

Honouring Water:
Remediating an Anthropocentric Worldview

by

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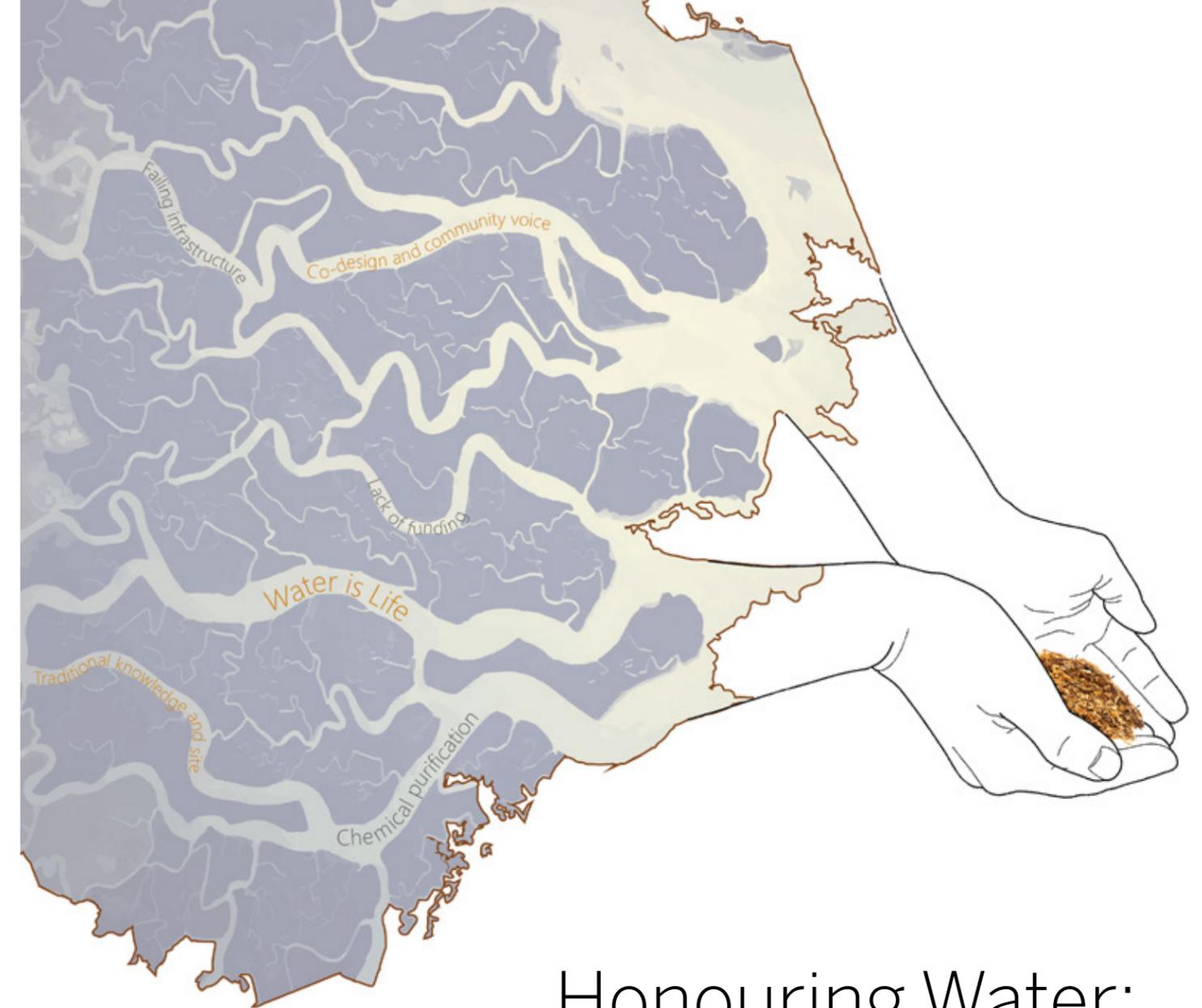
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Table of Contents

Table of Contents	vi
Abstract	viii
Acknowledgments	x
List of Figures	xi
Preface	xiv
Introduction	1
1 Anishnawbek Ways of Knowing and Being	3
Learning – Mino-Mnaamodzawin, Story, and Balance	
Manoomin – Migration Story	
Water Walkers – Josephine Mandamin-ba and the Role of Women	
2 Western Views of Water	9
The Walkerton Tragedy – Setting Regulations	
The Government of Canada – Jurisdiction in Water Governance	
Long-term Drinking Water Advisories – Unaccounted Water	
3 Existing Infrastructure in Communities	16
Funding Structure – Accountability, Control and Frugality	
Purification – Chlorination and Filtration	
Water Infrastructure professionals – OFNTSC	
4 Case Studies	19
Sherbourne Common – Canada	
Stepwells – India	
Omega Center for Sustainable Living – United States of America	
The Personhood of Water – New Zealand	

5 New Framework for Water Protection	27
Mapping – The Story of Water	
Design Method – Connections	
Tobacco Ties and Requests – Knowledge Sharing	
New Typologies of Water Treatment – Focus of Water	
6 Atikameksheng Anishnawbek	30
Community – First Nation, Population, and Associations	
Relations to Water – Territory, Drinking Water, and Vale	
Collaboration – Chief and Council, Elders, and Knowledge Carriers	
Introduction to Sites – Preliminary Studies	
7 Whitefish Lake and Halfways Creek	42
Site – Analysis	
The Land – Sharing and Learning by Community	
Programming – Biofiltration and Water Systems	
Conclusion	86
Appendices	
A – Walden Wastewater Treatment Plant	90
B – Water Filtration Artifact	94
C – Community Engagement	98
Bibliography	100

Abstract

Lack of Potable Water in First Nations communities is often portrayed negatively in the media. Framed as a Water crisis, the responsibility and failure to provide safe Water for communities is solely placed on the federal government of Canada. While colonization and enforcing these mindsets play a large part in these issues, all people are accountable for what is happening to the Water. This exploration of Water in First Nations communities considers two worldviews: Anishnawbek and Western perspectives. Western understandings of Water include implications of governance, policy, and set infrastructure within First Nations communities that measure its success based on funding models and meet regulated standards. Through ending Water advisories in communities, a surface understanding of addressing Water protection is framed through human well-being, and how to prevent further damage to human health. This perspective is very problematic when considering Anishnawbek ways of being, that value relationships and interconnections with all living beings. Water is life, it is a living entity, and has a spirit that must be respected and honoured.

Views of Water need to be reframed through an understanding of how we can respect the Water that brings us life and sustains us. We must reclaim the relationship with Water, by reconnecting community involvement in Water processes and to Water itself. As a response to the current society, Indigenous women are reasserting their role as the voice that speaks for the Water. Through leaders such as Water Walkers, there is an awareness brought to seemingly transparent issues of Water pollution and neglect, by walking around bodies of Water such as the Great Lakes. Water Walks are acts of ceremony themselves, honouring Water through prayer, song, and offerings of tobacco at every waterway that is passed, showing thanks and respect for the Water.

In order to value Anishnawbek ways of being and living, it is imperative to reassess existing political hierarchy in water governance and establish inclusive processes encompassing community voice, and the affected ecological factors of the land that is being impacted through substantial infrastructure intervention. To address the problem of Water, Water and wastewater infrastructure as they are understood presently, add large amounts of chemicals to the Water, which often results in dead Water without spirit, while undervaluing Anishnawbek perspectives and community involvement. Through an investigation of Water practices in other cultures, and case studies that address

Water through phytoremediation systems, an integration of Anishnawbek concepts, meanings, and teachings can be reflected upon in a new understanding of the value of Water through architecture systems and design. In collaboration with the Atikameksheng Anishnawbek First Nation community, located near Sudbury, Ontario, the history of Water and community will be transcribed through story. Engaging with community Elders, Knowledge Carriers, and other public figures will help in understanding the strong connections with Water prior to Water facilities, as well as mapping a small part of the land. Through a proposed framework that considers both worldviews, a new understanding of Water and architecture can begin to amend the perceptions and current realities of Water purification in First Nations communities and restore relations to Water.

Keywords

Water, Self-governance, Anishnawbek, Community, Biofiltration, Relations



Fig. 01: Teaching Lodge at Atikameksheng Anishnawbek First Nation.

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List of Figures

Figure number	Page Number
Abstract	
01. Atikameksheng Anishnawbek Teaching Lodge	ix
Introduction	
02. Junction Creek Spring Melt	2
1 Anishnawbek Ways of Knowing and Being	
03. Manoomin Harvest	4
04. Anishnawbekwe Women and Copper Vessel	5
05. Biidasige-ba's First Water Walk	6
06. Water Song and Prayer	6
07. Josephine Mandamin-ba and Elder Shirley Williams	7
08. Great Lakes Walk in Toronto	7
09. Mother Earth Water Walks Map	8
2 Western Views of Water	
10. Walkerton Pipe Swabs Test	10
11. Roles in Water Infrastructure Graphic	11
12. Long-term Drinking Water Advisories in Ontario Map	12
13. Ground Water Well Graphic	13
14. Water Treatment Plant Graphic	13
15. First Nation Water Treatment Facilities	14
3 Existing Infrastructure in Communities	
16. Funding Structure Diagram	17
4 Case Studies	
17. Sherbourne Common Water Feature	20
18. Sherbourne Common Pavilion	21
19. Sherbourne Common Children in Water Channel	21
20. Jaipur Stepwell	22
21. Gujarat Stepwell	22
22. Chand Baori Stepwell	23
23. Agrasen Ki Baoli Stepwell	23
24. OCSL Eco Machine	24
25. OCSL Wetlands and Solar Panels	25
26. OCSL Façade	25
27. OCSL Building Entry	25
28. Whanganui River	26

5	New Framework for Water Protection	
	29. Water Views Diagram	28
	30. Tobacco Tie	29
6	Atikameksheng Anishnawbek	
	31. Atikameksheng Anishnawbek First Nation and Sudbury Map	31
	32. Territory Boundary of Atikameksheng Anishnawbek Map	31
	33. Watershed Systems Diagram	32
	34. Vermilion River and Atikameksheng Anishnawbek Map	34
	35. Aquifers and Whitefish Lake Map	36
	36. Decommissioned Community Pumphouse	37
	37. City of Sudbury Meter Building	37
	38. Meeting Diagram with Julia Pegahmagabow	38
	39. Chief and Council	38
	40. Simon Lake Map	39
	41. Simon Lake Blue-green Algae Blooms	39
	42. Bridge Exiting Atikameksheng Anishnawbek	40
	43. View of Simon Lake	40
	44. View of Junction Creek	40
	45. Makada Lake Map	41
7	Whitefish Lake and Halfways Creek	
	46. Whitefish Lake	43
	47. Retrieving Fish in Net	43
	48. Whitefish Lake Depth	44
	49. Harvesting Manoomin	45
	50. Whitefish Lake Fish Species	45
	51. Site Context Map	46
	52. View from Reserve Road	47
	53. Cleared Land in Atikameksheng Anishnawbek	47
	54. Old Forestry Equipment	47
	55. Analysis Map of Halfways Creek	48
	56. View of Whitefish Lake from Culvert	49
	57. Culvert Diverting Water	49
	58. Site View from Whitefish Lake	49
	59. Site View of Boat Launch	50
	60. Site View of Whitefish Lake	50
	61. Site View from Reserve Road	50
	62. Natural Fire Pit	51
	63. Proposed Transplanted Saplings	51
	64. Communal Gathering Place Render	52
	65. Kayak Storage Render	54
	66. Path to Whitefish Lake Render	56
	67. Sacred Medicines and Herbs Planter Boxes	58
	68. Proposed Landscape Furniture	58
	69. Site Plan	59

70. Garden Planters Render	60
71. Whitefish Lake Waterfront Render	62
72. Water Advisories in Ontario Birchbark Map	64
73. Anishinaabe Migration Birchbark Map	65
74. Water System Plan and Ground Floor Plan	66
75. Deck and Gathering Space Render	68
76. South West and South East Elevations	70
77. Rain Garden Render	72
78. Axonometric Diagram of Building Construction	74
79. Structure Plan	74
80. Travel Path of Water Plan	76
81. Key Plan	78
82. Site Section Travel Path of Water	78
83. Building Section Travel Path of Water	78
84. Interior Render of Biofiltration Beds	80
85. Biofiltration Bed Section	82
86. Schematic Diagram of Water Filtration and Purification Process	82
87. Water Building Diagram	83
88. Winter Render and Trails	84

Conclusion

89. Community Engagement Timeline	86
90. Halfways Creek	88

Appendices

91. Entrance of Walden Wastewater Treatment Facility	89
92. Water Propagation of Pothos	89
93. Atikameksheng Anishnawbek Community Centre	89

A – Walden Wastewater Treatment Plant

94. Aeration Tanks for Wastewater	90
95. Water Quality Test Lab	91
96. Pipe network	91
97. Headworks	92
98. Sump Drain	92
99. Sedimentation Tank	93
100. Chlorination Chamber	93

B – Water Filtration Artifact

101. Filtration Device Artifact	95
102. Filtration Device Artifact Materials	96

C – Community Engagement

103. Entering Atikameksheng Anishnawbek	98
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Preface

I would first like to introduce myself, I am Abenakise. My relations are from Odanak, a First Nation community in Quebec, where the Saint-Francois River and the St. Lawrence River meet. Oftentimes Indigenous peoples tend to be generalized into one large group, but that is not the case. Traditions, ceremonies, and practices differ from nation to nation, which make us different but not unrelated. The community I have worked with and myself are both Anishnawbek.

As I am a visitor in Atikameksheng Anishnawbek it is important to respect cultural differences between nations and understand that only what is necessary for design purposes may be shared. Along the process, I have learned about some sacred aspects of teachings and ceremony that need to be considered during design but aren't necessarily shared in such a public document. It is important to understand that when working with a community, that not every aspect, or reasoning as to why things are a certain way need to be questioned, or fully understood. To be humble that someone has shared a part of themselves, of sacred knowledge, that must be acknowledged.

Introduction

Water is often identified as a resource relating to hydration and recreation, having been commodified in Western society. As a drinking source, Water supply is associated with bottled water, and tap Water. Yet many people do not know the bodies of Water to which the Water treatment facilities are connected to for distribution. Do we know where our Water comes from? Which river, or Water body it has travelled through, or how it has changed along its journey?



The proposed framework seeks to amend existing Water infrastructure processes, through an analysis of the history of Water regulation from municipalities translated to First Nations communities. As well as government policy, funding, and existing lifecycles of the equipment that contributes to the understanding of how this structured view of Water is failing. Engaging with infrastructure professionals such as Water facility operators, and organizations such as the Ontario First Nations Technical Services Corporation, an Indigenous organization that works closely with First Nations communities, a more realistic image of the complexity of potable Water within First Nations communities can be understood.

Through an Anishnawbek perspective, the intent of this thesis is to strengthen understandings of Water as a relative through an architectural intervention that acknowledges traditional practices, ceremony and our relations to the very land that grounds us and celebrate the Water that sustains us. Through understanding two separate factors, the technical aspect of Water through infrastructure and the knowledge of Water through Anishnawbek practices, an amalgamation of both factors can provide the basis for a new framework that places Water at the center and values community knowledge, relations to Water, and encompasses natural filtration processes in Water purification.

Although this form of architecture does not exist, case studies of other cultures and their connections to Water will examine how restoring Water relations can be possible. This includes Sherbourne Commons, Stepwells, and the Omega Center for Sustainable Living, as well as non-architecture case studies regarding the personhood of Water. The importance of Water is not a new idea; Anishnawbek ways of knowing and being have always acknowledged Water. A brief overview of this will aid in further understanding practices surrounding Water and daily interactions with Water.

1 Anishnawbek Ways of Knowing and Being

Definitions:

Anthropocentric	Worldview that places human existence as the most important, above other living things. ¹
-Ba	A prefix added to the name of someone who has passed, indicating that a person is resting and walks in the Spirit World now. ²
Grandmother	Elders who carry knowledge of history, traditional teachings, ceremonies, medicine carriers, wisdom bearers, and teach others. This relation goes beyond blood ties. ³
Nibi	In Ojibwe, this means Water. ⁴
Water	The capitalization of Water acknowledges the personhood of Water, and celebrates Water as a living, life giving entity. ⁵
Manoomin	Translated to 'the good berry', this is wild rice. ⁶
Mino-Mnaamodzawin	It is how we can live in a good way. ⁷
Shkagamik-Kwe (Mother Earth)	Anishnawbek concept for Mother Earth that expresses how she gives life and nurtures all living beings, this acknowledges our relations to the environment, spirituality and balance. ⁸
Water Walker	Primarily Indigenous women who walk for the Water as adaptive ceremony, raising awareness of environmental injustices. ⁹

1 Boslaugh, Sarah E, "Anthropocentrism," Britannica, Encyclopedia Britannica, inc., January 11, 2019, <https://www.britannica.com/topic/anthropocentrism>.
2 Pegahmagabow, Julia, meeting with Celina Rios-Nadeau, Zoom online, April 22, 2020.
3 Stiegelbauer, S.M., "What Is an Elder? What Do Elders Do?: First Nation Elders as Teachers in Culture-Based Urban Organizations," The Canadian Journal of Native Studies XVI, no. 1, (1996): 37-66, <http://www3.brandonu.ca/cjns/16.1/Stiegelbauer.pdf>.
4 Jackson, Beatrice Menase Kwe, "Nibi Song," Mother Earth Water Walk, WordPress, accessed September 15, 2019, http://www.motherearthwaterwalk.com/?attachment_id=2244.
5 Definition by author.
6 Stack Whitney, Kaitlin, "Manoomin: The Taming of Wild Rice in the Great Lakes Region," Environment & Society Portal, Arcadia (2015), no. 2, Rachel Carson Center for Environment and Society, <https://doi.org/10.5282/rcc/6830>.
7 McGregor, Deborah, "Mino-Mnaamodzawin," Environment and Society 9, no. 1 (September 2018): 7-24, <https://doi.org/10.3167/ares.2018.090102>.
8 Lafleur, Gail Sarah, "Ojibwe Elders' Experiences of Peace: To Teach Our Well-Being With the Earth," (2013): 1-15, https://dr.lib.rocky.brocku.ca/bitstream/handle/10464/5119/Brock_Lafleur_Gail_2013.pdf?sequence=1&isAllowed=y.
9 "About Us," Mother Earth Water Walk, WordPress, December 5, 2017, <http://www.motherearthwaterwalk.com/>.

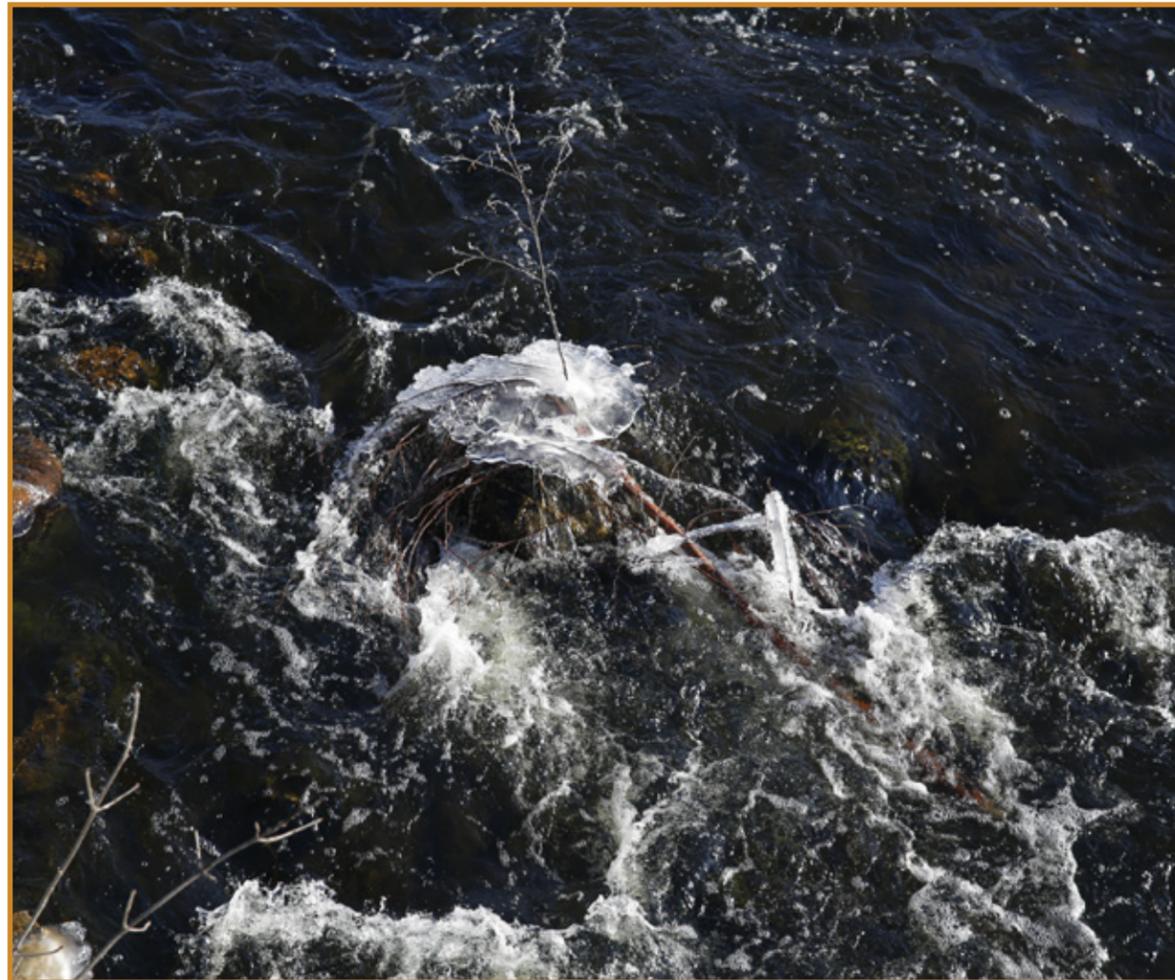


Fig. 02: Spring melting of Junction Creek.

This thesis seeks to answer the research question: how can community knowledge and relations to Water be restored through architectural intervention, and reframe existing practices of Water in First Nation communities?

Learning – Mino-Mnaamodzawin, Story, and Balance

The complexity of trying to understand Anishnawbek perspectives cannot be summarized and reduced to one chapter or book. One value that is reflected throughout this thesis is the complex network of traditional teachings that act as a foundation for the belief that true learning is flexible and open-ended, that change is a permanent part of life. “The development of an individual’s will to do right is of greater importance than coercing that person to behave in a certain way”.¹⁰ The growth of an

individual is strengthened by storytelling, which helps to promote connection with the land and forms the role of defender of the Earth. Mino-Mnaamodzawin, “to live in a good way”, is to mutually respect all living things, and have relationships among people, Water, and Shkagamik-kwe herself.¹¹ This is to say that society needs to consider relationships beyond anthropocentric views in order to move towards a balanced sustainable world.

Manoomin – Migration Story



Fig. 03: A woman harvests wild rice in her canoe using traditional harvesting sticks.

The journey of the Anishinaabe Migration led to settlement along the Great Lakes in order to fulfill the prophecy of “stopping at a place where food grows on Water”.¹² Manoomin meaning the “good berry” is wild rice.¹³ This became a spiritual and cultural staple, used for medicinal purposes, and offered to spirits during ceremonies, as an expression of gratitude to the Spirit providing this gift.¹⁴ One may question the importance of rice in protecting Water, which can be understood that everything must be respected equally, if it is not, an imbalance of what is valued can quickly fall to factors of greed, and monetary value. We must ask if we are good ancestors,¹⁵ not only to each other, but account for the well-being of Water. Traditionally this role was that of women, acting as protectors due to their connection to Water as bearers of life through birth.¹⁶

¹⁰ Gross, Lawrence William. *Anishinaabe Ways of Knowing and Being*. London: Routledge, 2016, 158.

¹¹ McGregor, “Mino-Mnaamodzawin.” *Environment and Society*.

¹² Pegahmagabow, Julia, interview by Celina Rios-Nadeau, personal interview, McEwen School of Architecture, November 21, 2019.

¹³ Ibid.

¹⁴ Whitney, Kaitlin Stack. “Manoomin: The Taming of Wild Rice in the Great Lakes Region.” *Environment & Society Portal*. Arcadia, 2015. <http://www.environmentandsociety.org/arcadia/manoomin-taming-wild-rice-great-lakes-region>.

¹⁵ McGregor, Deborah, “Anishnawbek Understanding of Environmental Sustainability,” *Protecting Our Water*, Henvey Inlet First Nation, December 3, 2019.

¹⁶ Corbiere, Alan Ojiig., Deborah McGregor, and Crystal Migwans, *Anishinaabewin Niizh: Culture Movements, Critical Moments*, 2011: a Selection from the Proceedings of the 2011 Anishinaabewin Niizh Multidisciplinary Culture Conference, Held in Sudbury, Ontario, MChigeeng, ON: Ojibwe Cultural Foundation, 2012.

Water Walkers – Josephine Mandamin-ba and the Role of Women



Fig. 04: Josephine Mandamin-ba (Grandmother in red skirt) holding a copper vessel among other Anishnawbekwe women.

Women have a responsibility to ensure the health of Shkagamik-kwe, to keep the Water clean for future generations as Water is the life blood of Mother Earth.¹⁷ Reasserting her role as the voice that speaks for the Water, Grandmother Josephine Mandamin-ba devoted her life to Nibi by walking around the Great Lakes, bringing

awareness to seemingly transparent issues, acting against Water pollution.¹⁸ The act of Water Walks are ceremonies in themselves, honouring Water through prayer, song, and offering tobacco to show respect for the Water that sustains life, reframing the understanding of what we offer Mother Earth, rather than what we take.

“Water is precious and sacred; it is one of the basic elements needed for life to exist”.¹⁹

¹⁷ “About Us,” *Mother Earth Water Walk*.

¹⁸ “Anishinaabe Grandmothers,” *Mother Earth Water Walk*, WordPress, accessed August 20, 2019, http://www.motherearthwaterwalk.com/?page_id=11.

¹⁹ “Anishinabek Nation Mourns the Passing of Grandmother Water Walker Josephine Mandamin” *Anishinabek News*, February 22, 2019, <http://anishinabeknews.ca/2019/02/22/anishinabek-nation-mourns-the-passing-of-grandmother-water-walker>.



Fig. 05: First Water Walk in 2003 by Josephine Mandamin-ba or Biidasige-ba (One Who Comes With the Light).



Fig. 07: Josephine Mandamin-ba and Elder Shirley Williams carrying the copper vessel.



Fig. 06: Song and prayer for the Water.



Fig. 08: The Great Lakes Water Walk in 2017, the largest Water Walk along the shoreline of Toronto.

2 Western Views of Water

Definitions:

Chief and Council	Elected members that identify and respond to the needs of the community through Administration and programs. ²¹
Economic prosperity	Having the money to fill needs and other desires. ²²
Environmental racism	Negative impacts to communities that are the result of practice and policy within a racialized context. ²³
Groundwater	Water that is below ground, in between layers of rock, soil and sand. ²⁴
Indigenous Services Canada	Part of the federal government to provide support in services of health care, education and infrastructure to First Nations, Métis and Inuit communities. ²⁵
Legal accountability	Refers to the theory under the law to find culpability such as a crime or to receive money by way of a civil case, financial liability. ²⁶
Drinking water advisories	Public health notifications that relate to potential and existing health risks related to drinking Water. This includes boil Water, do not consume, and do not use. ²⁷
Relational accountability	Our collective understanding and actions of respecting, and taking responsibility of ourselves, other life forms, and the land. ²⁸



Fig. 09: Map depicts 17,000 kilometers walked around the Great Lakes, which brought awareness of the injustices surrounding polluted Water.

“Look around. See what is happening to the Water. It has become polluted, bottled and destroyed. Water gives us so much, but we take and take and take”.²⁰

Grand Chief Bawdwaywidun
Midewanikwe ceremonial lodge, 2000

²⁰ “Water walker remembered as protector” Winnipeg Free Press, February 26, 2019, <https://www.winnipegfreepress.com/opinion/columnists/water-walker-remembered-as-protector-506414102.html>.

²¹ Indian Act, Elections of Chiefs and Band Councils 1985, c. I-5, <https://laws-lois.justice.gc.ca/eng/acts/i-5/page-11.html>.

²² “Examples of Economic Prosperity,” Cambridge Dictionary, Cambridge University Press, 2020, <https://dictionary.cambridge.org/example/english/economic-prosperity>.

²³ “Environmental Justice & Environmental Racism,” Greenaction for Health and Environmental Justice, Themelse, accessed October 19, 2019, <http://greenaction.org/what-is-environmental-justice/>.

²⁴ “Aquifers,” Safe Drinking Water Foundation, January 19, 2017, <https://www.safewater.org/fact-sheets-1/2017/1/21/aquifers>.

²⁵ “Indigenous Services Canada,” Government of Canada, March 23, 2020, <https://www.canada.ca/en/indigenous-services-canada.html>.

²⁶ “Legal Accountability Law and Legal Definition,” USLegal Inc. airSlate Legal Forms Inc., 2019, <https://definitions.uslegal.com/l/legal-accountability/>.

²⁷ “About Drinking Water Advisories,” Government of Canada; Indigenous Services Canada, October 1, 2018, <https://www.sac-isc.gc.ca/eng/1538160229321/1538160276874>.

²⁸ Wilson, Shawn, in *Research is Ceremony: Indigenous Research Methods*, (2008): 97-125, Blank Point, NS: Fernwood Pub.

The Walkerton Tragedy – Setting Regulations



Fig. 10: Pipe swabs show bacteria in water distribution system.

Prior to the *Ontario Drinking Water Protection Regulation Resources Act* established in 2002, Water guidelines and objectives allocated safe protocols in maintaining Water for human consumption in municipalities within Canada.²⁹ In May 2000, contaminants that were found in the Water supply tested positive for *Escherichia coli*. A harmful strain of the bacterium was present in one of the wells in Walkerton, Ontario due to cattle manure and a faulty chlorination system, leading to many illnesses and resulting in the death of seven individuals.³⁰ The provincial government of Canada quickly acted in restoring Water quality and establishing monitoring programs. By 2003, the *Safe Water Act and Regulations* were created, a legally binding set of standards enforced at the municipal level.³¹ This further led to the 2006 Report of the *Expert Panel on Safe Drinking Water for First Nations*. A plan that was announced by the federal government to create protocols in First Nation communities

through standards and requirements for Water systems, mandatory training for operators and certification, remedial plans for communities with critical and high risk problems, and establish a report on daily progress.³² By June 2013, the *Safe Water for First Nations Act* was created, establishing Eleven Essential regulatory components by which “the act allows the Government of Canada, in collaboration with First Nations, to develop federal regulations to ensure: access to safe, clean, and reliable drinking Water, effective treatment of wastewater, and protection of sources of drinking Water on First Nation lands”.³³ While this Act is not legally binding, it failed to address community voice, leaving many unheard and frustrated within First Nation communities, and continues to sever many Indigenous peoples relations to Water within Canada.

It is important to note that many health risks associated with polluted Water systems impacting Indigenous people have never been addressed at the same level of urgency as the Walkerton case, which resulted in very few deaths. More fatalities have occurred in First Nations communities because of inadequate Water, with little advances in addressing the core problem. While this is not a comparison of tragedy, or to pity communities, it is intended to bring awareness to the reader regarding the distinct implications of colonization, government control, lack of self-governance, and the inequalities faced through environmental racism.

²⁹ Merritt, Jim and Christopher Gore, “Drinking Water Services: A Functional Review of the Ontario Ministry of Environment,” July 18, 2001, <https://collections.ola.org/mon/2000/10296818.pdf>

³⁰ O’Connor, Dennis R., “First Nations”, in *Report of the Walkerton Inquiry: A Strategy for Safe Drinking Water*, Part Two, Toronto, 2002, 486- 497.

³¹ Ibid.

³² Indian Affairs and Northern Affairs Canada, *Report of the Expert Panel on Safe Drinking Water for First Nations*, Vol 1, Ottawa, 2006, 1.

³³ Indigenous and Northern Affairs Canada, “Safe Drinking Water for First Nations Act”, <https://www.aadnc-aandc.gc.ca/eng/1330528512623/1330528554327>.

The Government of Canada – Jurisdiction in Water Governance

The existing legal framework states that the federal government of Canada has primary jurisdiction to regulate Water quality on reserves.³⁴ Yet without existing legislation that binds Water quality in First Nation communities, and a shared responsibility between governments, Tribal councils, and Chief and Council, rights and obligations relating to clean Water for First Nations is often a complex network of socio-political issues that remain obscure.³⁵ Furthermore, funding for infrastructure projects is held by Indigenous Services Canada, and is transferred to communities when they are deemed eligible by meeting a list of requirements. Other services

provided by the government of Canada include the monitoring of Water systems by Health Canada through water samples, regulating Water discharge through Environment Canada, and providing engineering advice, as well as approvals by Public Works.³⁶ This structured oversight of drinking Water in First Nation communities superimposes Western ideologies of Water and creates a reliance on funding that is required to maintain existing and newly constructed complex Water treatment facilities. This further alienates First Nations peoples from Water and portrays the understanding of Water as a commodity and a resource.

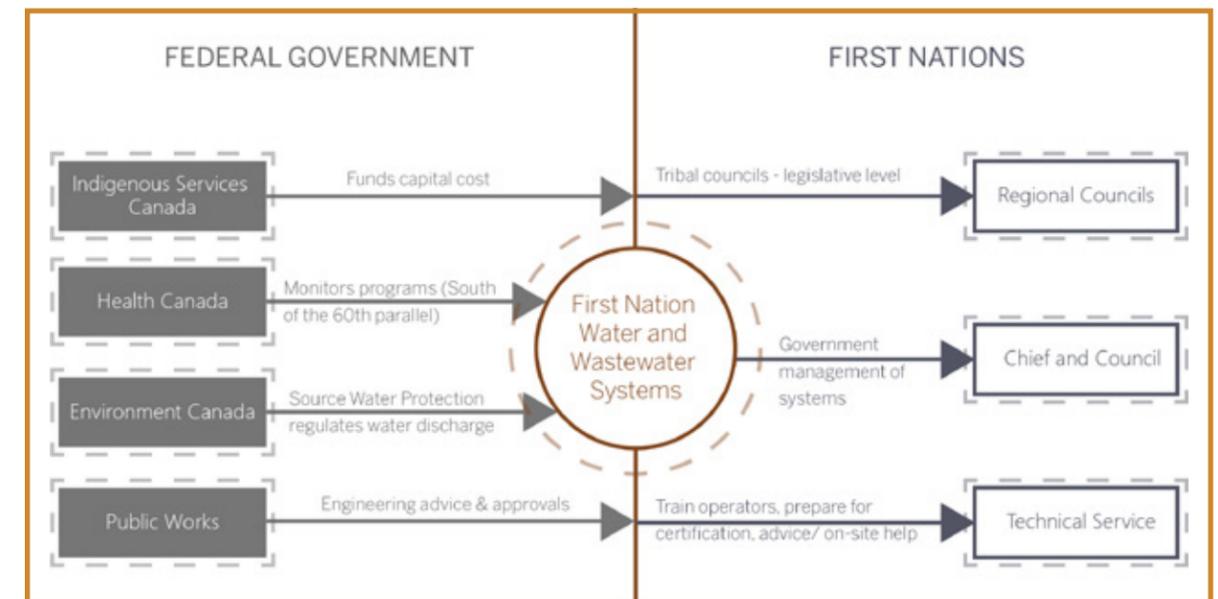


Fig. 11: Government of Canada and First Nations Roles in Water infrastructure.

³⁴ York, Geoffrey, “In the Neskantaga First Nation, Undrinkable Water Is a Crisis of Health and Faith,” *The Globe and Mail*, September 17, 2019, <https://www.theglobeandmail.com/canada/article-in-this-ontario-first-nation-undrinkable-water-is-a-crisis-of-health/>.

³⁵ Craft, Aimée, *Giving and receiving life from Anishinaabe nibi inakonigewin (our water law)* research in *Methodological Challenges in Nature: Culture and Environmental History Research*, 106.

³⁶ Indian Affairs and Northern Affairs Canada. *Report of the Expert Panel*, 15.

Long-term Drinking Water Advisories – Unaccounted Water

Justin Trudeau announced a five-year plan to end long-term drinking water advisories in First Nations communities in 2015.³⁸ This largely deals with boil water advisories, and often places unnecessary water advisories on communities until water quality information and data is attained by the government. This is done to avoid legal accountability, and completely dismisses relational accountability. While measures are put in place to reduce contaminants that re-enter ecological systems, human safety is valued as the most important. Billions of dollars are being spent in addressing the issues of existing water treatment facilities through updates, building new facilities, and training programs for operators.³⁹ Unfortunately, this misleads the general public to believe

that potable water is being addressed in all communities impacted by low water quality. Yet many northern regions must account for accessibility to communities, and often do not have the economic support to run these facilities, in which an equal framework of funding for infrastructure is provided by the government across Canada. With equal funding for southern and northern communities, remote communities don't have a set means of income to guarantee their water facilities will not shut down at the cost of the resources needed to run these facilities. This means that factors such as community population, location, environmental factors, and economic prosperity are not being ensured towards secure water standards through water facilities. While water infrastructure facilities are improving, other sources of water are not considered or funded. Many communities rely on ground water, which is often brought up through wells. Since wells are considered private sources of water, these communities often do not attain financial approval. What becomes problematic is when the decommissioning of said wells is required if contaminants are discovered, yet financial constraints allow further pollution of ground source water.

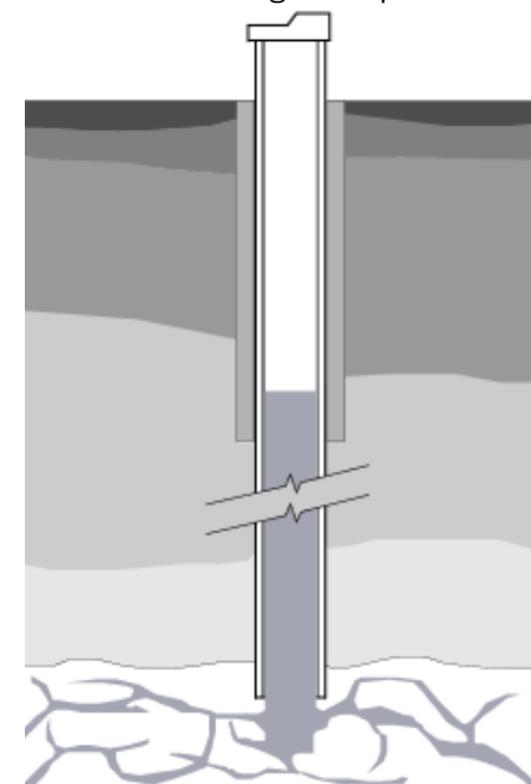


Fig. 13: Ground Water System - Wells

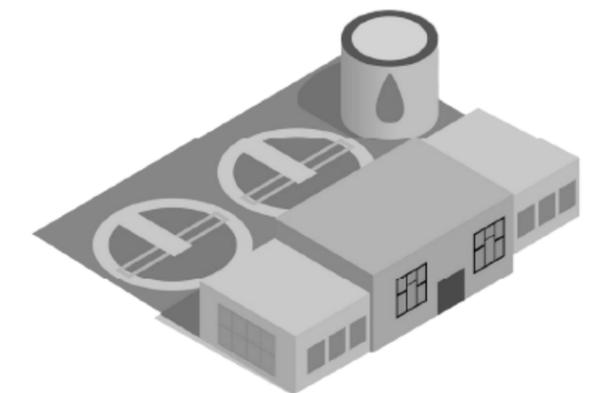


Fig. 14: Water Treatment Plant

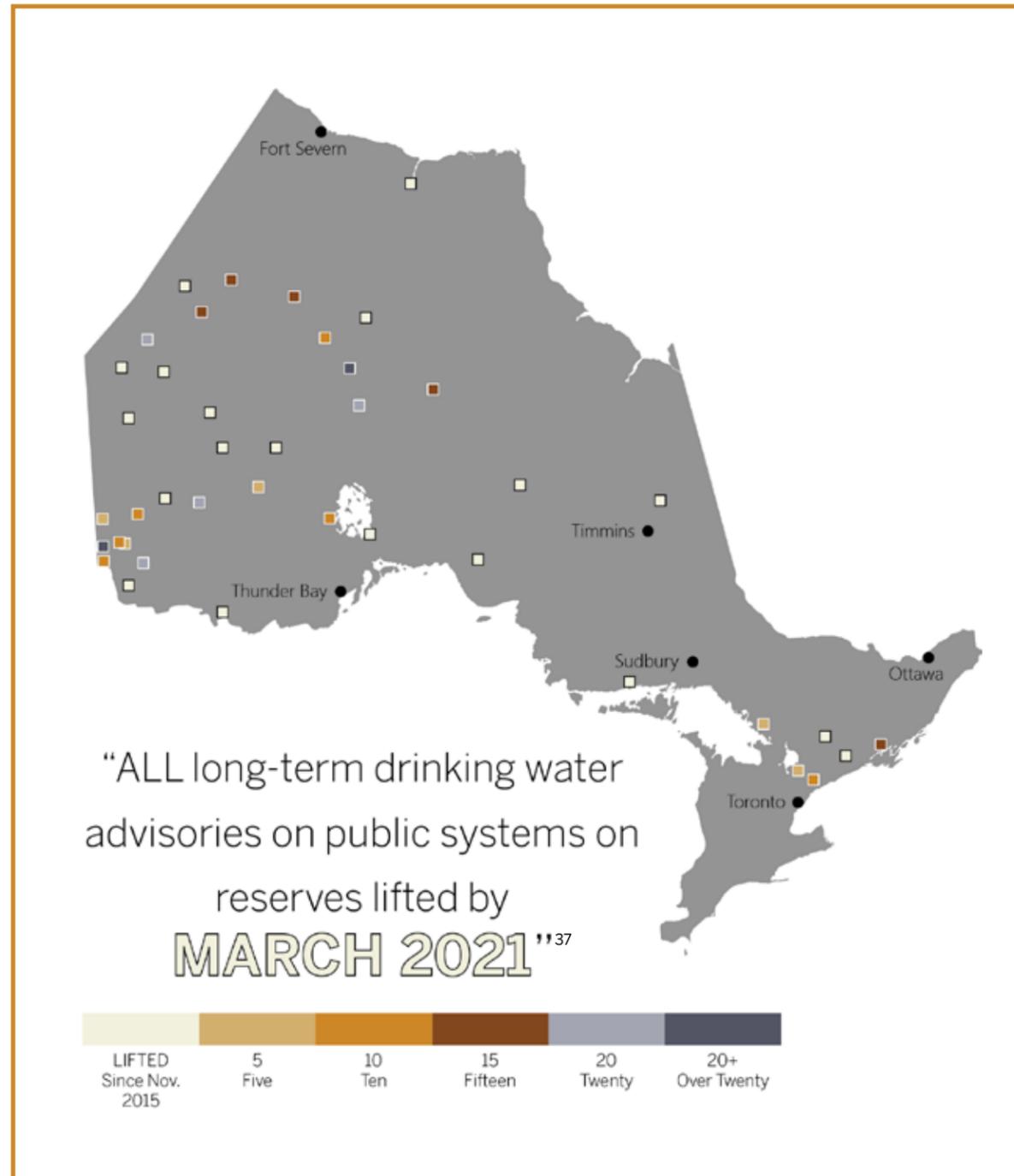


Fig. 12: Long-term Drinking Water Advisories in Ontario and length they have been enforced in communities.

³⁷ Northern Affairs Canada, “Key Facts and Figures Regarding Long-Term Advisories Affecting Drinking Water Systems on Reserve,” Indigenous and Northern Affairs Canada, Government of Canada, January 24, 2018, <https://www.aadnc-aandc.gc.ca/eng/1516741379405/1516741409130>.

³⁸ Northern Affairs Canada, “Key Facts and Figures Regarding Long-Term Advisories Affecting Drinking Water Systems on Reserve,” Indigenous and Northern Affairs Canada, Government of Canada, January 24, 2018, <https://www.aadnc-aandc.gc.ca/eng/1516741379405/1516741409130>.

³⁹ Report of the Expert Panel, 22.



Lac Seul FN



Eabametoong FN



Big Grassy FN



Wabigoon Lake FN



Fort Severn FN



Wauzhushk Onigum FN



Pelican Falls FN



Michipicoten FN



Wabaseemoong FN



Wabauskang FN



Ochiichagwe' Babigo' Ining FN



Aundeck Omni Kaning FN

Fig. 15: Collage of existing Water treatment facilities in First Nation (FN) Communities.

3 Existing Infrastructure in Communities

Definitions:

Indigenous and Northern Affairs Canada (INAC)	Now referred to as Indigenous Services Canada (ISC), it is the department responsible for meeting the Government of Canada's obligations and commitments to First Nations, Inuit and Métis, and fulfilling the federal government's constitutional responsibilities in the North. ⁴⁰
Operation and Maintenance	Daily regulation and repairs of equipment, data tracking, and monitoring in order to keep Water treatment systems running properly. ⁴¹
Ontario First Nation Technical Services Corporation (OFNTSC)	A technical advisory service for First Nations communities within Ontario, providing training programs, communications, emergency planning, environmental, engineering, Water, and wastewater services among many others. ⁴²
Trihalomethanes	Environmental pollutants as a result of chlorination treatment for disinfection in drinking Water, which can lead to potential health risks. ⁴³

40 Northern Affairs Canada, "About Indigenous and Northern Affairs Canada," Government of Canada; Indigenous and Northern Affairs Canada; Communications Branch, November 9, 2017, <https://www.aadnc-aandc.gc.ca/eng/1100100010023/1100100010027>.
 41 Sapp, Don, "Facilities Operations & Maintenance - An Overview," WBDG, May 12, 2017, <https://www.wbdg.org/facilities-operations-maintenance>.
 42 "Ontario First Nation Technical Services Corporation," OFNTSC, accessed October 19, 2019, <https://ofntsc.org/>.
 43 Oram, Brian, "Disinfection By-Products Trihalomethanes," *Water Research Center*, Resource Media, 2014, <https://water-re->

Funding Structure – Accountability, Control and Frugality

Once a facility has been constructed in a First Nation community, Operation and Maintenance funding is disbursed to that community, typically on an annual basis through block funding. ISC (formerly INAC) provides eighty percent of a formula-calculated budget.⁴⁴ This means that the remaining expenses must be borne by the community, which becomes problematic in northern communities who don't have the resources to fund the facilities.

Drinking Water infrastructure is largely reliant on government funding through three governing principles: financial accountability, macro and micro control, and frugality. This places ISC, and by association the federal government's priorities first. This contradicts the government's official mandate of "working together to make Canada a better place for Aboriginal and northern people and communities".⁴⁵

This directly impacts Water infrastructure by restricting the ability to respond to technical challenges, often conforming to set procedures and guidelines to meet criteria rather than personalized responses for different circumstances. The control aspect of Water infrastructure defines regular programs, and unplanned responses to situations, leaving First Nations unable to set priorities, rather the priorities are

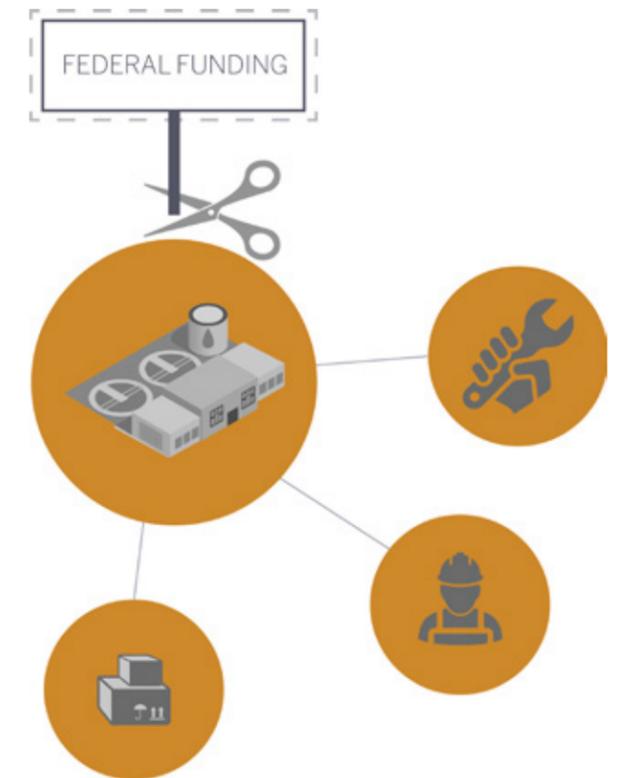


Fig. 16: Failing funding structure for daily operations in water treatment plants.

selected by external government.⁴⁶ The last principle of frugality through cost-saving decision making, impacts the quality of products themselves, and can result in delays in spending and set low design standards.⁴⁷ This reinforces the continual cycle of maintenance, and constant equipment repairs. Due to temporary solutions, and cheap materials that amount to more expenses in the long term.



Formula-calculated budget - percentages of financial responsibility of the Government of Canada and First Nations communities.

search.net/index.php/trihalomethanes-disinfection.
 44 Mccullough, Jason, and Khosrow Farahbakhsh, "Square Peg, Round Hole: First Nations Drinking Water Infrastructure and Federal Policies, Programs, and Processes," *International Indigenous Policy Journal* 3, no. 1 (August 2012): 5. <https://doi.org/10.18584/iipj.2012.3.1.3>.
 45 Ibid., 17.
 46 Ibid., 9.
 47 Ibid., 11.

Purification – Chlorination and Filtration

The implications of producing clean Water for consumption is done through purification by means of chemical additives that kill nearly all the bacteria in Water. The most utilized method involves chlorination. If done incorrectly, disinfection by-products of chlorination react with organic material in Water sources, creating trihalomethanes, which have been associated with cancer and reproductive problems.⁴⁸ This can greatly affect inhabitants of Water bodies, and ecosystems within the Water itself. Apart from potential health risks, chlorination of Water alters the taste of the water, by which people try to recapture a nostalgic crispness of Water through small filtration devices and refrigerating the Water.⁴⁹

Water Infrastructure professionals – OFNTSC

In order to understand limiting factors and daily operations of Water treatment plants, I approached OFNTSC, a not-for-profit organization that works closely with First Nation communities and was able to speak to three individuals: Stephanie Allen, an Environmental Scientist, Gary Naponse, an Infrastructure Database Technologist for the Waabnoong Bemjiwang Association of First Nations, and Patrick Stevens, the Public Works Manager for Nipissing First Nation. The most important factors that were brought up during our conversations include: the disconnect between community and government, set regulations and impacts, as well as consumption of Operation and Maintenance funding.

“Over the years many First Nations have been burned by the government...these communities don't want to share, because they don't trust the government, they have been taken advantage of...” states Naponse.⁵⁰

“There are a lot of regulation processes, yet no complete follow through – they (the government) wanted to put safe Water policy, but it was set up to fail, not designed to meet plant regulations...to take away self-governance from First Nations”,⁵¹ says Stevens.

“When the engineer estimated the cost of operation costs, he failed to account for the biggest factor that runs the facilities- the hydro expense drains much of the funding for Operation and Maintenance expenses, which uses most of the budget, and leads to creative solutions by operators,” explains Allen.⁵²

48 Oram, Brian, “Disinfection By-Products Trihalomethanes.”

49 Pegahmagabow, Julia, interview by Celina Rios-Nadeau, personal interview, Salute Coffee Company, October 21, 2019.

50 Naponse, Gary, interview by Celina Rios-Nadeau, phone interview, December 4, 2019.

51 Stevens, Patrick, Interview by Celina Rios-Nadeau, phone interview, November 28, 2019.

52 Allen, Stephanie, Interview by Celina Rios-Nadeau, informal Interview, Henvey Inlet December 3, 2019.

4 Case Studies

Definitions:

Cistern	A storage tank for Water. ⁵³
Contaminated Water overflow	A blocked or damaged part of a system such as a septic tank, that releases contaminated Water onto the surface. Often it is also due to flooding, where Water cannot move and remains on the surface. ⁵⁴
Legal entity	Generally known as an individual, company or organization that has legal rights and obligations. ⁵⁵
Pavilion	A non-permanent structure usually constructed of light weight materials. ⁵⁶
Ultraviolet filtration	One of the most effective ways to remove bacteria from Water, sun rays destroy illness-causing bacteria in the Water. ⁵⁷
Whanganui Iwi (Maori Tribe)	Indigenous peoples that reside within New Zealand, this specific tribe is collectively called Ngati Hau, the ancestors associated with the Whanganui river. ⁵⁸

53 “Cisterns and Other Rain Catchment Systems,” Centers for Disease Control and Prevention. U.S. Department of Health & Human Services, February 24, 2020, <https://www.cdc.gov/healthywater/emergency/drinking/disinfection-cisterns.html>.

54 “Sewage Overflows at Home,” Better Health Channel, Department of Health & Human Services, January 20, 2015, <https://www.betterhealth.vic.gov.au/health/healthyliving/sewage-overflows-at-home>.

55 “Legal Entity,” Business Dictionary, WebFinance Inc, accessed January 18, 2020, <http://www.businessdictionary.com/definition/legal-entity.html>.

56 “Pavilion,” Britannica, Encyclopædia Britannica, inc., May 12, 2017, <https://www.britannica.com/art/pavilion-architecture>.

57 Skillings, Derek, “The Pros and Cons Of Using Ultraviolet Rays For Water Treatment,” Skillings & Sons, Inc., NH, New Hampshire, MA, Massachusetts, January 15, 2018, <https://www.skillingsandsons.com/blog/the-pros-and-cons-of-using-ultraviolet-rays-for-water-treatment>.

58 “Story: Whanganui Tribes,” Whanganui tribes – Te Ara Encyclopedia of New Zealand, Ministry for Culture and Heritage Te Manatu Taonga, March 22, 2017, <https://teara.govt.nz/en/whanganui-tribes>.

Sherbourne Common – Canada



Fig. 17: Water feature vegetation that helps to further clean the Water after it has been purified below ground.

Located in Toronto, Ontario, the pavilion was designed by Teeple Architects Inc., and recognizes different roles of Water: purification processes, washrooms and changing facilities, a rink and a Water park. It joins recreational activities with stormwater treatment by creating a public park. Focusing mainly on public interaction and connection to Water, this pavilion aims to highlight the history of Lake Ontario, and functions as a stormwater purification intervention for the entire waterfront.⁵⁹ Environmentally, the park is multi-purpose, and helps in purifying stormwater in order to return it to the lake through ultraviolet

filtration, and uses the Water in heating and cooling the pavilion itself.⁶⁰ The problem faced at the waterfront was flooding issues due to rainfall, and lack of space to contain the excess Water, resulting in contaminated Water overflow that was entering the lake.⁶¹ While Water treatment occurs below the park, the clean Water is publicly displayed through the sculptural pieces. This balance of technical and natural purification celebrates Water and is a key study towards engaging the public about polluted Water interventions aside from saturated chemical processes.

⁵⁹ Canadian Architect, "Sherbourne Park Pavilion," Canadian Architect, November 30, 2009, <https://www.canadianarchitect.com/sherbourne-park-pavilion/>.

⁶⁰ Waterfrontontario, "Sherbourne Common Fact Sheet", June, 2010, https://waterfrontontario.ca/nbe/wcm/connect/water-front/875ead45-0af5-4d65-b369-3937967b27cc/sherbourne_common_fact_sheet_1.pdf?MOD=AJPERES&CACHEID=875ead45-0af5-4d65-b369-3937967b27cc.

⁶¹ "Sherbourne Common Stormwater Treatment Facility, Toronto, Ontario," *Water Technology*, accessed December 15, 2019, <https://www.water-technology.net/projects/sherbourne-common-stormwater-toronto-canada/>.



Fig. 18: The Pavilion intersects park programs that include the rink, splash pad, Water channel, and playground.



Fig. 19: Children playing in the Water channel.

Stepwells – India

Found in dry climates with little rain, stepwells are subterranean architectural forms that help to access Water sources in India.⁶² Throughout history, they were used to provide drinking, washing, bathing, and irrigation Water through extended cylinder wells that met the Water table. Depending on the season, the steps along the side provided access to the Water table in times of drought and doubled as a cistern during rainy times. Beyond this, they acted as sanctuaries during harsh heat, and cultural temples for prayer, and meditation.⁶³

Through rapid modernization, and falling Water tables, neglect, and colonization by the British rule, stepwells were deemed unhygienic, resulting in many stepwells being destroyed.⁶⁴ Today village taps, plumbing and Water tanks have eliminated the physical need for stepwells, but not the social and spiritual aspects, utilized during times of ceremony and prayer.⁶⁵ As the urgency for Water conservation increases, so do the efforts to reactivate wells to collect and store Water.⁶⁶

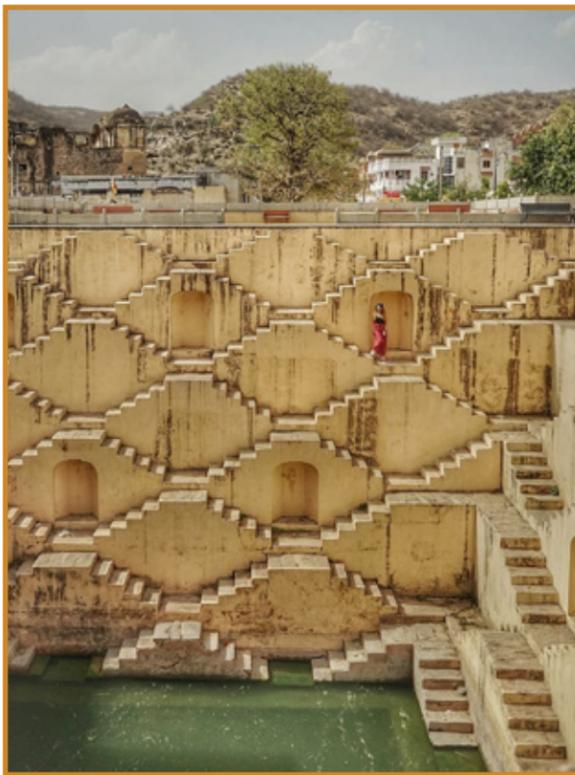


Fig. 20: Stepwell during the dry season allows access to the Water table in Jaipur.



Fig. 21: Located in Gujarat, this stepwell is being preserved by the government with renewed interest in restoration.



Fig. 22: One of the largest step wells Chand Baori is located in Abhaneri village near Jaipur, in Rajasthan.



Fig. 23: Agrasen Ki Baoli is located in Delhi and was once a Water reservoir, it is one of the oldest and best preserved stepwells.

62 Lautman, Victoria, "Stepwell Architecture," Encyclopædia Britannica, Encyclopædia Britannica, inc., December 4, 2019, <https://www.britannica.com/technology/stepwell>.

63 Ugc, "The Medieval Stepwells of India," Atlas Obscura, October 16, 2009, <https://www.atlasobscura.com/places/ancient-stepwells-india>.

64 Stepwell Architecture, 2019.

65 Ibid.

66 The Medieval Stepwells of India, Obscura.

Omega Center for Sustainable Living – United States of America



Fig. 24: The Eco Machine space with two aeration lagoons that contain living plants.

In 2006, the Omega Center for Sustainable Living (OCSL) had a goal to develop a highly sustainable wastewater filtration facility. Located in Rhine, New York, it sits within the Hudson River watershed basin.⁶⁷ Designed by BNIM Architects, the Omega Center uses biological methods of wastewater treatment, and serves to educate visitors, staff and community about global Water issues.⁶⁸

The process include feeding the Water to “microscopic algae, fungi, bacteria, plants, and snails”, naturally occurring microbial organisms digest “ammonia, phosphorus, nitrogen, potassium, and other substances in the Water.”⁶⁹ The Water flows

to the man-made outdoor wetlands, where cattails and bulrush reduce biochemical oxygen needs, and remove odorous gases.

Next the Water is pumped inside to two aeration lagoons. Known as the Eco Machine, the space harnesses sunlight for the aquatic plants to clean the Water.⁷⁰

The final step is sand filtration, which allows Water to meet wastewater standards and is returned to nature through dispersal fields into the aquifer, closing the hydrological loop in Water use. In addition the treated Water is used for garden irrigation and in a greywater recovery system.

⁶⁷ Jordana, Sebastian, “2010 AIA/COTE Top Ten Green Projects,” ArchDaily, April 22 2010, www.archdaily.com/57456/2010-aiacote-top-ten-green-projects.

⁶⁸ “Omega Center for Sustainable Living,” Architizer, architizer.com/projects/omega-center-for-sustainable-living/.

⁶⁹ Tackett, Chris, “The World’s Most Beautiful Wastewater Treatment Plant,” TreeHugger, October 10 2013, www.treehugger.com/green-architecture/omega-center-sustainable-living-eco-machine-living-building-water-treatment.html.

⁷⁰ “Omega Center for Sustainable Living,” World Architects, November 22 2010, www.world-architects.com/en/architecture-news/reviews/omega-center-for-sustainable-living.



Fig. 25: South view of man-made outdoor wetland and solar panel wall.



Fig. 26: South detail of operable window.



Fig. 27: Building entry featuring reclaimed wood siding.



Fig. 28: Whanganui River, the ancestor of the Whanganui Iwi (Maori Tribes) in New Zealand.

Whanganui River path.

“I am the River, and the River is me.”

Whanganui Iwi of Whanganui, New Zealand, like many Indigenous people, declare their connection to their ancestral river.⁷¹ For more than seven hundred years, the tribes cared for, and depended on the *awa tupua* (the river of sacred power), until the arrival of settlers in the mid-1800s who undermined and extinguished traditional authority through government decree.⁷² A long process of negotiation with the Crown, resulted in a settlement deed by 2014, which recognized the Whanganui River as a legal entity, with rights equivalent to personhood.⁷³ In 2017, The Whanganui

River Claims Settlement Act appointed two representatives that act as the human face of the river; from the Crown and the Iwi, by which formal acknowledgements to the responsibility of maintaining the health and well-being of the River is based on *tikanga* (the pre-colonial governance system), and provides financial compensation to remediate damage caused to the river and its people.⁷⁴ This case study exemplifies how Indigenous views of Water are respected by Western society, which needs to be addressed by the Canadian Government to fully rectify and reframe relations to Water.

5 New Framework for Water Protection

Definitions:

- Cross programming** In architecture, it is when there are two different types of buildings and how they are used (such as a medicine room and a Water treatment plant) that are combined to create a new type of building.⁷⁵
- Knowledge Carriers** Women often carry this role within the community. An individual who has knowledge of traditional practices, medicine, teachings, and tell stories to teach and guide others.⁷⁶
- Reciprocal relations** A relationship in which both participants are equally respected, and a mutual gain of knowledge and benefit is the result of collaboration.⁷⁷
- Tobacco ties** A small bundle filled with tobacco that is presented to Elders, Knowledge Carriers, and other First Nations people as an offering of appreciation for sharing their stories, knowledge, and experiences.⁷⁸

71 Warne, Kennedy, “This River in New Zealand Is a Legal Person, How Will It Use Its Voice?” National Geographic, April 24, 2019, <https://www.nationalgeographic.com/culture/2019/04/maori-river-in-new-zealand-is-a-legal-person/>.

72 This River in New Zealand Is a Legal Person, 2019.

73 Roy, Eleanor Ainge, “New Zealand River Granted Same Legal Rights as Human Being,” The Guardian, Guardian News and Media, March 16, 2017, <https://www.theguardian.com/world/2017/mar/16/new-zealand-river-granted-same-legal-rights-as-human-being>.

74 Cheater, Dan, “I Am the River, and the River Is Me: Legal Personhood and Emerging Rights of Nature,” West Coast Environmental Law, March 22, 2018, <https://www.wcel.org/blog/i-am-river-and-river-me-legal-personhood-and-emerging-rights>.

75 Johnson-Eilola, Johndan, “Crossprogramming,” Space Action Movement: Understanding Composition as Architecture, Clarkson University, accessed September 5, 2019, <https://people.clarkson.edu/~jjohnson/read/architecture/crossprogramming.html>.

76 “Anishinaabe Waadiziwin: Protocols for Working with Indigenous Knowledge Keepers (Elders, Métis Senators, Others) at Laurentian University,” *Indigenous Sharing and Learning Centre*, September 27, 2018, 5, <https://lufappul.ca/wp/wp-content/uploads/2018/12/Indigenous-Knowledge-Keepers-Protocol-Sept-27-2018.pdf>.

77 Wilson, Shawn, Reciprocal Relations, in *Research is Ceremony: Indigenous Research Methods*.

78 Pegahmagabow, Julia, interview by Celina Rios-Nadeau, personal interview, McEwen School of Architecture.

Mapping – The Story of Water

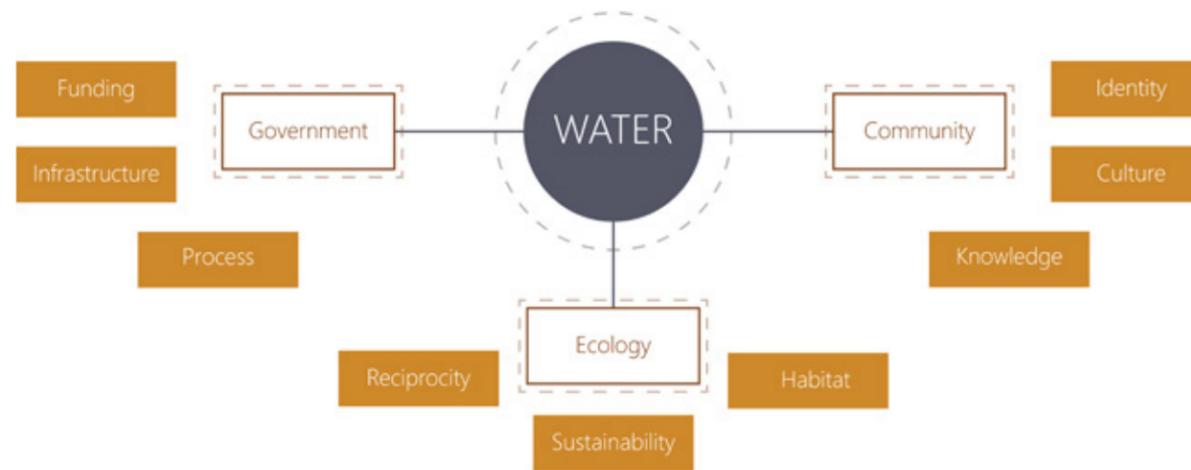


Fig. 29: A new understanding of Water - Western and Anishnawbek views.

In creating a new understanding of Water through both Anishnawbek and Western views, Water needs to be placed at the center of all processes, impacted by government, community, and ecology. Shifting how politics, social, and environmental problems are often placed before the well-being of Water. To place

Water at the center, the impacts that have affected the identity of Water will be considered and documented through story in collaboration with the community of Atikameksheng Anishnawbek. “The power of stories is found in the ability to outline and clarify connections people have to their place, their people, and their history”.⁷⁹

Design Method – Connections

In order to design with community it is important to form relations first. As a form of nonconventional academic research, I spoke with many individuals from different backgrounds, learning through communication and story. This includes water treatment specialists, Knowledge Carriers, Elders, Chief and Council, as well as community members. With the help of key individuals, I had the opportunity to engage with the land, visiting Atikameksheng Anishnawbek and a few select sites for further analysis.

To understand the possibility towards self-governance, celebrating Water, and ease reliance on failing funding structures set by the Canadian Government, a new approach that considers the planning of Water through understanding traditional relations and daily interactions with Water is necessary. To design and acknowledge the rights of Water, and value connections to Water, it is important to consider the following:

⁷⁹ Craft, Aimée, “9 Giving and receiving life from Anishinaabe nibi inaakonigewin (our water law) ANI research, in *Methodological Challenged in Nature: Culture and Environmental History Research*, 114.

1. How people relate to Water freely, without imposed infrastructure systems and government pressure
2. How Water itself is impacted through design
3. Existing infrastructure, and the current separation between people and Water
4. The history of Water, and how relations have shifted as modernization occurs
5. Mapping tradition, practices, and daily experiences with Water

Tobacco Ties and Requests – Knowledge Sharing

In order to establish respectful and reciprocal relations, it is very important to offer a tobacco tie when making a request to Elders, Knowledge Carriers, and Indigenous peoples. The person making the request thinks about what they are requesting with good thoughts while preparing the tobacco tie. During the process of making a request, the tobacco tie is offered with the left hand, while stating the request. An initial request was made to Julia Pegamahgabow, a Knowledge Carrier working with Laurentian University and a member of Atikameksheng Anishnawbek, who accepted my request to learn about her relations and experiences with Water.



Fig. 30: Tobacco tie prepared and presented to Chief Valerie Richer of Atikameksheng Anishnawbek.

New Typologies of Water Treatment – Focus of Water

Understood presently as making Water safe for human consumption, this shifting framework allows new ideas of Water processes to become a catalyst to transfer knowledge. Through learning, sharing, and adapting Anishnawbek ways of valuing Water, aspects of living with the land, ceremony, and traditional sites can benefit all living things, and restore reciprocal relations. One important element

is to maintain moving Water, which can be achieved through interventions of design. This key notion will be further explored in the design phase of the proposed project. The intent is to consider cross programming ideas of education, Water protection, and community presence that celebrate Water. Through the building, natural purification systems can begin to look at balanced processes of sustainable purification.

6 Atikameksheng Anishnawbek

Definitions:

Commodity	A useful or valuable good or service such as Water that is commercialized for profit. ⁸⁰
Effluents	An outflow of Water that has liquid waste or sewage discharge into a natural body of Water that negatively impacts existing ecologies. ⁸¹
Blue-green algae blooms	A result of agriculture, or sewage runoff that leaches into bodies of Water, creating a nutrient rich environment for the growth of these blooms, it can pose health risks. ⁸²
Privatized Water	The ownership of Water which could limit who receives Water, and results in no overall accountability in the quality of the provided drinking Water. ⁸³
Robinson-Huron Treaty	A document that sets guidelines for European settlement of Indigenous territories in North America, dictating the rights of the land. ⁸⁴
Sovereignty	A self-governing entity, it is an expression of what is and isn't individual freedom applied to a given nation. ⁸⁵
Vale	A multinational corporation engaged in metals and mining, the largest producer of ore and nickel in the world. ⁸⁶

80 "Commodity," Merriam-Webster, accessed February, 2020, <https://www.merriam-webster.com/dictionary/commodity>.

81 "Effluent," Merriam-Webster, accessed February 7, 2020, <https://www.merriam-webster.com/dictionary/effluent>.

82 "Blue-Green Algae," Ontario, Ministry of the Environment, Conservation and Parks, August 25, 2014, <https://www.ontario.ca/page/blue-green-algae>.

83 "Water Privatization: Facts and Figures," Food & Water Watch, August 31, 2015, <https://www.foodandwaterwatch.org/insight/water-privatization-facts-and-figures>.

84 "The RHT 1850 Treaty," Robinson Huron Treaty Trust, WordPress, accessed October 29, 2019, <http://rht1850.ca/the-rht-of-1850/>.

85 "Sovereignty," Encyclopædia Britannica, Inc., August 6, 2019, <https://www.britannica.com/topic/sovereignty>.

86 "About Vale," Vale, 2017, <http://www.vale.com/canada/EN/aboutvale/Pages/default.aspx>.

Community – First Nation, Population, and Associations



Fig. 31: Atikameksheng Anishnawbek First Nation proximity to Sudbury.

Located in Naughton, Ontario, Atikameksheng Anishnawbek is a First Nation community approximately twenty kilometers from the city of Sudbury.⁸⁷ In 2006, a resolution to change the name of the First Nation from Whitefish Lake Indian Reserve No.6 to Atikameksheng Anishnawbek was passed and took effect in 2013.⁸⁸ Within the Anishnawbek community, there are members of Ojibway, Algonquin, and Odawa ancestry. At the governance level Mamaweswen, The North Shore Tribal Council (NSTC) represents this community along with six other First Nations, that are located on the North Shore of Lake Huron within the Robinson-Huron Treaty area.⁸⁹ The population of members is currently 433 people living on reserve, from a total population of 1,303 registered members.⁹⁰



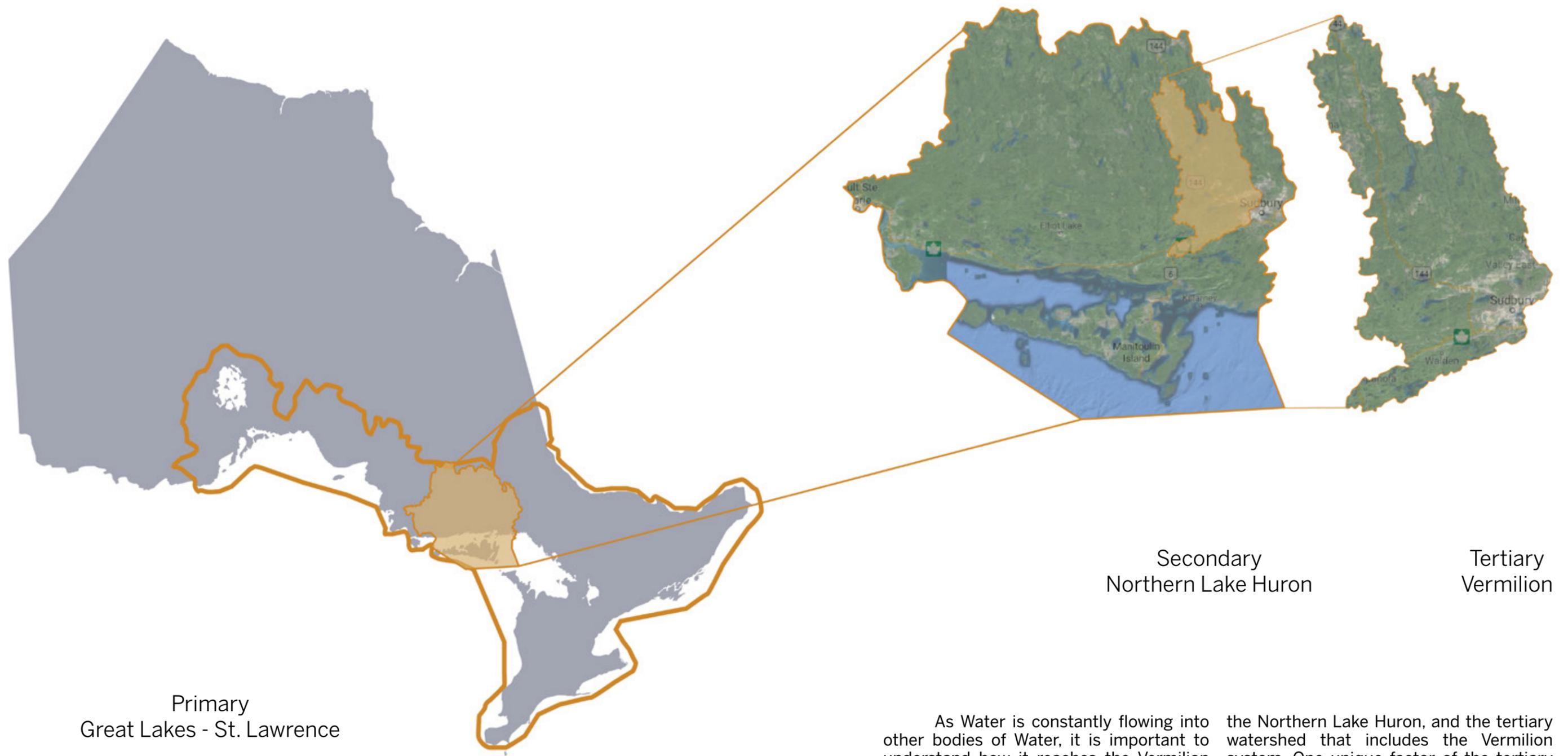
Fig. 32: Territory boundary of Atikameksheng Anishnawbek.

87 Google Maps, "Atikameksheng Anishnawbek First Nation," 2019.

88 Hedican J., Edward, "Appendix A: The First Nations of Ontario," in *The First Nations of Ontario: Social and Historical Transitions*, (Toronto, ON: Canadian Scholars, 2017), 159.

89 "About Mamaweswen," Mamaweswen, November 19, 2019, <https://mamaweswen.com/index.php/about-mamaweswen/>.

90 Migwans, Darin, interview by Celina Rios-Nadeau, Atikameksheng Anishnawbek Band Office, February 10, 2020.



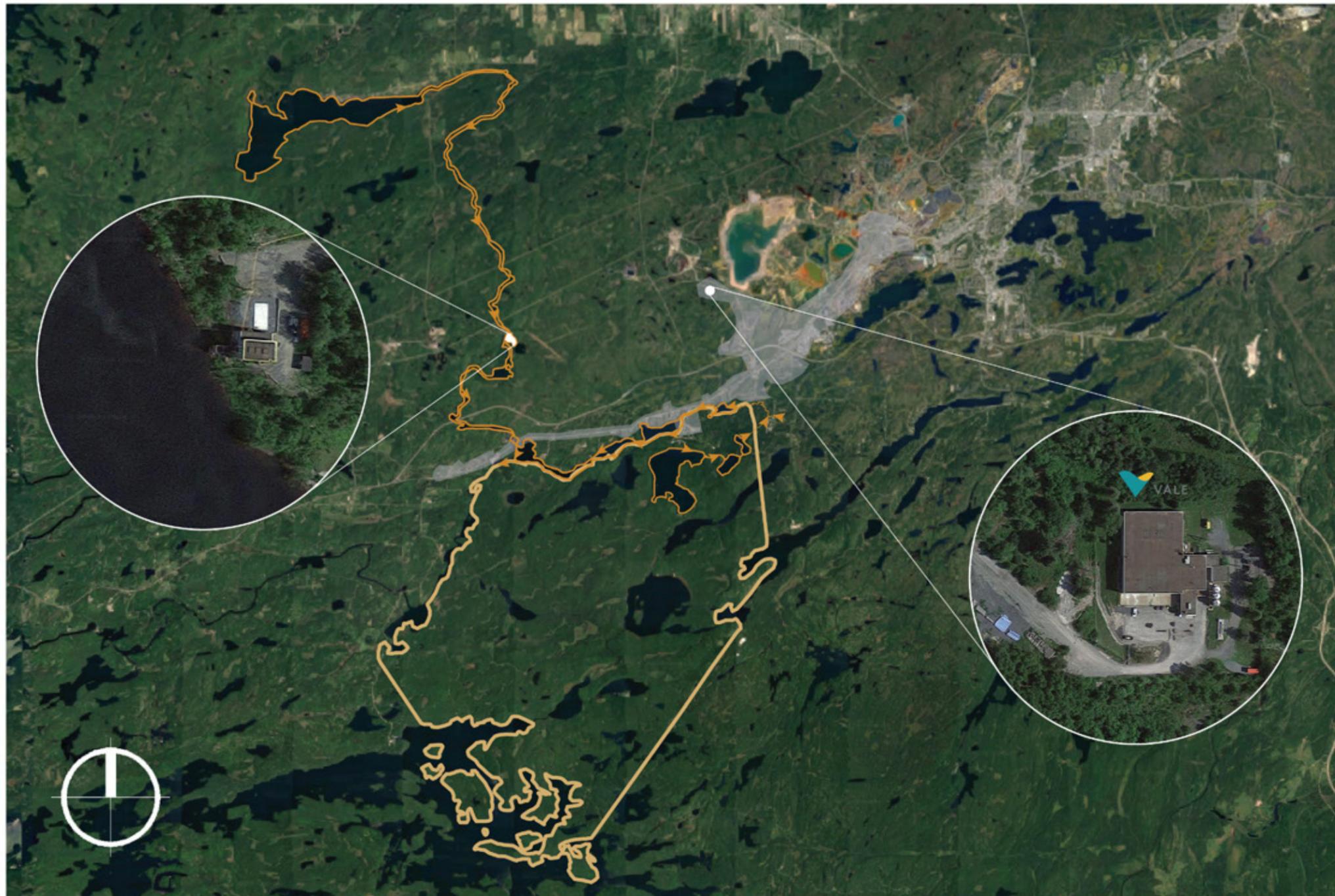
Primary
Great Lakes - St. Lawrence

Secondary
Northern Lake Huron

Tertiary
Vermilion

Fig. 33: Watershed systems diagram.

As Water is constantly flowing into other bodies of Water, it is important to understand how it reaches the Vermilion River, the current source of drinking Water for the community. At the largest scale, the primary watershed includes the Great Lakes and St. Lawrence, further narrowing it down to the secondary watershed being the Northern Lake Huron, and the tertiary watershed that includes the Vermilion system. One unique factor of the tertiary watershed is that half of the lakes within the bounds of the Atikameksheng Anishnawbek territory fall into a separate watershed. The focus of this thesis will speak to the Vermilion watershed and its relations.



VERMILION RIVER AND ATIKAMEKSHENG ANISHNAWBEK

5 KM

Fig. 34: Conext map of Water journey through the Vermilion River down to Whitefish Lake.

Historically, the territory was used for traditional activities of hunting, fishing, trapping and harvesting, while preserving a strong relationship with Water through ceremony, and daily practices. Surrounded by eight lakes, including Simon Lake and McCharles Lake, the community contains eighteen lakes within its boundaries, in direct proximity to Whitefish Lake, Mud Lake, Fly Lake, Little Fly Lake, and Makada Lake. The Vermilion River, which connects to Simon Lake via McCharles Lake, was significant for trade routes, journeys, and was used to access the Great Lakes and other major waterways.⁹¹ Today, the territory spans from the valley of the Vermilion River eastwards to the valleys of the Wahnapiatae and Sturgeon River.⁹²

In 2005, Chief and Council switched the community drinking source Water from wells connected to aquifers beneath the community, to the municipal Vermilion River Water Treatment Plant, owned and operated by Vale.⁹³ Vale is a mining company that has negatively impacted many Water systems and altered ecosystems to attain economic prosperity. While safe Water is provided through plumbing to each household, a daily interaction with Water is limited to tap Water, affecting community views of Water as commodity, rather than as a relative.

-  Vermilion Water Treatment Plant
-  Raw water intake zone
-  Service area of WTP
-  Territory
-  Main lakes and rivers
-  Watercourse direction

91 "Greater Sudbury Source Protection Area: Assessment Report", 2-15, September 2014.

92 "History," Atikameksheng Anishnawbek, accessed December 15, 2019, <https://atikamekshenganishnawbek.ca/culture>.

93 Richer, Chief Valerie, and Robert Paishegwon, interview with Celina Rios-Nadeau, formal interview, Atikameksheng Anishnawbek Band Office, December 17, 2019.



WHITEFISH LAKE

500 m

Fig. 35: Aquifers below Community and Whitefish Lake.

The previous potable water system had combined the drinking water and the fire suppression system in the community pumphouse. Unfortunately it did not produce a flow strong enough to meet the daily amount of water needed by community members and the fire department.⁹⁴ Currently there

⁹⁴ Migwans, Darin, interview by Celina Rios-Nadeau, Atikameksheng Anishnawbek.



-  Aquifers
-  Old pumphouse
-  Meter building
-  Main pipe network



Fig. 36: Community pumphouse decommissioned in 2005.



Fig. 37: Meter building owned by the City of Greater Sudbury.

exists a twenty-year agreement between Atikameksheng Anishnawbek and the municipality, where maintenance of potable water systems is the sole responsibility of its members on the territory. At the

⁹⁵ Ibid.

access bridge into the community, there is a meter building installed by the city. This contains a single hydro meter that monitors the usage of water for billing purposes, which services 148 homes.⁹⁵

Collaboration – Chief and Council, and Knowledge Carriers

In order to understand systematic forms of colonization through privatized Water, and how to reconnect with Water in everyday life, I began to speak with Julia Pegahmagabow, a Knowledge Carrier and member of Atikameksheng Anishnawbek about the value of Water, current and past relations, and her own experiences. She has aided me through teachings, stories, and understanding aspects of Anishinaabe ways. By explaining how people interact with the land and lakes through site visits, pointing out areas that have been previously damaged or altered throughout history, as well as wildlife that is impacted in these designated community planning areas.

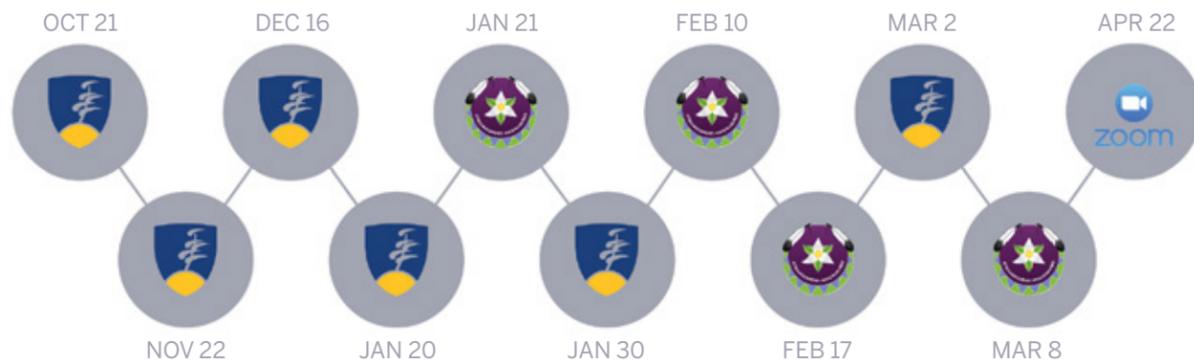


Fig. 38: Diagram of meetings and visits with Julia at Laurentian, Atikameksheng Anishnawbek and online.

“Historically, we didn’t have to contend with the rate of pollution, and environmental contaminants that are affecting Water systems...but people did boil Water to cook, and they knew which systems were not healthy, they paid attention to the beaver, where it was building a damn, so they knew where not to drink from, because there was bacteria”.⁹⁶

Although this community has access to clean Water through a municipal agreement, there is no voice in self-governance which limits relations with the Water. Due to the ease of access to potable Water, a shift to Water as a commodity places connection with Water and the community at risk. In order to address these issues, and re-establish ties with surrounding Water, and to continue to protect it for future generations, it is important to first establish a reciprocal relationship. Through meeting Chief Valerie Richer, and the Land Governance Officer Robert Paishegwon, a discussion took place on how my research can contribute to the community. Through documenting the story of what happened with the Water, and



Fig. 39: Chief Valerie Richer and Council.

daily living, a recollection of the history, and existing ways Water is experienced could help in taking back sovereignty over Water, through celebrating it.

⁹⁶ Pegahmagabow, Julia, interview by Celina Rios-Nadeau, personal interview, Salute Coffee Company, October 21, 2019.

Introduction to Sites – Preliminary Studies



Fig. 40: Site A Simon Lake preliminary analysis.

Places of conflict, and pollution were discussed during the meeting with Chief Valerie and Robert at the Band Office, bringing up two potential sites for architectural intervention. While efforts to preserve practices of Water and protect Water continue, many surrounding areas of Water remain contaminated. Initially Site A considered Simon Lake, a moving body of Water that contains partially treated raw sewage settlement from the 1970s, resulting in green-algae blooms during the summer months.⁹⁷ As the lake is outside of the territory boundary the community has little connection to Simon Lake, often negative remarks are made about this lake because of the foul odors it produces when the algae blooms decompose.



Fig. 41: Site A Simon Lake blue-green algae blooms during the summer.

Furthermore, Simon Lake is directly impacted by effluents released from the Walden Wastewater Treatment Plant, into Junction Creek that flows from Mud Lake towards Simon Lake.

As a point of passage into the community, an architectural intervention could reflect on new positive relations with Water and alter negative connotations of Water treatment in First Nations communities, while shifting understanding of Water treatment as places of learning and engaging with Water. Located at the entrance of the community, this would allow visitors, who frequently enter the community for other services, to learn about Water. Allowing all people to think about where their Water comes from, and actions that can be taken to protect and respect Water. Many factors impacted the decision to move away from this site, primarily listening to community voice and respecting their decisions to have it away from the public eye. While this wasn't the area that was selected, it is recognized that Simon Lake needs love and attention to become a healthy lake once again.

⁹⁷ Richer, Chief Valerie, and Robert Paishegwon, interview with Celina Rios-Nadeau, formal interview, Atikameksheng Anishnawbek.



Fig. 42: Site A view of Simon Lake while exiting Atikameksheng Anishnawbek.



Fig. 43: Site A view of Simon Lake from the bridge.



Fig. 44: Site A view of Junction Creek that flows into Simon Lake under the bridge.



Fig. 45: Site B Makada (Black Lake) preliminary analysis.

Another potential site was Makada Lake (known as Black Lake), which divides the lake in two; the set boundary of the Atikameksheng Anishnawbek community, and allocated lots for permanent residents and cottagers. Permanent dwellings, and seasonal dwellings exist along the shoreline. The conflict between Anishnawbek ways of living and being can clash with Western ideals of Water recreational use, and pollutants that have severely damaged this body of Water like many others. Although fish populations, and wildlife are still present, green-blue algae blooms have also been found. This strategy would involve both community members and external residents in helping to restore Water quality and form a protection plan for future use of Water, while being mindful of maintaining good Water and respect towards Water inclusive of non-Indigenous people.

The final site selection was the result of community engagement through a meeting that took place at Kendaasii-Gamik Library within Atikameksheng Anishnawbek. Discussion began with speaking about the goals of the conceptual building, and how site selection should consider both environmental factors such as access to Water, travel paths, but should also value how people connect to a specific place based on experiences, and memories. considers relations to Whitefish Lake and its strong connection to community members, the final selection of Whitefish Lake was one of the ideal locations. Through community input by individuals who utilize the land in different ways, from walking the trails in the summer, snowmobiling in the winter across the lake, tapping maple trees in the spring, and kayaking among other activities, this site was agreed on for further architectural intervention.

7 Whitefish Lake and Halfways Creek

Definitions:

Atmospheric fallout	Settling of airborne particles on the ground or Water, caused by explosions, carried to distant regions through the atmosphere. ⁹⁸
Biofiltration	Biological treatment process where living organisms such as plants help to filter and oxygenate Water. ⁹⁹
Intake	An opening, often a pipe, that draws Water from the lake to be cleaned. ¹⁰⁰
Natural fire pit	A dug out hole in the earth, sometimes there are stones placed around the edges. This type of fire is always supervised. ¹⁰¹
Tectonic	The way something is constructed relating to use and artistic design. ¹⁰²
Transplant	To move a plant from one place and introduced elsewhere. ¹⁰³

98 "Fallout," Dictionary.com, accessed March 25, 2020, <https://www.dictionary.com/browse/fallout>.

99 Ureta, Alejandro, "Biological Drinking Water Treatment: Microbiological Considerations For The Operation And Control Of Biofilters," Biological Drinking Water Treatment Microbiological Considerations For The Operation And Control Of Biofilters, accessed March 18, 2020, <https://www.wateronline.com/doc/biological-drinking-water-treatment-microbiological-considerations-for-the-operation-and-control-of-biofilters-0001>.

100 "Intake," Merriam-Webster, accessed March 19, 2020, <https://www.merriam-webster.com/dictionary/intake>.

101 "Firepit Meaning," Cambridge Dictionary, <https://dictionary.cambridge.org/dictionary/english/firepit>.

102 Maulden, Robert, "Tectonics in Architecture: from the Physical to the Meta-Physical," Tectonics in Architecture: from the physical to the meta-physical. Massachusetts Institute of Technology, January 1, 1986, <https://dspace.mit.edu/handle/1721.1/78804>.

103 "Transplant," Merriam-Webster, accessed March 19, 2020, <https://www.merriam-webster.com/dictionary/transplant>.

Site – Analysis



Fig. 46: View of Whitefish Lake in the summer.

The selection of this site considers not only the immediate conditions of the area, it looks at the environmental history of the site and its surrounding context. A deeper understanding of Whitefish Lake can define what it has experienced. The Lake reaches a depth of 11 meters at its core, extending 3,749,000 m² across the surface.¹⁰⁴ A brief history of nickel pollution in the lake was identified in a technical report. Indicating that mining procedures resulted in high levels of acidity due to atmospheric fallout, affecting fish populations tremendously.¹⁰⁵ As fish were unable to reproduce, many species of fish died, where high levels of heavy metals and nickel added unnecessary amounts of sulfates to the lakes, nearly eradicating all the fish from the lakes within and

beyond the community. As the renewal of the lakes was estimated to be seventeen years,¹⁰⁶ aquatic life was gradually restored.

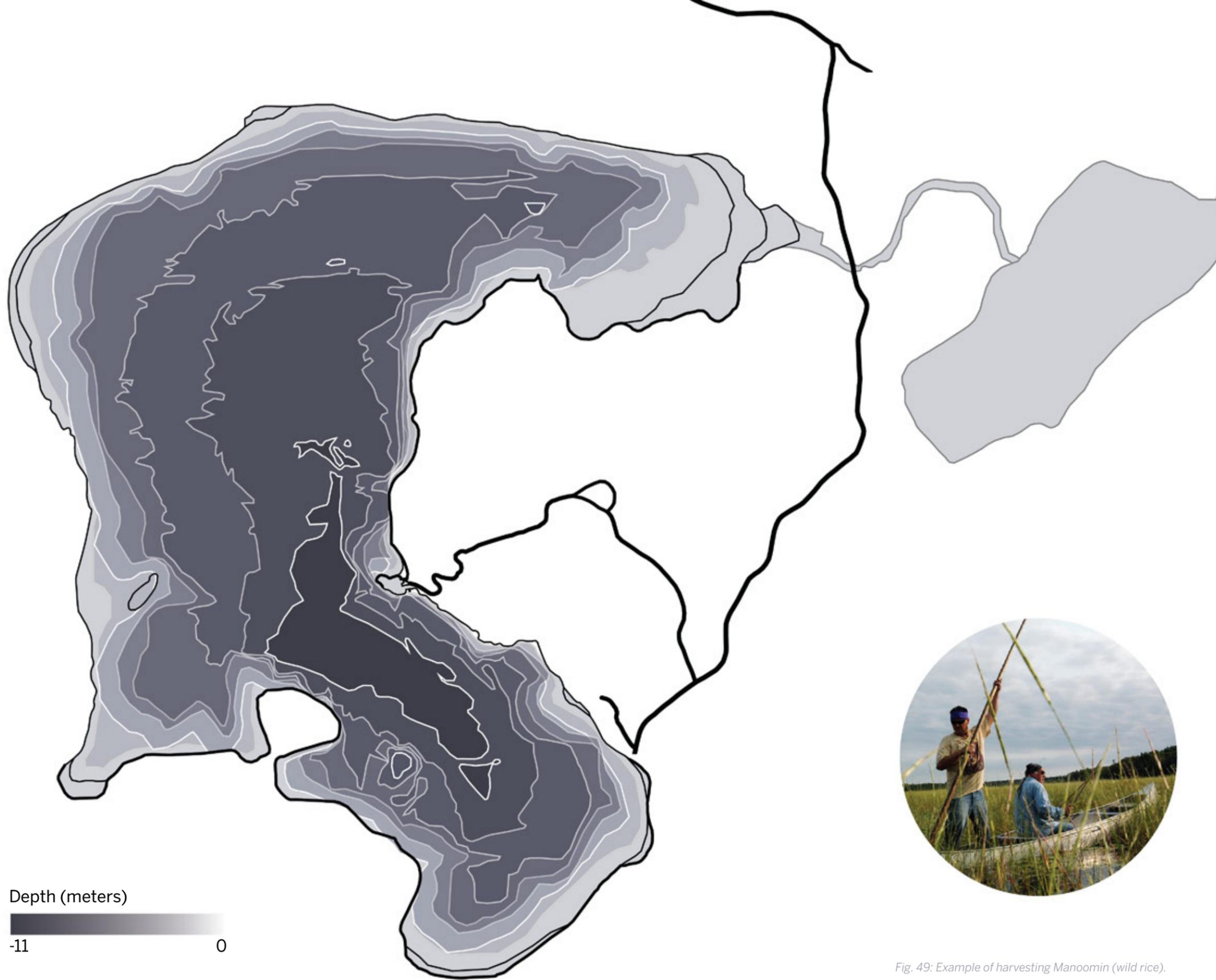


Fig. 47: Retrieving a Whitefish from a large mesh net.

104 Beamish, R.J., G.A. McFarlane, J.C. VanLoon and J. Lichwa, *An Examination of the Possible Effects of Sudbury Nickel Mining and Smelting Operations on Fishes and the Water Chemistry of Lakes within the Whitefish Lake Indian Reserve*, (Environment Canada, 1975), 2- 47.

105 Ibid., 9.

106 Ibid., 31.



Depth (meters)
-11 0

WHITEFISH LAKE

Fig. 48: Depth of Whitefish Lake analysis.

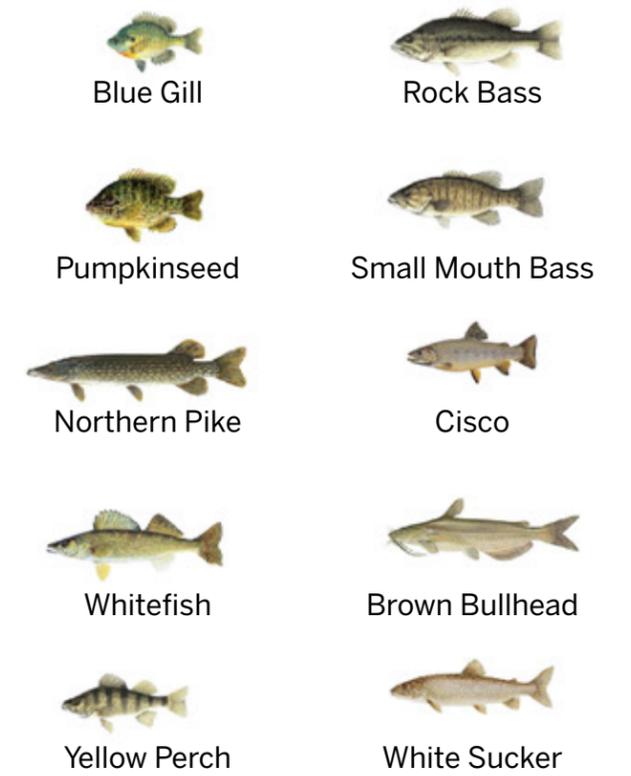


Fig. 50: Fish species found in Whitefish Lake.



Fig. 49: Example of harvesting Manoomin (wild rice).

In a more recent study on fisheries in Atikameksheng, more desired fish such as Walleye were present in 2003, deemed to be historically present in Whitefish Lake, were not found during the study.¹⁰⁷ Due to these acidic conditions of the Water, highly sensitive fish such as Walleye were unable to spawn, showing that restored Water doesn't guarantee the return of native species to pre-existing ecosystems. Presently, there are approximately 10 different species of seasonal fish. One important aspect is the connection to Fly Lake via Halfways Creek, which can be accessed in a canoe or kayak for future generations to harvest manoomin, wild rice that has begun to regrow here thanks to community re-planting efforts.

107 A/OFR, Atikameksheng Fisheries Update, January 2014, accessed March 5, 2020.

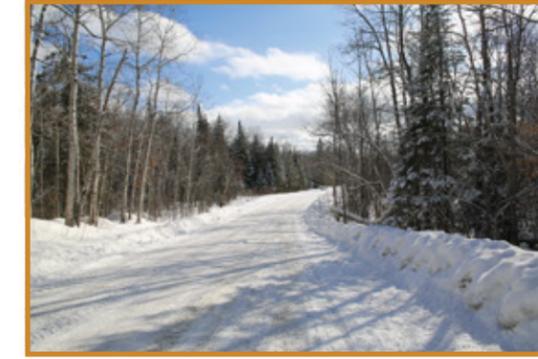


Fig. 52: View from Reserve Road towards site.



Fig. 53: Previously cleared land, now empty.



Fig. 54: Old forestry equipment and logs stored through the winter.

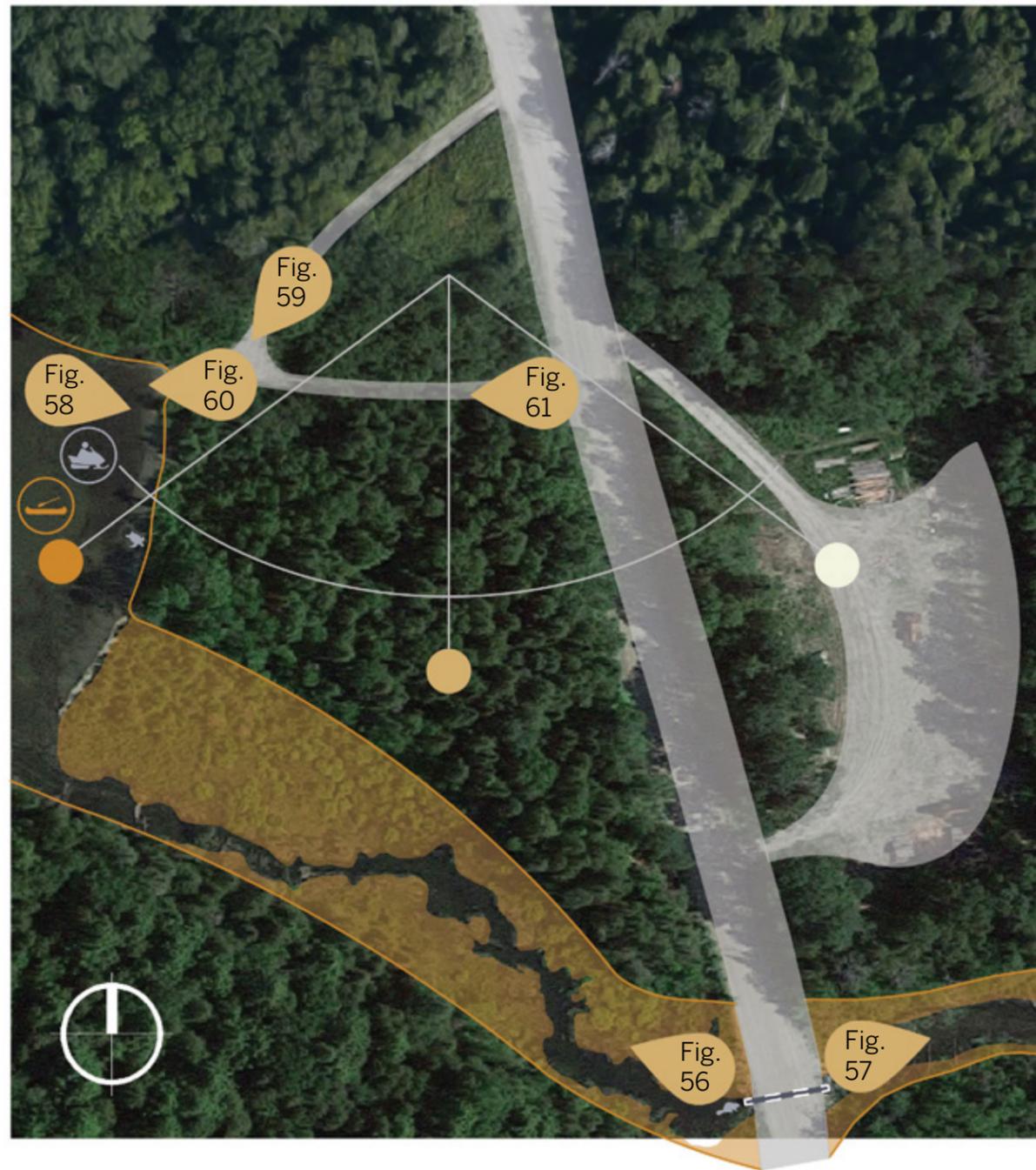
- Reserve Road
- ▣ New Booster station
- Solar canopy

Existing on the site, the first image is a view of the road from Halfways Creek up to the proposed site. There is an empty lot, which was cleared in the past for logging, it currently stores cut down logs and forestry equipment. The intent of the building is for it to be off grid, which would require energy production, which can be attained through a proposed parking lot solar canopy system.

SITE CONTEXT MAP

Fig. 51: Land contours, proposed deck, and solar parking lot.





HALFWAYS CREEK

500 m

Gravel road and trails

Logging equipment

Views

Wetland

Culvert

Animals

Fig. 55: Site connecting Whitefish Lake and Halfways Creek.

While visiting the lake, Julia relayed her knowledge of the site, sharing that turtles nest along the shoreline and a beaver has been witnessed, often clogging the culvert, which connects Whitefish Lake and Fly Lake through Halfways Creek.¹⁰⁸

paths to travel across the lake, and access fishing shelters. On the proposed building site itself, it had previously been clear-cut during times of agriculture impositions by Western influences,¹⁰⁹ clearly visible through the regrowth of saplings, and the



Fig. 56: Beaver spotted here often.



Fig. 57: Culvert diverting Water through Halfways Creek.

The connection to Fly Lake is where Manoomin, known as wild rice, has been reintroduced among bulrush and lily pads.

sparseness of trees. Other factors of environmental impacts are still present, such as the use of logging and stored equipment adjacent to the proposed site. The now empty lot was once a community garden space. Near this space, a landfill existed, bringing forth the concern of leaching toxins imbedded in the soil, and its effects on the creek.¹¹⁰

Connecting the shallow edge of the Water, the gravel pad is often used to launch boats during the summer months. In the winter, snowmobilers use the existing



Fig. 58: View of the site from Whitefish Lake.

¹⁰⁸ Pegahmagabow, Julia, site visit with Celina Rios-Nadeau, Atikameksheng Anishnawbek, February 10, 2020.

¹⁰⁹ Ibid.

¹¹⁰ Ibid.



Fig. 59: Site view of boat launch area facing Whitefish Lake from snowmobile path.



Fig. 60: Site view of Whitefish Lake.



Fig. 61: Site view of path from Reserve Road.

The Land – Sharing and Learning by Community

Anishnawbek have a connection to the land; we must protect her and continue to learn. Re-adapting to how the land has been scarred can strengthen our connection to our provider, retelling how reciprocal relations will maintain the balance between all life forms. Sharing and learning is done in many ways: communally through gathering, sharing of food, and more intimate places of healing one's own spirit is guided while on the land. These types of spaces provide safe and positive areas for community use. While they may not be regarded as architectural, light forms that sit on the landscape can begin to consider how sustainability is connected to and integrates Anishnawbek ways of teaching and interaction. Programming of these spaces begins to look at re-engaging with the land through an outdoor cooking space, different types of natural fire pit

areas, for socializing and healing. Small structures needed to support this type of learning, events would require outdoor storage of dried wood, and equipment storage for activities that celebrate Water such as fishing, skating, playing hockey, and boat storage. Outdoor decking would provide areas for teachings about Water, before participating in canoe building workshops, or going out on the Water in kayaks and canoes. As well as key factors of the site that need to be preserved, which includes the main trail for snowmobiles in the winter, and more importantly maintaining direct access to the Water without barriers or permanent structures. In relation to sustainability, a small percentage of harvested trees on site could provide more local use of building materials, while transplanting saplings to adjoining areas for further growth.



Fig. 62: Natural fire pit.

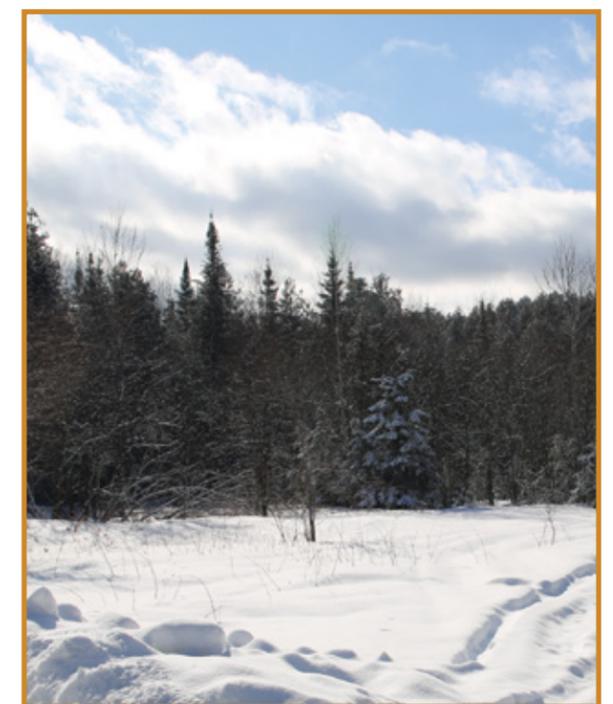


Fig. 63: Proposed transplanting of existing saplings on site.



Fig. 64: Children sharing stories at the communal gathering place with a natural fire pit and outdoor cooking space in the background.

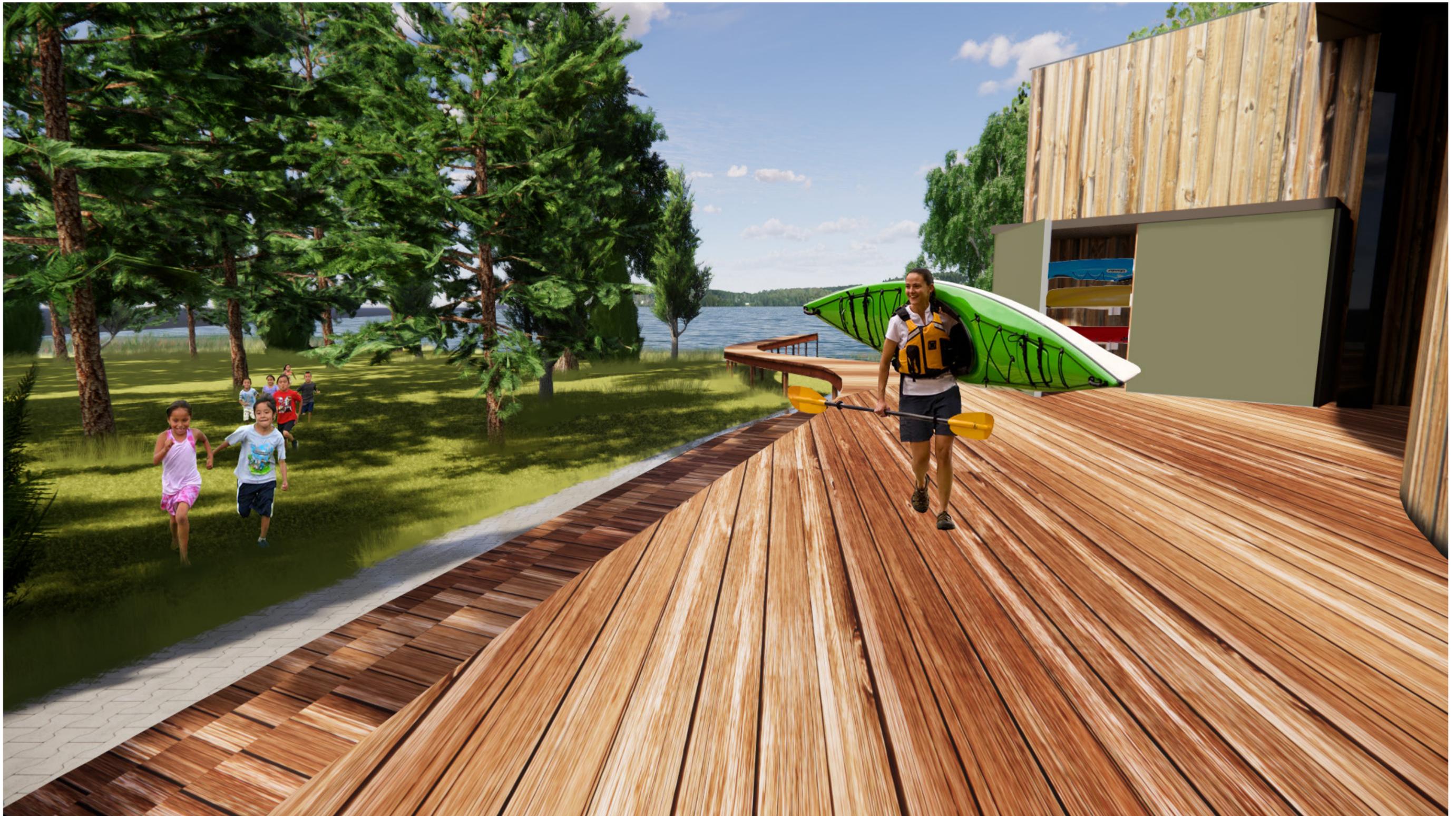
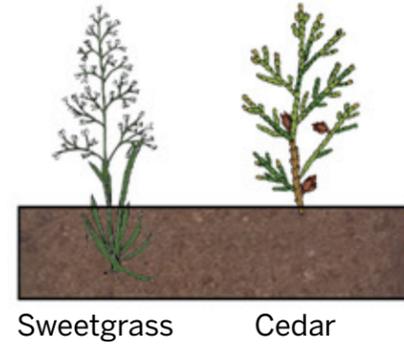


Fig. 65: Children playing in the forest and woman walking on the deck returning from kayaking in Whitefish Lake.



Fig. 66: Path to Whitefish Lake where woman is launching her kayak and young girl learns to fish with her mother.

Through community engagement and feedback, a large communal natural fire pit, and a smaller private fire pit in the trees could be used for healing, both would be supervised by a fire keeper when in use. An outdoor kitchen in close proximity to the larger gathering space could be used to brew tea, cook and boil harvested sap from maple trees in the spring. Outdoor garden planters would include the four sacred medicines being sage, tobacco, and along the shoreline sweetgrass, as well as transplanted cedar trees. As community members would use these spaces, it was important to integrate natural mosquito repellent plants, and herbs. In order to access services, but not impeded on the landscape, a proposed green paved path for truck usage was added. The deck would house a small storage area for kayaks to go down to the Water.



Sweetgrass Cedar



Sage Tobacco
Four Sacred Medicines



Oregano Rosemary Peppermint Lemon grass Lavendar
Mosquito Repellent Herbs and Plants

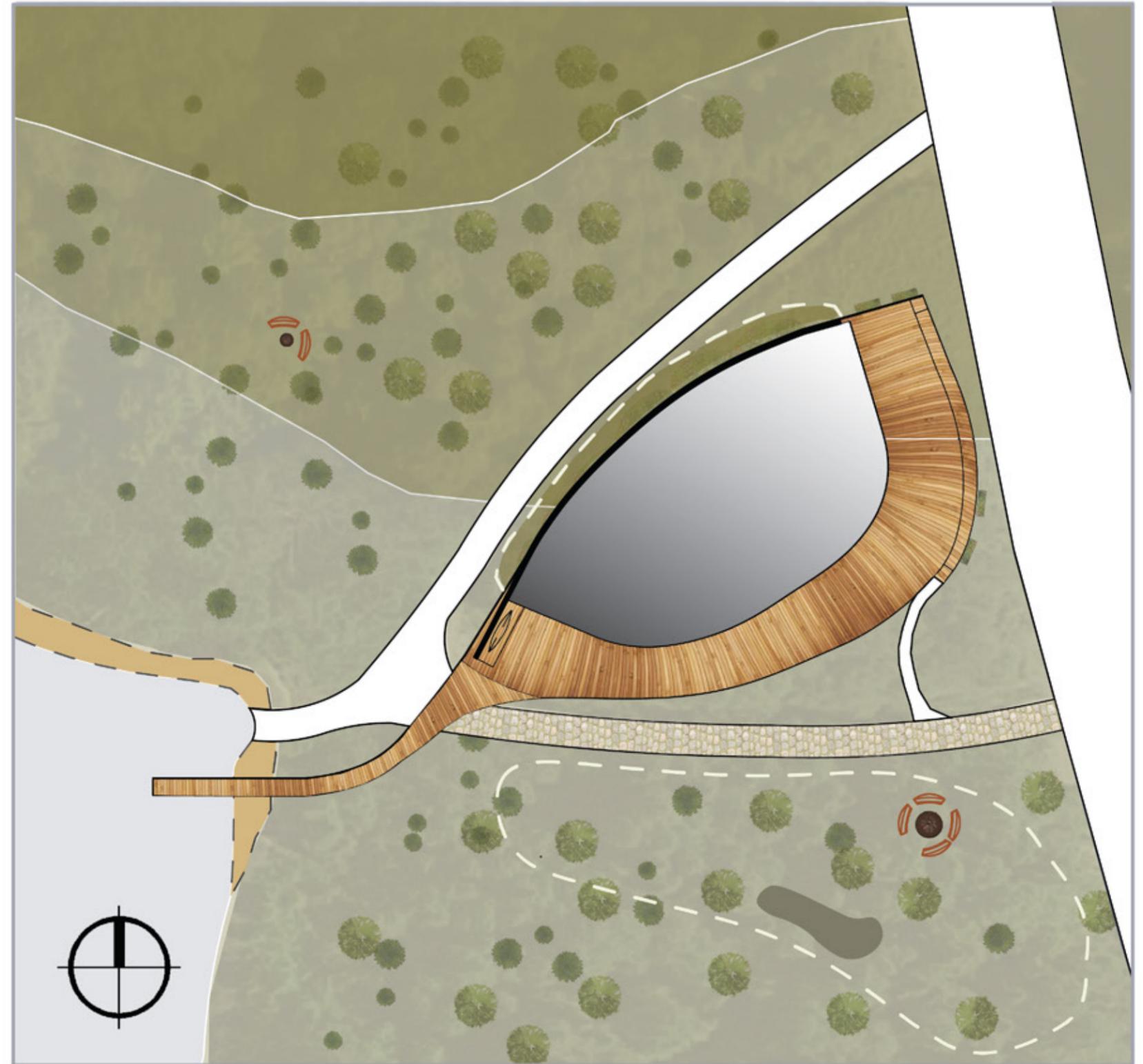
Fig. 67: Proposed landscaping and planter boxes.



Carved benches and Natural fire pit
Proposed Landscape Furniture

Fig. 68: Communal fire pit and furniture.

-  Gravel road and trails
-  Sweetgrass
-  Deck
-  Green paver road
-  Outdoor kitchen area
-  Fire pit and seating



SITE PLAN

Fig. 69: Proposed rain garden, deck, gathering spaces, and outdoor kitchen.





Fig. 70: Sisters gardening while women weave baskets among other community members.



Fig. 71: Man kayaking with his dog and woman sitting on the end of the dock.

Programming – Biofiltration and Water Systems

Beginning of the conceptual form of storytelling was inspired by the Anishinaabe Migration and the telling of this story through Birchbark scrolls. Completed for the Faculty Research Seminar course, an adaption of the Birchbark scroll depicts the number of Water advisories in First Nations communities within Ontario on the front face, and the Migration story on the back of the birchbark.

The intent of the mapping project is to placing value on storytelling and experience, so that it can be regarded at the same level as factual data is valued. Which can bring to light the relationship with Water that Indigenous people have currently and in the past. Through material exploration, the importance of birch bark as the medium was informed by its deep connection to Water, which shapes how birch bark dries

when submerged in Water, how it is shaped into vessels to navigate in Water, and encompasses the reciprocal relation of Water and its surrounding ecology. Through an analysis of traditional Indigenous forms of mapping, a better understanding of how birch bark was used in the past to map was through story. By engraving symbols and images into birch bark sheets, known

as scrolls. Referred to as Wiigwaasabak in Ojibwe, one of the most relevant birch bark scrolls to this exploration is Red Sky's Migration Chart, which depicts the historical journey of the Ojibwe people from their home along the Atlantic Ocean to the Great Lakes that transpired in the fourteenth and fifteenth centuries.¹¹¹



Fig. 72: Water advisories in Ontario front of birch bark map.

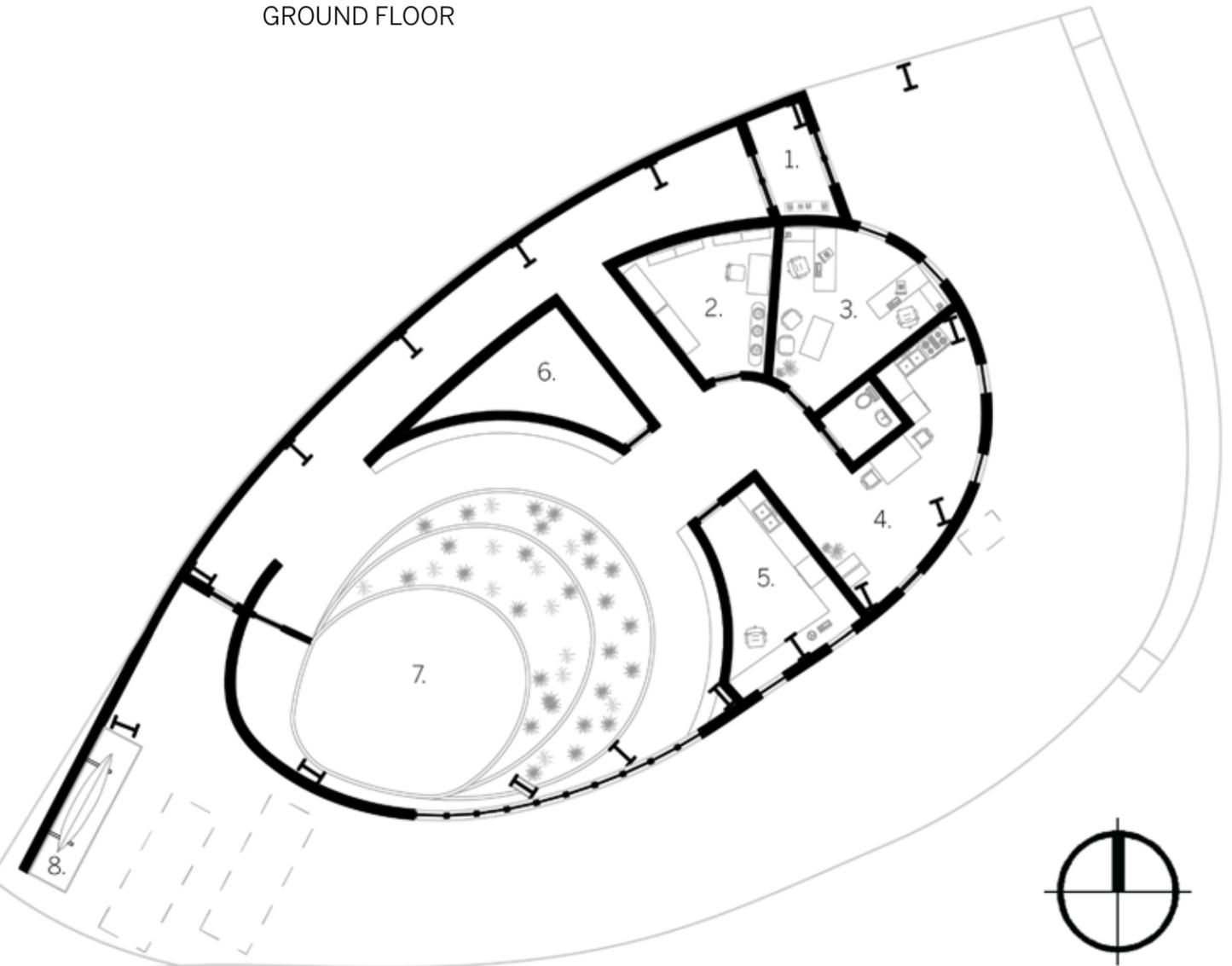
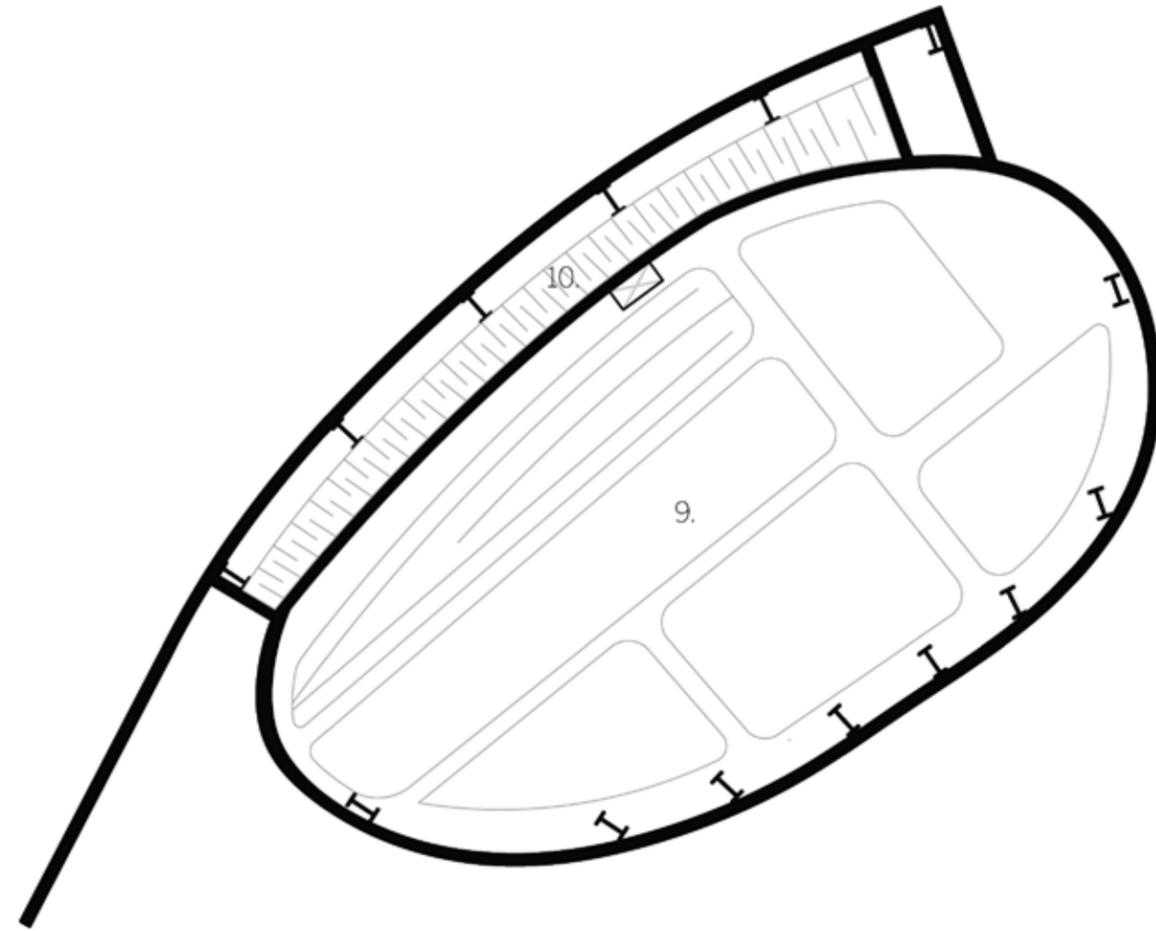


Fig. 73: Anishinaabe Migration back of birchbark map.

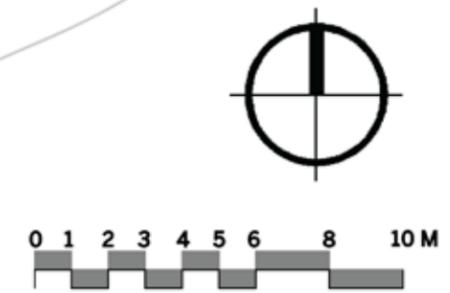
¹¹¹ Decolonialatlas, "Red Sky's Migration Chart: Ojibwe," The Decolonial Atlas, June 6, 2018.

SECOND FLOOR

GROUND FLOOR



- 1. Vestibule
- 2. Drying and storage room
- 3. Office
- 4. Kitchenette
- 5. Water testing lab
- 6. Mechanical room
- 7. Biofiltration system
- 8. Boat storage
- 9. Purification tanks
- 10. Potable Water tank



WATER SYSTEM PLAN AND GROUND FLOOR PLAN

Fig. 74: Proposed layout for building.

Entering the building, the program would integrate potable Water systems, biofiltration, and community use and learning. The drying and storage room would contain the harvested medicines, herbs and plants from the landscape. The kitchenette would be accessible from the deck and allow the facility employees to enjoy the outdoor spaces in the summer during lunch breaks, and community

members for gathering. Water quality testing would be done in the lab, and the main space would be the biofiltration Water beds, with integrated benches to learn about the process. The mechanical room would include an access point through a ladder and roof hatch for yearly maintenance. The loft space would be used for storing Water purification equipment and clean Water.



Fig. 75: Women talking and sitting on the deck area with views to the forest and outdoor cooking space.



SOUTH ELEVATIONS

Fig. 76: South West and South East elevations.



The first elevation shows the pitch of the roof, in order to collect rainwater that would flow down the side of the building into the rain garden. The purpose of the rain garden is to filter out debris and maintain Water flow. Since it is located on the North

side of the building, this will have more shaded conditions. In the summer, this collection of Water can be used to dampen the planter boxes. In the second elevation you can see the deck, with the covered boat storage and its connection to the Water.



Fig. 77: Rain Water falling down the side of the building collecting in the rain garden.

The tectonic approach interprets the construction of a birchbark canoe. In relation to Water, the birchbark canoe was used for many journeys, portaging on the land, and travelling across the Water. It is fitting that such a vessel inspires the structural integrity of the building. A curved ribcage composed of steel columns and beams would be required to hold large quantities of purified Water on the second floor, similar to the storage of safe drinking Water in municipal Water towers. Cross-Laminated Timber (CLT) construction was initially considered for structural support. Although this would be possible, a high amount of chemicals would be required to address moisture concerns impacting wood expansion and contraction, which could become problematic in the future. Steel construction would aid in mitigating potential contaminants, and heavy chemical processes, lasting much longer than treated wood.

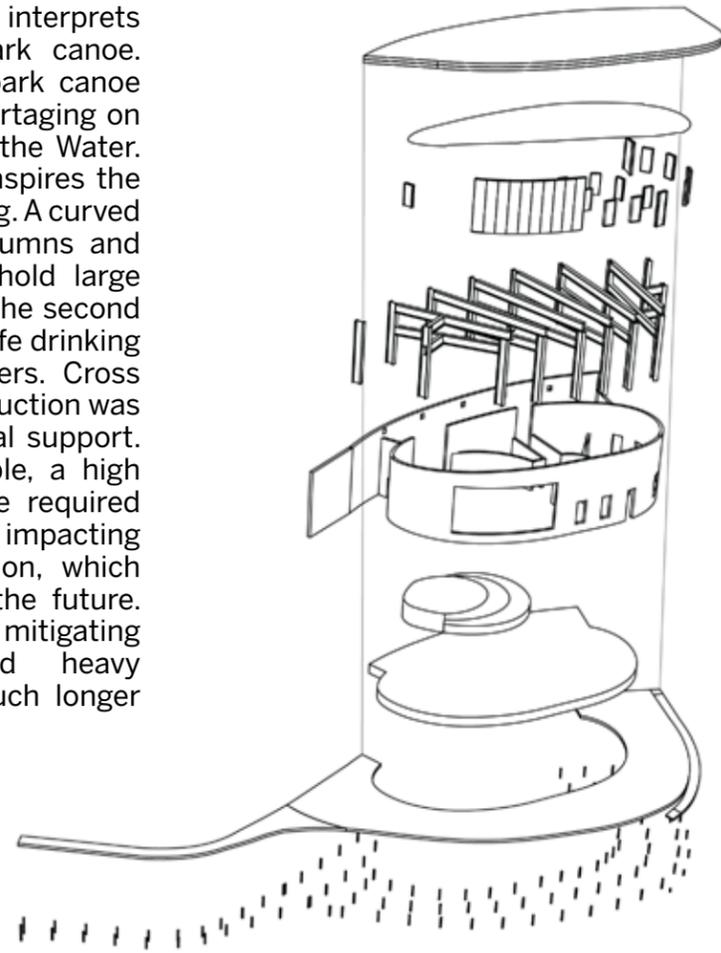
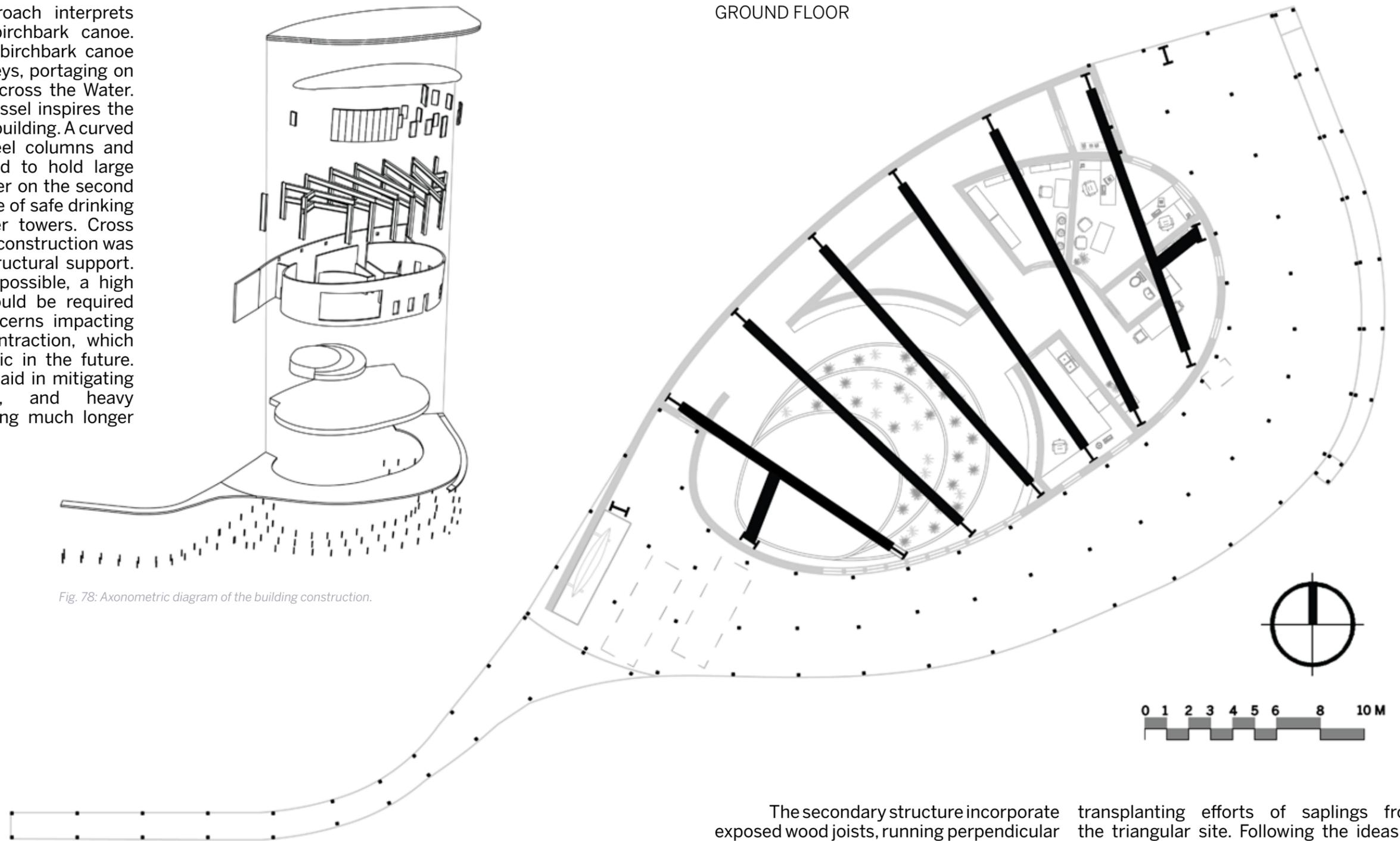


Fig. 78: Axonometric diagram of the building construction.

GROUND FLOOR



STRUCTURE PLAN

Fig. 79: Posts, beams, and columns structural components.

The secondary structure incorporate exposed wood joists, running perpendicular to the steel beams. As this proposed typology of drinking Water treatment seeks to integrate community engagement with the land, the community would be able to harvest materials on the site such as various types of wood to be used for cladding of the exterior and interior walls, as well as help in

transplanting efforts of saplings from the triangular site. Following the ideas of sustainable design, minimally impacting the land and avoiding large excavation processes would require a shallow foundation. The posts needed for structural stability of the deck would be placed 6 feet deep, the minimum requirement for footing to surpass the frostline.

SECOND FLOOR

GROUND FLOOR



TRAVEL PATH OF WATER PLAN

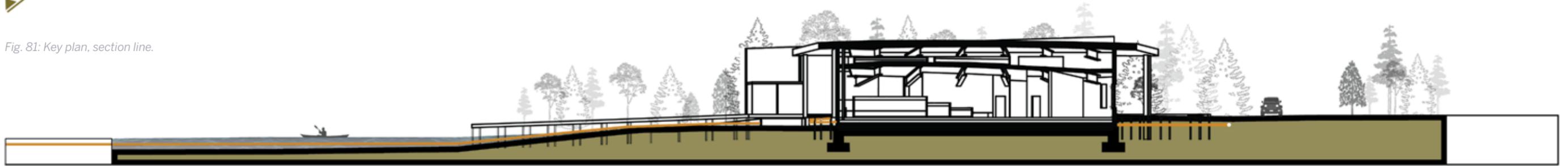
Fig. 80: Movement of Water from Whitefish Lake through the building.

As the journey of Water is important, the movement of Water is represented throughout the building. Drawn at the lake from the intake, the Water travels through an insulated pipe up to the coagulation basin and into the biofiltration beds. Once filtration occurs, a clear pipe travels to the second story, visibly showing how the Water moves to the second level. On this level, many components such as tanks and

basins are necessary to properly purify the Water. Once the Water has travelled through the system, it will continue to move through the clean Water storage area, and will be pumped to needed areas of the building. Storage of Water is also necessary in case of any emergency, and its final step will be to travel out to the community, pumped by a booster station, this will help in areas with steep terrain.

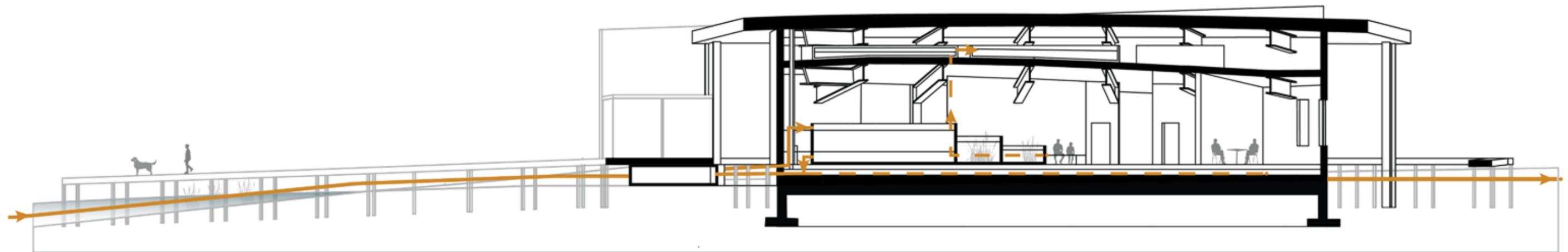


Fig. 81: Key plan, section line.



SITE SECTION TRAVEL PATH OF WATER

Fig. 82: Relation of the Water and building on the landscape.



BUILDING SECTION TRAVEL PATH OF WATER

Fig. 83: Travelling Water through the building and Water systems.

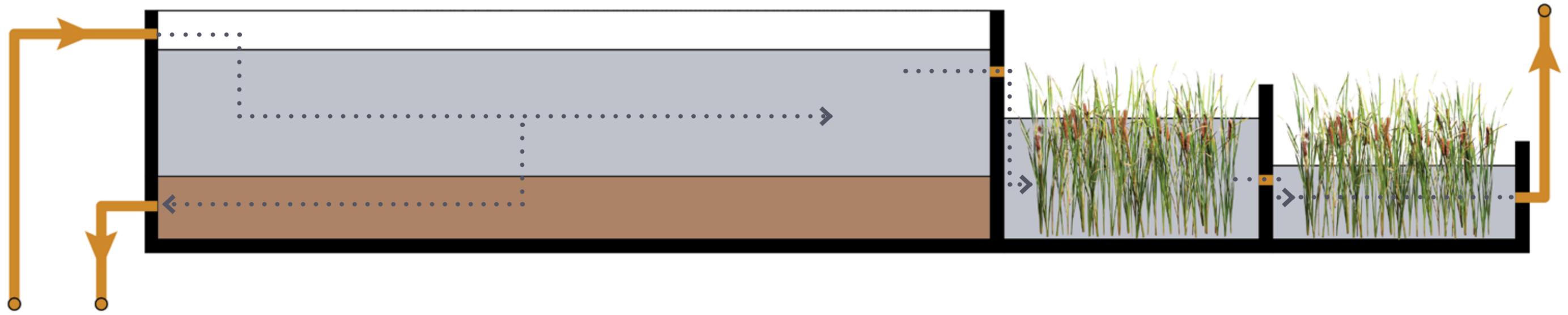


Possibilities of water purification should utilize natural processes, integrating native species of vegetation in order to reduce the reliance on heavy chemical processes. It would be naïve to propose a total natural system of purifying water

considering northern conditions, but it is vital to unify these two systems. Through indoor biofiltration beds, the existing ecosystems would remain undisturbed, creating an indoor system to teach and integrate constructed wetland principles.

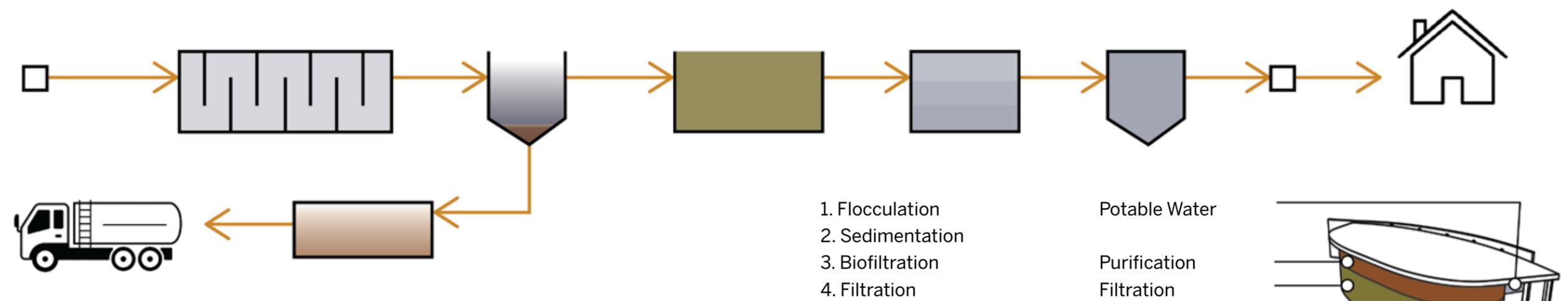


Fig. 84: People learning about biofiltration and watching Water travelling up to the second level for further purification through the pipe.



BIOFILTRATION BED SECTION

Fig. 85: Travelling Water through the flocculation basin and into the indoor wetland.



SCHEMATIC DIAGRAM OF WATER FILTRATION AND PURIFICATION PROCESS

Fig. 86: Journey of Water from the intake, to the home.

1. Flocculation
2. Sedimentation
3. Biofiltration
4. Filtration
5. Activated Carbon Basin
6. Chlorination

Potable Water
Purification
Filtration

Fig. 87: Water building diagram.

The concept encompasses the expression and movement of Water. In existing Water purification processes, Water is hidden away. In many instances, it is funnelled from equipment to equipment, only visible at the intake from a body of Water for purification. The building will

be a catalyst for learning, expressing how Water flows through material. The visual understanding of the Water purifying process, from how it enters the building, is filtered, stored, and travels to the community will be understood. Providing opportunities in engaging with filtration, and community.

The process would integrate six key components, and introduce biofiltration, mimicking similar properties to wetlands in ecosystems. Going through this cycle, the water is drawn from the lake, separated in the sedimentation tank from waste solids,

and filtered through the biofiltration beds. The next steps include purifying the Water through three layers of sand filtration being course to fine grains. The final step would be activated carbon and chlorination, then it is stored through maintaining moving Water.



Fig. 88: Snowmobiler using the preserved trail and children going down to the lake to skate.

Conclusion

First Nations have a different worldview and experience of Water and thus to consider these distinct perspectives, it was important to collaborate with Atikameksheng Anishnawbek throughout the design process. It was important to understand how people in the community experience and recognize Water. Every First Nation community and the people who live there have different connections to Water that must be taken into account. Some communities have a stronger spiritual or physical relationship with Water than others who have been greatly impacted by historical and ongoing processes of colonization, which has served to alienate people from their traditional relationships to Water. There is a shift in many communities to relate to the Water as a resource, needed for public works or drinking Water for the most part.

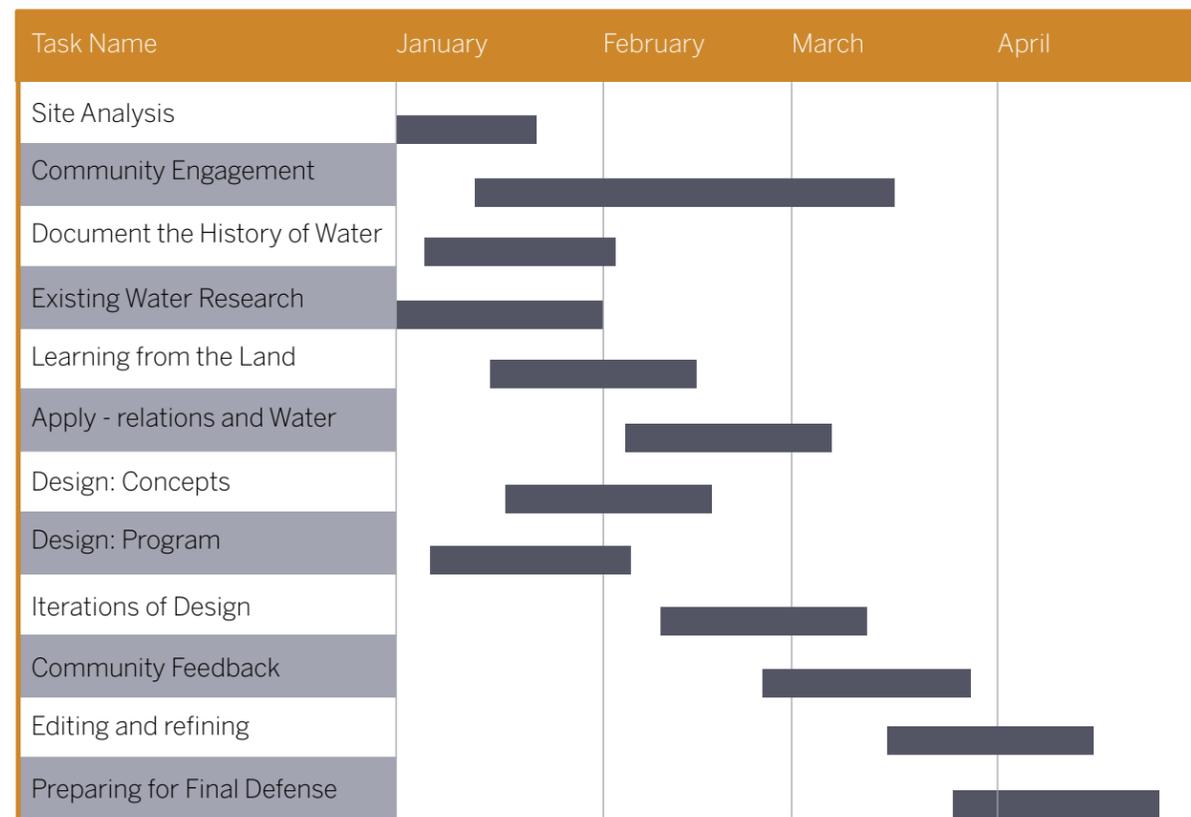


Fig. 89: Process of engaging with Atikameksheng Anishnawbek.

To explore the research question of “how community and Water can be reconnected through architectural intervention and thereby alter existing relations to Water positively,” it was imperative to engage with community first. This process has included fostering innovative relations with experts and professionals outside of the field of architecture such as Knowledge Carriers, Elders, and other technical professionals in Water management. Oftentimes, this type of relationship is not included in architectural projects. Participation includes many one-on-one meetings, sharing of story, listening and providing feedback from lived experiences, adding their being that enriches the entirety of the thesis.

Collaborations at the design phase with Elders, Knowledge Carriers and others, was deemed a unique inclusion in an architectural process. Such collaborations are important and need to be included in architectural practice as the forefront for not only Indigenous design, but all design. In doing so, a more inclusive process allows reciprocal relations to thrive in secure environments. A visual summary, indicated in figure 89, of involving Atikameksheng Anishnawbek shows how learning from the site, and engaging with community members holds equal significance to design. Through learning about Anishnawbek concepts and values, the development of the project considers future outcomes and stages such as total self-governance in Water infrastructure, and allowing community growth through eco tourism. Speaking to the teaching of the Seven Generations, any choice that is made should result in a sustainable world seven generations into the future. Meaning that as the community grows and develops, this design seeks to accommodate that growth progressively becoming less reliant on municipal Water services with ideally a return to self-sustaining and governing Water systems in the future. When designing with a community, communication with Chief and Council the leadership is a key component to good design.

Engagement with Chief Valerie Richer, and Robert Paishegwon from the First Nation government, reveal the potential for Water security in this community that involves a return to a more culturally grounded, self-sustaining ways to engage with Water. Water security (from technological infrastructure) for Atikameksheng Anishnawbek in relation to other First Nation communities is regarded as safe, facilitating growth to develop more spiritual components of ensuring water security for future generation strategies. Gary Naponse, the Infrastructure Database Technologist for Water infrastructure, communicated that there were virtually no problems with the Water distribution system from a technical standpoint and the quality of Water is safe for consumption. Water security in relation to self-governance in Atikameksheng Anishnawbek is much more complex.

The community purchases its Water from the city of Sudbury, the processes of cleaning the Water is not inclusive of community members, nor under the control of leadership. While there is a connection to the Vermilion River and its connection of flowing Water, the Water itself is diverted away from Atikameksheng Anishnawbek before reaching the people. As the twenty-year agreement between the municipality and the community would need to be reinstated soon, the potential for a self-governing relation to Water is possible. The future of Water security in this community moving forward can still provide safe Water for its members, while becoming self-governing in the process. As the Water quality is safe, this allowed a stronger focus on addressing Water and community through architecture in order to celebrate and enhance existing relations with Whitefish Lake.

Through understanding and learning about member experiences with Whitefish Lake, the thesis allowed the celebration of community through proposing spaces of gathering and sharing, by including an outdoor cooking space, natural fire pit area, and outdoor deck. Acknowledgement of Water relations can be achieved through proposed storage of Water vessels, planting of Sweetgrass along the shoreline, and the building Biofiltration space. Allowing community and visitors to learn about where their Water comes from, how it travels through the building and back to the community to sustain humanity.



Fig. 90: Halfways Creek connecting to Fly Lake.

Appendices



Fig. 91: Entrance to the Walden Wastewater Treatment Facility.



Fig. 92: Water propagation of Pothos to be used in Water Filtration Artifact.



Fig. 93: Atikameksheng Anishnawbek Community Centre.

A Walden Wastewater Treatment Plant



Fig. 94: Aeration tanks at the wastewater treatment facility.

In order to understand wastewater processes, another factor of cleaning Water, a tour was conducted at the Walden Wastewater Treatment Plant located on Regional Road 55 in Naughton. The informative visit took a look at how wastewater is first cleared of debris through screening, and filters. Proceeding to the aeration tanks that use activated sludge to remove further bacteria, and steadily progresses to the sedimentation tank. The final step of chlorination meets standards to release the treated Water into Junction Creek.



Fig. 95: Water quality testing lab.



Fig. 96: Pipe network that carries Water to the aeration tanks aboveground and other technical equipment.



Fig. 97: Headworks is where the wastewater passes through screens, and filters to remove solids and pollutants.



Fig. 99: Sedimentation tank turns slowly to remove scum from the wastewater.



Fig. 98: Sump drain used to keep Water moving.



Fig. 100: Chlorination contact chamber releases treated Water back into Junction Creek.

B Water Filtration Artifact

Created for the course Fabrication II, this artifact proposes the return to natural filtration processes that utilize more sustainable notions of purifying Water. The thesis design itself focuses largely on constructed wetlands, and a way to reduce the heavy reliance on chemicals to provide potable Water. The filtration artifact, being the prototype is intended to be a representation of the thesis project. Simultaneously, it seeks to reconnect people and Water, learning from the purification process and allowing engagement with the process at an individual level.

Secondary to the purification process, the artifact seeks to address the politics of Water in First Nations communities, speaking to more remote communities that lack a steady and secure source of clean Water. As a temporary solution, Water jugs are often transported to remote communities, which are rationed until the next delivery of Water. Rather than addressing the current failing infrastructure, decisions made by the federal government of Canada funding is provided by Indigenous Services Canada which dismiss community input in the development of Water treatment facilities. What further contributes to the problem is the privatization of Water by large companies, often taking Water from communities and selling it back to the residents at a steep price, or altogether draining the local area of its source to sell it elsewhere. One of the most energy consuming aspects of privatized Water is in the packaging of the Water. It requires between 1.2 to 1.4 litres of Water to bottle a single liter of Water, not to mention the energy required to transport it and the subsequent pollution it generates.¹¹²

Material selection plays a large part in the narrative towards not only sustainable ways of purifying Water, but also in the politics of Water. The intent to re-purpose Water jugs is to alter how we think of prepackaged Water and change the negative role of the plastic container in a more sustainable process of filtration and purification. The filtration artifact will be comprised of three components; filtration of debris through layered rock, charcoal, and sand, the aquatic vegetation that oxygenates and removes chemicals, and the final aspect being ultraviolet filtration that mimics the conditions of the sun to purify the Water of bacteria. The final form of the Water as it cycles through the artifact will be Water that is safe to consume.

The intent of the artifact was to utilize local vegetation for filtration purposes, in the future growing these plants would be included in the process to prevent disrupting ecologies, which could jeopardize the well-being of existing ecosystems. As a substitute, aquatic vegetation purchased at an aquatic shop would have been used.

¹¹² "Nestle's Water Privatization in the Aftermath of Flint, Michigan," Gaia, January 26, 2018, <https://www.gaia.com/article/water-privatization-flint-nestle>.

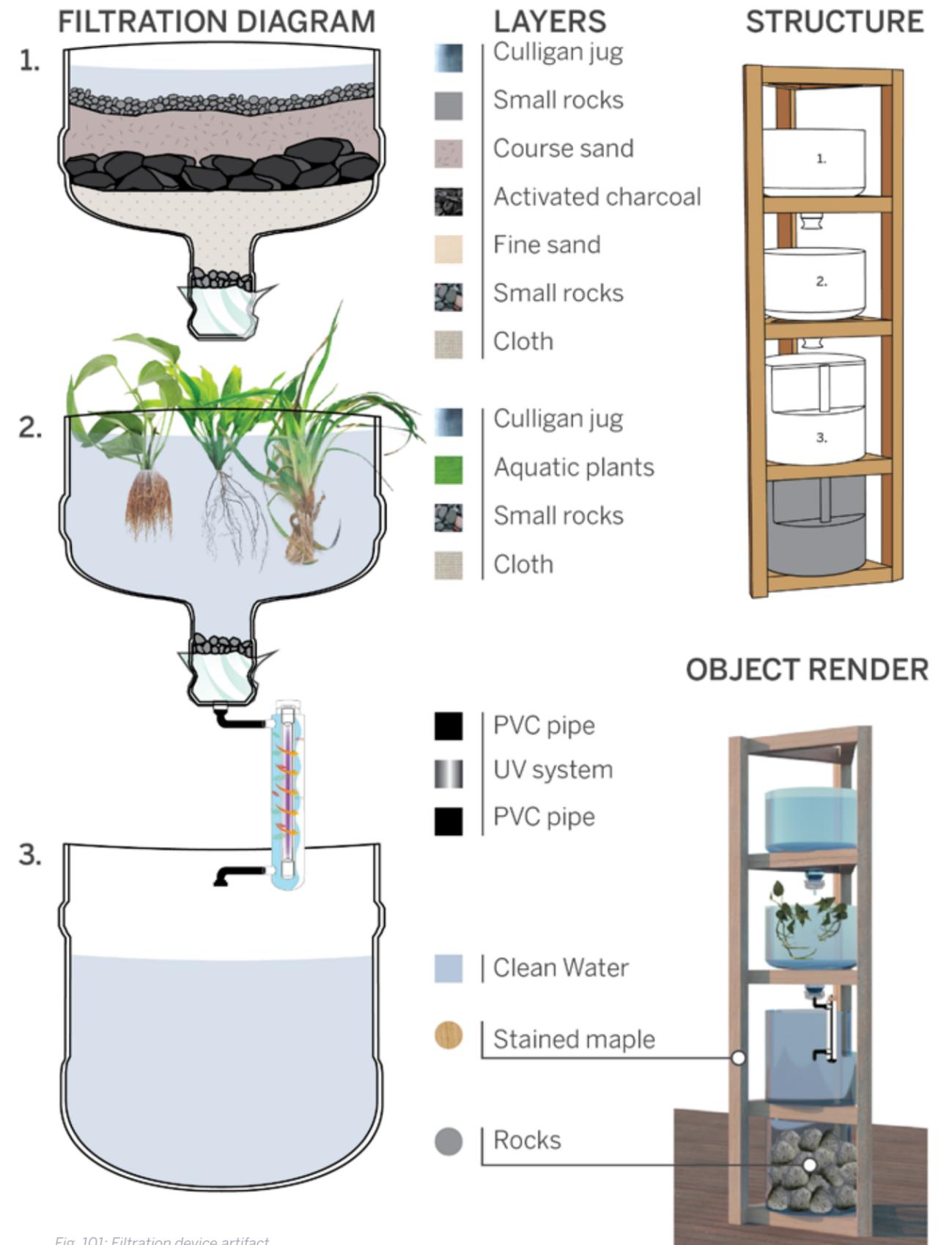
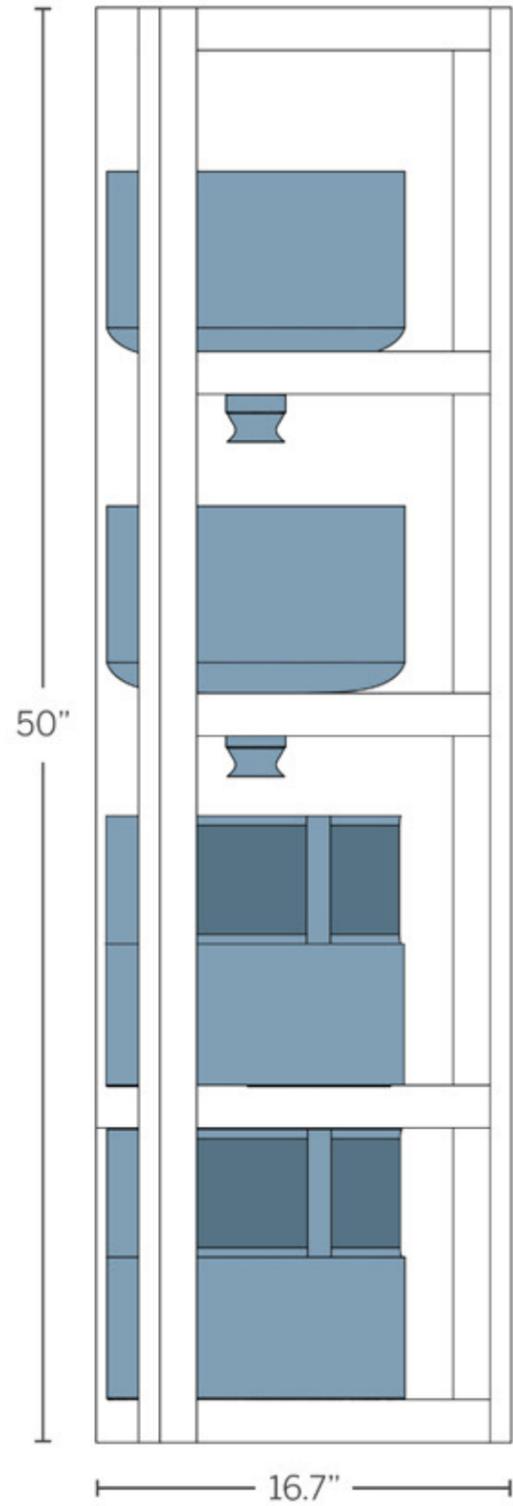
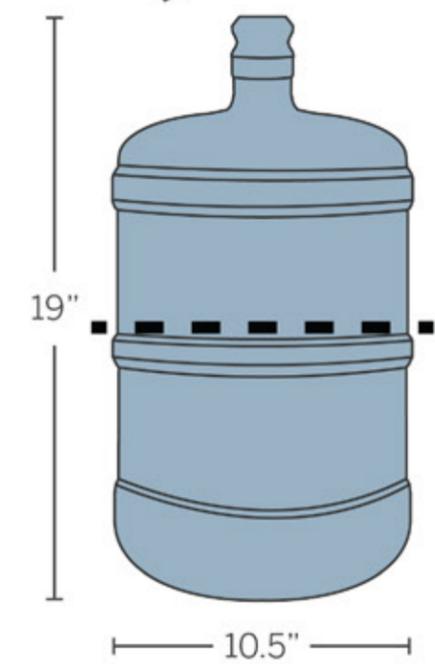
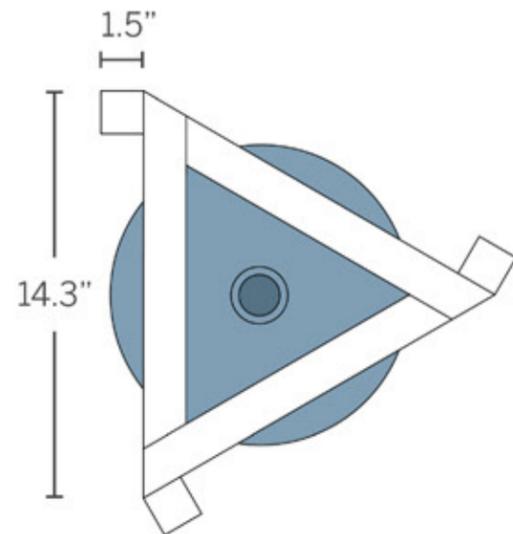


Fig. 101: Filtration device artifact.

DIMENSIONS



MATERIALS



Hornwort
Aquatic plants



Dwarf sagittaria



Hairgrass



Jugs (2) - 18.9 litres



Pothos
Water propagation

Fig. 102: Filtration device artifact materials.

C Community Engagement



Fig. 103: Entering Atikameksheng Anishnawbek.

The intent of the community meeting was to engage with members that utilize the land and have various experiences in relation to the land and lakes. The results of speaking with people from varying professions yielded a discussion of potential sites, enriching the design process and resulting in the agreement of the final site selection of Whitefish Lake to be suitable for the proposed building program. The following invitation was sent to members to participate in a meeting to voice opinions, experiences and input.

Aanii everyone,

My name is Celina, and I am an architecture student working on my thesis project that is about water and our relationships with water.

I have been doing a lot of research on drinking water infrastructure within First Nation communities, and how oftentimes the connection to the land is ignored.

Over the course of this year, I have met with Julia Pegahmagabow in order to understand and consider Anishnaabe views, and how this can be included in designing a water filtration building that integrates with the land and people.

Looking at sites within Atikameksheng Anishnawbek, the design aims to consider sustainable ways of filtering water, and celebrating water through land and water activities that support community outdoor living and learning.

In order to design for community members, I would like to invite you to come out and share your experiences, types of activities you enjoy, and what is important to you in creating a conceptual design for sustainable water filtration. As well as outdoor spaces that everyone can enjoy throughout the four seasons.

Date: March 7, 2020

Time: 10 AM - 12 PM

Location: Kendaasii-Gamik Library

Coffee and snacks will be provided

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Introduction

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2 Western Views of Water

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Conclusion

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B – Water Filtration Artifact

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C – Community Engagement

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“Pray for the Water. The women must take the lead.
Express your gratitude for the Water.
Listen to the Water, she bring a message for you.
Give yourself by fasting for a short time, in
appreciation for the Water.”

Josephine Mandamin-ba



“We cannot eat money, or drink oil.”

Autumn Peltier