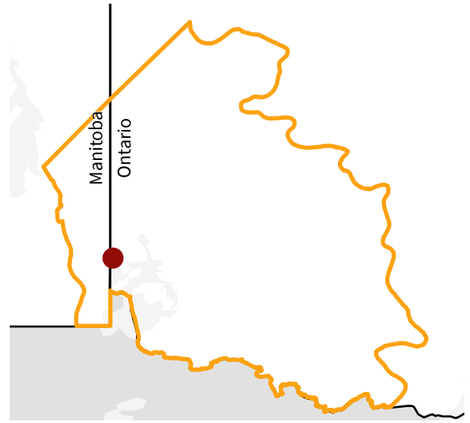
WAUZHUSHK ONIGUM
NISAACHEWAN
WASHAGAMIS BAY
SHOAL LAKE 40

narratives

Map 9: Alternative 2 Considered for Phase 1 of the TransCanada Highway Twinning Project



Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.



LEGEND

Phase Boundaries
- Phase 1 Corridor

Design Alternatives
- Alternative 2
- Existing Road

Administrative Boundaries
- Treaty #3

Map Features
- Existing Power Line Corridor
- Existing Pipeline Corridor

Roads
- Primary Highway
- Tertiary Highway
- Regional Road
- Local Road

0 250 500 1,000 1,500 m

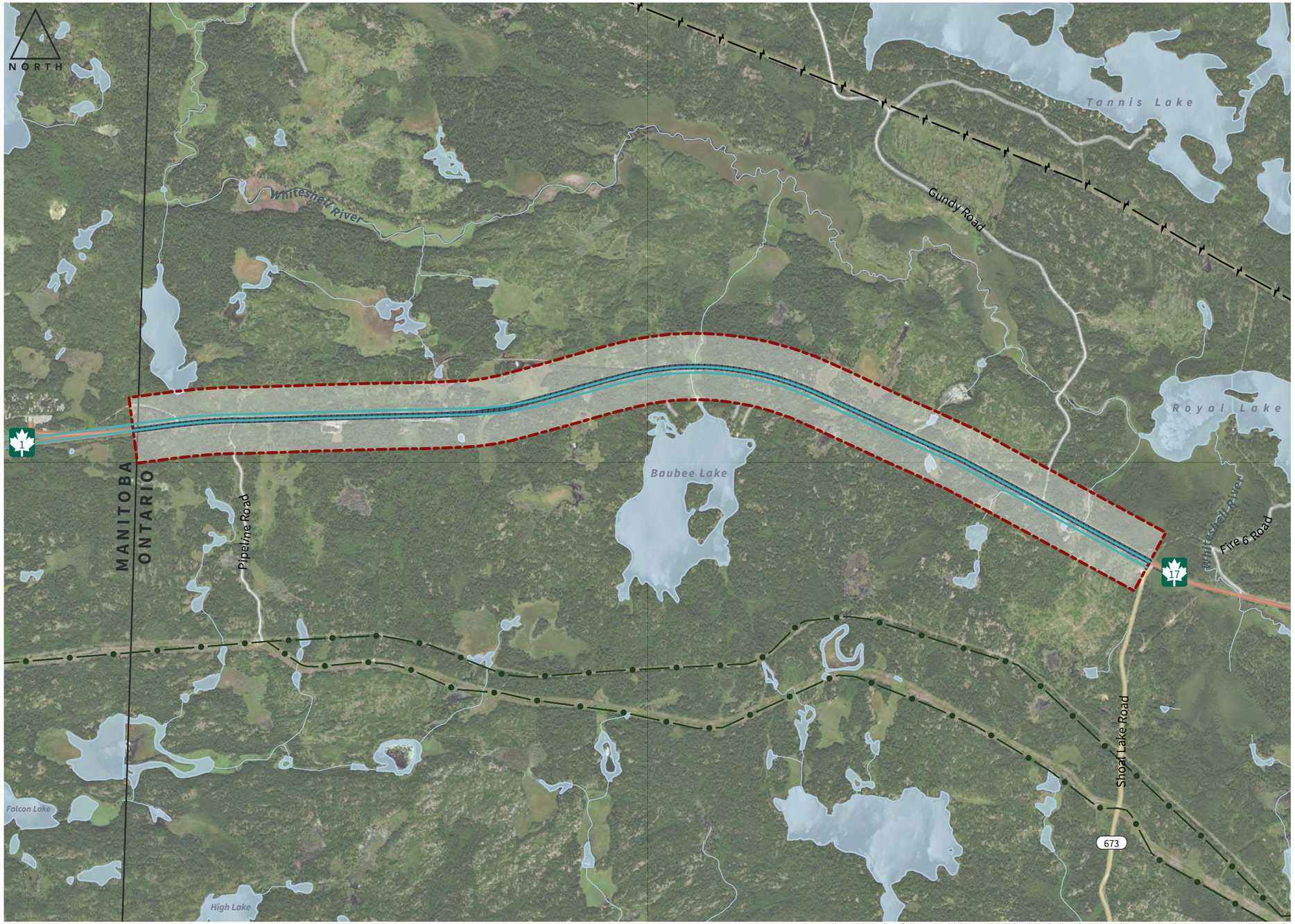
NAD 1983 UTM Zone 15N 1:25,000

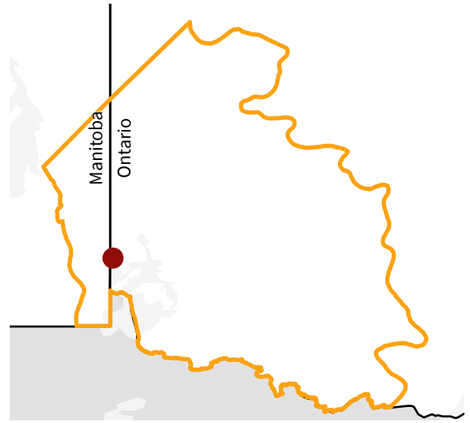
WAUZHUSHK ONIGUM
WASHAGAMIS BAY
NIISAACHEWAN
SHOAL LAKE 40

narratives

Map 09 - Alternative 2 Considered for Phase 1 of the TransCanada Highway Twinning Project

Map 10: Alternative 3A Considered for Phase 1 of the TransCanada Highway Twinning Project





LEGEND

Phase Boundaries
- Phase 1 Corridor

Design Alternatives
- Alternative 3A
- Existing Road

Administrative Boundaries
- Treaty #3

Map Features
- Existing Power Line Corridor
- Existing Pipeline Corridor

Roads
- Primary Highway
- Tertiary Highway
- Regional Road
- Local Road

0 250 500 1,000 1,500 m

NAD 1983 UTM Zone 15N 1:25,000

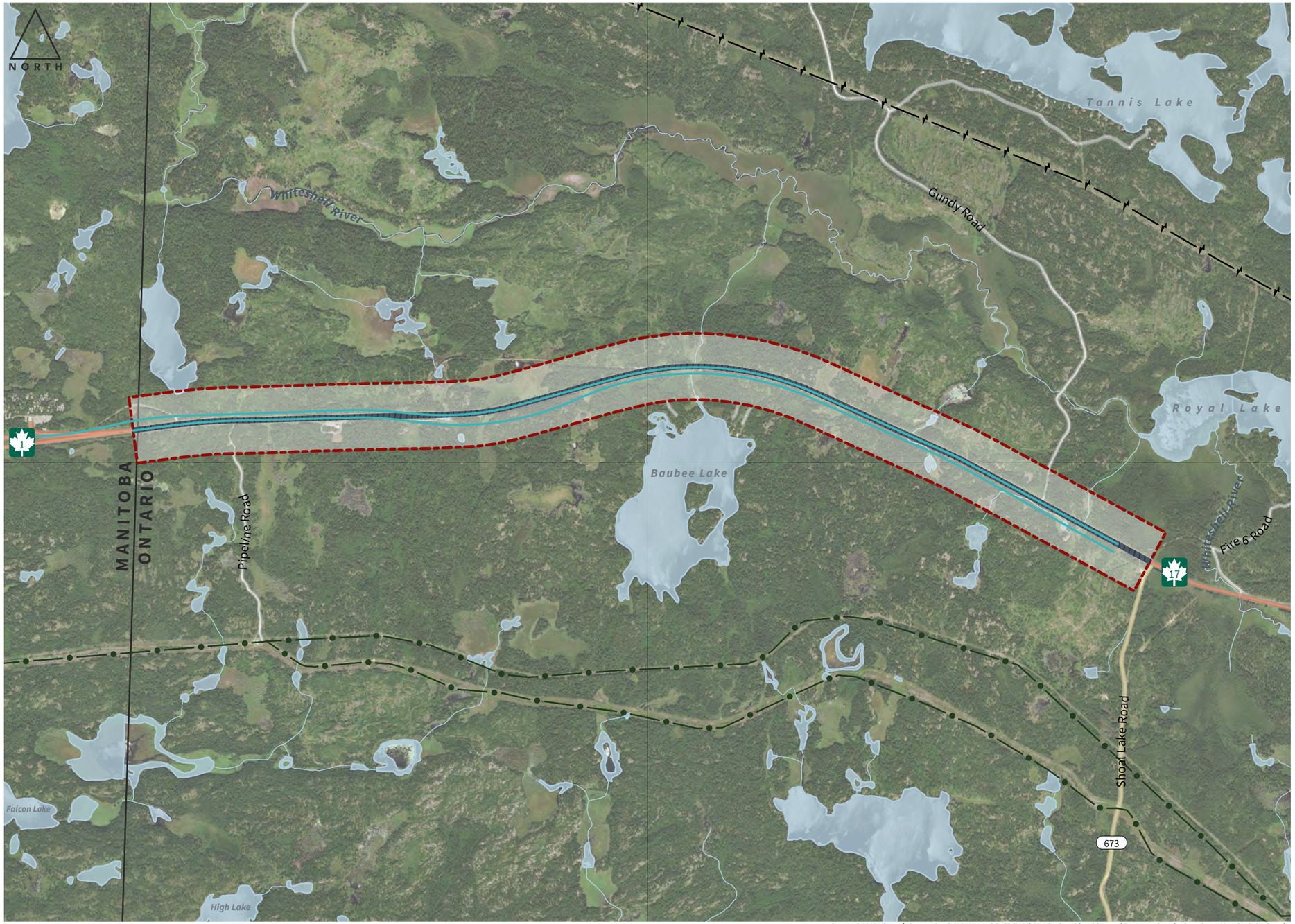
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

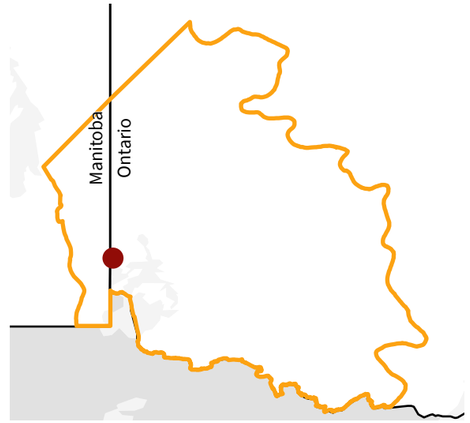
Map 10 - Alternative 3A Considered for Phase 1 of the TransCanada Highway Twinning Project

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives

Map 11: Alternative 3B Considered for Phase 1 for the TransCanada Highway Twinning Project





LEGEND

Phase Boundaries
- Phase 1 Corridor

Design Alternatives
- Alternative 3B
- Existing Road

Administrative Boundaries
- Treaty #3

Roads
- Primary Highway
- Tertiary Highway
- Regional Road
- Local Road

Map Features
- Existing Power Line Corridor
- Existing Pipeline Corridor

0 250 500 1,000 1,500 m

NAD 1983 UTM Zone 15N 1:25,000

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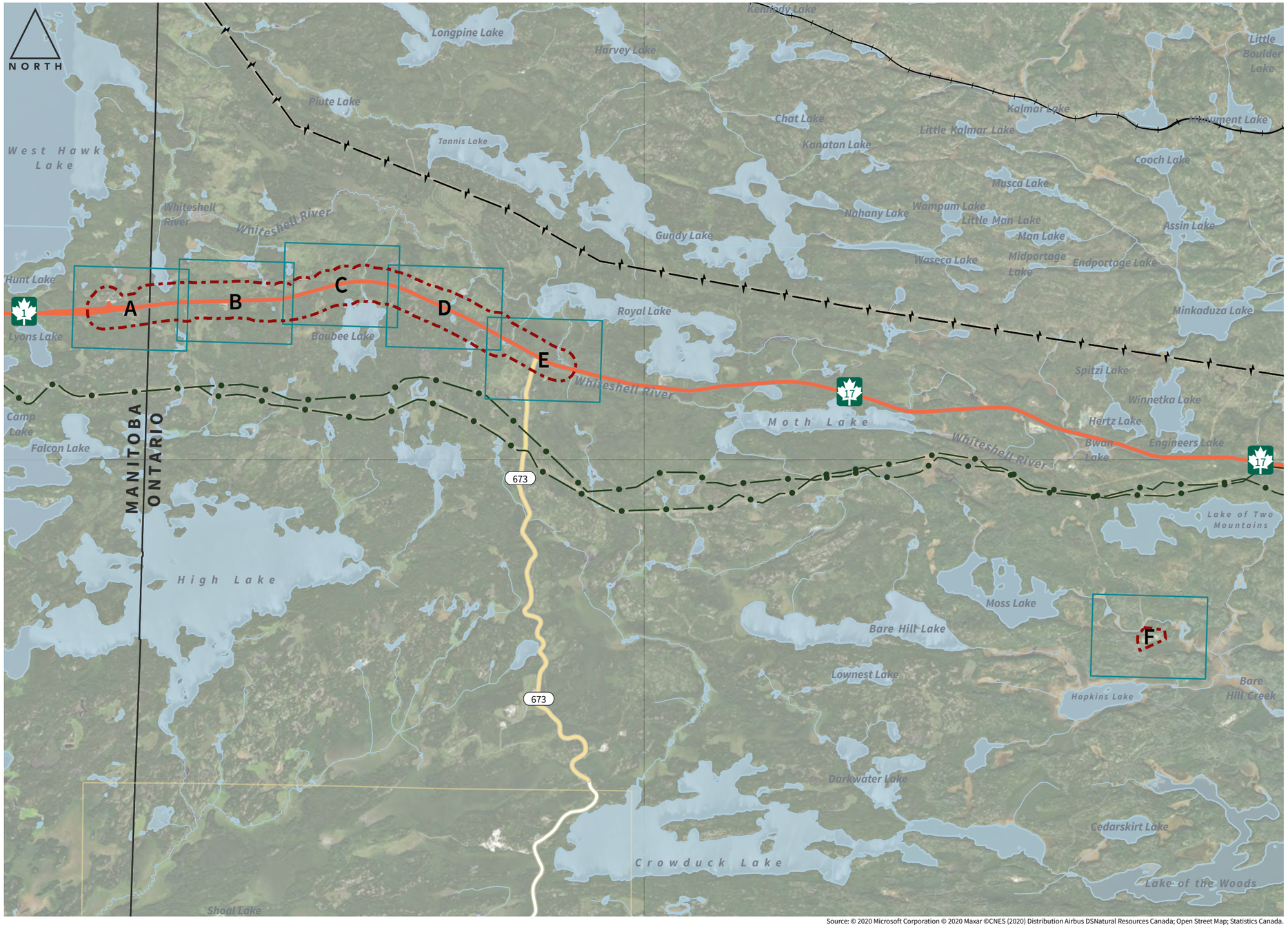
Map 11 - Alternative 3B Considered for Phase 1 for the TransCanada Highway Twinning Project

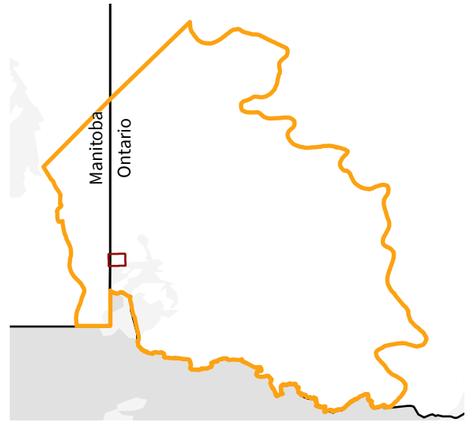
WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives

Map 12: Project Site: Phase 1 Alignment Segment Index



Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.



LEGEND

- Map Segment Index Frames

Project
- Project Site

Administrative Boundaries
- Indigenous Reserve Territory
- Treaty #3

Map Features
- Rail Corridor
- Existing Power Line Corridor
- Existing Pipeline Corridor

Roads
- Primary Highway
- Tertiary Highway
- Regional Road

0 0.5 1 2 3 4 km

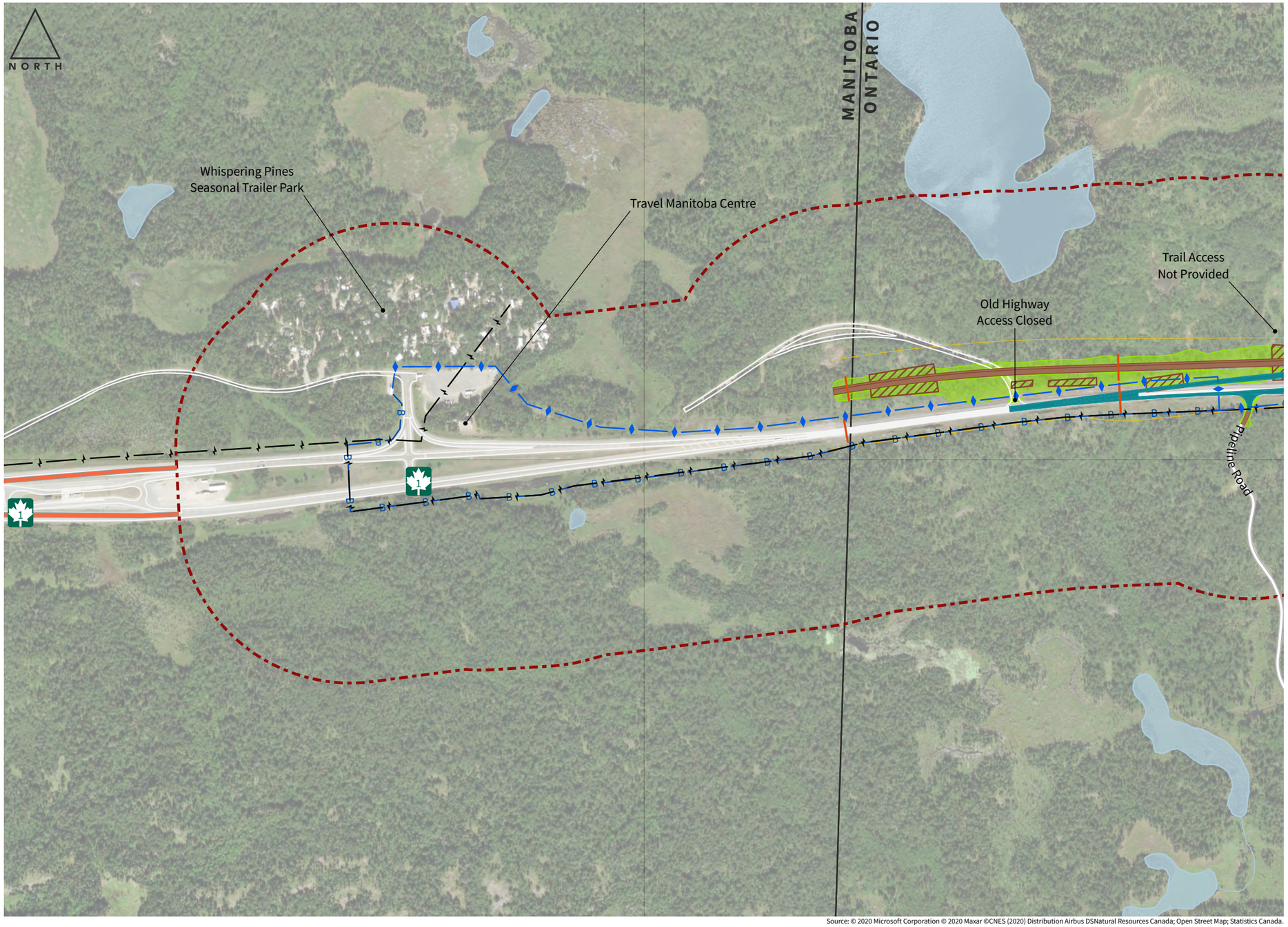
NAD 1983 UTM Zone 15N 1:65,000

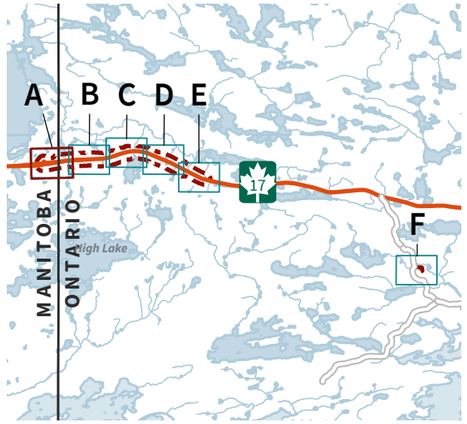
Map 12 - Project Site: Phase 1 Alignment
Segment Index for Maps 12A through 12F

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
NISAACHEWAN
SHOAL LAKE 40

narratives

Map 13: Project Site: Phase 1 Alignment for the TransCanada Highway Twinning Project (Maps A – F)





LEGEND

Proposed Project

- Project Site
- Proposed Culvert Locations
- Proposed Road Surface
- Proposed Gravel Surface
- Proposed Right of Way
- Proposed Rock Blasting Areas
- Proposed Grading Areas
- Existing Road Surface

Utilities

Existing Utilities

- Transmission Line (Above Ground)
- Communication Line (Underground)

Proposed Utilities

- Proposed Bell Line Relocation (Above Ground)

Roads

- Primary Highway
- Regional Road
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

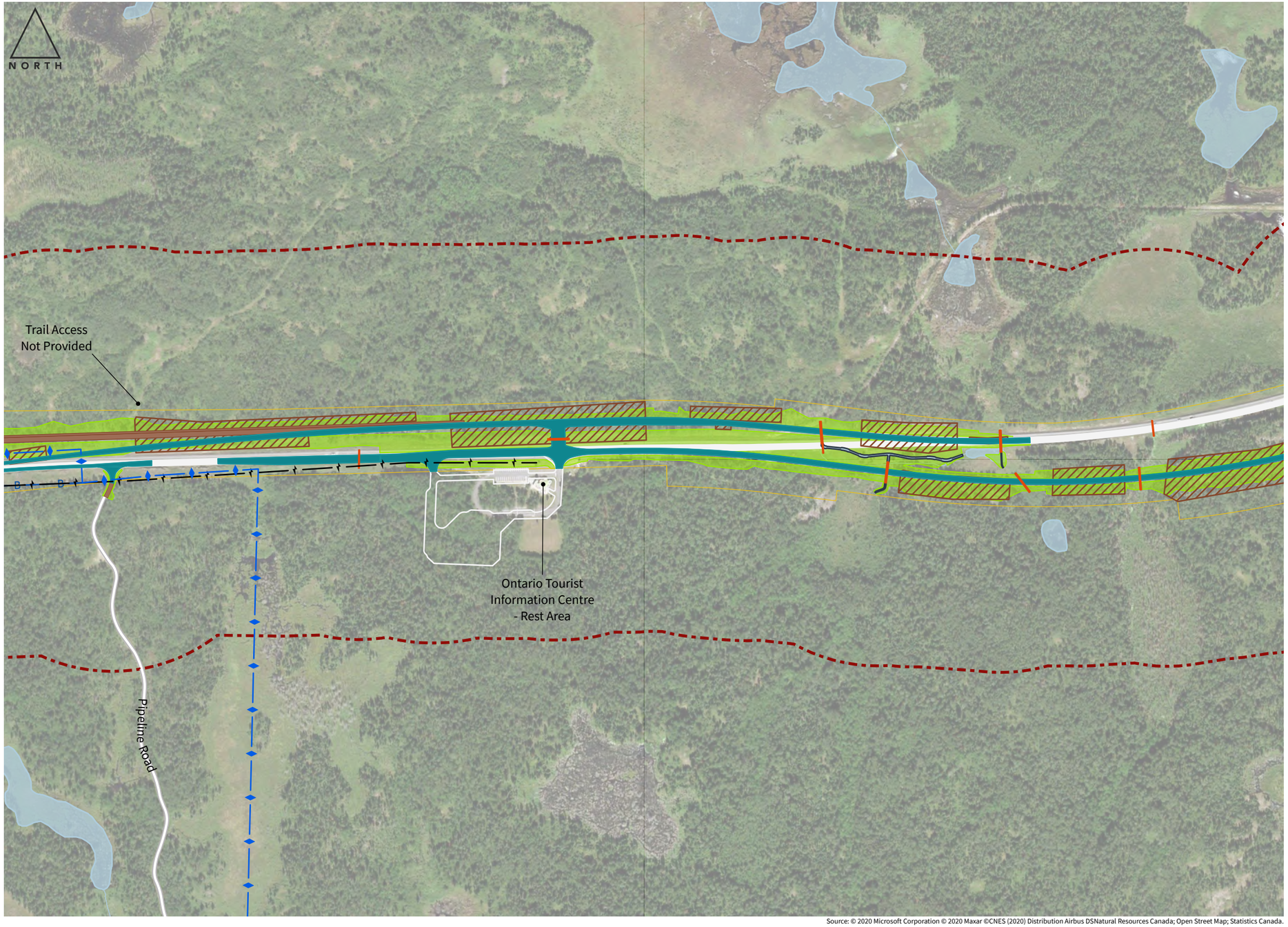
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

Map 13A - Project Site: Phase 1 Alignment for the TransCanada Highway Twinning Project

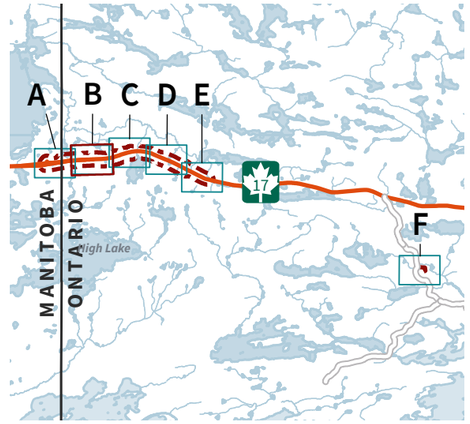
Map 1 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives



Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.



LEGEND

Proposed Project

- Project Site
- Proposed Culvert Locations
- Proposed Road Surface
- Proposed Drainage Channel
- Proposed Gravel Surface
- Proposed Right of Way
- Proposed Rock Blasting Areas
- Proposed Grading Areas
- Existing Road Surface

Utilities

Existing Utilities

- Transmission Line (Above Ground)
- Communication Line (Underground)

Proposed Utilities

- Proposed Bell Line Relocation (Above Ground)

Roads

- Primary Highway
- Local Road

0 50 100 200 300 400 m

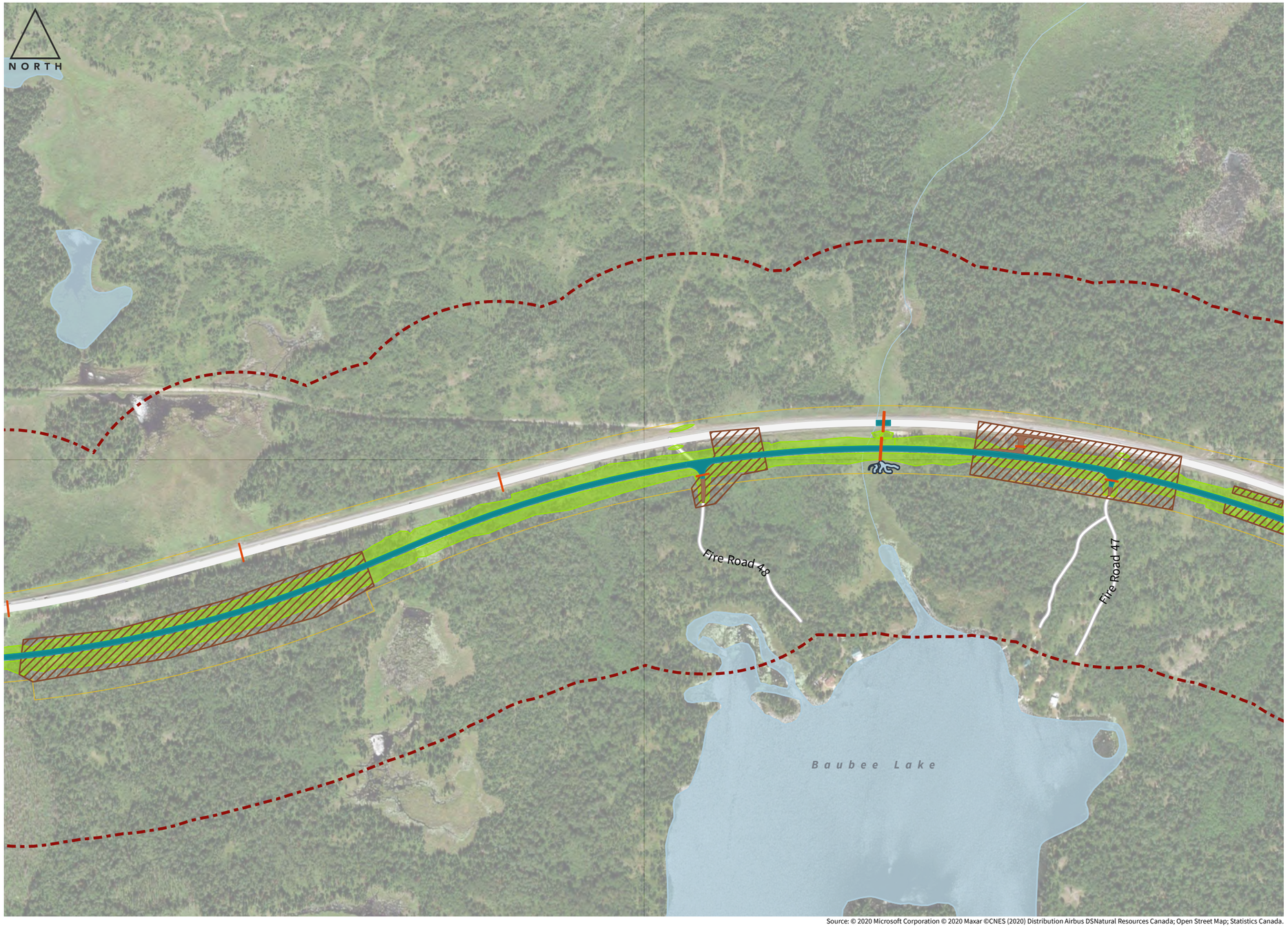
NAD 1983 UTM Zone 15N 1:6,000

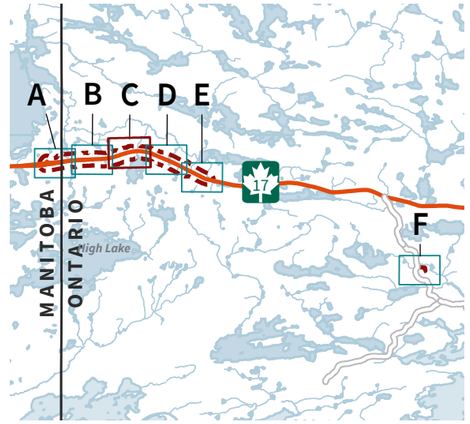
Map 13B - Project Site: Phase 1 Alignment for the TransCanada Highway Twinning Project

Map 2 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives





LEGEND

Proposed Project

- Project Site
- Proposed Culvert Locations
- Proposed Road Surface
- Proposed Drainage Channel
- Proposed Right of Way
- Proposed Rock Blasting Areas
- Proposed Grading Areas
- Existing Road Surface

Roads

- Primary Highway
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

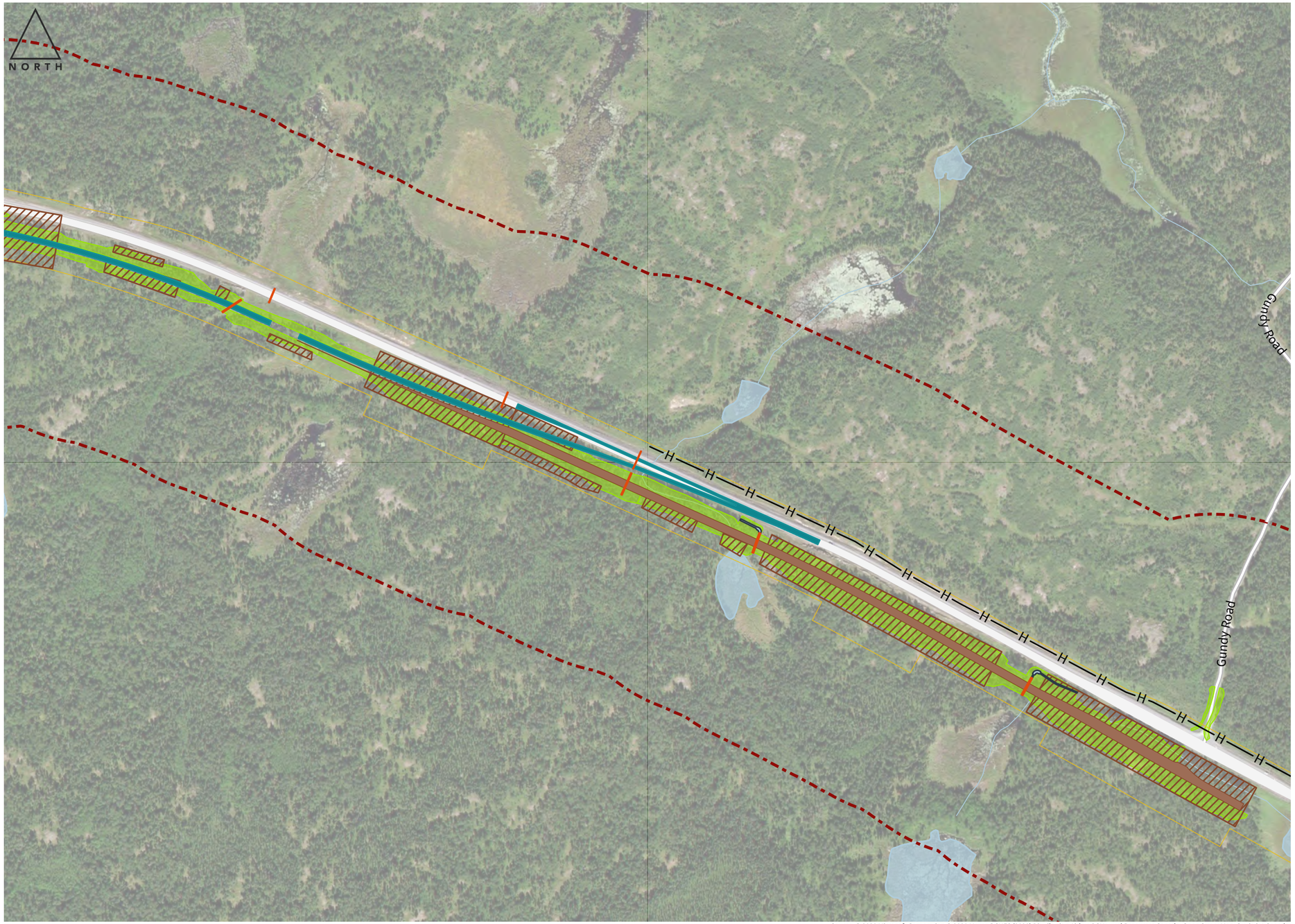
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

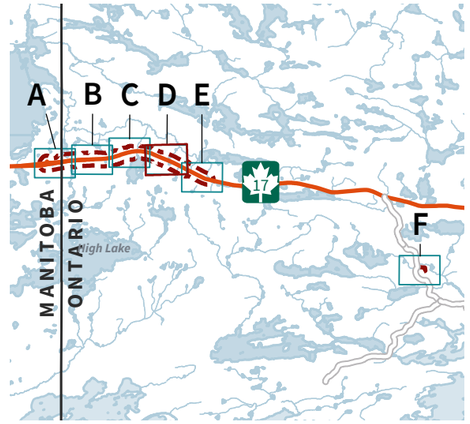
Map 13C - Project Site: Phase 1 Alignment for the TransCanada Highway Twinning Project

Map 3 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives





LEGEND

Proposed Project

- Project Site
- Proposed Culvert Locations
- Proposed Road Surface
- Proposed Drainage Channel
- Proposed Gravel Surface
- Proposed Right of Way
- Proposed Rock Blasting Areas
- Proposed Grading Areas
- Existing Road Surface

Proposed Utilities

- Proposed Hydro One Line Relocation (Above Ground)

Roads

- Primary Highway
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

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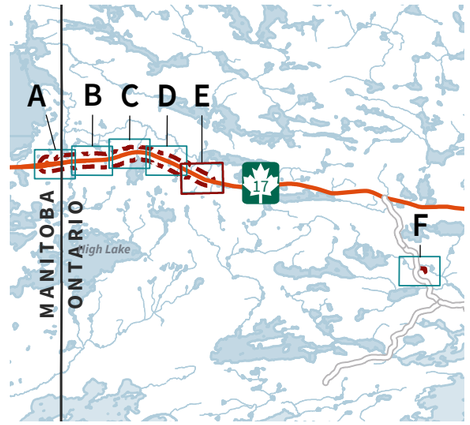
Map 13D - Project Site: Phase 1 Alignment for the TransCanada Highway Twinning Project

Map 4 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives



LEGEND

Proposed Project

- Project Site
- Proposed Gravel Surface
- Proposed Right of Way
- Proposed Rock Blasting Areas
- Proposed Grading Areas
- Existing Road Surface

Utilities

Existing Utilities

- Transmission Line (Above Ground)
- Natural Gas Pipeline (Underground)

Proposed Utilities

- Proposed Hydro One Line Relocation (Above Ground)

Roads

- Primary Highway
- Tertiary Highway
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

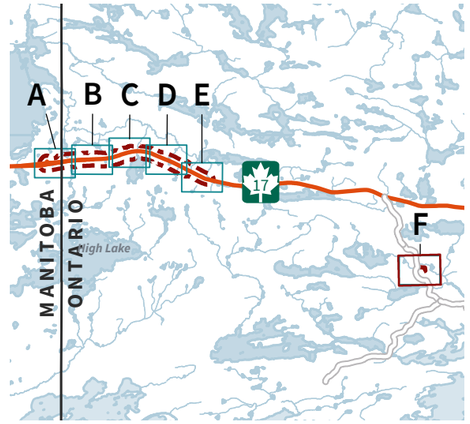
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

Map 13E - Project Site: Phase 1 Alignment for the TransCanada Highway Twinning Project

Map 5 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWIAN

narratives



LEGEND

Proposed Project

Project Site

Roads

Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

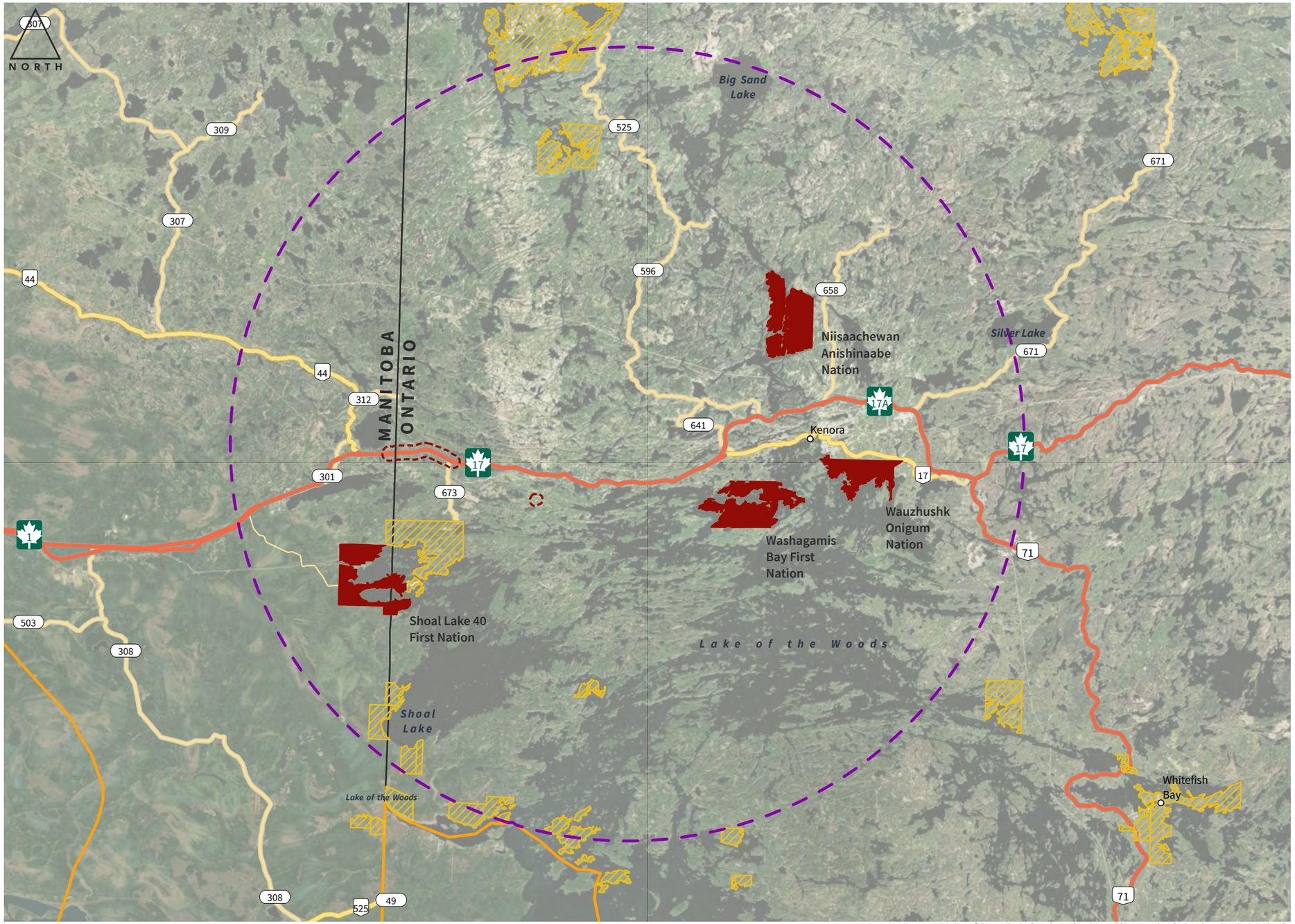
Map 13F - Project Site: Phase 1 Alignment for the TransCanada Highway Twinning Project

Map 6 of 6

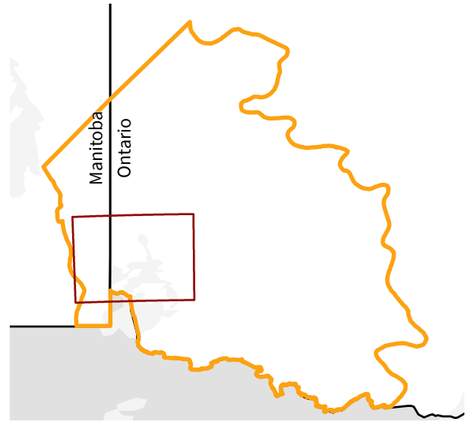
WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives

Map 14: Project Area for the TransCanada Highway Twinning Project



Source: © 2020 Microsoft Corporation Earthstar Geographics SIONatural Resources Canada; Open Street Map; Statistics Canada.



LEGEND

Project
- Project Site
- Project Area

Administrative Boundaries
- Niiwin Wendaanimok
- Indigenous Reserve Territory
- Treaty #3

Roads
- Primary Highway
- Secondary Highway
- Tertiary Highway

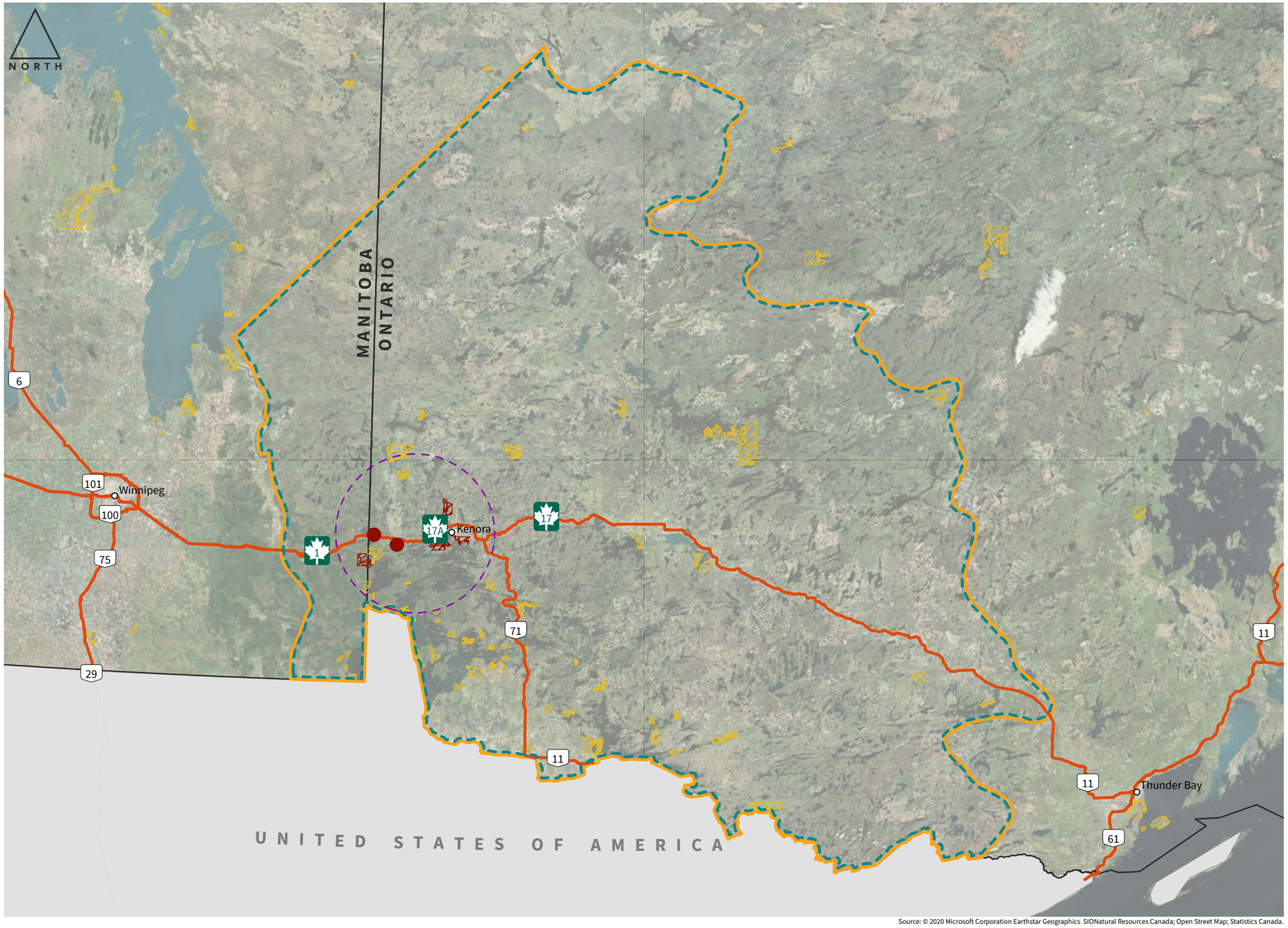
0 2.5 5 10 15 20 km

NAD 1983 UTM Zone 15N 1:465,000

Map 14 - Project Area for the TransCanada Highway Twinning Project

narratives

Map 15: Project Region for the TransCanada Highway Twinning Project



Source: © 2020 Microsoft Corporation Earthstar Geographics SIONatural Resources Canada; Open Street Map; Statistics Canada.

LEGEND

Project
- Project Site
- Project Area
- Project Region

Administrative Boundaries
- Niiwin Wendaanimok
- Indigenous Reserve Territory
- Treaty #3

Roads
- Primary Highway

0 25 50 100 150 km

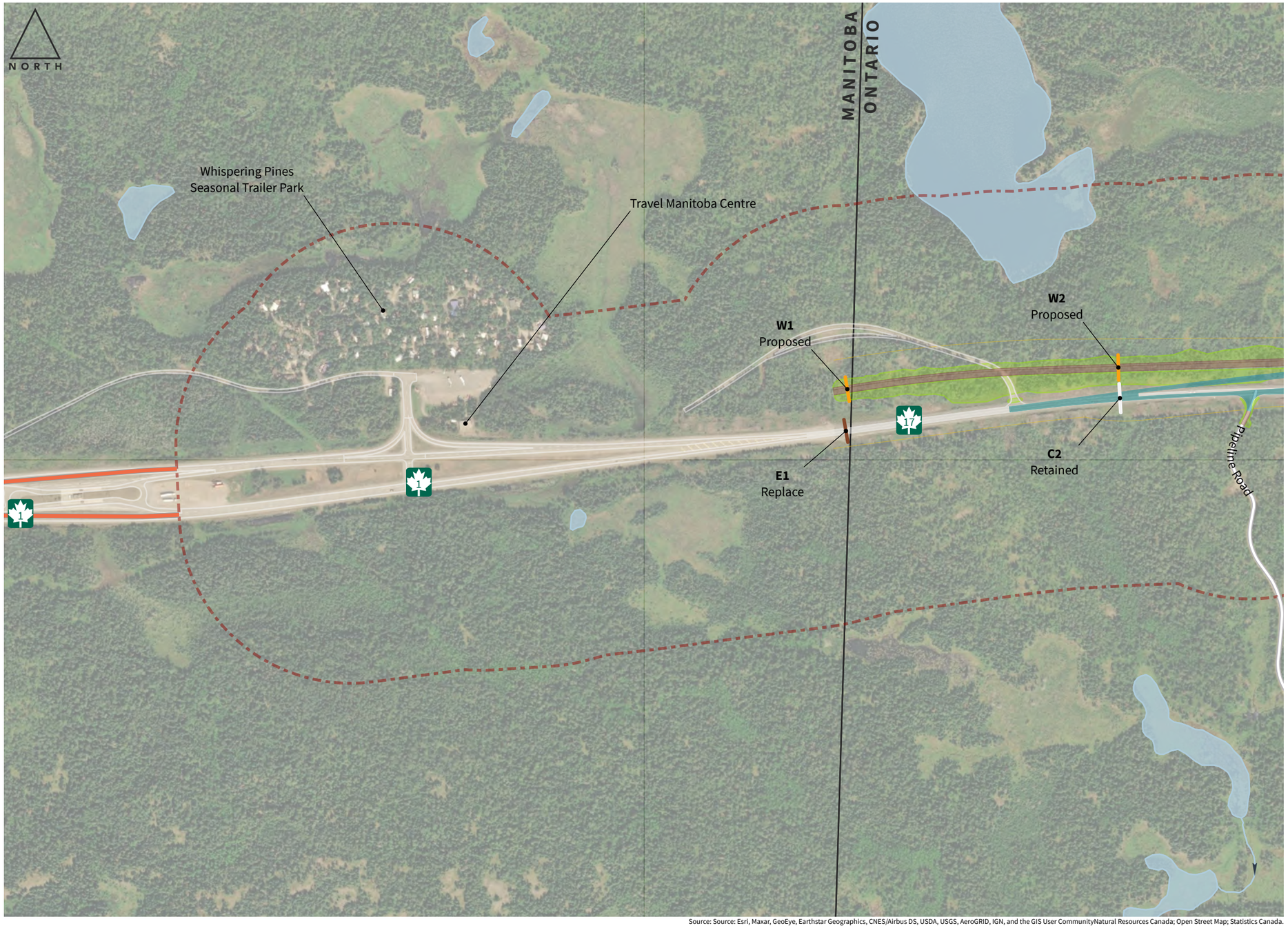
NAD 1983 UTM Zone 15N 1:2,310,000

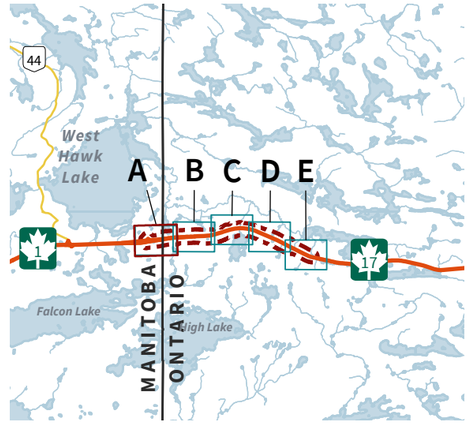
Map 15 - Project Region for the TransCanada Highway Twinning Project

WAUZHUSHK ONIGUM
NISAACHEWAN
WASHAGAMIS BAY
SHOAL LAKE 40

narratives

Map 16: Culverts for Phase 1: Being Retained, Removed, or Replaced, and New Proposed with Fish Passage Indicated





LEGEND

Proposed Culvert Locations
- Culvert will be Retained
- Existing Culvert Being Replaced
- New Culvert Proposed

Proposed Project
- Project Site
- Proposed Road Surface
- Proposed Gravel Surface
- Existing Road Surface
- Proposed Grading Areas

Watercourses
- Existing Watercourse and Flow Direction
- Waterbodies

Roads
- Primary Highway
- Regional Road
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

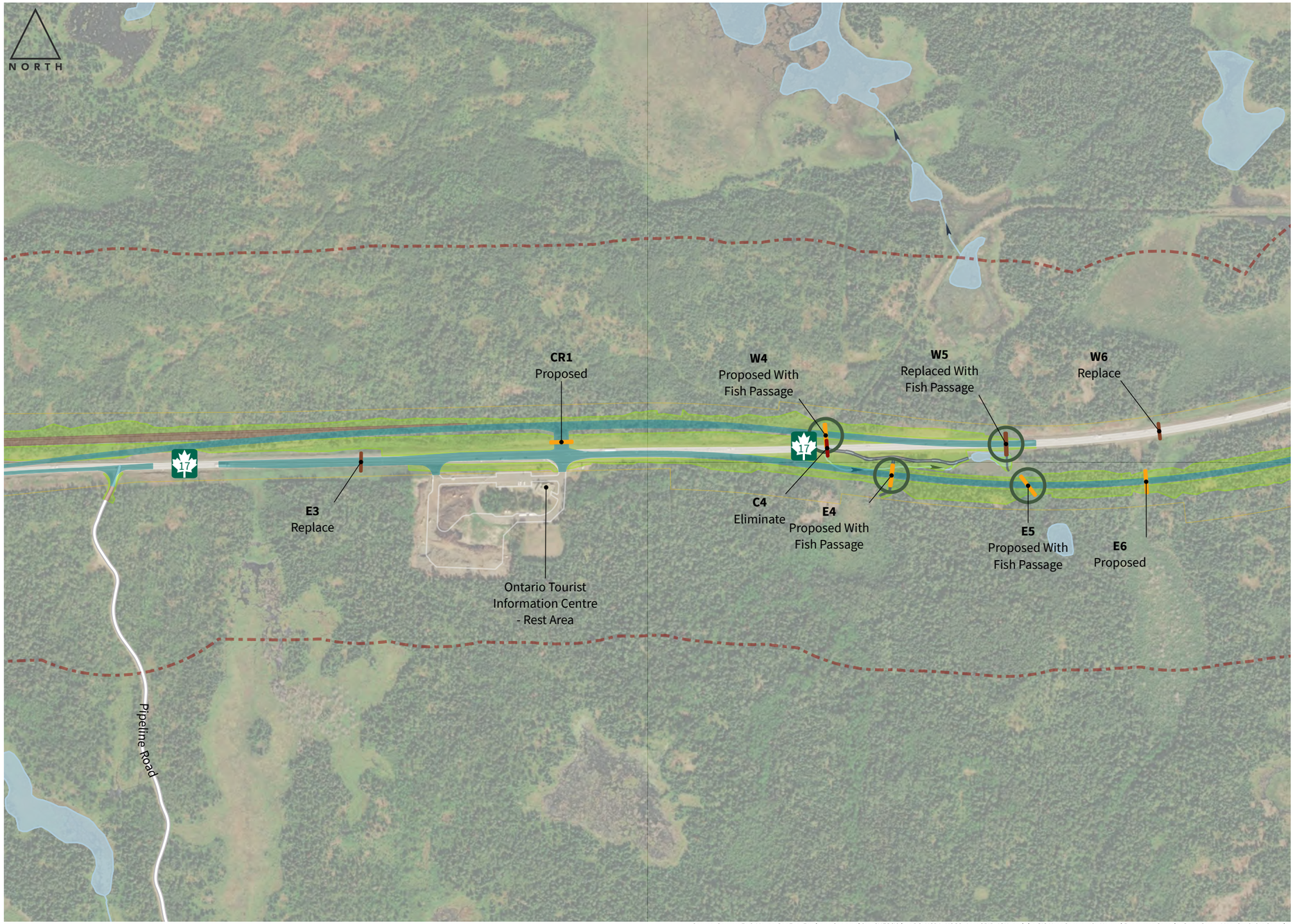
Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User CommunityNatural Resources Canada; Open Street Map; Statistics Canada.

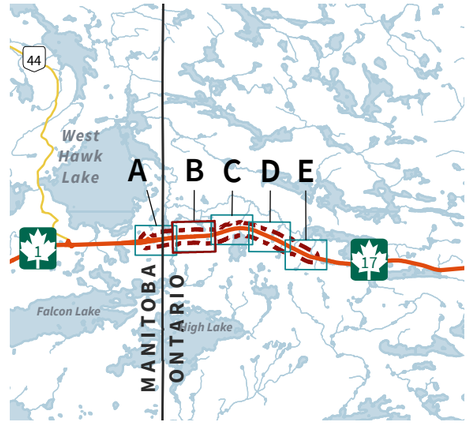
Map 16A - Culverts for Phase 1: Being Retained, Removed, or Replaced, and New Proposed with Fish Passage Indicated

Map 1 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives





LEGEND

Proposed Culvert Locations
- Culvert will be Eliminated
- Existing Culvert Being Replaced
- New Culvert Proposed
- Proposed Culverts with Fish Passage

Proposed Project
- Project Site
- Proposed Road Surface
- Proposed Drainage Channel
- Proposed Gravel Surface
- Existing Road Surface
- Proposed Grading Areas

Watercourses
- Existing Watercourse and Flow Direction
- Waterbodies

Roads
- Primary Highway
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

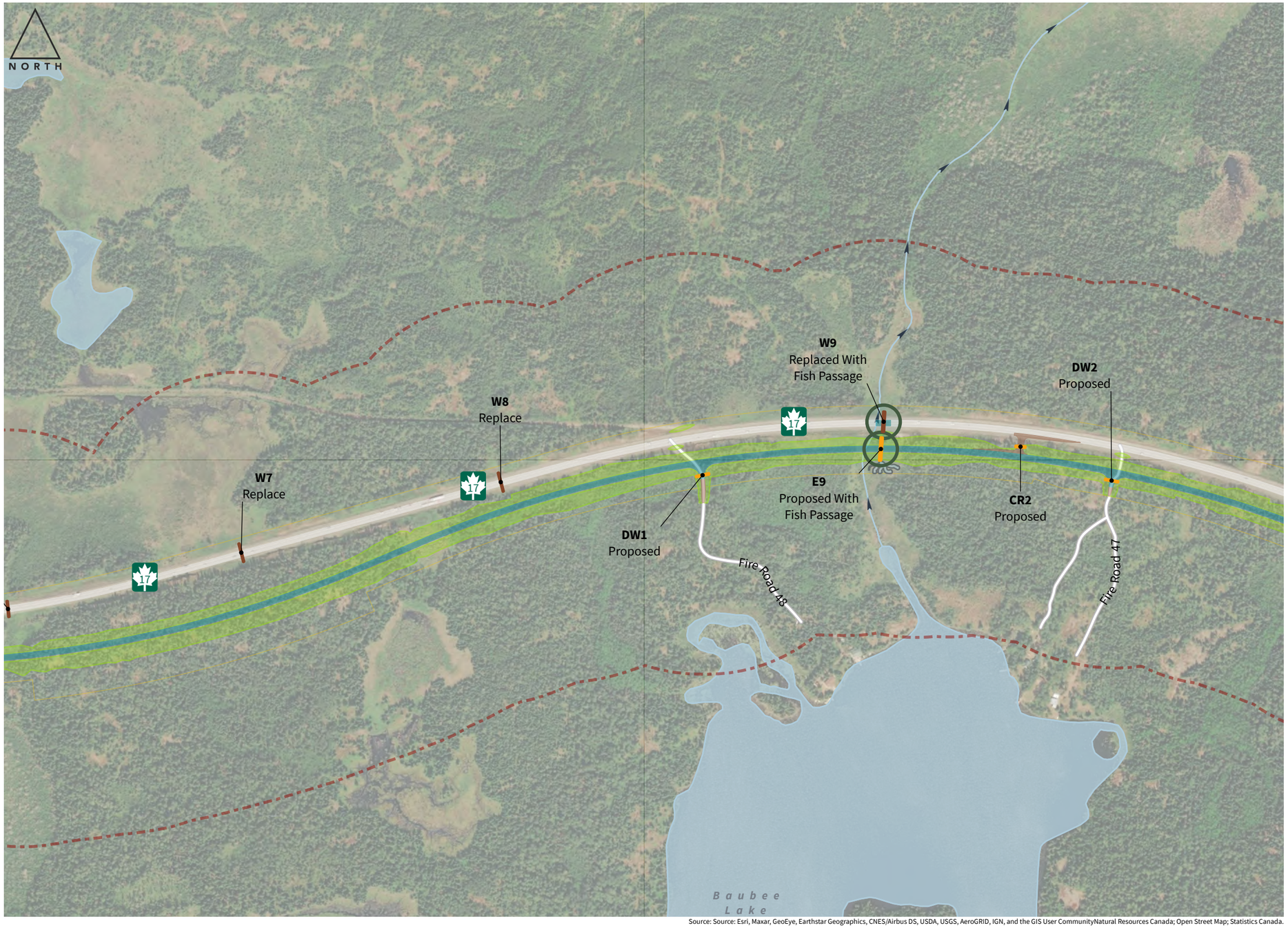
Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User CommunityNatural Resources Canada; Open Street Map; Statistics Canada.

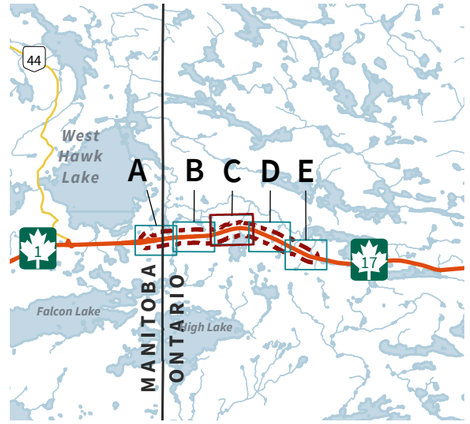
Map 16B - Culverts for Phase 1: Being Retained, Removed, or Replaced, and New Proposed with Fish Passage Indicated

Map 2 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives





LEGEND

Proposed Culvert Locations
- Existing Culvert Being Replaced
- New Culvert Proposed
- Proposed Culverts with Fish Passage

Proposed Project
- Project Site
- Proposed Road Surface
- Proposed Drainage Channel
- Existing Road Surface
- Proposed Grading Areas

Watercourses
- Existing Watercourse and Flow Direction
- Waterbodies

Roads
- Primary Highway
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

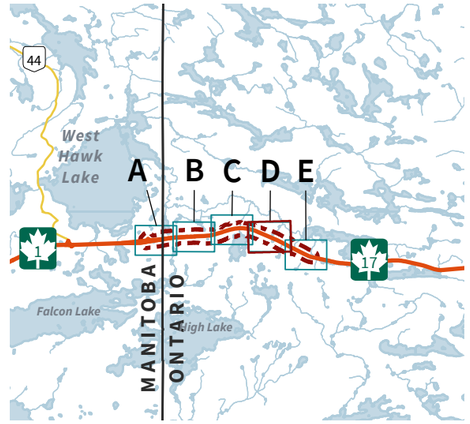
Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User CommunityNatural Resources Canada; Open Street Map; Statistics Canada.

Map 16C - Culverts for Phase 1: Being Retained, Removed, or Replaced, and New Proposed with Fish Passage Indicated

Map 3 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives



LEGEND

Proposed Culvert Locations

- Culvert will be Retained
- Existing Culvert Being Replaced
- New Culvert Proposed
- Proposed Culverts with Fish Passage

Proposed Project

- Project Site
- Proposed Road Surface
- Proposed Drainage Channel
- Proposed Gravel Surface
- Existing Road Surface
- Proposed Grading Areas

Watercourses

- Existing Watercourse and Flow Direction
- Waterbodies

Roads

- Primary Highway
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

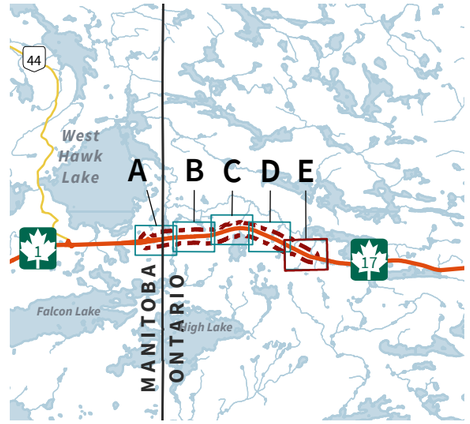
Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User CommunityNatural Resources Canada; Open Street Map; Statistics Canada.

Map 16D - Culverts for Phase 1: Being Retained, Removed, or Replaced, and New Proposed with Fish Passage Indicated

Map 4 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives



LEGEND

Proposed Project

- Project Site
- Proposed Gravel Surface
- Existing Road Surface
- Proposed Grading Areas

Watercourses

- Existing Watercourse and Flow Direction
- Waterbodies

Roads

- Primary Highway
- Tertiary Highway
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

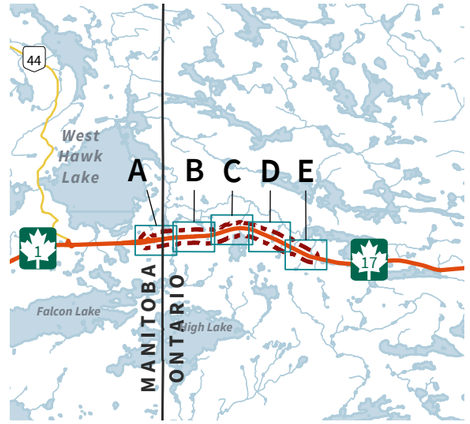
Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User CommunityNatural Resources Canada; Open Street Map; Statistics Canada.

Map 16E - Culverts for Phase 1: Being Retained, Removed, or Replaced, and New Proposed with Fish Passage Indicated

Map 5 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives



LEGEND

Proposed Project

Project Site

Watercourses

Existing Watercourse and Flow Direction

Waterbodies

Roads

Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User CommunityNatural Resources Canada; Open Street Map; Statistics Canada.

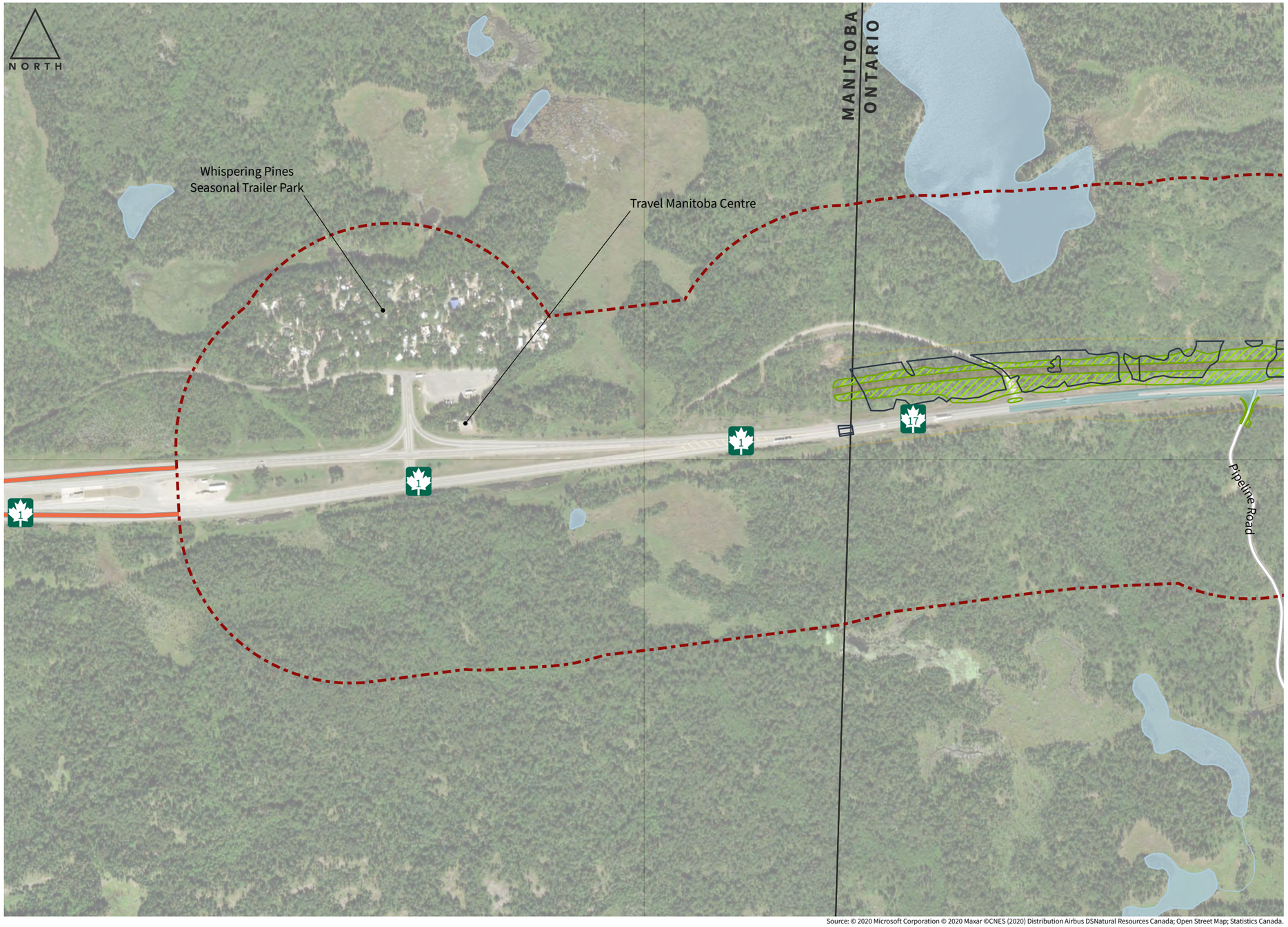
Map 16F - Culverts for Phase 1: Being Retained, Removed, or Replaced, and New Proposed with Fish Passage Indicated

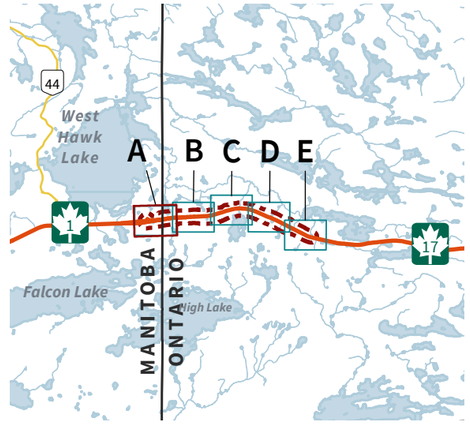
Map 6 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives

Map 17: Proposed Clearing and Grading Areas for Phase 1 of the TransCanada Highway Twinning Project





LEGEND

Project
- Project Site

Clearing and Grading Areas
- Proposed Tree Clearing Areas
- Proposed Grading Areas

Proposed Project
- Proposed Road Surface
- Proposed Gravel Surface
- Proposed Rock Blasting Areas
- Existing Road Surface
- Proposed Right of Way

Roads
- Primary Highway
- Regional Road
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

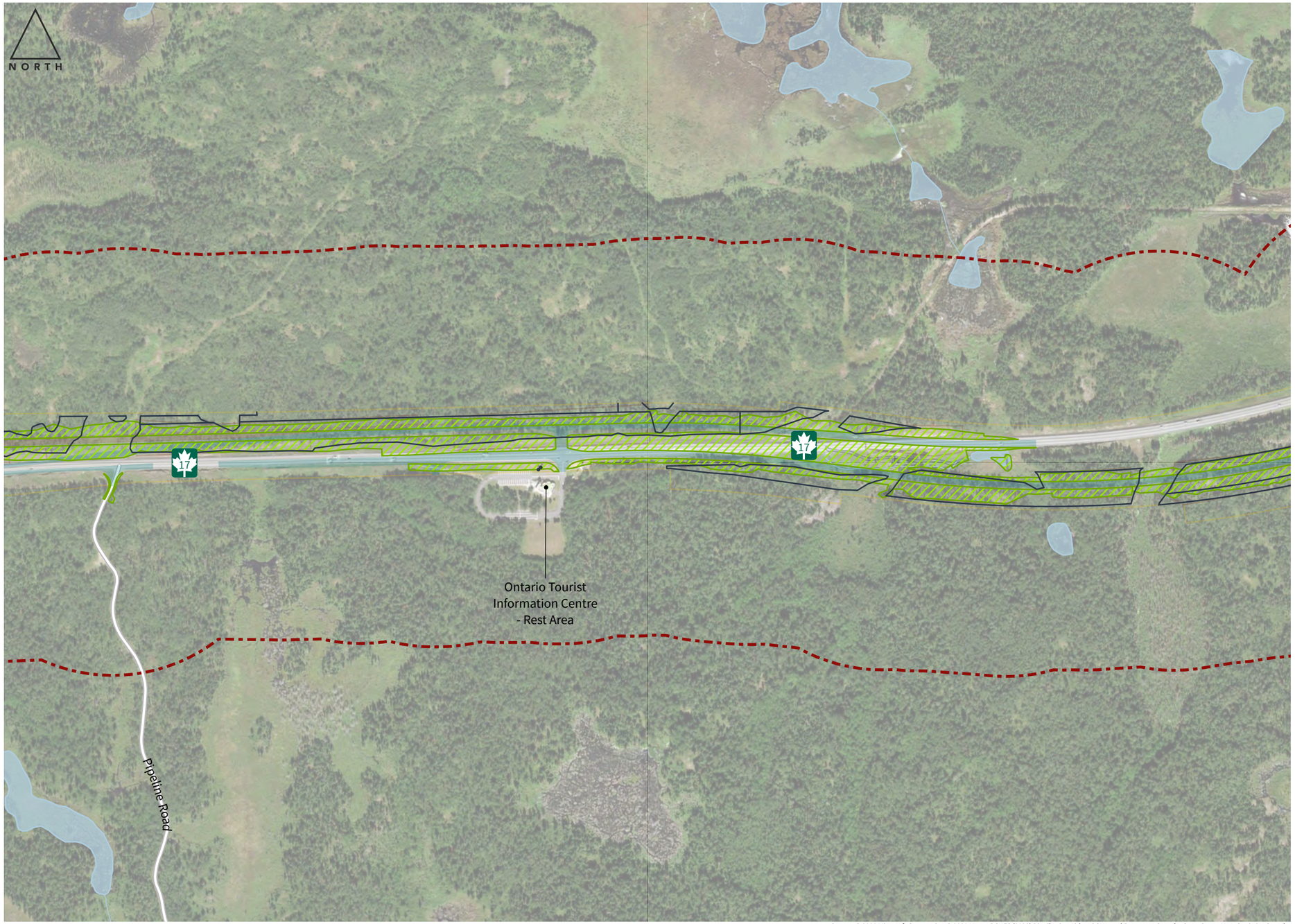
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

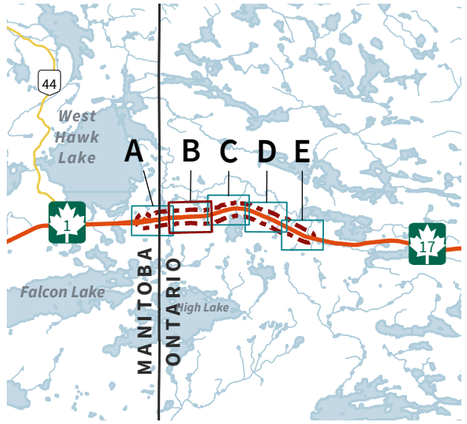
Map 17A - Proposed Clearing and Grading Areas for Phase 1 of the TransCanada Highway Twinning Project

Map 1 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives





LEGEND

Project
- Project Site

Clearing and Grading Areas
- Proposed Tree Clearing Areas
- Proposed Grading Areas

Proposed Project
- Proposed Road Surface
- Proposed Drainage Channel
- Proposed Gravel Surface
- Proposed Rock Blasting Areas
- Existing Road Surface
- Proposed Right of Way

Roads
- Primary Highway
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

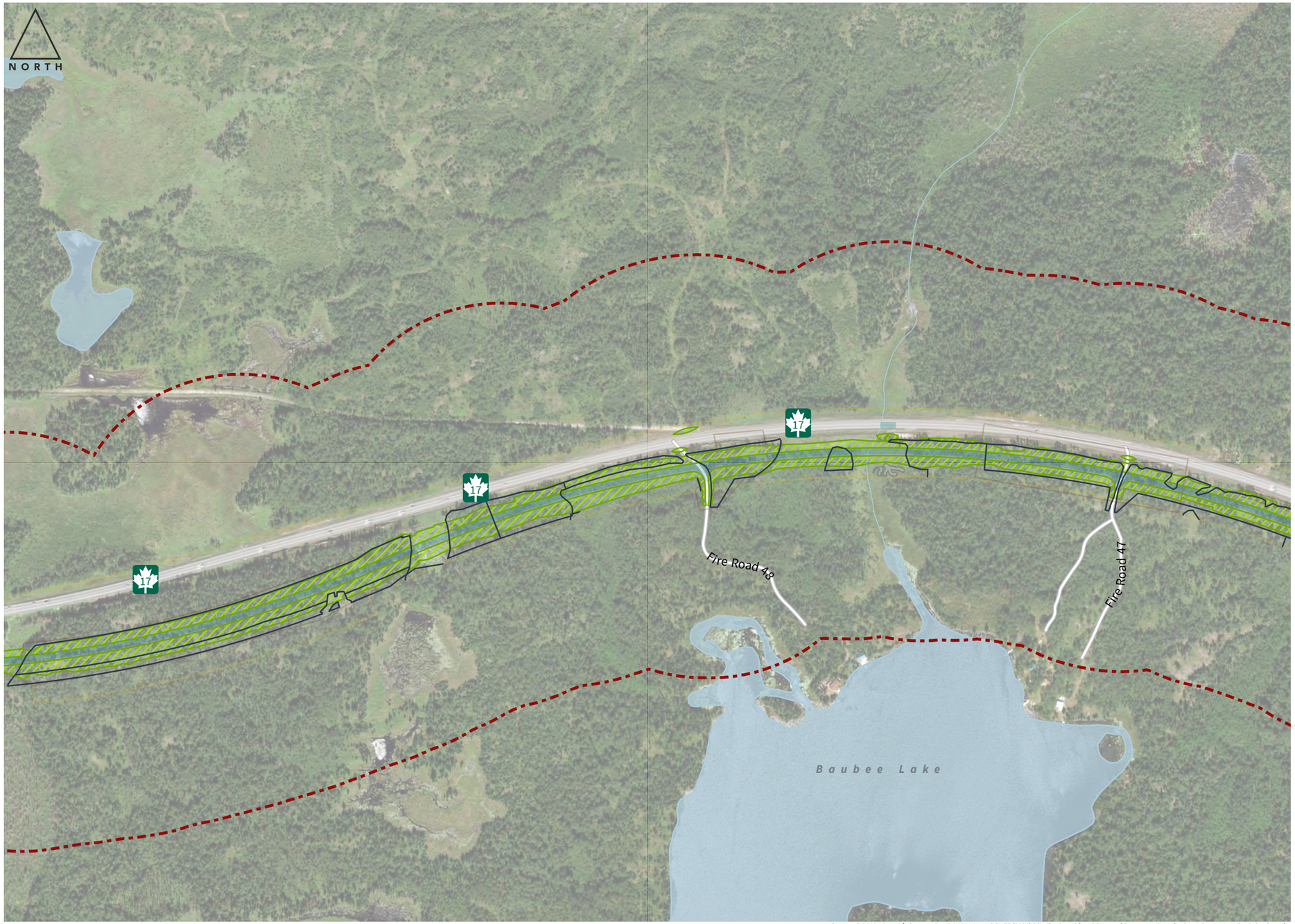
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

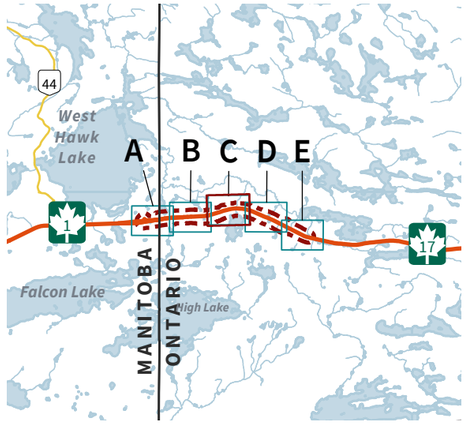
WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISHNAWBE

narratives

Map 17B - Proposed Clearing and Grading Areas for Phase 1 of the TransCanada Highway Twinning Project

Map 2 of 6





LEGEND

Project
- Project Site

Clearing and Grading Areas
- Proposed Tree Clearing Areas
- Proposed Grading Areas

Proposed Project
- Proposed Road Surface
- Proposed Drainage Channel
- Proposed Rock Blasting Areas
- Existing Road Surface
- Proposed Right of Way

Roads
- Primary Highway
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

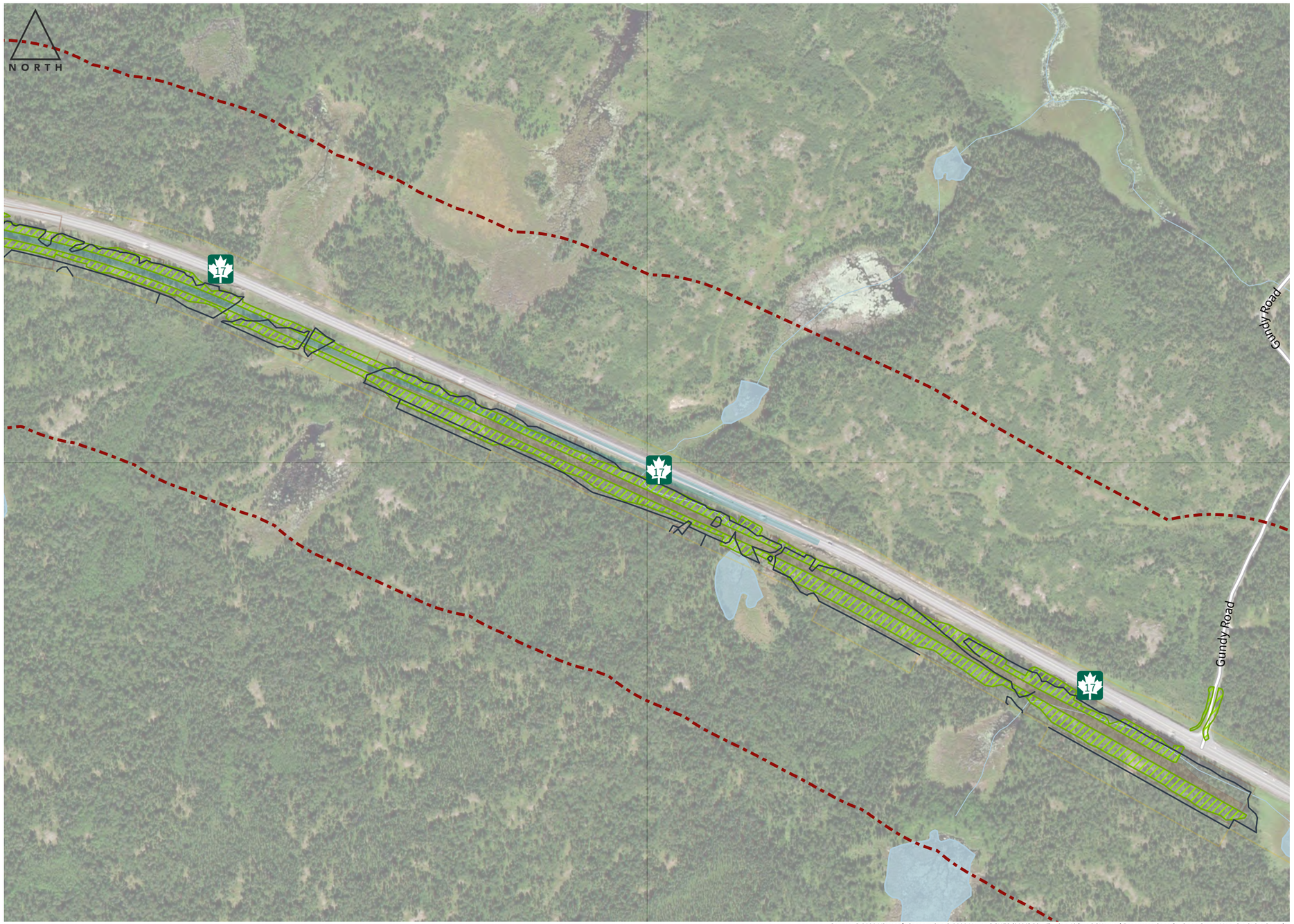
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

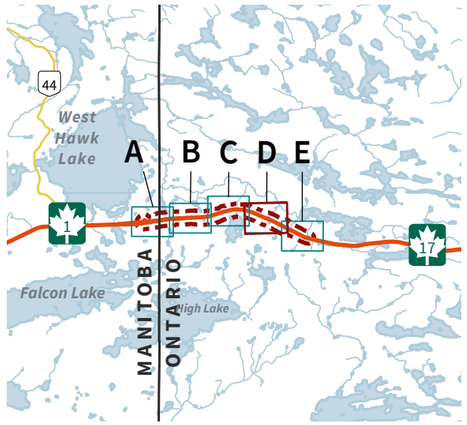
Map 17C - Proposed Clearing and Grading Areas for Phase 1 of the TransCanada Highway Twinning Project

Map 3 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISHNAWBE

narratives





LEGEND

Project
- Project Site

Clearing and Grading Areas
- Proposed Tree Clearing Areas
- Proposed Grading Areas

Proposed Project
- Proposed Road Surface
- Proposed Drainage Channel
- Proposed Gravel Surface
- Proposed Rock Blasting Areas
- Existing Road Surface
- Proposed Right of Way

Roads
- Primary Highway
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

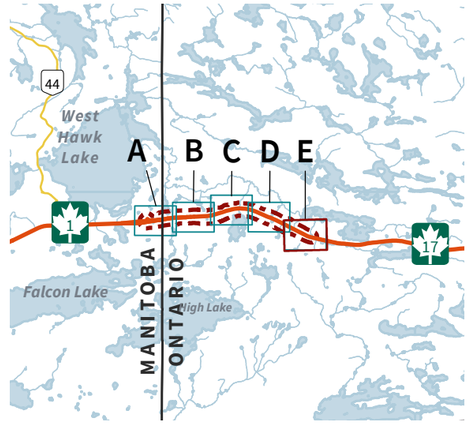
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

Map 17D - Proposed Clearing and Grading Areas for Phase 1 of the TransCanada Highway Twinning Project

Map 4 of 6

WAUZHUSHK ONIGUM
NISAACHEWAN
WASHAGAMIS BAY
SHOAL LAKE 40

narratives



LEGEND

Project
- Project Site

Clearing and Grading Areas
- Proposed Tree Clearing Areas
- Proposed Grading Areas

Proposed Project
- Proposed Gravel Surface
- Proposed Rock Blasting Areas
- Existing Road Surface
- Proposed Right of Way

Roads
- Primary Highway
- Tertiary Highway
- Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

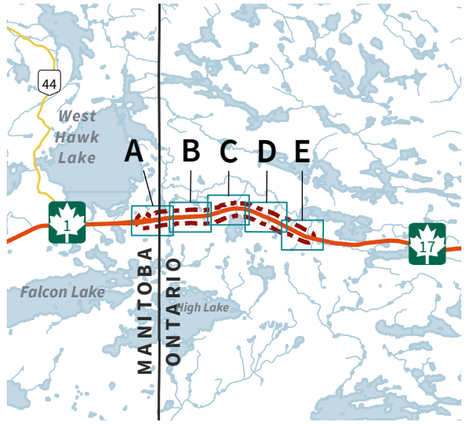
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

Map 17E - Proposed Clearing and Grading Areas for Phase 1 of the TransCanada Highway Twinning Project

Map 5 of 6

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISHNAWBE

narratives



LEGEND

Project

Project Site

Roads

Local Road

0 50 100 200 300 400 m

NAD 1983 UTM Zone 15N 1:6,000

Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Open Street Map; Statistics Canada.

Map 17F - Proposed Clearing and Grading Areas for Phase 1 of the TransCanada Highway Twinning Project

Map 6 of 6

WAUZHUSHK ONIGUM
NISAACHEWAN
WASHAGAMIS BAY
SHOAL LAKE 40

narratives

Map 18: Indigenous-Crown Treaties of Canada

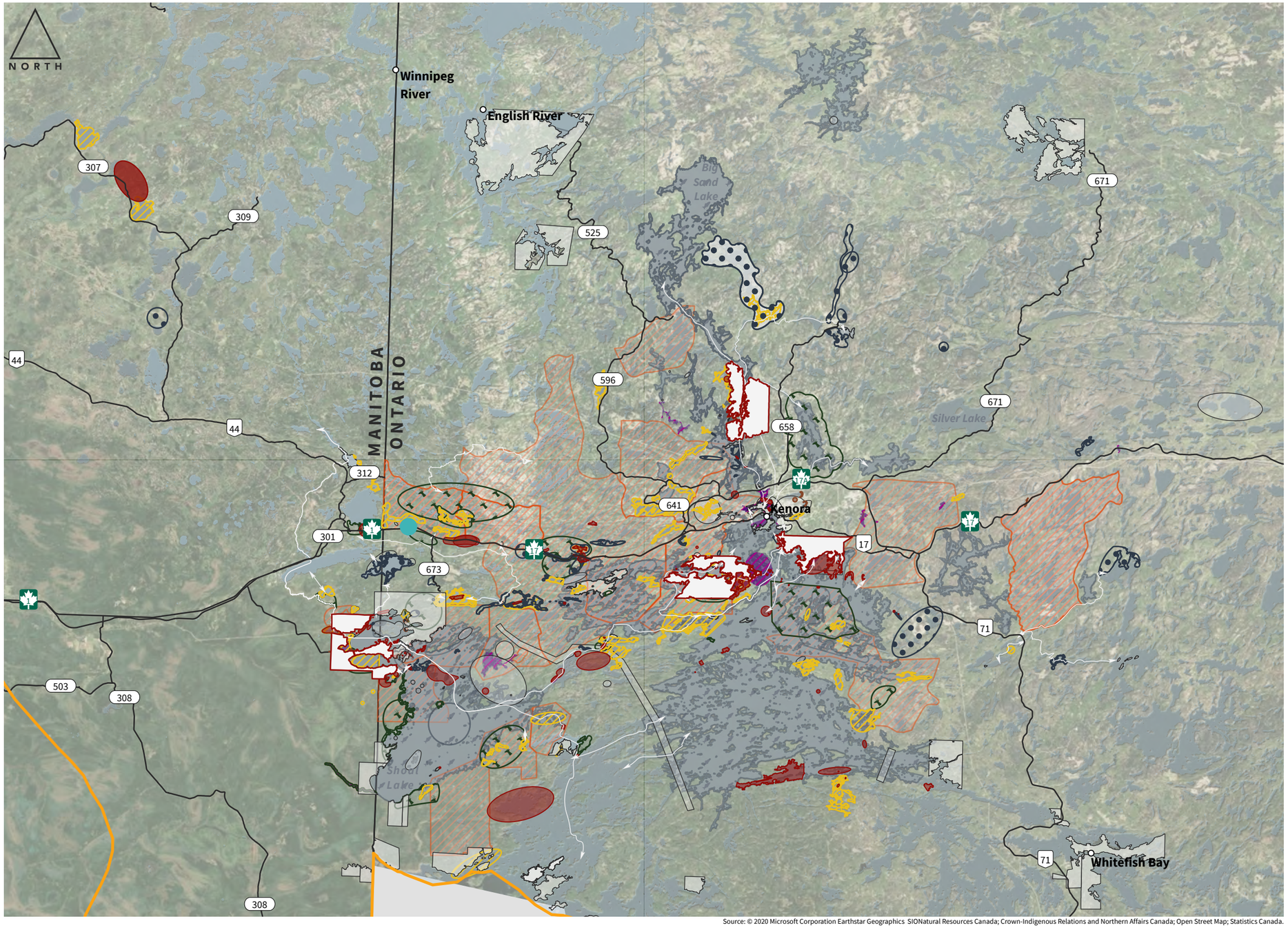
Source: Natural Resources Canada; Crown-Indigenous Relations and Northern Affairs Canada; Open Street Map; Statistics Canada.

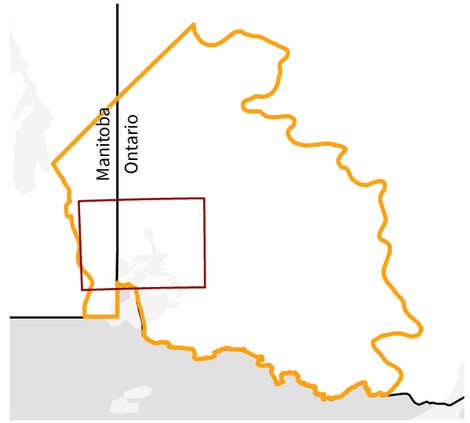
Map 18 - Indigenous-Crown Treaties of Canada

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives

Map 19: Anishinaabe Aki Kakendamowin for Niiwin Wendaanimok Communities





LEGEND

Anishinaabe Aki Kakendaamowin

- Sacred Sites
- Medicines
- Berry Picking
- Wild Rice
- Hunting
- Other
- Spawning Grounds
- Fishing
- Trapping
- Paths and Routes

Project

- Proposed Project in Treaty 3

Administrative Boundaries

- Niiwin Wendaanimok Communities
- Indigenous Reserve Territory
- Treaty #3

Roads

- Primary and Secondary Highways

0 5 10 20 30 km

NAD 1983 UTM Zone 15N 1:500,000

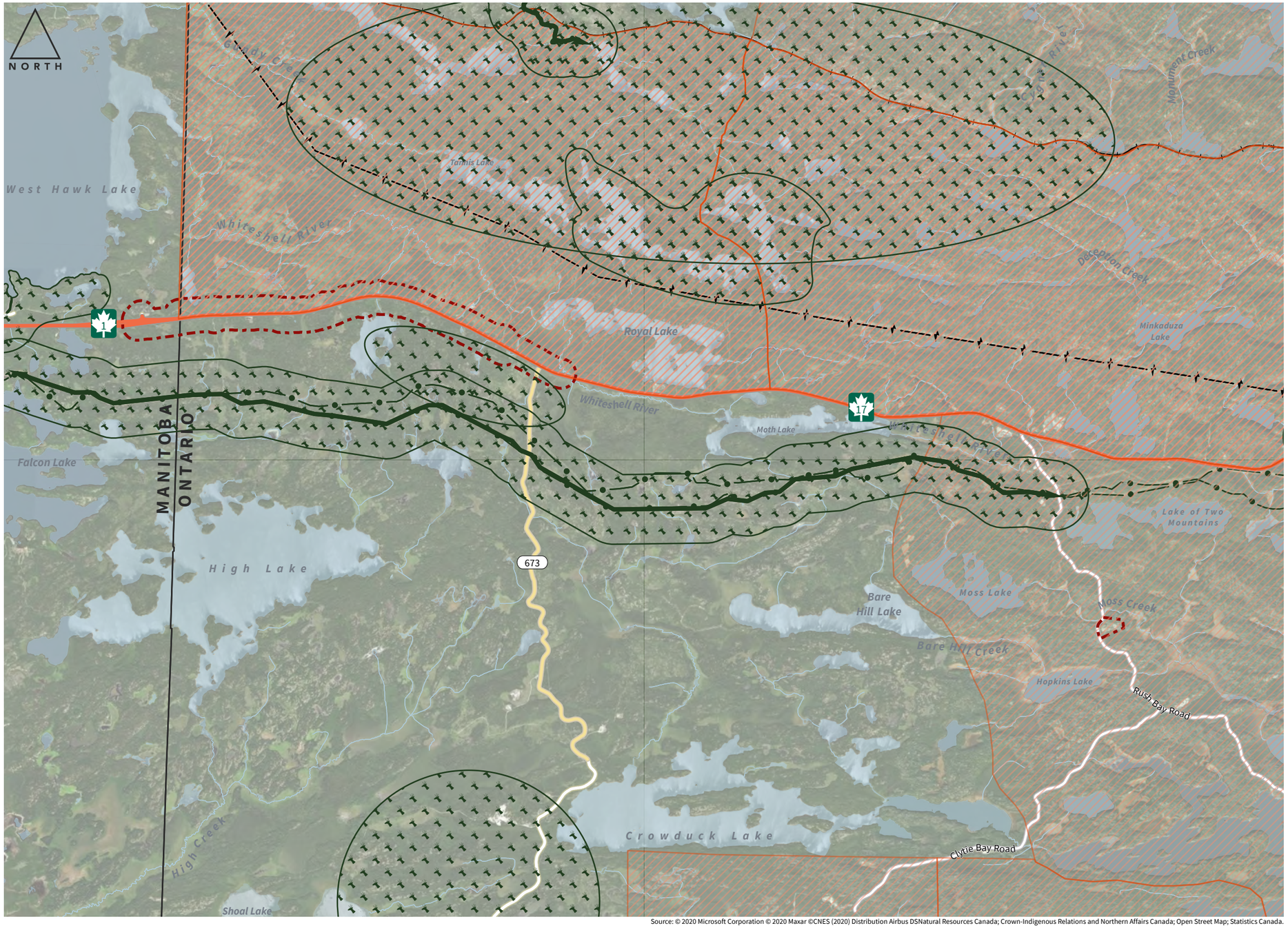
Source: © 2020 Microsoft Corporation Earthstar Geographics SIONatural Resources Canada; Crown-Indigenous Relations and Northern Affairs Canada; Open Street Map; Statistics Canada.

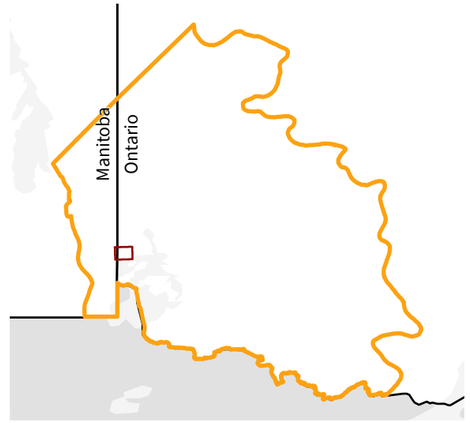
Map 19 - Anishinaabe Aki Kakendaamowin for Niiwin Wendaanimok Communities

WAUZHUSHK ONIGUM
NIISAACHEWAN
WASHAGAMIS BAY
SHOAL LAKE 40

narratives

Map 20: Anishinaabe Aki Kakendamowin for Niiwin Wendaanimok Communities – Knowledge of the Lands





LEGEND

Anishinaabe Aki Kakendaamowin
- Hunting
- Trapping
- Hunting Access / Route

Project
- Project Site

Existing Linear Infrastructure
- Rail Corridor
- Power Line Corridor
- Pipeline Corridor

Administrative Boundaries
- Treaty #3

Roads
- Primary Highway
- Tertiary Highway
- Regional Road

0 0.5 1 2 3 4 km

NAD 1983 UTM Zone 15N 1:70,000

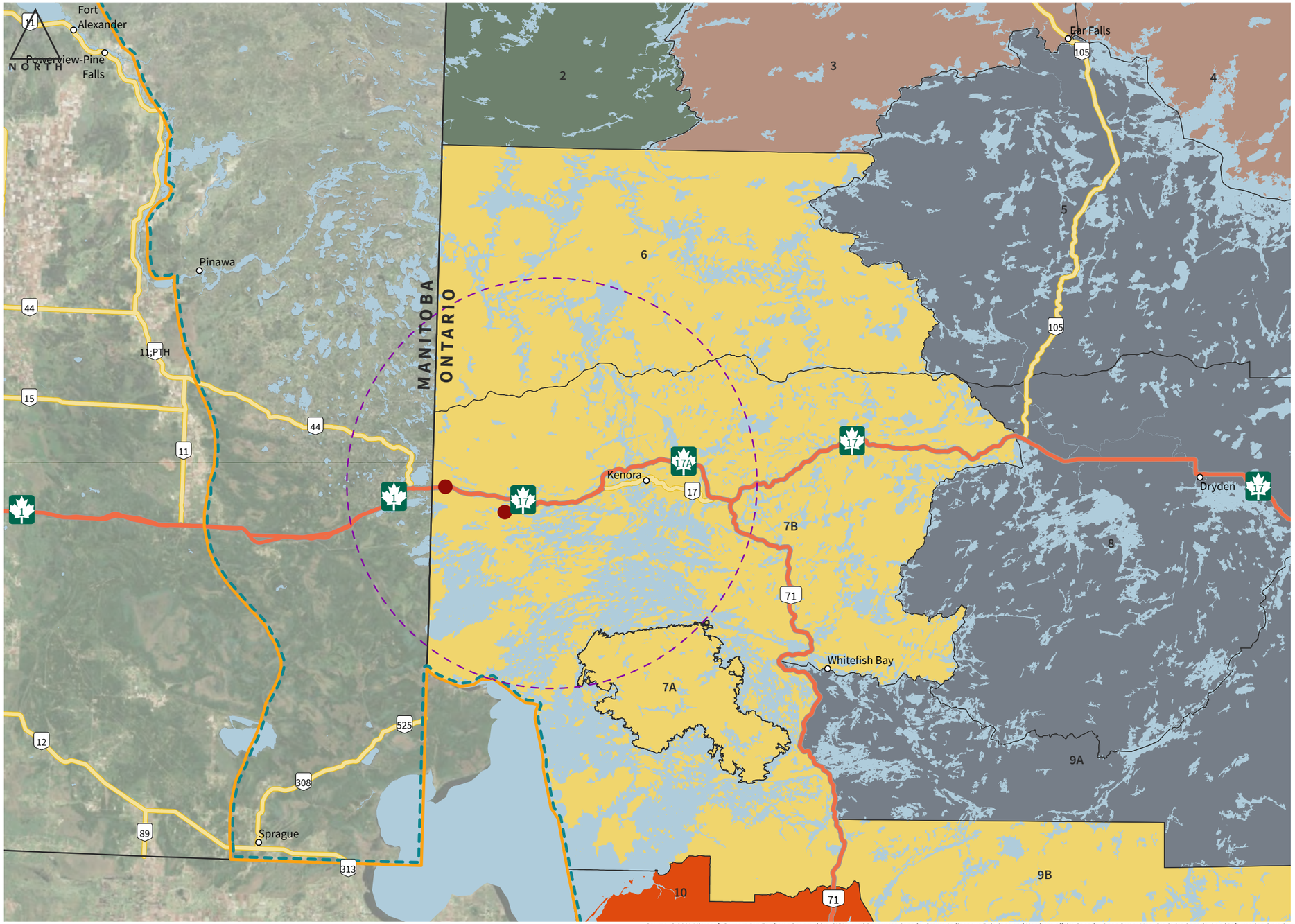
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Crown-Indigenous Relations and Northern Affairs Canada; Open Street Map; Statistics Canada.

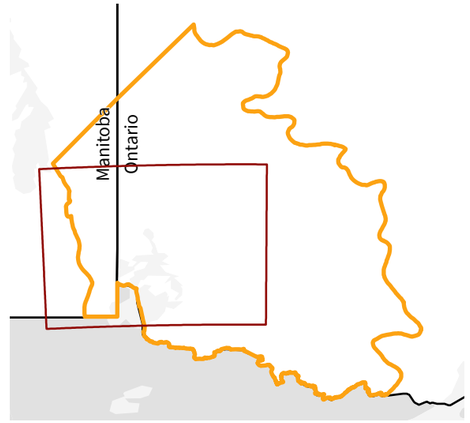
Map 20 - Anishinaabe Aki Kakendaamowin for Niiwin Wendaanimok Communities Knowledge of the Lands

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NIISAACHEWAN

narratives

Map 21: Wildlife Management Units of Ontario Featuring Cervid Ecological Zones





LEGEND

Project
- Project Site
- Project Area
- Project Region

Wildlife Management Units
- Wildlife Management Units

Cervid Ecological Zones
- A
- B
- C1
- D1
- E1

Administrative Boundaries
- Treaty #3

Roads
- Primary Highway
- Secondary Highway

0 5 10 20 30 40 50 km

NAD 1983 UTM Zone 15N 1:900,000

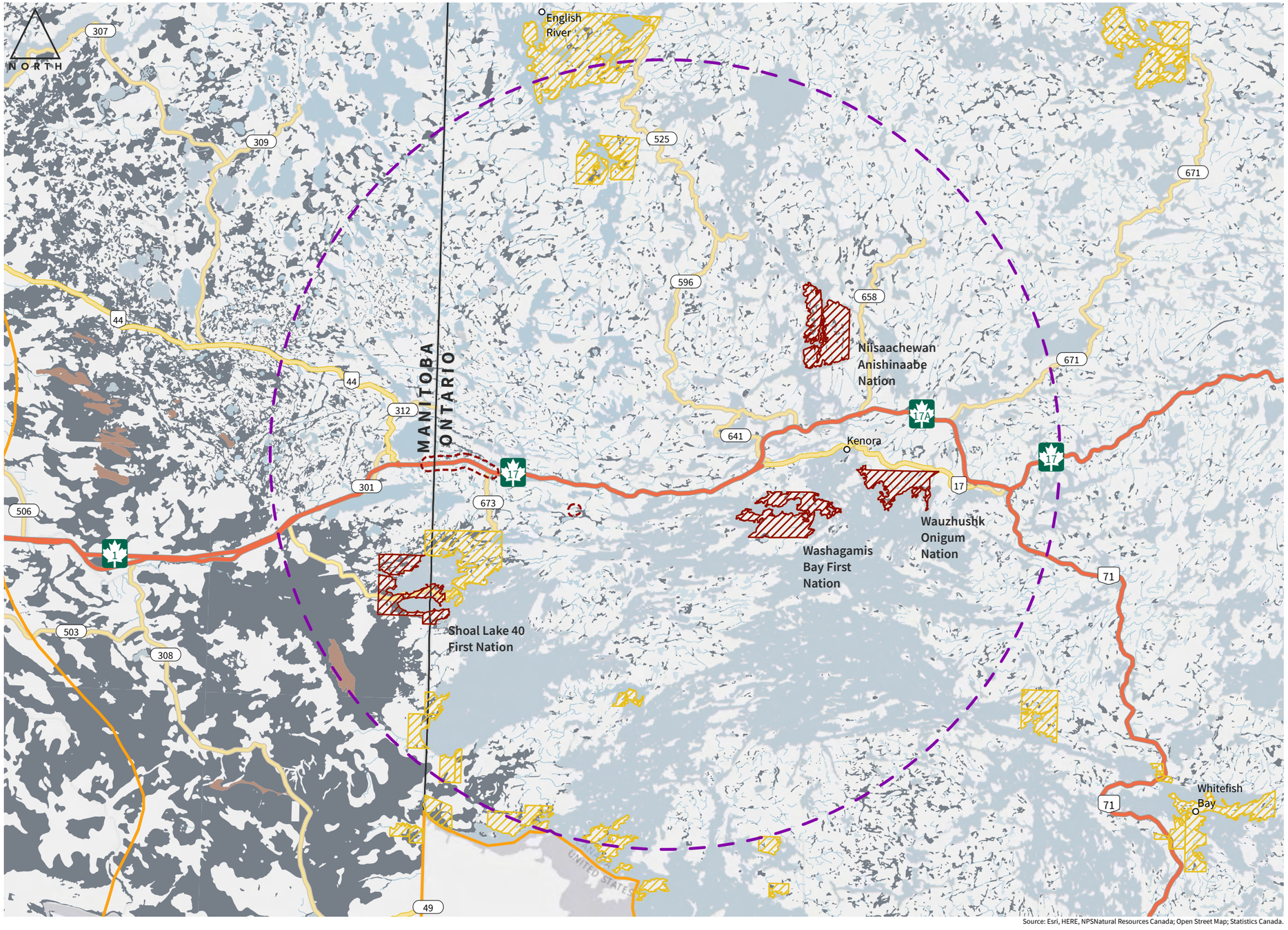
Source: © 2020 Microsoft Corporation Earthstar Geographics SIONatural Resources Canada; Crown-Indigenous Relations and Northern Affairs Canada; Open Street Map; Statistics Canada, Land Information Ontario.

Map 21 - Wildlife Management Units of Ontario
Featuring Cervid Ecological Zones

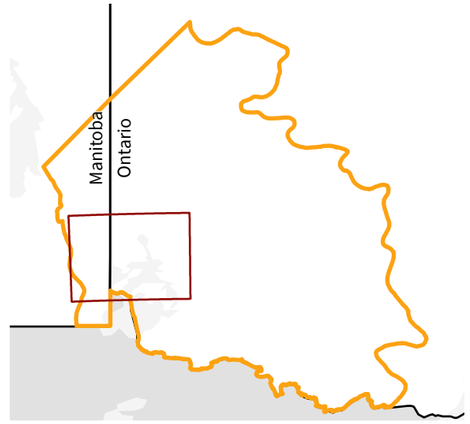
WAUZHUSHK ONIGUM
NISAACHEWAN
WASHAGAMIS BAY
SHOAL LAKE 40

narratives

Map 22: Saturated Soil Cover in the TransCanada Highway Twinning Project Area



Source: Esri, HERE, NPSNatural Resources Canada; Open Street Map; Statistics Canada.



LEGEND

Project
- Project Site
- Project Area

Administrative Boundaries
- Niiwin Wendaanimok
- Indigenous Reserve Territory
- Treaty #3

Roads
- Primary Highway
- Secondary Highway
- Tertiary Highway

Saturated Soils
- Wetland
- String Bog

World_Light_Gray_Base

Light Gray Canvas Base

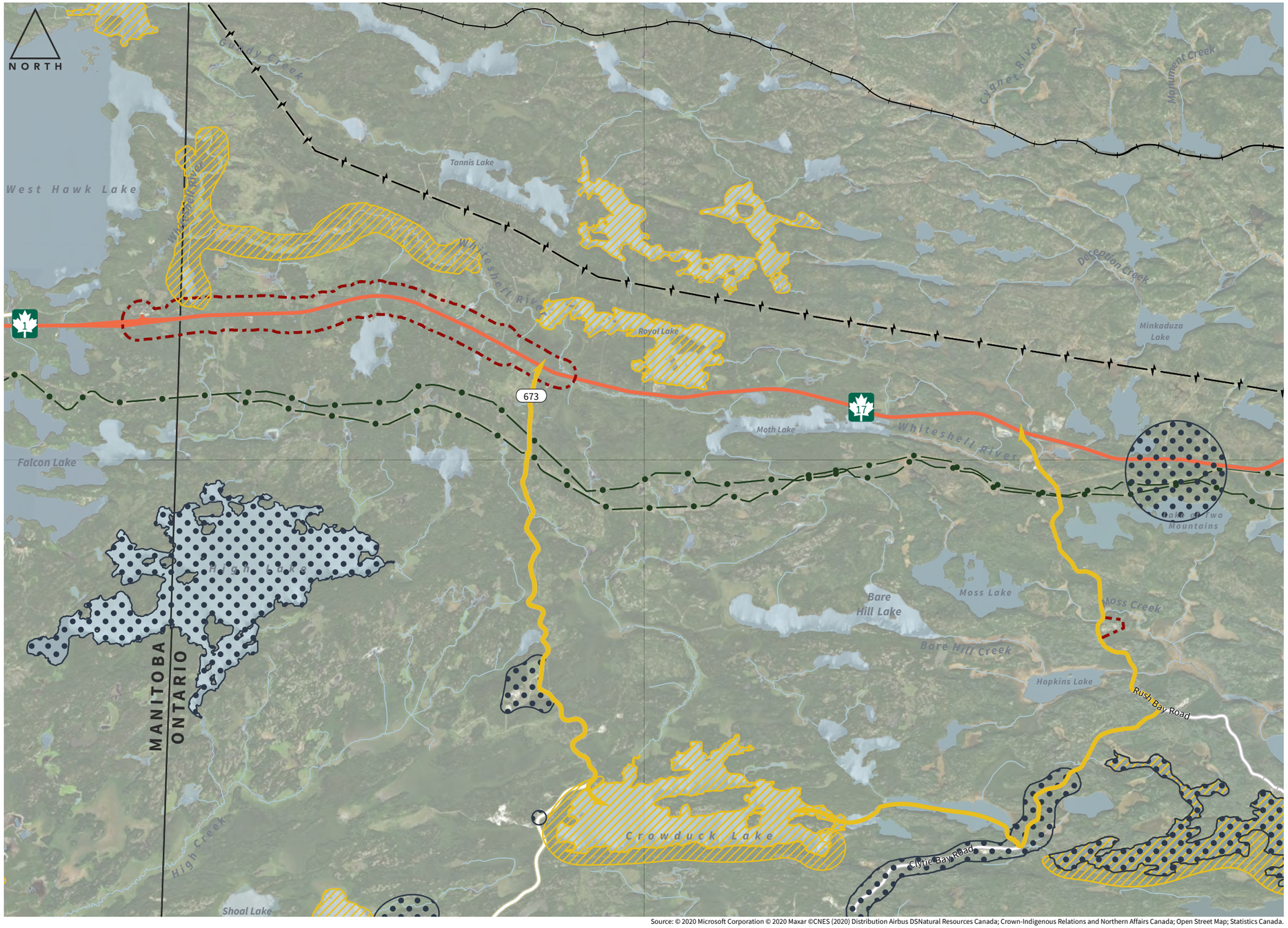
0 2.5 5 10 15 20 km

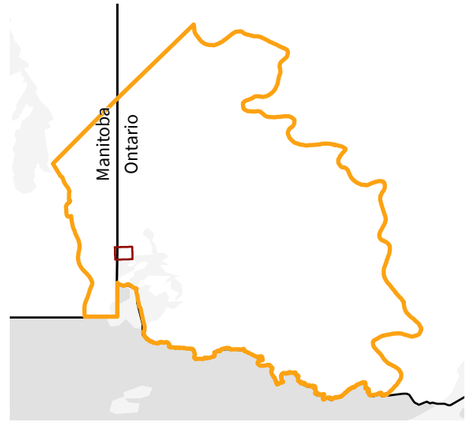
NAD 1983 UTM Zone 15N 1:465,000

Map 22 - Saturated Soil Cover in the TransCanada Highway Twinning Project Area

narratives

Map 23: Anishinaabe Aki Kakendamowin for Niiwin Wendaanimok Communities - Knowledge of the Soils





LEGEND

Anishinaabe Aki Kakendaamowin
- Berry Picking
- Wild Rice
- Wild Rice Access / Route

Project
- Project Site

Existing Linear Infrastructure
- Rail Corridor
- Power Line Corridor
- Pipeline Corridor

Administrative Boundaries
- Treaty #3

Roads
- Primary Highway
- Tertiary Highway
- Regional Road

0 0.5 1 2 3 4 km

NAD 1983 UTM Zone 15N 1:70,000

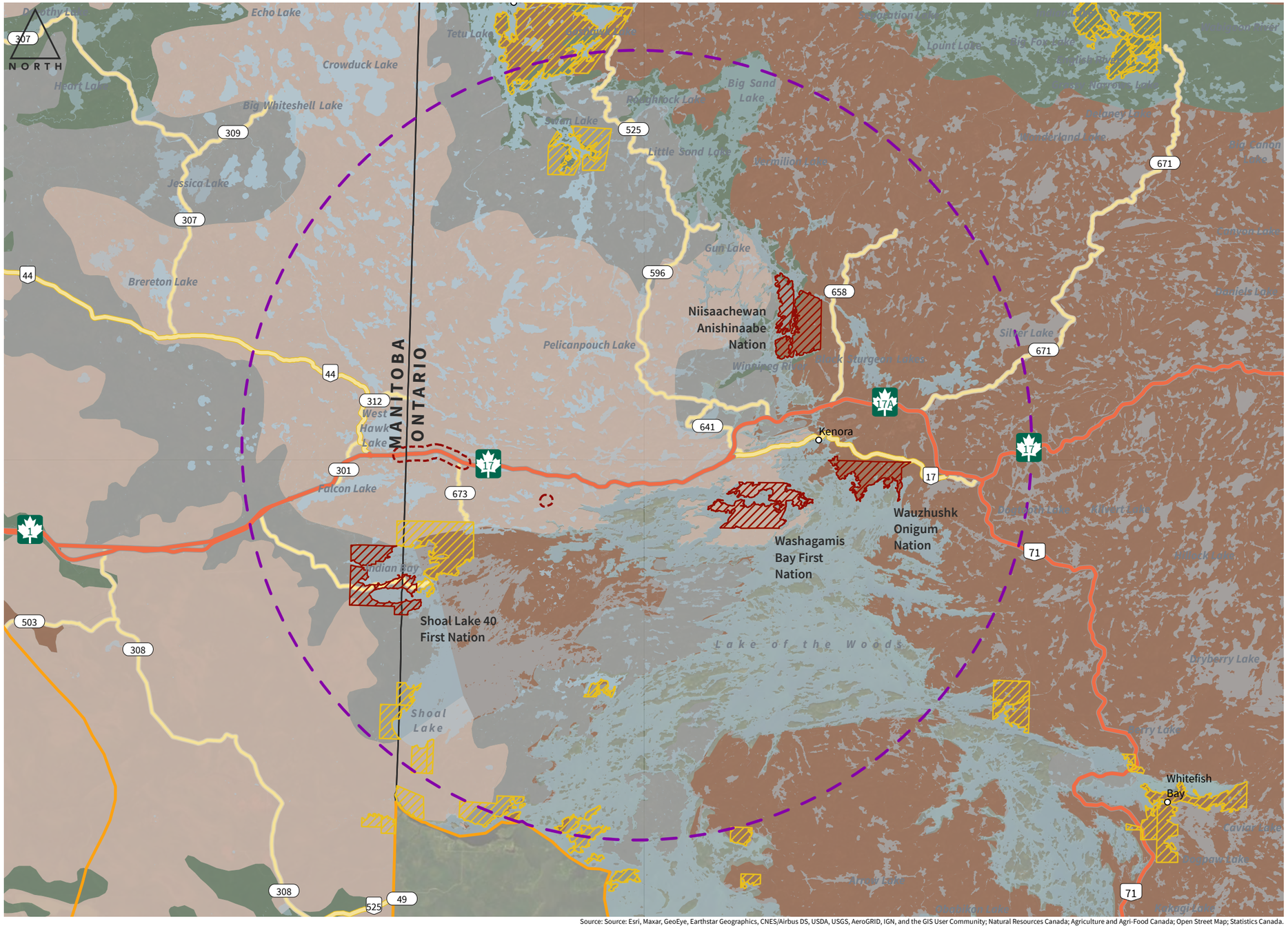
Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Crown-Indigenous Relations and Northern Affairs Canada; Open Street Map; Statistics Canada.

Map 23 - Anishinaabe Aki Kakendaamowin for Niiwin Wendaanimok Communities
Knowledge of the Soils

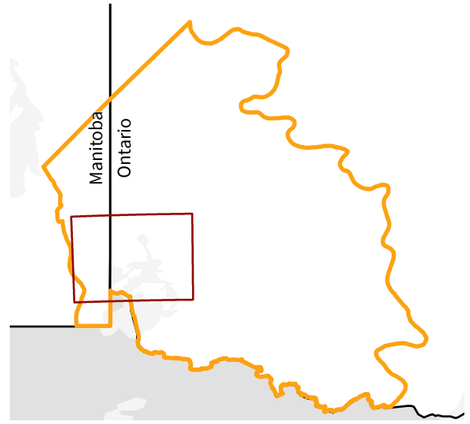
WAUZHUSHK ONIGUM
WASHAGAMIS BAY
NISAACHEWAN
SHOAL LAKE 40

narratives

Map 24: Soil Classification by Great Group in the TransCanada Highway Twinning Project Area



Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; Natural Resources Canada; Agriculture and Agri-Food Canada; Open Street Map; Statistics Canada.



LEGEND

Project
- Project Site
- Project Area

Administrative Boundaries
- Niiwin Wendaanimok
- Indigenous Reserve Territory
- Treaty #3

Roads
- Primary Highway
- Secondary Highway
- Tertiary Highway

Soil Classification
- Dystric Brunisol
- Gray Luvisol
- Mesisol
- Unclassified

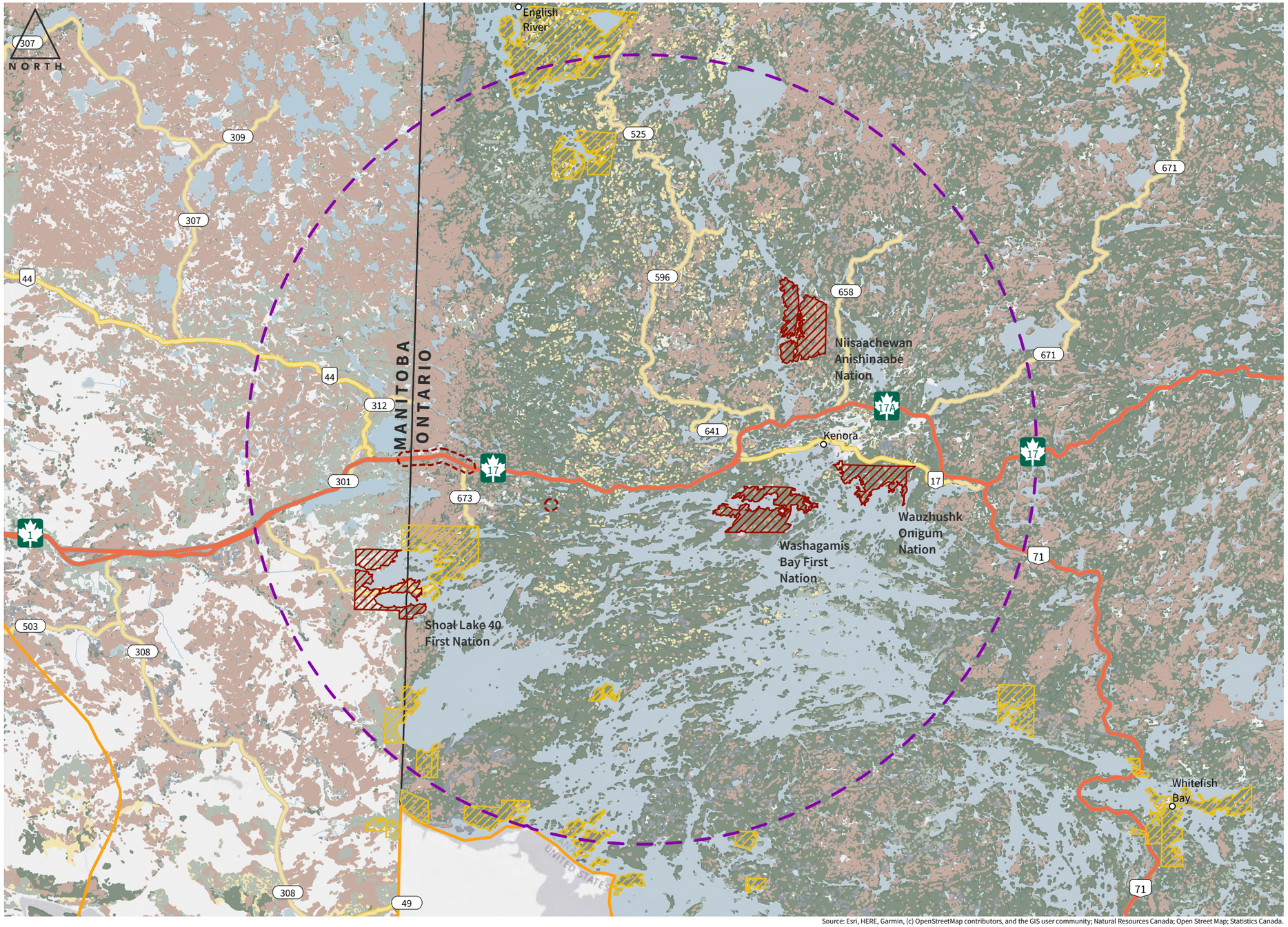
0 2.5 5 10 15 20 km

NAD 1983 UTM Zone 15N 1:465,000

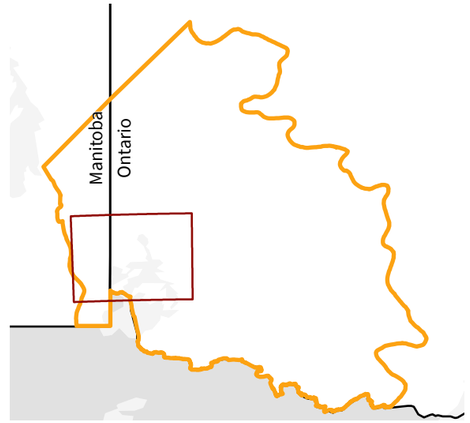
Map 24 - Soil Classification by Great Group in the TransCanada Highway Twinning Project Area

narratives

Map 25: Forested Land Cover in the TransCanada Highway Twinning Project Area



Source: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community; Natural Resources Canada; Open Street Map; Statistics Canada.



LEGEND

Project
- Project Site
- Project Area

Administrative Boundaries
- Niiwin Wendaanimok
- Indigenous Reserve Territory
- Treaty #3

Roads
- Primary Highway
- Secondary Highway
- Tertiary Highway

Forested Area
- Broadleaf Forest
- Coniferous Forest
- Wetland Treed
- Shrubland/Shrubtail
- Mixed Forest

0 2.5 5 10 15 20 km

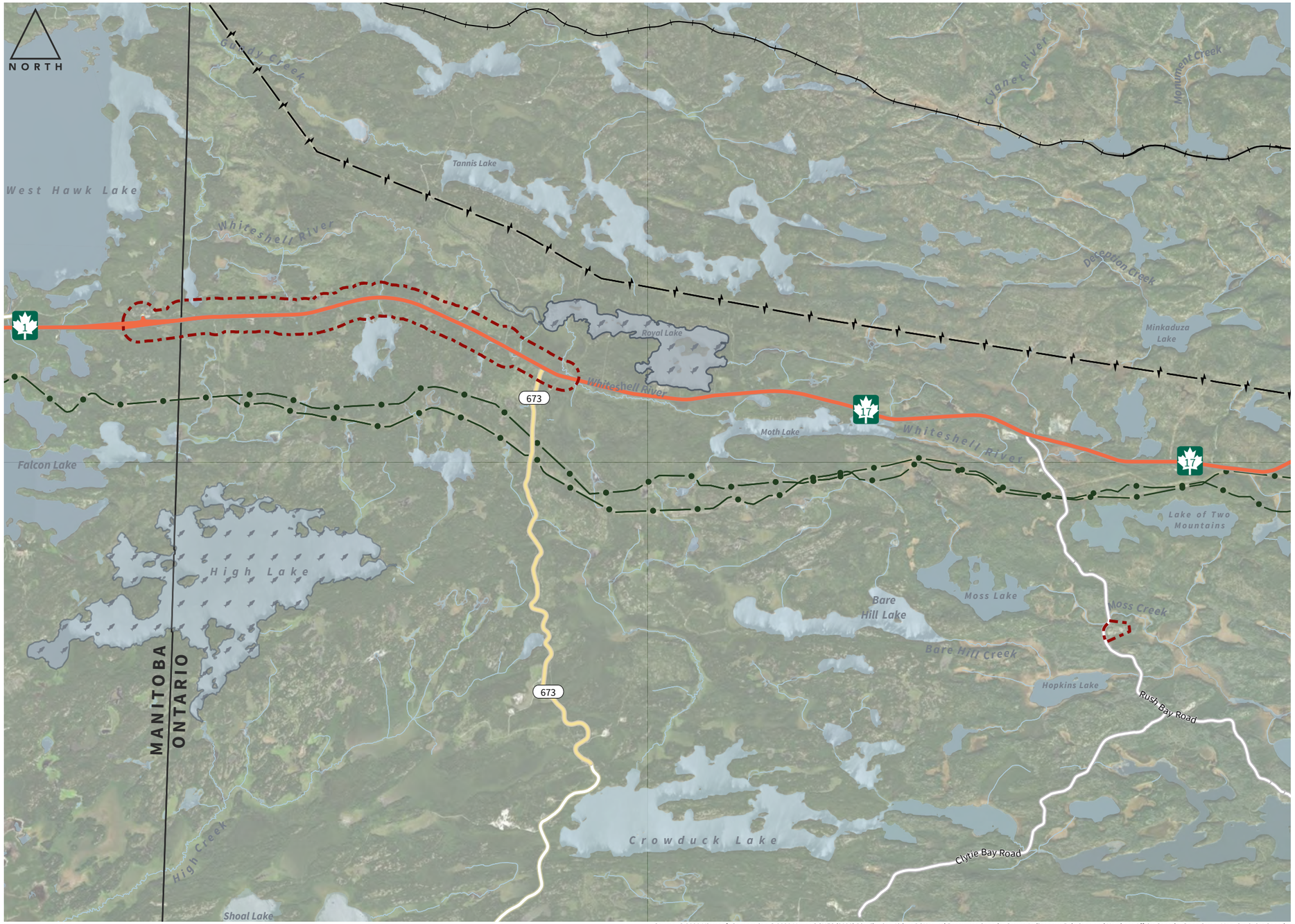
NAD 1983 UTM Zone 15N 1:465,000

Map 25 - Forested Land Cover in the TransCanada Highway Twinning Project Area

WAUZHUSHK ONIGUM · WASHAGAMIS BAY · SHOAL LAKE 40 · NIISAACHEWAN

narratives

Map 26: Anishinaabe Aki Kakendamowin for Niiwin Wendaanimok Communities - Knowledge of the Waters



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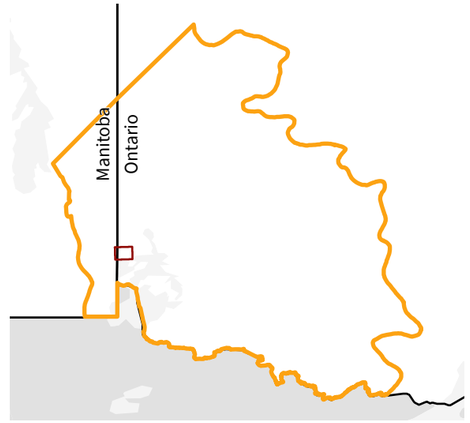


LEGEND

Anishinaabe Aki Kakendaamowin
- Fishing

Project
- Project Site

Existing Linear Infrastructure
- Rail Corridor
- Power Line Corridor
- Pipeline Corridor

Administrative Boundaries
- Treaty #3

Roads
- Primary Highway
- Tertiary Highway
- Regional Road

0 0.5 1 2 3 4 km

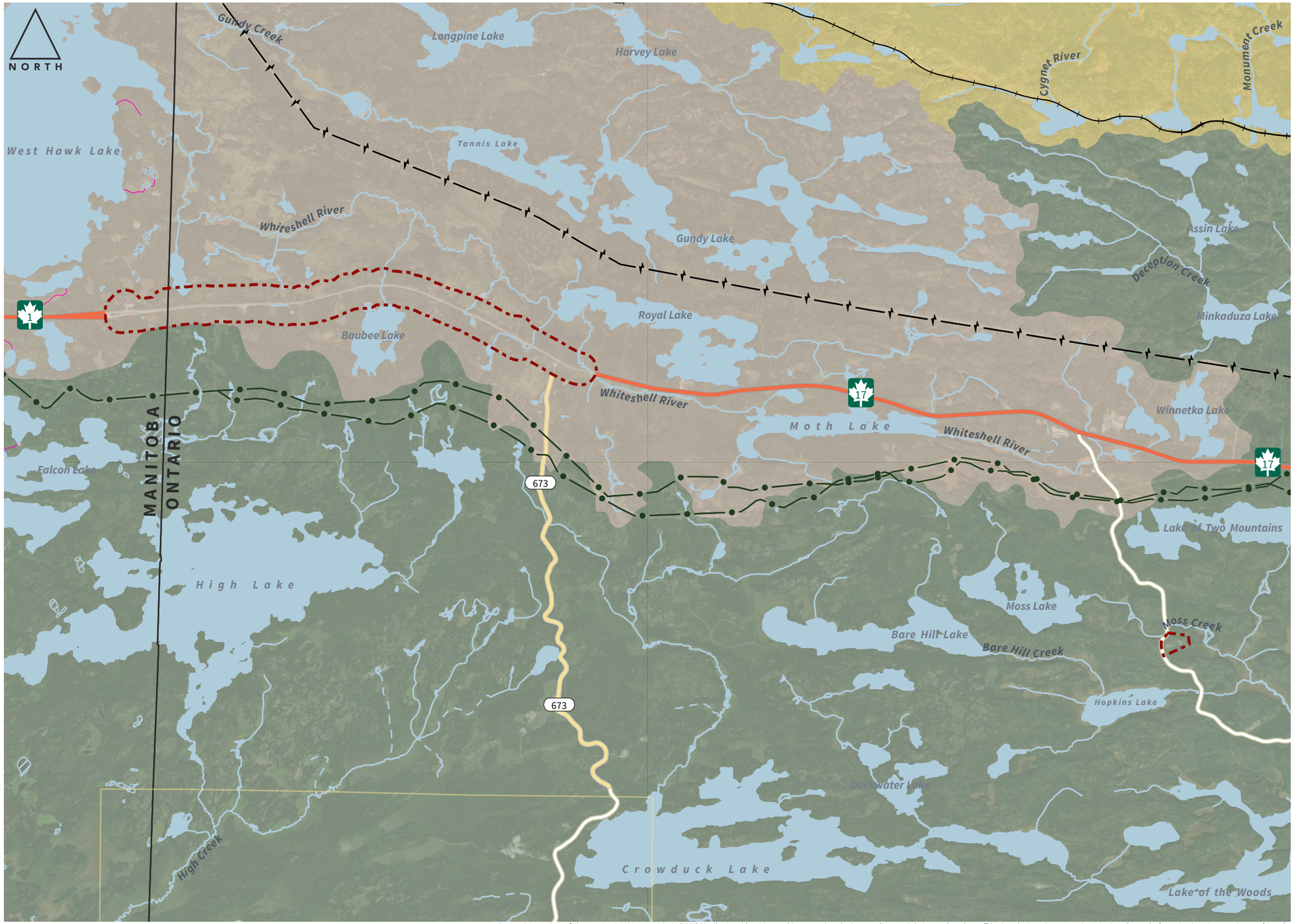
NAD 1983 UTM Zone 15N 1:70,000

Map 26 - Anishinaabe Aki Kakendaamowin for Niiwin Wendaanimok Communities
Knowledge of the Waters

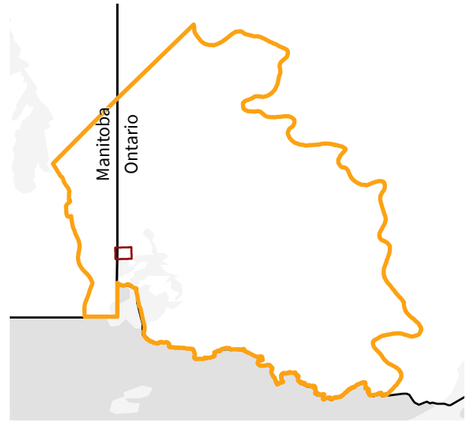
WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives

Map 27: Watershed Context for Phase 1 of the TransCanada Highway Twinning Project - Water Survey of Canada (WSC) Classification System



Source: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DSNatural Resources Canada; Crown-Indigenous Relations and Northern Affairs Canada; Open Street Map; Statistics Canada, Land Information Ontario, Water Survey of Canada.



LEGEND

Sub Sub Drainage Area
- Lake of the Woods
- Upper Winnipeg
- Whiteshell

Proposed Project
- Project Site
- Rail Corridor
- Power Line Corridor
- Pipeline Corridor

Roads
- Primary Highway
- Tertiary Highway
- Regional Road
- Treaty #3

Watercourses
- Permanent
- Intermittent
- Not Identified

0 0.5 1 2 3 4 km

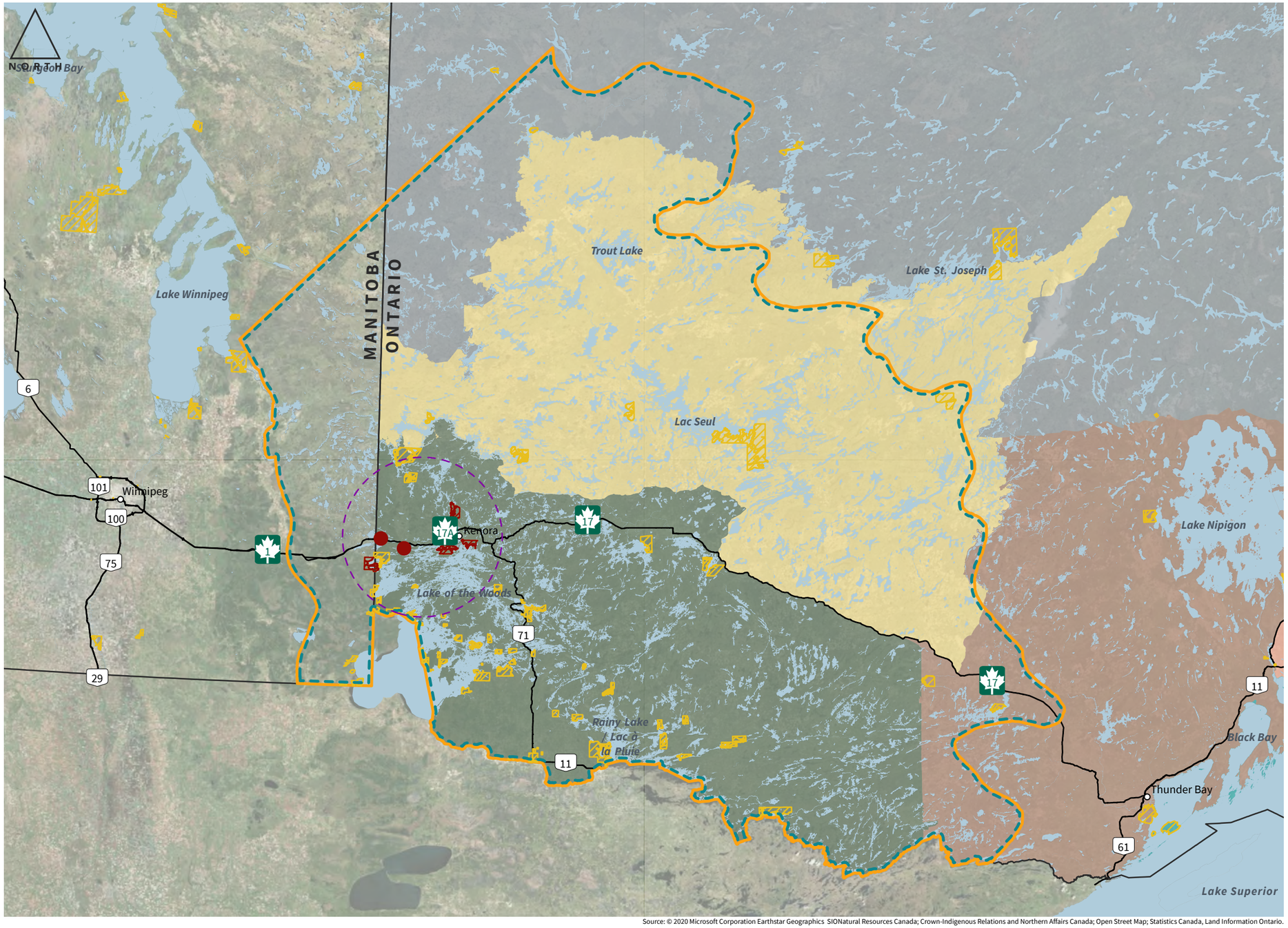
NAD 1983 UTM Zone 15N 1:65,000

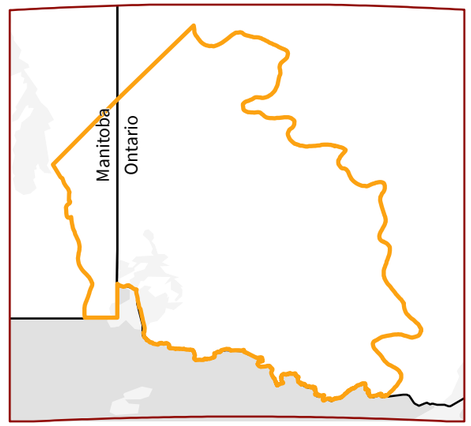
Map 27 - Watershed Context for Phase 1 of the TransCanada Highway Twinning Project
Water Survey of Canada (WSC) Classification System

WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives

Map 28: Fisheries Management Zones in Relation to the Project Area





LEGEND

Proposed Project
- Project Site
- Project Area
- Project Region

Administrative Boundaries
- Niiwin Wendaanimok
- Indigenous Reserve Territory
- Treaty #3

Roads
- Primary Highway

Fisheries Management Zones
- FMZ-2
- FMZ-4
- FMZ-5
- FMZ-6
- FMZ-7
- FMZ-9

0 25 50 100 150 km

NAD 1983 UTM Zone 15N 1:2,300,000

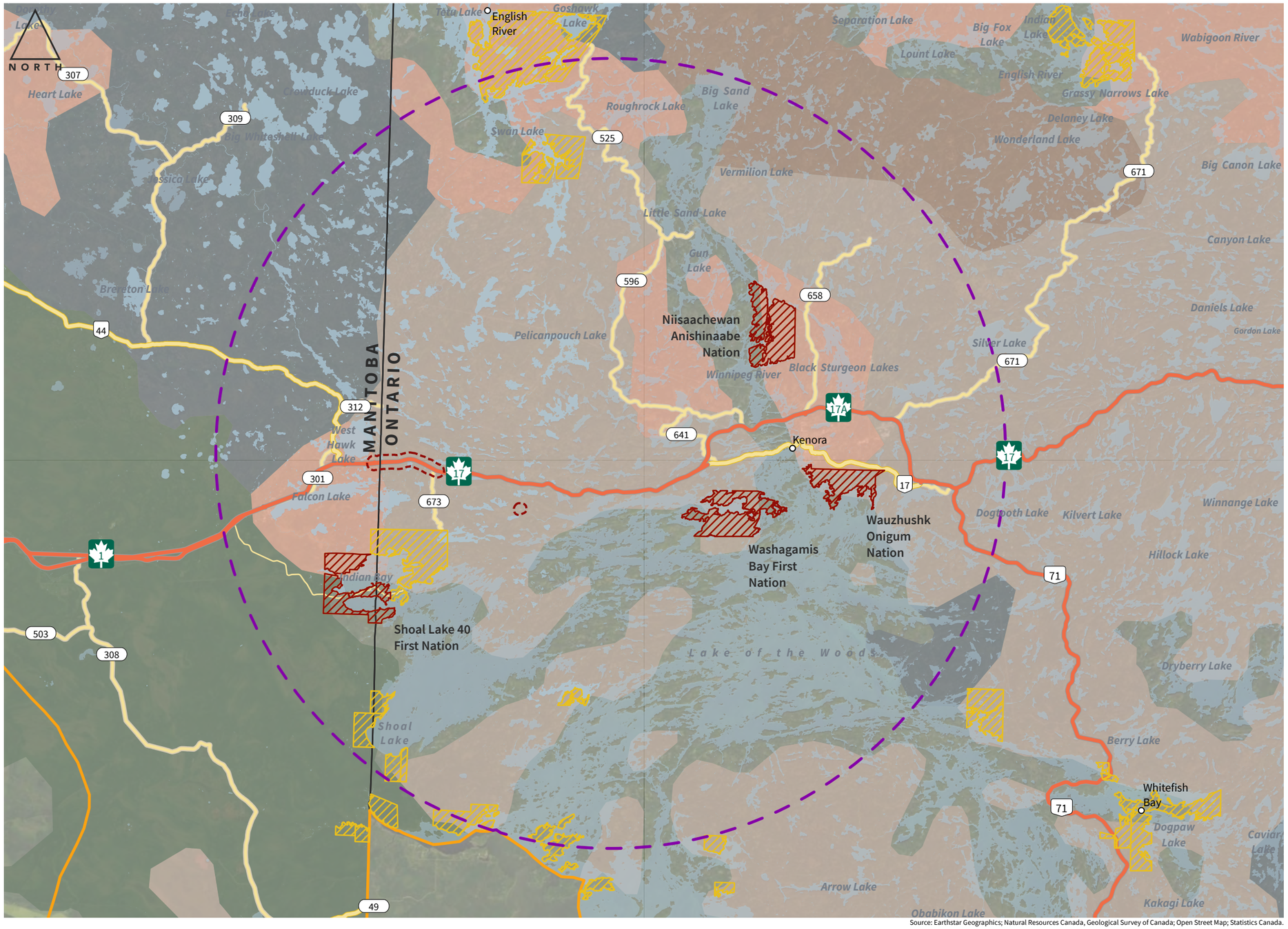
Source: © 2020 Microsoft Corporation Earthstar Geographics SIONatural Resources Canada; Crown-Indigenous Relations and Northern Affairs Canada; Open Street Map; Statistics Canada, Land Information Ontario.

Map 28 - Fisheries Management Zones in Relation to the Project Area

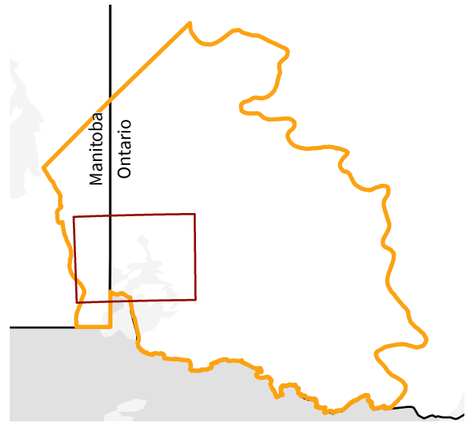
WAUZHUSHK ONIGUM
WASHAGAMIS BAY
SHOAL LAKE 40
NISAACHEWAN

narratives

Map 29: Surficial Geology of the TransCanada Highway Twinning Project Area



Source: Earthstar Geographics; Natural Resources Canada, Geological Survey of Canada; Open Street Map; Statistics Canada.



LEGEND

Project
- Project Site
- Project Area

Administrative Boundaries
- Niiwin Wendaanimok
- Indigenous Reserve Territory

Roads
- Primary Highway
- Secondary Highway
- Tertiary Highway

Surficial Geology
- Bedrock - Undifferentiated
- Glacial sediments - Blanket
- Glacial sediments - Veneer
- Glaciolacustrine sediments - Offshore sediments
- Organic deposits - Undifferentiated deposits

0 2.5 5 10 15 20 km

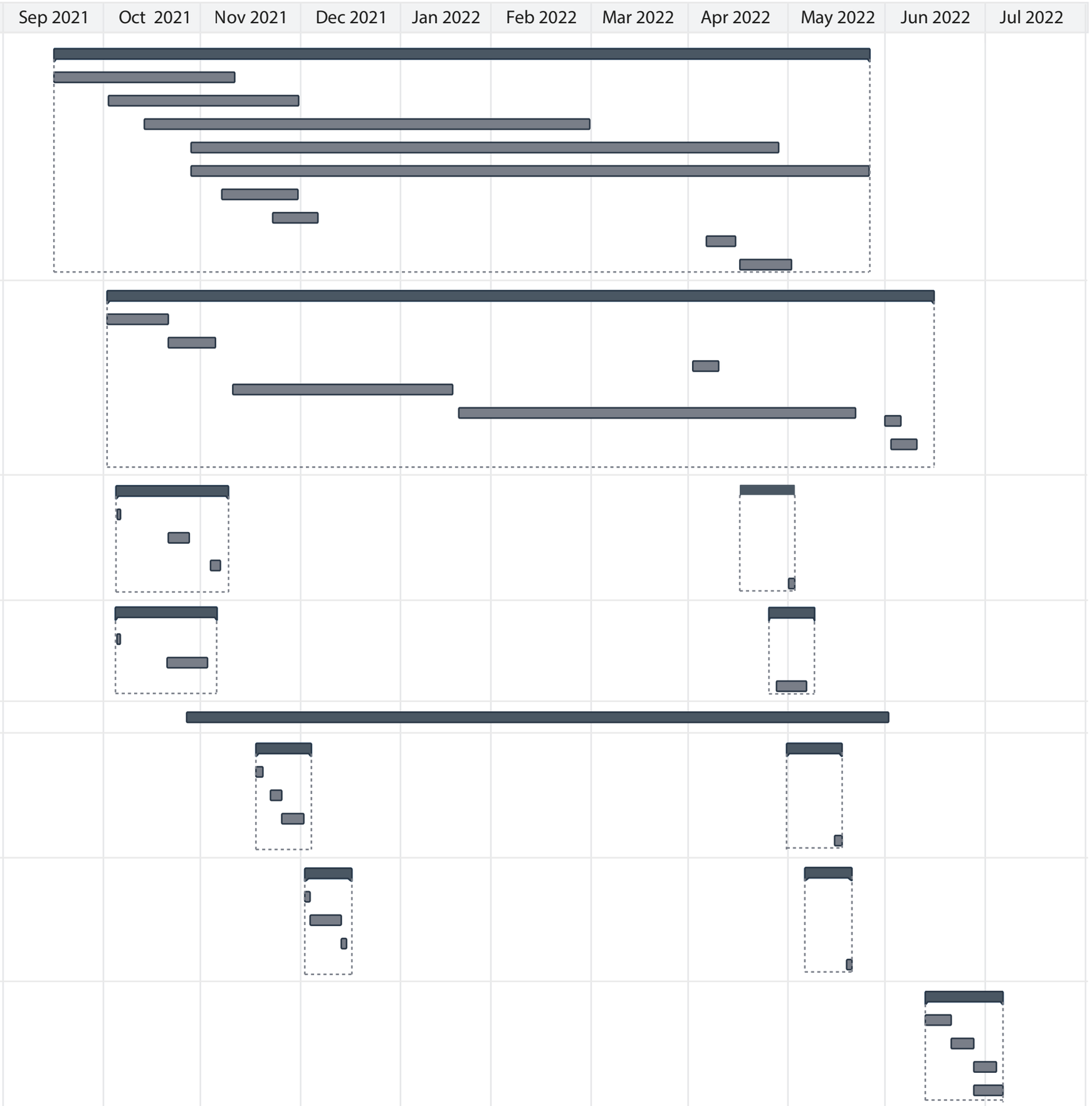
NAD 1983 UTM Zone 15N 1:465,000

Map 29 - Surficial Geology of the TransCanada Highway Twinning Project Area

narratives

APPENDIX 2: CONSTRUCTION SCHEDULE

Activity	Start	End
Construct New Eastbound Lanes	Sep 17	May 23
Earth Excavation	Sep 17	Nov 11
Rock Excavation	Oct 2	Nov 29
Rock Embankment	Oct 15	Mar 1
Surcharge Period	Oct 29	Apr 26
Surcharge Period	Oct 29	May 23
Culvert Construction	Nov 9	Nov 30
Watercourse/Chanel Realignment	Nov 23	Dec 5
Granular B Type II Subbase	Apr 6	Apr 14
Granular A Base	Apr 13	Jun 3
Construct New Westbound Lanes	Oct 2	Sep 23
Earth Excavation	Oct 2	Oct 20
Rock Excavation	Oct 20	Nov 6
Culvert Construction	Apr 2	Apr 9
Rock Embankment	Nov 10	Jan 16
Preloading Embankment	Jan 18	May18
Granular B Type II Subbase	Jun 1	Jun 5
Granular A Base	Jun 3	Jun 10
Construct 2 to 4 Lane Transition	Oct 5	Nov 18
Earth Excavation	Oct 5	Oct 5
Rock Excavation	Oct 23	Oct 27
Rock Embankment	Nov 10	Nov 12
Granular Base/Subbase	Apr 30	May 1
Construct Temporary Widening	Oct 5	Nov 18
Earth Excavation	Oct 5	Oct 5
Rock Excavation	Oct 23	Nov 5
Granular Base/Subbase	Apr 28	May 6
Winter Shutdown Period	Oct 28	Jun 1
Construct 4 to 2 Lane Transition	Nov 16	Dec 3
Earth Excavation	Nov 16	Nov17
Rock Excavation	Nov 20	Nov 24
Rock Embankment	Nov 25	Dec 1
Granular Base/Subbase	May 15	May 16
Temporary Access Connections	Dec 2	Dec 14
Earth Excavation	Dec 2	Dec 2
Rock Excavation	Dec 3	Dec 10
Rock Embankment	Dec 13	Dec 13
Granular Base/Subbase	May 17	May 17
Paving	Jun 13	Jul 6
Binder Course	Jun 13	Jun 20
Surface Course	Jun 21	Jun 27
Pavement Marking	Jun 28	Jul 4
Granular A Shouldering	Jun 28	Jul 6



APPENDIX 3: NEWSLETTERS

02 Manito Aki Inakonigaawin
Overview & Significance

03 Twinning Project
Details and Status Update
Anishinaabe Aki Kakendamowin
Traditional Land Use Study

04 Next Steps...
The Journey to come...
Meet your Community Coordinators
Who make it all happen!

NIIWIN WENDAANIMOK

FOUR WINDS PARTNERSHIP

June 2019

Shoal Lake 40 | Obashkaandagaang | Niisaachewan | Wauzhushk Onigum

An Introduction: The Unity Agreement

Since 2010, the Ministry of Transportation Ontario (MTO) has been in the process of developing a plan to "twin" (double-lane) Highway 17 between the Manitoba border and Kenora as part of an effort to reduce traffic and increase road safety. MTO recognizes that Highway 17 is located on the traditional territory of the Nations of Treaty 3 and has affirmed its responsibility to consult communities who may be affected by the project.

In order to coordinate their shared experience, concerns, and interests, the Nations of Shoal Lake 40, Obashkaandagaang, Niisaachewan, and Wauzhushk Onigum signed the **Unity Agreement** in October of 2018. This agreement marks the beginning of the **Niiwin Wendaanimok** ('Four Winds') Partnership.

In the spirit of reconciliation, MTO has agreed to partnering with the Niiwin Wendaanimok moving forward on the twinning project. Although the nature and terms of this partnership are still being negotiated, it means the Niiwin Wendaanimok will consult its own people to understand potential social, environmental, and cultural impacts, provide its own reporting, and directly contribute to future decisions on the project.

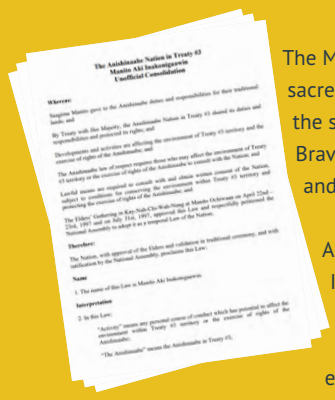
Chiefs Redsky, Sinclair, Skead, and Cobiness with the signed Unity Agreement (Oct. 2018)

To keep community members informed of project developments, the Niiwin Wendaanimok will provide monthly updates through this newsletter. Read on to learn more about the project, who your Community Coordinators are, and how you can get involved.

Meegwetch!

4 *Treaty #3 Nations* | **2,232** *community members* | at least **2.13** *million acres of traditional territory*

M.A.I.



The Manito Aki Inakonigaawin (MAI) is the sacred Law of the Anishinaabeg informed by the seven Grandfather Teachings of Humility, Bravery, Honesty, Wisdom, Truth, Respect, and Love.

Although it has been in effect since Time Immemorial (and is therefore unwritten) a portion of the Law has recently been translated to written form. This expression of the MAI is called the **Resource Law** and is intended to be both equal in force and compatible with the contemporary laws of the Crown.

Resource Law and Safe Passage through Anishinaabe Lands

The MAI is being used as the basis for a Treaty-based relationship with the Crown. MTO has agreed in principle to observance of the principles embodied in the Resource Law in exchange for safe passage through Anishinaabe lands, including:

- Bona fide and meaningful traditional and contemporary consultation
- Minimizing and mitigating environmental effects
- Process funding
- Satisfying Crown obligations and proponent responsibilities
- Maximizing benefits and minimizing negative the effects to the Anishinaabeg in Treaty 3
- Commitment to a joint process that will activate spiritual guidance and protocols.

The Niiwin Wendaanimok in action.

Here are a few of the activities and meetings conducted thus far.

MAR 19

Drum Ceremony at the Wauzhushk Onigum Roundhouse

APR 23

Elders Meeting at Wauzhushk Onigum

The Highway 17 Twinning Project

The Highway 17 Twinning Project is planned to move forward in several phases, though the specific dimensions of each phase is currently under review. With that said, MTO is considering twinning the highway between the Manitoba border in the west to the western extent of the Kenora border in the east.

MTO had begun to conduct some environmental and socioeconomic study and prepared several potential design alternatives closest to the Manitoba border. These works are being revisited as a result of the Niwiin Wendaanimok Partnership.

Decision-making on these and future works will be informed by a "Harmonized Impact Assessment" which will be based upon the Anishinaabe Aki Kakendamowin. This process will give careful consideration of potential environmental, social, and cultural impacts according to the principles embodied in the MAI.

Anishinaabe Aki Kakendamowin

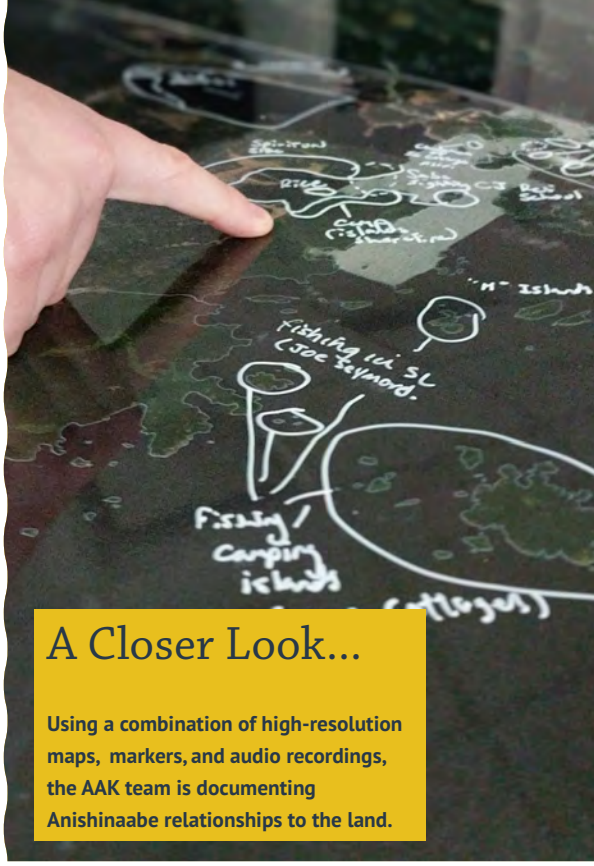
The Anishinaabe Aki Kakendamowin (AAK) refers to the documentation of the knowledge and practices associated with the care and protection for all life on the lands, in the soil, the skies, and the waters of the territories of the Anishinaabe. This process is directly informed by the Kaagakiwe Inaakonigewin (The Teachings) and will be used to support decision-making on the Twinning Project.

The process involves storytelling, mapping, interviews with community members, and archival research to record and understand the relationships that the Anishinaabe of the Niiwin Wendaanimok have with the land - from the ancient past to the present.

This relationship can have to do with a number of traditional and present uses of the land, including ceremonies, hunting, fishing, trapping, sacred sites, traditional tools and technologies, celebrations and historic moments, feasts, medicines and harvesting, and many others.

The AAK Team is currently conducting mapping meetings, archival research, and interviews with community members to build this record and understanding. Their work has just begun - and they need help connecting with knowledge keepers in your community!

See page 4 of this newsletter to find out how you can become involved.



A Closer Look...

Using a combination of high-resolution maps, markers, and audio recordings, the AAK team is documenting Anishinaabe relationships to the land.

APR

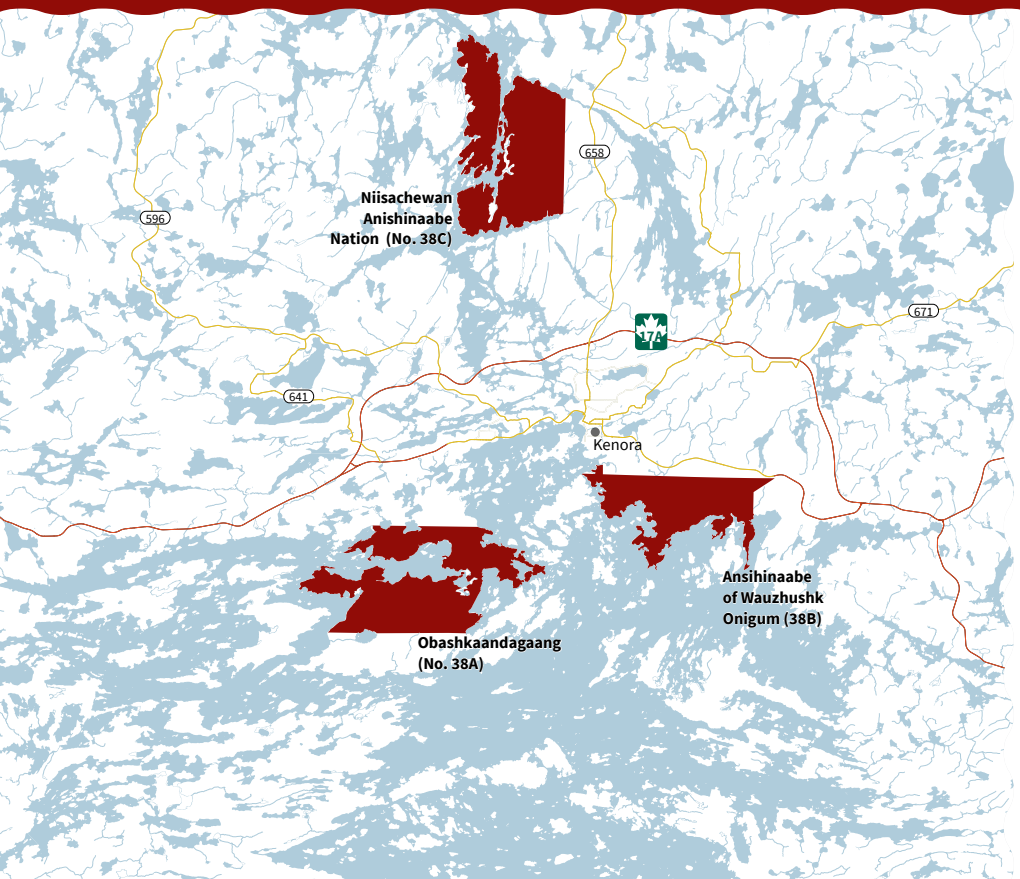
24

Lake of the Woods Museum Archives

MAY

21

Mapping & Storytelling Sessions at Shoal Lake 40



YOUR LOGO HERE

The Niwiin Wendaanimok Logo Contest

First Place: $250.00 in gift certificates and their design printed on all Niwiin Wendaanimok materials.
Runner-up prize: $100.00 gift certificate.

Judges will be looking for a design that embodies the spirit of the Niwiin Wendaanimok Partnership.

Contact your Community Coordinator for more information.

Documenting the A.A.K.

The Anishinaabe Aki Kakendamowin (AAK) Team is building a Geographic Information System ("GIS") database that will contain shapes and lines symbolizing the areas of the land identified by community members.

Using audio recording transcripts from meetings, they will link the words of community members directly to this GIS database so that so that we can better inform the project by having a full picture of the relationship to lands - from location, to significance, to their evolution over time.

Next Steps...

The Niiwin Wendaanimok team is continuing to meet with MTO officials to share updates and refine the partnership arrangement.

In the meantime, the Anishinaabe Aki Kakendamowin (AAK) team will be setting up meetings in each community to meet with their knowledge keepers over the course of the spring, summer, and fall. Meetings may take the form of a group mapping exercise or a one-on-one interview.

In addition to meetings, the AAK team will be continuing its archival research.

Many of you have conducted "Traditional Land Use" studies in the past, for example, as part of Flood Claims studies. The AAK team wants to minimize the chance for repetition. They know your time and knowledge are valuable!

Want to get involved?

Get the conversation started!

- Ask your family, friends, and neighbours about what stories they might tell.
- Find old photo albums, artifacts, drawings, or audio and video recordings.
- Remember the stories you've heard and think about their significance to the land.
- The AAK Team will be in touch to start setting up sessions very soon! If you'd like to set up a metting, contact your Community Coordinator (see below).

Meet your Community Coordinators!

Shoal Lake 40

TANIA BRUYERE
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Wauzhushk Onigum

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Niisaachewan

BERNICE MAJOR
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(807) 548-5876

Obashkaandagaang

MARVIN SINCLAIR
mjpsinclair@gmail.com
(705) 255-7840

The Niiwin Wendaanimok Community Coordinators are responsible for setting up meetings and managing logistics in each community. If you'd like to contribute to the project or know a friend of family member who might (including catering or assisting with distributing fliers or other support), please give your Community Coordinator a call!

Photo: Wauzhushk Onigum Pow Wow (July 2019)

02 Project Recap
Manito Aki Inakonigaawin
Our Teachings, Our Protocol

03 Technical Working Group
Introductions and Reflections

04 Recent Sessions
See the team in action!
Community Coordinators Contact
Get involved!

NIIWIN WENDAANIMOK

FOUR WINDS PARTNERSHIP

August 2019

Shoal Lake 40 | Obashkaandagaang | Niisaachewan | Wauzhushk Onigum

Project Recap

A **Unity Agreement** was signed between the Nations of Shoal Lake 40 First Nation, Obashkaandagaang, Niisaachewan Anishinaabe Nation, and Wauzhushk Onigum Nation in October 2018 to coordinate the Nations' shared experience, concerns, and interests as they relate to the **Twinning of Highway 17** between the Manitoba border and Kenora. This agreement marked the beginning of the **Niiwin Wendaanimok** Partnership.

We have been busy with documenting the Anishinaabe Aki Kakendamowin (AAK), continuing our discussions with the Ministry of Transportation (MTO) and building strong partnerships for this important project across Treaty 3.

Manito Aki Inakonigaawin: Our Teachings, Our Protocol

In every newsletter, we would like to focus in on one aspect of Manito Aki Inakonigaawin (the MAI). For this edition, we are focusing on the **Process of Engagement**.

Our process reflects the care and protection of the natural environment. The process of engagement under the Manito Aki Inakonigaawin will be guided by **Weweni** (Take our time) and **Bebekaa** (Doing it right). This invokes guidance from all our sacred lodges, pipes, drums, songs, traditional law and ceremonies. The two principles provide that engagement processes be conducted at the appropriate levels of authority: The political, the technical, and through task forces.

We will continue to seek to educate the public, government agencies, and industry, and promote these principles through public forums, media and other sources.

George Kakeway, Protocol Advisor

4 *Treaty #3 Nations*

2,232 *community members*

at least 2.13 *million acres of traditional territory*

Introducing the Technical Working Group

Reporting to the Chiefs from the Four Nations in the Niiwin Wendaanimok, the Technical Working Group is responsible for the development of the Anishinaabe Aki Kakendamowin (documentation of traditional knowledge and practice), as well as the ongoing negotiations with MTO on various aspects of the Twinning Project.

The Technical Working Group is pursuing a vision of a new era of harmonized collaboration with federal, provincial, and municipal levels of government founded on mutual respect, honour, and observance of fundamental laws and protocols (i.e. the MAI).

Each member of the Technical Working Group has provided (1) a brief reflection on their role, (2) the importance of the project, (3) what they hope to achieve, (4) what they are most excited for, and (5) one message they'd like to share with all community members.

Stay tuned for our next newsletter, where we'll be featuring our Community Coordinators, Project Administrator, and other key people who are working hard to make this project a success!

George Kakeway
Wauzhushk Onigum Nation

My role is that of a Protocol Advisor. In that capacity, I bring together customary and contemporary protocols and the Manito Aki Inakonigaawin to make sure that the protocols are implemented throughout all agreements that the partnership enters into.

The project represents establishment of a process for reconciliation by means of harmonizing laws and polices with the provincial government. Environmental protection is my priority and making sure our sacred sites, the water, the land, and all our resources are protected for future generations.

I'm excited to see the realization of government of their own laws and that there has to be consultation and accommodation, and that these are being implemented through the MAI process.

My message to all community members, especially the youth, is that they understand who they are as Anishinaabe peoples, that they learn the principles of sharing and teaching. Jobs and economic opportunities are also important and this is an opportunity for them to participate in the project.

Fabian Blackhawk
Niisaachewan Anishinaabe Nation

In my capacity in the Technical Working Group, I try to offer a creative perspective that encompasses a traditional outlook on our backbone to this project's goals, with community safety and best interests at heart.

This project demonstrates our commitment to being stewards of the land in a sensitive time for our country's journey to reconciliation. I hope to achieve a meaningful Nation-to-Nation relationship and form partnerships with governments and municipalities that are driven by aboriginal laws, rights, and trust. Equality is key!

Our special Unity Agreement partnership has brought so much excitement for what the future holds. It's a good feeling knowing that we are contributing to a greater good not only for our Indigenous brothers & sisters but for our neighbours for generations to come.

If I could share one message, it's that working TOGETHER creates better platforms for understanding our communities and respecting the tasks at hand so that we can all contribute in our own ways. Being accountable is important to the young eyes that are watching; the pioneers pave the way.

Marvin Sinclair
Obashkaandagaang

I'm involved with this project and serve on the Technical Working Group to be a strong advocate for our Treaty and Inherent rights regarding land use and land management.

This project represents a critical starting point for all parties concerned with respect for our rightful place in society. From this starting point, I hope to see a true nation-to-nation relationship on all matters concerning our lands.

I am most excited to see how this process will lead to economic development and prosperity for the First Nations and businesses in the Kenora area.

If I could share one message, it is that this process represents a great beginning in the recognition of our true potential as an economic force in Our Territory.

Tom Anderson
Shoal Lake 40 First Nation

I see my role as an advisor to the Technical Working Group, helping in any way I can with a humble perspective.

I feel that this is an important project because it has the potential to provide opportunity for young people now, and into the future. It is my hope that we can achieve a sound and solid ongoing business partnership foundation for years to come.

It is particularly exciting to see four individual communities working together for a collective common goal, which will be a precedent setting success. That carries into the one message I'd like to share - when people cooperate and work with each other, great things can happen!

Ed Skied
Wauzhushk Onigum Nation

I'm part of the Technical Working Group to represent my community and its commitment to its partners for the benefit of all users of the highway and their safety foremost.

I feel that this project is critical both to ensuring safety on the highway in preventing loss of life and in building a collaborative relationship with MTO and our other partners. I hope to achieve full partnership and reconciliation with other governments, true treaty-based relationships, and impact benefit and revenue sharing agreements.

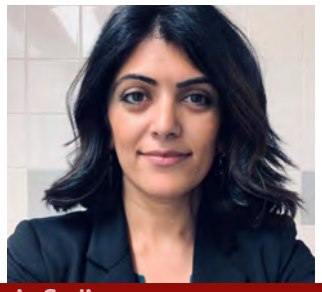
I am excited see recognition of our shared treaty, employment opportunities for First Nations, and to work with committed governments and partners. We need to learn to trust one another and find ways to work with other government and agencies and work towards common goals that make the most beneficial impact for all our treaty partners and for the safety of future user's of this project and not only that but must allow reconciliation to be a part of our daily lives.

Billy Wahpay
Shoal Lake 40 First Nation

My role with the technical group is to provide guidance, acting as a project Lead and manage the project team.

This project is not only a major Ontario project, it is a major Canadian project. Im happy to be working on it. My goal is to get the highway development started and to create regional Economic Opportunities for North Western Ontario.

I'm most excited to be working on this project with an excellent team. If I could share one message, it would be that safety for the citizens of North Western Ontario is the priority with this project, while ensuring a smooth transition Between Ontario and Manitoba.

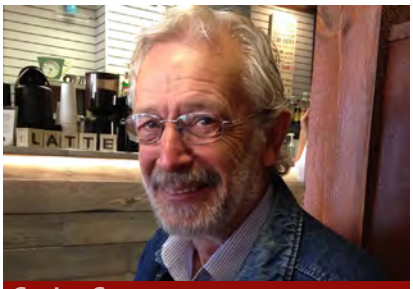


Somia Sadiq

My role on the project is to support the Harmonized and the AAK and offering other advice as needed. This project represents breaking new ground, thinking outside the box, and pushing hard, pushing strategically, and consistently for the Nations' inherent rights. If successful, it will represent reconciliation done right.

Through this process, I hope to learn more about the Manito Aki Inakonigaawin, and learn from the elders, and community members. It is exciting to see the youth engaged, listen to the stories being told by the elders, and experience the powerful traditions that bind the Nations together.

My message to the communities: Participate, participate, participate! Please get in touch with your community coordinators and your Technical Group representatives.



Cuyler Cotton

Between the various governments, technicians, and the Anishinaabe National Interest, a lot of interests need to be included and accommodated if a big infrastructure project like this one is going to be successful. Manito Aki Inakonigaawin will be followed and the governments' decision-making needs to be harmonized with Anishinaabe law. In sum, there are a lot of relationship and process challenges to be worked out. My role is to support the Anishinaabe and non-Anishinaabe governments in their efforts to arrive at a successful, positive outcome.

This project holds out the opportunity to demonstrate that by operating under Anishinaabe law —the MAI— it is possible to respectfully achieve mutually agreeable conclusions. I hope it can show what Anishinaabe and non-Anishinaabe governments can achieve by working together.

It's exciting to see ancient Anishinaabe law being respected and being applied today. If successful, this government-to-government partnership will provide great opportunities for jobs and capacity building but just as importantly, it will reinforce the capacity of the Anishinaabe Nation in Treaty 3 to strengthen their governance processes and jurisdiction. I'd encourage everyone to talk to their local coordinators and get involved in the decision making.

The Niiwin Wendaanimok in action.

Here are a few of the activities and meetings conducted since the end of May.

Shoal Lake 40 Elders Meeting

JUN 10

Shoal Lake 40 Open House

JUN 12

Wauzhushk Onigum Elders' Meeting

JUN 18

Obashkaandagaang Elders' Meeting

JUL 23

Obashkaandagaang Youth Event

JUL 24

Obashkaandagaang Community Event

JUL 25

YOUR LOGO HERE

The Niiwin Wendaanimok Logo Contest

First Place: $250.00 in gift certificates and their design printed on all Niiwin Wendaanimok materials.
Runner-up prize: $100.00 gift certificate.

The design should embody the spirit of the Niiwin Wendaanimok Partnership. Contact your Community Coordinator for more information.

Deadline: August 31st - Get your entries in soon!

Community Coordinator Contact Information

Shoal Lake 40

TANIA BRUYERE
tania.bruyere@gmail.com
(807) 464-1567

DARYL REDSKY
elkclan@hotmail.ca
(204) 979 7759

Wauzhushk Onigum

TERRY SKEAD
tjskead@hotmail.com
(807)407-5603

Niisaachewan

BERNICE MAJOR
bmajor@ochiichag.ca
(807) 548-5876

Obashkaandagaang

MARVIN SINCLAIR
mjpsinclair@gmail.com
(705) 255-7840

The Niiwin Wendaanimok Community Coordinators are responsible for setting up meetings and managing logistics in each community. If you'd like to contribute to the project or know a friend of family member who might (including catering or assisting with distributing fliers or other support), please give your Community Coordinator a call!

Photo: Niisaachewan Boat Trip (August, 2019)

02 Niiwin Wendaanimok in Action
Recent Activities and Events

03 Harmonized Impact Assessment
Manito Aki Inakonigaawin
Visioning

04 Logo Contest
The new face of the Niiwin Wendaanimok

Contractors Event

FOUR WINDS PARTNERSHIP

NIIWIN WENDAANIMOK

October 2019

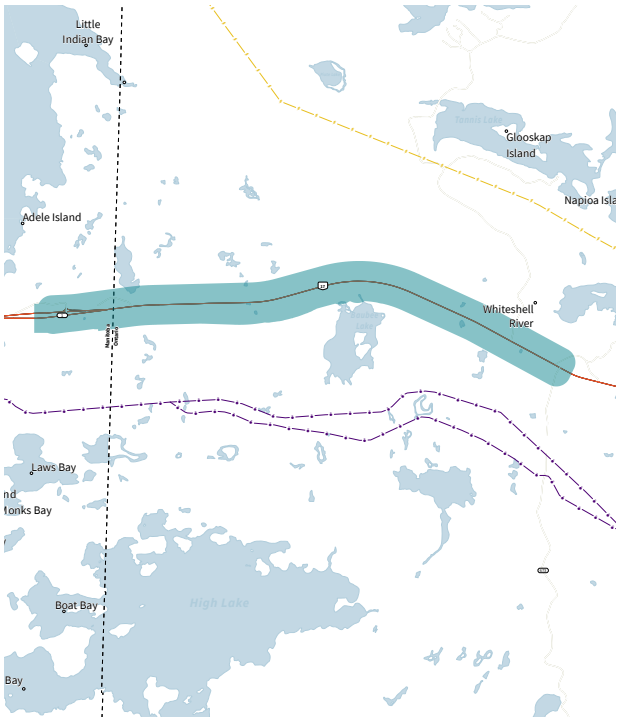
Shoal Lake 40 | Obashkaandagaang | Niisaachewan | Wauzhushk Onigum

Project Recap

A **Unity Agreement** was signed between the Nations of Shoal Lake 40 First Nation, Obashkaandagaang, Niisaachewan Anishinaabe Nation, and Wauzhushk Onigum Nation in October 2018 to coordinate the Nations' shared experience, concerns, and interests as they relate to the Twinning of Highway 17 between Manitoba/Ontario border and Kenora. This agreement marked the beginning of the Niiwin Wendaanimok Partnership. And this newsletter is the third one produced since formation of the partnership.

Since May 2019, the Niiwin Wendaanimok Partnership has been undertaking the Anishinaabe Aki Kakendamowin (AAK), referring to the documentation of the knowledge and practices associated with the care and protection for the land, its life, and its spirit. With Phase 1 of MTO's Highway 17 Twinning Project approaching the environmental approvals stage, knowledge from the AAK is informing an understanding of the potential impacts of the Project.

The AAK Team has begun meetings with each of the Niiwin Wendaanimok communities to consider the impacts of the Twinning Project on their lands in Treaty 3 Territory. Documentation of the AAK will continue over the next several years to help with future Phases of the project.



4 *Treaty #3 Nations*

2,232 *community members*

at least 2.13 *million acres of traditional territory*

The Niiwin Wendaanimok in action.

Here are a few of the activities and meetings conducted in August and September.

Niisaachewan Sweat Ceremony

AUG 13

Niisaachewan Community Meetings

AUG 14

Obashkaandagaang Interviews

AUG 21

Shoal Lake 40 Community Event

AUG 22

Niisaachewan Ground Truthing Boat Trip

SEP 17

Niisaachewan Interviews

SEP 18

Wauzhushk Onigum Elders' Meeting

SEP 18

Wauzhushk Onigum Impacts Discussion

OCT 07

Harmonized Impact Assessment

As part of a new and exciting approach to understanding the potential impacts of the Twinning Project, the Niiwin Wendaanimok will be co-authoring the environmental assessment report with MTO. This process is being called a Harmonized Impact Assessment.

Impact Assessments allow us to document impacts of projects on the environment, health, culture, and livelihoods. Impact Assessments are meant to be a tool to better plan projects such as the Twinning of the TransCanada highway so positive outcomes can be enhanced, and negative effects reduced. Typically for projects, the proponent (in this case the MTO) would undertake the Impact Assessment with some input or feedback from the Nations, based on Canadian laws. However, this approach limits the application of the Manito Aki Inakonigaawin (MAI).

The Niiwin Wendaanimok Partnership is therefore pushing the boundaries of how Impact Assessment should occur on Anishinaabe territory. To make sure all assessments follow our MAI, the Partnership has negotiated a Harmonized Impact Assessment process, which is now underway. This process will further allow the Partnership to gather and document evidence of impact for further negotiations.

This approach combines the jurisdictions of two nations - that of Canada (through Ontario) and that of the Anishinaabe of Treaty #3. It considers contemporary science and policy on the one hand, and the Anishinaabe Resource Law of the Manito Aki Inakonigaawin (MAI) on the other. Most importantly, the Harmonized Impact Assessment process recognizes a shared authority and shared responsibility for stewardship and decision-making on Treaty lands.

The Niiwin Wendaanimok is hopeful that this effort captures the true meaning and spirit of a Nation-to-Nation partnership.

The Manito Aki Inakonigaawin: Our Teachings, Our Protocol

As noted in our previous newsletter, in every newsletter we will cover off key teachings of the Manito Aki Inakonigaawin. This is important as a guiding principle for building relationships, partnerships, communications and exercising environmental responsibility. The MAI will continue to guide the Niiwin Wendaanimok Partnership and the Ministry of Transportation Ontario on joint processes on implementation, operationalization, and harmonization on this Twinning Project.

For this newsletter, we would like to focus on the Visioning Phase as explained under the MAI. The Anishinaabe People know very clearly who we are, and why we take on new major initiatives. Our Anishinaabe People are experts on environmental scanning and seek a clear vision before any such undertakings. We make sacred offerings. We fast. We meditate. We conduct extensive ceremonies. We prepare with the greatest care and guided by the Seven Laws of Creation. We do this together. We carefully consider our mission, our vision, and are guided by our values and principles.

Thus, in times of critical challenges or conflict, we can act quickly, decisively, because we have a clear knowledge of our purpose and our priorities. Our ability to do so allows for our Vision to be clear, and our Visioning Phase to be key to informing what we do.

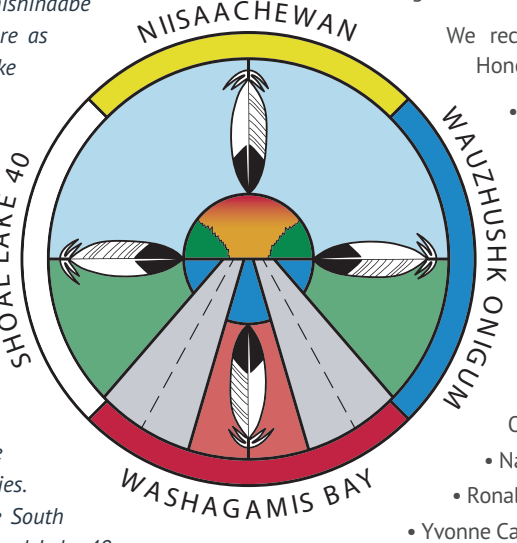
Logo Competition: Announcing Our Winner!

The Niiwin Wendaanimok Partnership held a logo competition. We asked people to create a logo that would represent the vision of this partnership. We are happy to announce the winner: Terry Greene from Niisaachewan Anishinaabe Nation!

When asked to describe his logo, Terry said,

When asked to describe his logo, Terry said "This logo represents our acknowledgement of our Anishinaabe identity, our Treaty rights, and who we are as Peoples. It represents making sure we take our time and do things right. It means we be careful and consider our lands, our duties, and our obligations. Niiwin Wendaanimok means the Wind comes from four directions. The Highway is from the West to East, so I moved the medicine wheel colours to reflect that. I made the road to symbolize our Anishinaabe path (red road). The smaller circle represents Treaty 3; with its sunrise, trees, and water. The feathers represent the four winds, the four directions, and the four communities. To the East is Wauzhushk Onigum, to the South is Obaashkaandagaang, to the West is Shoal Lake 40, and to the North is Niisaachewan Anishinaabe Nation. This logo represents acknowledgement of the Memegwesiwag (the little people) who will be disturbed as a part of this highway, and an acknowledgement of Burial Grounds, Sacred Sites and Ceremonial Grounds that should be protected. Also, when we pray, we ask the Creator to send helping spirits from the four directions to come help us. Waabinong (the East), Zhaawanong (the South), Epangishmok (the West), and Kiiwedinong (the North).

This logo is a reminder that we will continue to seek guidance, take our time and do things right so we can honour who we are as Anishinaabe Peoples."



Congratulations Terry!

We received many entries for this competition. Honourable mentions to go the following:

- Bansi Lal Ketki
- Connie White from Shoal Lake 40
- Daniel Skead from Wauzhushk Onigum
- Danielle Sinclair from Washagamis Bay
- Jeremy Chesson from Niisaachewan
- Kailey Daniels from Shoal Lake 40
- Kirk Boucher from Shoal Lake 39
- Kyla Henry from Niisaachewan
- Lakeyshia Sinclair-Fobister from Obashkaandagaang
- Natalie Henry from Niisaachewan
- Ronald Kabestra from Niisaachewan
- Yvonne Castel from Shoal Lake 40

We thank everyone for sharing their vision with us, showing care, and taking the time to make submissions.

Community Coordinators

Shoal Lake 40
TANIA BRUYERE
tania.bruyere@gmail.com
(807) 464-1567
DARYL REDSKY
elkclan@hotmail.ca
(204) 979 7759

Obashkaandagaang
MARVIN SINCLAIR
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(705) 255-7840

Wauzhushk Onigum
TERRY SKEAD
tjskead@hotmail.com
(807)407-5603

Niisaachewan
BERNICE MAJOR
bmajor@ochiichag.ca
(807) 548-5876

Contractors Event

A key component of the MAI is building economic partnerships and opportunities and engaging with those around us in a meaningful way. On October 15th and 16th, the Niiwin Wendaanimok Partnership met with several reputable contractors from the region who have significant expertise and experience with large-scale highway construction. These meetings helped the partnership initiate a strategy for building economic alliances in Treaty 3. The Partnership looks forward to continuing to have discussions with local companies and service providers for this important task ahead.

02 Meet the Board!
Branda Chartrand, Erwin Redsky, Fabian Blackhawk, & George Kakeway

03 Key Updates
Eco Impact Award!
Harmonized Impact Assessment

04 The Niiwin Wendaanimok in action
Recent activities & meetings
Community Coordinators
Contact Information

NIIWIN WENDAANIMOK

FOUR WINDS

January 2020

Shoal Lake 40 | Washagamis Bay | Niisaachewan | Wauzhushk Onigum

Project Recap

A **Unity Agreement** was signed between the Nations of Shoal Lake 40 First Nation, Washagamis Bay, Niisaachewan Anishinaabe Nation, and Wauzhushk Onigum Nation in October 2018 to coordinate the Nations' shared experience, concerns, and interests as they relate to the Twinning of the Highway 17 between Manitoba/Ontario border and Kenora. This agreement marked the beginning of the **Niiwin Wendaanimok** Partnership. This newsletter is the fourth one produced since formation of the Partnership.

Manito Aki Inakonigaawin:

Our Teachings, Our Protocol

In this newsletter, we would like to talk about the importance of ***feasting a process***. Feasting processes represents our customary engagement protocol. It represents an ongoing celebration of our Anishinaabe identity, which is rooted in our relation to the land. It represents respecting our sovereignty, our right to health and well-being, and our right to livelihood. When we feast in the presence of our leaders, our elders, heads of families, and community members, it brings us together. When we feast in the presence of sacred items like tobacco, feathers, gifts, pipes, and drums, it reminds us of who we are. It reminds that benefits are temporary, but our Anishinaabe identity is here to stay.

4 *Treaty #3 Nations*

2,232 *community members*

at least 2.13 *million acres of traditional territory*

Meet the Board!

In this edition, we would like to introduce the Board Members for the Niiwin Wendaanimok Partnership. They are Brenda Chartrand (Washagamis Bay), Erwin Redsky (Shoal Lake 40), Fabian Blackhawk (Niisaachewan), and George Kakeway (Wauzhushk Onigum). We sat down with the board members and asked them a few questions. Here is what they had to say:

Brenda Chartrand

What do you see as the biggest task ahead of you?

The biggest task is making sure that the community understands the rewards and benefits of the project. And that we're approaching this with due diligence.

What do you see as the biggest opportunity ahead?

The biggest opportunity for me personally is capacity development as a Board member of a major corporation. This opportunity will provide me with amazing governance experience. For our Nations, the biggest opportunity is economic development and protection of our traditional lands.

What strengths do you bring to the Board?

The strength that I bring is my compassion for people. I am always looking out for community members and I bring that perspective to the Board. I also bring vision and leadership, along with a passion to complete tasks at hand, dedication, and effectiveness.

What does success look like to you?

Success to me would be beginning and finishing the twinning project.

Erwin Redsky

What do you see as the biggest task ahead of you?

On the political side, the biggest task is ensuring that Crown Ontario continues to listen. On the business side, projects as big as Twinning have lots of opportunities and the big task is to stay focussed. Our joint company has a realistic plan that considers our strengths and weaknesses and, if we're disciplined and realistic, we can achieve success. We're a start-up venture with great future potential. Our biggest challenge will be avoiding distractions while we build the foundation.

What do you see as the biggest opportunity ahead?

The biggest opportunity is exercising our laws –the laws of this land. Manito Aki Inakonigaawin is given to the Anishinaabeg by the Creator as the way humans must think and act in order to live sustainably on this Earth. It's a rare opportunity that the settler governments are prepared to respect our laws and we can demonstrate their strength.

What strengths do you bring to the Board?

As a former Chief and life-long business person, I bring decades of training and experience. I know the theory but I also know what it really takes to succeed. I've built and led teams that accomplished goals that many said were impossible. I know the importance of bringing everyone together and involving everyone in building and executing inspiring but realistic plans.

What does success look like to you?

Success to me will be showing to Crown Ontario, municipalities and industry that infrastructure projects can be built in our treaty territory without controversy if they respect our laws. Success will demonstrate that Manito Aki Inakonigaawin is a better, more collaborative way forward for everyone. If we can show this, the land and the next generations will thank us.

Fabian Blackhawk

What do you see as the biggest task ahead of you?

The biggest task will be finding a common ground with the relationships that we are trying to build in a manner that appeases our people and respects and honours our traditions. This is not easy but something that continues to drive this team.

What do you see as the biggest opportunity ahead?

The biggest opportunity is long term economic growth and stability as we create and sustain a vehicle to manage our resources.

What strengths do you bring to the Board?

I bring a creative perspective that is protocol-driven and rooted in tradition.

What does success look like to you?

Success to me will be the ability to create and implement a vision that honours and celebrates our collective sense of identity in a manner that Crown Ontario understands and respects for all future activities in our territories.

George Kakeway

What do you see as the biggest task ahead of you?

The biggest task is going to be implementing our strategic plan and determining how we would use our existing resources to achieve the goals and objectives we have set out for ourselves.

What do you see as the biggest opportunity ahead?

The biggest opportunity that I see is the opportunity to implement an Impact Benefits Agreement which is informed by the Manito Aki Inakonigawin and celebrates our identity as Anishinaabe peoples.

What strengths do you bring to the Board?

I bring knowledge, experience, and a deep understanding of the Manito Aki Inakonigawin, and advice on how the MAI can inform all aspects this relationship with the Ministry of Ontario.

What does success look like to you?

Success to me would be seeing the Manito Aki Inakonigawin informing all aspects of our process; the environmental, the economic, the procurement, and all other aspects critical to celebrating our Anishinaabe identity.

Key Updates

The Partnership has been busy undertaking the **Anishinaabe Aki Kakendamowin (AAK)** and building an understanding of how the proposed project will impact our lands. These meetings will continue over the months to come.

We also compiled **photo albums** for each community which document your respective journey so far. Copies of these have been shared with each community. If you have not received a copy and would like one, we encourage you to contact your community coordinator to request one today!

A ceremony was held in the Roundhouse at Wauzhushk Onigum to **feast the process** on November 24, 2019. Elders from all four communities participated in this celebration. Meetings for this project will continue, and we encourage you to participate and continue to share your views on this important project.

Eco Impact Award!

In December 2019, our efforts resulted in a nomination for an Eco Impact Award. This award recognizes environmental excellence and innovation. A record number of submissions were received from across the country and we are proud to announce that we were one of the four finalists recognized at the Eco Impact Awards event in Calgary on January 23, 2020. Even though we didn't win, we are very proud of this recognition and will continue to push boundaries and strive for excellence!

Harmonized Impact Assessment

In our last newsletter, we talked about a new and exciting approach to understanding the potential impacts of the Twinning Project called **Harmonized Impact Assessment.** This approach is rooted in the **Manito Aki Inakonigaawin** and incorporates best practice principles of Impact Assessment in a unique way that places the well-being of our peoples at its core. Our **Harmonized Impact Assessment** approach has received significant attention. On January 21, we were invited by the **Impact Assessment Agency** to make a presentation on this approach. The Niiwin Wendaanimok is hopeful that this effort will continue to gain traction across our territories, so all future decisions are rooted in our traditions, protocols, and ceremony.

The Niiwin Wendaanimok in action.

Here are a few of the activities and meetings conducted since the end of October.

OCT 30

Preliminary Site Reconnaissance

NOV 04

Shoal Lake 40 Impacts Discussions

NOV 06

Wauzhushk Onigum Impacts Discussions

NOV 12

Washagamis Bay Impacts Discussions

NOV 13

Niisaachewan Impacts Discussions

DEC 03

Project Planning Session

Community Coordinators

Shoal Lake 40

TANIA BRUYERE
tania.bruyere@gmail.com
(807) 464-1567

DARYL REDSKY
elkclan@hotmail.ca
(204) 979 7759

Wauzhushk Onigum

TERRY SKEAD
tjskead@hotmail.com
(807)407-5603

Niisaachewan

BERNICE MAJOR
bmajor@niisaachewan.ca
(807) 548-5876

Obashkaandagaang

MARVIN SINCLAIR
mjpsinclair@gmail.com
(705) 255-7840

The Niiwin Wendaanimok Community Coordinators are responsible for setting up meetings and managing logistics in each community. If you'd like to contribute to the project or know a friend of family member who might (including catering or assisting with distributing fliers or other support), please give your Community Coordinator a call!

APPENDIX 4: POSTERS

Niiwin Wendaanimok Partnership

Share your knowledge!

Traditional Land Use Study for the HWY 17 Twinning Project

Tuesday, May 21st to Friday, May 24th

Drop by any time between **10 am and 6pm**

At the **KDC Trailer**, Shoal Lake #40. Refreshments will be provided.

If you're unable to come to the trailer, we will also be conducting home visits. Please notify a community coordinator if you'd like to arrange a visit.

For more info, please contact a Community Coordinator for the project:

Tania Bruyere – p. (807) 464-1567
e. tania.bruyere@gmail.com

Daryl Redsky – p. (204) 979-7759
e. elkclan@hotmail.ca

Daily Door Prizes and End-of-the-Week Grand Prize

Gift Certificates to:

SAFEWAY

nofrills lower food prices

Walmart

Niiwin Wendaanimok Partnership

Share your knowledge!

Anishinaabe Aki Kakendamowin (Traditional Land Use Study) for the HWY 17 Twinning Project

Tuesday, June 11th

&

Wednesday, June 12th

Drop by any time between **10 am and 3pm**

At the **KDC Trailer**, Shoal Lake #40. Refreshments will be provided.

If you're unable to come to the trailer, we will also be conducting home visits. Please notify a community coordinator if you'd like to arrange a visit.

For more info, please contact a Community Coordinator for the project:

Tania Bruyere – p. (807) 464-1567
e. tania.bruyere@gmail.com
Daryl Redsky – p. (204) 979-7759
e. elkclan@hotmail.ca

End-of-Day Door Prizes!

Gift Certificates to:

SAFEWAY Walmart

Niiwin Wendaanimok Partnership

Community Event

Anishinaabe Aki Kakendamowin
(Traditional Land Use Study)
for the HWY 17 Twinning Project

Thursday, July 25th

Drop by any time between **10 am and 4pm**

At the **Band Office (upstairs in the Community Hall)**.

Refreshments will be provided.

For more info, please contact your Community Coordinator for the project:

Marvin Sinclair – p. (705) 255-7840
e. mjpsinclair@gmail.com

Door Prizes!

Three ***$100.00*** Safeway Gift cards will be drawn – one at 12:00, one at 2:00, and one at 4:00!

SAFEWAY

Niiwin Wendaanimok Partnership

Elders Event

Anishinaabe Aki Kakendamowin
(Traditional Land Use Study)
for the HWY 17 Twinning Project

Tuesday, July 23rd

Drop by anytime between **10 am and 4pm**

At the **Band Office (upstairs in the Community Hall)**.

For more info, please contact your Community Coordinator for the project:

Marvin Sinclair – p. (705) 255-7840
e. mjpsinclair@gmail.com

Refreshments will be served.

Honorariums will be provided.

Niiwin Wendaanimok Partnership

Youth Event!

Anishinaabe Aki Kakendamowin
(Traditional Land Use Study)
for the HWY 17 Twinning Project

Wednesday, July 24th

Drop by any time between **10 am and 4pm**

At the **Band Office (upstairs in the Community Hall)**.

Refreshments will be served.

For more info, please contact your Community Coordinator for the project:

Marvin Sinclair – p. (705) 255-7840
e. mjpsinclair@gmail.com

End-of-Day Door Prizes will be drawn!

App Store & ITunes Gift Cards

Walmart Gift Card

Niiwin Wendaanimok Partnership

Community Event

Anishinaabe Aki Kakendamowin
(Traditional Land Use Study)
for the HWY 17 Twinning Project

Thursday, August 15, 2019

Drop by anytime between **10 am and 4pm**

At the **Band Office (upstairs in the Community Hall).**

For more info, please contact your Community Coordinator for the project:

Bernice Major Email: bmajor@niisaachewan.ca

Phone: (807) 407-5686

Refreshments will be served.

Honorariums will be provided.

Niiwin Wendaanimok Partnership

Elders Event

Anishinaabe Aki Kakendamowin
(Traditional Land Use Study)
for the HWY 17 Twinning Project

Wednesday, August 14, 2019

Drop by anytime between **10 am and 4pm**

At the **Band Office (upstairs in the Community Hall).**

For more info, please contact your Community Coordinator for the project:

Bernice Major Email: bmajor@niisaachewan.ca

Phone: (807) 407-5686

Refreshments will be served.

Honorariums will be provided.

Niiwin Wendaanimok Partnership

NIISAACHEWAN ANISHINAABE NATION COMMUNITY SWEAT

Tuesday, AUGUST 13, 2019

2:00 P.M.

Sweat is to begin the process for recording of traditional land information with the Four Winds Project and the Highway Twinning.

***DIRECTIONS TO SWEAT LODGE AREA: Enter the community proceed straight down Dalles Rd. pass the 4-way intersection. When you reach the water treatment plant follow road and stay right and continue right down the single lane. (Map Attached)**

Everyone is welcome to attend.

NIIWIN WENDAANIMOK PARTNERSHIP

COMMUNITY GATHERING FOR TWINNING PROJECT

Wednesday, November 13th, 2019.

The event will run from **10:00 AM – 2:00 PM**

At the **New Gym**.

Lunch and honorariums will be provided.

For more information, please contact

Bernice Major at **(807)548-5876** at

bmajor@niisaachewan.ca

NIIWIN WENDAANIMOK PARTNERSHIP

ELDER'S GATHERING FOR TWINNING

Monday, November 4th, 2019.

The event will run from **10:00 AM – 2:00 PM**

At the **OHS Gym**.

Lunch and honorariums will be provided.

For more information, please contact

Tania Bruyere at **(807)464-1567** or

tania.bruyere@gmail.com

NIIWIN WENDAANIMOK PARTNERSHIP

MEN'S GATHERING FOR TWINNING PROJECT

Monday, November 4th, 2019.

The event will run from **5:00 – 8:00 PM**

At the **KDC Trailer**.

Supper will be provided.

GIFT PRIZE:

Two lucky winners get a gift card for **$250!**

For more information, please contact

Daryl Redsky at **(204)979-7759** or
elkclan@hotmail.ca

NIIWIN WENDAANIMOK PARTNERSHIP

WOMEN'S GATHERING FOR TWINNING PROJECT

Monday, November 4th, 2019.

The event will run from **5:00 – 8:00 PM**

At the **OHS Gym**.

Supper will be provided.

GIFT PRIZE:

Two lucky winners get a gift card for **$250!**

For more information, please contact

Roxanne Greene at **(807)464-1706**
roxanne.k.greene@gmail.com

NIIWIN WENDAANIMOK PARTNERSHIP

COMMUNITY GATHERING FOR TWINNING PROJECT

Tuesday, November 5th, 2019.

The event will run from **10:00 AM – 1:00 PM**

Location: The Clarion in Kenora

Lunch will be provided.

Door prizes will be drawn at 11AM and 1 PM.

Honorariums will be provided to elders.

For more information, please contact

Marvin Sinclair at **(705)255-7840** or

mjpsinclair@gmail.com

NIIWIN WENDAANIMOK PARTNERSHIP

COMMUNITY GATHERING FOR TWINNING PROJECT

Wednesday, November 6th, 2019.

The event will run from **10:00 AM – 2:00 PM**

At the **Youth and Elders Centre**.

Lunch and honorariums will be provided.

For more information, please contact

Terry Skead at **(807)407-5603** or

tjskead@hotmail.com

NIIWIN WENDAANIMOK PARTNERSHIP

YOUTH GATHERING FOR TWINNING PROJECT

Wednesday, November 13th, 2019.

The event will run from **5:00 – 8:00 PM**

At the **OHS Gym**.

Supper will be provided.

GIFT PRIZE:

FIVE lucky winners get a gift card for **$100!**

For more information, please contact

Chevonne Redsky at

chevonneredsky@hotmail.com

NIIWIN WENDAANIMOK PARTNERSHIP

FEAST FOR TWINNING PROJECT

Inviting all community members of Shoal Lake 40, Niisaachewan, Washagamis Bay, and Wauzhushk Onigum to feast the ongoing process of discussions for the twinning of the Trans-Canada Highway at the

Roundhouse, Pow Wow Island, Wauzhushk Onigum,

on **Sunday, November 24th, 2019 at 10:00 AM**

For more information, please contact

Terry Skead at **(807)407-5603** or **tjskead@hotmail.com**

NIIWIN WENDAANIMOK PARTNERSHIP

ELDERS' GATHERING FOR TWINNING

Wednesday, November 13th, 2019.

The event will run from **5:00 PM – 8:00 PM**

At the **Medical Building**.

Dinner and honorariums will be provided.

For more information, please contact

Tania Bruyere at **(807)464-1567** or

tania.bruyere@gmail.com

NIIWIN WENDAANIMOK PARTNERSHIP

MEN'S GATHERING FOR TWINNING PROJECT

Tuesday, November 12th, 2019.

The event will run from **5:00 – 8:00 PM**

At the **Medical Building**.

Supper will be provided.

GIFT PRIZE:

FIVE lucky winners get a gift card for **$100!**

For more information, please contact

Daryl Redsky at **(204)979-7759** or
elkclan@hotmail.ca

NIIWIN WENDAANIMOK PARTNERSHIP

WOMEN'S GATHERING FOR TWINNING PROJECT

Wednesday, November 13th, 2019.

The event will run from **5:00 – 8:00 PM**

At the **Youth Centre**.

Supper will be provided.

GIFT PRIZE:

FIVE lucky winners get a gift card for **$100!**

For more information, please contact

Roxanne Greene at **(807)464-1706**
roxanne.k.greene@gmail.com

NIIWIN WENDAANIMOK PARTNERSHIP

COMMUNITY GATHERING FOR TWINNING PROJECT

Tuesday, November 12th, 2019.

The event will run from **10:00 AM – 1:00 PM**

At the **Clarion in Kenora**.

Lunch will be provided.

Door Prizes will be drawn.

Honorariums will be provided to elders.

For more information, please contact

Marvin Sinclair at **(705)255-7840** or

mjpsinclair@gmail.com

NIIWIN WENDAANIMOK PARTNERSHIP

TWINNING PROJECT UPDATE

Tuesday, February 18th, 2020.

The event will run from **6:00 – 8:30 PM**

At the **OHS Gym**.

Supper will be provided.

Honorariums will be provided to elders.

GIFT PRIZE:

Five lucky winners get a gift card for $100!

For more information, please contact:

Roxanne Greene (Women)

Daryl Redsky (Men)

Tania Bruyere (Elders)

Chevonne Redsky (Youth)

NIIWIN WENDAANIMOK PARTNERSHIP

TWINNING PROJECT UPDATE

Wednesday, February 19th, 2020.

The event will run from **10:00 AM – 12:30 PM**

At the **Community Hall**.

Lunch will be provided.

Honorariums will be provided to elders.

GIFT PRIZE:

Five lucky winners get a gift card for $100!

For more information, please contact

Marvin Sinclair at **(705)255-7840** or

mjpsinclair@gmail.com

NIIWIN WENDAANIMOK PARTNERSHIP

TWINNING PROJECT UPDATE

Wednesday, February 19th, 2020.

The event will run from **2:00 – 4:30 PM**

At the **Golden Eagle Bingo Hall**.

Lunch will be provided.

Honorariums will be provided to elders.

GIFT PRIZE:

Several gift prizes will be drawn!

For more information, please contact

Terry Skead at **(807)407-5603** or **tjskead@hotmail.com**

NIIWIN WENDAANIMOK PARTNERSHIP

TRANSCANADA HIGHWAY TWINNING PROJECT

M.O.U. TRADITIONAL PROCESS SIGNING CEREMONY

Wednesday, February 5th, 2020.

The event will begin at **12:30 PM**

at the **Roundhouse in Wauzhushk Onigum**.

For more information, please contact

Terry Skead at **(807)407-5603** or **tjskead@hotmail.com**

NIIWIN WENDAANIMOK PARTNERSHIP

TWINNING PROJECT UPDATE

Wednesday, February 19th, 2020.

The event will run from **6:30 – 8:30 PM**

At the **Family Well-being Centre**.

Supper will be provided.

Honorariums will be provided to elders.

GIFT PRIZE:

Five lucky winners get a gift card for $100!

For more information, please contact

Bernice Major at **(807)548-5876** or

bmajor@niisaachewan.ca

APPENDIX 5: GUIDELINE DOCUMENTS

MINISTRY OF TRANSPORTATION

Environmental Guide for Noise

Version: October 2006

MINISTRY OF TRANSPORTATION

Environmental Guide for Noise

Part of the Environmental Standards and Practices

ISSUED BY:

PROVINCIAL AND ENVIRONMENTAL PLANNING OFFICE
MINISTRY OF TRANSPORTATION
301 ST. PAUL STREET
ST. CATHARINES, ONTARIO
L2R 7R4

Citation

Environmental Guide for Noise, October 2006. Ministry of Transportation Ontario.

Acknowledgements

This document was prepared for the Ministry of Transportation (MTO) by McCormick Rankin Corporation. Lead author was Greg Moore. Lead author of Appendix B was Chris Blaney of MTO.

This document was developed under the direction of the Environmental Standards Project (ESP) Team comprised of MTO staff in the Provincial and Environmental Planning Office (Jamie Dougall – Project Director and Brenda Carruthers – Project Manager) and the lead consultant firm of Ecoplans Limited (Bob Hodgins - Project Director and Clark Gunter – Project Manager).

The ESP Team would like to acknowledge the numerous contributors and reviewers for this document from MTO's Working Group, other reviewers from MTO's Head and Regional Offices, and the Regulatory Liaison Committee that includes representatives from: Canadian Environmental Assessment Agency, Environment Canada, Fisheries and Oceans Canada, Health Canada, Ministry of Agriculture, Food and Rural Affairs, Ministry of Culture, Ministry of the Environment, Ministry of Municipal Affairs and Housing, and Ministry of Natural Resources.

Comments and Suggestions

The Ministry of Transportation welcomes comments and suggestions on ways to improve the document with the objective of providing a practical and pragmatic approach to environmental management in the Province of Ontario. MTO anticipates that changes will be warranted to clarify, improve and incorporate new information.

The format of the document is designed to accommodate such changes. Such revisions and amendments will be incorporated in later editions of this document. MTO will not formally respond to unsolicited comments submitted in response to the document.

Ce document hautement spécialisé n'est disponsible qu'en anglais en vertue du règlement 411/97, qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec le ministère des Transports, Bureau des services en français au: 905-704-2045 ou 905-704-2046.

VERSION HISTORY

VERSION #	DATE	DESCRIPTION OF MAJOR CHANGE

TABLE OF CONTENTS

1 INTRODUCTION 6
1.1 TERMINOLOGY FOR THIS GUIDE 6
1.2 THE ROLE OF OTHER MTO DOCUMENTS IN THIS GUIDE 6
2 POLICY FRAMEWORK 8
2.1 ENVIRONMENTAL PROTECTION REQUIREMENT (EPR) NOISE-1 – PLANNING & DESIGN 8
2.2 ENVIRONMENTAL PROTECTION REQUIREMENT (EPR) NOISE-2 - CONSTRUCTION 10
2.3 MINISTRY OF THE ENVIRONMENT REQUIREMENTS 10
2.4 NOISE BARRIER RETROFIT POLICY 11
2.5 CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA) 11
2.6 MUNICIPAL NOISE CONTROL BYLAWS 11
3 REFERENCE DOCUMENTS 12
4 APPROACH 13
5 QUALIFICATIONS 15
6 NOISE PREDICTION METHODOLOGIES 16
7 TRANSPORTATION PLANNING – CORRIDOR AND ROUTE LOCATION ALTERNATIVES 17
7.1 AREA OF INVESTIGATION 17
7.2 NOISE SENSITIVE AREAS (NSAS) 18
7.3 OUTDOOR LIVING AREA (OLA) VS. MOST EXPOSED SIDE 18
7.4 DETERMINATION OF FUTURE AMBIENT 19
7.5 DETERMINATION OF FUTURE NOISE LEVELS WITH THE UNDERTAKING 21
7.6 DETERMINATION OF POTENTIAL IMPACT 22
7.7 DETERMINATION OF SIGNIFICANCE 23
7.8 PRELIMINARY ASSESSMENT OF MITIGATION 24
7.9 AESTHETIC CONSIDERATIONS 27
7.10 DOCUMENTATION 27
8 HIGHWAY DESIGN - PRELIMINARY DESIGN 28
8.1 PROJECTS ENTERING FROM PLANNING STAGE 28
8.2 PROJECTS COMMENCING IN PRELIMINARY DESIGN STAGE 29
8.3 MITIGATION CONSIDERATIONS 29
8.4 CONSTRUCTION NOISE 30
8.5 DOCUMENTATION 30
8.6 CONDITIONS OF EA APPROVAL PERTAINING TO NOISE 31
9 HIGHWAY DESIGN - DETAIL DESIGN 32
9.1 MITIGATION 32
9.2 CONSTRUCTION – CONTRACT PREPARATION 35
10 CONSTRUCTION 36
10.1 CONSTRUCTION NOISE COMPLAINT PROCESS 36
11 OPERATIONS AND MAINTENANCE NOISE 37
12 COMPUTER DATA MAINTENANCE 38

FIGURES

Figure 4.1 Summary of Noise Analysis in MTO Planning and Design Process 14
Figure 7.1 Preliminary Assessment of Mitigation 25

TABLES

Table 2.1 Mitigation Effort Required for the Projected Noise Level with the Proposed Improvements Above the Ambient 9
Table 6.1 Description of The Two Approved Noise Prediction Methodologies. 16
Table 7.1 Sample Summary Table of Future Noise Levels With and Without Proposed Undertaking 23

APPENDICES

APPENDIX A: DEFINITION OF KEY TERMS
APPENDIX B: NOISE BARRIER RETROFIT POLICY

1 INTRODUCTION

The Ontario Ministry of Transportation (MTO) Environmental Guide for Noise (referred to as the Noise Guide) was developed to provide guidance for MTO personnel and consultants in the analysis of highway noise and its effects. It replaces the Environmental Office Manual – Technical Areas – Noise, EO-V-1000-00 (May 1992).

The Noise Guide has been organized as follows:

- ***Section 2: Policy Framework***, provides a summary of requirements and procedures for noise as outlined in this Guide.
- ***Section 3: Reference Documents,*** provides a list of Ontario Ministry of Environment (MOE) publications related to noise.
- ***Section 4: Approach,*** provides an overview of the step-by-step process for the consideration and analysis of noise effects throughout all stages of the studies/projects carried out for the Ministry of Transportation.
- ***Section 5: Qualifications*** for Acoustic Specialists.
- ***Section 6: Noise Prediction Methodologies,*** provides an overview of the approved noise models.
- ***Sections 7 to 11:*** provide details for the consideration and analysis of noise effects for the following stages:
  - Transportation Planning (Section 7);
  - Highway Design - Preliminary Design (Section 8);
  - Highway Design - Detail Design (Section 9);
  - Construction (Section 10); and
  - Operations and Maintenance (Section 11).
- ***Section* 12: *Computer Data Maintenance,*** management of computer data throughout and after the project.

1.1 Terminology for this Guide

Definitions and explanations in this guide are provided in the MTO Environmental Glossary. Definitions and explanations of key terms are provided in Appendix A for convenience.

1.2 The Role of Other MTO Documents in this Guide

Numerous MTO environmental design and construction documents are related to or have a role in this Guide, as described below:

Environmental Protection Requirements for Transportation Planning and Highway Design, Construction, Operations and Maintenance

Environmental Protection Requirements (EPRs) are a list of statements, organized by environmental factors. The EPRs are a synthesis and interpretation of the over sixty statutes and their supporting regulations and formal government policies applicable to environmental aspects of transportation planning, and highway design, construction, operation and maintenance activities.

Class Environmental Assessment for Provincial Transportation Facilities, 2000

The Environmental Assessment Act (EA Act) provides for the preparation of Class Environmental Assessments (Class EA). MTO's Class EA is an approved planning document that defines groups of projects and activities and the environmental assessment (EA) processes, which MTO commits to following for each of these undertakings.

Environmental Reference for Highway Design

The Environmental Reference for Highway Design (ERD) addresses requirements for consultants undertaking MTO projects including scope of work, staff qualifications, scheduling and documentation for each environmental specialty area. (Section 3.4 outlines the technical, documentation and qualification requirements for noise). This Guide supports and explains these requirements.

Environmental Standards and Practices User Guide

The Environmental Standards and Practices User Guide (User Guide) contains a brief overview of typical potential environmental impacts associated with highway projects for each environmental factor assessed by MTO, provides design considerations in managing those impacts and lists applicable technical documents (like this Guide). As such, the User Guide is a roadmap to relevant standards and guides.

Environmental Reference for Contract Preparation

The Environmental Reference for Contract Preparation (ERCP) contains a brief overview of potential environmental impacts associated with highway construction and all relevant Ontario Provincial Standard Specifications (OPSS) and MTO Standard Special Provisions (SSP) that may be used as part of a construction contract to mitigate those impacts.

2 POLICY FRAMEWORK

Requirements for noise assessment and mitigation relating to the construction of new or the expansion of existing Provincial Highways are outlined in this Guide, which updates, improves, and supersedes the MTO/MOE (Ministry of the Environment) *Noise Protocol* and the MTO *Quality and Standards Directive A-1* - Noise Policy and Acoustical Standards for Provincial Highways. These requirements have been summarized into two (2) Environmental Protection Requirements (EPRs): Noise-1 (Planning & Design) and Noise-2 (Construction), and are discussed in the following sub-sections. In addition, MOE Approvals, Canadian Environmental Assessment Act (CEAA), and Municipal Noise Bylaws are discussed in this section.

Other references that may provide guidance include:

- MOE NPC-205, NPC-203 and NPC-233; and
- "National Guidelines of Environmental Noise Control – Procedures and Concepts for the Drafting of Environmental Noise Regulations/By-laws in Canada", Environmental Health Directorate, Health Protection Branch, Health Canada (March 1989, as applicable).

2.1 Environmental Protection Requirement (EPR) Noise-1 – Planning & Design

Environmental Protection Requirement (EPR) Noise-1 requires that potential noise impacts be investigated where a highway construction project is proposed through or adjacent to a Noise Sensitive Area (NSA). In order to determine a noise impact, a comparison shall be made for future sound levels with and without the proposed improvements for the Outdoor Living Area (OLA) of NSAs. The objective for outdoor sound levels is to achieve the future ambient that would occur without the proposed improvements. The significance of a noise impact is quantified by using this objective in addition to the change in sound level above the future ambient (i.e. the future sound level without the proposed improvements is compared to the future sound level with the proposed improvements).

Where increases in noise levels are predicted, the mitigation efforts to be applied for the predicted change in noise level above the ambient and the projected noise level with the proposed improvements are shown in Table 2.1.

Table 2.1 Mitigation Effort Required for the Projected Noise Level with the Proposed Improvements above the Ambient

Change in Noise Level Above Ambient / Projected Noise Levels with Proposed Improvements	Mitigation Effort Required
< 5 dBA change & < 65 dBA	- None
≥ 5 dBA change OR ≥ 65 dBA	- Investigate noise control measures on right-of-way. - Introduce noise control measures within right-of-way and mitigate to ambient if technically, economically and administratively feasible. - Noise control measures, where introduced, should achieve a minimum of 5 dBA attenuation, over first row receivers.

On right-of-way mitigation measures must be identified, considered and implemented where warranted. Mitigation measures within the right-of-way include:

- acoustical barriers;
- berms;
- vertical and horizontal alignments; and
- pavement surfaces.

Mitigation must attempt to achieve levels as close to, or lower than, the objective level (i.e., future predicted ambient without the proposed improvements) as is technically, economically, and administratively feasible.

The technical, economic, and administrative feasibility of providing mitigation is required to be reviewed as follows:

Technical Feasibility	Review the constructability of the noise mitigation (i.e. design of wall, roadside safety, shadow effect, topography, achieve a 5 dBA reduction, ability to provide a continuous barrier, etc.).
Economic Feasibility	Carry out a cost/benefit assessment of the noise mitigation (i.e., determine cost per benefited receiver).
Administrative Feasibility	Determine the ability to locate the noise mitigation on lands within public ownership (i.e., provincial or municipal right-of-way).

The determination of whether or not mitigation is provided must be based on the review of technical, economical and administrative feasibility while considering the existing and projected noise levels, the predicted noise level decreases and the number of benefiting receivers. The findings of this review must be documented in the Noise Report.

2.2 Environmental Protection Requirement (EPR) Noise-2 - Construction

Highway construction projects must be undertaken in accordance with the requirements and procedures outlined in this Guide, which indicates that construction activities will be undertaken in a manner to minimize noise levels and identify a process for dealing with public complaints during construction. Pile driving and blasting operations will be in accordance with OPSS 120 and MOE Publication NPC-119.

2.3 Ministry of the Environment Requirements

The determination of potential noise impacts including the justification for whether or not providing noise mitigation must be documented in the Noise Report, which will be included in Environmental Assessment (EA) documentation (see Section 8.5).

2.4 Noise Barrier Retrofit Policy

In keeping with Government policy, MTO developed a Retrofit Noise Barrier Program to alleviate noise impacts on existing noise sensitive areas adjacent to existing freeways. See Appendix B for details.

2.5 Canadian Environmental Assessment Act (CEAA)

If the Canadian Environmental Assessment Act (CEAA) is triggered, then the noise impact assessment must satisfy the requirements of the CEAA review process.

If CEAA is triggered, the proponent should contact the CEA Agency and Responsible Authority, who will provide specific guidance on CEAA noise requirements in consultation with other federal agencies including Health Canada, Environmental Health Services.

2.6 Municipal Noise Control Bylaws

Construction operations must abide by municipal noise control bylaws. Therefore, municipal bylaws must be reviewed for construction requirements prior to the commencement of construction activities. In certain situations, a contract may require work (e.g., night construction) that is in contravention of a municipal noise control bylaw. In these cases, an exemption must be obtained from the municipality prior to construction. If the exemption is not obtained, the construction project may not go on in a manner that is in contravention of the bylaw.

3 REFERENCE DOCUMENTS

For noise assessment requirements, references are made to the following Ontario Ministry of Environment (MOE) publications, or any amendment thereof:

1) NPC-101 - Technical Definitions
2) NPC-102 – Instrumentation
3) NPC-103 – Procedures
4) NPC-205 - Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)
5) NPC-232 - Sound Level Limits for Stationary Sources In Class 3 Areas (Rural)
6) LU-131 – Noise Assessment Criteria in Land Use Planning
7) ORNAMENT, Ontario Road Noise Analysis Method for Environment and Transportation, Technical Document, Ontario Ministry of the Environment, ISBN 0-7729-6376,1989

References 1 to 6 can be found on the MOE website (www.ene.gov.on.ca).

4 APPROACH

The process for noise analysis has been in place for over 15 years and is based on the overall approach developed by MTO for complying with the requirements of the Ontario Environmental Assessment Act and those policies which relate directly to noise.

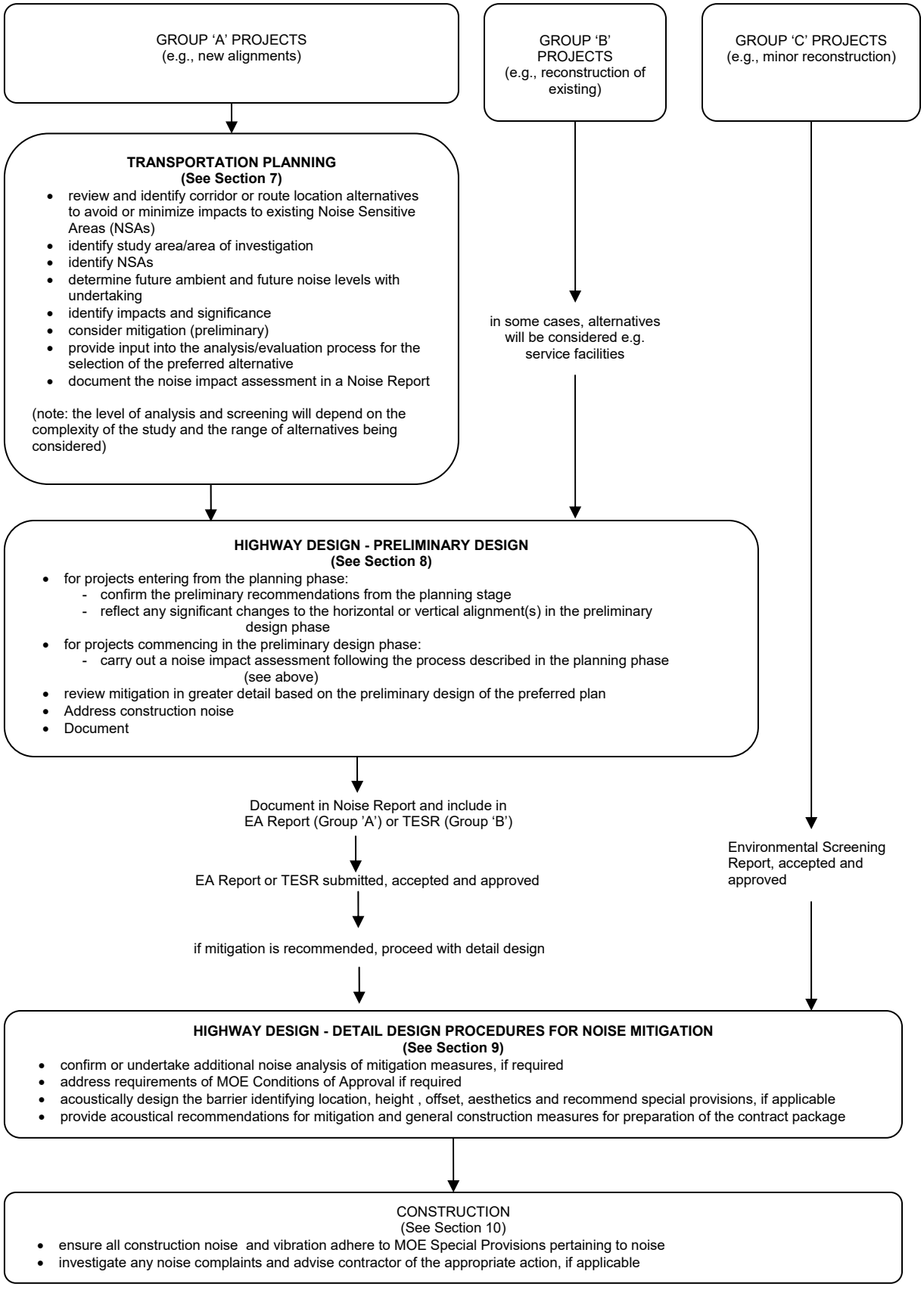
This Guide follows this well established process, and provides 'step-by-step' guidance for the consideration and analysis of noise effects throughout all project stages including:

- Transportation Planning;
- Highway Design;
  - Preliminary Design,
  - Detail Design;
- Construction; and
- Operations and Maintenance.

The results of the assessment of noise may affect the decisions that are made in each of the stages of MTO's planning and design process. Furthermore, the analysis of noise may be an iterative process where the results of one stage may necessitate review of the findings from a previous stage. Therefore, this guide has been prepared in a manner that integrates both the process and the technical analysis requirements.

Figure 4.1 illustrates the noise assessment process through the planning, preliminary design, detail design and construction stages.

Figure 4.1 Summary of Noise Analysis in MTO Planning and Design Process



5 QUALIFICATIONS

Noise analyses must be undertaken by a recognized Acoustical Specialist. An Acoustical Specialist must have demonstrated knowledge of pertinent Ontario noise policies and procedures as well as demonstrated expertise / experience in highway noise analysis and mitigation, and construction noise, from having completed at least three projects of similar scale and complexity for the Ontario Ministry of Transportation.

Furthermore, the application of these guidelines requires sound, experienced, professional judgement.

6 NOISE PREDICTION METHODOLOGIES

Noise prediction calculations must only be undertaken using noise prediction methodologies approved by the Ontario Ministry of the Environment (MOE) and MTO. As of 2006, there are two noise prediction methodologies approved by the MOE and MTO. These are described in Table 6.1. The Acoustical Specialist must document the rationale for the noise prediction methodology used.

Table 6.1 Description of the two Approved Noise Prediction Methodologies

Name	Description	Considerations for Appropriate Use
ORNAMENT	ORNAMENT (Ontario Road Noise Analysis Method) is a methodology that uses input that is general in nature and simple calculations. It has been modified for use on a personal computer using the STAMSON computer program. See Ontario Road Noise Analysis Method for Environment and Transportation, Technical Document, Ontario Ministry of the Environment, ISBN 0-7729-6376 (1989) for details.	o topography is not complex o noise level increases are expected to be less than 5 dBA o informal verification of the output from STAMINA 2.0.
STAMINA 2.0	STAMINA 2.0 is a computer program based on the United States Federal Highway Administration (FHWA) Highway Noise Prediction Model. It uses more complex calculations and required more detailed input data.	o noise level increases greater than 5 dBA and mitigation is probable o detailed evaluation of various factors such as, topography, cuts and fills, alignment, grade is needed o Environmental Assessment bump-up requests are anticipated; and o ORNAMENT results indicate increases approaching or greater than 5 dBA.

7 TRANSPORTATION PLANNING – CORRIDOR AND ROUTE LOCATION ALTERNATIVES

During the selection of corridor or route location alternatives, efforts are to be made to locate corridors or route location alternatives that avoid or minimize impacts to existing Noise Sensitive Areas (NSAs) or lands that are zoned as future NSAs.

From Figure 4.1, the steps for Transportation Planning are:

- review and identify corridor or route location alternatives to avoid or minimize impacts to existing Noise Sensitive Areas (NSAs);
- identify study area/area of investigation;
- identify NSAs;
- determine future ambient and future noise levels with undertaking;
- identify impacts and significance;
- consider mitigation (preliminary);
- provide input into the analysis/evaluation process for the selection of the preferred alternative; and
- document the noise impact assessment in a Noise Report.

Note: the level of analysis and screening will depend on the complexity of the study and the range of alternatives being considered.

7.1 Area of Investigation

Where corridor or route location alternatives are located through or adjacent to existing NSAs, the area of investigation must be determined using one of the following methods:

- using 5 decibel contour lines extending from the source to a NSA where there is no increase above the future ambient sound level, or;
- a NSA where there is no increase above the future ambient sound level, or;
- a perpendicular distance of 600 m from the closest edge of pavement.

The rationale for determining the area of investigation must be documented in the Noise Report.

7.2 Noise Sensitive Areas (NSAs)

There is no minimum number of noise sensitive land uses that defines a Noise Sensitive Area (NSA). Therefore, all noise sensitive land uses, regardless of size or location (urban or rural), must be assessed for application of noise control measures. NSAs must be identified using current air photo/mapping, documented on a plan and confirmed through field review.

Where land has been developed for residential uses adjacent to an existing or planned Provincial Highway after February 8, 1977, the developer would have been required to prepare noise study reports as per the MOE requirements under the Planning Act and submit them to MOE or the designated authority under the Planning Act. Based on MOE requirements, the developer is responsible for ensuring that noise levels in the outdoor living area are consistent with the provincial objective of 55 dBA ten years after construction. In such cases, it is the responsibility of the developer to identify and implement indoor and outdoor noise attenuation (i.e. noise walls, air conditioning, forced ventilation, etc.). Even with noise attenuation measures, if the provincial objective of 55 dBA cannot be achieved ten years after construction, noise warning clauses are required on title of those properties affected. Accordingly, where corridor or route location alternatives are located through or adjacent to existing residential areas constructed after 1977, the Acoustical Specialist must determine if a noise study report was completed as part of the subdivision agreement. If so, the Acoustical Specialist must review the report to determine:

- if the noise calculations assumed that the proposed improvements to the Provincial Highway were in place;
- if their traffic assumptions were consistent with the traffic assumptions for the proposed improvements to the Provincial Highway; and
- if there are noise warning clauses on title at the adjacent residential houses.

Based on this review, the Acoustical Specialist must determine how the residential subdivision should be included in the acoustical assessment of the corridor or route location alternatives. The foregoing must be documented in the Noise Report.

7.3 Outdoor Living Area (OLA) vs. Most Exposed Side

In the past, noise levels for highways and freeways were calculated for the OLA (see Appendix A for definitions), where the receiver location is defined as 3 m from the back of the dwelling unit.

This guide introduces an additional requirement whereby the “most exposed side” of the dwelling unit of the NSA is to be assessed as part of an initial screening. This is

discussed in Section 7.7. The most exposed side refers to the closest side of the dwelling unit or NSA, even if there is no OLA associated with the most exposed side. Accordingly, the most exposed side includes all sides of the dwelling unit, not just the back of the building, whether or not there is an OLA. This rationale is to determine the noise level at the side of the dwelling unit most exposed to the highway or freeway without the benefit of shielding from the dwelling unit. The determination of the provision of mitigation, however, is based on the analysis of the predicted noise level at the OLA, which is typically the rear yard, and may include shielding from the building, where applicable.

7.4 Determination of Future Ambient

An acoustical assessment must be conducted to determine the future ambient noise levels. This assessment will involve the following:

1) A general review of the study area must be undertaken in terms of topography and land use. Any field services necessary must be conducted to produce the topographic contours necessary to operate noise prediction models.

2) Receiver locations must be determined for the NSAs at approximately 3 m away from dwelling unit wall at the most exposed side:
   - 1.2 m above ground;
   - where there is a continuous development of NSAs of a similar nature (e.g. residential subdivision), representative locations will be identified; and
   - where there are isolated NSAs, each will be considered individually.

3) Where an existing highway/roadway is the main noise source (i.e. noise level predictions can be done), a prediction methodology as approved by the Ontario MOE/MTO must be used to predict the future ambient, i.e. 10 years after the construction of the undertaking.

   It should be noted that the contribution from transient noise sources (e.g. rail, air, etc.) are typically excluded from the determination of the ambient. In special circumstances, should these sources be the dominant in duration as well as sound level, they should be considered on a project-by-project basis with confirmation with MTO and MOE. Where included, a methodology as approved by the Ontario MOE/MTO must be used for predicting train or air noise.

4) Where no dominant noise source currently exists or is projected to exist in the future (i.e. noise level predictions cannot be done):

- As a guideline, the following ambient sound levels will be assumed for the MOE Class 1-3 Areas as defined in Appendix A and MOE's *NPC-205* and *NPC-233*:
  - Class 1 Area (urban) - 55 dBA
  - Class 2 Area (suburban) - 50 dBA
  - Class 3 Area (rural) - 45 dBA

  MTO and MOE must confirm the assumed ambient sound level.

- Where necessary, the assumed ambient must be supported with noise levels measured in the field as a means to justify the levels selected. Nonetheless, it should be noted that field measurements can be inconsistent, unreliable and only represent a 'snapshot' with respect to a Leq(24hr) situation. Given this, MTO does not typically rely on field measurements. If noise measurements are undertaken, the following procedures must be adhered to:

  i. Identify study objectives followed by a site visit.

  ii. Study maps and other documentation and predict the existing and future sound levels to identify the area where the noise measurements should be taken.

  iii. Select measurement sites according to location category.

  iv. Select measurement times to include both peak and off-peak periods.

  v. Specify duration of measurements. The minimum duration of measurements required must be in accordance with MOE Publications NPC-103 & NPC-233.

  vi. Document the following:

  - name of Acoustical Specialist performing the measurements;
  - type of sound level instrumentation used;
  - date of calibration;
  - site of measurements;
  - date and time of day;
  - weather conditions (temperature, wind speed, wind direction, humidity, etc.);
  - traffic counts;
  - sound levels;
  - duration of measurements; and
  - any additional comments about the nature of audible sounds.

vii. Evaluate and check study findings by comparing measured and predicted results, if applicable.

viii. Request additional sound level measurements, if required.

5) Where there is continuous development of NSAs of a similar nature (e.g. residential subdivision), noise contours must be plotted in increments of 5 dBA, e.g., 45 dBA, 50 dBA, 55 dBA, 60 dBA, etc.

7.5 Determination of Future Noise Levels with the Undertaking

An acoustical assessment is to be undertaken; using a prediction methodology as approved by MOE/MTO, to predict future noise levels after the undertaking is constructed. The following are required for the assessments:

1) Predicted future noise levels must be determined for 10 years after the undertaking is constructed at the most exposed side of the dwelling unit using the following data (where data is not available, use the best available data):
   - Vehicle speeds used in the evaluation of impacts shall be the posted speed limits.
   - The higher of Annual Average Daily Traffic (AADT) or Summer Average Daily Traffic (SADT) as determined by a recognized traffic analyst must be used.
   - The forecasting of future traffic volumes for freeways and highways within a high-density urban area (e.g. City of Toronto) should be based on the ultimate capacity of the roadway, as new or expanded freeways and highways within a high-density urban area typically operate at or near capacity once construction is completed. The forecasting of future traffic volumes for freeways and highways outside of a high-density urban area (e.g. rural environment) must be determined for 10 years after the construction of the undertaking. The forecasting of future traffic volumes must be confirmed by a recognized traffic analyst.
   - Traffic volumes for freeways must be based on a 24-hour period. Traffic volumes for all other classes of highways and arterial roads must be based on a 16-hour period.
   - Commercial vehicle percentages should be based on traffic data provided by a recognized traffic analyst. Where data is not available, the following will be assumed:
     - commercial vehicle percentage for freeways should be assumed to be 20% (15% heavy trucks and 5% medium trucks);
     - for all other classes of highways, the percentage is 13% (8% heavy trucks and 5% medium trucks); and

- for arterial roads, truck percentages should be obtained from the local road authority.

2) Predicted future noise levels must be compared with the undertaking 10 years after construction to the future ambient to determine if there are any noise level changes and, if so, what they are.

3) Where there is continuous development of NSAs of a similar nature (e.g., residential subdivision), noise contours must be plotted in increments of 5 dBA, e.g., 45 dBA, 50 dBA, 55 dBA, 60 dBA, etc.

Inclusion and assessment of point sources associated with MTO's transportation facilities (i.e., truck inspection stations, maintenance yards, travel plazas, etc.) must be discussed with MTO and MOE. The following should be applied when reviewing the impact of these types of facilities adjacent to a NSA:

- If the point source is part of the transportation construction project, then the sum of the point source and the undertaking will be assessed (i.e. future ambient noise level without the undertaking vs. future noise level with the undertaking and point source).
- If the point source is constructed after the transportation undertaking, then the point source will be assessed with the undertaking (i.e. future noise level with the undertaking vs. future noise level with undertaking and the point source).
- If a maintenance yard, etc., is constructed away from the undertaking (i.e., on an arterial road with access to the highway), then the point source will be assessed independently.

The assessment of point sources must follow *MOE's NPC-205* and *NPC-232*.

7.6 Determination of Potential Impact

1) The future ambient must be compared to the noise level for the undertaking projected 10 years after construction at the most exposed side of the dwelling unit. Where roadways that affect the future ambient are present, the impact must be determined by comparing the noise levels for the undertaking projected 10 years after construction, with the future ambient levels also projected to that date.

2) Where contours have been developed, the predicted future noise level contours should be superimposed on the future ambient level contours. Where specific receivers are considered, the predicted future noise level with the undertaking must be compared to the future ambient noise level.

3) The absolute levels and noise level increases must be documented in a summary table. Table 7.1 is an example.

Table 7.1 Sample Summary Table of Future Noise Levels with and without Proposed Undertaking

			Alternative 'X'		Alternative 'Y'	
Receiver Location	**No. of Noise Sensitive Land Uses**	**Year 'Z' Ambient**	**Year 'Z' L_{eq} (24 hr)**	**Change due to undertaking**	**Year 'Z' L_{eq} (24 hr)**	**Change due to undertaking**
1	20	50.2 dBA	60.8 dBA	+10.6 dBA	63.3 dBA	+13.1 dBA
2	1	55.4 dBA	60.5 dBA	+5.1 dBA	65.8 dBA	+10.4 dBA

Year 'Z' - 10 years following projected opening of the highway

7.7 Determination of Significance

The term significance is meant to be the level at which MTO begins determining whether or not the provision of noise mitigation requires investigation. The significance of highway noise must be decided for each NSA that is expected to experience increases in the absolute noise level over 45 dBA ten (10) years after construction. They must be grouped as follows:

- 45.0 to 49.9 dBA,
- 50.0 to 54.9 dBA,
- 55.0 to 59.9 dBA,
- 60 to 64.9 dBA,
- etc.

The study must include a comparison of the alternatives and an assessment of impacts. As such, the NSA's are to be grouped by predicted noise level increases into the following:

- 0 to 5.0 dBA
- 5.1 to 10.0 dBA
- 10.1 to 15.0 dBA, and
- > 15.1 dBA.

Similar groupings documenting sound level reductions must also be identified (i.e., –5.0 to –0.1 dBA). This assessment is the basis for the determination of impact significance.

Mitigation efforts to be applied for various noise level increases are outlined in Section 2.1.

7.8 Preliminary Assessment of Mitigation

Figure 7.1 summarizes the basic process for the assessment of noise mitigation based on the most exposed side vs. OLA for NSAs.

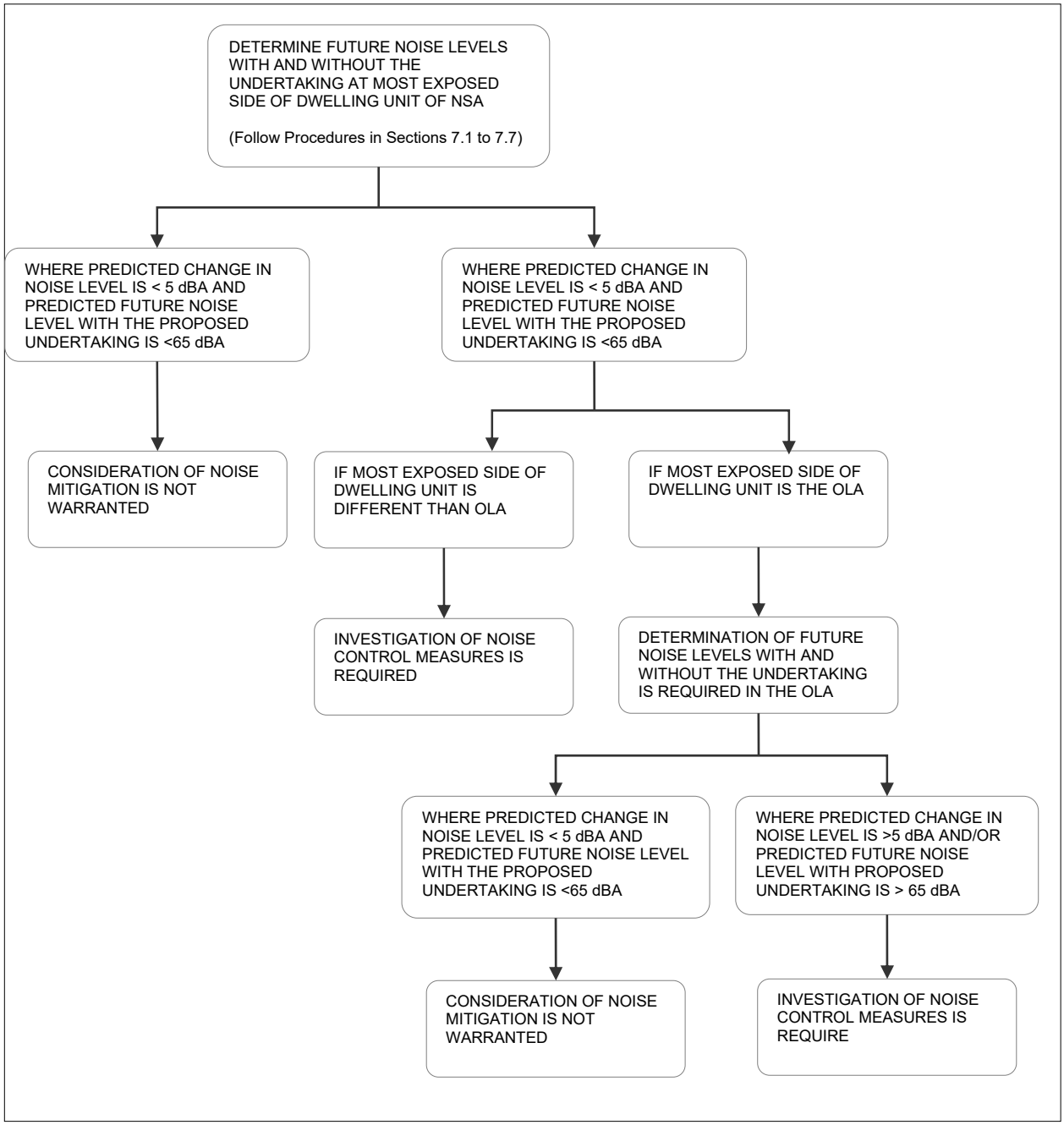
Where predicted noise increases above the ambient are less than 5 dBA and projected noise levels are less than 65 dBA, the consideration of the provision of mitigation is not required.

Where the future noise level with the proposed improvements at the most exposed side result in a greater than 5 dBA increase over the future noise level without the proposed improvements; or the projected noise level is equal to or is greater than 65 dBA, the future noise level must be predicted in the OLA to determine the significance of the noise impact.

Where the future noise level with the proposed improvements in the OLA result in a greater than 5 dBA increase over the future noise level without the proposed improvements; or the projected noise level is equal to or is greater than 65 dBA, the following must occur:

- noise control measures must be investigated within the right-of-way;
- if a minimum attenuation of 5 dBA can be achieved in the OLA averaged over first row receivers, the selected measures within the right-of-way are to be implemented.

Figure 7.1 Preliminary Assessment of Mitigation



* This figure summarizes the basic process, however, the assessment of mitigation has to be read in conjunction with sections 7.1 to 7.7 in the Noise Guide, which includes the detailed requirements

On right-of-way mitigation measures are to be identified, considered and implemented where warranted. Mitigation measures within the right-of-way include: acoustical barriers, berms, vertical and horizontal alignments, pavement surfaces, etc.

Mitigation must attempt to achieve levels as close to, or lower than, the objective level (i.e., future predicted ambient without the proposed improvements) as is technically, economically, and administratively feasible.

The determination of whether or not mitigation is provided is based on the review of technical, economical and administrative feasibility while considering the existing and projected noise levels, the predicted noise level decreases and the number of benefiting receivers.

The review of technical, economic, and administrative feasibility of providing mitigation is based on the following:

- **Technical Feasibility:** Review the constructability of the noise mitigation (i.e., design of wall, roadside safety, shadow effect, topography, achieve a 5 dBA reduction, ability to provide a continuous barrier, etc.).
- **Economic Feasibility:** Carry out a cost/benefit assessment of the noise mitigation (i.e., determine cost per benefited unit).
- **Administrative Feasibility:** Determine the ability to locate the noise mitigation on lands within public ownership (i.e., provincial or municipal right-of-way).

At this stage, mitigation is considered in the broadest sense, i.e.:

- alignment;
  - vertical
  - horizontal
- pavement types
- barriers
  - earth berms
  - walls

If new noise barriers need to be designed, acoustical recommendations for noise barrier design alternatives must be provided including recommendations for noise barrier heights and lengths. A minimum of one receiver per three homes is the typical standard to determine the best noise barrier design.

The acoustical recommendations must also include a cost analysis of the noise mitigation alternatives (i.e., providing noise barriers vs. changes in grade and/or alignment).

7.9 Aesthetic Considerations

Potential visual impacts associated with noise control measures should be reviewed. The feasibility of non-structural mitigation planning alternatives (e.g., lowering the grade or alignment shifts away from the sensitive land uses) should also be examined to mitigate noise/visual impacts. If these planning alternatives are feasible, there is significant aesthetic benefit in the elimination of the need for structural noise control and the associated need for visual impact mitigation.

7.10 Documentation

The Noise Report is to include, as a minimum, the following:

- a description of the NSAs (usually identifying discrete receiver locations);
- a map illustrating the location of the NSAs and receiver locations;
- the name of the noise prediction model used;
- results of existing ambient and future noise level predictions at NSAs for each route alternative (if more than one);
- a table identifying project impacts;
- where the consideration of mitigation is required, the Noise Report must include a discussion of mitigation measures including needs, cost/effectiveness, applicability to the project, and construction timing. The practicability of each measure must be evaluated by such factors as the effectiveness of the mitigation (i.e., predicted noise level decrease), and technical, economic and administrative feasibility (see Sub-section 7.2); and
- an analysis of construction noise impacts and project requirements including the following:
    - location and number of NSAs;
    - identification of municipal noise control bylaws;
    - need to obtain noise bylaw exemptions as required by MTO;
    - an explanation of any hardships to the project caused by municipal noise control bylaws; and
    - the construction noise complaint process.

8 HIGHWAY DESIGN - PRELIMINARY DESIGN

From Figure 4.1 the steps for Preliminary Design are:

- for projects entering from the planning stage:
  - confirm the preliminary recommendations from the planning stage;
  - reflect any significant changes to the horizontal or vertical alignment(s) in the preliminary design stage;
- for projects commencing in the preliminary design stage, carry out a noise impact assessment following the process described in the planning stage;
- review mitigation in greater detail based on the preliminary design of the preferred plan;
- address construction noise; and
- document.

8.1 Projects Entering from Planning Stage

Following the selection of a preferred alternative in the planning stage, the preliminary design stage will include assessing:

i) the route alignment alternatives; and

ii) the preferred alignment in more detail.

For projects entering the preliminary design stage from the planning stage, varying levels of noise analysis will already exist. If a noise analysis has been completed and mitigation has been recommended, then, during the preliminary design stage, the objective will be to undertake the analysis in more detail in order to:

- confirm the preliminary recommendations from the planning stage;
- reflect any horizontal or vertical alignment adjustments that may occur during the preliminary design stage; and
- detail the effects and mitigation requirements, if any.

The degree of accuracy required for predicting future levels at this stage is greater than that for the planning stage. Typically, STAMINA 2.0 is used for the detailed evaluation of various factors such as complex topography, cuts and fills, alignment, grade and mitigation. The methodology will be the same as followed during the planning stage of the study (see Section 7).

In those cases where the topography is simple, the changes in sound level are below the range of impact and there are no significant engineering changes, then the

Acoustical Specialist must determine whether or not the planning analysis will suffice and document the rationale.

8.2 Projects Commencing in Preliminary Design Stage

For projects commencing in the preliminary design stage (i.e., reconstruction / widening of existing facilities), there will likely be no previous noise analysis available and so the process for planning stage must be followed as described in Section 7. In summary, this must include:

- identification of area of investigation;
- identification of noise sensitive areas;
- determination of future ambient;
- determination of future noise levels with the undertaking;
- determination of potential impact;
- determination of significance; and
- assessment of mitigation.

In those cases where topography is less complex and it is apparent that the levels are below the range of impact, ORNAMENT should be sufficient. Where a detailed evaluation of various factors such as topography, cuts and fills, alignment, grade, and where noise level increases greater than 5 dBA are expected, STAMINA 2.0 should be used. The Acoustical Specialist must document the rationale for the noise prediction methodology used.

8.3 Mitigation Considerations

If acoustical barriers are required, the potential negative visual impact should be reviewed by the specification of appropriate barrier types, and the proper control of their configuration. The Acoustical Specialist must evaluate and document the following:

- the feasibility of the use of earth berms and berm/walls as alternatives to barrier walls;
- the aesthetic merits of each alternative treatment (i.e., berm, berm/wall, wall) based on the overall visual environment of the area;
- the potential impact of each alternative treatment on the existing vegetation and other landscape features; and
- the feasibility of mitigation measures pertaining to each alternative treatment (i.e., in the case of wall treatment, the suitability of colour, texture, pattern control).

8.4 Construction Noise

During the Environmental Assessment process, the following must be undertaken with regard to construction noise:

1) NSAs must be identified during the project planning stage;

2) Potential noise impacts of construction equipment on NSAs must be identified. These might include impacts resulting from hours or type of operation or proximity of equipment;

3) Potential mitigation of noise impacts from construction equipment must be identified. These might include measures such as timing constraints, setbacks of certain operations from NSAs, or quieter equipment;

4) The technical and economic feasibility of various alternatives must be evaluated in order to select the appropriate construction noise control measures;

5) Municipal noise control bylaws must be reviewed for requirements that may cause hardship to the project. This can be a particular problem when the need for night construction work is identified; and

6) In certain situations, a contract may require work that is in contravention of a municipal noise control bylaw. In these cases, an exemption must be obtained from the municipality before construction. If the exemption is not obtained, the construction project may not proceed in a manner that is in contravention of the bylaw.

8.5 Documentation

If there are no NSAs located within the area of investigation and no noise analysis was carried out, then the rationale for not undertaking noise analysis must be documented in the Environmental Assessment documentation (i.e., Transportation Environmental Study Report, Design and Construction Report, etc.).

If noise analysis was carried out, the work in Section 8 must be documented in a Noise Report that includes, as a minimum, the following:

- a description of the NSAs (usually identifying discrete receiver locations) including maps as appropriate;
- the name of the noise prediction model used;
- results of existing ambient and future noise level predictions at NSAs for each route alternative (if more than one);
- a table identifying project impacts;

- where the consideration of mitigation is necessary, the report must include a discussion of mitigation measures including needs, cost/effectiveness, and applicability to the project and construction timing;
- the practicability of each measure evaluated by such factors as the effectiveness of the mitigation (i.e. predicted noise level decrease), and technical, economic and administrative feasibility; and
- an analysis of construction noise impacts and project requirements including the following:
    - location and number of NSAs;
    - identification of municipal noise control by-laws;
    - the need to obtain noise bylaw exemptions;
    - an explanation of any hardships to the project caused by municipal noise control bylaws; and
    - the construction noise complaint process.

Environmental Assessment documentation must state that, where work is done by contract, enforcement of noise control bylaws is the responsibility of the municipality.

Special Provisions dealing with construction noise and vibration must be included in the contract package as applicable.

8.6 Conditions of EA Approval Pertaining to Noise

During the review and approval of and Individual Environmental Assessment, MOE may impose Condition(s) of Approval for noise. If this occurs, the following are required:

1. the requirements of the Condition of Approval must be addressed;
2. methodology and results must be documented in an Acoustical Report explaining how the Condition of Approval has been addressed; and
3. the Noise Report must be submitted to MOE for review and comment.

Upon review and approval, a formal letter from MOE confirming that the conditions have been met is required before proceeding with project implementation.

9 HIGHWAY DESIGN - DETAIL DESIGN

From Figure 4.1, the steps for Detail Design are:

- confirm or undertake additional noise analysis of mitigation measures, if required;
- address requirements of MOE Conditions of Approval if required;
- acoustically design the barrier, identifying location, height, offset, aesthetics and recommended special provisions, if applicable; and
- provide acoustical recommendations for mitigation and general construction measures for preparation of the contract package;

Where an acoustical analysis has not been carried out in the previous stages, the process for the planning stage must be followed as described in Section 7.

9.1 Mitigation

Where a noise analysis has been previously done and noise mitigation is recommended, a noise analysis must be done during the detail design stage to:

- determine the most cost-effective manner in which the noise mitigation can be achieved; and
- respond to any Environmental Assessment commitment.

Any Condition(s) of Approval required by MOE for noise must be addressed (see Section 8.6).

Where mitigation is required, the following must be reviewed, where applicable:

- horizontal and vertical alignment;
- pavement type; and
- barriers.

9.1.1 Horizontal and Vertical Alignment

The horizontal alignment is reviewed to determine the feasibility and cost-effectiveness to locate the proposed facility to avoid NSAs or increase the distance between source and receiver.

The vertical alignment is reviewed to determine the feasibility and cost-effectiveness to shift the vertical profile to reduce noise levels by affecting the line of sight between the

source and the receiver. For example, depressing the highway can provide excess material for construction of berms and/or a buffering effect from the natural ground line. The feasibility of shallow cuts to provide berming material should be reviewed.

The geometric design of the highway often affects the operation of vehicles travelling it. In areas of dense residential land use, design elements, including but not limited to the following, are to be reviewed:

- maximization of radii for curves of ramps, lengths of acceleration and deceleration lanes, and length of weave sections;
- minimization of steep upgrades on interchange ramps and long grades;
- location of “on-ramps” on downgrades and “off ramps” on upgrades to improve acceleration and deceleration characteristics;
- selection of appropriate pavement type (see Sub-section 9.1.2 for discussion); and
- placement of highway service facilities (i.e. truck inspection stations, service centres, patrol yards, etc.) away from NSAs.

9.1.2 Pavement Type

Pavement mix designs (i.e. open graded friction course or OFC) that reduce noise levels produced by the interaction of the tires with the pavement surface are to be reviewed to determine their cost-effectiveness.

9.1.3 Rumble Strips

Noise created by longitudinal rumble strips occurs infrequently since the rumble strips alert drivers when they leave the travel lane. Noise created by transverse rumble strips occurs more frequently since these strips are located on the travel lane. The use of longitudinal or transverse rumble strips is to be reviewed to determine their safety benefit and noise impact at adjacent noise sensitive areas. The justification for either installing or eliminating rumble strips or eliminating them along roadway sections immediately adjacent to NSAs must be documented in the Noise Report.

9.1.4 Barrier Recommendations

The required location, height, length, absorbency and aesthetics of the noise barrier must be recommended. A number of noise barrier options may be identified. Once the noise barrier design options are identified on the site plan, noise analysis must be undertaken using prediction methodology approved by the MOE/MTO. Upon determining a recommendation, the barrier location and height, colour, barrier

absorbency and any specialized barrier treatments or specifications must be identified and documented.

Recommended noise barrier designs (i.e. type of noise wall) must be included on the list in MTO's Designated Sources for Materials Manual.

9.1.4.1 Barrier Aesthetics

If earth berms or berm/wall combinations are proposed, recommendations must include but are not limited to:

- aesthetically sensitive grading design of the berms (e.g. variable side slopes, meandering alignment, contoured grading, etc.);
- landscaped planting of trees and shrubs and special ground cover vegetation for the berms suitable for the site conditions such as type of fill, prevailing winds, existing visual and natural environment, compliance with roadside safety etc; and
- transitional treatment to visually blend in the berm and wall combinations and end treatments.

If walls are the selected acoustical treatment, recommendations must include:

- general controls on material, colour, texture, patterns, etc;
- retention of existing vegetation adjacent to the barrier alignment;
- post construction landscape development where feasible to complement, soften or screen the walls; and
- special graphic design to provide visual relief of negative, monotonous effects and/or eliminate potential claustrophobic effects of barriers.

9.1.4.2 Maintenance Considerations

Maintenance issues that are to be taken into consideration in the design of the barrier include:

- maintaining accessibility for maintenance activities (i.e. noise wall repair, landscaping, etc.);
- locating barrier to avoid shading of roadway and shoulder for winter maintenance ice control;
- avoiding barrier gaps which might create snow drift problems;

- locating the barrier as far from the shoulder as possible to provide optimum space for snow storage and to eliminate the need for hand removal of winter sand along the guide rail; and
- if berms are built, providing desirable slopes of 3:1 or flatter for right-of-way maintenance.

9.2 Construction – Contract Preparation

General construction measures, setbacks from NSAs, timing constraints, or specific scheduling of construction activities including preconstruction of noise barriers, where required and where practical, must be included in the contract documents. The NSAs must be identified in the contract package using SP 199F33. See MTO's *Environmental Reference for Contract Preparation*.

When known before contract preparation, the details of any exemption from any municipal noise control bylaw must be outlined in the contract documents using SP 199F31.

Special Provisions 199F31 and 199F33, which are to be placed in contract documents, must be taken from the Contract Preparation System (CPS).

10 CONSTRUCTION

The noise mitigation measures for construction activities are specified in design and included in the contract documents (see Sub-section 9.2). During construction, these measures and a process to manage noise complaints are implemented and enforced.

10.1 Construction Noise Complaint Process

Despite compliance with any noise control measures identified in the contract documents, a persistent complaint must require a field investigation to determine noise level emissions. If noise level emissions for the construction equipment in use exceed the sound level criteria for construction equipment contained in the MOE Model Municipal Noise Control Bylaw, MTO requires the contractor to comply with the sound level criteria where quieter alternative equipment is reasonably available.

11 OPERATIONS AND MAINTENANCE NOISE

The main noise issues/concerns relating to highway operations are addressed during the planning and design stages so that potential impacts are identified and addressed as required prior to actual operation. Major repairs are usually addressed as part of a construction project. Therefore, the relevant construction provisions would apply.

MTO's policy regarding the retrofitting of existing freeways and highways is documented in Appendix Four of *QST Directive A-1*.

12 COMPUTER DATA MAINTENANCE

Ongoing computer data maintenance is required during the course of, and, following the completion of the study in order to:

- permit ease of information retrieval;
- provide required background support data to calculations included in the Noise Report; and
- allow for the retention of data which may be required many years following the completion of the study, for example, for an Environmental Assessment Board hearing.

At the completion of the study, all computer files must be provided to MTO.

APPENDIX A: Definition of Key Terms

See Separate File

APPENDIX B: Noise Barrier Retrofit Policy

See Separate File

MINISTRY OF TRANSPORTATION

APPENDIX A: Definition of Key Terms

Environmental Guide for Noise

Version: October 2006

VERSION HISTORY

VERSION #	DATE	DESCRIPTION OF MAJOR CHANGE

Acoustical Barriers: means walls, berms and combinations of the two, which are effective in reducing sound levels.

Acoustical Specialist: means one who has demonstrated knowledge of pertinent Ontario noise policies and procedures as well as demonstrated expertise / experience in highway noise analysis and mitigation, and construction noise, from having completed at least three projects of similar scale and complexity for the Ontario Ministry of Transportation.

Adjacent: means those Noise Sensitive Areas (NSAs) lying near highway rights-of-way, although not necessarily contiguous to them. An intervening land use may be located between the source and receiver, if that land use is such that its zoning or official plan designation is anticipated to prevent a change in the future to a use which, in itself, will be a barrier to noise.

Aesthetics: means recognition of the sensitivity of the interaction between the highway and the surrounding landscape.

Ambient Noise Level: means the total sound which is associated with and representative of a given environment and includes all natural and man-made sound from many sources (i.e., existing highways and roadways, industries, etc.) both near and far. It is the noise level prior to construction of an undertaking.

In areas with existing residential development, ambient noise level is the predicted level due to existing highways and major roadways using an approved noise prediction model.

For rural areas, where there is no dominant noise source (i.e. where predictions cannot be done), the ambient or background sound level may be assumed to be 45 dBA (Leq 24 hr). Where necessary, assumed ambient sound levels, shall be supported with field measurements of existing ambient sound levels. All measurements must be conducted in accordance with procedures outlined in the MTO Noise Guide and MOE NPC-103/NPC-233 measurement guidelines.

The contribution from transient noise sources (e.g. rail, air, etc.) are typically excluded from the determination of the ambient. In special circumstances, should these sources be the dominant noise source in duration as well as sound level, they should be considered on a project-by-project basis with confirmation with MTO and MOE. Where included, a methodology as approved by the Ontario MOE/MTO will be used for predicting train or air noise.

Class 1 Area: means an area with an acoustical environment typical of a major population centre, where the background noise is dominated by the urban hum.

Class 2 Area: means an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 Areas, and in which a low ambient sound level, normally occurring only between 23:00 and 07:00 hours in Class 1 Areas, will typically be realized as early as 19:00 hours.

Other characteristics which may indicate the presence of a Class 2 Area include:

- absence of urban hum between 19:00 and 23:00 hours;
- evening background sound level defined by natural environment and infrequent human activity; and
- no clearly audible sound from stationary sources other than from those under impact assessment.

Class 3 Area: means a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic, such as the following:

- a small community with less than 1000 population;
- an agricultural area;
- a rural recreational area such as a cottage or a resort area; or
- a wilderness area.

Decibel Scale: means a linear numbering scale used to define a logarithmic amplitude scale, thereby compressing a wide range of amplitude values to a small set of numbers. This system is used to compress sound pressure levels. The scale is often weighted using the "A" weighting frequency adjustments because it most closely approximates the frequency response of the average human ear.

dBA: means 'A-weighting' or 'dBA-scale', which is considered to be an accurate approximation of noise perceived by the average human ear.

First Row Receivers: means those adjacent receivers where noise level differences are imperceptible (within 3 dBA) from the receiver experiencing the highest noise levels.

Freeway: means controlled access median divided highway facility with grade separated crossings and interchanges (i.e. QEW and 400 series highways).

Future Ambient: means the ambient noise level projected 10 years after construction without the proposed undertaking.

For rural areas, where there is no dominant noise source (i.e. where predictions cannot be done), the ambient sound levels may be assumed as discussed in Section 7.5 of this Guide. Where necessary, assumed ambient sound levels shall be supported with field measurements of existing ambient sound levels. All measurements shall be conducted in accordance with procedures outlined in the Section 7 of this Guide and MOE's *NPC-103* and *NPC-233* measurement guidelines.

Future Noise Levels: means those sound levels (L_{eq} (24 hr) that are based on traffic volumes for a time period at least 10 years after the completed construction of the undertaking. The higher of the Annual Average Daily Traffic (AADT) or Summer Average Daily Traffic (SADT) is used.

Highway: means roadway under the jurisdiction of MTO including King's highways, secondary highways and tertiary roads. This includes all components within the associated right-of-way, e.g. structures, drainage works, traffic and safety devices.

Highway Undertaking: means the planning, design and construction of a new highway or highway improvement which can include widenings, realignments, etc.

Mitigation Measures: means measures that are designed to result in reduced noise levels in Noise Sensitive Areas (NSAs). These measures include walls, berms, adjustment to horizontal and vertical alignments and pavement types, which are designed to result in reduced noise levels in NSA's.

Noise Level (Leq 24 hour): means the 24 hour equivalent sound level (L_{eq} 24 hr) expressed on the A-weighted decibel scale (dBA). L_{eq}(24 hr) is used because it is a widely accepted descriptor of community noise for freeways and since traffic volumes are usually available for that period of time.

Noise Level (Leq 16 hour): means the 16 hour equivalent sound level (Leq 16 hr) for the time period 7:00 a.m. to 11:00 p.m. expressed on the A-weighted decibel scale (dBA). Leq (16 hr) is used for other classes of highways than freeways and for arterial roadways because these roadway classes typically have a distinct difference in traffic volumes between the daytime (7:00 a.m. to 11:00 p.m.) and night-time (11:00 p.m. to 7:00 a.m.)

Noise Sensitive Areas (NSAs): means the following land uses, with an Outdoor Living Area (OLA) associated with them:

- Private homes such as single family residences (owned or rental)
- Townhouses (owned or rental)
- Multiple unit buildings, such as apartments with OLA's for use by all occupants
- Hospitals, nursing homes for the aged, where there are OLA's for the patients

There is no minimum number of land uses that defines a NSA. Therefore, all noise sensitive land uses, regardless of size or location (urban or rural), will be assessed for application of noise control measures.

Where a new freeway/highway corridor or route is planned, the following land uses would qualify as NSAs in addition to the land uses noted above:

- Educational facilities and day care centres, where there are OLA's for students
- Campgrounds that provide overnight accommodation

- Hotels / motels where there are OLA's (i.e. swimming pool area, etc.) for visitors

NSA's must have an OLA.

Land uses listed below, by themselves do not qualify as NSA's:

- Apartment balconies above ground floor
- Churches
- Cemeteries
- Parks and picnic areas which are not inherently part of a NSA
- All commercial
- All industrial

Outdoor Living Area (OLA): means an area at ground level, adjacent to a NSA and accommodating outdoor living activities. This area may be situated on any side of the NSA. The usual distance from the dwelling unit wall is 3 m. The vertical height is 1.2 m above the existing ground surface. Where unknown, the side closest to the highway should be assumed. Paved areas for multiple dwelling residential units may not be defined as an OLA.

Significant Noise Impact: means the basis established in the Ontario MTO/MOE Noise Protocol for determining whether or not the provision of noise mitigation requires investigation. This term 'significance' does not have the same meaning as the term 'significant adverse environmental effect' as defined by the Canadian Environmental Assessment Act.

MINISTRY OF TRANSPORTATION

APPENDIX B:

NOISE BARRIER RETROFIT POLICY

Environmental Guide for Noise

Version: April 2007

VERSION HISTORY

VERSION #	DATE	DESCRIPTION OF MAJOR CHANGE

Policy

On February 8, 1977, the Ministries of Housing (now Ministry of Municipal Affairs and Housing) and Transportation and Communications (now Ministry of Transportation (MTO)) jointly released a policy statement regarding noise associated with major freeways. On May 29, 1979, the Ministry of Housing released a supplementary guideline for noise on behalf of the Government.

In keeping with Government policy, MTO developed a Retrofit Noise Barrier Program to alleviate noise impacts on existing noise sensitive areas adjacent to existing freeways. This policy is based on the principle that existing Noise Sensitive Areas (NSAs) exposed to high noise levels due to their proximity to a freeway should receive some consideration. Similarly, to avoid future noise problems, developers must design new residential areas in an acoustically sensitive manner in accordance with the guidelines issued by the Ministries of Municipal Affairs and Housing and Environment and in consultation with the affected municipality.

It is not the intent of the retrofit program to provide noise barriers at all sites on the Candidate Sites for Noise Barrier Retrofit List. Some sites may not be constructed for a number of reasons such as the inability to achieve perceptible attenuation, excessive costs to provide mitigation for a few homes, or physical limitations. Full implementation of this policy is dependent upon budget allocations and subject to prioritization of candidate sites.

1. NSAs for Retrofit

a) NSAs shall be interpreted to mean areas that are either:

- Adjacent to existing freeways and are existing residential areas where approvals were received under the Planning Act prior to February 8, 1977. Except as noted below, residential developments approved after the announcement in 1977 of the policy for noise and new residential developments adjacent to freeways do not qualify;
- Adjacent to new freeways and are existing residential developments where approvals were received under the *Planning Act* prior to the designation of the proposed freeway route under the *Public Transportation and Highway Improvement Act*; or
- Adjacent to expanding freeways and are existing residential developments where approvals were received under the *Planning Act* prior to the implementation of the highway expansions and where noise control measures were not required at the time of highway construction.

b) The majority of the residences in the area must be zoned as residential and taxed as principal residences to ensure that funds are directed to areas of greatest need (i.e. principal residences).

c) There is no minimum number of residences that define a NSA. Therefore, all noise sensitive land uses, regardless of size or location (urban or rural), should be assessed for application of noise control measures.

d) Discretion should be exercised for situations where there is a potential for the zoning to be changed from a noise sensitive land use to a non-sensitive land use.

e) NSAs must have an Outdoor Living Area (OLA) associated with the residential unit (see Appendix A).

f) f) The following land uses, with OLAs associated with them would qualify as NSAs under the above criteria:

- Private homes such as single-family residences;
- Townhouses;
- Multiple unit buildings, such as apartments with OLAs for use by all occupants; and
- Hospitals, nursing homes for the aged, where there are OLAs for the patients.

g) Land uses listed below, by themselves do not qualify as NSAs:

- Apartment balconies above ground floor;
- Educational facilities (except dormitories with common OLAs);
- Churches;
- Cemeteries;
- Parks and picnic areas that are not inherently part of a NSA;
- Day care centres;
- All commercial; and
- All industrial.

2. Candidate Site

This includes NSAs, which meet the criteria for inclusion on the Candidate Sites for Noise Barrier Retrofit List. This does not necessarily mean that the site will satisfy all warrants for noise barrier construction.

3. Retrofit Barrier Site

This includes barrier candidate sites that satisfy all warrants for construction and therefore qualify for inclusion on the capital construction program when priorities dictate and funds become available.

4. Noise Level

a. Noise levels are the 24-hour equivalent sound level (LAeq 24 hr) expressed on the A-weighted decibel scale (dBA).

b. Noise predictions will be calculated using the United States Federal Highway Administration (FHWA) Noise Prediction Model. The Ministry does not rely on the use of noise measurements for the reasons set out in Section 4.3.1.3. The Ministry accepts the following computerized models:
   - o STAMINA 2.0,
   - o Traffic Noise Model (TNM©), Version 2.5
   - o Stamson©, Version 5.0, or
   - o other versions or programs subsequently approved for use by the Ministry.

c. When setting retrofit barrier priorities and undertaking noise barrier design the traffic volume shall be the higher of the Average Annual Daily Traffic (AADT) or Summer Average Daily Traffic (SADT) volume.

d. Vehicle speeds used in the evaluation of impacts shall be the posted speed limits.

e. Commercial vehicle percentage shall be those available from Regional Traffic Sections/Offices. Where unknown, the percentage can be assumed to be 20% (15% heavy trucks and 5% medium trucks).

f. Receivers shall be located in the OLA.

5. Selection of Candidate Sites

a. The Ministry shall consider retrofit noise control measures for existing freeways where NSAs receive noise levels in excess of 60 dBA $L_{Aeq24\ hr}$, if such measures can reduce the noise levels by at least 5 dBA averaged in the first row.

b. A benefit/cost analysis will be carried out for all candidate sites and will be used to establish a priority listing. The analysis will account for the absolute sound level, noise barrier insertion loss, number of NSAs and the barrier cost.

c. Sites will be selected for inclusion on the multi-year capital construction program primarily on a priority basis.

d. Retrofit barriers should be scheduled as part of another capital construction project only where there is a significant cost savings or where a serious construction problem is avoided. Only sites, which are already on the multi-year capital construction program, should be considered for possible inclusion with another project.

6. Mitigation Standards

a. The objective is to reduce noise levels as much as is technically and economically practicable towards the provincial noise level objective of 55 dBA.

b. Noise barriers must achieve a minimum barrier insertion loss of 5 dBA averaged in the first row NSAs.

c. Noise barrier retrofit sites approaching or exceeding 70 dBA, should be designed to provide additional attenuation, where technically feasible, and not economically prohibitive.

d. When designing noise control measures, input on aesthetic treatments should be sought from the Regional Environmental Units/Offices. Consideration should be given to aesthetic impacts when considering increases in barrier height.

7. Parallel Barriers

When it can be shown that a barrier will cause detrimental noise reflections to the opposing side of the highway, then the parallel sites should be constructed at the same time. Otherwise, barriers should be built in priority sequence. To reduce reflections, consideration should be given to specifying the use of absorptive noise barrier materials.

8. Reconstruction/Maintenance of Barriers

a. Previously constructed Ministry noise walls and additional walls on existing berms, will be reprioritized when the following criteria are met:
   i) an existing barrier did not achieve a 5 dBA attenuation averaged over first row NSAs;
   ii) there is a serious existing problem;
   iii) there is ongoing public concern;
   iv) a new barrier could reduce noise levels by an additional 3 dBA (over existing conditions) averaged over first row NSAs; and
   v) all other warrants can be met.

b. When a barrier is to be completely rebuilt it shall be designed and constructed to current Ministry standards for noise barriers. Prior to reconstruction, an acoustical analysis must be conducted to determine the most effective location and height of the new barrier.

c. Where visually justified, and funds are available, consideration should be given to improving aesthetically undesirable features in existing barriers. These improvements could include, but are not limited to screening by vegetation, painting and texturing of barrier panels.

9. Non-Barrier Noise Control Measures

Each MTO region is encouraged to consider all forms of noise control measures within their Rights-of-Way when assessing a problem and is allowed the flexibility to make recommendations concerning this type of measure based on the specific circumstances associated with the project.

10. Updating Noise Predictions

All acoustical reports are valid until site conditions change significantly. For example, if project construction is delayed, the noise barrier design recommendations should be re-examined; including using updated road traffic volume information.

11. Updating Candidate Sites For Noise Barrier Retrofit List

The Ministry maintains a Candidate Sites for Noise Barrier Retrofit List. The list is updated on an annual basis to remove constructed sites, add new sites and to reprioritize sites based on new road traffic volumes and site conditions.

MTO GENERAL CONDITIONS OF CONTRACT

Table of Contents

SECTION GC 1.0 - INTERPRETATION 6

GC 1.01 Captions 6
GC 1.02 Abbreviations 6
GC 1.03 Gender and Singular References 6
GC 1.04 Ontario Provincial Standards 6
GC 1.05 Ontario Traffic Manual 7
GC 1.06 Conflict of Interest 7
GC 1.07 Definitions 7
GC 1.08 Substantial Performance 13
GC 1.09 Interpretation of Certain Words 13
GC 1.10 Liens 13

SECTION GC 2.0 - CONTRACT DOCUMENTS 14

GC 2.01 Reliance on Contract Documents 14
GC 2.02 Order of Precedence 14

SECTION GC 3.0 - ADMINISTRATION OF THE CONTRACT 16

GC 3.01 Contract Administrator's Authority 16
GC 3.02 Working Drawings 17
GC 3.03 Right of the Contract Administrator to Modify Methods and Equipment 17
GC 3.04 Emergency Situations 17
GC 3.05 Working Area 18
GC 3.06 Extension of Contract Time or Interim Completion Dates 18
GC 3.07 Delays 18
GC 3.08 Assignment of Contract 20
GC 3.09 Subcontracting by the Contractor 20
GC 3.10 Changes in the Work and Additional Work 21
GC 3.10.01 Changes in the Work 21
GC 3.10.02 Additional Work 21
GC 3.10.03 Price Agreement Form 22
GC 3.10.04 Work Directive 22
GC 3.11 Change Proposals after Contract Award 22
GC 3.11.01 Definitions 22

GC 3.11.02	Sharing of Cost Savings	22
GC 3.11.03	Conditions of Change Proposals	23
GC 3.11.03.01	Processing, General	23
GC 3.11.03.02	Incomplete Change Proposals	24
GC 3.11.03.03	Proposals for Design Changes	24
GC 3.11.03.04	Design Changes	24
GC 3.11.03.05	Proposals for Method Changes	25
GC 3.11.03.06	Proposals for Alternative Types of Materials or Material Sources	26
GC 3.11.03.07	Proposal for a Combination of Design, Method, and Material Changes	26
GC 3.11.03.08	Ownership and Copyright	26
GC 3.11.03.08.01	Intellectual Property	26
GC 3.11.03.08.01.01	Ownership of Intellectual Property	26
GC 3.11.03.08.01.02	Presumption Governing Ownership	27
GC 3.11.03.08.01.03	Contractor’s Grant of Licence	27
GC 3.11.03.08.01.04	No Restrictive Materials in Change Proposal	27
GC 3.11.03.08.01.05	Assurances Regarding Moral Rights	27
GC 3.11.03.08.01.06	Further Assurances Regarding Copyright	28
GC 3.11.03.08.01.07	Owner May Prescribe Further Compliance	28
GC 3.11.03.08.01.08	Survival	28
GC 3.11.03.08.02	Owner Rights	28
GC 3.11.03.09	Time Periods for Review	29
GC 3.11.03.10	Risk Sharing/Warranty	29
GC 3.11.04	Submission of Change Proposals	29
GC 3.11.05	Accepted Change Proposal Payment	30
GC 3.12	Notices	31
GC 3.13	Use and Occupancy of the Work Prior to Substantial Performance	31
GC 3.14	Clarification and Claims	31
GC 3.14.01	Claim Resolution Approach	31
GC 3.14.02	Request for Clarification	32
GC 3.14.03	Change Order Price Negotiations	32
GC 3.14.04	Notice of Claim	32
GC 3.14.05	Daily Work Records	34
GC 3.14.06	Claim Review Process	34
GC 3.14.07	Further Avenues for Dispute Resolution	35
SECTION GC 4.0 - OWNER'S RIGHTS AND RESPONSIBILITIES		**37**
GC 4.01	Working Area	37
GC 4.02	Management of Excess Materials	37

GC 4.03 Construction Affecting Railway Property 37
GC 4.04 Default by the Contractor 37
GC 4.05 Notification of Default 37
GC 4.06 Contractor's Right to Correct a Default 37
GC 4.07 Owner's Right to Correct Default 38
GC 4.08 Termination of Contractor's Right to Continue the Work 38
GC 4.09 Final Payment to Contractor 38
GC 4.10 Termination of the Contract 38
GC 4.11 Continuation of Contractor's Obligations 39
GC 4.12 Use of Performance Bond 39
GC 4.13 Owner Audit 39
SECTION GC 5.0 - MATERIAL 40
GC 5.01 Supply of Material 40
GC 5.02 Quality of Material 40
GC 5.03 Rejected Material 41
GC 5.04 Owner Supplied Material 41
GC 5.04.01 Ordering of Excess Material 41
GC 5.04.02 Care of Material 41
SECTION GC 6.0 - INSURANCE, PROTECTION, AND DAMAGE 43
GC 6.01 Protection of Work, Persons, and Property 43
GC 6.02 Indemnification 43
GC 6.03 Contractor's Insurance 44
GC 6.03.01 General 44
GC 6.03.02 Commercial General Liability Insurance 44
GC 6.03.03 Automobile Liability Insurance 45
GC 6.03.04 Payment for Loss or Damage 45
GC 6.03.05 Insurance Requirements and Duration 45
GC 6.04 Bonding 46
SECTION GC 7.0 - CONTRACTOR'S RESPONSIBILITIES AND CONTROL OF THE WORK 47
GC 7.01 General 47
GC 7.01.01 Site Visit 47
GC 7.01.02 Commencement of Work 47
GC 7.01.03 Control and Responsibility 47
GC 7.01.04 Compliance with the Occupational Health and Safety Act 47
GC 7.01.05 Contractor’s Representatives 48
GC 7.01.06 Assistance to the Contract Administrator 49
GC 7.01.07 Critical Path Schedule 49

GC 7.01.08	Errors Relating to the Contract	50
GC 7.01.09	Utilities	51
GC 7.01.10	Public Ceremony	51
GC 7.02	Layout	51
GC 7.03	Damage by Vehicles or Other Equipment	53
GC 7.04	Excess Loading of Motor Vehicles	53
GC 7.05	Use of Construction Equipment and Unlicensed Vehicles	53
GC 7.06	Carrier Safety Compliance	54
GC 7.06.01	Contractor Operation of a Commercial Motor Vehicle	54
GC 7.06.02	Subcontractor and Other Operation of a Commercial Motor Vehicle	55
GC 7.07	Condition of the Working Area	55
GC 7.08	Maintaining Roadways and Detours	56
GC 7.09	Access to Properties Adjoining the Work and Interruption of Utility Services	57
GC 7.10	Approvals and Permits	57
GC 7.11	Suspension of Work	57
GC 7.12	Contractor's Right to Stop the Work or Terminate the Contract	57
GC 7.13	Notices by the Contractor	58
GC 7.13.01	Advance Notice	58
GC 7.13.02	Environmental Incident Management under Legislation Protecting the Environment and Natural Resources	58
GC 7.14	Obstructions	59
GC 7.15	Limitations of Operations	59
GC 7.16	Cleaning Up Before Contract Completion	60
GC 7.17	Record Drawings	60
GC 7.18	General Warranty	60
GC 7.19	Accounts Payable	61
SECTION GC 8.0 - MEASUREMENT AND PAYMENT		**62**
GC 8.01	Measurement	62
GC 8.01.01	Quantities	62
GC 8.01.02	Variations in Tender Quantities	62
GC 8.02	Payment	63
GC 8.02.01	Non-Resident Contractor	63
GC 8.02.02	Price for Work	63
GC 8.02.03	Advance Payments for Material	63
GC 8.02.04	Certification and Payment	64
GC 8.02.04.01	Progress Payment Certificate	64
GC 8.02.04.02	Payment Adjustment for Changes in the Fuel Price Index	65

GC 8.02.04.03	Certification of Subcontract Completion	68
GC 8.02.04.04	Subcontract Statutory Holdback Release Certificate and Payment	68
GC 8.02.04.05	Certificate of Substantial Performance	68
GC 8.02.04.06	Substantial Performance Payment and Statutory Holdback Release Payment Certificates	69
GC 8.02.04.07	Certificate of Contract Completion	70
GC 8.02.04.08	Interest	71
GC 8.02.04.09	Interest for Late Payment	71
GC 8.02.04.10	Interest for Clarifications and Claims	71
GC 8.02.04.11	Owner's Set-Off	71
GC 8.02.04.12	Contract Completion and Statutory Holdback Release Payments	71
GC 8.02.04.13	Liens Filed Late	72
GC 8.03	Payment on a Time and Material Basis	72
GC 8.03.01	Definitions	72
GC 8.03.02	Daily Work Records	74
GC 8.03.03	Payment for Work	74
GC 8.03.04	Payment for Labour	75
GC 8.03.05	Payment for Material	75
GC 8.03.06	Payment for Equipment	75
GC 8.03.06.01	Working Time	75
GC 8.03.06.02	Standby Time	76
GC 8.03.06.03	Payment for Work by Subcontractors	76
GC 8.03.06.04	Mark-Up on Work on a Time and Material Basis	76
GC 8.03.06.05	Submission of Invoices	77
GC 8.04	Release from Warranty	77
GC 8.05	Records	77
GC 8.06	Taxes and Duties	77
GC 8.07	Liquidated Damages	78

SECTION GC 1.0 - INTERPRETATION

GC 1.01 Captions

.01 The captions appearing in these MTO General Conditions of Contract have been inserted as a matter of convenience and for ease of reference only and in no way define, limit, or enlarge the scope or meaning of these General Conditions of Contract or any provision hereof.

.02 In the event of a conflict of a reference to the number and caption of a subsection, subsection, clause, or paragraph, reference shall be made to the caption.

GC 1.02 Abbreviations

.01 The abbreviations listed on the left below are commonly found in the Contract Documents and represent the organizations and phrases listed on the right:

AASHTO	-	American Association of State Highway Transportation Officials
ANSI	-	American National Standards Institute
ASTM	-	ASTM International - formerly American Society for Testing and Materials
AWG	-	American Wire Gauge
AWWA	-	American Water Works Association
CESA	-	Canadian Engineering Standards Association
CGSB	-	Canadian General Standards Board
CSA	-	CSA Standards - formerly Canadian Standards Association
CWB	-	Canadian Welding Bureau
CVOR	-	Commercial Vehicle Operator's Registration
DSM	-	Designated Sources for Materials
GC	-	MTO General Conditions of Contract
MOE	-	Ministry of the Environment (Ontario)
MTO	-	Ontario Ministry of Transportation
MTC	-	Ministry of Transportation and Communications, now MTO
MUTCD	-	Manual of Uniform Traffic Control Devices, published by MTO
OPS	-	Ontario Provincial Standards
OPSS	-	Ontario Provincial Standard Specification
OPSD	-	Ontario Provincial Standard Drawing
OTM	-	Ontario Traffic Manual
PEO	-	Professional Engineers Ontario
SAE	-	Society of Automotive Engineers
SSPC	-	Structural Steel Painting Council
TRA	-	The Road Authority
UL	-	Underwriters Laboratories
ULC	-	Underwriters Laboratories Canada

GC 1.03 Gender and Singular References

.01 References to the masculine or singular throughout the Contract Documents shall be considered to include the feminine and the plural and vice versa as the context requires.

GC 1.04 Ontario Provincial Standards

.01 Regardless of the publishing date on OPSSs and OPSDs contained in the OPS manuals and on a MTO website, the Standards applicable to this Contract are listed in the schedule of Provisions, Plans, Standard Drawings, Specifications, and MTO General Conditions of Contract.

.02 When an OPSS contains an appendix, the appendix is deleted in its entirety and is not invoked unless specified elsewhere in the Contract Documents. When an appendix is invoked, the information contained in the appendix shall form part of the specification.

GC 1.05 Ontario Traffic Manual

.01 All references in the Contract Documents to the MUTCD, including all Parts and Divisions thereof, or MTO Traffic Control Manual for Roadway Work Operations, or Traffic Control Manual for Roadway Operations Field Edition are hereby deleted and replaced by the following books of the Ontario Traffic Manual:

Book 1 - Introduction to the Ontario Traffic Manual;
Book 1A - Illustrated Sign and Signal Display Index;
Book 1B - Sign Design Principles;
Book 1C - Positive Guidance Toolkit;
Book 5 - Regulatory Signs;
Book 6 - Warning Signs;
Book 7 - Temporary Conditions (and Temporary Conditions Field Edition);
Book 11 - Pavement, Hazard and Delineation Markings;
Book 12 - Traffic Signals.

.02 Any reference in the Contract Documents to OTM shall be deemed to be the Ontario Traffic Manual Books 1, 1A, 1B, 1C, 5, 6, 7, 11, and 12.

.03 The Contractor shall comply with the applicable requirements of the above OTM books.

GC 1.06 Conflict of Interest

.01 The Contractor, any of the Subcontractors and any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall not engage in any activity or provide any services to the Minister where such activity or the provision of such services, creates a conflict of interest (actually or potentially in the sole opinion of the Minister) with the provision of services pursuant to this Contract. The Contractor acknowledges and agrees that it shall be a conflict of interest for it to use confidential information of the Crown relevant to the services where the Minister has not specifically authorized such use.

.02 The Contractor shall disclose to the Minister, without delay, any actual or potential situation that may be reasonably interpreted as either a conflict of interest or a potential conflict of interest.

.03 A breach of this section by the Contractor shall entitle the Minister to terminate the Contract, in addition to any other remedies that the Minister has in this Contract, in law or in equity.

GC 1.07 Definitions

For the purpose of this Contract, the following definitions apply:

Abnormal Weather means an extreme climatic condition characterized by wind speed, air temperature, precipitation, or snowfall depth, that is less than or greater than 1½ standard deviations from the mean determined from the weather records of the 25 years immediately preceding the tender opening date.

Access Road means a private road built or existing road used by the Contractor to gain access to the Work or to a source of material.

Actual Measurement means the field measurement of that quantity within the approved limits of the Work.

Addendum means an addition to or a change in the Contract Documents issued prior to tender closing.

Additional Work means work not provided for in the Contract and not considered by the Contract Administrator to be essential to the satisfactory completion of the Contract within its intended scope.

Aggregate means gravel, sand, clay, earth, shale, stone, limestone, dolostone, sandstone, marble, granite, or rock other than metallic ores, slag, and clinkers.

Agreement means the signed document between the Minister or delegated representative and the Contractor for the performance of the Work included in the Contract Documents.

Base means a layer of Material of specified type and thickness placed immediately below the Pavement, driving surface, finished grade, curb with gutter, or sidewalk.

Business Day means any Day which is not:

a) A Saturday or a Sunday or

b) A Day observed as a holiday under the laws of the Province of Ontario or the federal laws of Canada applicable to the Province of Ontario.

Change in the Work means the deletion, extension, increase, decrease, or alteration of lines, grades, dimensions, quantities, methods, drawings, changes in the character of the work to be done, or Materials of the Work or part thereof, within the intended scope of the Contract.

Change Order means a written order to the Contractor covering contingencies, extra work, increase or decrease in Contract quantities, and additions or alterations to the plans or specifications, within the scope of the Contract and establishing the basis of payment. Also means, a written authorization covering Additional Work.

Change Proposal means a proposal by the Contractor for a modification to the Contract Documents that is expected to result in design improvement benefits or a reduction in costs or both, or Contract Time.

Claim means any request for a modification in payment from the original tender bid price submission.

Commercial Motor Vehicle means as defined under Section 16 of the *Highway Traffic Act*, R.S.O. 1990, c. H.8, as amended.

Commercial Source means a place where Aggregate or a product containing Aggregate is made available for sale.

Construction Signs means all traffic control devices and signs, including vehicles, trailers, and the like that are provided to support signs, and equipment to supply sign lighting, but excludes Contract identification signs and Highway number markers, all as may be described in the OTM.

Constructor means, for the purposes of, and within the meaning of the *Occupational Health and Safety Act*, R.S.O. 1980, c. O.1, as amended, the Contractor who executes this Contract.

Contract means the undertaking by the Owner and the Contractor to perform their respective duties, responsibilities, and obligations as prescribed in the Contract Documents.

Contract Administrator means the person, partnership, or corporation designated by the Owner to be the Owner's representative for the purposes of the Contract.

Contract Bulletin means a publication of MTO on the MTO's website www.raqs.mto.gov.on.ca.

Contract Completion means the Work has passed all inspection and testing requirements, the Contractor has rectified all deficient Work, and the Contractor has fulfilled all obligations under the Contract, except warranty obligations.

Contract Completion Certificate means the certificate issued by the Contract Administrator at Contract Completion.

Contract Documents means the Agreement, Tender, MTO General Conditions of Contract, Standard Specifications and Drawings, Special Provisions, Contract Drawings, Addenda incorporated into any aforementioned document, documents referenced in the aforementioned documents, and subsequent amendments to any of these documents made pursuant to the provisions of the Agreement.

Contract Drawings or **Contract Plans** mean drawings or plans provided by the Owner for the Work and without limiting the generality thereof may include soil profiles, foundation investigation reports, reinforcing steel schedules, aggregate sources lists, quantity sheets, cross-sections, and Standard Drawings.

Contractor means the person, partnership, or corporation undertaking the Work as identified in the Agreement.

Contractor's Intellectual Property means Intellectual Property owned by the Contractor prior to its performance under this Contract or created by the Contractor during this Contract independently of the performance of Contractor obligations under this Contract.

Contract Time means the time stipulated in the Contract Documents for completion of the Work, including any extension of Contract Time made pursuant to the Contract Documents.

Controlling Operation means any component of the Work that, if delayed, will delay the completion of the Work.

Cut-off Date means the date up to which a progress payment shall be made for work performed.

CVOR Abstract means a level 1 Commercial Vehicle Operator's Registration (CVOR) abstract obtained from MTO.

CVOR Certificate means a Commercial Vehicle Operator's Registration certificate issued under the *Highway Traffic Act*, R.S.O. 1990, c. H.8, as amended.

CVOR Holder means a person or company to whom a CVOR Certificate was issued that has not been cancelled nor currently under suspension.

Daily Work Records means daily records for any part of the Work detailing the work in question, names, and categories of workers and hours worked or on standby; types and quantities of Equipment and number of hours in use and/or on standby; and description and quantities of Material used.

Day means a calendar day.

Earth Grade means the earth surface, whether in cut or fill, as prepared for the Base or Subbase.

Engineer means a professional engineer licensed by the Professional Engineers Ontario to practice in the Province of Ontario.

Environmental Incident means an event such as a spill, discharge, emission, release, or escape of a material, pollutant, contaminant, deleterious substance, or dangerous good as defined in the legislation referenced in paragraph GC 7.13.02.01.

Equipment means all machinery and equipment used for preparing, fabricating, conveying, or erecting the Work and normally referred to as construction machinery and equipment.

Estimate means a calculation of the quantity or cost of the Work or part of it, depending on the context.

Grade means the required elevation of work.

Grade Line means a reference line representing the Grade in profile or longitudinal section established for the control of work.

Hand Tools means tools that are commonly called tools or implements of the trade and include small power tools. Individually, a tool shall be considered as a Hand Tool where the maximum cost is $400.

Haul Road means any public road excluding the road under Contract that forms part of a Material haul route.

Highway means a common and public highway any part of which is intended for or used by the general public for the passage of vehicles and includes the area between the lateral property lines thereof.

Inclement Weather means weather conditions or conditions that result immediately there from that prevents the Contractor from proceeding with the Controlling Operation.

Inspector means any person, partnership, or corporation appointed by the Contract Administrator to participate in the inspection of the Work and the Material to be used in the Work.

Intellectual Property means any intellectual, industrial, or other proprietary right of any type in any form protected under the laws of Canada, any foreign country, or any political subdivision of any country, including, without limitation, any intellectual, industrial, or proprietary rights protected by legislation, by common law, or at equity.

Labour and Material Payment Bond means the type of security furnished to the Owner to guarantee payment of prescribed debts of the Contractor covered by the bond.

Lump Sum Item means a tender item indicating a portion of the Work for which payment shall be made at a single tendered price. Payment is not based on a measured quantity, although a quantity may be given in the Contract Documents.

Major Item means any tender item that has a value, calculated on the basis of its actual or estimated tender quantity, whichever is the greater, multiplied by its tender unit price, which is equal to or greater than the lesser of:

a) $200,000, or

b) 5% of the total tender value calculated on the basis of the total of all the estimated tender quantities and the tender unit prices.

Material means material, machinery, equipment, and fixtures forming part of the Work.

Newly Created Intellectual Property means any Intellectual Property created by the Contractor in the course of performance of the Contractor's obligations under this Contract.

Owner means the party to the Agreement for whom the Work is being performed, as identified in the Agreement, and includes, with the same meaning and import, "Authority."

Pavement means a wearing course or courses placed on the Roadway and consisting of asphaltic concrete, hydraulic cement concrete, or other bituminous surfaces.

Performance Bond means the type of security furnished to the Owner to guarantee completion of the Work according to this Contract and to the extent provided in the bond.

Person means an individual, corporation, partnership, joint venture, association, trust, pension fund, union, governmental agency, board, tribunal, ministry, commission, or department and the heirs, beneficiaries, executors, legal representatives, or administrators of a person to whom the context can apply according to law.

Plan Quantity means that quantity as computed from within the boundary lines of the Work as shown in the Contract Documents.

Profile Grade means the required elevation of the surface of the Base.

Quantity Sheet means a list of the locations, estimated design quantities, and other details of Work to be completed for tender items.

Quarried Rock means material removed from an open excavation made in a solid mass of rock that was integral with the parent mass prior to removal.

Quarry means a place where Aggregate has been or is being removed from an open excavation made in a solid mass of igneous, sedimentary, or metamorphic rock or any combination of these that was integral with the parent mass prior to removal.

Rates of Interest means the interest rates determined by the Treasurer of Ontario and that are issued by and available from the Owner.

Record Drawings mean marked-up Contract Drawings prepared by the Contractor that show all differences, design changes, and deviations from the original Contract Drawings.

Records mean any books, payrolls, accounts, or other information that relate to the Work or any Change in the Work or Claims arising there from.

Regional Contracts Office means the Contracts Office in the MTO Region administering the Contract.

Release from Warranty Certificate means the certificate prepared by the Owner releasing the Contractor from all warranty obligations at the end of the last expiring warranty period.

Road Allowance means the lands acquired at any time for use as a Highway.

Roadbed means that part of the Work which is designed to support the Roadway.

Roadway means that part of the Highway designed or intended for use by vehicular traffic and includes the shoulders.

Rock Grade means the rock surface, whether in cut or fill, that has been prepared for the Base or Subbase.

Shoulder means that portion of the Roadway between the edge of the travelled lane and the top inside edge of the ditch or fill slope.

Special Provision means special direction within the Contract Documents containing requirements particular to the Work.

Standard means, when used alone, the generic term for Standard Specifications and Standard Drawings.

Standard Specification or Standard Drawing means a standard practice required and stipulated by the Owner for performance of the Work.

Subbase means a layer of material of specified type and thickness between the Subgrade and the Base.

Subcontractor means a person, firm, or corporation undertaking the execution of a part of the Work by virtue of a contract with the Contractor.

Subgrade means the Earth Grade or Rock Grade.

Substructure means all of that part of a structure, including backwalls, wingwalls, and wing protection railings, below:

a) The bearings of single and continuous span bridges.

b) Skewbacks of arches and tops of footings of rigid frame bridges.

Superintendent means the Contractor's authorized representative in responsible charge of the Work.

Superstructure means all that part of a structure, excluding backwalls, wingwalls, and wing protection railings, above:

a) The bearing seat of single and continuous span bridges.

b) Skewbacks of arches and tops of footings of rigid frame bridges.

Surety means the person, partnership, or corporation, other than the Contractor, executing a bond provided by the Contractor.

Time and Material means costs calculated according to subsection GC 8.03, Payment on a Time and Material Basis.

Utility means a facility maintained by a municipality, public utility authority, or regulated authority and includes sanitary sewer, storm sewer, water, electric, gas, steam, data, telephone, and cable television services.

Work means the total construction and related services required by the Contract Documents.

Working Area means all the land and all the easements owned or acquired by the Owner for the construction of the Work.

Working Day means any Day:

a) Except Saturdays, Sundays and statutory holidays.

b) Except a Day as determined on which the Contractor is prevented by weather or conditions resulting immediately thereafter, from proceeding with a Controlling Operation. For the purposes of this definition, this shall be a Day during which the Contractor cannot proceed with at least 60% of the normal labour and equipment force effectively engaged on the Controlling Operation for at least 5 hours.

c) Except a Day on which the Contractor is prevented from proceeding with the Controlling Operation by reason of:

    i. Any breach of Contract or prevention by the Owner, by any other Contractor of the Owner, or by any employee of any one of them.

ii. Non-delivery of Owner supplied materials.
iii. Any cause beyond the reasonable control of the Contractor that can be substantiated by the Contractor.

Working Drawings or Working Plans means any drawings or plans prepared by the Contractor for the execution of the Work and may, without limiting the generality thereof, include falsework and formwork plans, roadway protection plans, shop drawings, shop plans, or erection diagrams.

GC 1.08 Substantial Performance

.01 The Work is substantially performed:

a) When the Work or a substantial part thereof has passed inspection and testing and is ready for use or is being used for the intended purposes; and

b) When the Work to be performed under the Contract is capable of completion or, where there is a known defect, correction, at a cost of not more than:

i. 3% of the first $500,000 of the Contract price,
ii. 2% of the next $500,000 of the Contract price, and
iii. 1% of the balance of the Contract price

.02 For the purpose of this Contract where the Work or a substantial part thereof is ready for use or is being used for the purposes intended and the remainder of the Work cannot be completed expeditiously for reasons beyond the control of the Contractor or, where the Owner and the Contractor agree not to complete the Work expeditiously, the price of the services or Materials remaining to be supplied and required to complete the Work shall be deducted from the Contract price in determining substantial performance.

GC 1.09 Interpretation of Certain Words

.01 The words "acceptable," "approval," "authorized," "considered necessary," "directed," "required," "satisfactory," or words of like import shall mean approval of, directed, required, considered necessary, or authorized by and acceptable or satisfactory to the Contract Administrator unless the context clearly indicates otherwise.

.02 The words “Ministry of Transportation,” “ministry,” and “Owner” and the abbreviations “MTO” and “MTC” shall mean the Ontario Ministry of Transportation.

GC 1.10 Liens

.01 A lien is preserved when the claimant has given the Owner a copy of the claim for lien together with the affidavit of verification within the time frame detailed in Section 34 of the *Construction Lien Act*, R.S.O. 1990, c. C.30, as amended (*Construction Lien Act*).

.02 A preserved lien is perfected when the claimant commences an action in the courts to enforce the lien prior to the end of the period specified in Section 36 of the *Construction Lien Act*.

SECTION GC 2.0 - CONTRACT DOCUMENTS

GC 2.01 Reliance on Contract Documents

.01 The Owner warrants that the information furnished in the Contract Documents can be relied upon with the following limitations or exceptions:

a) The location of all mainline underground Utilities that affects the Work shall be shown to a tolerance of 1.0m horizontal and 0.3m vertical

.02 The Owner does not warrant interpretations of data or opinions expressed in any subsurface report available for the perusal of the Contractor and excluded from the Contract Documents

.03 The Owner does not warrant any other information specifically excluded from this warranty.

GC 2.02 Order of Precedence

.01 In the event of any inconsistency or conflict in the contents of the following documents, such documents shall take precedence and govern in the following order:

a) Agreement

b) Addenda

c) Special Provisions

d) Contract Drawings

e) Standard Specifications

f) Standard Drawings

g) Tender

h) MTO General Conditions of Contract

i) Working Drawings

Later dates shall govern within each of the above categories of documents.

.02 In the event of any conflict among or inconsistency in the information shown on Contract Drawings, the following rules shall apply:

a) Dimensions shown in figures on a drawing shall govern where they differ from dimensions scaled from the same drawing.

b) Drawings of larger scale shall govern over those of smaller scale.

c) Detailed drawings shall govern over general drawings.

d) Drawings of a later date shall govern over those of an earlier date in the same series.

.03 In the event of any conflict in the contents of Standards the following order of precedence shall govern:

a) Ontario Provincial Standard Specifications and Drawings

b) Other Standards referenced by OPSSs and OPSDs(e.g., CSA, CGSB, ASTM, and ANSI)

.04 The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all.

SECTION GC 3.0 - ADMINISTRATION OF THE CONTRACT

GC 3.01 Contract Administrator's Authority

.01 The Contract Administrator shall be the Owner's representative during construction and until the issuance of the Release from Warranty Certificate. All instructions to the Contractor including instructions from the Owner shall be issued by the Contract Administrator. The Contract Administrator shall have the authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

.02 All Claims, disputes, and other matters in question relating to the performance and the quality of the Work or the interpretation of the Contract Documents shall be referred to the Contract Administrator in writing by the Contractor. The Contract Administrator shall give a decision in writing within a reasonable time.

.03 The Contract Administrator may inspect the Work for its conformity with the Contract Drawings and Standard Specifications and all Drawings, and to record the necessary data to establish payment quantities under the schedule of tender quantities and unit prices or to make an assessment of the value of the work completed in the case of a lump sum price Contract.

.04 The Contract Administrator shall approve the amounts owing to the Contractor under this Contract and shall issue certificates for payment in such amounts as provided for in section GC 8.0, Measurement and Payment.

.05 The Contract Administrator shall, with reasonable promptness, review and take appropriate action upon the Contractor's submissions such as Working Drawings, product data, and samples according to the Contract Documents. Unless specified otherwise, the Contract Administrator shall respond to submissions requiring approval according to the Contract as soon as possible but not longer than 5 Business Days excluding any requests for extensions of Contract Time.

.06 The Contract Administrator shall investigate all allegations of a change in the character of the Work made by the Contractor and issue appropriate instructions.

.07 The Contract Administrator shall prepare and issue Change Orders.

.08 The Contract Administrator shall be, in the first instance, the interpreter of the Contract Documents and the judge of the performance there under by both parties to the Contract. Interpretations and decisions of the Contract Administrator shall be consistent with the intent of the Contract Documents.

.09 The Contract Administrator shall have the authority to reject work or Material which does not conform to the Contract Documents.

.10 Defective work, whether the result of poor workmanship, use of defective Material, or damage through carelessness or other act or omission of the Contractor and whether incorporated in the Work or not, that has been rejected by the Contract Administrator as failing to conform to the Contract Documents shall be removed promptly from the Work by the Contractor and replaced or re-executed promptly according to the Contract Documents at no additional cost to the Owner.

.11 Any part of the Work destroyed or damaged by such removals, replacements, or re-executions shall promptly be made good at no additional cost to the Owner.

.12 If, in the opinion of the Contract Administrator, it is not expedient to correct defective work or work not performed according to the Contract Documents, the Owner may deduct from monies otherwise due to the Contractor the difference in value between the work as performed and that specified in

the Contract Documents, the amount of which shall be determined in the first instance by the Contract Administrator.

.13 Notwithstanding any inspections made by the Contract Administrator or the issuance of any certificates or the making of any payment by the Owner, the failure of the Contract Administrator to reject any defective work or Material shall not constitute acceptance of defective work or Material.

.14 The Contract Administrator shall have the authority to temporarily suspend the Work for such reasonable time as may be necessary to facilitate the checking of any portion of the Contractor's construction layout or the inspection of any portion of the Work. There shall not be any extra compensation for this suspension of work.

GC 3.02 Working Drawings

.01 The Contractor shall arrange for the preparation of clearly identified and dated Working Drawings as specified in the Contract Documents.

.02 The Contractor shall submit Working Drawings to the Contract Administrator with reasonable promptness and in orderly sequence so as to not cause delay in the Work. If either the Contractor or the Contract Administrator so requests, they shall jointly prepare a schedule fixing the dates for submission and return of Working Drawings. At the time of submission, the Contractor shall notify the Contract Administrator in writing of any deviations from the Contract requirements that exist in the Working Drawings.

.03 The Contractor shall make any changes in Working Drawings that the Contract Administrator may require consistent with the Contract Documents and resubmit, unless otherwise directed by the Contract Administrator. When resubmitting, the Contractor shall notify the Contract Administrator in writing of any revisions other than those requested by the Contract Administrator.

.04 The Contractor shall keep one set of the Working Drawings at the site at all times.

GC 3.03 Right of the Contract Administrator to Modify Methods and Equipment

.01 The Contractor shall, when instructed in writing, make alterations in the method, Equipment, or work force at any time the Contract Administrator considers the Contractor's actions to be unsafe or damaging to either the Work or existing facilities or the environment, at no additional cost to the Owner. The Contractor shall alter the sequence of operations on the Contract, when requested in writing, so as to avoid interference with other work.

.02 Notwithstanding the foregoing, the Contractor shall ensure that all necessary safety precautions and protection are maintained throughout the Work.

GC 3.04 Emergency Situations

.01 The Contract Administrator has the right to determine the existence of an emergency situation and, when such an emergency situation is deemed to exist, the Contract Administrator may instruct the Contractor to take action to remedy the situation. If the Contractor does not take timely action or, if the Contractor is not available, the Contract Administrator may direct others to remedy the situation.

.02 If the emergency situation was the fault of the Contractor, the remedial work shall be completed at no additional cost to the Owner. If the emergency situation was not the fault of the Contractor, the Owner shall pay for the remedial work.

GC 3.05 Working Area

.01 The Contractor's sheds, site offices, toilets, other temporary structures, and storage areas for Material and Equipment shall be grouped in a compact manner and maintained in a neat and orderly condition at all times.

.02 The Contractor shall confine his construction operations to the Working Area so as not to interfere with public use. Should the Contractor require more space than that shown on the Contract Drawings, the Contractor shall obtain such space at no additional cost to the Owner.

.03 The Contractor shall not enter upon or occupy any private property for any purpose, unless the Contractor has received prior written permission from the property owner.

GC 3.06 Extension of Contract Time or Interim Completion Dates

.01 An application for an extension of Contract Time or interim completion dates shall be made in writing by the Contractor on the Owner's Standard Form PH-CC-775, Extension of Time Request and Approval Form, to the Contract Administrator, as soon as the need for such extension becomes evident. The application for an extension of Contract Time shall enumerate the reasons and impact on the critical path schedule, and state the length of extension required.

.02 Circumstances suitable for consideration include the following:

a) Delays: See subsection GC 3.07, Delays.

b) Changes in the Work: See clause GC 3.10.01, Changes in the Work.

c) Additional Work: See clause GC 3.10.02, Additional Work.

.03 The Contract Time shall be extended for such additional time as approved by the Contract Administrator.

.04 The terms and conditions of the Contract shall continue for such extension of Contract Time.

GC 3.07 Delays

.01 If the Contractor is delayed in the performance of the Work by:

a) War, blockades, or civil commotions; or

b) Errors in the Contract Documents; or

c) An act or omission of the Owner, Contract Administrator, other contractors, or anyone employed or engaged by them directly or indirectly, contrary to the provisions of the Contract Documents; or

d) A stop work order issued by a court or public authority, provided that such order was not issued as the result of an act or omission of the Contractor or anyone employed or engaged by the Contractor directly or indirectly; or

e) The Contract Administrator giving notice under subsection GC 7.11, Suspension of Work; or

f) Abnormal Weather, provided that in the case of an application for an extension of Contract Time, due to the Abnormal Weather, the Contractor shall, with the Contractor's application, submit evidence from Environment Canada, together with detailed calculations in support of such application; or

g) Archaeological finds,

then the Contractor shall be granted an extension of Contract Time according to subsection GC 3.06, Extension of Contract Time or Interim Completion Dates, and shall be reimbursed by the Owner for reasonable costs incurred by the Contractor as the result of such delay.

.02 To determine if the weather encountered during the term of the Contract constitutes Abnormal Weather, the weather records used for the calculation of the 25-year mean and standard deviation shall be from the Environment Canada weather station nearest to the location of the Work. The weather conditions measured in time periods of 3 consecutive Days within a 30-Day period, a calendar month, or 3 consecutive calendar months shall be used to determine the values for the calculations. No other time periods shall be considered.

a) For precipitation and snowfall, the values for each year shall be the total amount over the time period.

b) For wind and temperature, the values for each year shall be either the highest or lowest value in the time period.

c) The same month or 3 month time period shall be used for each of the 25 years.

d) For a consecutive 3-Day period within a 30-Day period, the 30-Day period shall begin 15 Days prior to the start of the weather event that is suspected to be abnormal. Only the highest or lowest 3-Day value within the same 30-Day period shall be used for each of the preceding 25 years.

.03 If the Contractor is granted an extension of Contract Time, compensation for unabsorbed head office overhead shall be as follows:

HOOH = (Te (OCv x 0.05)/T)) - 0.05(FCv-OCv)

Where:

HOOH: means head office overhead payment

Te: means approved extension of Contract Time in Days less the Days between December 1 and May 15 inclusive (for Working Day Contracts elapsed Days for approved Working Days)

OCv: means Original Contract tender value in dollars

T: means original Contract Time less the Days between December 1 and May 15 inclusive (Days for completion date contracts or elapsed Days for Working Day Contracts)

FCv: means final Contract value in dollars excluding: incentive/disincentive payments, material bonus/penalty payments, asphalt cement index payments and fuel price adjustments

The head office overhead payment shall not be negative.

For the purposes of establishing the start date to calculate Contract durations, the date shown on the Owners Standard Form PH-CC-700, Permission to Start Work, shall be considered as the start date. No other payment shall be made for Head Office overhead.

Payment for unabsorbed head office overhead shall be made after the Contract Completion Certificate has been issued.

.04 If the Work is delayed by labour disputes, strikes, or lock-outs, including lock-outs decreed or recommended to its members by a recognized contractor's association, of which the Contractor is a member or to which the Contractor is otherwise bound, which are beyond the Contractor's control, then:

a) Where an industry-wide strike delays the Work, the Contractor shall be granted an extension of Contract Time but not financial compensation (i.e., the strike is considered to be an excusable and non-compensable delay). The Contractor shall make application and shall document the extent to which Controlling Operations were delayed by the strike.

b) Bonuses and penalties shall apply to the revised interim and final completion dates.

.05 If the Contractor's operations expose any items which may indicate an archaeological find, such as building remains, hardware, accumulations of bones, pottery, or arrowheads:

a) The Contractor shall immediately notify the Contract Administrator and suspend operations within the area identified by the Contract Administrator.

b) Work shall remain suspended within that area until otherwise directed by the Contract Administrator in writing, according to subsection GC 7.11, Suspension of Work.

c) Any delay in the completion date of the Contract that is caused by such a cessation of construction operations shall be considered to be beyond the Contractor's control according to paragraph GC 3.07.01.

d) Any increases in the cost of the work to be done that are caused by such a cessation of construction operations shall be considered as a Change in the Work according to paragraph GC 3.10.01.01.

e) Any work directed or authorized in connection with an archaeological find shall be considered as Changes in the Work according to clause GC 3.10.01, Changes in the Work.

GC 3.08 Assignment of Contract

.01 The Contractor shall not assign the Contract, either in whole or in part, without the written consent of the Owner.

GC 3.09 Subcontracting by the Contractor

.01 The Contractor may subcontract any portion of the Work, but the total of all sublets shall not exceed 60% of the total tender value without the written consent of the Contract Administrator, subject to these MTO General Conditions of Contract and any limitations established by the Owner.

.02 The Contractor shall notify the Contract Administrator, in writing on the Owner's standard form PH-CC-742, Consent to Sublet, of the intention to subcontract where the subcontract comprises greater than 50% of the tender item value. Such notification shall identify the part of the Work, and the Subcontractor with whom it is intended.

.03 The Contractor shall preserve and protect the rights of the parties under the Contract with respect to the work to be performed under subcontract and shall:

a) Enter into agreements with the intended Subcontractors to require them to perform their work according to the Contract Documents; and

b) Be as fully responsible to the Owner for acts and omissions of the Contractor's Subcontractors and of persons directly or indirectly employed by them as for acts and omissions of persons directly employed by the Contractor.

.04 Subcontracting shall not be construed to relieve the Contractor from any obligation under the Contract or to impose any liability upon the Owner. Nothing contained in the Contract Documents shall create a contractual relationship between a Subcontractor and the Owner.

.05 The Contractor shall not subcontract any part of the Work to a Subcontractor that has submitted the lowest tender for the Contract, and has subsequently failed to enter into a Contract with the Owner. The Owner shall not be responsible or liable for any costs or damages of the Contractor arising from the need of the Contractor to substitute a Subcontractor.

GC 3.10 Changes in the Work and Additional Work

GC 3.10.01 Changes in the Work

.01 The Owner or the Contract Administrator, where so authorized, may, by order in writing, make Changes in the Work without invalidating the Contract. The Contractor shall not be required to proceed with a Change in the Work until in receipt of a Change Order. Upon the receipt of such written order the Contractor shall proceed with the work and shall provide the Owner with a detailed cost estimate of the work described in the Change Order. The estimate shall identify the costs of salaries and wages, payroll burden, Equipment, Materials, and payments to Subcontractors. Alternatively, and with the agreement of the Contract Administrator, the Contractor may provide a cost estimate based on actual or revised Contract prices. The Contractor shall also estimate the impact on any incentives or disincentives.

.02 The Contractor may apply for an extension of Contract Time according to the terms of subsection GC 3.06, Extension of Contract Time or Interim Completion Dates.

.03 If the Changes in the Work relate solely to quantities, payment for the work shall be made according to the conditions specified in clause GC 8.01.02, Variations in Tender Quantities. If the Changes in the Work do not solely relate to quantities, then either the Owner or the Contractor may negotiate upwards or downwards the adjustment of the Contract price in respect of the Changes in the Work according to subsection GC 3.14, Clarification and Claims, or payment may be made according to the conditions contained in subsection GC 8.03, Payment on a Time and Material Basis.

.04 The undisputed value of work performed as a result of a Change Order is eligible to be included in the Progress Payment Certificate. The Owner shall compensate the Contractor for the direct costs of labour, Materials, Equipment, and subcontracts. The interim payment shall be based on a mutually agreed lump sum, pro-rated for the percentage of work completed. In the case of failure to reach agreement, the interim payment shall be calculated according to subsection GC 8.03, Payment on a Time and Material Basis.

GC 3.10.02 Additional Work

.01 The Owner or Contract Administrator, where so authorized, may request the Contractor to perform Additional Work without invalidating the Contract. If the Contractor agrees to perform Additional

Work, the Contractor shall proceed with such work upon receipt of a Change Order establishing the basis of payment, the price, and the adjustment of Contract Time.

GC 3.10.03 Price Agreement Form

.01 If the Contractor and Contract Administrator agree on the basis of payment and price when appropriate, a price agreement on the Owner's Standard Form PH-CC-856, Price Agreement for Change in the Work, Extra Work or Additional Work, shall be signed by both parties.

GC 3.10.04 Work Directive

.01 If there is a dispute between the Owner and the Contractor whether a Change Order is required, and the Contractor does not proceed with the Work, the Owner may issue an Owners Standard Form PH-CC-857, Work Directive. Upon receipt of a Work Directive the Contractor shall proceed with the Work. The Contractor may pursue resolution of the dispute according to subsection GC 3.14, Clarification and Claims.

GC 3.11 Change Proposals after Contract Award

GC 3.11.01 Definitions

For the purpose of this subsection, the following definitions apply:

Alternative Type of Material means a substitute for a specified type of Material to be incorporated into a product and would involve a change that does not adversely affect the performance of the product.

Design Change means an alteration to a specified physical feature of a product or to the construction staging requirements that does not adversely affect the performance of the facility, and may include the use of an Alternative Type of Material that changes the physical dimensions of a product.

Method Change means an alteration to the specified means or process used to produce a product.

GC 3.11.02 Sharing of Cost Savings

.01 The Contractor may propose cost-reducing Change Proposals after Contract award and gain a financial reward by receiving 50% of the savings resulting from a Change Proposal. If a Change Proposal is acceptable to the Owner, as determined by an Owner Change Proposal review team, the Contractor shall:

a) Be reimbursed 100% for the agreed upon design/redesign cost as agreed upon at acceptance by the Owner in principle of a Change Proposal, and

b) Receive payment of 50% of the net construction cost savings, as detailed in clause GC 3.11.05, Accepted Change Proposal Payment, resulting after preliminary design development at the Contractor's cost.

Items a) and b) are in addition to payment for the tendered cost for construction of a Change Proposal.

.02 Standard submission forms and guidelines for their completion are available from the Contract Administrator.

GC 3.11.03 Conditions of Change Proposals

GC 3.11.03.01 Processing, General

.01 Change Proposals under this provision shall be considered after award and when all applicable conditions are met. Change Proposals need not necessarily be completely equivalent to or meet specified requirements, except as otherwise specified in subsection GC 3.11, Change Proposals after Contract Award. Change Proposals shall be submitted on the applicable Owner Standard Forms and shall duplicate all the original text provided in the original standard forms.

.02 Acceptance or rejection of the Change Proposal shall be at the sole discretion of the Owner. The Owner shall advise the Contractor of the reasons for rejection of a Change Proposal according to clause GC 3.11.03.09, Time Periods for Review.

.03 Each proposed Change that affects a different set of Contract items shall be documented as a separate Change Proposal.

.04 Ongoing costs and future life costs shall be evaluated, as detailed and explained on the Owner Standard Forms, and shall be noted considering, as a minimum, a perpetual/infinite life cycle using present worth value analysis, using a constant dollars concept, and a discount rate of 6%.

.05 Change Proposals that take advantage of any errors or omissions in the plans for the as-designed project, or discrepancies between the as-designed project and the Special Provisions covering alternate designs, shall not be accepted. In the event that any error, omission, or discrepancy is discovered, the Contractor shall immediately notify the Contract Administrator. Failure to notify the Owner shall constitute a waiver of all claims for misunderstandings, ambiguities, or other situations resulting from the error, omission, or discrepancy.

.06 The Contractor shall be responsible for all costs arising in connection with errors in the quantities related to the Change Proposal.

.07 The Owner shall not be liable to the Contractor for failure to accept or act upon any Change Proposal nor for any delays attributable to any such Change Proposal.

.08 No extension of Contract Time shall be permitted unless detailed in a Change Proposal and accepted by the Owner.

.09 The Contractor shall be responsible for obtaining all regulatory approvals resulting from any Change Proposal.

.10 The Owner shall be the sole judge of whether any Change Proposal is consistent with owner design policies and basic design criteria for the project.

.11 The Contractor shall have no Claim against the Owner for any costs or delays due to the Owner's review or rejection of a Change Proposal, including but not limited to review for approval of designs, development costs, anticipated profits, or increased material or labour costs resulting from delays in the review of such Change Proposals.

.12 If a Change Proposal is acceptable to the Owner, the Contractor shall construct the Change Proposal, and shall do the construction for the price bid for the Change Proposal identified by MTO as acceptable.

.13 If the Change Proposal is acceptable in whole or in part, such acceptance shall be clarified by the Owner by means of a Change Order that shall specifically state that it is executed pursuant to subsection GC 3.11, Change Proposals after Contract Award.

.14 Subcontractors may not submit a Change Proposal, except through the Contractor.

.15 If the Owner accepts a design change, the Owner shall not give permission to proceed with such a Change Proposal until an agreement has been reached on the estimated value of the cost savings and on the Change Proposal design or redesign costs, or until there is a written agreement on a dispute resolution procedure to resolve any disagreement over the values. If a Change Proposal is rejected, no compensation shall be made for any costs associated with the Change Proposal, other than those accepted as part of a Change Proposal and/or other costs found to be acceptable to the Owner.

.16 If the Owner already has under consideration certain revisions to the Contract or has approved certain changes in Standard Specifications or Drawings for general use that are subsequently incorporated into a Change Proposal, the Owner shall reject the Change Proposal and shall proceed with such revisions, if the Owner so desires and without any obligation to the Contractor. At the Owner's discretion, such changes may be made under subsection GC 3.10, Changes in the Work and Additional Work.

GC 3.11.03.02 Incomplete Change Proposals

.01 The Owner reserves the right to reject any Change Proposal if the Change Proposal does not contain all required information or is not presented clearly. Without prejudice to this right, the Owner may request clarification when the intent of a Change Proposal is unclear. If supporting data is insufficient or unclear, this shall also be grounds for rejection of a Change Proposal.

GC 3.11.03.03 Proposals for Design Changes

.01 When the Contract Documents do not contain a provision for a design change for a tender item, the Contractor's bid for the tender item shall be based on the specified/tendered design exclusive of any Change Proposal. Alternative designs presented under this provision may be proposed only after award. The Owner shall review the design Change Proposal and if the Change Proposal is acceptable to the Owner, the Contractor shall be responsible for the cost of all impacts on other construction item costs that are not included in the Change Proposal and for the schedule resulting from the Change Proposal.

GC 3.11.03.04 Design Changes

.01 The situations described below are covered in OPSSs, and shall be used by the Owner to determine how a Change Proposal shall be handled:

a) When the Contract contains provisions for acceptable alternative designs (e.g., pipe sewers, cast-in-place vs. precast manholes, and culverts), the Contractor may proceed with any one of them with no need to negotiate cost savings after award based on this provision.

b) When the Contractor is specifically permitted in the Contract to design an alternative to the design specified in the Contract (e.g., track protection, work sequence, or staging requirements), the Contractor shall perform the design, and the associated cost shall be deemed to be included in the related Contract prices. The design shall be subject to Owner review and, if the alternative design is not acceptable, it shall be changed to meet the Owner's requirements at no additional cost to the Owner or revert to the original design as directed by the Owner.

c) When the Contractor is responsible for the design of temporary work and no design has been provided in the Contract, or the design provided by the Owner is not sufficiently detailed to permit construction (e.g., formwork and falsework, dewatering, trench shoring, and roadway protection), it shall be understood that the costs for such work were included in the Contractor's original tendered bid, and the Contractor shall assume all the risk associated with bidding and constructing the design.

GC 3.11.03.05 Proposals for Method Changes

.01 When the Contract Documents do not contain a provision for a method change for the tender item, or when the Contractor proposes an alternative method to the specified method, the Owner shall, under this provision, receive, review, and accept or reject an alternate method only after award of the Contract. The Contractor shall assume all of the risk in bidding the tender item with an alternate method and in using the alternate method. If the alternative method is acceptable to the Owner, or is acceptable with modifications, the Contractor shall be paid according to the payment conditions of subsection GC 3.11, Change Proposals after Contract Award. If a Change Proposal is rejected, no additional compensation shall be made.

.02 The Contractor shall not start work with a proposed method change until the Owner has given written permission.

.03 When the Contractor proposes to change the construction staging scheme identified in the Contract Documents, and where these changes are deemed by the Contract Administrator to be a significant departure from the Contract Documents, the Contractor shall submit 4 copies of a traffic management plan that:

a) Includes, as appropriate, the following documents:

i. Plan, profile, and cross-section drawings indicating the proposed changes to the horizontal and vertical alignment and any changes to the drainage; electrical; environmental; Pavement; structural; over-winter; work zone safety; and public safety, including pedestrian access, schemes for all affected construction and traffic stages.
ii. Revised signing and Pavement marking schemes.
iii. Revised detour, lane, or ramp closure schemes.
iv. A revised critical path schedule for the duration of the project.

b) Maintains the minimum standards as used in the Contract Documents for:

i. Highway geometrics.
ii. Pavement structures (i.e., type, depth and granular depths).
iii. Illumination and traffic signals needs.
iv. Over-winter conditions.
v. Environmental Protection (i.e., design measures, construction constraints and requirements and commitments in environmental documentation which may not be referred to in the Contract Documents).

c) Clearly identifies geometric design criteria used for:

i. Design speed.
ii. Vertical grades.
iii. Stopping sight distance.
iv. Vertical curves.
v. Horizontal curves.
vi. Superelevation.
vii. Lane widths.
viii. Shoulder widths.

ix. Grades for side slopes.
x. Hazard offsets.
xi. Barrier warrants.
xii. Pavement crossfalls.
xiii. Shoulder crossfalls.

d) Identifies any changes to the construction staging or traffic operations affecting municipal roadways to the Contract Administrator who shall notify the affected municipality. A minimum of 10 Business Days shall be provided to the municipality for their response.

e) Complies with the pavement marking and signing standards of the OTMs.

f) Complies with permitted time periods for lane and ramp restrictions and closures as specified in the Contract Documents.

g) Complies with environmental constraints and requirements as specified in the Contract Documents.

h) Meets current MTO Standards.

GC 3.11.03.06 Proposals for Alternative Types of Materials or Material Sources

.01 The Contractor's Change Proposal for alternative types of Materials or Material sources shall include evidence that the Material or Material source meets the Owner's requirements in place at the time the Change Proposal is submitted.

GC 3.11.03.07 Proposal for a Combination of Design, Method, and Material Changes

.01 When the Contract Documents do not contain a provision for a design change for a tender item, other than that permitted by a Change Proposal, and the proposed design change requires a different method from that specified in the Contract, the Change Proposal including the proposed method shall be considered a design change, and all the requirements of clause GC 3.11.03.03, Proposals for Design Changes, shall apply.

GC 3.11.03.08 Ownership and Copyright

GC 3.11.03.08.01 Intellectual Property

GC 3.11.03.08.01.01 Ownership of Intellectual Property

.01 The Owner shall be the sole proprietor of any Newly Created Intellectual Property. The Contractor irrevocably assigns to and in favour of the Owner, and the Owner accepts every right, title, and interest in and to all Newly Created Intellectual Property in the Change Proposal, immediately following the creation thereof, for all time and irrevocably waives in favour of the Owner all rights of integrity and other moral rights to all Newly Created Intellectual Property in the Change Proposal, immediately following the creation thereof, for all time. To the extent that the Change Proposal includes, in whole or in part, the Contractor's Intellectual Property, the Contractor grants to the Owner a licence to use that Contractor's Intellectual Property in the manner contemplated in clause GC 3.11.03.08.01, Intellectual Property, of these MTO General Conditions of Contract, the total consideration for which shall be a portion of the payment of the lump sum tender item price to the Contractor by the Owner.

GC 3.11.03.08.01.02 Presumption Governing Ownership

.01 The presumption governing the Contract shall be that the Owner shall be the sole proprietor of any Intellectual Property in any form contained in the Change Proposal. If the Contractor's Intellectual Property forms any part of the Change Proposal, the Contractor shall notify the Owner in the Change Proposal. In the absence of any such notice, the presumption shall remain that the Owner is the sole proprietor of any Intellectual Property contained in the Change Proposal.

GC 3.11.03.08.01.03 Contractor's Grant of Licence

.01 For those parts of the Change Proposal that are the Contractor's Intellectual Property, the Contractor grants to the Owner for the sole purposes of resolving or remedying any breach of the Contract Documents or this warranty by the Contractor or for the Owner to undertake maintenance, rehabilitation, reconstruction, or construction work, a perpetual, world-wide, non-exclusive, irrevocable, transferable, royalty-free, fully-paid-up right and licence to:

a) Use, modify, reproduce, and distribute, in any form, the identified Intellectual Property; and

b) Authorize other Persons, including agents, contractors, or Subcontractors, to do any of the former on behalf of the Owner.

.02 The Owner acknowledges and agrees that the Contractor's Intellectual Property is the property of the Contractor and is highly valuable, confidential, and material to the interests, business, and affairs of the Contractor and that disclosure thereof would be detrimental to the interests, business, and affairs of the Contractor. The Owner agrees to maintain the confidentiality of the Contractor's Intellectual Property and that, subject to a court order or except as specifically permitted by the terms of these provisions, the Owner shall not disclose the Contractor's Intellectual Property to any person for any reason whatsoever other than to those persons who actually need to have knowledge of the Contractor's Intellectual Property for the sole purposes of resolving or remedying any breach of the Contract Documents or this warranty or for the Owner to undertake maintenance, rehabilitation, reconstruction, or construction work. The confidentiality obligation of the Owner shall not apply to those elements of the Contractor's Intellectual Property that are currently or hereafter become generally available to the public, provided such public availability has not occurred as a result of the disclosure by the Owner in contravention of this provision.

GC 3.11.03.08.01.04 No Restrictive Materials in Change Proposal

.01 The Contractor shall not incorporate into any Change Proposal anything that would restrict the right of the Owner to modify, further develop, or otherwise use the Change Proposal in any way that the Owner deems necessary, or that would prevent the Owner from entering into any contract with any contractor other than the Contractor for the modification, further development, or other use of the Change Proposal.

GC 3.11.03.08.01.05 Assurances Regarding Moral Rights

.01 At the request of the Owner, at any time or from time to time, the Contractor shall execute and agree to cause its directors, officers, employees, agents, partners, affiliates, volunteers, or Subcontractors to execute an irrevocable written waiver of any moral rights or other rights of integrity in the applicable Change Proposal in favour of the Owner. Such waiver to be in the form provided by the Owner, and which waiver may be invoked without restriction by any person authorized by the Owner to use the Change Proposal.

.02 The Contractor shall deliver such written waivers to the Owner within 10 Business Days of the receipt of the request from the Owner.

GC 3.11.03.08.01.06 Further Assurances Regarding Copyright

.01 At the request of the Owner, at any time or from time to time, the Contractor shall execute and agree to cause its directors, officers, employees, agents, partners, affiliates, volunteers, or Subcontractors to execute a written assignment of copyright in the applicable Change Proposal to the Owner in the form provided by the Owner. The Contractor shall deliver such written assignments to the Owner within 10 Business Days of the receipt of the request from the Owner. The Contractor shall assist the Owner in preparing any Canadian copyright registration that the Owner considers appropriate. The Contractor shall obtain or execute any other document reasonably required by the Owner to protect the Intellectual Property of the Owner.

GC 3.11.03.08.01.07 Owner May Prescribe Further Compliance

.01 The Owner reserves the right to prescribe the specific manner in which the Contractor shall perform its obligations relating to the Intellectual Property.

GC 3.11.03.08.01.08 Survival

.01 The obligations contained in clause GC 3.11.03, Conditions of Change Proposals, shall survive the termination or expiry of the Contract.

GC 3.11.03.08.02 Owner Rights

.01 In submitting a Change Proposal under this provision, the Contractor agrees to the following:

a) All plans, drawings, design reports, procedures, and programs prepared, conceived of, or produced or caused to be prepared, conceived of, or produced and delivered by or on behalf of the Contractor as part of an acceptable Change Proposal (the "Proposal") shall be the sole property of the Owner, except as otherwise provided below. The Contractor covenants that the Owner shall be the sole owner of the Proposal, and that none of such Proposal shall infringe the copyright, patent, or other right of any other Person.

For the purposes of the Copyright Act (Canada), the Contractor acknowledges that all Proposal shall be deemed to have been prepared under the direction and control of the Owner, and the copyright, except as otherwise provided below, shall belong to the Owner. The Contractor waives any moral rights it may have under the Copyright Act (Canada), concerning the Proposal.

All patents, copyrights, and other industrial and Intellectual Property rights, including trade secrets, arising in relation to the Proposal, if any, are hereby assigned to the Owner for its use, excepting any third party proprietary products, any licensed procedures, and any products licensed to a third party. Change Proposals shall clearly identify any third party proprietary products and licensed products and procedures to be used as a part of a Change Proposal. The Contractor shall take all reasonable steps, including the steps the Contractor takes to protect information, data, or other tangible and intangible property the Contractor owns and regards as proprietary or confidential, to ensure that such proprietary rights of the Owner are not violated.

The Contractor shall obtain all required assignments and releases of interest, acknowledgments, or waivers that the Owner considers necessary or advisable to transfer title and publication rights in and to the Proposal to the Owner, unless accepted otherwise.

b) The Owner hereby grants the Contractor a non-exclusive, royalty-free licence to use the Proposal for any and all purposes.

c) Without limitation, the Owner acknowledges that the Contractor shall have the right to use for the Contractor's own purposes outside of this Contract, any novel ideas and concepts developed by the Contractor.

d) The Contractor shall not be liable in any manner whatsoever for the claims arising as a result of the use by the Owner of the Proposal in connection with projects other than this Contract. Further, the Contractor cannot warrant the fitness of or be responsible or liable for any Proposal that are only partially completed due to early termination or suspension of this Contract by the Owner, or if same have been altered, revised, modified, or amended without the written consent and knowledge of the Contractor or if such Proposal have been provided to the Owner on computer devices with removable storage and used on improper or incompatible computer processing equipment.

e) The rights and privileges of the Owner, and the licence in favour of the Contractor provided for in these MTO General Conditions of Contract shall survive and shall not merge on the termination or other expiry of this Contract.

GC 3.11.03.09 Time Periods for Review

.01 Any Change Proposal shall include/document the anticipated change in the construction schedule and shall account for and clearly indicate the desired and reasonable time period for review of same by the Owner. When there is no time period specified with the Change Proposal for review of designs, methods, or Working Drawings in the Contract Documents that are applicable to the Change Proposal, the Owner shall, unless it accepts the times suggested in the Change Proposal, review the Change Proposal expeditiously. The actual duration shall depend on the complexity of the Change Proposal; however, within 5 Business Days of receipt of the Change Proposal, the Owner shall notify the Contractor in writing:

a) If the Change Proposal requires clarification or further supporting information, and

b) Of the expected time period for review.

.02 The Contractor shall be notified in writing of the acceptance or rejection of the Change Proposal not more than 20 Business Days after a fully documented and supported Change Proposal is received. If the Change Proposal is rejected, the reasons for the rejection shall be stated.

.03 If the Owner fails to respond to the Change Proposals within the desired review time suggested in the Change Proposal or within the time stated in the notification in paragraph GC 3.11.03.09.01, b), the Contractor shall consider the Change Proposal rejected, and shall have no claim against the Owner as a result thereof.

GC 3.11.03.10 Risk Sharing/Warranty

.01 As part of a Change Proposal, the Contractor shall outline and thoroughly explain warranties and other measures offered to reduce the Owner's risks, thus encouraging adoption of a Change Proposal. Shared risks and all risks that the Contractor is not prepared to accept shall also be outlined.

GC 3.11.04 Submission of Change Proposals

.01 The Contract Administrator shall be notified of the Contractor's intention to submit a Change Proposal at least 5 Business Days before a Change Proposal is submitted.

.02 Change Proposals shall be identified as Change Proposals submitted under subsection GC 3.11, Change Proposals after Contract Award, and shall include a completed standard cover sheet, the Owners Standard Forms, and the following:

a) A description of the proposed Change Proposal, and the related design or redesign costs;

b) A detailed list of the Contract requirements that change, if the Change Proposal is adopted;

c) The tender items affected by the proposed changes, including any quantity variation, and any new items, applicable Standards, Special Provisions, and quantities;

d) A detailed estimate of the Contractor's cost of performing the work under the existing Contract, and under the proposed Change Proposals;

e) A description of the comparative advantages and disadvantages of the Change Proposals;

f) A revised construction schedule and an application for extension of Contract Time, if applicable; and

g) Completed Owner's Standard Change Proposal Forms and procedures shall be used, and shall document and support, for acceptance/review purposes, any Change Proposals.

.03 Any aspect of a Change Proposal that involves or may involve (e.g., preliminary Change Proposal designs prepared for approval in principle) doing work or an act that is within the practice of professional engineering shall be designed by an Engineer and shall bear the seal and signature of the Engineer. Whatever the Contract specifies regarding stamp occurrences for such design work, the same requirement shall apply to designs or redesigns for a Change Proposal.

GC 3.11.05 Accepted Change Proposal Payment

.01 If a Change Proposal is acceptable to the Owner, the changes and payment related to the savings thereto shall be authorized by means of a Change Order to the Contract. Compensation to the Contractor shall be made as follows:

a) The Contractor's costs for development work (i.e., any preliminary work up to Owner acceptance in principle of a Change Proposal related to the Change Proposals) shall not be eligible for reimbursement.

b) The items for a Change Proposal shall become guaranteed maximum price items. Change proposal savings sharing shall be calculated as outlined in paragraph GC 3.11.05.01, c), and be shared equally between the Contractor and Owner; the Change Proposal design or redesign cost as agreed with MTO as acceptance in principle of the Change Proposal shall be fully reimbursed to the Contractor.

c) Change Proposal net construction cost savings Change Sharing payment shall be based on the following: the original directly related tendered construction price minus the price proposed (bid) to construct the Change Proposal and minus the cost of the Change Proposal design or redesign accepted by the Owner as a Change Proposal approval in principle. In addition to the shared savings payment total and the tendered price payment for the construction of redesigned Change Proposal work, the Contractor shall be reimbursed 100% for the price of the new Change Proposal design or redesign as agreed upon as acceptance of a Change Proposal in principle.

d) Unless otherwise advised in writing by the Contractor and agreed upon with the Owner, the Contractor's share of the change sharing savings shall be paid according to the following schedule: 50% of the Contractor's share of the agreed change sharing savings shall be paid as a part of the Owners progress payment following the Owner's acceptance of a Change Proposal in principle; the remaining Change Proposal costs shall be paid according to the percentage of Change Proposal work completed over the duration of the work of the Change

Proposal. The Contractor shall indicate, as a part of the Change Proposal, what items shall be used for each Change Proposal, shall get agreement with the Owner regarding such items, and shall outline, in the Change Proposal, any payment schedule that differs from clause GC 3.11.05, Accepted Change Proposal Payment.

e) The Contractor may submit any Change Proposals for an approved Subcontractor provided that reimbursement shall be made by the Owner to the Contractor; the terms of the pass through to the Subcontractor shall have been satisfactorily negotiated between the Contractor and the Subcontractor, and be accepted by both before the Change Proposal is submitted to the Owner.

GC 3.12 Notices

.01 The Contractor and the Owner shall provide each other with the mailing addresses, telephone numbers, facsimile terminal numbers, and email addresses for the Contract Administrator and the Superintendent at the commencement of the Work.

.02 Any notice permitted or required to be given to the Owner or the Contractor shall be given according to the notice provision of the Agreement.

.03 In the event of an emergency situation or other urgent matter the Contract Administrator or the Superintendent may give a verbal notice, provided that such notice is confirmed in writing.

.04 Any document permitted or required to be given to the Contract Administrator or the Contractor in respect of the Work shall be deemed to have been given to and received by the addressee on the date of delivery, if delivered by hand or by electronic transmission, and on the third Business Day after the date of mailing, if sent by mail.

GC 3.13 Use and Occupancy of the Work Prior to Substantial Performance

.01 Where it is not contemplated elsewhere in the Contract Documents, the Owner may use or occupy the Work or any part thereof prior to Substantial Performance, provided that at least 30 Days written notice has been given to the Contractor.

.02 The use or occupancy of the Work or any part thereof by the Owner prior to Substantial Performance shall not constitute an acceptance of the Work or parts so occupied. In addition, the use or occupancy of the Work shall not relieve the Contractor or the Contractor's Surety from any liability that has arisen, or may arise, from the performance of the Work according to the Contract Documents. The Owner shall be responsible for any damage that occurs because of the Owner's use or occupancy. Such use or occupancy of any part of the Work by the Owner does not waive the Owner's right to charge the Contractor liquidated damages according to the terms of the Contract.

GC 3.14 Clarification and Claims

GC 3.14.01 Claim Resolution Approach

.01 Any Claim shall be addressed using the claim review process set out in subsection GC 3.14, Clarifications and Claims. Each stage of the process shall be completed before the next stage or another form of resolution is initiated.

.02 If the parties mutually agree before the expiry of any time for the Owner to give a written decision at either the site or regional Claim review levels, the parties may extend such time to make a decision by up to 15 Business Days.

.03 Any offer of settlement becomes null and void when either party requests that the resolution process proceed to the next stage or seeks to take another form of dispute resolution.

.04 The Contractor and the Owner shall conduct, without prejudice, negotiations as part of the Claim review, and they agree not to disclose in any subsequent legal proceeding, any statements made, and documents or information obtained during the course of the Claim review and at any level of the Claim review that is not otherwise required to be disclosed by law.

.05 Notwithstanding that the Claim is not resolved, the Contractor shall proceed with the Work to completion with due diligence and in an expeditious manner and such action shall not prejudice the Contractor in respect of any Claim it may have. The Contractor is not relieved from complying with any direction, order, Change Order, or Work Directive that is the subject of the Claim.

GC 3.14.02 Request for Clarification

.01 The Contractor shall immediately submit a request for clarification, in writing, on the Owner's Standard Form PH-CC-750, Request for Clarification, when the Contractor becomes aware of or ought to be aware of any of the following:

a) A situation that is different than represented in the Contract Documents.

b) A Change Order where the Contractor disagrees with the basis of payment.

c) A situation where the Contractor believes the Contract Documents to be ambiguous.

d) Disagreement with Owner audit results.

e) A disagreement with the response to an extension of Contract Time request.

The Request for Clarification shall include a clear description of the situation with specific references to the Contract Documents. Notwithstanding the Contractor's Request for Clarification, the Contractor shall proceed with the work as directed by the Contract Administrator.

.02 The Contract Administrator and Contractor shall exchange information to try to resolve the situation as detailed in the Request for Clarification. In any event, prior to the expiry of 75 Days from the date of receipt of the Request for Clarification, the Contract Administrator shall provide a written response to the Request for Clarification, which shall be deemed to be the final site response.

GC 3.14.03 Change Order Price Negotiations

.01 The Contractor and Contract Administrator shall exchange information and negotiate to try to resolve the price for a Change Order where the price is to be negotiated. In any event, prior to the expiry of 75 Days from the date of receipt of Change Order, the Contract Administrator shall provide a written response stating the Contract Administrator's final price for the Change Order, which shall be deemed to be the final site response.

.02 Immediately after the Change Order has been provided to the Contractor, Daily Work Records shall be prepared by the Contractor.

GC 3.14.04 Notice of Claim

.01 In the event the situation is not resolved at the site, the Contractor, within 90 Days of the date of the Request for Clarification or Change Order when the issue is price, shall deliver a detailed written notice of Claim to the Regional Manager of Contracts, with a copy to the Contract Administrator. At the sole discretion of the Contractor, the notice of Claim may be delivered earlier. The Notice of Claim document shall describe information under the following headings in detail:

a) Contract number and Contract description.

b) Claim title.

c) Name of Contractor.

d) Request for Clarification date and notice of Claim date.

e) Date on which the circumstances arose that gave rise to the Claim.

f) Detailed description of the nature of the Claim with dates, location, Materials, and Equipment involved and any other items relevant to the Claim.

g) Relevant provisions of the Contract which support the Claim and the reasons these provisions are relevant.

h) Name of each official, representative, or employee of the Owner involved in or knowledgeable about the Claim.

i) Name of each official, representative, or employee of the Contractor or Subcontractor, supplier, or other persons involved in or knowledgeable about the Claim.

j) Work affected by the Claim.

k) Change from tendered Contract.

l) Areas of work incurring additional costs.

m) Schedule changes.

n) Summary of proven actual or estimated additional costs, including direct labour, Material, and Equipment costs and Subcontractor costs.

o) Summary of proven indirect costs or estimated indirect costs, including standby, overhead, and impact costs.

p) Copies of all supporting documentation and records of the Contractor.

q) Particulars of any oral communications that support the Claim.

r) If the Contractor sought an extension of the Contract Time, the Contractor shall provide the particulars of the extension and the reasons therefore.

s) Any other information deemed necessary or appropriate.

.02 When the Contractor completes the Work associated with the Claim and the Claim remains unresolved, the Contractor shall provide details of the actual costing in writing to the Contract Administrator and also to the appropriate respective levels of claim review process within 90 Days after completion of the affected work.

.03 The Contractor is solely responsible for ensuring that it has provided all the information required in the Request for Clarification, as set out in clause GC 3.14.02, Request for Clarification, and the notice of Claim, as set out in clause GC 3.14.04, Notice of Claim.

.04 The Contractor's failure to provide the notice of Claim as required shall result in the waiver of any Claim and the loss of compensation to the Contractor in respect of such Claim. However, if the Contractor provides the Owner with an explanation for the delay in providing the notice of Claim, which the Owner, in its sole discretion, can accept or reject for any reason, then, if the explanation is accepted, the Owner shall review the Claim according to the procedures set out herein. This provision shall not be interpreted so as to compel the Owner to review every Claim of the Contractor or any other person that does not comply with the requirements of the Contract, but rather is intended to allow the Owner the ability to consider those Claims that have failed to comply with the procedures and where the Owner, at its sole discretion, desires to consider such a Claim.

GC 3.14.05 Daily Work Records

.01 After the Request for Clarification is provided, the Contractor shall immediately:

a) Begin to keep Daily Work Records relating to the Request for Clarification as the Work is performed, as set out in clause GC 8.03.02, Daily Work Records.

b) Limit such Daily Work Records to the work directly impacted by the Request for Clarification.

c) Keep separate Daily Work Records for each individual Request for Clarification.

.02 The keeping of Daily Work Records by the Contractor and any process to review or comment on those records shall not be construed to be the Owner's acceptance of the Claim for additional payment to which the Daily Work Records relate.

GC 3.14.06 Claim Review Process

.01 The Contractor and the Owner shall attempt to resolve the Claim as detailed in clause GC 3.14.02, Request for Clarification.

.02 Unless the Claim is resolved at the site, the Claim review shall then proceed through two additional levels: firstly, the regional Claim review between the Contractor and the Regional Contracts Office staff and secondly, when unresolved, the Head Office claim review between the Contractor and the Owner’s Head Office.

.03 Where the Contractor wishes to pursue the Claim to the regional Claim review, upon receipt of the notice of Claim, the Contractor and the staff from the office of the Regional Manager of Contracts shall commence the regional Claim review as soon as possible. The Regional Manager of Contracts shall make best efforts to resolve the Claim at the earliest opportunity and shall give a written decision to the Contractor within 60 Days after receiving a complete notice of Claim.

.04 Where the Contractor desires to pursue the Claim to the Head Office Claim review, within 30 Days after the decision on the regional Claim review, the Contractor shall provide written notification to the Assistant Deputy Minister, Provincial Highways Management, with copies to the Contract Administrator, Regional Manager of Contracts and Head, Contract Claims, Contract Management Office, requesting that the Head Office level of Claim review commence. With this written notification, the Contractor shall provide a copy of the notice of Claim and a copy of any additional information provided during the regional Claim review. The Contractor and the Head Office shall commence head office Claim review as soon as possible. The Head Office staff shall make best efforts to resolve the Claim at the earliest opportunity and shall give a written decision to the Contractor within 60 Days after receiving the request to elevate the Claim to the Head Office level of Claim review.

.05 The Contractor's failure to provide the written notification for the next level of the claim review, as set out in clause GC 3.14.06, Claim Review Process, shall preclude the Contractor from later seeking such further level of claim review and shall constitute an abandonment of the Claim and the loss of any compensation to the Contractor not previously agreed upon by the Owner in respect of such Claim. However, if the Contractor provides the owner with an explanation for the failure to provide the written notification for the next level of claim review, which the owner, in its sole discretion, can accept or reject for any reason, then, if the explanation is accepted, the Owner shall review the Claim according to the procedures set out herein. This provision shall not be interpreted so as to compel the Owner to review every Claim of the Contractor or any other person that does not comply with the requirements of the Contract, but rather is intended to allow the Owner the ability to consider those Claims that have failed to comply with the procedures and where the Owner, at its sole discretion, desires to consider such a Claim.

.06 If the Owner requests additional information from the Contractor to justify the Claim, then the calculation of time set out in clause GC 3.14.06, Claim Review Process, to render a decision shall cease from the date of the request, until the Contractor has provided the information or a statement that it does not intend to provide the information.

.07 If the Owner fails to resolve or make a decision on the Claim within the times detailed within paragraphs GC 3.14.06.03 and GC 3.14.06.04, then the Contractor, if the Contractor so chooses, may elevate the Claim to the next level of review. In the case of the Owner's Head Office Claim review, the Contractor, if the Contractor so chooses, may initiate mediation or explore alternative dispute resolution mechanisms with the Owner according to clause GC 3.14.07, Further Avenues for Dispute Resolution. In all such situations, the Contractor shall provide the Request for Clarification, as set out in clause GC 3.14.02, Request for Clarification, and the notice of Claim, as set out in clause GC 3.14.04, Notice of Claim, or required notification of the desire to proceed to the next level or seek alternative dispute resolution as required by paragraph GC 3.14.06.04 or clause GC 3.14.07, Further Avenues for Dispute Resolution, depending on status of the claim review.

.08 Justification of the Claim and completing the notice of Claim to the satisfaction of the Owner is the full responsibility of the Contractor, failing which, the Owner shall rely upon the information provided by the Contractor to review the Claim at the risk of the Owner making an adverse decision by reason of the lack of supporting information.

GC 3.14.07 Further Avenues for Dispute Resolution

.01 If the parties fail in their efforts to resolve the Claim after following the Claim review process of clause GC 3.14.06, Claim Review Process, upon the submission of a request by the Contractor to the Assistant Deputy Minister, Provincial Highways Management, within 30 Days of the Head Office Claim review decision, the parties shall use formal non-binding mediation to attempt the parties to resolve the dispute.

.02 Subject to the direction of the mediator, as set out in the mediator's agreement, the following minimal rules shall apply to the mediation session:

a) At least 14 Days before the mediation session, the Contractor shall prepare a statement and provide a copy to every other party and to the mediator.

b) At least 7 Days before the mediation session, the Owner shall prepare a statement and provide a copy to every other party and to the mediator.

c) The statement shall identify the factual and legal issues in dispute and briefly set out the position and interests of the party making the statement.

d) The party making the statement shall attach to the statement any documents that the party considers of central importance in the dispute.

e) All communications at the mediation session and the mediator's notes and records shall be deemed to be without prejudice settlement discussions.

f) Each party is required to pay their own costs of the mediation session and an equal share of the mediator's fees and expenses for the mediation session.

.03 If the parties fail in their efforts to resolve the Claim, then the parties agree that prior to resorting to litigation they shall explore alternative dispute resolution methods that are acceptable to the Owner. The Contractor shall provide written notice to the Assistant Deputy Minister, Provincial Highways Management, of the Contractor's desire to explore alternative dispute resolution methods within 30 Days of the decision of the Owner's Head Office level of claim review or within 30 Days of the completion of mediation where used. Subject to the rights reserved by the Owner, the parties agree to explore all avenues of alternative dispute resolution and shall attempt to negotiate the method and the terms for the alternative dispute resolution in an effort to settle the Claim before resorting to litigation. If the parties are unable to agree upon an alternative dispute resolution method and its terms within 60 Days of the request to explore alternative dispute resolution, then either party may resort to litigation. An example of the alternative dispute resolution that may be considered includes arbitration. Notwithstanding the foregoing, the Owner reserves the final right to determine the alternative dispute resolution to be used and the terms by which the alternative dispute resolution is to be governed.

SECTION GC 4.0 - OWNER'S RIGHTS AND RESPONSIBILITIES

GC 4.01 Working Area

.01 The Owner shall acquire all property rights which are deemed necessary by the Owner for the construction of the Work, including temporary working easements, and shall indicate the full extent of the Working Area on the Contract Drawings.

GC 4.02 Management of Excess Materials

.01 The Owner shall identify in the Contract Documents the materials to be moved within or removed from the Working Area, and any characteristics of those materials which shall necessitate special materials management and disposition.

.02 The Owner shall be responsible for any additional costs of removal, management, and disposition of any material not identified in the Contract Documents, or where conditions exist that could not have been reasonably foreseen at the time of tendering.

GC 4.03 Construction Affecting Railway Property

.01 When construction affects railway property, the Owner shall pay the costs of all flagging and other traffic control measures required and provided by the railway company within the Working Area.

GC 4.04 Default by the Contractor

.01 The Contractor shall be in default of the Contract if:

a) The Contractor fails to commence the Work or execute the Work properly or otherwise fails to comply with the requirements of the Contract to a substantial degree; or

b) If the Contractor is adjudged bankrupt or makes a general assignment for the benefit of creditors because of insolvency or if a receiver is appointed because of insolvency.

GC 4.05 Notification of Default

.01 The Owner shall give written notice of a default to the Contractor as soon as the Owner becomes aware of the alleged default, but failure to give such notice in a timely way shall not constitute acceptance of the default. The notice shall include instructions to correct the default within 5 Business Days.

GC 4.06 Contractor's Right to Correct a Default

.01 The Contractor shall have the right within the 5 full Business Days following the receipt of a notice of default to correct the default and provide the Owner with satisfactory proof that appropriate corrective measures have been taken.

.02 If the correction of the default cannot be completed within the 5 full Business Days following receipt of the notice, the Contractor shall not be in default if the Contractor:

a) Commences the correction of the default within the 5 full Business Days following receipt of the notice;

b) Provides the Owner with an acceptable schedule for the progress of such correction; and

c) Completes the correction according to such schedule.

GC 4.07 Owner's Right to Correct Default

.01 If the Contractor fails to correct the default within the time specified in subsection GC 4.06, Contractor's Right to Correct a Default, or subsequently agreed upon, the Owner, without prejudice to any other right or remedy the Owner may have, may correct such default and deduct the cost thereof, as certified by the Contract Administrator, from any payment then or thereafter due to the Contractor.

GC 4.08 Termination of Contractor's Right to Continue the Work

.01 Where the Contractor fails to correct a default within the time specified in subsection GC 4.06, Contractor's Right to Correct a Default, or subsequently agreed upon, the Owner, without prejudice to any other right or remedy the Owner may have, may terminate the Contractor's right to continue the Work in whole or in part by giving written notice to the Contractor.

.02 If the Owner terminates the Contractor's right to continue with the Work in whole or in part, the Owner shall be entitled to:

a) Take possession of the Working Area or that portion of the Working Area devoted to that part of the Work terminated;

b) Use the Contractor's Material within the Working Area which is intended to be incorporated into the Work, the whole subject to the right of third parties;

c) Withhold further payments to the Contractor with respect to the Work or the portion of the Work withdrawn from the Contractor until the Work or portion thereof withdrawn is completed;

d) Charge the Contractor the additional cost over the Contract price of completing the Work or portion thereof withdrawn from the Contractor, as certified by the Contract Administrator, and any additional compensation paid to the Contract Administrator for such additional service arising from the correction of the default;

e) Charge the Contractor a reasonable allowance, as determined by the Contract Administrator, to cover correction to the Work performed by the Contractor that may be required under subsection GC 7.18, General Warranty; and

f) Charge the Contractor for any damages the Owner may have sustained as a result of the default.

GC 4.09 Final Payment to Contractor

.01 If the Owner's cost to correct and complete the Work in whole or in part is less than the amount withheld from the Contractor under subsection GC 4.08, Termination of Contractor's Right to Continue the Work, the Owner shall pay the balance to the Contractor as soon as the final accounting for the Contract is complete.

GC 4.10 Termination of the Contract

.01 Where the Contractor is in default of the Contract, the Owner may, without prejudice to any other right or remedy the Owner may have, terminate the Contract by giving written notice of termination to the Contractor, the Surety, and any trustee or receiver acting on behalf of the Contractor's estate or creditors.

.02 If the Owner elects to terminate the Contract, the Owner shall provide the Contractor and the trustee or receiver with a complete accounting to the date of termination.

GC 4.11 Continuation of Contractor's Obligations

.01 The Contractor's obligation under the Contract as to quality, correction, and warranty of the Work performed prior to the time of termination of the Contract or termination of the Contractor's right to continue with the Work in whole or in part shall continue to be in force after such termination.

GC 4.12 Use of Performance Bond

.01 If the Contractor is in default of the Contract and the Contractor has provided a Performance Bond, the provisions of section GC 4.0, Owner's Rights and Responsibilities, shall be exercised according to the conditions of the Performance Bond.

GC 4.13 Owner Audit

.01 The Owner may inspect, review, and audit all Records associated with the Contract, including the Contractor's Records relating to the Work and Changes in the Work and Claims, at any time up to 24 months after releasing payment of the final holdback.

.02 The Contractor shall supply certified copies of any part of the Contractor's Records whenever requested by the Owner.

.03 Where the inspection, review, and audit reveals discrepancies in payment, the Contractor shall be advised immediately. The Contractor shall have the opportunity to dispute these discrepancies by immediately submitting a Request for Clarification.

.04 Upon agreement with the results, any monies payable to the Contractor shall be payable within 30 Days. Interest back to the time the amount became payable shall not be paid.

.05 Upon agreement with the audit results, any monies due to the Owner shall be payable within 30 Days together with interest due from the time the amount was over paid. Where such amounts are not paid within 30 Days, the Owner shall setoff such monies owing the Contactor from other contracts.

SECTION GC 5.0 - MATERIAL

GC 5.01 Supply of Material

.01 All Material necessary for the proper completion of the Work, except that listed as being supplied by the Owner, shall be supplied by the Contractor. The Contract prices for the appropriate tender items shall be deemed to include full compensation for the supply and delivery of such Material.

GC 5.02 Quality of Material

.01 All Material provided by the Contractor shall be new, unless otherwise specified in the Contract.

.02 Material shall be supplied from sources identified in the MTO DSM available on TRA website http://www.roadauthority.com that is current at the time of supply of the product. If there are revisions to the DSM, these shall be posted on TRA website on the first Business Day of the months of February, April, June, August, October, and December. Material for which there is no category in the DSM shall be supplied according to the Contract Documents. Material which is not specified shall be of a quality best suited to the purpose required and the use of such Material shall be subject to the approval of the Contract Administrator.

Sources in the DSM have demonstrated their ability to produce material according to specified material specifications. However, the MTO does not warrant that these sources shall produce acceptable or sufficient Material for any contract. The Contractor shall make such independent investigation and examination as the Contractor deems necessary, to satisfy the Contractor as to the quality and quantity of the Material available from these sources, and to ensure that all Material supplied by them satisfies the requirements of the Contract Documents.

.03 As specified in the Contract Documents or as requested by the Contract Administrator, the Contractor shall make available for inspection or testing a sample of any Material to be provided by the Contractor.

.04 The Contractor shall obtain for the Contract Administrator the right to enter upon the premises of the Material manufacturer or supplier to carry out such inspection, sampling, and testing as specified in the Contract Documents or as requested by the Contract Administrator.

.05 The Contractor shall complete and submit, on Owners Standard Form PH-A-106, List of Materials from Designated Sources, to the Contract Administrator indicating where the Contractor intends to obtain the designated source materials for the Contract. The Contractor shall notify the Contract Administrator of the sources of supply of all Material sufficiently in advance of the Material shipping dates to enable the Contract Administrator to perform the required inspection, sampling, and testing.

.06 The Owner shall not be responsible for any delays to the Contractor's operations where the Contractor fails to give sufficient advance notice to the Contract Administrator to enable the Contract Administrator to carry out the required inspection, sampling, and testing before the scheduled shipping dates.

.07 Where the Standards require the Contractor to supply a Material designated by a trade or other name, the tender shall be based only upon supply of the Material so designated, which shall be regarded as the standard of quality required by the Standard.

.08 Prior to the commencement of Work the Contractor shall provide to the Contract Administrator a list of those products controlled under the Workplace Hazardous Material Information System (WHMIS) that the Contractor expects to use on the Contract. Related Material Safety Data Sheets shall accompany the submission. All containers used in the application of products controlled under

WHMIS shall be labelled. The Contractor shall notify the Contract Administrator of changes to the list in writing and provide relevant Material Safety Data Sheets.

.09 When a Material or Material source is deleted from the DSM list of pre-qualified Materials or Material sources after the tender opening date, the Owner shall be responsible for the extra costs of Material supply only, unless the Material production or Material source is controlled by the Contractor or Subcontractor. If the type of Material or Material source is pre-qualified after the date of tender opening, permission to use the Materials or Material sources shall not be given until an agreement has been reached on the estimated value of the cost savings to the Owner.

GC 5.03 Rejected Material

.01 Rejected Material shall be removed from the Working Area expeditiously after the notification to that effect from the Contract Administrator. Where the Contractor fails to comply with such notice, the Contract Administrator may cause the rejected Material to be removed from the site and disposed of in what the Contract Administrator considers to be the most appropriate manner, and the Contractor shall pay the costs of disposal and the appropriate overhead charges.

GC 5.04 Owner Supplied Material

GC 5.04.01 Ordering of Excess Material

.01 Where Material is supplied by the Owner and where this Material is ordered by the Contractor in excess of the amount specified to complete the Work, such excess Material shall become the property of the Contractor on completion of the Work and shall be charged to the Contractor at cost plus10% for administration.

GC 5.04.02 Care of Material

.01 The Contractor shall, in advance of receipt of shipments of Material supplied by the Owner, provide adequate and proper storage facilities acceptable to the Contract Administrator; and, on the receipt of such Material, promptly place it in storage except where it is to be incorporated forthwith into the Work.

.02 The Contractor shall be responsible for acceptance of Material supplied by the Owner, at the specified delivery point and for its safe handling and storage. If such Material is damaged while under the control of the Contractor, it shall be replaced or repaired by the Contractor at no expense to the Owner, and to the satisfaction of the Contract Administrator. If such Material is rejected by the Contract Administrator for reasons which are not the fault of the Contractor, it shall remain in the care and at the risk of the Contractor until its disposition has been determined by the Contract Administrator.

.03 Where Material supplied by the Owner arrives at the delivery point in a damaged condition or where there are discrepancies between the quantities received and the quantities shown on the bills of lading, the Contractor shall immediately report such damage or discrepancies to the Contract Administrator who shall arrange for an immediate inspection of the shipment and provide the Contractor with a written release from responsibility for such damage or deficiencies. Where damage or deficiencies are not so reported, it shall be assumed that the shipment arrived in good order and any damage or deficiencies reported thereafter shall be made good by the Contractor at no extra cost to the Owner.

.04 The full amount of Material supplied by the Owner in each shipment shall be accounted for by the Contractor and such Material shall be at the risk of the Contractor after taking delivery. Such Material shall not be used by the Contractor for purposes other the Work under the Contract.

.05 Empty reels, crates, containers, and other types of packaging from Material supplied by the Owner shall become the property of the Contractor when they are no longer required for their original purpose and shall be disposed of by the Contractor, unless otherwise specified in the Contract Documents.

.06 The Contractor shall provide the Contract Administrator, immediately upon receipt of each shipment, copies of bills of lading, or such other documentation the Contract Administrator may require to substantiate and reconcile the quantities of Material received.

.07 Where Material supplied by the Owner is ordered and stockpiled prior to the award of the Contract, the Contractor shall, at no extra cost to the Owner, immediately upon commencement of operations, check the Material, report any damage or deficiencies to the Contract Administrator, and take charge of the Material at the stockpile site. Where damage or deficiencies are not so recorded by the Contractor, it shall be assumed that the stockpile was in good order when the Contractor took charge of it and any damage or deficiencies reported thereafter shall be made good by the Contractor at no extra cost to the Owner.

SECTION GC 6.0 - INSURANCE, PROTECTION, AND DAMAGE

GC 6.01 Protection of Work, Persons, and Property

.01 The Contractor, the Contractor's agents, and all workers employed by or under the control of the Contractor, including Subcontractors, shall protect the Work, persons, and property from damage or injury, and shall be responsible for all losses and damage which may arise as the result of the Contractor's operations under the Contract unless indicated to the contrary below.

.02 The Contractor is responsible for the full cost of any necessary temporary provisions and the restoration of all damage, where the Contractor damages the Work or property in the performance of the Contract. If the Contractor is not responsible for the damage that occurs to the Work or property the Contractor shall restore such damage, and such work shall be administered according to these MTO General Conditions of Contract.

.03 The Contractor shall immediately inform the Contract Administrator of all damage and injuries which occur during the term of the Contract.

.04 The Contractor shall not be responsible for loss and damage that occurs as a result of:

a) War;

b) Blockades and civil commotion;

c) Errors in the Contract Documents;

d) Acts or omissions of the Owner, the Contract Administrator, the Owner’s agents, officers, and employees, or others not under the control of the Contractor but are within the Working Area with the Owner's permission.

.05 The Contractor and the Contractor’s Surety or Sureties shall not be released from any term or provision of any responsibility, obligation, or liability under the Contract or waive or impair any of the rights of the Owner, except by a release duly executed by the Owner.

GC 6.02 Indemnification

.01 The Contractor shall indemnify and hold harmless the Owner and the Contract Administrator, the Owner’s agents, officers, and employees from and against all claims, demands, losses, expenses, costs, damages, actions, suits or proceedings by third parties, hereinafter called "claims", directly or indirectly arising or alleged to arise out of the performance of or the failure to perform the Work, provided such claims are:

a) Attributable to bodily injury, sickness, disease, or death or to damage to or destruction of tangible property;

b) Caused by negligent acts or omissions of the Contractor or anyone for whose acts the Contractor may be liable; and

c) Made in writing within a period of 6 years from the date of Substantial Performance of the Work as set out in Owners Standard Form PH-CC-799, Certificate of Substantial Performance, for the Work or, where so specified in the Contract from the date of the Contract Completion Certificate.

.02 The Contractor shall indemnify and hold harmless the Owner from all and every claim for damages, royalties, or fees for the infringement of any patented invention or copyright occasioned by the

Contractor in connection with work performed or Material furnished by the Contractor under the Contract.

.03 The Owner expressly waives the right to indemnity for claims other than those stated in paragraphs GC 6.02.01 and GC 6.02.02.

.04 The Owner shall indemnify and hold harmless the Contractor, his agents, officers, and employees from and against all claims, demands, losses, expenses, costs, damages, actions, suits, or proceedings arising out of the Contractor's performance of the Contract that are attributable to a lack of or defect in title or an alleged lack of or defect in title to the Working Area.

.05 The Contractor expressly waives the right to indemnity for claims other than those stated in paragraph GC 6.03.04.

GC 6.03 Contractor's Insurance

GC 6.03.01 General

.01 Without restricting the generality of subsection GC 6.02, Indemnification, the Contractor shall provide, maintain, and pay for the insurance listed in these MTO General Conditions of Contract and specifically described under clause GC 6.03.02, Commercial General Liability Insurance, and clause GC 6.03.03, Automobile Liability Insurance, and such other insurance as may be specified in the Contract Documents.

GC 6.03.02 Commercial General Liability Insurance

.01 Commercial General Liability Insurance on an occurrence basis for third party bodily injury, personal injury, and property damage shall have an inclusive limit of not less than $5,000,000 per occurrence with $2,000,000 products and completed operations aggregate. The policy is to include the following:

a) The Owner and the Contract Administrator as additional insured's with respect to liability arising in the course of performance of the Contractor's obligations under or otherwise in connection with the Contract Documents.

b) Contractual liability coverage.

c) Cross-liability clause.

d) Employer's liability coverage.

e) 30 Day written notice of cancellation, termination, or material change.

f) Non-owned automobile coverage, including standard contractual liability endorsement, with blanket coverage for hired automobiles.

.02 The Contractor shall provide the Owner with proof of insurance required by these MTO General Conditions of Contract in the form of valid certificates of insurance acceptable to the Owner that references the Contract and confirms the required coverage, on or before the commencement of this Contract, and any renewal replacements on or before the expiry of any such insurance.

.03 The Contractor shall submit annually on the anniversary of the execution of the Agreement to the Owner the proof of the continuation of the insurance as described in these MTO General Conditions of Contract or elsewhere in the Contract Documents in the form of valid certificates of insurance acceptable to the Owner that references the Contract and confirms the required coverage.

.04 If the Contractor decides not to employ Subcontractors for operations requiring the use of explosives for blasting, pile driving or caisson work, or removal or weakening of support of property building or land, the certificate of insurance shall include the appropriate endorsements.

.05 "Claims Made" insurance policies shall not be permitted.

GC 6.03.03 Automobile Liability Insurance

.01 Automobile insurance in respect of licensed vehicles as per statutory requirements in Ontario shall have limits of not less than $5,000,000 inclusive per occurrence for bodily injury, death, and damage to property, including accident benefits in the standard owner's form automobile policy providing third party liability and accident benefits insurance and covering licensed vehicles owned or operated by the Contractor and endorsed to provide the Owner with not less than 30 Days written notice in advance of any cancellation, change, or amendment restricting coverage.

GC 6.03.04 Payment for Loss or Damage

.01 The Contractor shall be entitled to receive from the Owner, in addition to the amount due under the Contract, the amount at which the Owner's interest in restoration of the Work has been appraised, such amount to be paid as the restoration of the Work proceeds and according to the requirements of section GC 8.0, Measurement and Payment. In addition the Contractor shall be entitled to receive from the payments made by the insurer the amount of the Contractor's interest in the restoration of the Work.

.02 The Contractor shall be responsible for deductible amounts under the policies except where such amounts may be excluded from the Contractor's responsibility by the terms of this Contract.

.03 In the event of loss or damage to the Work arising from the action of others, the Owner shall pay the Contractor the cost of restoring the Work as the restoration of the Work proceeds and according to the requirements of section GC 8.0, Measurement and Payment.

GC 6.03.05 Insurance Requirements and Duration

.01 Unless specified otherwise, the insurance shall be maintained continuously from the commencement of the Work until 10 Days following the date of Contract Completion Certificate, and with respect to completed operations coverage for a period of not less than 24 months from the date of Contract Completion Certificate, and thereafter to be maintained for a further period of 4 years.

.02 The Contractor shall provide the Owner, on a form acceptable to the Owner, proof of insurance prior to commencement of the Work, signed by an officer of the Contractor and either the underwriter or the broker.

.03 The Contractor shall, on request of the Owner, promptly provide the Owner with a certified true copy of each insurance policy exclusive of information pertaining to premium or premium bases used by the insurer to determine the cost of the insurance. The certified true copy shall include a signature by an officer of the Contractor and in addition, a signature by an officer of the insurer or the underwriter or the broker.

.04 Unless specified otherwise the Contractor shall be responsible for the payment of deductible amounts under the policies.

.05 If the Contractor fails to provide or maintain insurance as required in these MTO General Conditions of Contract or elsewhere in the Contract Documents, then the Owner shall have the right to provide and maintain such insurance and give evidence thereof to the Contractor. The Owner's cost thereof shall be payable by the Contractor to the Owner on demand.

.06 If the Contractor fails to pay the cost of the insurance placed by the Owner within 30 Days of the date on which the Owner made a formal demand for reimbursement of such costs, the Owner may deduct the costs thereof from monies which are due or may become due to the Contractor.

GC 6.04 Bonding

.01 The Contractor shall provide the Owner with the surety bonds in the amount required by the tender documents.

.02 Such bonds shall be issued by a duly licensed surety company authorized to transact a business of suretyship in the Province of Ontario and shall be maintained in good standing until the fulfilment of the Contract.

SECTION GC 7.0 - CONTRACTOR'S RESPONSIBILITIES AND CONTROL OF THE WORK

GC 7.01 General

GC 7.01.01 Site Visit

.01 The Contractor warrants that the site of the Work has been visited during the preparation of the tender and the character of the Work and all local conditions which may affect the performance of the Work are known.

GC 7.01.02 Commencement of Work

.01 The Contractor shall not commence the Work nor deliver anything to the Working Area until the Contractor has received written permission, on Owners Standard Form PH-CC-700, Permission to Start Work, duly signed by the Contract Administrator.

GC 7.01.03 Control and Responsibility

.01 The Contractor shall have complete control of the Work and shall effectively direct, supervise, and undertake quality control activities for the work so as to ensure conformity with the Contract Documents. The Contractor shall be responsible for construction means, methods, techniques, sequences, and procedures and for coordinating the various parts of the Work.

.02 The Contractor shall have the sole responsibility for the design, erection, operation, maintenance, and removal of temporary structures and other temporary facilities and the design and execution of construction methods required in their use.

.03 Notwithstanding paragraph GC 7.01.03.02, where the Contract Documents include designs for temporary structures and other temporary facilities or specify a method of construction in whole or part, such facilities and methods shall be considered to be part of the design of the Work, and the Contractor shall not be held responsible for that part of the design or the specified method of construction. The Contractor shall, however, be responsible for the execution of such design or specified method of construction in the same manner that the Contractor is responsible for the execution of the Work.

GC 7.01.04 Compliance with the Occupational Health and Safety Act

.01 The Contractor shall execute the terms of the Contract in strict compliance with the requirements of the *Occupational Health and Safety Act*, R.S.O. 1990, c. O.1 (*the Act*) and Ontario Regulation 213/91 (*Construction Projects*) and any other regulations under *the Act* (*the Regulations*) which may affect the performance of the Work, as the Constructor or employer, as the case may be. The Contractor shall ensure that:

a) Worker safety is given first priority in planning, pricing, and performing the Work;

b) The Contractor’s officers and supervisory employees have a working knowledge of the duties of a Constructor and employer under *the Act* and the provisions of *the Regulations* applicable to the Work, and a personal commitment to comply with them;

c) A copy of the most current version of *the Act* and *the Regulations* are available at the Contractor's office within the Working Area or, in the absence of an office, in the possession of the Superintendent responsible for the performance of the Work;

d) Workers employed to carry out the Work possess the knowledge, skills, and protective devices required by law or recommended for use by a recognized industry association to allow them to work in safety;

e) The Contractor's supervisory employees carry out their duties in a diligent and responsible manner with due consideration for the health and safety of the workers; and

f) All Subcontractors performing part of the Work and their employees are properly protected from injury while they are at the work place.

.02 When requested, the Contractor shall provide the Owner with a copy of its health and safety policy and program at the pre-start meeting and shall respond promptly to requests from the Owner for confirmation that its methods and procedures for carrying out the Work comply with *the Act* and *the Regulations*. The Contractor shall cooperate with representatives of the Owner and Ministry of Labour inspectors appointed to enforce *the Act* and *the Regulations* in any investigations of worker health and safety in the performance of the Work. The Contractor shall indemnify and save the Owner harmless from any additional expense that the Owner may incur to have the Work performed as a result of the Contractor's failure to comply with the requirements of *the Act* and *the Regulations*.

.03 The Contractor shall immediately, upon receipt, provide the Owner a copy of all correspondence from the Ministry of Labour including but not limited to Project Forms, Stop Work Orders, or Certificates of Offence.

.04 For work inside confined spaces, including box girder bridges, detailed written procedures addressing the confined space requirements of *the Act* and *Construction Projects*, shall be clearly posted at the project site and available to all personnel, including the Contractor's workers, the Contract Administrator, MTO personnel, and Ministry of Labour inspectors. The procedures shall include the rescue procedures to be followed during a rescue or evacuation of all personnel from an unsafe condition or in the event of personal injury. The Contractor shall have personnel trained in rescue procedures readily available on site.

GC 7.01.05 Contractor's Representatives

.01 The Contractor shall have an authorized representative on the site while any work is being performed, to act for or on the Contractor's behalf. Prior to commencement of construction, the Contractor shall notify the Contract Administrator of the names, addresses, positions, and telephone numbers of the Contractor's representatives who can be contacted at any time to deal with matters relating to the Contract.

.02 The Contractor shall designate a person to be responsible for traffic control and highway work zone safety. The designated person shall be a competent worker who is qualified because of:

a) Knowledge, training, and experience to perform the duties;

b) Is familiar with Book 7 of the OTM; and

c) Has knowledge of all potential or actual danger to workers and motorists.

Prior to the commencement of construction, the Contractor shall notify the Contract Administrator of the name, address, position, and telephone number of the designated person. The designated person may have other responsibilities, including other construction sites, and need not be present in the Working Area at all times.

.03 The Contractor shall maintain a daily, hard bound diary of the signs in use for temporary and long term traffic control. The diary shall be submitted with the final payment documents. For the duration of the Contract and within 24 hours of a request by the Contract Administrator, the Contractor shall provide the Contract Administrator full access to the diary. The following information shall be included in the diary:

a) A schematic of the location of each existing sign by station, offset, and height above pavement.

b) A schematic of the placement and re-location of all construction signs by station, offset, and height above pavement.

c) Traffic accidents, including time of inspection, location of incident, and photographs.

d) Time and date of daily sign inspections.

GC 7.01.06 Assistance to the Contract Administrator

.01 The Contractor shall, at no additional cost to the Owner, furnish all reasonable aid, facilities, and assistance required by the Contract Administrator for the proper inspection and examination of the Work or the taking of measurements for the purpose of payment.

GC 7.01.07 Critical Path Schedule

.01 Initial and updated critical path schedules shall be prepared and submitted as detailed below:

a) 2 paper copies and 1 electronic copy in the format of the scheduling software and readable by the scheduling software of the initial construction schedule shall be submitted to the Regional Contracts Office within 7 Business Days of receipt of the acceptance of the tender.

b) 1 hard copy of the initial construction schedule shall also be submitted to the Contract Management Office, St. Catharines, with the executed copies of the Contract.

c) Where the Contractor has revised the initial construction schedule prior to the first site meeting, the revised construction schedule shall be submitted to the Contract Administrator at least 3 Business Days prior to the meeting.

d) 2 paper copies and 1 electronic copy in the format of the scheduling software and readable by the scheduling software of an updated schedule shall be prepared and submitted to the Contract Administrator not less than 3 Business Days prior to all regularly scheduled site meetings. All revisions shall be highlighted on the updated schedule. Updated schedules submitted shall reflect actual progress of the Work and any additions, deletions, or revisions to the Work that have arisen since the previous update. At regularly scheduled site meetings, the Contractor shall explain the revisions and any increase or decrease in resources required to complete the Work on time. At the Contract Administrator's request, and at no additional cost to the Owner, the Contractor shall submit an updated schedule within 7 Business Days of any major increase or decrease in quantities, or major change in the staging or perceived change in character of the Work.

e) All copies shall be legible and shall show the date the schedule was prepared.

.02 The requirements for the construction schedule are detailed below:

a) The critical path method shall be used to prepare and update the construction schedule. The initial and updated construction schedules shall consist of a time scaled network diagram with its related bar charts or a time scaled linear diagram.

b) For Contracts with a specified number of Working Days, the construction time shown on the initial schedule shall not exceed the specified number of Working Days. The activities on the critical path shall assist the Contract Administrator in determining the Controlling Operation for the purpose of the charging of Working Days. The construction schedule shall include all non-working periods and appropriate allowances for inclement weather.

c) For Contracts which specify a Contract Completion date, the construction time shown on the initial construction schedule shall not extend beyond the specified Contract Completion date. The construction schedule shall include all non-working periods and appropriate allowances for inclement weather.

d) The construction schedule shall reflect operational constraints, interim completion dates, and other scheduling requirements specified in the Contract.

e) A delay for an activity shall be deemed to have occurred when the activity is not complete on its late finish date established by the construction schedule or it exceeds the specified number of Working Days or specified Completion Date for the Contract.

.03 The requirements for diagrams and bar charts are detailed below:

a) The Contractor may select to submit initial and updated construction schedules in either logic diagram format with accompanying time scaled bar charts or time scaled linear diagrams.

b) The Contractor shall select the activities so that the Work is identifiable and the progress of each activity can be determined. The Owner reserves the right to limit or increase the number of activities on the diagram.

c) Each activity in the initial and updated construction schedules shall include a description of the operation and the number of Days allocated or actually used for it. When the duration of an activity is dependent on weather conditions, the number of Days allocated shall include an allowance for normal frequency of inclement weather. In addition, for Contracts which specify the number of Working Days for the Contract Time, the expected number of Working Days shall be shown for the activities on the critical path that may be subject to Working Day charges. When the activity has an associated tender item quantity, the approximate quantity shall also be shown.

d) The construction schedule shall show the sequence and interdependence of all activities required to complete the Work under the Contract, including time for review of Working Drawings and mix design submissions, early start date, early finish date, and float times. All network connections used to create a logical schedule and the corresponding durations shall be shown. Activities on the critical path shall be identified clearly on the diagram.

e) The time scale of the construction schedule may be divided into Days or weeks.

.04 The Contractor shall not be permitted to start work until a construction schedule, conforming to clause GC 7.01.07, Critical Path Schedule, is received by the Contract Administrator.

.05 If, for any reason, the Contractor cannot produce an acceptable construction schedule within 30 Business Days of initial submission of the construction schedule, the Contractor shall be in default of the Contract.

GC 7.01.08 Errors Relating to the Contract

.01 Where the Contractor finds any errors, inconsistency, or omissions relating to the Contract, the Contractor shall promptly report as a Request for Clarification to the Contract Administrator on Owner Standard Form PH-CC-750, Request for Clarification, and shall not proceed with the activity affected until receiving direction from the Contract Administrator.

GC 7.01.09 Utilities

.01 The Contractor shall arrange with the appropriate Utility authorities for the stake out of all underground Utilities and service connections that may be affected by the Work. The Contractor shall be responsible for any damage done to the underground Utilities by the Contractor's forces during construction. The Contractor shall also be responsible for any damage done to the service connections. The Contractor shall attend such meetings with the Contract Administrator and the Utility authorities as may be required by the Contract Administrator to ensure coordination of activities among the Contractor and the Utility authorities for each Utility affected by the Contract.

.02 In the case of damage to, or interference with any Utilities, pole lines, pipe lines, conduits, farm tiles, or other public or privately owned works or property, the Contractor shall immediately notify the Owner and the Contract Administrator of the location and details of such damage or interference.

GC 7.01.10 Public Ceremony

.01 Only the Owner shall be permitted to make the first public announcements or hold the first public ceremonies about the award or acceptance of the Contract, project milestones, and Contract Completion. The Contractor shall not hold any public ceremony or make any public announcements about the above matters prior to the Owner doing so, without first obtaining the prior written approval of the Owner. The Contractor shall refer all media inquiries regarding such initial announcement and ceremonies to the Owner.

In the above paragraph “project milestones” means any significant event in the completion of the Work, which includes the completion of a major component of the Work; the opening or closing of lanes, ramps, and structures; and any Work associated with incentives and disincentives described in the Contract.

GC 7.02 Layout

.01 Prior to commencement of construction, the Contract Administrator and the Contractor shall locate on site those property bars and benchmarks that are necessary to delineate the Work Area and to lay out the Work, as shown on the Contract Drawings.

.02 The Contractor shall be responsible for the preservation of all property bars while the Work is in progress, except those property bars that require removal to facilitate the Work. Any property bars disturbed, damaged, or removed by the Contractor's operations shall be replaced under the supervision of an Ontario Land Surveyor, at no cost to the Owner.

.03 The Contractor shall provide qualified personnel to layout and establish all lines and grades necessary for construction. The Contractor shall notify the Contract Administrator of any layout work carried out.

.04 The Contractor shall assume full responsibility for alignments, elevations, and dimensions of each and all parts of the Work.

.05 All stakes, marks, and reference points provided by the Contract Administrator shall be carefully preserved by the Contractor. In the case of their destruction or removal, such stakes, marks, and reference points shall be replaced by the Contractor at no cost to the Owner.

.06 The Contract Administrator shall provide a Grading Report to establish grading cross-sections. During the progress of the work the Contractor shall notify the Contract Administrator forthwith of any errors, omissions, or inconsistencies in the geometric information and the controls provided by the Owner. This report contains all necessary information relating to distance and elevation for each station necessary for the construction of the Work.

.07 Certification shall be required for the layout of the following components of the work:

a) Bridges;

b) Retaining walls;

c) Culverts having a span of 5 m or more;

d) Tunnelling, excluding augured tunnels;

e) Sewers of 2 m diameter or more.

For each of the identified components above, the Contractor shall provide to the Contract Administrator, on Owners Standard Form PH-CC-811, Certification of the Component, over the seal and signature of either an Engineer or an Ontario Land Surveyor, the following:

a) Certification of the final pile location before proceeding with footings.

b) Certification that the footings have been constructed to the designated lines and grades before proceeding with any work above the footings.

c) Final elevations of bridge seats and certification of span dimensions before proceeding with any work on the superstructure of each bridge.

d) Actual profiles on the beams before proceeding with any work on the deck of each bridge.

e) Certification of the final screed rail elevations before proceeding with the deck placement.

f) Certification that each of the identified components of the Work has been constructed to the designated lines and grades before the Contract Completion Certificate.

.08 The Contractor shall supply the Owner with all as-constructed horizontal and vertical data related to the layout of the Work before the Contract Completion Certificate.

.09 The Contractor shall advise the Contract Administrator of the intended layout schedule at the weekly meeting by identifying the survey activities planned for the following week, including any miscellaneous surveying items.

.10 For the grading layout, stakes 25 x 50 x 600 mm, minimum, shall be installed left and right of centreline at or near the right-of-way limits and in the areas where additional staking is required, (e.g., intersections, bridges, and on horizontal and vertical curves). Staking intervals shall be as specified in Table 7.02-1 and Table 7.02-2. The only data to be shown on these stakes shall be profile grade, off-set distance from centreline, and station location. The Contractor shall erect butterfly rods or batter boards at grade stake locations.

.11 The Contractor shall provide a complete set of off-set stakes with finished grade and stations for the following components of the Work:

a) Drainage Items

Sewers, road culverts, entrance culverts, manholes, and similar items.

b) Pavement Items

Concrete base, concrete pavement, stabilized base, asphalt, Pavement, and similar items. Fine grading stakes shall be used for this work when Pavement items form part of grading or granular work.

c) Miscellaneous Items

Sidewalk, curb and gutter, slope paving, structures, fencing, noise barrier, lighting, guide rail barrier, rip-rap, and similar items as required by the Owner.

.12 For fine grading layout, including paving, fine grading stakes 25 x 50 x 600 mm in size shall be installed left and right of the control line at or near the Subgrade Shoulder break. These stakes shall be installed at an interval of 30 m or less where the Contract Administrator deems appropriate, on horizontal and vertical curves, widening of intersections, and similar locations. The only data to be shown on these stakes shall be Profile Grade, elevation, off-set distance from the control line, and station.

.13 For resurfacing layout, offset stakes shall be installed left or right of the control line and at or near the edge of Shoulder at an interval of 50 m or less. The only data to be shown on the stake shall consist of the final Pavement elevation, off-set distance from the control line, and station.

GC 7.03 Damage by Vehicles or Other Equipment

.01 If at any time, in the opinion of the Contract Administrator, damage is being done or is likely to be done to any Roadway or any improvement thereon, within or outside the Work Area, by the Contractor's vehicles or other Equipment, whether licensed or unlicensed, the Contractor shall, on the direction of the Contract Administrator and at no extra cost to the Owner, make changes or substitutions for such vehicles or Equipment, alter loadings, or in some other manner, remove the cause of such damage to the satisfaction of the Contract Administrator.

GC 7.04 Excess Loading of Motor Vehicles

.01 Where a vehicle is hauling Material, in whole or in part upon a Highway, and where motor vehicle registration is required for such vehicle, the Contractor shall not cause or permit such vehicle to be loaded beyond the legal limit specified in the Highway Traffic Act, whether such vehicle is registered in the name of the Contractor or otherwise, except where there are designated areas within the Working Area where overloading is permitted. The Contractor shall bear the onus of weighing disputed loads.

.02 Vehicles hauling Materials shall be accompanied by an Owners Standard Form SR-E-121, Record of Allowable Gross Weight certificate, on. The legal limit shall be the vehicle's registered gross weight or the allowable gross weight, whichever is less. The Contractor shall ensure that a copy of the Record of Allowable Gross Weight form is left with the weigh person for Owner use.

GC 7.05 Use of Construction Equipment and Unlicensed Vehicles

.01 Unlicensed vehicles and construction equipment, with the exception of rock trucks, shall not travel, work, or stop within 4 m of a lane carrying traffic, except where construction operations necessitates the Working Area be less than 4 m from the traffic in which case, the Contractor shall erect delineators along the edge of the travelled lane, according to paragraph GC 7.08.01.

.02 The use of unlicenced rock trucks on facilities open to public traffic shall be permitted only when hauling rock material within the construction zone and subject to the following:

a) For unlicenced rock trucks that are less than 3.2 m wide and equipped with foot operated brakes, headlights, and front and rear turn signals, flagging is required at entrance and exit points to warn public traffic.

b) For all other unlicenced rock trucks, flagging is required at entrance and exit points and either pilot vehicles or flagging is required along the route to warn public traffic and control movement.

GC 7.06 Carrier Safety Compliance

GC 7.06.01 Contractor Operation of a Commercial Motor Vehicle

.01 Where the Contractor is a Commercial Vehicle Operator's Registration (CVOR) Holder who intends to operate a Commercial Motor Vehicle in the performance of the Contract or in the haulage of Materials to, on, or from the Working Area, the Contractor shall provide to the Owner a copy of the Contractor's CVOR Abstract as follows:

a) The first CVOR Abstract shall be provided to the Owner before the Contractor operates a Commercial Motor Vehicle in the performance of the Contract or in the haulage of Materials to, on, or from the Working Area, and

b) CVOR Abstracts shall be submitted to the Owner:

i. Annually in October.
ii. Periodically upon request anytime during the period of the Contract.

The search date recorded on any CVOR Abstract shall not exceed 30 Days from the date that it is provided to the Contract Administrator.

.02 If at any time the Contractor holds an unsatisfactory or conditional CVOR rating, the Contractor shall advise the Contract Administrator within 72 hours:

a) The Contractor's Commercial Motor Vehicles shall not operate in the performance of the Contract or in the haulage of materials to or from the Working Area while the Contractor holds an unsatisfactory CVOR rating.

b) The Contract Administrator may permit a Contractor with a Conditional CVOR rating to operate their vehicles in the performance of the Contract or in the haulage of materials to or from the Working Area, subject to the following performance criteria:

i. Within 10 Days of having a Conditional CVOR Rating, the Contractor produces an approved plan confirming that drivers and vehicles safety programs are in place to ensure compliance with the safety rating requirement, the Highway Traffic Act and National Safety Code; and

ii. Achieve a satisfactory, satisfactory unaudited, or excellent safety rating under the MTO Carrier Safety Rating Program and have a violation rate of under 70% within 12 months of the date the plan is submitted to the Owner, or show improvement in the Carrier's Safety Performance over the term of the Contract by reducing the Carrier's pointable accidents, pointable convictions and out of service inspections.

Where a Contractor fails to achieve the performance criteria outlined above, the Contract Administrator may require the Contractor to subcontract all work requiring a CVOR Certificate and the Contractor's bidding privileges on future work with the Owner may be affected.

Provisions GC 7.06.01.02, b), i and ii, are in addition to any carrier interventions or sanctions imposed through the MTO CVOR program.

GC 7.06.02 Subcontractor and Other Operation of a Commercial Motor Vehicle

.01 Prior to any CVOR Holder operating a Commercial Motor Vehicle in the performance of the Contract or in the haulage of material to, on, or from the Working Area, the Contractor shall examine the CVOR Abstract of every CVOR Holder with whom the Contractor intends to subcontract, directly or indirectly, to operate a Commercial Motor Vehicle in the performance of the Contract or in the haulage of materials to, on, or from the Working Area. The Contractor shall provide the Contract Administrator with the CVOR Holder's name and CVOR Certificate number of all Subcontractors.

The search date of any CVOR Level 1 Abstract shall not exceed 30 Days from the date that it is provided to the Contractor.

The Contractor shall retain copies of all CVOR Abstracts for examination by the Owner, upon request.

.02 The CVOR Holder shall not hold a dormant or inactive CVOR certificate at any time during the period of the Contract.

The Contractor shall, at all times throughout the duration of the Contract, ensure that no CVOR Holder with an unsatisfactory CVOR rating works, directly or indirectly, for the Contractor in the operation of a Commercial Motor Vehicle in the performance of the Contract or in the haulage of materials to, on, or from the Working Area. The Contractor shall require Subcontractors, in turn, to require compliance with subsection GC 7.06, Carrier Safety Compliance, from any Person with whom they contract.

If a CVOR Holder holds an unsatisfactory CVOR rating at any time during the period of the Contract, the Contractor shall inform the Contract Administrator, in writing, within 72 hours of becoming aware, having exercised all due diligence, of such CVOR Holder having an unsatisfactory CVOR rating.

The Contract Administrator may permit a Subcontractor with a conditional CVOR rating to operate their vehicles subject to the following:

a) Within 10 Days of having a conditional CVOR record, the Subcontractor produce an approved plan confirming that drivers and vehicles safety programs are in place to ensure compliance with the safety rating requirement, the Highway Traffic Act and National Safety Code; and

b) Achieve a satisfactory, satisfactory unaudited, or excellent safety rating under the ministry's Carrier Safety Rating Program and have a violation rate of under 70% within 12 months of the date the plan is submitted to the Owner, or show improvement in the Carrier's Safety Performance over the term of the contract by reducing the Carrier's pointable accidents, pointable convictions, and out of service inspections.

Where a Subcontractor fails to achieve the performance criteria above the Contractor shall within 1 month replace the Subcontractor or CVOR Holder and the Contractor's bidding privileges on future work with the Owner may be affected.

Provisions GC 7.06.02.02, a), and GC 7.06.02.02, b), are in addition to any carrier interventions or sanctions imposed through the MTO CVOR program.

GC 7.07 Condition of the Working Area

.01 The Contractor shall maintain the Working Area in a tidy condition and free from the accumulation of debris, other than that caused by the Owner or others.

.02 During night work, the Contractor shall ensure that the worksite is adequately illuminated to the Contract Administrator's satisfaction for work operations and inspections and the advance warning to traffic.

.03 The Contractor shall take such steps as may be necessary to control dust resulting from the Contractor's operations or by public traffic, where it is the Contractor's responsibility to maintain a road through the Work, such that it does not:

a) Affect traffic;

b) Enter surface waters; or

c) Escape beyond the right-of-way to cause a nuisance to residents, businesses, or Utilities.

GC 7.08 Maintaining Roadways and Detours

.01 Where an existing Roadway is affected by construction, it shall be kept open to traffic, and the Contractor shall, except as otherwise provided in subsection GC 7.08, Maintaining Roadways and Detours, be responsible for providing and maintaining a road through the Work for the duration of the Work, whether along an existing Highway, including the road under construction, or on detours within or adjacent to the Highway according to the OTMs.

.02 The Contractor shall not be required to maintain a Roadway through the Working Area before the Contractor has commenced the Work, or during seasonal shutdown or within any sections of the Roadway where a twelve (12) month general warranty period has commenced. Responsibility for maintenance shall be transferred between the Contractor and the Owner at the commencement of the Work, the start and end of each seasonal shutdown period, and the start or each twelve (12) month general warranty period. A minimum of 5 Business Days prior to an anticipated transfer date of responsibility for maintenance, the Contract Administrator, Contractor and a representative of the Owner's maintenance contractor shall perform a pre-turnover field inspection. The pre-turnover field inspection shall identify deficiencies within the right-of-way and the anticipated timeframe for correction. The Contract Administrator shall be the sole judge or whether or not the noted deficiencies require correction prior to or after the turnover date. Provided that the Contractor was given advance written notice of the pre-turnover inspection date, the Contractor shall not delay commencement of the Work or the assumption of responsibility for maintenance because of the existence of deficiencies. A Turnover Agreement Form PH-CC-771, prepared by the Contract Administrator, which identifies the date and time that responsibility for maintenance shall be transferred between parties shall be executed by both the Contract Administrator and Contractor prior to the actual turnover date. Where work under the Contract is discontinued for any extended period including seasonal shutdown, the Contractor shall, when directed by the Contract Administrator, open and place the roadway and detours in a passable, safe, and satisfactory condition for public travel. The Contractor shall not be required to apply deicing chemicals or abrasives or carry out snow-plowing on a public road.

.03 The Contractor shall ensure that the Roadway affected by construction is clear of debris. All debris on the travelled portion of the Roadway shall be removed as soon as possible after detection. Debris on the Shoulder shall be removed within 24 hours.

.04 Where only localized and separated sections of the Highway are affected by the Contractor's operations, the Contractor shall not be required to maintain intervening sections of the Highway until such times as these sections are located within the limits of the Highway affected by the Contractor's general operations under the Contract.

.05 The Owner shall bear the cost of maintaining, in a satisfactory condition for public traffic, a Roadway through the Working Area. The Contractor shall bring any defects to the attention of the Contract Administrator as soon as they are identified. Such defects include potholes, distortions,

pavement edge loss, washouts, drop-offs, and soft or wet areas. Compensation for all labour, Equipment, and Materials to address such defects shall be at the Contract prices appropriate to the work and, where there are no such prices, at negotiated prices. Notwithstanding the foregoing, the cost of providing an operated grader, required to maintain the surface of such Roadways, shall be deemed to be included in the prices bid for the various tender items and no additional payment shall be made.

.06 Compliance with the foregoing provisions shall in no way relieve the Contractor of obligations under subsection GC 6.01, Protection of Work, Persons, and Property, dealing with the Contractor's responsibility for losses and damage.

.07 The Contractor shall ensure that earth, mud, aggregate, and other construction debris are not tracked onto the Roadway by construction vehicles.

GC 7.09 Access to Properties Adjoining the Work and Interruption of Utility Services

.01 At all times, the Contractor shall provide the following to properties adjoining the Working Area at no additional cost to the Owner:

a) Pedestrian and vehicular access; and

b) Continuity of Utility services.

.02 At all times, the Contractor shall provide access to fire hydrants and water and gas valves located in the Work Area at no additional cost to the Owner.

.03 Where any interruptions in the supply of Utility services are required and are authorized by the Contract Administrator, the Contractor shall give the affected property owners notice according to subsection GC 7.13, Notices by the Contractor, and shall arrange such interruptions so as to create a minimum of interference to affected property owners.

GC 7.10 Approvals and Permits

.01 Except as specified in paragraph GC 7.10.02, the Contractor shall obtain any permits, licenses, and certificates required for the performance of the Work that are in force at the date of tender closing.

.02 The Owner shall obtain and pay for the necessary plumbing and building permits.

.03 The Contractor shall arrange for all necessary inspections.

GC 7.11 Suspension of Work

.01 The Contractor shall, upon written notice from the Contract Administrator, discontinue or delay any or all of the Work. The Work shall not resume until the Contract Administrator issues such written direction. Delays, in these circumstances, shall be administered according to subsection GC 3.07, Delays.

GC 7.12 Contractor's Right to Stop the Work or Terminate the Contract

.01 If the Owner is adjudged bankrupt or makes a general assignment for the benefit of creditors because of insolvency or if a receiver is appointed because of insolvency, the Contractor may terminate the Contract, without prejudice to any other right or remedy the Contractor may have, by giving the Owner or receiver or trustee in bankruptcy written notice.

.02 If the Work is stopped or otherwise delayed for a period of 30 Days or more under an order of a court or other public authority and provided that such order was not issued as the result of an act or fault of the Contractor or of any Person directly employed or engaged by the Contractor, the Contractor may terminate the Contract, without prejudice to any other right or remedy the Contractor may have, by giving the Owner written notice.

.03 The Contractor may notify the Owner in writing, with a copy to the Contract Administrator, that the Owner is in default of contractual obligations, if :

a) The Contract Administrator fails to issue payment certificates according to the provisions of section GC 8.0, Measurement and Payment;

b) The Owner fails to pay the Contractor, within 30 Days of the due date, the amounts certified by the Contract Administrator or awarded by arbitration or court;

c) The Owner fails to comply with the requirements of the Contract to a substantial degree.

.04 The Contractor's written notice to the Owner shall advise that if the default is not corrected in the 7 Days immediately following the receipt of the written notice the Contractor may, without prejudice to any other right or remedy the Contractor may have, stop the Work or terminate the Contract.

.05 If the Contractor terminates the Contract under the conditions set out in subsection GC 7.12, Contractor's Right to Stop the Work or Terminate the Contract, the Contractor shall be entitled to be paid for all work performed according to the Contract Documents and for any losses or damage as the Contractor may sustain as a result of the termination of the Contract.

GC 7.13 Notices by the Contractor

GC 7.13.01 Advance Notice

.01 Before any or all of the Work is carried out that may affect the property or operations of any owner or agency of government or any individual, company, partnership or corporation, including a municipal corporation or any board or commission thereof, and in addition to such notices of the commencement of specified operations as are prescribed elsewhere in the Contract Document, the Contractor shall give at least 48 hours advance written notice of the date of commencement of such work to the individual person, company, partnership, corporation, board, or commission so affected.

GC 7.13.02 Environmental Incident Management under Legislation Protecting the Environment and Natural Resources

.01 The Contractor shall be in strict compliance with the requirements of the following legislation, as amended, regarding Environmental Incidents under the control of the Contractor or that are a result of the Contractor's operations:

a) *Environmental Protection Act*, R.S.O. 1990

b) *Fisheries Act* (R.S., 1985)

c) *Technical Standards and Safety Act*, 2000

d) *Pesticides Act*, R.S.O. 1990

e) *Ontario Water Resources Act*, R.S.O. 1990

f) *Transportation of Dangerous Goods Act*, 1992

.02 The requirements of the legislation listed in paragraph of GC 7.13.02.01 include but are not restricted to:

a) Immediate containment of the material, pollutant, contaminant, deleterious substance, or dangerous good;

b) Immediate notification of the Environmental Incident to the proper authority; and

c) Cleanup and restoration of the environment to preconditions.

.03 The Contractor shall possess a plan demonstrating that Environmental Incidents shall be managed to satisfy the requirements of paragraphs GC 7.13.02.01 and GC 7.13.02.02.

.04 The Contractor shall also be responsible for informing the Contract Administrator forthwith of:

a) An Environmental Incident when it occurs; and

b) Any actions taken or intended to be taken by the Contractor regarding the Environmental Incident.

.05 Within 48 hours of an Environmental Incident, the Contractor shall provide to the Contract Administrator, on Owner Standard Form PH-CC-818, Environmental Incident Notification Form, details of such incident.

.06 The Contractor shall indemnify and save the Owner harmless from any additional expense that the Owner may incur to have the Work performed as a result of the Contractor's failure to comply with the requirements of the legislation listed in paragraph GC 7.13.02.01.

GC 7.14 Obstructions

.01 Except as otherwise noted in these MTO General Conditions of Contract, the Contractor assumes all the risks and responsibilities arising out of any obstruction encountered in the performance of the Work and any traffic conditions, including traffic conditions on any Highway or road giving access to the Working Area caused by such obstructions, and the Contractor shall not make any claim against the Owner for any loss, damage, or expense occasioned thereby.

.02 Where the obstruction is an underground Utility such as a telephone cable, watermain, gas main or sewer or other man-made object, the Contractor shall not be required to assume the risks and responsibilities arising out of such obstruction, unless the location of the obstruction is shown on the plans or described in the specifications and the location so shown is within the tolerance specified in paragraph GC 2.01.01, a), or unless the presence and location of the obstruction has otherwise been made known to the Contractor or could have been determined by the visual site investigation made by the Contractor according to these MTO General Conditions of Contract.

.03 During the course of the Contract, it is the Contractor's responsibility to consult with Utility companies or other appropriate jurisdictions for further information in regard to the exact location of these Utilities, to exercise the necessary care in construction operations, and to take such other precautions as are necessary to safeguard the Utilities from damage.

GC 7.15 Limitations of Operations

.01 Except for such work as may be required by the Contract Administrator to maintain the Working Area in a safe and satisfactory condition, the Contractor shall not carry on operations under the Contract on Sundays without permission in writing from the Owner.

.02 The Contractor shall cooperate with other contractors, Utility companies, and the Owner and they shall be allowed access to their work or plant at all reasonable times.

GC 7.16 Cleaning Up Before Contract Completion

.01 Upon attaining Substantial Performance of the Work, the Contractor shall remove surplus materials, Hand Tools, Equipment not required for the performance of the remaining work. The Contractor shall also remove all temporary works and debris other than that caused by the Owner or others and shall leave the Work and Working Area clean and suitable for occupancy by the Owner unless otherwise specified.

.02 The Work shall not be deemed to have reached Contract Completion until the Contractor has removed surplus materials, Hand Tools, Equipment. The Contractor shall also have removed debris, other than that caused by the Owner or others.

GC 7.17 Record Drawings

.01 The Contractor shall provide 3 hard copies and 1 digital file, in PDF format, of Record Drawings prior to Contract Completion.

.02 Record Drawings shall show all differences, design changes, and deviations from the original Contract Drawings in red with references to the Contractor's survey and quality control inspection records beside each entry.

GC 7.18 General Warranty

.01 Unless otherwise specified in the Contract for certain Materials or components of the Work, the Contractor shall be responsible for the proper performance of the Work only to the extent that the design and specifications permit such performance. The onus is on the Contractor to show through engineering analysis that the design and specifications are deficient for the proper performance of the Work.

.02 Subject to the previous paragraph, the Contractor shall correct promptly at no cost to the Owner, defects or deficiencies in the Work that appear during the period of 12 months after the date of Substantial Performance as set out in the Certificate of Substantial Performance or such longer periods as may be specified for certain Materials or components of the Work. The Owner shall promptly give the Contractor written notice of observed defects or deficiencies. The Contractor shall submit a comprehensive repair proposal, including traffic control measures, to the Owner within 15 Days of receiving written notification of the defects or deficiencies.

Notwithstanding the above, on Contracts lasting more than 1 construction season, the Owner shall allow the 12 month general warranty period to commence prior to the date of Substantial Performance for complete sections of Roadways that have been completed in their entirety, have a value of greater than $5,000,000, and are in use by public traffic. In such cases, the Contractor shall apply in writing to the Owner for approval of the start dates of the general warranty for the selected sections of completed Roadways. The written request shall be submitted to Contract Administrator no later than 10 Days prior to the proposed general warranty start dates and include details as to the limits, location, and start date requested. If a request is granted, the Contractor shall correct promptly at no cost to the Owner, defects or deficiencies in the completed section of Roadway, which appear during the period of 12 months after the date of commencement of the warranty on the completed section of Roadway

.03 The Contractor shall correct or pay for damage resulting from corrections made under the requirements of paragraph GC 7.18.02.

GC 7.19 Accounts Payable

.01 The Contractor shall pay interest after 30 Days on accounts payable to the Owner at the Rate of Interest.

SECTION GC 8.0 - MEASUREMENT AND PAYMENT

GC 8.01 Measurement

GC 8.01.01 Quantities

.01 Quantities for progress payments shall be construed and held to be approximate. The final quantities for the issuance of the Contract Completion Certificate shall be based on the measurement of the Work completed.

.02 Measurement of the quantities of the Work shall be either by Actual Measurement or by Plan Quantity as indicated in the Contract. Adjustments to Plan Quantities shall normally be made by modifying boundary lines and grades of the work on the plans to calculate new adjusted Plan Quantities but may, where appropriate, be made using Actual Measurements. Those items identified on the tender by the notation (P) in the unit column shall be paid according to the Plan Quantity. Items where the notation (P) does not occur shall be paid according to Actual Measurement or lump sum.

GC 8.01.02 Variations in Tender Quantities

.01 When it appears that the quantity of work to be done or Material to be supplied by the Contractor or both under a unit price tender item may exceed or be less than the tender quantity, the Contractor shall proceed to do the work or supply the Material or both required to complete the tender item and payment shall be made for the actual amount of work done or Materials supplied or both at the unit prices stated in the tender except as provided below:

a) In the case of a Major Item, when the quantity of work performed or Material supplied by the Contractor or both exceeds the tender quantity by more than 15%, either party to the Contract may make a written request to the other party to negotiate a revised unit price for that portion of the Work performed or Material supplied or both which exceeds 115% of the tender quantity. The negotiation shall be carried out as soon as reasonably possible. Any revision of the unit price shall be based on the actual cost of doing the work or supplying the Material or both under the tender item plus a reasonable allowance for profit and applicable overhead.

b) In the case of a Major Item, when the quantity of work performed or Material supplied by the Contractor or both is less than 85% of the tender quantity, the Contractor may make a written request to negotiate payment for the portion of actual overheads and fixed costs applicable to the amount of the underrun in excess of 15% of the tender quantity. For purposes of the negotiation, the overheads and fixed costs applicable to the item are deemed to have been prorated uniformly over 100% of the tender quantity for the item. Overhead costs shall be confirmed by a statement certified by the Contractor's senior financial officer or auditor and may be audited by the Owner.

Alternatively, where both parties agree, an allowance equal to 10% of the unit price on the amount of the underrun in excess of 15% of the tender quantity shall be paid. Written requests for compensation shall be received no later than 180 Days after Contract Completion.

.02 When it appears that the amount of work to be done or Material to be supplied by the Contractor or both under a lump sum concrete item may exceed or be less than the amount shown in the Contract Documents, the Contractor shall proceed to do the work or supply the Material or both required to complete the tender item and payment shall be made on the basis of the lump sum price shown in the tender except as provided below:

a) Where the theoretical quantity as determined from the design dimensions of the structure components exceeds the estimated quantity of concrete stated in the Contract Documents by more than 3% and when such increase does not result from a change in design made according to paragraph GC 3.10.01.01, then the Contractor may make a written request to the

Contract Administrator to negotiate the compensation payable for that portion of the concrete that exceeds 103% of the estimated quantity. The negotiation shall be carried out as soon as reasonably possible. Any increase in the compensation shall be based on the actual cost of supplying and placing that portion of the concrete which exceeds 103% of the estimated quantity plus a reasonable allowance for profit and overhead.

b) Where the theoretical quantity as determined from the design dimensions of the structure components is less than 97% of the estimated quantity of concrete stated in the Contract Documents and where such difference does not result from a change in design made according to paragraph GC 3.10.01.01, then the Contract Administrator may make a written request to the Contractor to negotiate the compensation payable for the item to reflect the change in quantity. The negotiation shall be carried out as soon as reasonably possible. Any decrease in compensation shall be based on the estimated value of the amount of underrun in excess of 3% of the estimated quantity and shall include a reasonable allowance for profit and overhead.

.03 The Contractor or the Contract Administrator may dispute the quantity that is specified for payment on a Plan Quantity basis. The dispute shall be supported by calculations, drawings, and any other evidence indicating why the Plan Quantity is believed to be in error. If the Plan Quantity is found to be in error, payment shall be made according to the adjusted Plan Quantity.

GC 8.02 Payment

GC 8.02.01 Non-Resident Contractor

.01 The Contractor shall obtain all necessary approvals, consents, permits, licences, certificates, registrations, and other authorizations prior to execution of the Contract.

.02 The Contractor shall ensure that all Subcontractors the Contractor proposes to use for carrying out any of the Work required by the Contract and who are non-resident in Ontario have obtained all necessary approvals, consents, permits, licences, certificates, registrations, and other authorizations prior to execution of the subcontract.

GC 8.02.02 Price for Work

.01 Prices for the Work shall be full compensation for all labour, Equipment, and Material required to do the work. The term “all labour, Equipment, and Material” shall include Hand Tools, supplies, and other incidentals.

.02 Payment for Work as shown or detailed in the Contract Documents not specifically detailed as part of any one item and without specified details of payment shall be deemed to be included in the item with which it is associated.

.03 Payment adjustments determined according to the Contract Documents shall be applied to the payment due to the Contractor.

GC 8.02.03 Advance Payments for Material

.01 The Owner shall make advance payments for Material intended for incorporation in the Work upon the written request of the Contractor and according to the following terms and conditions:

a) In advance of receipt of the shipment of the Material, the Contractor shall, arrange for adequate and proper storage facilities and notify the Contract Administrator of the location of the facilities.

b) The value of Aggregates, processed and stockpiled, shall be assessed by the following procedure:

i. Sources Other Than Commercial

(A) Granular A, B, and M shall be assessed at the rate of 60% of the tendered unit price.

(B) Coarse and fine aggregates for hot mix asphalt and surface treatment shall be assessed at the rate of 25% of the tendered unit price multiplied by the tonnage of each Aggregate in stockpile. Prior to payment, the Contractor shall provide test results and mix designs to demonstrate that the materials are capable of producing a mix design conforming to the Contract Documents.

ii. Commercial Sources

Payment for separated coarse and fine aggregates shall be considered at the same rate as sources other than commercial, when such Materials are stockpiled at a commercial source. Advance payments for other materials located at a Commercial Source shall not be made.

c) Payment for all other Materials, unless specified otherwise elsewhere in the Contract Documents, shall be based on an invoice identifying the Contract and marked as “paid” and signed by the Material supplier. In the event of Materials supplied by a Subcontractor, the Contractor shall provide the original Material supplier invoice marked as paid and signed by the Material supplier and an invoice from the Subcontractor marked as paid and signed by the Subcontractor.

d) The payment for all Materials shall be prorated against the appropriate tender item by paying for sufficient units of the item to cover the value of the Material. Such payment shall not exceed 80% of the tendered unit price for the item.

e) All Materials for which the Contractor wishes to receive advance payment shall be placed in the designated storage location immediately upon receipt of the Material and shall thenceforth be held by the Contractor in trust for the Owner as collateral security for any monies advanced by the Owner and for the due completion of the Work. The Contractor shall not exercise any act of ownership inconsistent with such security or remove any Material from the storage locations, except for inclusion in the Work, without the consent of the Contract Administrator, in writing. The Contractor shall arrange for a lease agreement with any private property owner where such Material is to be stored on Owner Standard Form PH-CC-733, Owner Tenancy and Access Agreement, granting the Owner tenancy and access for any storage location on private property for the sum of $1.

f) Such Materials shall remain at the risk of the Contractor who shall be responsible for any loss, damage, theft, improper use, or destruction of the Material, however so caused.

GC 8.02.04 Certification and Payment

GC 8.02.04.01 Progress Payment Certificate

.01 The Contractor shall submit an application for progress payment monthly after starting the Work on this Contract. This application for progress payment shall be for work completed at the agreed to monthly cut-off date.

Within 5 Business Days following the agreed to monthly cut-off dates, the Contractor shall submit an updated application to the Contract Administrator.

The application shall contain two parts:

Part 1 - Invoice detailing:

Item numbers, description, unit of measurement, original tender quantity, approved revised quantity, total quantity to date, quantity previous invoice, quantity this period, unit price, dollars this period, and total dollars to date.

Subtotals shall be detailed for tender items, Change Orders, incentives, disincentives, and quality assurance Material bonuses or penalties.

The item information appearing on the invoice shall agree exactly with those as shown in the bid tender document.

Part 2 - Quantity Sheets detailing:

Item numbers, sub-item numbers, unit of measurement, location description, original tender quantity, approved revised quantity, total quantity to date, quantity previous invoice, and quantity this period.

The item information appearing on the Quantity Sheets shall agree exactly with those provided in the bid tender document. The Quantity Sheet information shall be sufficient to allow the Contract Administrator to verify and approve the invoice for payment.

Invoices and Quantity Sheets shall be submitted in hard-copy and digital format. The Contract Administrator shall review the invoice for completeness and subsequent approval for payment within 5 Business Days.

The Owner shall pay the approved invoice within 30 Days after the application for progress payment date or after the date of receipt of any invoice that had to be resubmitted due to deficiencies, errors, or non-compliance with the Owner's request in the preceding paragraphs.

The Owner shall not process for payment any changes less than $1,000 from the amount shown on the previous payment certificate.

GC 8.02.04.02 Payment Adjustment for Changes in the Fuel Price Index

.01 The Owner shall adjust the payment to the Contractor based on changes to the Owner's fuel price index. The fuel price index shall be calculated by the Ministry of Energy, Science, and Technology, and shall be based on the rack price, including taxes, of diesel fuel. The fuel price index shall be published monthly in the Owner’s Contract Bulletin for each calendar month and shall reflect the previous month's prices. The Contractor shall use this index when calculating flow through to truckers, Subcontractors, and shippers and suppliers.

.02 A payment adjustment, excluding any payments for Changes in the Work and Additional Work, shall be calculated monthly and applied to the monthly progress payment.

.03 It is agreed by the parties to the Contract that it is impracticable and difficult to ascertain actual fuel consumed on the Contract, and the parties hereto agree that for the purpose of calculating the total fuel price adjustments, the amount of fuel consumed shall be determined using the rates in Table 8.02.04.02-1. The payment provided for the items listed in Table 8.02.04.02-1 shall be deemed to be for all Work.

.04 Payments provided under clause GC 8.02.04.02, Payment Adjustment for Changes in the Fuel Price Index, shall be used to compensate all trucks, Subcontractors, and shippers and suppliers performing any Contract Work or delivering material for the Contract including items not listed in Table 8.02.04.02-1.

.05 The compensation provided through this provision shall also be used for the purpose of providing fuel price adjustment compensation to suppliers and shippers. Should the Contractor be required by a supplier to negotiate and provide fuel price adjustment compensation to any party providing Materials to the Contract, the Owner shall not provide any compensation for this purpose in addition to that provided through these MTO General Conditions of Contract.

.06 Fuel Price Adjustment Calculation

a) The Contractor's payment adjustment for each month shall be calculated using the following formula:

$$Cfpa = (Ctem) \times \frac{(I - Bc)}{100}$$

Where:

Cfpa = fuel price adjustment paid to Contractor or Owner, in dollars

Ctem = total estimated monthly fuel consumption

I = progress payment month fuel price index (for the month that the work was completed in)

Bc = fuel price index in the month that the Contract was advertised for tender

b) The progress payment month fuel index shall be published the first Friday of every month in the Owner's Contract Bulletin.

c) The total monthly fuel consumption shall be calculated by multiplying the consumption rates in Table 8.02.04.02-1by the work accomplished in the current month for each applicable item and totalling the volume in litres.

d) Only tender item quantities or work done at the tender item price shall be included in the calculation.

.07 Payment Certificate Documentation

a) When (I-Bc)(progress payment month fuel price index – advertising month fuel price index) is positive, the Contractor shall receive a payment.

b) When (I-Bc)(progress payment month fuel price index – advertising month fuel price index) is negative the Owner shall receive a credit.

c) The Contractor shall show the fuel price adjustment as a line item on each progress payment certificate and the final payment certificate. The item shall be called fuel price adjustment.

.08 Fuel Price Adjustment Flow Through

a) The Contractor agrees to adjust the payment to each trucker hired directly by the Contractor for execution of part of the Work according to the following formula:

$$Tfpa = (Tmpp) \times \frac{(I - Bt)}{Bt} \times 0.17$$

Where:

Tfpa = fuel price adjustment paid to trucker, in dollars

Tmpp = monthly payment to trucker, in dollars

Bt = fuel price index in the month that the Contract with the trucker was entered into either verbally or in writing

I = progress payment month fuel price index (for the month that the work was completed in)

The fuel price adjustment paid to each trucker (Tfpa) shall be calculated for each calendar month and may be positive or negative.

b) The Contractor agrees to adjust the payment to each Subcontractor according to the following formula:

$$Sfpa = (Smpp) \times \frac{(I - Bs)}{Bs} \times \frac{Fn}{100}$$

Where:

Sfpa = fuel price adjustment paid to the Subcontractor, in dollars

Smpp = monthly progress payment to the Subcontractor, in dollars

Bs = fuel price index in the month that the Contract with the Subcontractor was entered into either verbally or in writing

I = progress payment month fuel price index (for the month that the work was completed in)

Fn = fuel consumption factor as negotiated between the Contractor and the Subcontractor as a percentage of the value of the subcontract

c) The Contractor shall report the negotiated fuel consumption factor (Fn) on Owner Standard Form PH-CC-744 Fuel Consumption Listing Subcontractor, listing all subcontracts, and the corresponding negotiated fuel consumption factor. The form shall be updated monthly or as changes and additions arise.

d) The Contractor also agrees that each subcontract shall contain a requirement that the Subcontractor shall make a fuel price adjustment to each trucker hired directly by the Subcontractor for execution of part of the work according to the same formula and conditions used by the Contractor to make fuel price adjustments to truckers, and provide such confirmation on Owner Standard Form PH-CC-745 Fuel Consumption Tracking Subcontractor, for each trucker.

GC 8.02.04.03 Certification of Subcontract Completion

.01 Before the Work has reached the stage of Substantial Performance; the Contractor may notify the Contract Administrator, in writing that a subcontract is completed satisfactorily and ask that the Contract Administrator certify the completion of the subcontract.

.02 The Contract Administrator shall issue on Owner Standard Form PH-CC-797, Certificate of Completion of Subcontract, if the subcontract has been completed satisfactorily and all required inspection and testing of the work covered by the subcontract have been carried out and the results are satisfactory.

.03 Within 7 Days of the date the subcontract is certified complete, the Contract Administrator shall give a copy of the certificate to the Contractor and to the Subcontractor concerned.

GC 8.02.04.04 Subcontract Statutory Holdback Release Certificate and Payment

.01 At the time of issuance of the Certificate of Completion of Subcontract, the Contract Administrator shall:

a) Prepare a subcontract completion payment certificate showing:

i. The final prices for items;
ii. The amount of holdback monies;
iii. The amount due the Contractor.

b) Mail to the Contractor, the subcontract completion payment certificate within 50 Days of the date the subcontract was certified complete, for the Contractor to sign and return within 25 further Days. The Contract Administrator shall release to the Subcontractor through the Contractor the 10% holdback retained by the Owner in respect of the work covered by the said subcontract after it is certified complete and providing that all lien claims have been discharged and providing that the Contractor has furnished to the Contract Administrator a statutory declaration in a form supplied by the Owner that the said Subcontractor has discharged all liabilities incurred by the Subcontractor in carrying out the said subcontract.

.02 Payment of the holdback monies by the Owner shall be made within a period of 105 Days from the date on which the subcontract was certified complete, providing the Contractor returns the said certificate within the required time.

.03 On receipt of the holdback monies from the Owner, the Contractor shall forthwith pass the payment due under the said subcontract to the Subcontractor concerned.

.04 Release of holdback monies by the Owner in respect of a subcontract according to the foregoing shall not relieve the Contractor or the Contractor's surety of any of their responsibilities.

GC 8.02.04.05 Certificate of Substantial Performance

.01 Application for Substantial Performance by the Contractor shall be submitted in the form of a letter, accompanied with:

a) An application for payment at Substantial Performance in a form satisfactory to the Contract Administrator for all work to date, the amount of the 10% holdback, and the amount due.

b) A release, on Owner Standard Form PH-CC-817, Application for Substantial Performance/Contract Completion, by the Contractor releasing the Owner from all further claims related to the Contract qualified by stated exceptions such as outstanding work or matter arising out of subsection GC 3.14, Clarification and Claims.

c) A statutory declaration, on Owner Standard Form PH-CC-817, Application for Substantial Performance/Contract Completion, that all liabilities incurred by the Contractor and the Subcontractors in carrying out the Contract have been discharged except for the statutory holdbacks properly retained.

d) A satisfactory Certificate of Clearance from the Workplace Safety and Insurance Board.

.02 Upon written application by the Contractor for Substantial Performance, the Contract Administrator shall conduct an inspection of the Work to establish the date of Substantial Performance of the Work. The Contractor's application shall detail non-conformances, defects to be rectified, and work yet to be completed. The Contract Administrator shall provide a list of deficiencies and work yet to be completed in addition to the Contractor's list. The Contractor's list of non-conformances, defects, and works yet to be completed together with the Contract Administrator's list of same shall be combined and referred to as the Substantial Performance deficiency list. All deficiencies and work to be completed from the Substantial Performance Deficiency List shall be completed prior to Contract Completion. Any additional defects and deficiencies for work previously accepted as substantially performed shall be completed within 60 Days of Contract Completion, unless prevented by winter weather conditions; in such case, the defects and deficiencies shall be corrected by June 15th of the following year. Defects and deficiencies on work completed after Substantial Performance shall be completed prior to Contract Completion.

.03 Upon verifying that the Contract has been substantially performed, the Contract Administrator shall issue a Certificate of Substantial Performance and shall set out in the Certificate of Substantial Performance the date on which the Contract was substantially performed and within 7 Days after the signing the said certificate the Contract Administrator shall provide a copy to the Contractor.

.04 Upon receipt of a copy of the Certificate of Substantial Performance, the Contractor shall arrange to have the certificate published in the *Daily Commercial News* and the Contractor shall provide to the Contract Administrator proof that the certificate was published. Where the Contractor fails to publish a Certificate of Substantial Performance within 7 Days of receiving the certificate, the Owner may publish the certificate in the *Daily Commercial News* and charge the Contractor $400 for the costs of advertising and administration. The 45-Day lien period shall start on the date the Certificate of Substantial Performance is published in the *Daily Commercial News*.

.05 Except as otherwise provided for in Section 31 of the *Construction Lien Act*, the 45-Day lien claim period prior to the release of holdback shall commence from the date of publication of the Certificate of Substantial Performance as provided for in paragraph GC 8.02.04.05.04.

GC 8.02.04.06 Substantial Performance Payment and Statutory Holdback Release Payment Certificates

.01 Upon receipt of the application for payment at Substantial Performance, the Contract Administrator shall check the invoice and advise the Contractor of any discrepancies. Any of these discrepancies that are unresolved prior to the expiry of the 45-Day lien period shall be treated as set-offs.

.02 If there are no outstanding lien claims, the Owner shall issue payment, without holdback on the work done, exclusive of the set-offs, within 30 Days after the expiration of the 45-Day lien period.

.03 In addition to set-offs, holdback is accrued at the rate of 10%, on all work performed after the date of the application for payment at Substantial Performance.

.04 If this Contract extends over more than one construction season and there are no outstanding lien claims, the Owner shall issue payment to reduce the holdback on work done from 10% to 2½%, plus the amount of the Owner's set-offs, not more than 5 Days after January 31st in each calendar year the Contract extends, provided that the Contract had not been substantially performed and the estimated value of the work performed is greater than 60% of the original tender value for a

contract having an expected duration of two construction seasons or less, or 40% for a Contract having an expected duration of more than two construction seasons.

GC 8.02.04.07 Certificate of Contract Completion

.01 Application for Contract Completion may be requested by the Contractor once all services and Material required by the Contract have been supplied, exclusive of any warranties, and shall be submitted in the form of a letter, accompanied with:

a) An application for payment at Contract Completion in a form satisfactory to the Contract Administrator for all work to date, the amount of the 10% holdback, and the amount due the Contractor.

b) A release, on the Owner's Standard Form PH-CC-817, Application for Substantial Performance/Contract Completion, by the Contractor to the Contract Administrator releasing the Owner from all further claims related to the Contract qualified by stated exceptions (e.g., outstanding submissions or matters arising out of subsection GC 3.14, Clarifications and Claims).

c) A statutory declaration, on Owner Standard Form PH-CC-817, Application for Substantial Performance/Contract Completion, by the Contractor to the Contract Administrator that all liabilities incurred by the Contractor and Subcontractors in carrying out the Contract have been discharged, except for the statutory holdbacks properly retained.

d) A satisfactory Certificate of Clearance from the Workplace Safety and Insurance Board.

.02 Upon confirming the Contract is complete, the Owner shall issue a Certificate of Contract Completion on the Owners Standard Form PH-CC-890 Certificate of Contract Completion and shall set out in the form the date on which the Contract was completed (date of Contract Completion) and within 7 Days after the signing the said certificate, the Owner shall provide a copy to the Contractor. A Certificate of Substantial Performance shall also be provided, if not previously requested by the Contractor.

.03 If the Contractor has not previously received a Certificate of Substantial Performance, upon receipt of a copy of the Certificate of Contract Completion and the Certificate of Substantial Performance, the Contractor shall arrange to have the Certificate of Substantial Performance published in the *Daily Commercial News* and the Contractor shall provide to the Contract Administrator proof that the certificate was published. Where the Contractor fails to publish a Certificate of Substantial Performance within 7 Days of receiving the certificate, the Owner may publish the certificate in the *Daily Commercial News* and charge the Contractor $400 for the costs of advertising and administration. The 45-Day lien period shall start on the date the certificate is published in the *Daily Commercial News*.

.04 The Certificate of Contract Completion may be issued although not all required Contractor submissions have been provided. The Contractor shall provide all outstanding submissions (e.g., test results, Record Drawings, and manuals) within 20 Business Days of the date of Certificate of Contract Completion. It is anticipated the Owner shall incur damages after such time should the submissions not be received within the above time. The parties agree that liquidated damages of $400 per Day shall be charged to the Contractor for each Day after 20 Business Days of the date of Certificate of Contract Completion until all submissions have been received.

.05 Upon receipt of the application for payment at Contract Completion, the Contract Administrator shall check the invoice and advise the Contractor of any discrepancies. Any of these discrepancies that are unresolved prior to the expiry of the 45-Day lien period may be treated as a set-off.

.06 Upon conclusion of the 45-Day lien period, and provided no liens have been received, all remaining holdback, exclusive of set-offs, shall be paid by the Owner, within 30 Days.

GC 8.02.04.08 Interest

.01 Interest due the Contractor is based on simple interest and is calculated using the applicable Rates of Interest.

GC 8.02.04.09 Interest for Late Payment

.01 When the Contractor has complied with the requirements of the Contract and when payment by the Owner to the Contractor for Work performed or for release of statutory holdback is delayed by the Owner, then the Contractor shall be entitled to payment for Work performed at the Rates of Interest from a date or dates derived from the following:

a) Progress payment due date: a date 30 Days after the cut-off date;

b) Subcontract completion and subcontract statutory holdback: a date 75 Days after the date the subcontract is certified complete;

c) Substantial Performance and statutory holdback: a date 75 Days after the date the Certificate of Substantial Performance is published;

d) Contract Completion and holdback: a date 75 Days after the date the Contract is certified complete.

GC 8.02.04.10 Interest for Clarifications and Claims

.01 Except as hereinafter provided, where a Request for Clarification and any subsequent Claims are submitted according to the time limits and/or procedure described by section GC 3.14, Clarification and Claims, the Owner shall pay the Contractor the Rates of Interest on the amount of the negotiated price for the Work or on the amount of the settled Claim. Such interest shall commence from a date 30 Days next following the established cut-off date which immediately follows the completion of the Work to which the negotiation applies.

GC 8.02.04.11 Owner's Set-Off

.01 Pursuant to Section 12 of the *Construction Lien Act* - Set-Off by Trustee, the Owner may retain from monies owing to the Contractor under this or any other contract an amount sufficient to cover any outstanding or disputed liabilities, including the cost to remedy deficiencies, the reduction in value of substandard portions of the Work, claims for damages by third parties that have not been determined in writing by the Contractor's insurer, undetermined claims by the Owner under paragraph GC 8.01.02, a), and any assessment due the Workers' Compensation Board.

.02 Under these circumstances the Owner shall give the Contractor appropriate notice of such action.

GC 8.02.04.12 Contract Completion and Statutory Holdback Release Payments

.01 Payment for subcontracts certified complete, including release of holdback shall be made within 105 Days of the date on which the Work was certified complete.

.02 Payments for Work certified as substantially performed, including release of holdback, shall be made within 120 Days of the date of publication of substantial performance. The Owner shall reduce the holdback to 2½% at the end of the 45-Day lien period providing all liens are discharged. This payment shall be made within 30 Days of the expiry of the 45-Day lien period.

.03 Final payment including release of holdback shall be made within 105 Days of the date of Contract Completion. Where the Contractor does not apply for Substantial Performance, final payment including release of holdback shall be made within 120 Days of the date of publication of Substantial Performance. In this case the Owner shall reduce the amount of holdback held to 2½% at the end of the 45-Day lien period providing all liens are discharged. This payment shall be made within 30 Days of the expiry of the 45-Day lien period.

.04 The time periods stated in clause GC 8.02.04.12, Contract Completion and Statutory Holdback Release Payments, are all dependent on the Contractor returning the appropriate documents within the time stipulated in paragraph GC 8.02.04.07.04.

GC 8.02.04.13 Liens Filed Late

.01 In cases where a lien is not preserved (i.e., the claimant files a claim outside the time limits prescribed in the *Construction Lien Act*), the Owner shall record the claim as an "out of time" lien. The Owner shall set-off the amount of the claim but only to the extent of the funds already held by the Owner with respect to the work which the claim has been filed against.

.02 In cases where a lien has been preserved within the time allowed, but not perfected according to the *Construction Lien Act*, the Owner shall continue to hold the amount of the claim; however, the 25% security for costs held when the lien was preserved shall be released and included in the Contract payment.

.03 The Owner shall be responsible for the final disposition of funds withheld under the circumstances noted in paragraphs GC 8.02.04.13.01 and GC 8.02.04.13.02.

GC 8.03 Payment on a Time and Material Basis

GC 8.03.01 Definitions

For the purpose of subsection GC 8.03, Payment on a Time and Material Basis, the following definitions apply:

Actual Payroll Burden means the payments in respect of the following list of items. No other items shall be permitted in the calculation of the Contractor's Actual Payroll Burden.

a) **Vacation** means the Contractor's paid time off for vacation earned in each year calculated at salary cost, including overtime, according to the Contractor's policy.

b) **Sick Leave** means the Contractor's paid time off due to sickness, accident, or injury or specific personal and family issues such as bereavement leave, jury duty, and similar leaves. Such paid time off is according to Contractor's policy and calculated at salary cost.

c) **Statutory Holidays** means the Contractor's paid time off according to Ontario law and established custom.

d) **Training** means the Contractor's paid time for employees to maintain and increase their level of skills pertaining to their position.

e) **Employment Insurance** means the Contractor's portion of employment insurance premiums incurred according to the Employment Standards Act.

f) **Group Life Insurance** means the premium paid by the Contractor to employee group life and short and long term disability insurance plans.

g) **Employer Health Tax** means the premium incurred by the Contractor for the year according to the Employer Health Tax Act of Ontario.

h) **Group Medical Plan** means the premium paid by the Contractor for group health insurance plans providing coverage of health care costs not covered by the basic government health plan.

i) **Workplace Safety and Insurance Board** means the WSIB premium incurred by the Contractor for the year according to Workplace Safety and Insurance Act.

j) **Contractor Pension Plan** means the Contractor's pension plan cost, including the cost of funding the pension benefits earned by employees and cost of services of third parties incurred for the pension plan.

k) **Canada Pension Plan** means the Contractor's portion of Canada pension plan contribution incurred according to the Canada Pension Plan Act or its equivalent for non-residents.

l) **Union Contributions** means the premium paid by the Contractor to a union according to active collective agreements. Items such as Industry Funds paid to a Trustee and Legal Benefits identified in such agreements are to be included under this item.

Cost of Labour means the amount of wages, salary, travel expenses, travel time, room and board, and Actual Payroll Burden paid or incurred directly by the Contractor to or in respect of labour and supervision actively and necessarily engaged on the Work on a Time and Material Basis based on the recorded time and hourly rates of pay for such labour and supervision but shall not include any payment or costs incurred for general supervision, administration, or management time spent on the entire Work or on any wages, salary, or Actual Payroll Burden for which the Contractor is compensated by any payment made by the Owner for Equipment.

Travel expenses, travel time, and room and board shall be justified by the Contractor and, if requested, the Contractor shall supply the Owner with proof of the expenditure. Reasonable costs for room and board shall only be paid if the Work on a Time and Material Basis extends the time that the Contractor's labour is on-site or if the Contractor hires labour that is not normal to the Contract and room and board is charged.

Cost of Material means the cost of Material purchased or supplied from stock and valued at current market prices for the purpose of carrying out Work on a Time and Material Basis by the Contractor or by others when such arrangements have been made by the Contractor for completing the Work on a Time and Material Basis, as shown by itemized invoices.

Mark-Up means the amount of administrative overhead and project overhead costs incurred by the Contractor and an amount for profit. Administrative overheads and project overheads include but are not limited to the following:

Advertising, amortization, association and convention fees, audit and accounting fees, bad debt, bank charges and interest, building repairs - head office, capital tax, computer costs, donations, freight and express, insurance - liability and property, interest on long term debt, licences and permits - non Equipment related, management bonuses, management fees subcontracts, management salaries, municipal taxes, office and land - rent or lease, performance, labour and Material bonds, pit rehabilitation - commercial, plans, postage, printing and stationary, promotions, radio, Hand Tools or equipment that are tools of the trade, clothing allowance, sundry, supplies - operation, Utilities: telephone, heat, light, and water, and vehicles repairs - light trucks and autos.

Operated Rented Equipment means Rented Equipment rented or leased for which an operator is provided by the supplier of the Equipment and for which the rent or lease includes the cost of the operator.

Rented Equipment means Equipment that is rented or leased from an individual, firm, or corporation that is not an associate or affiliate of the lessee as defined by the *Securities Act*, R.S.O. 1990, c. S.5, as amended, and is approved by the Contract Administrator.

Standby Time means any period of time that is not considered Working Time and that together with the Working Time does not exceed 10 hours in any one Working Day and during which time a unit of Equipment cannot practically be used on other Work and remains on the site in order to continue with its assigned task and during which time the unit is in fully operable condition.

The 127 Rate means the rate for a unit of equipment as listed in OPSS 127, Schedule of Rental Rates for Construction Equipment, Including Model and Specification Reference, which is current at the time the Work is carried out or, for Equipment that is not so listed, the rate that has been calculated by the Owner, using the same principles as used in determining The 127 Rates.

Work on a Time and Material Basis means Changes in the Work and Additional Work approved by the Contract Administrator for payment on a Time and Material basis. The Work on a Time and Material Basis shall be subject to all the terms, conditions, Standards, and provisions of the Contract.

Working Time means each period of time during which a unit of Equipment of necessity and is actively engaged on a specific operation and the first 2 hours of each immediately following period, during which the unit is not so engaged but during which the operation is otherwise proceeding and during which time the unit cannot practically be transferred to other Work and remains on the site in order to continue with its assigned tasks and during which time the unit is in a fully operable condition.

GC 8.03.02 Daily Work Records

.01 Daily Work Records reporting the labour and Equipment employed and the Material used shall be prepared by the Contractor's representative. The Daily Work Records shall be signed each Day by both the Contractor's representative and the Contract Administrator. The Contract Administrator will note disagreements on the Daily Work Record prior to signing and return a copy to the contractor. These records shall be used for the basis of payment.

.02 Daily Work Records shall report the labour and Equipment employed, both working time and downtime, and the Material used on Owner Standard Form PH-CC-754 Daily Work Record. Daily Work Records shall include a brief description of the work being carried out and location of such work.

.03 For each Day that a Daily Work Record is required under these provisions, the Contractor shall deliver daily to the Contract Administrator's representative at the working area a Contractor signed copy of the Daily Work Record.

.04 The Contractor's failure to keep or deliver Daily Work Records or to keep complete Daily Work Records may limit the Contractor's ability to recover its costs.

GC 8.03.03 Payment for Work

.01 Payment as herein provided shall be full compensation for all labour, Equipment, and Material to do the Work on a Time and Material Basis, except where there is agreement to the contrary prior to the commencement of the Work on a Time and Material Basis.

.02 Payment for labour, Rented Equipment, and Operated Rented Equipment intended for use on other Work but has been idled due to the circumstances giving rise to the Work on a Time and Material Basis shall be negotiated according to subsection GC 3.14, Clarification and Claims. Consideration shall be given to removing the labour and Equipment from the site until the idled Work can be resumed.

GC 8.03.04 Payment for Labour

.01 The Owner shall pay the Contractor for labour used on each Time and Material basis at 100% of the Cost of Labour. Payroll Burden shall not be applied to room and board and or travel expenses when calculating the Cost of Labour.

.02 Payments in respect of Payroll Burden shall be made at the following rates:

a) Union workers - 40% of the wages and salary portion of the Cost of Labour.

b) Non-union workers - 30% of the wages and salary portion of the Cost of Labour.

c) Alternatively, the Contractor's external auditor shall complete, sign, and submit a copy of the Contractor's Actual Payroll Burden. The following shall apply when this option is used:

i. Actual Payroll Burden shall be calculated using Owner Standard Form PH-CC-819, Actual Payroll Burden, and only those items stated under clause GC 8.03.01, Definitions, shall be included.

ii. Owner Standard Form PH-CC-819, Actual Payroll Burden, shall be completed by the Contractor's external auditor and filed with the Contract Management Office, St Catharines.

iii. The Actual Payroll Burden shall be filed annually and shall be applied from April 1 of each year to March 31 of the following year. The Actual Payroll Burden can be adjusted once annually upon submission of a revised Owner Standard Form PH-CC-819, Actual Payroll Burden, completed by the Contractor's external auditor.

iv. The Owner shall apply union workers or non-union workers Payroll Burden which ever is applicable, to Contractors failing to provide an annual update by April 1 of the current year. Once Owner Standard Form PH-CC-819, Actual Payroll Burden, is received, the Owner shall apply the new rate from the date of receipt of an acceptable Actual Payroll Burden to March 31 of the following year.

v. The Contractor's Actual Payroll Burden rate shall apply universally to all labour areas across the province.

d) At the Owner's discretion, a review of the Actual Payroll Burden may be conducted, in which case, the Actual Payroll Burden so determined at the time of the review shall be applied to all Work on a Time and Material Basis affected. Upon request, the Contractor shall make available all records in support of the Actual Payroll Burden calculation submitted.

GC 8.03.05 Payment for Material

.01 The Owner shall pay the Contractor for Material at 100% of the cost of the Material.

GC 8.03.06 Payment for Equipment

GC 8.03.06.01 Working Time

.01 The Owner shall pay the Contractor for the Working Time of all Equipment other than Rented Equipment and Operated Rented Equipment used on the Work on a Time and Material Basis at 75% of The 127 Rates.

.02 The Owner shall pay the Contractor for the Working Time of Rented Equipment used on the Work on a Time and Material Basis at 110% of the invoice price. A Contractor shall obtain approval from

the Contract Administrator prior to the use of the Rented Equipment, if 110% of the invoice price is greater than 75% of The 127 Rates.

.03 The Owner shall pay the Contractor for the Working Time of Operated Rented Equipment used on the Work on a Time and Material Basis at 110% of the Operated Rented Equipment invoice price approved by the Contract Administrator, prior to the use of the Equipment on the Work on a Time and Material Basis.

.04 When Equipment is transported solely for the purpose of the Work on a Time and Material Basis to or from the Working Area on a Time and Material basis, payment shall be made by the Owner only in respect of the transporting units. When Equipment is moved under its own power it shall be deemed to be Working. The method of moving Equipment and the rates shall be subject to the approval of the Contract Administrator.

GC 8.03.06.02 Standby Time

.01 The Owner shall pay the Contractor for Standby Time of all Equipment other than Rented Equipment and Operated Rented Equipment at 50% of The 127 Rate.

.02 The Owner shall pay for Rented Equipment and Operated Rented Equipment at 100% of the invoice price where it is necessary to retain Equipment in the Working Area for extended periods agreed to by the Contract Administrator.

GC 8.03.06.03 Payment for Work by Subcontractors

.01 Where the Contractor arranges for Work on a Time and Material Basis, or a part of it, to be performed by Subcontractors on a Time and Material basis and has received approval prior to the commencement of the Work according to the requirements of subsection GC 3.09, Subcontracting by the Contractor, the Owner shall pay the cost of Work on a Time and Material Basis by the Subcontractor calculated as if the Contractor had done the work on a Time and Material basis.

GC 8.03.06.04 Mark-Up on Work on a Time and Material Basis

.01 Payment for Mark-Up on Work on a Time and Material Basis shall be made at the following rates:

a) Contractor Mark-Up

15% applied to the total payment for labour, Equipment, and Material when the work was completed by the Contractor.

b) Subcontractor Mark-Up

15% applied to the total payment for labour, Equipment, and Material when the work was completed by the Subcontractor.

c) Contractor Mark-Up on Subcontractors Work on a Time and Material Basis:

10% mark-up allowed on Subcontractor's total labour, Equipment, and Material after Subcontractor Mark-Up is applied. If Work on a Time and Material Basis is assigned or sublet to an associate, as defined by the *Securities Ac*t, R.S.O. 1990, c. S.5, as amended, no Contractor Mark-Up is permitted.

GC 8.03.06.05 Submission of Invoices

.01 At the start of the Work on a Time and Material Basis, the Contractor shall provide the applicable labour and Equipment rates not already submitted to the Contract Administrator during the course of the Work. The Contractor shall provide documented proof of labour and Equipment rates when requested by the Contract Administrator.

.02 A separate Owner Standard Form PH-CC-796, Time and Material Summary for Payment, shall be completed for Contractor and Subcontractor Work on a Time and Material Basis. Each completed form shall include the Change Order number and covering dates of the Work on a Time and Material Basis and shall itemize separately payment for labour, payment for Materials, and payment for Equipment. Invoices for Materials, Rented Equipment, and other charges incurred by the Contractor on the Work on a Time and Material Basis shall be included with each summary.

.03 Each month the Contract Administrator shall include with the monthly progress payment certificate, the costs of the Work on a Time and Material Basis incurred during the preceding month all according to the Contract administrative procedures and the Contractor's invoice of the Work on a Time and Material Basis.

.04 The final Owner Standard Form PH-CC-796, Time and Material Summary for Payment, shall be submitted by the Contractor within 60 Days after the completion of the Work on a Time and Material Basis.

GC 8.04 Release from Warranty

.01 At the expiry of the last warranty period and after correction of all deficiencies, the Owner shall issue the Contractor a Release from Warranty Certificate.

GC 8.05 Records

.01 The Contractor shall maintain and keep accurate Records relating to the Work, Changes in the Work, and Claims arising there from in sufficient detail to support the total cost of the Work, Changes in the Work, and Claims. The Contractor shall preserve all such original Records until 12 months after the Release from Warranty Certificate is issued or until all claims have been settled, which ever is longer. The Contractor shall require that Subcontractors preserve all original Records pertaining to the Work, Changes in the Work, and Claims arising there from for a similar period of time.

.02 If, in the opinion of the Contract Administrator, Daily Work Records are required, the Contractor shall complete such Daily Work Records for the Work or such specific part of the Work requested.

GC 8.06 Taxes and Duties

.01 Where a change in Canadian Federal or Provincial taxes occurs after the date of tender closing for this Contract, and this change could not have been anticipated at the time of bidding, the Owner shall increase or decrease Contract payments to account for the exact amount of tax change involved.

.02 Claims for compensation for additional tax cost shall be submitted by the Contractor to the Contract Administrator on Owner Standard Form, PH-CC-725 Tax Change Statement. Such claims for additional tax costs shall be submitted not later than 30 Days after the date of completion of the Work.

.03 Where the Contractor benefits from a change in Canadian Federal or Provincial taxes, the Contractor shall submit a statement of such benefits to the Contract Administrator on Owner

Standard Form, PH-CC-725 Tax Change Statement. This statement shall be submitted not later than 30 Days after the date of completion of the Work.

.04 The Contract Administrator reserves the right to make deductions from regular progress payments to compensate for the estimated benefit from decreased tax costs. Such deductions shall be set-off from Contract payments pending receipt of the statement itemizing the benefits that have resulted from a decrease in tax costs at which time the final payment adjustment shall be determined.

.05 Changes in Federal or Provincial taxes impacting upon commodities that, when left in place, form part of the finished Work, or the provision of Services, where such Services form part of the Work and where the manufacture or supply of such commodities or the provision of such Services is carried out by the Contractor or a Subcontractor, are subject to a claim or benefit as detailed above. Services, in the latter context, means the supply and operation of Equipment, the provision of labour and the supply of commodities that do not form part of the Work.

GC 8.07 Liquidated Damages

.01 When liquidated damages are specified in the Contract and the Contractor fails to complete the Work according to the Contract, the Contractor shall pay such amounts as are specified in the Contract Documents.

TABLE 7.02-1
Layout Intervals and Measurement Accuracy
for Construction Survey - Layout

Activity	Interval m	Measurement Accuracy mm	Remarks
Layout - Rock - Earth	 10 25	-	With the exception of plus sections, layout is normally at the same interval as the cross-sections/grade calculations. This may be varied when extreme changes in horizontal and vertical alignment are encountered.
Maximum for setting structure footing grades	10	-	
Set structure grades	-	1	
Adjustment to slope stake distances to allow for grubbing losses	-	300	
Set grades for earth grading	-	10	
Set grades for granular	-	5	
Layout stake offset for curb and gutter	-	-	2 m but may be varied to suit conditions
Stake layout for curb and gutter	10	-	May be necessary to reduce for very sharp curves
Set curb and gutter grades	-	1	
Staking maximum for layout of a radius, intersections	3	-	
Layout stake offset for concrete pavement	-	-	2 m offset
Set concrete pavement grades	-	1	

TABLE 7.02-2
Layout Intervals and Measurement Accuracy
for Construction Survey - Cross-Sections

Activity	Interval m	Measurement Accuracy mm	Remarks
Backsight and foresight readings	-	1	
Maximum allowable error between adjacent Bench Marks	-	5	
Intermediate road readings - earth cut - rock cut - rock cut with overburden - muskeg excavation - fills with stripping, sub-excavation, or ditching - transition from cut to fill - fills - earth or rock fills - borrow pits	 25 10 10 25 25 25 25 25 25	10	
Maximum transverse interval for cross-section elevations - earth - rock - borrow	 25 10 25	-	
Measure offset distances	-	100	

TABLE 8.02.04.02-1
Fuel Consumption Rates

	Item Description	Notes	Diesel Fuel Consumption Rates
1	Clearing including Close Cut Clearing		237 L/ha
2	Grubbing		163 L/ha
3	Earth Excavation and Earth Borrow	1	1.7 L/m^3
4	Rock Excavation	2	0.6 L/m^3
5	Rock Embankment		1.6 L/m^3
6	Rock Face		1.2 L/m^2
7	Select Subgrade Material (SSM)		1.0 L/t
8	Granular A, B ,O, and RSS Backfill		1.9 L/t
9	All Asphalt Pavement, except SuperPave FC2		11.5 L/t
10	SuperPave FC2 Pavement		14.3 L/t
11	Concrete Pavement		4.9 L/m^2
12	Structural Concrete	3	5.5 L/m^3
13	Tall Wall, any non-precast barrier wall, including asymmetric		3.2 L/m
14	Milling by m^2 Items	4	0.4 L/m^2
15	Milling by tonne Items	5	3.0 L/t
16	Pulverize		0.2 L/m^2
17	Cold In Place Recycling		0.4 L/m^2
18	Concrete Removal, all complete structural concrete	6	1.0 L/m^3
19	Concrete Removal, concrete base and pavements		0.9 L/m^2
20	Asphalt Removal	7	0.4 L/m^2
21	Piling & Caissons		5.0 L/m
22	Sewers & Drainage	8	8.0 L/m
23	Rock Supply		1.4 L/m^3

Notes:

1. Also includes the Tender Item Earth Excavation for Structures when the quantity is greater than 100 m^3.

2. If the Contract has a Rock Excavation item but not the Rock Embankment item, the diesel fuel consumption rate for Rock Excavation shall be 2.2 L/m^3.

3. Structural concrete is normally a lump sum item that has no quantity listed in the Contract. The Contract Administrator shall calculate the quantity for this item or get concrete ticket summary sheets for this item. This item does not include deck joint assemblies or modifications, concrete patches, or precast units.

   Includes the following items:

   - concrete in deck
   - concrete in substructure
   - concrete in culverts
   - high performance concrete in deck
   - concrete in footing, structure
   - concrete in substructure and retaining wall
   - high performance concrete in sub structures
   - concrete in structure
   - concrete in approach slab
   - high performance concrete in barrier walls
   - concrete in parapet walls

Table continued on next page

Table continued from previous page

4. Includes the following items:

   - removal of asphalt pavement from concrete surfaces
   - removal of asphalt pavement, partial depth
   - removal of asphalt pavement from concrete surfaces on structures
   - reclaim asphalt pavement, full depth
   - remove asphalt pavement and salvage; full depth
   - reclaim asphalt pavement, full depth over concrete

5. Includes the following items:

   - reclaim asphalt pavement, partial depth
   - remove asphalt pavement and salvage, partial depth

6. Includes the following items:

   - removal of bridge structures
   - concrete removal, full depth
   - concrete removal, complete deck

7. Includes the following items:

   - removal of asphalt pavement

8. Sewers and drainage is to be applied to sewers that are 300 mm in diameter or larger. Subdrains do not receive compensation. Catch basins with a single stub outlet receive no compensation nor do flexible pipe culverts.

GENERAL SPECIFICATION FOR THE USE OF EXPLOSIVES

TABLE OF CONTENTS

120.01 **SCOPE**

120.02 **REFERENCES**

120.03 **DEFINITIONS**

120.04 **DESIGN AND SUBMISSION REQUIREMENTS**

120.05 **MATERIALS**

120.06 **EQUIPMENT**

120.07 **CONSTRUCTION**

120.08 **QUALITY ASSURANCE - Not Used**

120.09 **MEASUREMENT FOR PAYMENT - Not Used**

120.10 **BASIS OF PAYMENT**

APPENDICES

120-A **Commentary**

120.01 SCOPE

This specification covers the requirements for the use of explosives.

120.01.01 Specification Significance and Use

This specification has been developed for use in provincial- and municipal-oriented Contracts. The administration, testing, and payment policies, procedures, and practices reflected in this specification correspond to those used by many municipalities and the Ontario Ministry of Transportation.

Use of this specification or any other specification shall be according to the Contract Documents.

120.01.02 Appendices Significance and Use

Appendices are not for use in provincial contracts as they are developed for municipal use, and then, only when invoked by the Owner.

Appendices are developed for the Owner's use only.

Inclusion of an appendix as part of the Contract Documents is solely at the discretion of the Owner. Appendices are not a mandatory part of this specification and only become part of the Contract Documents as the Owner invokes them.

Invoking a particular appendix does not obligate an Owner to use all available appendices. Only invoked appendices form part of the Contract Documents.

The decision to use any appendix is determined by an Owner after considering their contract requirements and their administrative, payment, and testing procedures, policies, and practices. Depending on these considerations, an Owner may not wish to invoke some or any of the available appendices.

120.02 REFERENCES

When the Contract Documents indicate that provincial-oriented specifications are to be used and there is a provincial-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.PROV, unless use of a municipal-oriented specification is specified in the Contract Documents. When there is not a corresponding provincial-oriented specification, the references below shall be considered to be to the OPSS listed, unless use of a municipal-oriented specification is specified in the Contract Documents.

When the Contract Documents indicate that municipal-oriented specifications are to be used and there is a municipal-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.MUNI, unless use of a provincial-oriented specification is specified in the Contract Documents. When there is not a corresponding municipal-oriented specification, the references below shall be considered to be the OPSS listed, unless use of a provincial-oriented specification is specified in the Contract Documents.

This specification refers to the following standards, specifications, or publications:

Ontario Ministry of Transportation Publications

Ontario Traffic Manual (OTM):
Book 7 - Temporary Conditions

Department of Fisheries and Oceans (DFO) Publication

Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, 1998

International Society of Explosives Engineers (ISEE)

Performance Specifications for Blasting Seismographs, 2011 Edition

120.03 DEFINITIONS

For the purpose of this specification, the following definitions apply:

Blaster means a competent person knowledgeable, experienced, and trained in the handling, use, and storage of explosives and their effect on adjacent property and persons.

Blast Monitoring Consultant means a consulting engineering firm with a minimum of 5 years experience related to blasting retained by the Contractor to provide blast monitoring services. The blast monitoring consultant shall be a third party that is not owned or corporately affiliated with the Contractor responsible for the Work.

Consulting Engineering Firm means a firm or an individual that has been issued a Certificate of Authorization and a Consulting Engineer designation by the Professional Engineers Ontario.

Designated Blast Area means the area where the Contractor has notified, in writing, and provided information to all Utilities, public and private property owners, and as the area where the Contractor has made arrangements to evacuate all persons whose safety might be threatened by the blasting operation.

Engineer means a professional engineer licensed by the Professional Engineers Ontario to practice in the Province of Ontario.

Fish Habitat means as defined by the Fisheries Act.

Flyrock means rock that becomes airborne as a direct result of a blast.

Peak Particle Velocity (PPV) means the maximum component velocity in millimetres per second that ground particles move as a result of energy released from explosive detonations.

Pre-Blast Survey means a detailed record, accompanied by film or video as necessary, of the condition of private or public property, prior to the commencement of blasting operations.

120.04 DESIGN AND SUBMISSION REQUIREMENTS

120.04.01 Design Requirements

A blast design shall be prepared by an individual or firm with a minimum 5 years experience and be certified by an Engineer. The blast design shall include, as a minimum, the following:

a) Design PPV and design peak sound pressure level at 250 m radius or nearest Utility, residence, structure, or facility.

b) Number, pattern, orientation, spacing, size, and depth of drill holes.

c) Collar and toe load, number and time of delays, and mass and type of charge per delay.

d) Setback distances to affected fish habitat.

e) The explosive products to be used.

f) The designated blast area.

120.04.02 Submission Requirements

The following shall be submitted to the Contract Administrator:

a) A minimum of 2 weeks prior to the use of explosives:

i. The name and statement of experience of the firm carrying out the blasting.
ii. The name of the blaster including a record of experience and safety training.
iii. The name of the individual or firm responsible for the blast design, including a record of experience and statement of qualifications.
iv. A letter from an Engineer certifying the design.
v. The name of the blast monitoring consultant, including a record of experience and a record of qualifications.
vi. A certificate of insurance indemnifying the Owner from all claims and damages arising from the use of explosives.

b) A minimum of 48 hours prior to the use of explosives:

i. A letter signed by the Engineer certifying the blast design indicating the areas for which the blast design has been completed.
ii. A letter signed by the blaster indicating receipt of the blast design and agreement that the blasting shall be according to the design.
iii. A letter signed by the Contractor certifying that a pre-blast survey has been carried out in accordance with the Pre-Blast Survey subsection and a copy of the pre-blast survey.
iv. A copy of the blast design, including all items shown in the Design Requirements subsection.
v. The designated blast area.
vi. A blasting schedule.
vii. A list of all locations to be monitored.
viii. Proof of calibration of all monitoring equipment.

c) Upon request, any blasting permits, approvals, and agreements required for the use of explosives or to carry out blasting operations.

120.05 MATERIALS

120.05.01 Explosives

Only explosive products approved for use in Canada shall be used.

120.06 EQUIPMENT

120.06.01 Detonation Apparatus

Detonation apparatus shall be of the type approved by the detonation system manufacturer for the type of blasting operation to be undertaken. All apparatus shall be kept in working order and shall be thoroughly inspected before and after each blasting operation.

All wiring connected to electrical detonation apparatus shall be properly insulated.

120.06.02 Monitoring Equipment

All monitoring equipment shall be capable of measuring and recording ground vibration PPV up to 200 mm/s in the vertical, transverse, and radial directions. The equipment shall have been calibrated within the last 12 months either by the manufacturer or other qualified agent. Proof of calibration shall be submitted to the Contract Administrator prior to commencement of any monitoring operations.

Monitoring equipment shall be according to ISEE Performance Specifications for Blasting Seismographs.

120.07 CONSTRUCTION

120.07.01 General

Blasting shall be carried out only during daylight hours and at a time when atmospheric conditions provide clear observation of the blast when practical from a minimum distance of 1,000 m. Blasting shall not be conducted on Sundays, statutory holidays, or during electrical storms.

Blasting shall not be carried out within 30 m of concrete placed less than 72 hours when the ambient temperature falls below 20 °C or for 36 hours when the ambient temperature is continuously greater than 20 °C, unless otherwise authorized by the Contract Administrator.

Protection of fish and fish habitat shall be according to the Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters.

120.07.02 Radio-Frequency Hazards

Prior to blasting, investigations shall be done to determine if radio-frequency hazards exist. When such hazards exist, necessary precautions shall be taken.

120.07.03 Pre-Blast Survey

A pre-blast survey shall be prepared for all buildings, Utilities, structures, water wells, and facilities likely to be affected by the blast and those within 75 m of the location where explosives are to be used. The standard inspection procedure shall include the provision of an explanatory letter to the owner or occupant and owner with a formal request for permission to carry out an inspection.

The pre-blast survey shall include, as a minimum, the following information:

a) Type of structure, including type of construction and if possible, the date when built.

b) Identification and description of existing differential settlements, including visible cracks in walls, floors, and ceilings, including a diagram, if applicable, room-by-room. All other apparent structural and cosmetic damage or defect shall also be noted. Defects shall be described, including dimensions, wherever possible.

c) Digital photographs or digital video or both, as necessary, to record areas of significant concern.

Photographs and videos shall be clear and shall accurately represent the condition of the property. Each photograph or video shall be clearly labelled with the location and date taken.

A copy of the pre-blast survey limited to a single residence or property, including copies of any photographs or videos that may form part of the report shall be provided to the owner of that residence or property, upon request.

120.07.04 Notification

120.07.04.01 General

A minimum of 15 Business Days prior to blasting, the Contractor shall provide written notice to Utilities and all owners and tenants of improved property within 250 m of the right-of-way in the vicinity of the blast. The notice shall include a blasting schedule, information about the audible blast warning system, and contact name for questions or other concerns.

The Contractor shall ensure that a competent person is available to receive, document, and deal with public inquiries before and after blasting operations.

A minimum 48 hours prior to blasting, sufficient detail regarding the blasting operations shall be provided to NAV Canada.

120.07.04.02 Utilities

Authorities of all likely affected Utilities shall be notified a minimum of 72 hours prior to blasting.

120.07.04.03 Properties

Not more than 5 Business Days and not less than 4 hours prior to each blast, the Contractor shall provide notice of the blasting schedule to all owners and tenants of buildings or facilities within 150 m of the blast. All blasts scheduled for the following 7 Days may be included in one notice. The notice shall include information about the audible blast warning system.

When blasting operations may incur property damage or require temporary evacuation, notification shall include evacuation information and instructions. The Contractor shall take all reasonable steps to ensure that the property owner acknowledges, by their signature, that they have received the information and shall comply with any evacuation requirements. When such signature is withheld, the Contractor shall maintain records showing the date and time that the information was delivered.

120.07.05 Monitoring

120.07.05.01 General

The Contractor shall employ a blast monitoring consultant to carry out monitoring for PPV, peak sound pressure levels, and water overpressures as required. During each blast, ground vibration PPV and the peak sound pressure level shall be monitored 250 m from the blast or at the closest portion of any residence, Utility, structure, or facility. Water overpressure in affected fish habitats shall be monitored adjacent to the shore closest to the blast. The monitoring equipment shall be repositioned as required.

120.07.05.02 Ground Vibration

Ground vibration as measured by PPV shall be limited to the maximum levels shown in Table 1. Should readings from any two consecutive blasts exceed these values or any single reading exceed these values by more than 30 mm/s, the blast operation shall cease until a revised blast design, certified by the Engineer, has been submitted to the Contract Administrator.

120.07.05.03 Water Overpressure

Instantaneous pressure change as measured by water overpressure in or near fish habitat shall not exceed 100 kPa.

120.07.05.04 Trial Blasts

The Contractor shall confirm the suitability of the blast design for the ground vibration PPV limits and sound pressure levels by carrying out a minimum of three limited test blasts at locations agreed upon by the Contract Administrator and the Contractor. The trial blasts shall be carried out with appropriate blast vibration and noise level monitoring equipment. Based on the results, the initial blast design shall be revised as necessary.

120.07.06 Protective Measures

Immediately prior to the blast, the designated blast area shall be cleared of all vehicular and pedestrian traffic.

All traffic shall be stopped and prevented from entering the area until the blaster gives permission. Traffic control shall be according to the Ontario Traffic Manual, Book 7. Signs shall be posted to inform the public of blasting operations and to turn off radio transmitters. Audible blast warning devices, capable of alerting workers and the public up to a radius of 1,000 m, shall be used before and after blasting.

Blasting mats or other suitable means of controlling flyrock shall be used to limit potential hazardous effects of the blast.

120.07.07 Records

A post-blast record shall be prepared and signed by the blaster for each blast completed. The post-blast record shall report the following conditions and be made available to the Contract Administrator for site review:

a) The date, time, and location of the blast.

b) The wind direction and approximate speed at the time of the blast.

c) The general atmospheric conditions at the time of the blast.

d) The actual blast details.

e) PPV, peak sound pressure level, and water overpressure results of each blast.

A report summarizing the results of the ground vibration and peak sound pressure levels shall be submitted to the Contract Administrator at the end of each work day that blasting was carried out.

120.07.08 Damage

Upon completion of blasting or immediately following the receipt of a complaint, a site condition survey shall be performed to determine if any damage has resulted. The Contractor shall record all incidents of any damage or injury, which shall be reported immediately in writing to the Contract Administrator. All other complaints shall be reported to the Contract Administrator in writing within 24 hours of receipt. Each complaint report shall include the name and address of the complainant, time received, and description of the circumstances that led to the complaint.

120.10 BASIS OF PAYMENT

Payment at the Contract price for the appropriate tender items that requires the use of explosives shall be full compensation for all labour, Equipment, and Material to do the work.

When the Contract contains separate items for work required by this specification, payment shall be at the Contract prices and according to the specifications for such work.

The cost of standby crews and equipment required by Utility authorities shall be the responsibility of the Contractor.

120.10.01 Claims

The Contractor shall be responsible for the management of all claims and payment arising from the hauling, handling, use of, and storing of explosives and all effects, directly or indirectly related to the blasting operation.

TABLE 1
Maximum Peak Particle Velocity Values

Element	Frequency Hz	Peak Particle Velocity (PPV) mm/s
Structures and Pipelines	≤ 40	20
	> 40	50
Concrete and Grout < 72 hours from placement	N/A	10

Appendix 120-A, November 2013
FOR USE WHILE DESIGNING MUNICIPAL CONTRACTS

Note: This is a non-mandatory Commentary Appendix intended to provide information to a designer, during the design stage of a contract, on the use of the OPS specification in a municipal contract. This appendix does not form part of the standard specification. Actions and considerations discussed in this appendix are for information purposes only and do not supersede an Owner's design decisions and methodology.

Designer Action/Considerations

This specification should be included on all projects that require the use of explosives.

The designer should determine if Utility authorities have any special measures or minimum offset distances and include them in the Contract Documents.

The designer should identify if there are site-specific conditions or environmental issues that may affect blasting design and alter monitoring requirements, pre-blast survey limits, pre-blast survey requirements, or notification limits as necessary, and include them in the Contract Documents.

The designer should provide names of Utility authorities and contacts involved in the Contract.

The designer should ensure that the General Conditions of Contract and the 100 Series General Specifications are included in the Contract Documents.

Related Ontario Provincial Standard Drawings

No information provided here.

ONTARIO
PROVINCIAL
STANDARD
SPECIFICATION

METRIC
OPSS 180
NOVEMBER 2011

GENERAL SPECIFICATION FOR THE MANAGEMENT OF EXCESS MATERIALS

TABLE OF CONTENTS

180.01	SCOPE
180.02	REFERENCES
180.03	DEFINITIONS
180.04	DESIGN AND SUBMISSION REQUIREMENTS
180.05	MATERIALS - Not Used
180.06	EQUIPMENT - Not Used
180.07	CONSTRUCTION
180.08	QUALITY ASSURANCE - Not Used
180.09	MEASUREMENT FOR PAYMENT - Not Used
180.10	BASIS OF PAYMENT

APPENDICES

180-A	Commentary

180.01 SCOPE

This specification covers requirements for the management of excess materials.

Where the management of excess material requirements of other Ontario Provincial Standard Specifications differs from this specification, the requirements of this specification will take precedence.

180.01.01 Specification Significance and Use

This specification has been developed for use in provincial- and municipal-oriented Contracts. The administration, testing, and payment policies, procedures, and practices reflected in this specification correspond to those used by many municipalities and the Ontario Ministry of Transportation.

Use of this specification or any other specification shall be according to the Contract Documents.

180.01.02 Appendices Significance and Use

Appendices are not for use in provincial contracts as they are developed for municipal use, and then, only when invoked by the Owner.

Appendices are developed for the Owner's use only.

Inclusion of an appendix as part of the Contract Documents is solely at the discretion of the Owner. Appendices are not a mandatory part of this specification and only become part of the Contract Documents as the Owner invokes them.

Invoking a particular appendix does not obligate an Owner to use all available appendices. Only invoked appendices form part of the Contract Documents.

The decision to use any appendix is determined by an Owner after considering their contract requirements and their administrative, payment, and testing procedures, policies, and practices. Depending on these considerations, an Owner may not wish to invoke some or any of the available appendices.

180.02 REFERENCES

When the Contract Documents indicate that provincial-oriented specifications are to be used and there is a provincial-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.PROV, unless use of a municipal-oriented specification is specified in the Contract Documents. When there is not a corresponding provincial-oriented specification, the references below shall be considered to be to the OPSS listed, unless use of a municipal-oriented specification is specified in the Contract Documents.

When the Contract Documents indicate that municipal-oriented specifications are to be used and there is a municipal-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.MUNI, unless use of a provincial-oriented specification is specified in the Contract Documents. When there is not a corresponding municipal-oriented specification, the references below shall be considered to be the OPSS listed, unless use of a provincial-oriented specification is specified in the Contract Documents.

This specification refers to the following standards, specifications, or publications:

Ontario Provincial Standard Specifications, Construction

OPSS 206 Grading
OPSS 209 Swamp Excavation

Ontario Provincial Standard Specification, Material

OPSS 1004 Aggregates - Miscellaneous

Canadian and Provincial Statutes

Environmental Protection Act, R.S.O. 1990, c.E.19
& R.R.O. 1990, Regulation 347
GENERAL - WASTE MANAGEMENT
As amended

Transportation of Dangerous Goods Act, 1992,
S.C. 1992, c. 34

Fire Protection and Prevention Act, 1997
S.O. 1997, CHAPTER 4

180.03 DEFINITIONS

For the purpose of this specification, the following definitions apply:

Bituminous Pavement means any combination of asphaltic material and aggregate, excluding asbestos modified asphaltic material.

Commercial Waste means waste described as commercial waste in Regulation 347, under the Environmental Protection Act, Ontario.

Concrete means concrete mixtures produced with Portland cement and may include blended hydraulic cement, supplementary cement materials, spent debris and silica sand abrasive blasting media from abrasive cleaning of concrete and reinforcing steel, and concrete brick and block and associated mortar. It may include embedded steel and excludes asbestos modified Portland cement concrete mixtures.

Disposable Fill means excess material other than that disposed of at a certified disposal site and that is managed in berms and mounds and as fill other than in road embankments.

Earth means earth as defined in OPSS 206.

Excess Material means material removed under the Work specified in the Contract Documents for which management is not specified and includes surplus and unsuitable materials.

Fabricated Metal and Plastic Products means metal and plastic products such as culverts, fence materials, and guide rails. It does not include containers, other packaging materials, storage tanks, septic tanks and ancillary equipment associated with sanitary sewage systems, septic systems, and fuel or lubricant dispensing and storage systems.

Groundwater means subsurface water and water that occurs beneath the water table in soils and rock formations that are fully saturated.

Manufactured Wood means wood that is not entirely natural wood.

Masonry means clay brick and associated mortar.

Natural Wood means stumps, trunks, branches, debris from tree and shrub removal, and wood products that are not treated, coated, or glued.

Non-Hazardous Solid Industrial Waste means waste described as non-hazardous solid waste in Regulation 347, under the Environmental Protection Act, Ontario.

Re-Use means using, processing, re-processing, or recycling of excess material into a construction material or other useful product and managed by these means for the Contract and other work.

Rock means rock as defined in OPSS 206.

Subject Waste means waste defined as subject waste in Regulation 347, under the Environmental Protection Act, Ontario.

Swamp Material means swamp material as defined in OPSS 209.

Waste means excess material that is not managed by re-use, open burning, or as disposable fill and includes any excess material.

Waterbody means waterbody as defined in OPSS 182.

180.04 DESIGN AND SUBMISSION REQUIREMENTS

180.04.01 Submission Requirements

180.04.01.01 Notification of Site Selection and Property Owner Release

A copy of the completed form OPSF 180-1, Site Selection Notification for Stockpiling Materials Managed Through Re-Use, or OPSF 180-2, Site Selection Notification for Material Managed as Disposable Fill or both shall be submitted to the Contract Administrator and the property owner at least two weeks prior to the use of the property. These forms are not required for property owned by the Owner or designated for use in the Contract Documents.

At the completion of such work, a completed copy of the form OPSF 180-3, Property Owner's Release, shall be provided to the Contract Administrator.

180.04.01.02 Verification of Management by Disposal as Non-Hazardous Solid Industrial or Commercial Waste

When excess material is managed by disposal as non-hazardous solid industrial or commercial waste, a copy of the weigh ticket or receipt provided by the disposal site operator shall be submitted to the Contract Administrator on a weekly basis. When such documentation is not available, written confirmation that the waste has been received shall be obtained from the operator of the disposal site and provided to the Contract Administrator within two weeks after disposal activities are complete.

Within three weeks of the completion of all disposal activities associated with the work, a completed copy of the form OPSF 180-5, Waste Quantity Report, shall be provided to the Contract Administrator and shall account for all excess material managed by disposal as solid non-hazardous industrial or commercial waste.

180.04.01.03 Notification of Forest Resource Licensees

Forest Resource licensees identified in the Contract Documents shall be notified at least two weeks prior to commencement of open burning.

180.04.01.04 Certificate of Approval

When Certificates of Approval for a Waste Management System or a Waste Disposal Site are required, a copy of such certificate shall be supplied to the Contract Administrator prior to transporting excess material from the Working Area.

180.04.01.05 Subject Waste Documentation

For each subject waste listed in the form OPSF 180-4, Subject Waste Classification, that is being shipped from the Working Area to a waste disposal site, the following shall be completed:

a) The Contract Administrator shall be notified at least two weeks prior to the first shipment of subject waste, and at least 24 hours prior to each subsequent shipment of subject waste.

b) A Regulation 347 manifest with Part B completed by the carrier for each truckload of subject waste, shall be submitted to the Contract Administrator for Part A completion. Copies #1 and #2 of the manifest with Parts A and B completed shall be retained by the Contract Administrator and the remaining copies #3 to #6 returned to the carrier.

c) Copy #6 of the Regulation 347 manifest shall be forwarded to the Contract Administrator at the mailing address indicated on Part A of the manifest, within four weeks of the shipment of subject waste from the Working Area.

For each subject waste that is generated by the Contractor's operations and that is not listed in form OPSF 180-4, Subject Waste Classification, that is being shipped from the Working Area to a waste disposal site, the following documentation shall be provided to the Contract Administrator.

a) Prior to shipment of the subject waste:

   i. Test results from testing to determine the Regulation 347 waste class and characteristics of the subject waste from the Canadian Association for Laboratory Accreditation (CALA) accredited laboratory selected by the Contractor;
   ii. Notification from the Ministry of the Environment (MOE) Hazardous Waste Information Network (HWIN) of the registration of the subject waste to obtain a Regulation 347 Generator Registration Number (GRN); and
   iii. A duplicate of Copy #2 of the Regulation 347 manifest with Parts A and B completed and signed by the generator and carrier respectively.

b) After shipment of the subject waste:

   i. Notification of payment of all registration, manifest, and tonnage fees associated with the shipment from the MOE HWIN;
   ii. A duplicate of Copy #6 of the Regulation 347 manifest with Part C completed and signed by the receiver; and
   iii. Notification of de-activation of the Regulation 347 GRN in the MOE HWIN.

A record of all test sample numbers and sample dates shall be kept and made available to the Contract Administrator upon request.

180.04.01.06 Excess Material Audit or Inventory Document

When an excess material audit or inventory is imposed by statute or is a condition specified in the Contract Documents, a copy of the audit or inventory documents shall be provided to the Contract Administrator.

180.04.01.07 Alternative Management Condition Approvals

When certain excess material is to be managed according to the conditions approved in writing by the local District office of the Ministry of Environment of Ontario and such conditions differ from those specified in Table 1, a copy of such approval shall be provided to the Contract Administrator at least two weeks prior to commencement of the work governed by the condition.

180.07 CONSTRUCTION

180.07.01 Conditions on Management of Excess Material - General

Management of excess material shall be as described in Tables 1 and 2 and the appropriate subsections of this specification, unless prior alternative management conditions are approved in writing by the Ministry of Environment of Ontario (MOE).

When an excess material is a mixture of materials, it shall be managed in compliance with the most stringent conditions associated with any of the constituent excess material.

When excess material includes asbestos waste, the asbestos waste shall be managed as specified in the Contract Documents.

Excess materials shall not be permitted in waterbodies and sensitive areas as identified in the Contract Documents, except when re-used according to the appropriate Ontario Provincial Standard.

180.07.02 Conditions on Management by Re-Use

Management of excess material by re-use for incorporation into the work or for other designated re-use shall be as specified in the Contract Documents.

Management by re-use shall otherwise be outside the Owner's property.

Distance separations described in Table 2 do not apply for the following:

a) Re-use of excess materials for the same purpose.

b) Re-use of bituminous pavement, concrete, and masonry within a road right-of-way.

c) Re-use of concrete as aggregate in bituminous pavement.

d) Re-use of concrete as rip-rap, gabion stone, or rock protection in compliance with the requirements of OPSS 1004.

Except cutting for construction purposes, excess material consisting of manufactured wood shall not be reprocessed.

180.07.03 Conditions on Management as Disposable Fill

Management of excess material as disposable fill, including sidecasting of swamp material, within the Owner's property and on other property designated in the Contract Documents shall be as specified in the Contract Documents.

Natural wood and debris from open fires may be managed as disposable fill only within a road right-of-way or on property with a boundary common to a road right-of-way, both within the Contract limits.

Such material shall be top covered by at least 300 mm of earth or topsoil.

180.07.04 Conditions on Management by Open Burning

Management of excess material by open burning is permitted only when specified in the Contract Documents. Where management by open burning is permitted, it shall be subject to the following conditions and conducted in accordance with the Fire Protection and Prevention Act, 1997 where it applies, and with any applicable, local, municipal by-law(s):

a) A permit from the Ministry of Natural Resources (MNR) under the Fire Protection and Prevention Act, and/or applicable local or municipal by-law shall be obtained by the Contractor for open burning, as required.

b) Open burning is prohibited in areas subject to a restricted fire zone order as issued by MNR or to a smog alert advisory as issued by MOE.

180.07.05 Conditions on Management by Disposal as Non-Hazardous Solid Industrial or Commercial Waste

Management of excess material by disposal as non-hazardous solid industrial or commercial waste at receiving sites designated in the Contract Documents shall be as specified in the Contract Documents.

When receiving sites are not specified in the Contract Documents for management by disposal as non-hazardous solid industrial or commercial waste, such material shall be disposed of at sites identified by the Contractor.

Management as non-hazardous solid industrial waste or commercial waste shall be subject to the following conditions:

a) Non-hazardous solid industrial or commercial waste shall be transported from the Working Area directly to a site that has a Certificate of Approval for a Waste Disposal Site that is valid for non-hazardous solid industrial or commercial waste.

b) Non-hazardous solid industrial or commercial waste may be transported by a hauler who is engaged in other work on the Contract, without a Certificate of Approval for a Waste Management system, provided the waste is transported from the Working Area directly to the disposal site.

c) Non-hazardous solid industrial or commercial waste shall otherwise be transported by a hauler with a Certificate of Approval for a Waste Management System that is valid for the following:

   i. The entire period of the work.
   ii. The entire area within the limits of the work and the entire hauling route to the receiving site.
   iii. The equipment to be used.
   iv. Non-hazardous solid industrial or commercial waste.

180.07.06 Conditions on Management by Stockpiling

Management of excess material by stockpiling within the Owner's property and on other property designated in the Contract Documents shall be as specified in the Contract Documents.

Stockpiling shall otherwise be outside the Owner's property.

Stockpiles of bituminous pavement, concrete, and masonry shall be separated according to Table 2, unless either of the following occurs:

a) Stockpiles are located within a road right-of-way or on property with a boundary common to a right-of-way, both within the Contract limits for a period not exceeding 120 Days.

b) Stockpiles are located within a provincial or municipal works yard or in a commercially licensed pit or quarry.

For all other excess materials, where Table 1 indicates that stockpiling is subject to management conditions in Table 2, such management conditions only apply to stockpiles that are to be in place for a period exceeding 120 Days.

180.07.07 Conditions on Management by Disposal as Subject Waste

When an excess material is identified as a dangerous good waste or a subject waste in form OPSF 180-4, Subject Waste Classification, management shall be as follows:

a) Subject waste shall be carried only by a certified carrier directly to a certified waste disposal site. The carrier and waste disposal site shall have Certificates of Approval for a Waste Management System and a Waste Disposal Site, respectively, issued by the MOE that is valid for the following:

   i. The entire period of the work.
   ii. The entire area within the limits of the work and the entire haul route.
   iii. The equipment to be used.
   iv. The waste class to be managed.

b) When the subject waste is also a dangerous good as described in the Transportation of Dangerous Goods Act (TDGA), the carrier shall provide all necessary TDGA labels and placards.

c) All shipments of subject waste shall be manifested.

When an excess material generated by the Contractor's operations may be subject waste and it is not identified in form OPSF 180-4, Subject Waste Classification, the Contractor shall be responsible to manage it in accordance with the following:

a) Conduct sampling and testing using a laboratory certified by the Canadian Association of Laboratory Accreditation (CALA) selected by the Contractor to determine whether it is subject waste and to determine the Regulation 347 waste class and characteristics.

b) Register all subject waste in the MOE HWIN to obtain a Regulation 347 GRN for disposal.

c) Package and label all subject waste for transportation and disposal.

d) Arrange for shipment of all subject waste to a certified waste disposal site using a certified carrier.

e) Complete Part A of a Regulation 347 manifest including the GRN obtained from the MOE HWIN and provide the manifest to the certified carrier for completion of Part B.

f) Provide a duplicate of Copy #2 of the Regulation 347 manifest to the Contract Administrator with Parts A and B completed and signed.

g) Pay all registration, manifest and tonnage fees associated with subject waste disposal in the MOE HWIN.

h) De-activate the GRN in the MOE HWIN after shipment of all subject waste to a certified waste disposal site is complete and acceptance of the subject waste is acknowledged by the receiver completing and signing Part C of the Regulation 347 manifest.

i) Provide a duplicate of Copy #6 of the Regulation 347 manifest to the Contract Administrator upon receipt from the receiver.

Subject waste shall be carried only by a certified carrier directly to a certified waste disposal site. The carrier and waste disposal site shall have Certificates of Approval for a Waste Management System and a Waste Disposal Site, respectively, issued by the Ministry of the Environment that is valid for the following:

a) The entire period of the work.

b) The entire area within the limits of the work and the entire haul route.

c) The equipment to be used.

d) The waste class to be managed.

When the subject waste is also a dangerous good waste as described in the Transportation of Dangerous Goods Act, 1992 (TDGA), the carrier shall provide all necessary TDGA labels and placards.

When an excess material is tested and found not to be a dangerous good waste or a subject waste, it shall be managed by disposal as Non-Hazardous Solid Industrial or Commercial Waste in accordance with this specification.

180.10 BASIS OF PAYMENT

Payment for the management of excess material shall be included in the tender items requiring such management and shall include all costs associated with acquiring approvals, releases, and agreements.

Payment for the management of excess material that is subject waste generated by the Contractor's operations and not listed in form OPSF 180-4 by the Owner, and is in addition to the cost of disposal as non-hazardous, solid industrial, or commercial waste, shall be paid as Extra Work, with provisions subject to testing to verify that the excess material is subject waste.

TABLE 1
Excess Material Management Conditions

EXCESS MATERIAL DESCRIPTION	Subsection in This Specification				
	Conditions on Management by Re-Use	Conditions on Management as Disposable Fill	Conditions on Management by Open Burning	Conditions on Management by Disposal as Non-hazardous Solid Industrial or Commercial Waste	Conditions on Management by Stockpiling
EARTH	Yes	Yes	n/a	Yes	Yes
SWAMP MATERIAL	Yes	Yes TABLE 2	n/a	Yes	Yes TABLE 2
AGGREGATE	Yes	Yes	n/a	Yes	Yes
ROCK	Yes	Yes	n/a	Yes	Yes
BITUMINOUS PAVEMENT	Yes TABLE 2	Not Permitted	n/a	Yes	Yes
CONCRETE	Yes TABLE 2	Not Permitted	n/a	Yes	Yes
MASONRY	Yes TABLE 2	Not Permitted	n/a	Yes	Yes
MANUFACTURED WOOD	Yes	Not Permitted	Not Permitted	Yes	Yes TABLE 2
NATURAL WOOD	Yes	Yes TABLE 2	Yes	Yes	Yes TABLE 2
DEBRIS FROM OPEN FIRES	n/a	Yes TABLE 2	n/a	Yes	Yes TABLE 2
METAL/PLASTIC POLYSTYRENE PRODUCTS	Yes	Not Permitted	Not Permitted	Yes	Yes
SUBJECT WASTE	Subject waste shall be managed as specified in the subsection for Conditions on Management by Disposal as Subject Waste.				
MATERIALS SUSPECTED OF BEING CONTAMINATED	When excess materials that were not generated by the Contractor's operations and are not listed in form OPSF 180-4, Subject Waste Classification, are suspected of being contaminated, direction on their management shall be obtained from the Contract Administrator.				
OTHER MATERIALS	Excess materials that are not listed above shall be managed as specified in the subsection for Conditions on Management by Disposal as Non-Hazardous Solid Industrial or Commercial Waste, unless prior alternative management conditions are approved in writing by the Ministry of Environment of Ontario.				

TABLE 2
Excess Material Management Distance Separation Requirements

ADJACENT FEATURE	MINIMUM DISTANCE SEPARATION
Groundwater	2 m (Above)
Waterbodies	30 m
Water Wells	100 m
Residences	100 m

This form to be used with Ontario Provincial Standard Specification 180

SITE SELECTION NOTIFICATION FOR STOCKPILING MATERIALS MANAGED THROUGH RE-USE

Contract Information

Contract No: _____ Owner: _____

The following describes the notification process between the Owner of the Contract and the Contractor, wherein the Contractor formally notifies the Owner that agreement has been reached with a third party property owner for the stockpiling of Contract generated excess material. Such excess material, stockpiled for re-use or disposal, may be one or a combination of: earth; aggregate; swamp material; rock; concrete; masonry; bituminous pavement; natural wood; metal, plastic, and polystyrene; wood which has been treated, coated, or glued; and debris from open fires, provided the conditions on management are satisfied.

Site Information

Property Owner(s) for the subject property: _____

The subject property:

Lot _____ , Concession _____ , Township of _____

County/Region/District of _____ , Quantity and Type of Excess Material stockpiled:

_____

_____

This is to notify you, as Owner, that permission has been obtained from the property owner(s) named herein for the management of excess materials through re-use from this Contract. The property owner has signed and been provided with a copy of this form and has been advised that a Property Owner's Release Form, OPSF 180-3, will also be required. The use of this management site will comply with the following:

Conditions on Management

It is understood that materials are stockpiled to be re-used or held for disposal at a certified waste disposal site. Stockpiles of natural wood, manufactured wood, debris from open fires, and swamp material may only be located:

a) A minimum of 2 m above the level of ground water.
b) A minimum of 30 m from waterbodies.
c) A minimum of 100 m from any water wells.
d) A minimum of 100 m from residences.

Stockpiles of bituminous pavement, concrete, and masonry may only be located:

a) A minimum of 30 m from waterbodies; and
b) A minimum of 100 m from residences unless

    1. on property with a boundary common to a right-of-way, within the contract limits for a period not exceeding 120 calendar days, or
    2. such stockpiles are located within a provincial or municipal works yard or in a commercially licensed pit or quarry.

The property owner(s) agrees to sign the Property Owner's Release after the Contractor has placed the excess material on the above-noted property in accordance with the terms of this form.

These conditions do not supersede any constraints imposed on this property by Federal, Provincial or Municipal, including Conservation Authority, statute or regulations and bylaws made thereto.

Dated this _____ day of _____ 20____

_____
Print Contractor's Name & Field Representative's Name

_____
Contractor's Field Representative Signature

_____
Property Owner's Signature(s)

cc: Contract Administrator, Property Owner(s), Contractor

OPSF 180-1

This form to be used with Ontario Provincial Standard Specification 180

SITE SELECTION NOTIFICATION FOR MATERIAL MANAGED AS DISPOSABLE FILL

Contract Information

Contract No: _____ Owner: _____

The following describes the notification process between the Owner of the Contract and the Contractor, wherein the Contractor formally notifies the Owner that agreement has been reached with a third party property owner for the disposition of Contract generated excess material. Such excess material, managed as disposable fill, shall be limited to one or a combination of: earth, aggregate, swamp material, rock, natural wood, and debris from open fires, provided the conditions on management are satisfied.

Site Information

Property Owner(s) for the subject property: _____

The subject property:

Lot _____, Concession _____, Township of _____

County/Region/District of _____, Quantity and Type of Excess Material used as fill:

_____

_____

This is to notify you, as Owner, that permission has been obtained from the property owner(s) named herein for the management of excess materials from this Contract. The property owner has signed and been provided with a copy of this form and has been advised that a Property Owner's Release Form, OPSF 180-3, will also be required. The use of this management site will comply with the following:

Conditions on Management

Swamp material, natural wood, and debris from open fires managed as disposable fill will be top covered by a minimum of 300 mm of earth or topsoil. Swamp material, natural wood, and debris from open fires managed as disposable fill may only be placed:

a) A minimum of 2 m above the level of ground water.
b) A minimum of 30 m from waterbodies
c) A minimum of 100 m from any water wells
d) A minimum of 100 m from residences.

The Property Owner(s) agrees to sign the attached form of Property Owner's Release after the Contractor has placed the excess material on the above-noted property in accordance with the terms of this form.

These conditions do not supersede any constraints imposed on this property by Federal, Provincial, or Municipal, including Conservation Authority, statute or regulations and bylaws made thereto.

Dated this _____ day of _____ 20____

_____
Print Contractor's Name & Field Representative's Name

_____
Contractor's Field Representative Signature

_____
Property Owner's Signature(s)

cc: Contract Administrator, Property Owner(s), Contractor

OPSF 180-2

PROPERTY OWNER'S RELEASE

Contract No: _____

Work Description: _____

_____

I/We _____ being the owner(s) of Lot, _____

Concession _____, Township of _____, and County/Region/District of _____, verify that the Contractor for the above noted work has placed excess material from the above noted Contract on my/our property with my/our permission. I/We have signed together with the Contractor OPS Forms 180-1, Site Selection Notification for Stockpiling Materials Managed Through Re-Use, or 180-2, Site Selection Notification for Material Managed as Disposable Fill, or both, that describe Conditions on Management, and have been assured by the Contractor that these conditions have been met.

Where materials are managed as disposable fill, I/we agree to be responsible for any subsequent relocation and management of the material so placed.

Where materials are to be stockpiled, I/We agree that the stockpile(s) will be removed by the date(s) herein noted.

I/We hereby release the Owner and the Contractor in respect of the activities of the Contractor carried out in accordance with this release.

Dated this _____ day of _____ 20____

_____
Property Owner's Signature(s)

_____
Print Contractor's Name & Field Representative's Name

_____
Contractor's Field Representative Signature

cc: Contract Administrator, Property Owner(s), Contractor

OPSF 180-3

SUBJECT WASTE CLASSIFICATION

The following named waste is to be disposed of as a subject waste:

_____

The classification of the above waste is as follows:

Shipping Name of Waste	
Reg. 347 Classification	
TDGA Identification No. (PIN)	
TDGA Classification	
TDGA Packaging Group	
Volume of Waste	
Container Type and Condition	

The following named waste is to be disposed of as a subject waste:

_____

The classification of the above waste is as follows:

Shipping Name of Waste	
Reg. 347 Classification	
TDGA Identification No. (PIN)	
TDGA Classification	
TDGA Packaging Group	
Volume of Waste	
Container Type and Condition	

cc: Contract Administrator, Property Owner(s), Contractor

OPSF 180-4

This form to be used with Ontario Provincial Standard Specification 180

WASTE QUANTITY REPORT

For Solid Non-Hazardous Industrial and Commercial Waste

Contract No: _____

Contractor: _____

Material Description	Location of Disposal Site and Certificate of Approval Number	Quantity of Materials

cc: Contract Administrator, Property Owner(s), Contractor

OPSF 180-5

Appendix 180-A, November 2011
FOR USE WHILE DESIGNING MUNICIPAL CONTRACTS

Note: This is a non-mandatory Commentary Appendix intended to provide information to a designer, during the design stage of a contract, on the use of the OPS specification in a municipal contract. This appendix does not form part of the standard specification. Actions and considerations discussed in this appendix are for information purposes only and do not supersede an Owner's design decisions and methodology.

Designer Action/Considerations

The designer should specify the following in the Contract Documents:

- Property available for stockpiling for re-use and disposable of fill, or management as disposable fill of excess materials. (180.04.01.01)

- Forest resource licensees within the Contract limits. (180.04.01.03)

- Excess material audit or inventory when required. (180.04.01.06)

- Management conditions of materials with asbestos waste. (180.07.01)

- Identification of waterbodies and sensitive areas. (180.07.01)

- Management by re-use. (180.07.02)

- Management of disposable fill within the Owner's property and on other property. (180.07.03)

- Conditions on management by open burning. (180.07.04)

- Management by disposal of non-hazardous solid industrial or commercial waste. (180.07.05)

- Receiving sites. (180.07.05)

- Management by stockpiling within the Owner's property or on other property. (180.07.06)

- Management of dangerous good waste or subject waste. (180.07.07)

The designer should ensure that the General Conditions of Contract and the 100 Series General Specifications are included in the Contract Documents.

Related Ontario Provincial Standard Drawings

No information provided here.

CONSTRUCTION SPECIFICATION FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

TABLE OF CONTENTS

805.01 SCOPE

805.02 REFERENCES

805.03 DEFINITIONS

805.04 DESIGN AND SUBMISSION REQUIREMENTS - Not Used

805.05 MATERIALS

805.06 EQUIPMENT - Not Used

805.07 CONSTRUCTION

805.08 QUALITY ASSURANCE - Not Used

805.09 MEASUREMENT FOR PAYMENT

805.10 BASIS OF PAYMENT

APPENDICES

805-A Commentary

805.01 SCOPE

This specification describes the requirements for the installation, maintenance, and removal of temporary erosion and sediment control measures.

805.01.01 Specification Significance and Use

This specification has been developed for use in provincial- and municipal-oriented Contracts. The administration, testing, and payment policies, procedures, and practices reflected in this specification correspond to those used by many municipalities and the Ontario Ministry of Transportation.

Use of this specification or any other specification shall be according to the Contract Documents.

805.01.02 Appendices Significance and Use

Appendices are not for use in provincial contracts as they are developed for municipal use, and then, only when invoked by the Owner.

Appendices are developed for the Owner's use only.

Inclusion of an appendix as part of the Contract Documents is solely at the discretion of the Owner. Appendices are not a mandatory part of this specification and only become part of the Contract Documents as the Owner invokes them.

Invoking a particular appendix does not obligate an Owner to use all available appendices. Only invoked appendices form part of the Contract Documents.

The decision to use any appendix is determined by an Owner after considering their contract requirements and their administrative, payment, and testing procedures, policies, and practices. Depending on these considerations, an Owner may not wish to invoke some or any of the available appendices.

805.02 REFERENCES

When the Contract Documents indicate that provincial-oriented specifications are to be used and there is a provincial-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.PROV, unless use of a municipal-oriented specification is specified in the Contract Documents. When there is not a corresponding provincial-oriented specification, the references below shall be considered to be to the OPSS listed, unless use of a municipal-oriented specification is specified in the Contract Documents.

When the Contract Documents indicate that municipal-oriented specifications are to be used and there is a municipal-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.MUNI, unless use of a provincial-oriented specification is specified in the Contract Documents. When there is not a corresponding municipal-oriented specification, the references below shall be considered to be the OPSS listed, unless use of a provincial-oriented specification is specified in the Contract Documents.

This specification refers to the following standards, specifications, or publications:

Ontario Provincial Standard Specifications, Construction

OPSS 206 Grading
OPSS 518 Control of Water from Dewatering Operations
OPSS 804 Seed and Cover

Ontario Provincial Standard Specifications, Material

OPSS 1004 Aggregates - Miscellaneous
OPSS 1801 Corrugated Steel Pipe Products
OPSS 1840 Non-Pressure Polyethylene Plastic Pipe Products
OPSS 1860 Geotextiles

Canadian and Provincial Statutes

Ontario Water Resources Act, R.S.O. 1990, c. 0.40

Canadian General Standards Board (CGSB)

148.1 No 7.3-92	Methods of Testing Geosynthetics and Geomembranes - Grab Tensile Test for Geotextiles
148.1 No 10-94	Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size

805.03 DEFINITIONS

For the purpose of this specification, the following definitions apply:

Diversion Ditch means a temporary channel to intercept and convey overland flow away from areas of disturbed or erodible soil and to minimize erosion of slopes from sheet flow.

Earth means as defined in OPSS 206.

Erosion means the physical removal or detachment of soil particles from an earth surface, followed by the transport of detached particles to another location by the action of a mobile agent including rain, flowing water, wind, equipment and vehicles.

Fibre Roll means an assembled or commercially available flexible, tubular structure that provides sediment control and may provide run-off filtration and includes wattles, filter socks and filter berms.

High Water Level means the highest point on the bank or floodplain of a waterbody where the water level reaches during high flow events or periods.

Riparian Vegetation means vegetation within 30 m of a waterbody.

Sediment means soil particles detached from an earth surface by erosion.

Waterbody means any permanent or intermittent, natural or constructed body of water including lakes, ponds, wetlands and watercourses, but does not include sewage works as defined in the Ontario Water Resources Act.

Waterbody Bank means the slope on or adjacent to a waterbody from the normal water level to the top of slope.

Watercourse means a stream, creek, river, or channel including ditches, in which the flow of water is permanent, intermittent, or temporary.

805.05 MATERIALS

805.05.01 Straw and Straw Bales

Straw shall be either wheat or oat straw.

Straw bales shall be dry and firm, be tied tightly in at least two places, show no evidence of straw or tie decay, and be free of sediment. They shall be of agricultural, rectangular formation and dimensions, as specified in the Contract Documents.

805.05.02 Geosynthetics

805.05.02.01 Geotextile

Geotextile shall be free of holes, tears, and punctures.

805.05.02.02 Silt Fence Geotextile

Geotextile for silt fence shall be according to OPSS 1860, Table 3.

Geotextile for silt fence may be separate from the stakes used to install it as a sediment barrier.

805.05.02.03 Berm Barrier and Rock Flow Check Dam Geotextile

Geotextile for berm barriers and rock flow check dams shall be a woven, Class II geotextile according to OPSS 1860. The filtration opening size (FOS) shall be no greater than 300 μm.

805.05.02.04 Turbidity Curtain Geosynthetic

Turbidity curtain geosynthetics shall have a grab tensile strength of at least 990 N, meeting CAN/CGSB 148.1, No. 7.3 and be one of geotextile or geomembrane.

Geotextile shall be a woven material. The filtration opening size (FOS) shall be no greater than 300 μm, meeting CAN/CGSB 148.1, No. 10.

Geomembrane shall be a low-permeability synthetic material or a geotextile impregnated with elastomeric spray.

805.05.02.05 Filter Bags

Geotextile for filter bags shall be non-woven, polypropylene, Class I according to Table 1 of OPSS 1860 unless otherwise specified in the Contract Documents.

805.05.03 Plastic Sheeting

Plastic sheeting used to wrap berm barriers or other sediment control measures shall be 6 mm polyethylene of maximum available width.

805.05.04 Stakes

Stakes shall be of sufficient strength and length to satisfy control measure installation, performance and maintenance requirements.

805.05.05 Control Measure Support

Control measure support for heavy-duty silt fence barrier shall be a separate product or one bonded to silt fence geotextile and be either plastic snow fence mesh, 0.81 mm diameter galvanized wire mesh or 1.63 mm diameter galvanized steel fence with a 5 cm by 10 cm weave and a 0.91 m height.

When a heavy-duty silt fence barrier is installed using a product manufactured with the control measure support bonded to the geotextile it shall be installed with the geotextile on the upstream side or front of the control measure support.

805.05.05.01 Posts

Posts to support heavy duty wire-backed silt fence barriers shall be metal T-posts. Metal ties shall be used to secure the silt fence to the metal T-posts.

805.05.06 Berm Barriers

Berm barriers shall be constructed using earth, sand, gravel, brush or compost.

805.05.07 Sandbags

Sandbags shall be made from heavy gauge plastic, agricultural burlap, or silt fence geotextile. Heavy gauge plastic shall contain stabilizers or inhibitors resistant to deterioration by ultraviolet radiation. Sandbags shall be filled with clean sand, 19 mm gravel or 6 mm pea gravel, containing no silt or clay.

805.05.08 Fibre Rolls

Fibre rolls shall be of a consistent internal thickness with even fibre distribution throughout the roll.

Fibre rolls shall be covered on the outside with an open-weave, biodegradable and photodegradable mesh or netting that securely contains the fibres within the rolls.

Fibre rolls shall be filled with 100% organic, biodegradable material such as shredded straw, wood fibres or compost and may contain seed.

805.05.09 Turbidity Curtain Hardware

805.05.09.01 Floatation

Turbidity curtain floatation shall be a material that has sufficient buoyancy to provide the curtain with continuous support, and a minimum of freeboard as specified in the Contract Documents.

805.05.09.02 Load Lines

Turbidity curtain load lines shall be 8 mm diameter steel cable or 19 mm diameter nylon or polypropylene rope.

805.05.09.03 Ballast

Turbidity curtain ballast shall be 8 mm steel chain.

805.05.09.04 Anchors

Turbidity curtain anchors shall be mushroom or kedge anchors with a minimum mass of 34 kg for firm mud bottoms or self-burying anchors with a minimum mass of 5 kg for sandy bottoms.

805.05.09.05 Mooring Buoys

Turbidity curtain mooring buoys shall have provision for the mooring line to be securely attached and be sufficiently buoyant to remain afloat under normal load conditions.

805.05.09.06 Mooring Lines

Turbidity curtain mooring lines shall be 19 mm diameter nylon or polypropylene rope.

805.05.09.07 Adjustment Lines

Turbidity curtain adjustment lines shall be 13 mm diameter nylon or polypropylene rope.

805.05.10 Rock

Rock for rock flow check dams shall be according to the requirements for rip-rap and gabion stone according to OPSS 1004.

805.05.11 Corrugated Pipe

Corrugated pipe slope drains shall be non-perforated, corrugated steel pipe according to OPSS 1801 or polyethylene plastic pipe according OPSS 1840. Pipe diameter shall be as specified in the Contract Documents.

805.05.12 End Sections

End sections for the inlet and outlet of slope drains shall be according to OPSS 1801, regardless of the material type of the pipe used.

805.05.13 Erosion Control Blankets

Erosion control blankets for diversion ditches shall be as specified in OPSS 804.

805.07 CONSTRUCTION

805.07.01 Operational Constraints

805.07.01.01 Retention of Riparian Vegetation

The area over which vegetation is removed on site shall affect no more than one third (1/3) of the total woody vegetation in the right-of-way within 30 m of the high water level of any waterbody unless otherwise specified in the Contract Documents.

805.07.01.02 Protection of Stockpiled Materials

All stockpiles of erodible construction materials and excess or surplus materials shall be protected from erosion and sediment transport within 48 hours of being built unless otherwise specified in the Contract Documents.

805.07.01.03 Dewatering

Dewatering effluent shall be controlled to prevent passage of sediment into waterbodies and other sensitive environmental features as specified in the Contract Documents or onto adjacent properties. Discharge of dewatering effluent to sediment traps for dewatering shall be controlled to avoid exceeding trap capacity and to prevent scour and washout.

Discharge of water from sediment traps for dewatering shall be according to OPSS 518.

805.07.01.04 Slope Drains

When slope drains are specified in the Contract Documents, the slope drain and associated berm barrier shall be constructed in the same day.

805.07.01.05 Turbidity Curtains and Cofferdams

Equipment shall not be operated in a waterbody outside a turbidity curtain or cofferdam other than hand held equipment or boats.

805.07.01.06 Construction and Removal of Measures

The construction and removal times for temporary erosion and sediment control measures shall be as specified in the Contract Documents.

805.07.02 Light-Duty Sediment Barriers, General

Light-duty sediment barriers are light-duty straw bale barriers, light-duty silt fence barriers, or light duty fibre roll barriers.

Light-duty sediment barriers shall be constructed as specified in the Contract Documents.

Light-duty sediment barriers shall not be installed in or across waterbodies.

When the Light-Duty Sediment Barriers item is specified in the Contract Documents, any light-duty sediment barriers may be used. When a specific light-duty sediment barrier is specified in the Contract Documents, there shall be no option of substitution for the control measure.

Light-duty sediment barriers shall include protection placed against the downslope side at the low points of the barrier so that any overflow of the barrier is prevented from causing soil scour and erosion.

805.07.02.01 Light-Duty Straw Bale Barriers

Light-duty straw bale barriers shall be constructed as specified in the Contract Documents.

When specified to be installed around catch basins, straw bales shall be placed completely around catch basins and ditch inlets without gaps. When a double row of straw bales is specified in the Contract Documents, the straw bales shall be placed such that the joints between the straw bales of each row are not in-line with the joints of the straw bales of the adjacent row.

Stakes securing the bales shall be driven through the bales without breaking the bale ties or otherwise disturbing bale firmness and shape.

Maintenance shall include the replacement of each bale at intervals not exceeding 45 Days.

805.07.02.02 Light-Duty Silt Fence Barriers

Light-duty silt fence barriers shall be constructed as specified in the Contract Documents.

Light-duty silt fence barriers shall not be used for perimeter control or property line delineation unless specified in the Contract Documents.

Light-duty silt fence barriers shall be installed within a trench excavated along the contour of the ground such that the elevation of the above ground portion of the fence is the same along its entire length except at the ends. Light-duty silt fence barriers shall be installed without breaks or gaps along their entire length. Light-duty silt fence barriers shall only be installed on flat ground with a minimum offset of 2 m from the toe of the slope being protected. When a longer sediment barrier is required, another light-duty silt fence barrier shall be installed as specified in the Contract Documents.

The geotextile shall be attached firmly, without sagging, to the upslope side of the stakes. Stakes shall be spaced to ensure the geotextile remains vertical. Where the geotextile is joined to provide a continuous run, the ends shall be overlapped a minimum of 500 mm and securely fastened to the stakes using cable ties or soft wire at the top of the geotextile only. The geotextile shall be angled upslope at the ends of each run in a “J” pattern and so that the ends are at a higher elevation than the bottom of the run.

When geotextile is supplied without stakes attached, the geotextile shall be installed into the trench in the ground first, the stakes shall be driven into the ground behind the geotextile, and the geotextile shall be attached to the upslope side of the stakes using cable ties or soft wire at the top of geotextile only.

805.07.02.03 Light-Duty Fibre Roll Barriers

Light-duty fibre roll barriers shall be sized and constructed as specified in the Contract Documents.

Light-duty fibre roll barriers shall be installed along the contour of the ground into trenches that have been excavated into the soil perpendicular to the slope face to a depth of approximately one half the roll diameter and width across the width of the slope.

Any rills and gullies shall be filled in where light-duty fibre roll barriers are to be installed. Light-duty fibre roll barriers shall only be installed on flat ground with a minimum offset of 2 m from the toe of the slope being protected. When a longer sediment barrier is required, another light-duty fibre roll barrier shall be installed tightly butted against the first one.

Light-duty fibre roll barriers shall be installed so that their base is in continuous contact with the underlying soil along their entire length without gaps and angled upslope at each end run in a “J” pattern. The ends of adjacent fibre roll segments shall be tightly butted against each other and shall not be overlapped vertically or horizontally.

A metal bar shall be used to make pilot holes perpendicular to the slope face through the centre of the fibre rolls as specified in the Contract Documents. Pilot holes shall also be made at the ends of each fibre roll segment angled towards the next abutting fibre roll to hold adjacent rolls together.

Wooden stakes shall be driven into the pilot holes as specified in the Contract Documents.

Soil excavated from the trenches shall be placed along the upslope side of the fibre rolls and compacted into the front of the trench to minimize possible undermining by runoff.

The soil on the upslope and downslope sides of the fibre rolls shall be seeded according to OPSS 804.

805.07.03 Heavy-Duty Sediment Barriers, General

Heavy-duty sediment barriers are heavy-duty silt fence barriers, heavy-duty wire-backed silt fence barriers, berm barriers, or sandbag barriers.

Heavy-duty sediment barriers shall be constructed as specified in the Contract Documents, without gaps and without undermining to prevent sediment passage through, under, or around the barrier.

When heavy-duty sediment barriers are specified in the Contract Documents, the Contractor has the option to select any of the heavy-duty sediment barriers or any combination of them. When a specific heavy-duty sediment barrier is specified in the Contract Documents, there shall be no option of substitution for the control measure.

Heavy-duty silt fence barriers shall include control measure support placed against the downstream side at the low points of the barrier so that any overflow of the barrier is prevented from causing soil scour and erosion.

805.07.03.01 Heavy-Duty Silt Fence Barriers

Heavy-duty silt fence barriers shall be constructed as specified in the Contract Documents.

Heavy-duty silt fence barriers shall not be used for perimeter control or property line delineation unless specified in the Contract Documents.

Heavy-duty silt fence barriers shall be installed within a trench excavated along the contour of the ground such that the elevation of the bottom of the fence is the same along its entire length except at the ends. Heavy-duty silt fence barriers shall be installed without breaks or gaps along their entire length. Heavy-duty silt fence barriers shall only be installed on flat ground with a minimum offset of 2 m from the toe of

the slope being protected. When a longer sediment barrier is required, another heavy-duty silt fence barrier shall be installed as specified in the Contract Documents.

The geotextile shall be attached firmly to the upstream side of the control measure support and the stakes. Stakes shall be spaced to ensure the geotextile and the control measure support remains vertical. Where the geotextile or the control measure support is joined to itself to provide a continuous run, the ends shall be overlapped a minimum of 500 mm and securely fastened to stakes using wire ties at the top of the geotextile or the control measure support only. The geotextile and control measure support shall be angled upslope at the ends of each run in a “J” pattern and so that the ends are at a higher elevation than the bottom of the run.

When geotextile is supplied without the control measure support or stakes attached, the control measure support shall be installed into the trench in the ground first, the geotextile shall be installed into the trench on the upslope side of the control measures support, the stakes shall be driven into the ground behind the geotextile and the control measure support, and the geotextile and control measure support shall be attached to the stakes using wire ties at the top of the geotextile and control measure support and only.

805.07.03.02 Heavy-Duty Wire-Backed Silt Fence Barriers

Heavy-duty wire-backed silt fence barriers shall be constructed as specified in the Contract Documents.

Heavy-duty wire-backed silt fence barriers shall not be used for perimeter control or property line delineation unless specified in the Contract Documents.

Heavy-duty wire-backed silt fence barriers shall be installed in a trench excavated along the contour of the ground such that the elevation of the bottom of the fence is the same along its entire length except at the ends. Heavy-duty wire-backed silt fence shall be installed without breaks or gaps along their entire length. Heavy-duty wire-backed silt fence barriers shall only be installed on flat ground with a minimum offset of 2 m from the toe of the slope being protected. When a longer sediment barrier is required, another heavy-duty wire-backed silt fence barrier shall be installed as specified in the Contract Documents.

The wire control measure support shall be installed into the trench in the ground. The geotextile shall be installed into the trench on the upslope side of the wire control measure support. T-posts shall be installed into the ground behind the geotextile and wire control measure support and spaced to ensure the geotextile and wire control measure support remain vertical. The geotextile and the wire control measure support shall be attached securely to the T-posts using wire ties at the top of the geotextile and wire control measure support only. Where the geotextile or the wire control measure support is joined to itself to provide a continuous run, the ends shall be overlapped a minimum of 500 mm and securely fastened to T-posts using wire ties at the top of the geotextile or wire control measure support only. The geotextile wire control measure support shall be angled upslope at the ends of each run in a “J” pattern and so that the ends are at a higher elevation than the bottom of the run.

805.07.03.03 Berm Barriers

Berm barriers shall be constructed and wrapped in geotextile or plastic sheeting as specified in the Contract Documents. The geotextile or plastic sheeting shall be secured to the ground.

805.07.03.04 Sandbag Barriers

Sandbags shall be securely tied at the top.

Sandbag barriers shall be constructed as specified in the Contract Documents

Sandbags within each row shall be placed with the sides of the bags butted tightly against one another without gaps. The ends of sandbags in adjacent rows shall be butted tightly against one another without gaps.

When sandbag barriers are constructed on earth surfaces, the trench into which the sandbags are placed shall be backfilled around the sandbags to existing grade and compacted.

When sandbag barriers are to be constructed on sod, erosion control blanket, existing turf, or bedrock, they shall be placed so there are no gaps between the sandbags and the underlying surface.

Sandbag barriers shall be maintained with undamaged bags that are firmly seated.

805.07.04 Fibre Roll Grade Breaks

Fibre roll grade breaks shall be constructed as specified in the Contract Documents.

Fibre rolls shall be installed horizontally starting from the toe of the slope and working up to the top of the slope Any rills and gullies on the slope face shall be filled in as the fibre rolls are installed.

Fibre rolls shall be installed along the contour of the ground into trenches that have been excavated into the soil perpendicular to the slope face and width across the slope.

Fibre rolls shall be installed so that their base is in continuous contact with the underlying soil along their entire length without gaps and angled upslope at each end run in a “J” pattern. The ends of adjacent fibre roll segments shall be tightly butted up against each other and shall not be overlapped vertically or horizontally.

A metal bar shall be used to make pilot holes perpendicular to the slope face through the centre of the fibre rolls as specified in the Contract Documents. Pilot holes shall also be made at the ends of each fibre roll segment angled towards the next abutting fibre roll to hold adjacent rolls together.

Wooden stakes shall be driven into the pilot holes perpendicular to the slope face to secure the fibre rolls to the slope along their entire length. Additional stakes shall be driven into the fibre rolls along the downslope side at every grade change or if soils are very loose and uncompacted or the slope is steep.

Soil excavated from the trenches shall be placed along the upslope side of the fibre rolls and well compacted into the front of the trench to minimize possible undermining by runoff.

The soil on the upslope and downslope sides of the fibre rolls shall be seeded as specified in the Contract Documents.

805.07.05 Flow Check Dams - General

Flow check dams are straw bale flow check dams, fibre roll flow check dams, sandbag flow check dams, or rock flow check dams.

Flow check dams shall be constructed as specified in the Contract Documents such that the spillway level of the downstream flow check dam is the same as the base of the upstream flow check dam when they are specified in series. Flow check dams shall be constructed without gaps and without undermining to prevent sediment passage through, under, or around the flow check dam.

When the Flow Check Dams item is specified in the Contract Documents, any of the flow check dams or any combination of them may be used. When a specific flow check dam is specified in the Contract Documents, there shall be no option of substitution for the control measure.

Flow check dams shall include protection placed against the downstream side at the lowest point of the flow check dam so that any overflow of the flow check dam is prevented from causing soil scour and erosion.

805.07.05.01 Straw Bale Flow Check Dams

Straw bale flow check dams shall be constructed as specified in the Contract Documents and shall be replaced every 45 days.

805.07.05.02 Fibre Roll Flow Check Dams

Fibre roll flow check dams shall be constructed as specified in the Contract Documents.

805.07.05.03 Sandbag Flow Check Dams

Sandbag flow check dams shall be constructed as specified in the Contract Documents.

805.07.05.04 Rock Flow Check Dams

Rock flow check dams shall be constructed as specified in the Contract Documents.

805.07.06 Sediment Traps

Sediment traps shall be constructed as specified in the Contract Documents to prevent sediment passage from the upstream to the downstream side of the trap and so that the majority of the sediment is collected in the excavated basin.

Sediment traps shall be constructed as a single control measure consisting of an excavated basin and a rock flow check dam.

A temporary fence shall be erected around the sediment trap to restrict public access.

805.07.07 Slope Drains

Slope drains shall be constructed as specified in the Contract Documents.

Slope drains shall be constructed as a single control measure consisting of a corrugated pipe, two end sections including an inlet and an outlet, and a sediment trap constructed at the outlet end of the pipe.

The pipe inlet shall be placed through a berm barrier in such a manner that flow is directed to the pipe inlet without scouring of the berm. The toe plate of the inlet end section shall be fully imbedded into the ground surface.

Pipes shall be maintained in place without gaps and without undermining so that water is conveyed from the upstream side of the berm and collected in the sediment trap.

805.07.08 Diversion Ditches

Diversion ditches shall be constructed as specified in the Contract Documents.

When diversion ditches are specified to be lined with rolled erosion control blanket along their entire length it shall be according to OPSS 804.

Flow check dams shall be installed at regular intervals along the entire length of diversion ditches as specified in the Contract Documents.

Where diversion ditches are specified to be lined with rip-rap or granular it shall be according to OPSS 1004.

805.07.09 Sediment Traps for Dewatering

Sediment traps for dewatering shall be constructed as specified in the Contract Documents.

Sediment traps for dewatering shall be constructed a minimum of 30 m away from waterbodies or as far away as practicable from the top of the bank of any waterbody.

The shape of the excavated basin may be varied to suit the characteristics of the area surrounding it.

The sediment barrier and rock flow check dam shall be constructed as specified in the Contract Documents.

Construction of the sediment barrier shall be according to the requirements for light-duty sediment barriers with the following exceptions:

a) End runs are not required.

b) The rock flow check dam shall be located at the low point of the light-duty sediment barrier.

A temporary fence shall be erected around the sediment trap to restrict public access.

Discharge of water from sediment traps for dewatering shall be according to OPSS 518.

805.07.10 Filter Bags

Filter bags, hoses and pumps shall be sized appropriately to the volume as specified in the Contract Documents of water to be filtered. Bags shall have a FOS as specified in the Contract Documents.

Filter bags shall be situated in a vegetated area or placed on a permeable surface on a slight slope with the opening of the bag facing upslope a minimum of 30 m away from waterbodies or as far as practicable from the top of the bank of any waterbody.

The opening of the filter bag shall be securely attached with mechanical connections to the discharge hose using commercially available hose couplers and placed in the retention facility to be dewatered.

Discharge of water from filter bags shall be according to OPSS 518.

805.07.11 Turbidity Curtains

Turbidity curtains shall be constructed as specified in the Contract Documents. Turbidity curtains shall be free of tears and gaps, and the bottom edge of the curtain shall be continuously in contact with the waterbody bed so that sediment passage from the enclosed area is prevented.

Turbidity curtains shall be constructed according to the following:

a) Breaks may be made in the lower sleeve to facilitate pulling of the ballast, provided they are a maximum 100 mm in size and spaced at minimum 3 m intervals.

b) Where turbidity curtain geosynthetic is joined to provide a continuous run, the sections shall be connected to provide a continuous seal to prevent the escape of turbid water between the sections.

c) The turbidity curtain shall be of sufficient width to account for water depth and wave action.

d) The turbidity curtain shall be prepared for installation by furling and tying securely with furling ties every 1.5 m for the entire length of the curtain.

e) Anchor locations shall be established as necessary to maintain the turbidity curtain in place and functioning.

The sequence of installation shall be according to the following:

a) Tie-downs shall firmly anchor the turbidity curtain to the shoreline.

b) One end of the furled curtain shall be firmly attached to the upstream tie-down.

c) The furled curtain shall be launched and placed.

d) The other end of the furled curtain shall be attached to the downstream tie-down.

e) Each anchor shall be attached to the turbidity curtain load line with a mooring line.

f) Mooring buoys shall be attached to the mooring line at a distance of 1 m from the load line to keep the turbidity curtain in place at locations where it changes direction.

g) The furling ties shall be released to allow the turbidity curtain ballast to sink to its maximum depth.

h) The location and depth of the ballast shall be adjusted as necessary using the adjustment lines.

Equipment is permitted in the working area enclosed by the turbidity curtain.

Folds in the turbidity curtain that form next to the floatation collar shall be regularly monitored and cleared of collected sediment.

805.07.12 Cofferdams

Cofferdams shall be constructed as specified in the Contract Documents to:

a) Isolate the working area from the waterbody.

b) Prevent the release of sediment and debris into the surrounding waterbody.

Equipment is permitted in the working area enclosed by the cofferdam.

805.07.13 Monitoring

All temporary erosion and sediment control measures shall be monitored to ensure they are in effective working order. Monitoring shall be once a week, at minimum, prior to any forecast rain event and following any rain event.

805.07.14 Maintenance

All temporary erosion and sediment control measures constructed under this specification shall be maintained in an effective, functioning, stable condition.

805.07.15 Sediment Removal

The work shall consist of the removal and management of accumulated sediment.

Sediment that is accumulated by the temporary erosion and sediment control measures shall be removed in a manner that avoids escape of the sediment to the downstream side of the control measure and avoids damage to the control measure. Sediment shall be removed to the level of the grade existing at the time the control measure was constructed and be according to the following:

a) For light-duty sediment barriers and flow check dams, accumulated sediment shall be removed once it reaches the lesser of the following:

    i. A depth of one-half the effective height of the control measure. For flow check dams, the effective height shall be determined relative to the lowest point of the flow check dam.
    ii. A depth of 300 mm immediately upstream of the control measure.

b) For heavy-duty sediment barriers, sediment traps, and sediment traps for dewatering, accumulated sediment shall be removed once it reaches one-half the effective height or depth of the control measure.

c) For all control measures, accumulated sediment shall be removed as necessary to perform maintenance repairs.

d) Accumulated sediment shall be removed immediately prior to the removal of the control measure.

805.07.16 Control Measure Removal

Ditch, permanent slope, and any other embankment cover specified elsewhere in the Contract Documents to be placed within the area controlled by the temporary erosion and sediment control measure shall be in place and established prior to the removal of such control measure.

Temporary erosion and sediment control measures shall be removed and associated excavations backfilled and compacted when the measures are no longer required.

Temporary erosion and sediment control measures shall be removed in a manner that:

a) Prevents entry of equipment, other than hand-held equipment or boats, to any waterbody.

b) Prevents release of sediment and debris to any waterbody.

Prior to removal of the in-water control measures, the area enclosed by turbidity curtains and cofferdams shall be cleaned of all debris. For cofferdams, accumulated sediment shall be removed prior to removal of the sediment control measure.

Any seeding and mulching, temporary cover, sod, other surface application, or original turf cover disturbed by removal or backfilling of erosion and sediment control measures and removal of accumulated sediment, shall be brought to final grade and restored as specified in the Contract Documents.

805.07.17 Management of Excess Material

Management of excess material shall be according to the Contract Documents.

805.07.18 Protection of Waterbodies and Waterbody Banks

Protection of waterbodies and waterbody banks shall be as specified in the Contract Documents.

805.09 MEASUREMENT FOR PAYMENT

805.09.01 Actual Measurement

805.09.01.01 Light-Duty Sediment Barriers
Light-Duty Straw Bale Barriers
Light-Duty Silt Fence Barriers
Light-Duty Fibre Roll Barriers
Heavy-Duty Sediment Barriers
Heavy-Duty Silt Fence Barriers
Heavy-Duty Wire-Backed Silt Fence Barriers
Berm Barriers
Sandbag Barriers
Fibre Roll Grade Breaks

Measurement shall be the length in lineal metres from end to end of the barrier constructed, maintained, and removed, following the contours of the ground.

805.09.01.02 Flow Check Dams
Straw Bale Flow Check Dams
Fibre Roll Flow Check Dams
Sandbag Flow Check Dams
Rock Flow Check Dams

For measurement purposes, a count shall be made of the flow check dams constructed, maintained, and removed.

805.09.01.03 Sediment Traps
Slope Drains
Diversion Ditches
Sediment Traps for Dewatering
Filter Bags

For measurement purposes, a count shall be made of the number of sediment traps, slope drains, diversion ditches, sediment traps for dewatering and filter bags constructed or installed, maintained, and removed. Component parts shall not be counted separately for payment.

805.09.01.04 Turbidity Curtains

Measurement of turbidity curtain shall be made in lineal metres along its length from end to end between tie-downs for each turbidity curtain installed, maintained, and removed.

805.09.01.05 Cofferdams

For measurement purposes, a count shall be made of the number of cofferdams constructed, maintained, and removed.

805.09.01.06 Sediment Removal

Measurement shall be as specified in the Contract Documents by the volume of sediment excavated in cubic meters or by the number of hours required for excavation of sediment.

805.09.02 Plan Quantity Measurement

When measurement is by Plan Quantity, such measurement shall be based on the units shown in the clauses under Actual Measurement.

805.10 BASIS OF PAYMENT

805.10.01 Light-Duty Sediment Barriers - Item
Light-Duty Straw Bale Barriers - Item
Light-Duty Silt Fence Barriers – Item
Light-Duty Fibre Roll Barriers - Item
Heavy-Duty Sediment Barriers - Item
Heavy-Duty Silt Fence Barriers – Item
Heavy-Duty Wire-Backed Silt Fence Barriers – Item
Berm Barriers - Item
Sandbag Barriers - Item
Fibre Roll Grade Breaks – Item
Flow Check Dams - Item
Straw Bale Flow Check Dams - Item
Fibre Roll Flow Check Dams - Item
Sandbag Flow Check Dams - Item
Rock Flow Check Dams – Item
Sediment Traps - Item
Slope Drains – Item
Diversion Ditches - Item
Sediment Traps for Dewatering – Item
Filter Bags - Item
Turbidity Curtains - Item
Cofferdams - Item

Payment at the Contract price for the above tender items shall be full compensation for all labour, Equipment, and Material required to do the work.

Progress payments for the temporary erosion and sediment control measures shall be made as follows:

a) 30% for initial construction.

b) 50% for maintenance.

c) 20% for removal.

805.10.02 Sediment Removal - Item

Payment at the Contract price for the above tender item shall be full compensation for all labour, Equipment, and Material to do the work.

When the Contract Documents do not have a separate item for sediment removal, payment at the Contract price for the appropriate tender item for the installation of the sediment control measures shall be full compensation for all labour, Material, and Equipment to do the work of sediment removal.

Appendix 805-A, November 2015
FOR USE WHILE DESIGNING MUNICIPAL CONTRACTS

Note: This is a non-mandatory Commentary Appendix intended to provide information to a designer, during the design stage of a contract, on the use of the OPS specification in a municipal contract. This appendix does not form part of the standard specification. Actions and considerations discussed in this appendix are for information purposes only and do not supersede an Owner's design decisions and methodology.

Designer Action/Considerations

The designer should specify the following in the Contract Documents:

- Installation and removal times for temporary erosion and sediment control measures. (805.07.01.06)

- Grading requirements for control measure removal. (805.07.16)

- Sediment removal measurement for payment. (805.09.01.06)

The designer should determine the need for barrier installation. The desirable slope grade is maximum 5%. (805.07.02 and 805.07.03)

The designer should determine the following and, if they are required, the requirements should be included in the Contract Documents:

- Sensitive environmental features. (805.07.01.03)

- The need for a specific light-duty sediment barrier. Where the light-duty sediment barrier is to be built using fibre rolls, the diameter of the fibre rolls to be used and whether and how they may be stacked vertically. (805.07.02)

- The type of seed mix to be applied to the upslope and downslope sides of fibre roll grade breaks. (805.07.02.03)

- The need for a specific heavy-duty sediment barrier. Where the heavy-duty sediment barrier is to be built using fibre rolls, the diameter of the fibre rolls to be used and whether and how they may be stacked vertically. (805.07.03)

- The need for wire backing for a heavy-duty silt fence barrier. (805.07.03.02)

- The need for fibre roll grade breaks and the number, diameter and spacing of fibre rolls required. (805.07.04)

- The need for a specific flow check dam, the number of flow check dams in series required and the spacing of the flow check dams. (805.07.05)

- The need for a sediment trap(s). When a sediment trap is to be constructed in a ditch the outside edge shall be sized to extend beyond the base of the ditch. (805.07.06)

- The need for a slope drain(s). (805.07.07)

Identify the need for a diversion ditch(s). Design dimensions and direction of flow along contour of ground. Outlet details including scour protection and sediment control. The need for, type and number of flow check dam(s), and type of erosion control lining. (805.07.08)

- The need for a sediment trap(s) for dewatering. Ensure that sediment traps for dewatering are sized appropriately for the catchment area and that there is enough space available to construct them. (805.07.09)

- The need for filter bags, and the type, Class and filtration opening size (FOS) of geotextile to be used. (805.07.10)

- Appropriate volume of water to be filtered. (805.07.10)

- The need for a turbidity curtain(s). (805.07.11)

- The need for and design of a cofferdam(s). (805.07.12)

- Whether sediment removal is to be measured by volume or time. (805.09.01.06)

The designer should ensure that the General Conditions of Contract and the 100 Series General Specifications are included in the Contract Documents.

Related Ontario Provincial Standard Drawings

OPSD 219.100	Light-Duty Straw Bale Barrier
OPSD 219.110	Light-Duty Silt Fence Barrier
OPSD 219.120	Light-Duty Fibre Roll Barrier
OPSD 219.130	Heavy-Duty Silt Fence Barrier
OPSD 219.131	Heavy-Duty Wire-Backed Silt Fence Barrier
OPSD 219.150	Sandbag Barrier
OPSD 219.160	Fibre Roll Grade Breaks
OPSD 219.180	Straw Bale Flow Check Dam
OPSD 219.191	Fibre Roll Flow Check Dam
OPSD 219.200	Sandbag Flow Check Dam
OPSD 219.210	Temporary Rock Flow Check Dam V-Ditch
OPSD 219.211	Temporary Rock Flow Check Dam Flat Bottom Ditch
OPSD 219.220	Sediment Trap In Ditch
OPSD 219.230	Temporary Slope Drain For Sediment Trap
OPSD 219.231	Temporary Berm Barrier
OPSD 219.240	Sediment Trap for Dewatering
OPSD 219.260	Turbidity Curtain
OPSD 219.261	Turbidity Curtain Seam Detail

Traffic between Station 11+615 to 11+680 shall be diverted onto the new (future) westbound lanes (Stage 2 detour) prior to subexcavation works for the adjacent (future) eastbound lanes and/or channel realignment works.

OPERATIONAL CONSTRAINT (TRAFFIC) - Maintenance of Traffic

Special Provision

With the exception of during full highway closures required for blasting operations as described elsewhere, the Contractor shall ensure that traffic queues do not exceed 1 km throughout the Contract. At the request of the Contract Administrator, the Contractor shall demonstrate that he is complying with this requirement.

In the event that a traffic queue does exceed 1 km, the Contractor must take immediate action to clear the queue and shall adjust their operation(s) to prevent 1 km queues from re-forming.

Any costs associated with changes to the Contractor's traffic control, Traffic Control Plan and/or traffic staging layout shall be considered to be at the Contractor's expense with no additional payment.

OPERATIONAL CONSTRAINT (TRAFFIC) - Milled Surfaces

Special Provision

The Contractor shall schedule his work such that milled surfaces are not exposed to traffic for more than ten calendar days.

OPERATIONAL CONSTRAINT (ENVIRONMENTAL)

Special Provision No. ENVR0001M

Management of Excess Earth with Salt Impacts

The Contractor shall note that excess earth from highway construction projects may contain elevated concentrations of chloride and sodium and may have elevated values for Electrical Conductivity and Sodium Adsorption Ratio. For the purpose of this Contract, excess earth with salt impacts is not considered to be "contaminated" within the meaning of Table 1 in OPSS 180.

Where the Contractor manages excess earth as disposable fill, the Contractor shall take into account the possibility of salt impacts and ensure that the material is managed responsibly and in an environmentally appropriate manner.

It is not anticipated that a private landowner will need to be sought for the acceptance of excess earth materials generated during this Contract. The excess earth should be managed according to the guidelines (and placement priorities) outlined elsewhere in the Contract, with priority given to utilizing the excess earth material within the Contract Limits. However, should the Contractor wish to handle excess materials for

placement on private property, the Contractor should do so only after consultation with the Contract Administrator (CA).

Where the Contractor intends to manage the excess earth that may be salt impacted on private property, the Contractor shall make the Property Owner aware that it may be salt impacted by using the attached Property Owner's Release in place of MTO form PH-CC-183.

The Contractor is responsible for conducting such sampling and testing as may be necessary to comply with any requirements imposed by the Property Owner as a condition of accepting the excess earth.

PROPERTY OWNER'S RELEASE

Contract No: _____

Work Description: _____

_____

I/We being the owner(s) of Lot _____, Concession _____, Township of _____, and County/Region/District of _____, verify that the Contractor for the above noted work has placed excess material from the above noted Contract on my/our property with my/our permission. I/We have signed together with the Contractor MTO forms PH-CC-181, Site Selection Notification for Stockpiling Materials Managed Through Re-Use, or PH-CC-182, Site Selection Notification for Material Managed as Disposable Fill, or both, that describe Conditions on Management, and have been assured by the Contractor that these conditions have been met.

Where materials are managed as disposable fill, I/we understand that excess earth from a highway project may contain elevated concentrations of chloride and sodium and may have elevated values for Electrical Conductivity and Sodium Adsorption Ratio and I/we agree to be responsible for any subsequent relocation and management of the material so placed.

Where materials are to be stockpiled, I/we agree that the stockpile(s) will be removed by the date(s) herein noted.

I/We hereby release the Owner and the Contractor in respect of the activities of the Contractor carried out in accordance with this release.

Dated this _____ day of _____ 20____

_____
Property Owner's Signature

_____
Print Contractor's Name & Field Representative's Name

_____
Contractor's Field Representative Signature

cc: Contract Administrator, Property Owner(s), Contractor

OPERATIONAL CONSTRAINT (ENVIRONMENTAL) – Channel Realignments

Special Provision

The Contractor is to be made aware that any newly constructed watercourse realignment areas have to be verified as stable by the Contract Administrator (CA) prior to opening up to the watercourse. The Contractor must open up the area during the timing window as outlined elsewhere in Contract. Direction will be provided for channel realignments by the Fisheries Contract Specialist as required (especially regarding any field fitting or connections to existing channels). The Contractor may be required to stake realignment areas prior to snowfall to ensure that the correct extents are to be excavated.

OPERATIONAL CONSTRAINT (ENVIRONMENTAL) – Migratory Bird Protection (General)

Special Provision

The Contractor shall avoid destroying nests of migratory birds.

There is a history of nesting activity possibly involving migratory birds within Culvert C4 located at Station 111+640.

Prior to any clearing operations being conducted between April 15th and August 30th, the Contractor shall ensure a qualified individual visually inspects the area for active bird nests (i.e., nests that are occupied by birds or nests that contain eggs). If active nests are observed, work will not occur in this area and the Contractor shall notify the Contract Administrator within 24 hours. The Contract Administrator will provide written direction should any additional action be required by the Contractor.

The Contractor shall not disturb or destroy the active nests, or wound or kill birds, of species protected under the Migratory Birds Convention Act, 1994 and/or Regulations under that Act.

OPERATIONAL CONSTRAINT (ENVIRONMENTAL) – General Environmental Protection Requirements

Special Provision

The Contractor is responsible for protection of people, property and the natural environment from environmental impacts and damage that may result from this contract.

Environmental protection during construction shall:

a) comply with commitments and conditions of environmental approvals, permits, exemptions, agreements, reports, and clearances provided by the owner;
b) comply with any other formal environmental approvals, permits, exemptions, agreements, reports and clearances that must be procured by the contractor in order to perform the work; and
c) be integrated with environmental and other requirements specified in the contract.

Environmental protection shall include, but not be restricted to the control of materials, equipment and construction operations in order to avoid and minimize:

a) direct physical damage;
b) sediment, noise, vibration, dust, chemical, and other emissions; and
c) interference with local use, access and passage.

Such control shall include but not be restricted to selection and management of :

a) materials, equipment and method of construction, including the management of excess and contaminated materials;
b) construction site disturbance limits; construction site access, detours and haul roads; earth aggregate and rock borrow areas; material storage and disposal areas; equipment storage areas; construction yards; and
c) timing, duration and staging of the work.

All materials used in the construction of temporary physical environmental protection measures shall remain the property of the Contractor.

OPERATIONAL CONSTRAINT (ENVIRONMENTAL) – Erosion and Sedimentation Control

Special Provision

Scope

This special provision covers the requirements for erosion and sediment control for operations other than the item specific erosion and sediment control measures of the contract, including the winter shut-down period if required.

Erosion and Sedimentation Control

A plan shall be prepared for the control of erosion and sediment. The plan shall complement the erosion and sediment control measures specified elsewhere in the contract. The plan shall be comprehensive, and shall provide descriptions and schedules, as well as sketches and/or plans and/or drawings and shall include all required materials. The plan shall be designed to control erosion and sediment for a five (5) year Design Storm Event.

Any work to correct ineffective erosion and sediment control measures, that is caused by a storm event, not exceeding that specified in this special provision, shall be at the Contractor's expense.

The Contractor will provide the Contract Administrator with a copy of the plan prior to undertaking any work covered by the plan.

Implementation, inspection, maintenance and removal of erosion and sediment control measures, identified in the plan, shall be in accordance with OPSS 805.

Materials

Materials may include, but are not limited to, those specified in OPSS 805, Construction Specification for Temporary Erosion and Sediment Control Measures. Alternative materials or methods are acceptable provided they meet industry standards and protect the environment from the impacts of erosion and sedimentation.

Payment

Except for specific environmental tender item(s) the Erosion and Sediment Control Plan, and work necessary to control erosion and sediment under the provisions of the plan, shall be included in the bid price for the contract.

OPERATIONAL CONSTRAINT (ENVIRONMENTAL) - Subject Waste

Special Provision

Where an excess material is identified as a subject waste in form OPSF 180-4, Subject Waste Classification, or through Toxicity Characteristic Leaching Procedure (TCLP) analysis, the Contractor shall obtain a valid Generator Number issued by the Ministry of the Environment, Conservation and Parks. A copy of the Contractor's Generator Number shall be provided to the Contract Administrator within 7 days prior to the transfer of such subject wastes.

AMENDMENT TO MTO GENERAL CONDITIONS OF CONTRACT, NOVEMBER 2016 - Conditions of the Working Area, and Maintaining Roadways and Detours

Special Provision No. 100F68M August 2019

GC 7.07 Condition of the Working Area

Clause GC 7.07 of the MTO General Conditions of Contract is amended by the addition of the following:

.04 Materials or Equipment shall not be stored adjacent to the edge of lanes carrying traffic within:

a) 4 m, on roadways with a posted speed equal to or greater than 70 km/h, or within

b) 4 m, on roadways with a posted speed of less than 70 km/h.

Upon permission from the Contract Administrator, the distances specified above may be reduced to a minimum of 2.5 m in medians only.

.05 The Contractor shall at no additional cost to the Owner, remove any vehicle, equipment or material which, in the opinion of the Contract Administrator, constitutes a traffic hazard or obstruction to maintenance operations.

GC 7.08 Maintaining Roadways and Detours

Clause GC 7.08 of the MTO General Conditions of Contract is amended by the addition of the following:

AMENDMENT TO OPSS 182, APRIL 2019

Special Provision No. 101F23 May 2019

Timing of In-Water Works, Oversight Requirements, and Measures to Avoid Harm to Fish

182.07.08.01 Timing of In-Water Works

Clause 182.07.08.01 of OPSS 182 is amended by the addition of the following:

In-water work where fish and/or fish habitat are present is permitted during times specified in Table A for each waterbody and station listed.

Table A
Timing of In-Water Work

Waterbody	Station	Timing Window for When In-Water Work Can Occur
Tributary of Whiteshell River #1 (C4/C5)	11+645 to 11+940; Watercourse/channel realignment/modification, culvert works	No timing window required. *Baitfish Species present. OPSS 182 applies to this watercourse*
Baubee Lake / Tributary of Whiteshell River #2 (C9)	13+430 to 13+465; Watercourse/channel realignment/modification	Winter construction – Wetland channels and watercourse channel to be cut under frozen conditions during winter months (Jan. 1 to March 15); No works in wetlands between March 16 and Dec. 31 of any given year)
	13+447; Culvert works	June 16th – March 31st
Tributary of Whiteshell River #3 (C10)	14+150; Culvert works	No timing window required *Baitfish Species present. OPSS 182 applies to this watercourse*
Tributary of Whiteshell River #4 (C11/12)	14+786 to 14+996; Watercourse/channel realignment/modification, culvert works	No timing window required *Baitfish Species present. OPSS 182 applies to this watercourse*
Tributary of Whiteshell River #5 (C13/14)	15+442 to 15+507; Watercourse/channel realignment/modification, culvert works	No timing window required *Baitfish Species present. OPSS 182 applies to this watercourse*

182.07.08.05 Fisheries Specialist Services

Clause 182.07.08.05 of OPSS 182 is amended by deleting bullet d) and replacing it with the following:

d) Be on-site to inspect and confirm the proper installation, functioning and decommissioning (as appropriate) of all temporary and permanent mitigation measures and, where applicable, any other monitoring and reporting conditions of a Fisheries Act authorization, Endangered Species Act permit, or Species at Risk Act permit as specified in Table B, including providing field fit advice and necessary corrective actions for issues of non-compliance;

Table B
Qualified Fisheries Contracts Specialist - Oversight Requirements

Waterbody	Mitigation Measures and Monitoring Conditions of an Authorization / Permit	Measures to Protect Fish and Fish Habitat	Minimum Frequency
N/A	The Fisheries Contracts Specialist (FCS) will meet with the MTO Environmental Planner within one month prior to construction at any of the waterbodies listed below. MTO will provide an overview of: • The background information including rationale behind design requirements • Identification of specific contract provisions that the FCS should be aware of during their inspections, and • Expectations related to oversight requirements	N/A	One (1) meeting (2hrs)

Tributary of Whiteshell River #1 (C4/C5) Baubee Lake / Tributary of Whiteshell River #2 (C9) Tributary of Whiteshell River #3 (C10) Tributary of Whiteshell River #4 (C11/12) Tributary of Whiteshell River #5 (C13/14)	**Channel Realignment:** The FCS shall review and discuss with the Contractor their plans including ESC, dewatering and isolation, construction, materials etc. prior to channel realignment occurring. Where necessary the FCS shall provide field fit recommendations in advance of construction. The FCS shall inspect and confirm the new channel realignment and associated features (ie. Pools, riffles, bank protection, seed/mulch, etc) are constructed as specified elsewhere in the contract documents. The FCS shall inspect and confirm channel tie-ins from the new channel realignment into the existing stream so that smooth transitions are established with the natural streambed and no sudden drops in elevations occur as specified elsewhere in the contract documents. This includes confirming proper tie-ins are established after the removal of cofferdams/channel plugs occurs. The FCS shall inspect and confirm that the site is stabilized prior to opening the new channel to the existing watercourse. **C9**- With regards to the Wetland Pond creation the FCS shall inspect and confirm the new pond, including the tie in to the existing stream, is constructed as specified elsewhere in the Contract documents. **Culvert Installation** The FCS shall inspect and confirm dewatering operations, and associated mitigation, are functioning as intended to ensure water is clean prior to being released into the watercourse.	Contract Drawings Placement of Streambed Material Item OPSS 517 OPSS 182	Prior to channel realignment for review of the Contractor's plans (1 day) During channel realignment (minimum weekly) During removal of channel plugs and/or cofferdams while opening up the new channel to the existing watercourse During creation of wetland pond (minimum weekly) During start of dewatering operations

Tributary of Whiteshell River #1 (C4/C5) Baubee Lake / Tributary of Whiteshell River #2 (C9) Tributary of Whiteshell River #3 (C10) Tributary of Whiteshell River #4 (C11/12) Tributary of Whiteshell River #5 (C13/14)	**Erosion and Sediment Control** The FCS shall inspect and confirm temporary erosion control and sediment control measures are properly installed at the identified crossings during the following activities: • C4/C5-Channel Realignment • C9- Channel realignment and Watercrossing Installation • C13/14-Channel Realignment The FCS shall suggest adjustments to correct existing measures and advise whether additional measures are necessary. **<u>Temporary Erosion Control Area (TECA)</u>** When the contractor is working within the Temporary Erosion Control Area (TECA)identified elsewhere in the contract, the FCS shall complement the monitoring requirements in ENVR005 by: • Reviewing the Contractor's plans for working in these areas, • Inspecting the TECA for potential erosion concerns, and • Providing advice to the Contractor about actions required to correct any potential erosion or erosion concerns observed, including the selection of temporary erosion control measures When an Environmental Incident occurs within a TECA, the FCS shall: • Request to see the Contractor's Environmental Incident Management Plan • Assist the Contractor with their response/plan to address the incident • Advise the Contractor and Contract Administrator on issues of non compliance and any necessary corrective actions • When an environmental incident impacts fish (eg. Potential HADD, habitat impacts from sedimentation, fish kill etc.) and the FCS shall provide the MTO Environmental Planner with a summary report to document the incident, actions taken to address the problem, and confirmation that the incident was resolved, and • Provide the MTO Environmental Planner with the *MTO Non-Compliance Summary Form*	OPSS 182 OPSS 805 SSP805F01 ENVR005 OPSS 100	During site inspections as required elsewhere within this table In response to an Environmental Incident within a TECA

Waterbodies where fish salvage is required	**Fish Salvage** The FCS shall perform fish salvage as required where Fish may be stranded by the Work or found in the work area during construction in accordance with OPSS 182.	OPSS 182	As required

AMENDMENT TO OPSS 313, NOVEMBER 2016

Special Provision No. 103F03 August 2019

OPSS 313, November 2016, Construction Specification for Hot Mix Asphalt - End Result, is deleted in its entirety and replaced with the following:

313.01 SCOPE

This specification covers the requirements for the placement, compaction, and acceptance of hot mix asphalt (HMA).

This specification also covers the requirements for the placement, compaction, and acceptance of HMA produced using warm mix asphalt (WMA) technology when the tender item title includes “Warm Mix”.

313.02 REFERENCES

This specification refers to the following standards, specifications, or publications:

Ontario Provincial Standard Specifications, Construction

OPSS 308 Tack Coat

Ontario Provincial Standard Specifications, Material

OPSS 1101 Performance Graded Asphalt Cement
OPSS 1151 Superpave and Stone Mastic Asphalt Mixtures

Ontario Ministry of Transportation Publications

MTO Laboratory Testing Manual
LS-100 Rounding-Off of Test Data and Other Numbers
LS-101 Calculation of Per Cent within Limits
LS-262 Bulk Relative Density of Compacted Bituminous Mixtures
LS-264 Theoretical Maximum Relative Density of Bituminous Paving Mixtures
LS-265 Determination of Percent Air Voids in Compacted Dense Bituminous Pavement Mixtures
LS-266 Determination of VMA in Compacted Bituminous Mixtures
LS-282 Quantitative Extraction of Asphalt Cement and Analysis of Extracted Aggregate from Bituminous Paving Mixtures
LS-292 Quantitative Determination of Asphalt Cement Content by Ignition and Analysis of Remaining Aggregate from Bituminous Paving Mixtures
LS-294 Measuring Pavement Lift Thickness
LS-306 Bulk Relative Density of Compacted Bituminous Mixtures Using Paraffin Coated Specimens