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Phase 4 Report
School of Environment and Sustainability



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SECTION 01 SENS COMMITMENT

Introduction, Purpose, Scope, and SENS Guiding Principles

The School of Environment and Sustainability (SENS) has a long history of working with Indigenous Peoples and communities. Some initiatives involving Indigenous communities began over two decades ago and thus predate the School itself; others are more recent. While it has not been formalized as such, all initiatives reflect SENS's commitment to *ohpahotân | oohpaahotaan* through the integration of relational accountability across graduate education, research, and governance. Recently, our commitment to Indigenous Peoples was embedded as a foundational priority through a revision of the School's mission statement.

As a research-intensive and interdisciplinary graduate School that draws on the 7 Sacred Teachings of love, respect, courage, honesty, wisdom, humility, and truth as ethical foundations guiding Indigenous partnership development, knowledge generation and mobilization and approaches to sustainability challenges, for SENS, the 7 Sacred Teachings are not just symbols of good will, but operationalized, informing day-to-day decision-making, supervisory relationships, community engagement practices, and collaborative research models. As a School that has built upon decades of community-based research, we prioritize relationship-building over transactional engagement. We embed reciprocity in teaching, engagement and research design, and knowledge exchange.

We emphasize our responsibility as leaders in environmental research to the communities we work with; to the future generations we serve; and to uphold respect across Indigenous and Western knowledge systems. Nevertheless, we continue to be learners in this space. We have made mistakes and continue to be guided by individuals and communities with whom we work.

It is these principles that collectively shape research practices, curriculum development, governance processes, and daily institutional practices. For almost two decades, a large number of SENS faculty have conducted research and sought to uphold a learning and research environment where reflection is encouraged, humility is practiced, and relational accountability remains central.

Relationships with Elders and Knowledge Keepers

Right Relations | Representation | Creation

Recognizing that working closely with Indigenous communities is based on relationships, for years SENS maintained a role to help nurture and grow those relationships and provide a means of increasing awareness and inclusion of Indigenous perspectives within the School's programs and initiatives. In 2011, the School hosted Mr. Randall Tetlich, the Northern Elder-in-Residence at Yukon College (before it became a university), who taught traditional knowledge to students and Parks Canada staff and other government departments. As the School's Elder in Residence, Tetlich shared with SENS his knowledge of First Nations (Gwich'in) knowledge systems, research with First Nations communities, and communicating in First Nations contexts. The positive effects of this early experience led the School to establish the Indigenous Mentor role in 2016, a position first held by Mr. Alfred Gamble from Beardy's and Okemasis First Nation and arising from a collaboration between the School and his community, with Gamble acting as a liaison and bridge to coordinate the sharing of knowledge.

Recognizing that working closely with Indigenous communities is based on relationships, SENS established the Indigenous Mentor role in 2016 to help nurture and grow those relationships and provide a means of increasing awareness and inclusion of Indigenous perspectives within the School's programs and initiatives.

From 2017-2019, the role was held by Mr. Anthony Dreaver Johnston of Mistawasis Nêhiyawak, who provided strategic guidance to the School for improving its programs to better reflect Indigenous perspectives and contribute to reconciliation. Johnston actively contributed to some of the School's courses and provided advice to faculty and students on working with Indigenous communities.

From 2020-2023, Mr. Gary Merasty of the Peter Ballantyne Cree Nation, took up the position of Senior Advisor, Indigenous and External Relations. Mr. Merasty provided strategic advice to the School's leadership team on programming, partnerships, and outreach to and for Indigenous students and communities, specifically related to new graduate programming in Energy Security. In addition to advising



Clockwise from top: Mr. Gary Merasty of the Peter Ballantyne Cree Nation; Mr. Anthony Dreaver Johnston of Mistawasis Nêhiyawak; Mr. Alfred Gamble from Beardy's and Okemasis First Nation.

on relationship building with Indigenous communities and recruitment of Indigenous students, Merasty also contributed his expertise to developing the School's graduate courses, including ENVS 834 (The Art and Practice of Negotiations) and ENVS 886 (Building Understanding in the Age of Reconciliation).

Budget cuts forced the School to end the role in 2023, but it was not for lack of interest from faculty, students, and staff. Given the strong interest and history of engaging with Indigenous communities, the School hopes to see the Indigenous Mentor role reinstated in the future, as it would benefit our teaching and learning significantly. To date, SENS continues to engage with both Elder Julie Pitzel from Buffalo Narrows, SK and Elder Roland Duquette from Mistawasis Nêhiyawak.

A group of people are standing in tall grass by a lake. A woman on the right is gesturing towards the water. The background shows a calm lake and some reeds in the distance.

SECTION **02** COMMUNITY- BASED RESEARCH

Saskatchewan, Alberta, and British Columbia



Mistawasis Nêhiyawak: partnership and friendship

Right Relations | Stewardship | Representation | Renewal | Creation

The relationship between Mistawasis Nêhiyawak (Mistawasis) and SENS dates back to 2015, when two key people – the Nation's Mr. Anthony Dreaver Johnston and SENS faculty member, Dr. Maureen Reed, met when working on projects connected to the Prince Albert Model Forest. Meetings held at the Nation provided opportunities to strengthen this relationship.

As a result, from 2017-2019, Mr. Johnston was an Indigenous mentor to SENS (see [Relationships with Elders and Knowledge Keepers, page 5](#)), and from 2019-2024 he was a Professional Affiliate. In that time, he helped develop culturally appropriate programming and provided strategic guidance to SENS students and faculty about working effectively with Indigenous communities and improving reconciliation and Indigenous interests in our curriculum. Additionally, Mr. Johnston was a co-investigator on multiple SSHRC and other grant applications involving SENS faculty.

The work of Mr. Johnston, Reed, and others at SENS have helped nurture and grow the relationships between Mistawasis and SENS, leading to mutual understanding of people and place. The importance of these relationships was recognized formally through

an Asota (make a promise agreement) signed in 2017 and renewed by pipe ceremony in 2023.

[Miyotôtâkewin: Welcome to the SENS Indigenous Mentor;](#)

[SENS and Mistawasis Nêhiyawak signed an agreement to work together](#)



Left to Right: Dr. Toddi Steelman (former Executive Director, SENS) and Chief Daryl Watson, Mistawasis Nêhiyawak, 2017

Growing Connections from the Ground Up

Right Relations | Stewardship

SENS is also connected to Saskatchewan First Nations through land-based work. Through his role as the Placement Director for the Regenerative Sustainability stream of the School's Master of Sustainability degree, Dr. Vladimir Kricsfalusy knew Mistawasis community member Anita Ledoux.

Kricsfalusy, a conservation ecologist, contacted Anita to discuss areas of potential interest for a rare plant inventory. Kricsfalusy initiated a similar discussion with Steven Wiig at Muskeg Lake Cree Nation, a connection made by John Kindrachuk, who was Executive Director at Redberry Lake Biosphere Region at the time. Kricsfalusy then conducted several days of fieldwork at Mistawasis in 2022 and 2024 and at Muskeg Lake in 2024.

The School's relationship with Mistawasis has continued to evolve and broaden. The work has been sustained by visits to the Nation and expanded through additional collaboration on broader projects led by Reed that seek to improve how sustainability education is taught and how research between Indigenous communities and academics can be strengthened.

For example, Mistawasis is a partner to the *TRANSECTS* (Transdisciplinary Education Collaboration for Transformations in Sustainability) partnership, a SSHRC-funded, international research training partnership supporting students to learn and apply professional, relational, and intercultural skills necessary to conduct transdisciplinary research in sustainability. In addition to supporting the grant application, Mistawasis youth and senior members of the community have participated in *TRANSECTS*' knowledge exchange events in Canada and Germany, sharing their knowledge and experience alongside diverse participants from Kenya, Ghana, Germany, South Africa, and Canada. *More on TRANSECTS and its international partnerships on page 21.*

Mistawasis Nêhiyawak is also a Canadian partner to the Co-designing Transdisciplinary Sustainability Education project, which is a research-practice partnership led by Reed and funded by the Spencer Foundation (USA). Sub-projects in Canada and South Africa work explicitly with Indigenous People who bring ways of knowing and learning related to climate change education, green entrepreneurship, and land-based learning. Presently, there is an Indigenous Master's student working with community members and the Redberry Lake Biosphere Region

to develop a land-based curriculum for elementary schools at Hafford and Mistawasis Nêhiyawak (*Traditional Cree Uses of Plants: A Resource for Teachers, page 9*). Another student will soon be working in the region.

Additionally, a small group of faculty, staff, and students within SENS are engaging in critical reflections about working with Indigenous communities to be shared with fellow faculty. The partnership also engages in cross-country learning exchanges with collaborators in South Africa that provide opportunities to learn from Indigenous participants across countries.

The Nation has also been a community partner of the UNESCO Chair in Biocultural Diversity, Sustainability, Reconciliation, and Renewal, co-held by SENS faculty members Dr. Maureen Reed and Dr. James Robson. Working with Mr. Johnston, the UNESCO Chair has partnered with the community and its members to co-create programs of knowledge and exchange that supports biocultural diversity and sustainable development. *More on the UNESCO Chair on page 9.*



Colleagues from South Africa, Germany (and Canada) receive a star blanket from Chief Watson at Mistawasis Nêhiyawak. (They came in relation to TRANSECTS and Spencer work together)

Traditional Cree Uses of Plants: A Resource for Teachers

*Stewardship | Renewal | Creation |
Right Relations*

Through funding from the Spencer Foundation, Indigenous MES student Elizabeth Zdunich, is exploring the use of native plants as traditional medicines within the Redberry Lake Biosphere Region.

Elizabeth is in the midst of working with Mistawasis Elders, knowledge-keepers, and community members to develop a teaching resource that helps youth to learn about relationship with the land. Aligned with the Saskatchewan Grade 6 Science curricular outcomes, this seven-lesson resource will be developed on principles of land-based learning with the inclusion of Nêhiyawêwin (Cree language) and Michif language learning as a means of cultural affirmation, language revitalization, education and reconciliation.

Applying a qualitative case study methodology, two neighbouring, yet distinct, schools (Chief Mistawasis School located on-reserve; Hafford Central School located in Hafford, SK) will be invited to use a land-based resource in their grade 6 classrooms.



(above) SENS MES student, Elizabeth Zdunich, and students from Makwa Sahgaiehcan First Nation School Kenaston, and Davidson schools make salve from native plants in Mistawasis (below).



UNESCO Chair in Biocultural Diversity, Sustainability, Reconciliation, and Renewal

Held by Drs Maureen Reed and James Robson since 2018, the Chair and partners collaborate to develop programs of knowledge co-creation and exchange that explicitly support biocultural diversity and sustainable development.

These programs create avenues for reconciliation and the renewal of respectful and responsible relationships between Indigenous and non-Indigenous peoples and institutions.

The Chair continues to support collaborative research and community-engaged initiatives, particularly across North, Central, and South America and South Africa, several of which are highlighted throughout this report.

[Chair Website](#)

Meadow Lake Tribal Council: A Growing Partnership in Environmental Stewardship

Renewal / Right Relations / Creation / Stewardship / Representation / Safety / Wellness

SENS has a new and active partnership with Meadow Lake Tribal Council (MLTC) focused on youth engagement and capacity building for environmental monitoring. In 2024, at the request of MLTC and Mr. Warren Hounsell (MLTC's Indigenous-Led Area Based Conservation Project Lead Coordinator), SENS connected with MLTC and their member Nations to strengthen engagement of Indigenous youth and communities in areas of community scientific interest.

This work, coordinated by Dr. James Robson, has responded to MLTC's request to incorporate Western natural science approaches into youth learning activities through their summer and winter land-based camps. Working with MLTC teachers, high school educational staff, and Elders, the School's team of faculty and students shares expertise and provides hands-on instruction in areas of community environmental interest. Training in specific field methods for environmental monitoring and sampling (fish health, water quality, wildlife tracking), led by Drs. Baulch, Clark, Jardine, and Whitfield, is being built into MLTC's broader efforts around Indigenous-led Area Based Conservation (ILABC) funded through the federal government (Environment and Climate Change Canada). As part of this work, through the first year, SENS hosted ~10 land users and ~15 youth to campus, and participated in five 2-day intercultural science camps in First Nations' communities, helping train ~80 members. This prompted invitation of our SENS leadership team to the 2025 annual MLTC meeting, which included leadership, band members, land-users, youth, stakeholders and partners of all member Nations. SENS faculty and staff were then invited to the 2026 gathering of the ILABC project to present results and celebrate the success of the project.

Clearwater River Dene Nation youth, educators and land users gather on the ice to conduct winter water quality testing with support from SENS faculty and students.



From this foundation, SENS faculty and staff worked with MLTC's Warren Hounsell to write an application for an NSERC PromoScience grant, which was successfully funded.

Through this project, additionally supported by the Mastercard Foundation, SENS faculty and students will continue participating in winter and summer land-based camps in Indigenous communities and will again host Indigenous youth for visits at USask. The latter will strengthen the connections between learning activities from camps and scientific principles, while familiarizing youth with the university environment to reduce the barrier of having never been welcomed onto a university campus. Additionally, the intent is to build into the camp program a peer-support network for Indigenous youth with interest in or plans to attend university.

Faculty member Dr. Doug Clark reflected on this effort as being organic, authentic, and likely to endure because of the substantive common interests shared between MLTC and SENS faculty.



One of the Meadow Lake Tribal Council's member Nations harvest fish as part of a fish health assessment conducted through their land-based learning camp.

Linking International Partnerships with Saskatchewan First Nations

Dr. Maureen Reed and Dr. James Robson are co-leading the IDRC-funded RELATE project (Reimagining Ethics, Learning, and Transdisciplinary Evaluation) to connect researchers, practitioners, and community representatives from Canada, Latin America, and South Africa to explore how research institutions and agencies can adapt research ethics and evaluation policies and practices to be better grounded in the interests, contexts, and protocols of Indigenous Peoples and local communities.

The initiative explores how research institutions and agencies can adapt ethics and evaluation policies to better reflect the interests and protocols of Indigenous Peoples and local communities in Canada, South Africa, and Latin America.

The project also seeks to identify pathways for including community-driven ethics protocols and expanding how research impact is assessed.

Restoring the Saskatchewan River Delta

Right Relations | Stewardship | Representation | Renewal | Creation



SENS faculty members Dr. Tim Jardine and Dr. Graham Strickert have worked collaboratively with communities of Cumberland House for almost 15 years. The work has focused on understanding the Saskatchewan River Delta and how human development upstream has impacted the wildlife and people in the delta.

Working with active community members, some of whom are or have been elected officials, they have achieved one of their main goals of bringing greater recognition to the delta within the province and beyond. This was evidenced by a traveling art exhibit that reached an audience >5000 people (described in Steelman et al. 2019), numerous media appearances, and countless inquiries from interested organizations to learn more about the delta. Jardine and Strickert have also drafted a Delta Stewardship Plan that outlined the community's goals to improve the health of the delta (described in Patrick et al. 2018). Along the way, they have engaged in knowledge co-production, deploying instruments to measure water quality, sharing stories and observations about the health of the delta, and spending significant time together on the land and water in all seasons. Because of this relationship, their understanding of science and research and life has been enriched.

Though the relationship with the community has encountered many hurdles, namely during a messy period of dam relicensing, the partnership has endured. It is estimated that Jardine and Strickert

have been to Cumberland House about 40 times in the last 15 years, have attended weddings and funerals for community members, and have spent countless hours on phone calls, text messaging and email chains with Elders and land users over that time discussing the delta's management needs and sharing knowledge with one another. This culminated in a co-authored book chapter that highlighted our shared understanding of the state of the delta (Jardine et al. 2023).

About five years ago the focus changed from understanding impacts to identifying options to restore the delta and its cultural and ecosystem functions. Local people are implementing several restoration options, including channel clearing, cultural burning to control deleterious grasses, locally-led monitoring, and reconnecting wetlands to the river. Other restoration options that local partners are actively considering include raising the level of Cumberland Lake with structures; draining, burning, and flooding lakes in the Cumberland Marshes to control phragmites and regenerate productive habitat; fixing or removing 60 small-scale flow control structures; and mitigating and eventually eliminating hydropeaking.

Rivers and Deltas: Collaborative Research with First Nations and Métis Community Members

*Safety | Right Relations | Stewardship | Creation
| Representation | Wellness*

Dr. Karl-Erich Lindenschmidt has been conducting research on the Slave River in partnership with Métis Knowledge Holders and community members, notably Earl Evans from Fort Smith and Henry McKay from Fort Resolution, who are coauthors on the core publication documenting freeze-up and ice cover progression along the Slave River (Das et al., 2015). Their involvement was not symbolic, but shaped site selection, field safety, interpretation of ice conditions, and the framing of research questions. Community members had observed air pockets within the ice cover and cracking with subsequent flooding of the ice cover along the riverbanks that can lead to travel impediments, hinder fishing activities, and drowning of muskrats within their overwintering pushups.

These observations motivated the team's targeted field surveys near Earl Evans' cabin along the Fort Smith reach and in the Slave River delta. Ice drilling, transect surveys, and timelapse camera installation were conducted in conditions that demanded attentiveness to local knowledge about safe travel routes and ice behavior. Observations of pressurized air release and flooding through punctured air pockets directly corroborated community warnings about hidden dangers beneath snow-covered ice. Lindenschmidt observed that it can be difficult to estimate the emotional weight of these observations for community members, especially when discussing winter accidents and near misses. Recognizing this toll requires courage and honesty and slowing down research conversations to acknowledge fear and loss and prioritize safety over data collection. The Bayesian Belief Network (BBN) developed later in the project (Mantyka-Pringle et al., 2017) reflects a turning point in this thinking. Traditional knowledge informed more than half of the network nodes, reshaping how cause-effect relationships in the ice regime were conceptualized. This approach aligns with Two-

Eyed Seeing that holds Indigenous and Western knowledge systems together without subordinating one to the other. Here, wisdom and humility are not abstract values, but skills learned through listening, revising models, and acknowledging uncertainty.

This collaboration embodied respect and recognized that community members are experts of their own lands and waters, and that research must respond to community identified concerns rather than external academic agendas.

Lindenschmidt reflected that a central challenge scientists face, particularly during the early stages of a project, is to curb the tendency, due to their ingrained Western scientific training, to treat Indigenous knowledge as contextual rather than as a knowledge system in its own right. He noted that this is not always intentional. In his case, through sustained engagement, particularly during ice surveys and post-field discussions, he experienced that Indigenous knowledge helped identify hazardous ice conditions long before satellite imagery detected them. It also helps to explain the practical implications of ice-cover-embedded air pockets for winter travel, and frames ice safety in relational, ethical terms rather than probabilistic risk alone.



Slave River community member working to remove air pockets in the ice to mitigate hidden dangers

Land-Based Learning and Knowledge Exchange in the Athabasca and Slave Rivers

Right Relations | Stewardship | Creation | Safety | Wellness | Representation

Starting in 2009, Dr. Paul Jones and his students undertook a partnership with communities and territorial and federal agencies to investigate concerns raised by communities to investigate potential impacts of upstream oilsands activities on the health and quality of fish in the Slave/Athabasca river system (Alberta). In its initial stages, researchers worked with communities to collect fish commonly used for food and assess them for their general health. Samples were then analyzed for a variety of chemical contaminants of concern to assess the potential for adverse health effects in those who consumed the fish. In 2015, additional funding was secured from the Canadian Water Network to continue the work for an additional three years in the Northwest Territories and to develop a community-based monitoring program driven by the local communities. With support from Territorial government agencies, this program was called the Slave Watershed Environmental Effects Program (SWEEP).

While maintaining activities in the areas of fish health and potential consumer risks, the program also included activities for water quality monitoring at the community level as well as hydrological and ice quality issues. There was also a social science component which investigated traditional knowledges around the Slave River and Delta. These findings were given voice in an animated whiteboard posted on [YouTube](#). Aspects of the social science research of the SWEEP program were extended by the development of the Delta Dialogue Network (DDN) in 2017 which sought to establish conversations among Indigenous communities across Canada's three largest deltas, the Slave River Delta, the Peace Athabasca River Delta and the Saskatchewan River Delta.

Throughout these studies, Jones and his collaborators worked closely with the following parties: Fort McMurray First Nation, Fort McMurray Métis Nation, Fort McKay First Nation, Ft McKay Métis Nation, Athabasca Chipewyan First Nation, Mikisew Cree First Nation, Fort

Chipewyan Métis Nation, Fort Smith First Nation, Town of Fort Smith, Fort Smith Métis Council, NWT Métis Nation, Smith's Landing First Nation, Resolution Métis Council, Fort Resolution First Nation, Deninu School, Aurora College, Government of the Northwest Territories, Slave River and Delta Partnership, Parks Canada, Environment and Climate Change Canada, the Department of Fisheries and Oceans (Canada), Aboriginal Affairs and Northern Development Canada (AANDC). Many of these parties are also members of the Slave River and Delta Partnership (SRDP).

Key SENS faculty involved in these activities, including SWEEP and the DDN, were: Dr. Paul Jones, Dr. Tim Jardine, Dr. Karl-Erich Lindenschmidt, Dr. Graham Strickert, and then Executive Director of SENS, Dr. Toddi Steelman. Field work during these activities also allowed numerous USask students to participate in field/community collaborations with Indigenous communities.

Fraser River Freshwater Ecosystem Initiative – Wildfire impacts on salmon-bearing rivers (2024–2026)

Right Relations | Stewardship | Creation | Safety | Wellness

This research was initiated in response to questions from the Boothroyd, Skwłāx, and Adams Lake Indian Band (British Columbia) regarding the impacts of wildfires on water quality and salmon habitat in the Fraser River watershed.

Dr. Markus Brinkmann, faculty member with SENS and Director of the Toxicology Centre, contributed expertise in aquatic toxicology and environmental chemistry to a study that was co-developed and executed in close partnership with these communities, focusing on post-fire contaminant mobilization, sediment–water interactions, and exposure risks to salmon during sensitive life stages.

The work reinforced the importance of starting from community-identified concerns and demonstrated the value of co-designed research for addressing climate-driven environmental change.

Community Partnerships for Water Health

Right Relations | Creation | Renewal | Stewardship | Representation

Through the national NSERC CREATE Water Health program, which seeks to deliver unique transdisciplinary and global training opportunities for solving water problems, SENS faculty members, Dr. Markus Brinkmann, Dr. Markus Hecker, and others have partnered closely with the Prince Albert Grand Council (PAGC) to ensure that research and training activities are informed by community-identified water-related questions and priorities.

PAGC plays a central role in shaping research directions, training activities, and community-engaged science schools, with a shared focus on co-developing solutions toward improved water security and freshwater ecosystem health. This work explicitly follows the principles of respect, relevance, responsibility, reciprocity, and relationship, as well as ownership, control, access, and possession (OCAP®) principles where applicable.

The Water Health CREATE program embeds Indigenous partnership and community-engaged research as a core training element for graduate students, helping strengthen pathways for reconciliation-minded research and future leadership in water security.

Reflection from Dr. Maureen Reed

One co-benefit of working with Indigenous Nations is that they often have projects that involve multiple units across campus.

This can create connections between SENS faculty and colleagues in other areas—people we might not otherwise meet—strengthening relationships across the university. Another important co-benefit is the learning that comes from this work.

Engaging with Indigenous communities has deepened my understanding of how to approach research more effectively and equitably. The “Rs” that guide this work—respect, responsibility, relevance, reciprocity, relational accountability, and refusal—are not only applicable in Indigenous contexts, but offer a meaningful framework for working with all communities. I am grateful for this perspective.

COMMUNITY- BASED RESEARCH

Northern and Arctic

Relationships with Northern Communities in the Canadian Arctic

*Right Relations | Stewardship | Creation | Representation
| Renewal | Wellness*

SENS faculty member, Dr. Douglas Clark's, entire research program is based on projects that address community-driven priorities with the majority of the projects conducted collaboratively with Indigenous organizations (including Indigenous-State co-management bodies) and communities. Ongoing and recent projects include:

Nanuq & aklak hitjaq Research with Aqqiumavvik Society of Arviat, Nunavut

From 2025-present Clark has been developing the Nanuq & aklak hitjaq (polar bear and grizzly bear dens) project, originally suggested by [Aqqiumavvik Society of Arviat, Nunavut](#). The researchers initial questions about bear dens have deepened through project co-design to emphasize the Inuit value of qanuqtuurniq ("deep learning to find a solution"), establishing a strong foundation for the project that will ultimately be used to help build curriculum for the Society's Ujjuqsiq (Young Hunters' Program).

This co-design process is itself part of Aqqiumavvik's aajiqatigiingniq community [research methodology](#), which is part of the learning process for Clark and one of his grad students as they proceed to build and implement this project with the community.

ArcticNet-funded Research Project

During 2022-24, Clark conducted an ArcticNet-funded research project that was suggested and encouraged by the Olokhtomiut Hunters and Trappers Committee (a co-management body constituted under the 1982 Inuvialuit Final Agreement). The project sought to better understand grizzly bear range expansion in the Arctic. Community members from Ullukhaktok, NWT deployed

remote cameras on Victoria Island, successfully documenting grizzly bear occupancy. An Inuvialuk youth was employed as a research assistant in his home community there for the duration of the project. A component of that ArcticNet project took place in northern Manitoba, where researchers worked directly with Fox Lake Cree Nation and the Wapusk National Park co-management board (on which FLCN is represented) and community members participated in grizzly bear den surveys. The group held a project-completion workshop in spring 2024 with participating and interested community members where they set the future direction for Clark's grizzly bear research endeavours. Community members suggested focusing on the bears' diet and the project began in 2025 using non-invasive research methods (hair snagging). In 2022, an Inuk youth was employed as a research assistant in her home community of Churchill.

Community-led Approaches to Zoonotic Disease Policy

In 2022, the Champagne & Aishihik First Nations hosted a participatory scenario planning workshop facilitated by Clark and PhD student, Gabriel Antwi-Boasiako, as part of a SSHRC-Funded comparative study on zoonotic disease policy processes. Gabriel's findings identify Indigenous and community involvement as crucial to developing and implementing more effective policies about diseases that move from wildlife to people.

Inuit Knowledge and Polar Bear Co-Management in Nunavut

In 2022, the Nunavut Wildlife Management Board (a co-management body constituted under the 1993 Nunavut Final Agreement) invited Clark to lead a research project to mobilize documented Inuit knowledge of polar bears for co-management decision-making about the species in Nunavut. The work, funded by Environment & Climate Change Canada, was carried out by a Métis postdoctoral fellow, Dr. Dana Reiter, who was supervised by Clark from 2022-2025. Reiter built a queryable library of Inuit knowledge based on the NWMB's public hearings (in this context, public = Inuit) that has been published and presented to the International Polar Bear Range States' Meetings of the Parties in 2023 and 2025.

Collaborations with the Davis Strait Polar Bear Subpopulation Working Group

In 2022, Clark was invited onto the Davis Strait Polar Bear Subpopulation Working Group, part of the Polar Knowledge Canada-

funded Nanuq Knowledges project led by Dr. Jamie Snook of the Torngat Wildlife, Plants, and Fisheries Secretariat, an Inuit co-management board established through land claim settlement in [Nunatsiavut, Newfoundland and Labrador](#).

This working group was established with some urgency by the three Inuit co-management boards who hold responsibility for the Davis Strait polar bear subpopulation (along with Greenland), due to increasing interjurisdictional management challenges. The group was tasked with defining the problems and developing rational, feasible, and justifiable responses that the three co-management boards, their communities, and governments could implement. Importantly, the working group was made up primarily of Inuit community members, complemented by an interdisciplinary selection of academics with extensive Arctic experience.

GNWT Work on Mackenzie River - Northwest Territories

Stewardship | Safety | Right Relations | Creation

Funded by the Government of the Northwest Territories, this project focused on contaminants (PAHs and mercury) in the Mackenzie River and fish health assessments using a combination of established and emerging molecular screening tools.

Dr. Markus Brinkmann with SENS and the Toxicology Centre, contributed expertise in aquatic toxicology and environmental chemistry to support sentinel fish monitoring aimed at understanding cumulative stressors in large northern river systems.

The work emphasized regulatory relevance, Indigenous and territorial engagement requirements, and responsible research practices in the North, supporting longer-term stewardship and cumulative effects assessment.

COMMUNITY- BASED RESEARCH



Latin America

The work we do in energy security and engagement and support of Indigenous self-governance and sovereignty spills outside of Canadian boundaries and into other places in the world.

Latin America in particular has become a focal point, which started with the UNESCO Co-Chair who has a strong connection and relationship with the Global South and its people.

Community-Engaged Research Networks Across Latin America and Beyond

Renewal | Representation | Creation | Right Relations

2023- ongoing: YIOLI Amazon Network: Supporting a network of Indigenous, Afro-descendent, and Campesino youth across the Surinamese, Colombian, and Bolivian Amazon who are engaged in forest conservation and cultural revival efforts in their home communities and territories. Dr. James Robson with SENS, alongside partners Tropenbos International and their regional offices in South America, play a facilitatory role. They have supported youth participation in UN Conference of the Parties meetings, where youth have delivered manifestos for youth-led action and change. They have brought the youth together in annual gatherings for knowledge exchange and learning. Dr. Robson has found funds through a SSHRC Connection Grant and the UNESCO Chair to support these activities.

2022- 2026: Supporting Youth Engagement and Empowerment in the El Condor in the Argentinian Puna (altiplano): In partnership with CONICET and INPA (Government agencies, Argentina). Series of youth-oriented workshops and focus groups –supporting community governance to become more inclusive of youth. Funded through a USASK International Research Partnership Fund and UNESCO Chair funds.

2017- ongoing: Collaborations with Indigenous territories of Lomerío (Monkox) and Guarayos in eastern Bolivia: In partnership with Instituto Boliviano de Investigación Forestal (IBIF). Cut across SSHRC Connection Grants (x2), SSHRC Insight Development Grant, and USASK International Research Partnership Fund.

2016 - ongoing: Research collaborations with Zapotec community of San Juan Evangelista Analco, Oaxaca, Mexico. This work cuts across SSHRC Connection Grant and SSHRC Insight Development Grant. This research relationship dates back to 2007. Work has focused on human migration and its impact on commons governance, with recent projects looking at building inclusivity into decision-making (youth-focused) and youth-community-forest linkages. Recent work has been funded by SSHRC Connection and Insight Development Grants.

2017 - 2020: Future of Forest Work and Communities, in partnership with 14 forest-dependent communities from Manitoba, Quebec, Mexico, Guatemala, Bolivia, Peru, Nepal, Philippines, Uganda, and Tanzania. Robson led the project that engaged community youth in a series of visioning workshops. The workshops enabled youth to exchange ideas and brainstorm possible solutions that would benefit their communities. The project was funded through a SSHRC Connection Grant and with support from the Ford Foundation. Over 200 youth participated.

2026-2028: RELATE project. This new project brings together community, researcher, and practitioner voices from Canada in Mexico, Bolivia, Suriname, and South Africa, including Indigenous and Afro-descendent communities, to identify best practices and institutional change to enhance ethical research practices and evaluation processes for community-engaged work. Funded through the International Development Research Centre (IDRC).

Student thesis research (various projects, 2017-ongoing): MES and PhD students have conducted research in collaboration with Zapotec and Mixteco Indigenous communities in Oaxaca, Mexico, with Monkox Indigenous communities in Bolivia, with Cree communities in Saskatchewan (Muskeg Lake Cree Nation), and with Tribal/ Indigenous communities (Bono, Daagaba, Konkomba) in northern and central Ghana.



Building Energy Security in the Northern Andes

Creation / Right Relations / Stewardship

In collaboration with the Higher Polytechnic School of Chimborazo (ESPOCH), and the Development for the Environment and Climate Change Research Group (GIDAC), Dr. Oscar Zapata with SENS, works with Indigenous communities in Ecuador's Andean region to support climate change adaptation and help preserve the country's paramo ecosystem, which is home to many Indigenous communities.

Incredibly vulnerable to the changing climate, the tropical Andes paramo is the second fastest warming region on the planet, after the Arctic. Zapata's work focuses on understanding how environmental changes are affecting both the ecosystem and communities that depend on it. In partnership with local communities, Zapata supports the adaptation of livelihoods tied to paramo resources, including introducing renewable energy options in energy-insecure communities and exploring sustainable economic opportunities.

These projects include:

- Understanding energy poverty in paramo communities
- The techno-economic feasibility of renewable energy in paramo communities; and
- The adaptation of Indigenous communities to climate change and design of healthy paramo communities.

This is in collaboration with Ana Hidalgo from the Department of Geography and Planning in the College of Arts and Science.

San Juan community, Chimborazo province, Ecuador. Small-scale solar & wind power generator for the San Juan women's community association: demonstration project. Research collaboration: SENS-USask (Oscar Zapata) and GIDAC research group (Chimborazo Polytechnic University, Ecuador). November 2024. Photo by GIDAC.

Although the ultimate objective is to co-design research projects with communities, the project is still emerging and Zapata has so far only engaged communities to design community-informed interventions and projects. Currently the focus is to work with San Juan communities (located at an altitude between 3,800 and 4,400 meters above the sea level), which are located at the foothills of the Chimborazo mountain, the highest peak of Ecuador (around 6,300 meters above the sea level).



San Juan community, Chimborazo province, Ecuador. Participants at the workshop in 'Decision making and healthy communities for a changing climate in the Andes', conducted by USask researchers (Oscar Zapata, SENS; Ana Hidalgo, Geography and Planning), involving community engagement and participation. November 2024. Photo by GIDAC.

International Partnerships with **TRANSECTS**

Creation | Right Relations | Stewardship | Renewal

TRANSECTS is a SSHRC-funded international partnership for research training of graduate students in transdisciplinary sustainability. Students gain professional, intercultural, and relational skills while engaging in experiential learning in UNESCO-designated Biosphere Regions (BRs) in Canada, South Africa, and Germany. Learners from the three countries who have worked in Redberry Lake and Mount Arrowsmith BRs (in Canada) have worked with/learned from Indigenous partners in those regions; learners who have worked with Vhembe and Garden Route BRs have gained insights from their projects with those who identify as original residents.

We have hosted a number of “Program Institutes” in each country at which First Nations partners have participated and shared teachings related to stewardship and governance. New initiatives are emerging, such as funding from the (American) Spencer Foundation, which is, in part, supporting learners in both countries who identify as Indigenous by creating curriculum resources with Indigenous educators in Canada and South Africa that can be used in public schools and higher education. In July 2025, faculty and students from South Africa visited Mistawasis and met with the Chief and other leaders. October 2026, faculty and staff from USask and Mistawasis will meet in South Africa to engage in a semi-structured learning exchange. We are planning additional events online and in person during 2027.

The Conservation with Equity project is funded by the Shyluk Nature Fund (managed by USask) and a Vanier Scholarship. Gilbert Adum, a PhD candidate, is leading the research that is co-designing a framework by which to assess conservation with equity, with particular emphasis on upholding the rights, and governance and knowledge systems of Indigenous Peoples and engaging Redberry Lake Biosphere Region, Muskeg Lake Cree Nation, and Mistawasis Nêhiyawak. Together, they are working to build on other conservation efforts to identify and commit to conserving lands, waters, and habitats in ways that recognize and uphold Indigenous rights, ensure fair and equitable procedures and distribution of benefits (and burdens), and meet the foundational requirements of “ecological reconciliation”.



Top: Lawrence Mitchell (holding drum) and his son Jaylen (middle) about to begin the welcoming ceremony for the 2024 TILL at the Snaw-naw-as campground. (Source: Mount Arrowsmith Biosphere Region Research Institute).

Middle: Learners participate in a walk for Missing and Murdered Indigenous Women through Mount Arrowsmith Biosphere Region during a Transdisciplinary International Learning Lab (TILL). (middle attached) (Source: Mount Arrowsmith Biosphere Region Research Institute).

Bottom: Gilbert Adum with Anthony Johnston at Mistawasis

SECTION

03

TEACHING
INITIATIVES





Indigenous Perspectives in SENS Curricula

The strong foundation of Indigenous engagement established through SENS research and partnerships is reflected throughout the School's academic programming and its alignment with the commitments of ohpahotân | oohpaahotaan, particularly Right Relations, Creation, Stewardship, and Representation. Faculty draw upon their collaborative work with Indigenous communities, Nations, and organizations to inform both course content and teaching approaches.

Courses such as ENVS 803 Research in Environment and Sustainability, ENVS 807 Sustainability in Theory and Practice, and ENVS 809 Doctoral Seminar incorporate community-engaged research, co-developed priorities, and Indigenous and community-based methodologies. These approaches emphasize respectful and reciprocal relationships, recognition of multiple ways of knowing, and research as a collaborative process. Students are encouraged to practice ethical engagement, transparent communications, and responsible representation of community knowledge.

Building on this foundation, students are introduced to Indigenous knowledges, worldviews, and ways of learning alongside other approaches to understand sustainability. Through courses such as ENVS 807 and ENVS 818 Introduction to Sustainability, students examine sustainability from interdisciplinary and intercultural perspectives and critically consider how different knowledge systems contribute to understanding and addressing complex environmental and societal challenges. In this way, Indigenous scholarship and perspectives are recognized as essential to sustainability education, advancing commitments to Representation and Creation.

Indigenous perspectives are further integrated into discussions of environmental stewardship, resource management, governance, and sustainability transitions. Courses such as ENVS 820 Water, Human Health, and Wellbeing explore connections between water, human

health, and well-being, with a particular focus on social justice issues both globally and within Canada. Through faculty expertise, case studies, guest speakers, and community-engaged learning opportunities, students develop an understanding of the interconnectedness of people, communities, and ecosystems, reinforcing commitments to Stewardship and Representation.

Experiential and community-engaged learning further reinforce these commitments. ENVS 806 Field Skills in Environment and Sustainability provides hands-on opportunities to apply interdisciplinary methods in real-world contexts, while many courses include partnerships with communities and practitioners (*see Masters of Sustainability - Energy Security, page 26*).

Faculty regularly invite Elders and Traditional Knowledge Keepers, Indigenous practitioners, and community leaders into the learning environment, creating opportunities for students to learn from lived experience and diverse knowledge systems. Together, these experiences foster a learning environment grounded in respect, reciprocity, and shared responsibility.

These commitments are also reflected in the Master of Sustainability (MSs) in Energy Security program, where Indigenous perspectives, community priorities, and relationship-building are intentionally integrated throughout the curriculum. Taught by faculty, practitioners, and at times team-taught with Indigenous instructors with direct experience in the energy sector, the program emphasizes community-led approaches to energy transitions and sustainable development. Courses such as ENVS 844 Community Vision and Engagement and ENVS 848 Creating a Community Energy Plan introduce students to holistic community energy planning with a particular focus on Northern, remote, and Indigenous communities. Combined with community-

engaged projects, place-based learning, and partnerships with Indigenous communities, the program prepares graduates to address energy challenges in ways that advance Right Relations, support Stewardship, foster Renewal, and contribute to sustainable, equitable, and community-led energy futures.

Beyond academic programming, the Commitments are evident in outreach initiatives, community partnerships, and land-based learning opportunities. Through collaborations with Indigenous communities, Elders and Traditional Knowledge Keepers, practitioners, schools, and partner organizations, SENS and the Toxicology Centre are creating pathways into environmental and sustainability education.

While SENS has made meaningful progress in advancing the commitments of *ohpahotân | oohpaahotaan*, the School recognizes that Indigenous student success requires ongoing effort, reflection, and investment. Through community partnerships, Indigenous-focused curriculum, land-based learning opportunities, engagement with Elders and Knowledge Keepers, and flexible program delivery models, SENS has worked to reduce barriers related to representation, cultural relevance, geographic access, and community connection.

In the coming pages, we highlight ongoing teaching initiatives such as partnerships with Mistawasis Nêhiyawak, Meadow Lake Tribal Council, and Saskatchewan Polytechnic's Adult 12 Environmental Science program, together with the development of Eco-Camps and community-engaged learning opportunities, which help create pathways into environmental and sustainability education while strengthening relationships with Indigenous communities. The involvement of Indigenous instructors, practitioners, Elders, and community leaders also contributes to more inclusive and culturally grounded learning experiences.

Still, important challenges remain. Many Indigenous learners continue to face barriers related to financial insecurity, housing, childcare, technology access, and the transition from rural, Northern, and remote communities into post-secondary education. While SENS has sought to address some of these challenges through relationship-building, flexible program delivery, outreach initiatives, and community partnerships, many of these barriers extend beyond the direct capacity of the School. SENS also recognizes that Indigenous representation among faculty and instructors remains limited and that much of the work associated with Indigenous engagement, curriculum development, and relationship-

building with communities continues to rely on the commitment and capacity of faculty, staff, and community collaborators whose time and resources are already stretched across multiple priorities. Although Indigenous perspectives are incorporated throughout many courses and programs, there remains an opportunity to further embed Indigenous knowledges, pedagogies, languages, and land-based learning experiences across the curriculum in more systematic and sustained ways.

The MSs Energy Security program similarly illustrates both opportunities and challenges. While it has created innovative pathways for Indigenous, Northern, and remote learners and developed a curriculum grounded in community energy development and Indigenous leadership, maintaining specialized programming requires sustained enrolment, resources, and partnerships. These realities highlight a need to attain full-time staff and faculty positions to provide student recruitment, in-program support, and program delivery.

Looking ahead, SENS remains committed to strengthening relationships with Indigenous communities and enhancing inclusive, responsive learning environments. Key opportunities include expanding programs aligned with community and workforce needs—such as energy and water security, climate adaptation, and Indigenous-led stewardship—while increasing flexible learning options, including online, hybrid, and professional offerings. The School can also continue to build on partnerships with Indigenous communities, governments, industry, and non-governmental organizations to support experiential learning and ensure program relevance.

The School has learned that ambitious initiatives, specialized programs, community-engaged partnerships, and reconciliation-focused activities depend on sustained investment in faculty, staff, student support, and relationship-building. Moving forward, SENS will need to balance innovation with sustainability, ensuring that new initiatives are aligned with available resources and supported by long-term planning. In this way, academic change presents not only challenges but also an opportunity to reaffirm SENS' role in preparing future leaders to address complex environmental and sustainability challenges through interdisciplinary, community-engaged, and socially responsive approaches.



Masters of Sustainability - Energy Security

Elder Joseph Naytowhow delivering a sharing circle and starting a smudge during an event with MSs Energy Security program coordinators, facilitators, and students.

Renewal | Representation | Right Relations | Creation | Wellness | Safety

Between 2017 and 2019, engagement with Indigenous leaders, northern communities, and industry partners, including from Peter Ballantyne Cree Nation and Gwich'in Tribal Council, identified strong demand for accessible education that supports both entry into the energy sector and the knowledge to help communities transition away from diesel and fossil fuel dependence. Community consultations and letters of support confirmed the need for training that is relevant to northern and Indigenous contexts, while also meeting the needs of working professionals already active in the energy sector.

Northern, remote, and Indigenous learners face structural barriers to post-secondary education, including geographic isolation, financial constraints, and limited flexibility in traditional program models. There is a clear need for accessible, community-based training that allows students to remain in their communities and with their families while building skills in sustainable energy development. This is particularly relevant for prospective students who are working full-time while supporting family members.

In response, SENS developed the Master of Sustainability in Energy Security, launched in September 2020 as a hybrid offering. The program was co-designed with partners including Peter Ballantyne Cree Nation, Yukon University, the Gwich'in Tribal Council, First Nations Power Authority, and the Northwest Territories Power Corporation, with ongoing input from Indigenous leaders, Elders, and community partners.

At its core, the program integrates a two-eyed seeing (Etuaptmumk) approach, intentionally braiding Indigenous and Western knowledge systems in curriculum, delivery, and assessment. This approach recognizes that each knowledge system offers unique insights into energy, sustainability, and community well-being, and that students gain deeper understanding when both are honoured side by side.

Implementation begins with strong, respectful partnerships with Elders, Knowledge Keepers, Indigenous leaders, and community partners. Through ongoing dialogue and relational engagement, SENS and its partners co-created program level and course level learning outcomes, course content grounded in both Indigenous and Western perspectives, land-based learning opportunities that were connected to local Nations and territories, and assessments that honour multiple ways of demonstrating knowledge.

However, budget constraints resulted in under-resourcing of staff and faculty dedicated to the Energy Security program stream and available funding did not meet its intended goal. Consequently, the initial recruitment effort and program course development (aside from a few exceptions) fell largely on the one senior faculty member who designed the program (Dr. Greg Poelzer).

Reenvisioning the Future of the MSs in Energy Security Program

The process of a curriculum redesign in 2024 was completed, with the advice of an Advisory committee that included Indigenous leaders, industry representatives, and academics, to keep the program current and to align with training priorities that better serve Indigenous communities, organizations and employers. Partners identified that many northern, Indigenous, and remote students struggled with the realities of an intensive two-year graduate program. As a result, certificate programs were introduced to help prepare students for the rigors of graduate school. Funding through Natural Resources Canada (NRCAN and Suncor Energy Foundation provided financial support, academic resources, including access to tutoring and writing supports, and mentorship from program staff *(see sidebar on page 28)*.

Independent funding secured by Poelzer from NRCAN ensured that additional supports for students as well as a 0.5 FTE Indigenous Community Coordinator would be funded. The coordinator's role was to fully support students in the Energy program, including in challenges



Aklavik, NWT solar project which features a 55kW ground-mounted solar array, integrated into the community's microgrid and is operated by the Northwest Territories Power Corporation.



Students participate in a Round Dance at Chief Mistawasis School during a visit with Energy Security faculty, Dr. Elaina Guilmette, June 2025.

Delivering on a Promised Program

Recognizing the contributions of Dr. Greg Poelzer and his instrumental role in establishing this program. Because 170 of Canada's northern and remote communities are Indigenous, off-grid, and face unacceptable rates of energy insecurity, Poelzer envisioned a program that would train Indigenous community energy champions – community leaders with a skillset in planning and leading community energy projects, and particularly those with renewable sources of energy.

The program and its Indigenous-focused curriculum has faced challenges, particularly around not being fully resourced. Although these challenges have slowed the program from realizing its full potential, Poelzer's commitment to his Indigenous partners led him to seek external funding to support personnel critical to ensuring student success in the program.

Through significant funding that Poelzer successfully secured from Natural Resources Canada (NRCan), Suncor Energy Foundation, SaskPower, and others, SENS was able to fund curriculum development and hire three staff members (two who were Indigenous), as well as support an Indigenous co-lead advisory board, and student support.

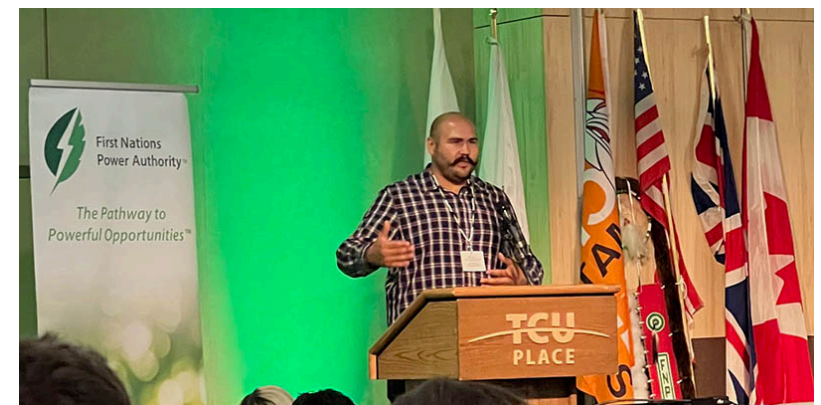
While these have helped in the short-term, the fact remains that the School's most Indigenous-focused program continues to face challenges. Since spring 2025, SENS has been without dedicated staff for supporting Indigenous recruitment and success. Beyond this, there is a clear and systemic issue that exists for Northern, remote, and Indigenous students that require more institutional support to be successful in a graduate program. A broad and general understanding of the challenges that Indigenous students can face during graduate studies, which requires flexibility and accommodation.

related to meeting the rigors of graduate-level programming, home-life challenges, geographical and financial barriers to success, and to travel to communities to aid in recruitment efforts.

Despite its challenges, the Energy Security stream of the Master of Sustainability program has trained 25 Indigenous students to begin their careers in the energy sector, with a focus on sustainability and renewable resources.

Each year, SENS, with the advice of the MSs Energy Security Program Director, (currently Dr. Oscar Zapata), alongside colleagues in the program, Dr. Greg Poelzer, and Dr. Elaina Guilmette, SENS staff, and core faculty:

- Nominate Energy students for the Indigenous Achievement Award each year
- Recruit Indigenous students for the program, which involves contacting community leaders and visiting Band Education offices, participating in events organized by Indigenous communities or organizations, having several one-to-one conversations with prospective students, and providing frequent guidance on completing program applications.



Jason Cooks-Studer, MSs Energy Security student, received the 2025 Indigenous Achievement Award for Leadership

Mistawasis, Muskeg Lake Cree Nation, and Yellow Quill First Nation

Strengthening Water Stewardship Through Community-Based Learning

Stewardship | Renewal | Representation

Dr. Andrew Ireson with SENS takes students from ENVS 806 Field Skills in Environment and Sustainability to visit Mistawasis Nêhiyawak to learn about their water challenges. In fall 2025, the class visited the high school at Mistawasis to participate in some joint activities between high school students and university students. The group also participates in a sharing circle, which was inspired by Sarah Gauthier, who led the activity in 2024, and will be invited to lead this in the future, when possible. In this activity the group hears about and then discusses the water issues at Yellow Quill First Nation.

Connecting Youth With Land-Based Science

Right Relations | Creation

SENS researchers and colleagues in Biology and the College of Agriculture and Bioresources are supporting the “Bridge to Land Water Sky” Living Lab led by Mistawasis Nêhiyawak, which seeks to adopt alternative management practices on agricultural lands, including a return to traditional land uses. As part of this collaboration, Dr. Colin Whitfield and his research group were invited to serve as demonstrators at the Muskeg Lake Cree Nation Harvest Science Fest. The event, which ran for an afternoon in October 2024 at the Muskeg Lake Cree Nation food forest, hosted high school students from Muskeg Lake,

Mistawasis, and surrounding communities. Whitfield and team ran a water quality focussed station featuring infographics, water samples and invertebrates, as well as some field instruments for the students to use and learn about.

Building a Culture of Reciprocity Through Volunteerism

Stewardship | Renewal | Representation

We have just begun to build a culture of ‘volunteerism’ between SENS and First Nations. A current Master of Environment and Sustainability (MES) graduate student has been a strong advocate for reciprocity in these relationships and is currently leading a pilot ‘Catalyst’ program to support student and faculty volunteer work with Mistawasis Nêhiyawak. This includes contributions to “Bridge to Land Water Sky”.

This project includes sustainable land management demonstration sites at Mistawasis, Muskeg Lake Cree Nation, and the broader Redberry Lake Biosphere Region. Current volunteer opportunities for faculty and students include helping to maintain these sites and supporting environmental science and monitoring education in the local high school. While students have been volunteering through 2025-26, several faculty members are now participating, with the first activities taking place in Spring 2026. Volunteer opportunities are emerging with the school at Mistawasis.



Aerial photo of Camp Bigchild at Mistawasis, taken by drone during ENVS 806 Field Skills in Environment and Sustainability, Fall, 2025.

The Benefits of Land Based Learning on Mental Health

Stewardship | Renewal | Representation | Wellness | Safety



There's a link between mental health, culture and land-based learning that for many, has been missing in Northern, remote, and Indigenous classrooms for several years. Understanding that connection, Dr. Elaina Guilmette with SENS, and, thanks to funding from Royal Bank of Canada (RBC), is working with Master of Environment and Sustainability (MES) students and community members to co-develop land-based culture camps in Loon Lake, Saskatchewan at Makwa Sahgaiehcan First Nation School.

Established in 2025 and continued in 2026, the Loon Lake culture camps engage directly with Indigenous Youth and Elders to incorporate Indigenous teaching at the camp and engage directly with the land, community, and what a lived experience might mean for them. Opportunities during the camp provide access to a variety of forms of wellness that are difficult to achieve in classroom-only environments. Indigenous teachings at camps emphasize that well-being comes from relationships—with the land, community, ancestors, and self. Being on the land helps learners feel grounded, connected and part of something larger than themselves.

Future MES student, Brie Phillips, is joining Guilmette for the 2026 culture camps before initiating work in her master's program. She plans to research the effects bringing art into culture camps have on mental health and wellbeing for everyone involved.



in May 2026, students from Makwa Sahgaiehcan First Nation School, as well as youth from Davidson and Kenaston, participated in a land-based Cultural Camp in Loon Lake. During the three-day trip, they swam, canoed, kayaked, played endless games, and built a teepee.

SaskPolytechnic - Toxicology Centre

Renewal / Creation / Stewardship

From 2024 to present, a teacher of the Adult 12 Environmental Science program at Saskatchewan Polytechnic engaged with Toxicology Centre leadership to provide guided tours for students in the program.

Approximately fifty per cent of students enrolled in the program are Indigenous and many of the topics discussed during the course relates to toxicology, environmental health, Indigenous water challenges, and emerging contaminants.

The class had, before attending tours at the Toxicology Centre, covered a variety of Toxicology-related topics in class, including the importance of Toxicology for medical safety, environmental protection, food safety, and workplace safety. The class discussed common toxins including both naturally occurring substances like poisonous mushrooms, stinging nettle and human-made toxicants like DDT.

The class had also discussed some incidents like the Bhopal gas leak disaster, DDT effects on eagle eggshells, and the Yellow Quill First Nation water treatment issues of the late 90's, and multiple examples of tire chemicals harming fish that are important for Indigenous subsistence fisheries in BC. During their annual tour, Toxicology Centre staff and faculty discuss this topics at length, in particular the effects of tire chemicals on fish populations while providing them with tangible insights on how the research is done, some of the approaches used, and how we partner with different rightsholder and stakeholders in this research space.

These activities create accessible entry points to post-secondary science for Indigenous people and foster inclusive, applied learning environments.

SENS Eco Summer Camps

Renewal / Safety / Creation / Representation / Right Relations / Stewardship

We have developed on-campus summer eco-camps for children aged 8–12 that provide hands-on programming in environmental sustainability, water security, toxicology, and climate change. As part of this initiative, we have reserved camp spaces for children from partnering Indigenous communities, including Meadow Lake Tribal Council and Mistawasis First Nation, to reduce barriers to participation and extend relationships beyond research contexts. This initiative supports relational accountability, early engagement, and long-term pathways into environmental education.

A key focus of the summer camps is not only to build a foundation in sustainability knowledge, but also to create a space where youth from Indigenous partner communities, Indigenous graduate students, and Saskatoon-based Knowledge Keepers can share their perspectives. This is guided by a two-eyed seeing approach, which brings together Indigenous and Western ways of understanding.

Camp programming will encourage all participants to reflect on and share their understanding of sustainability both before and after camp. Through this, we hope to encourage meaningful exchange and learning, with all participants offering important perspectives that help broaden and deepen how sustainability is understood across different contexts.

SECTION 04 REFLECTIONS ON THE GIFT

In reflecting on our progress as a School, it is important to recognize that SENS has not operated deliberately from a comprehensive Indigenous strategy. The success of our projects, initiatives, and programming has arisen from the motivation of individuals (or groups of individuals) acting with a sense of purpose and responsibility, and supported and encouraged by the School's leadership, rather than from a unit-level mission or mandate driving whole-of-School progress. On the one hand, we are very proud of our collective achievements, and we can clearly see our strong alignment with several of the seven fundamental commitments of *ohpahotân | oohpaahotaan*. On the other hand, it is humbling to see how this approach has resulted in uneven progress - in meeting the commitments, in which initiatives did and did not do this, and in terms of who has been contributing to that progress. Below, we reflect on our progress by assessing our strengths and weaknesses, our impact and areas for improvement, and most importantly, our intentions to make positive changes as a School moving forward.

Across the School, our research and teaching have most strongly and consistently met the commitments of Right Relations, Stewardship, and Creation, in some cases embedding them as organizing principles. This is not surprising, given that interdisciplinary research connected to water security, ecosystem health, and land-based practices, and based in, and

often led by, Indigenous communities, is among the School's greatest strengths. Some of the School's most impactful work stems from long-term, trust-based partnerships with Indigenous communities (e.g. Mistawasis, Cumberland House), with research addressing community-defined agendas and integrating Indigenous governance frameworks (e.g. OCAP®, co-authorship, community-led monitoring) that support reciprocity. Some of our research and teaching are grounded in Two Eyed Seeing and are tied directly to Indigenous priorities, going as far as creating an Indigenous advisory committee for our Energy Security stream of the Master of Sustainability program to ensure the program meets both cultural expectations but also individual needs. Collectively, these strengths highlight that some of our work is actively advancing more ethical, relational, and community-responsive ways of working.

However, progress has not been even or consistent. Our work has not made significant progress towards deliberately creating spaces free from racial bias, increasing access to culturally relevant wellness supports, or improving the experiences of new Indigenous students or staff (i.e., the commitments of Safety and Wellness). Both Safety and Wellness have been assumed or implied in our work, rather than being made explicit or designed intentionally, though the Energy Security program is a notable exception. Representation and Renewal has only been met in some initiatives — particularly those involving youth, education/

training, and Indigenous leadership (e.g. supporting MLTC's camps and monitoring our Energy Security program). As those are relatively newer efforts within the School, this speaks to positive recent changes in areas of our work, but with room for improvement and, importantly, even wider uptake among faculty.

Considering our work to date, SENS is at an inflection point. In recent years, we have made an important transition toward more equitable and community-centered practices. Much has been accomplished, but this has mostly been through individual or small group efforts. While these have been supported by the School's leadership, they have not been driven by a specific whole-of-school strategy or actions. So, we must plan the next phase of progress to ensure broader and more deliberate improvement.

Individual reflections contributed as part of our reporting process (**Appendix 1**) revealed several themes and questions the School asked itself to guide its future change. First, the School has areas of excellence - both in terms of specific areas and initiatives, but also in who is making and leading those contributions. How can we move from individual or small group excellence to a more collective shared responsibility for Indigenous engagement and reconciliation? Second, the School needs to pay more attention to its commitments to Safety and Wellness. How can we be more welcoming and supportive of Indigenous people in everything we do and create spaces and processes to facilitate that? Third, as a unit, SENS has not built any deliberate mechanisms for reflection, feedback, or shared learning that could lead to discussion around what is and what is not working. How do we 'institutionalize' improvement as a collective and have processes in place for monitoring that change?

Reflecting on these questions and our work to date, our main goal for the future is to be more intentional in our approach by committing, as a School, to a process of continual improvement towards positive cultural change. We have come up with the following guiding principles that we hope will help us achieve our goal:

Make explicit our commitment to our students, staff, and faculty that we are, and will continue to be, an inclusive and culturally safe unit for Indigenous people. While we will make specific mention of Indigenous people, we will be clear that we value and welcome people from all

equity-deserving groups. Importantly, our actions must back up this commitment.

Further promote a culture of allyship that values and celebrates work with Indigenous Peoples and communities. Encourage everyone to start their journey towards better upholding the commitments of ohpahotân | oohpaahotaan and learning from their mistakes, provide peer-to-peer mentorship to support that effort, and better recognize those who contribute to our shared culture.

Review programming and curricula to ensure it includes an Indigenous lens, wherever appropriate. We will be guided by the learning outcomes from ENV5 886: Building Understanding in the Age of Reconciliation, and work to implement and 'monitor' them in our programs, courses, and student experience.

Develop a sustainable approach to innovation by ensuring that new programs, partnerships, Indigenous engagement activities, and community-based initiatives are aligned with available resources, long-term planning, and appropriate capacity within the School. Continue to advocate for increased institutional support and, where resources allow, further advance SENS' commitments to reconciliation and Indigenization in ways that are meaningful, sustainable, and responsive to community needs.

We will encourage everyone in SENS to contribute to an ongoing shared responsibility for upholding the commitments of ohpahotân | oohpaahotaan, provide space for that, and ensure we monitor our progress as a School. Through our collective action, we will strive to be the best partners and agents for positive change that we can. We look forward to the collective progress we can make on our journey towards reconciliation with Indigenous people.

Appendix 1 - Individual Reflection

Below are the personal reflections that we received as part of our reporting process on progress (individual and institutional) towards Ohpahotân | Oohpaahotaan. These personal reflections have been only very lightly edited to ensure anonymity of the authors.

Individual 1

Challenges/Lessons Learned (not in any particular order):

- While we moan about 'cut-backs' at the university, we remain incredibly privileged. I am reminded of the incredible unevenness of resources and capacity between academia and partners, so I'm grateful for every minute they can spare. But this also requires patience and creativity (on my part and on the part of partners) to achieve mutually-beneficial outputs and outcomes from the research.
- Working with Indigenous partners have helped me to 'operationalize' the 6 Rs of research: respect, responsibility, relevance, reciprocity, relational accountability, and refusal. But these extend well beyond working with Indigenous partners and are good guides for all community-engaged scholarship, no matter the community.
- I have been blessed with students to take on these commitments in a meaningful way. We think that students need to be 'trained' - and they do - but they have also done their research with "head, hands, and heart" and worked so hard to ensure their research and associated activities will be useful. They become role models to us.
- I think SENS has missed an opportunity, to date, to have a school-wide vision for working with Indigenous communities and partners. Many people do this work, but we have never really shared that with one another. We could share stories and learn from one another, and help each other methodologically, but also identify some communities where the School wants to make a difference and in what ways. Having some school-wide discussions might lead to new ideas for research, for programming, and for reciprocity more generally.

Individual 2

How did you begin your journey as a college/school/portfolio with Ohpahotan|Oohpaahotaan?

I attended Ohpahotan|Oohpaahotaan in Marquis Hall circa 2022. I heard many speakers discuss the challenges of decolonization such as the impacts and harms of colonized approaches to collaboration. It was eye opening. I have made several mistakes along the way. We have been reluctant leaders. The community asked us to lead in the early years of our collaboration. We felt discomfort with leading community planning within [the community]. Once local leaders emerged to move forward with various efforts, we stepped back to play supporting roles. Supporting roles including: writing proposals, supervising students with partners on research, coordinating meetings, providing resources, answering questions, listening and responding.

What initiatives have directly contributed to the implementation of Ohpahotan|Oohpaahotaan for your college/school/portfolio?

With permission, we share what we have learned in collaboration with our partners in our courses. Our students have expressed gratitude for learning about the challenges and successes of intersectional, intercultural work.

What critical system changes are planned?

Being wide open to collaborations with provincial regulators and agencies while remaining critically constructive.

What reflections does your college/school/portfolio engage in after work/initiatives are in place?

I don't think we really do this much as a school? We struggle with these kinds of discussions as we have very different perspectives about these relationships. We don't have a common language to talk about these things. People often get run over by dominant voices when they initiate these discussions. Then everyone goes quiet. It's not healthy.

College/School/Portfolio must show how Ohpahotan|Oohpaahotaan weaves into college/school/portfolio strategic plans.

We've just spent months working on strategic initiatives, but Ohpahotan|Oohpaahotaan didn't really seem to be at the center of any

of it. Note, I was only on one of the four initiatives; this was missing from that one at least. It could have been quite useful to bring Ohpahotan into it, but I'm not sure we know how to do that.

Reflection:

Tell us how you evaluated these initiatives?

We listen to our partners. We haven't done formal evaluations. But we'd welcome ways of doing that with our partners.

What were key takeaways from the engagement initiatives?

Listen before you speak. Follow communities' lead. Check in on how it's going regularly.

What has been learned?

Land-based knowledge and science can coexist. Creates a better understanding of the whole ecosystem and water resources systems.

Demonstrate the impact of the school portfolio journey with Ohpahotan?

I think we need to bring more of this work into our courses and programs' curriculum. Or at least, I need to. I did more of this this year and it was welcomed by our students.

How has ohpahotan provided a platform for the colleges and schools to experience reconciliation, decolonize curriculum, foster improved relations etc?

I think it provides us with much needed guidance on how to have the conversations that we often avoid having.

Future:

What areas of the school lacks engagement with ohpahotan?

About half of our faculty have built strong relationships with Indigenous communities. It seems like the other half don't really engage with communities or ohpahotan? There is an impression that they may want to but don't know how. Maybe they also feel like other people are doing it, so they don't need to. Or, that it's too much work? Too risky? Not essential to knowledge creation.

Be direct, how will you collectively move forward?

I wish others would come to understand that it actually makes science and scholarship much better. Yes, it's a bit harder at first, but after a while, the impacts go far beyond sciences and scholarship. The potential for meaningful impact within communities and in environmental systems is possible.

Individual 3

One of the lessons learned is certainly that community-led research and Federal funding mechanisms (and associated reporting requirements) do not always align well. For example, if we want to truly be responsive to community needs, that means we must be nimble in how we respond to changes in direction and new data becoming available. However, within rigid structures of many grants, with milestones and deliverables, that is not always easy, and maintaining a balance has been a steep learning curve for me.

The other learning for me was that I must listen more and speak less, and accept that I am not in a position to suggest or dictate what a community might want to learn about. So I now see myself more as a consultant or partner in the research, rather than driving or leading it. But I must admit that I am still at the beginning of this journey.

Individual 4

Challenges and lessons learned:

- Working with Indigenous communities takes time, patience, and empathy
- Building respectful relationships and showing reciprocity is key for engagement
- Understanding that language barriers affect the time it takes for Indigenous students to complete readings and assignments, and that extensions might be required for success.
- Each community is unique and differ in governance, language, priorities, and protocols. Learn about a communities history, governance, priorities, and land before engaging.
- Research and projects need to place Indigenous people and communities as equal partners
- Engage early, often, and in a meaningful way
- Respect oral knowledge and local expertise.

Individual 5

Not sure I can give you much in terms of specifics beyond some general challenges of doing this kind of work:

- Time and work commitments for building and maintaining the relationships that underpin such partnerships
- Challenges, changes, problems faced by communities over the lifespan of a project can scupper progress in the collaborative

research being done - reminder that as a researcher, lots of things are out of one's hands or control

- Costs of doing research (esp. travel) are going up - making it harder for funds to cover all planned activities (have to make compromises in design)
- That from an academic perspective, doing research that is predicated around community engaged work, whether with Indigenous peoples or other traditional/local communities, does not align well with the standard metrics used to gauge research impact and researcher "productivity" (i.e., long timeframes for getting work done, papers written etc. with impact focused on generating products and benefits for community that are not always visible to, or easily assessed, by academic processes)

Individual 6

I'll try to keep this brief, but hope these help.

- There do not appear to be institutional structures to support individuals who wish to undertake these types of initiatives
- There can be large gaps between what researchers are positioned to do, and capacities on the ground in Indigenous communities needed to build functioning partnerships
- Being willing to go out of my comfort zone is necessary

Individual 7

I think the big thing I've learned from these projects is that building these relationships takes time. That has been a real challenge when we get calls for proposals that require partnerships with Indigenous groups. Without previous engagement, meaningful partnerships can't develop quickly enough to support the proposal but without funds to collaborate, it can be difficult to develop the relationships.

The other challenge has been aligning research interests with those of Indigenous people. A lot of my research focuses on understanding problems that aren't readily visible and have mainly been of interest to other scientists and engineers. In my experience, a lot of what Indigenous nations needs for groundwater management could be done by environmental consultants. Figuring out research problems that are of interest to both Indigenous nations and to the hydrologic research community has been something that I have not had much success with.