



**SUBJECT TO CHANGE
FOLLOWING FIELD VERIFICATION**

LOCAL INDIGENOUS KNOWLEDGE AND VALUES FRAMEWORK

FORESHORE INTEGRATED MANAGEMENT PLANNING – NICOLA LAKE

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November 2022





SETTING THE STAGE

“Traditional Knowledge can help lakeshore monitoring by understanding the different ways to monitor and what to monitor for. I find there is quite a distance between Western science monitoring and Traditional monitoring but other times there are similarities. It’s about bringing those two together, including those Knowledge Keepers, the First Nations, within that monitoring to help understand each world.

Our water is not in a healthy state at the moment. There is more pressure, more water demand, water withdrawal, and climate change impacts such as higher temperatures causing massive issues for water quality. Various human activities along the shoreline are speeding up these processes. If we look just across the lake here, we have stories of battles and pithouses, and now all we see are developments. What impact is this having on the fish, plants, and animals that utilize this space and water? It’s really important that this gets dealt with in my time so my children can live with clean water.”

-Brian Holmes, Upper Nicola Band, on the importance of collaborative planning and relationship building around water stewardship



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ACKNOWLEDGEMENTS

We would like to thank Brian Holmes and the Upper Nicola Band for their dedication, direction and guidance of the development of this framework. We acknowledge the Upper Nicola Band as the proper rights holders and guardians of Nicola Lake and strive to uphold their authority.

We would also like to thank the following organizations and individuals for their contributions:

Georgia Peck, B.Sc., FIMP Project Manager, Living Lakes Canada
Claire Armstrong, B.Sc, Applied Reconciliation Assistant, Living Lakes Canada
Bruce MacDonald, B.Sc., B.Ed., FIMP Project Director, Living Lakes Canada
Jason Schleppe, M.Sc., R.P.Bio., Senior Biologist, Ecoscape Environmental Consultants Ltd.
Sherri McPherson, B.Sc., R.P.Bio., Senior Aquatic Biologist, Lotic Environmental Ltd.
Louise Porto, M.Sc., R.P.Bio., WSP E&I Canada Limited
Crystal Lawrence, B.Sc., R.P.Bio., WSP E&I Canada Limited
Bryce Henney, UBC Sustainability Scholars Program
Mehrnaz Makuei, UBC Sustainability Scholars Program
Yiming Zhang, UBC Sustainability Scholars Program

We would also like to thank the review committee for their thoughtful feedback and detailed contributions. Committee members were carefully selected based on personality traits, which aligned with the Four Food Chiefs. Framework authors wanted to ensure revisions were made by a diverse group of individuals, who would bring unique, yet equally important perspectives to their review.



FINANCIAL SUPPORT

This project is made possible with funding from the Real Estate Foundation of British Columbia and the Fish & Wildlife Compensation Program.



SUSTAINABILITY SCHOLARS PROGRAM - UNIVERSITY OF BRITISH COLUMBIA

Support for this framework was provided by the UBC Sustainability Scholars Program, a partnership between the University of British Columbia and various local governments and organizations in support of providing graduate students with opportunities to do applied research on projects that advance sustainability across the region.



SUGGESTED CITATION

Peck, G., Holmes, B., & Armstrong, C. (2023). Local Indigenous Knowledge and Values Framework. Prepared by: Living Lakes Canada, Upper Nicola Band.



ACRONYMS

- BMP.....Best Management Practice
- DFOFisheries and Oceans Canada
- FIM.....Foreshore Inventory Mapping
- FIMPForeshore Integrated Management Planning
- FDG.....Foreshore Development Guideline
- FHSI.....Foreshore Habitat Sensitivity Index
- IKIndigenous Knowledge
- LLC.....Living Lakes Canada
- MOUMemorandum of Understanding
- QA/QCQuality Assurance and Quality Control
- QEPQualified Environmental Professional
- RFPRequest for Proposal
- UNB.....Upper Nicola Band



KEY TERMS

Captik^wt: Oral stories on occupation and use, jurisdiction and authority and the en'owkin'wixw? process

En'owkin'wixw?: A consensus-based practice developed on the principles of respect, trust and inclusion

Sux^wtxtəm: To take care of (stewardship)

Tmíxw^w: People, animals, plants, air, and water

Two-Eyed Seeing: An approach of inquiry and solutions where people come together to view the world through an Indigenous lens with one eye, and through a Western lens with the other eye¹

Indigenous Knowledge: A cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission about the relationship of living beings (including humans) with one another and with their environment

Traditional Ecological Knowledge*: Traditional Ecological Knowledge (TEK) is the ongoing accumulation of knowledge, practice and belief about relationships between living beings in a specific ecosystem that is acquired by indigenous people over hundreds or thousands of years through direct contact with the environment, handed down through generations, and used for life-sustaining ways

Western Science: Western science is the system of knowledge which relies on certain laws that have been established through the application of the scientific method to phenomena in the world

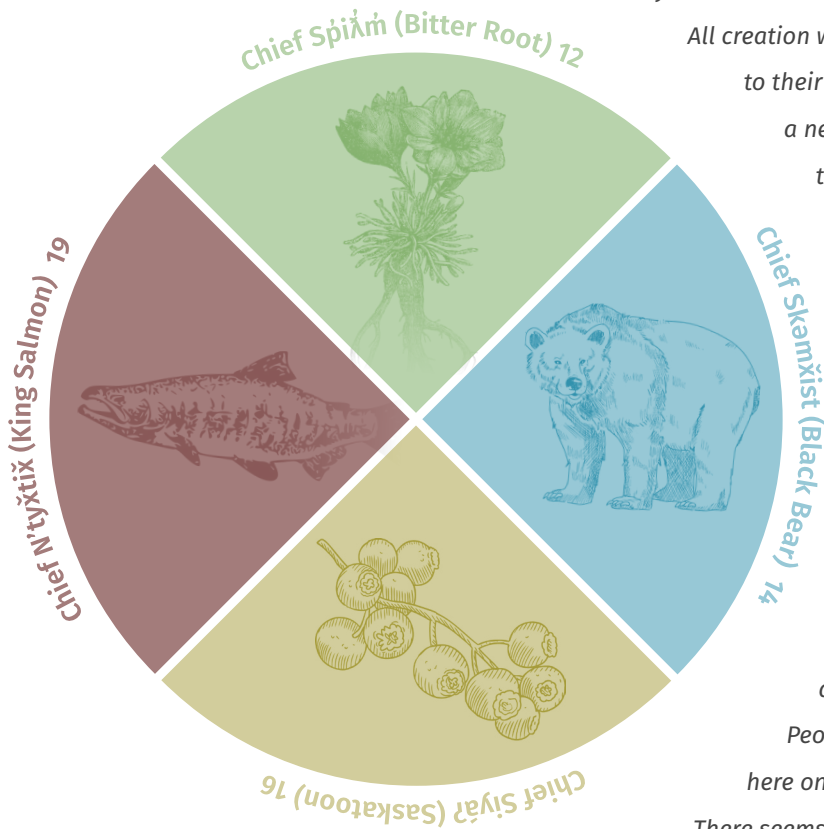
**Traditional Ecological Knowledge—The recently updated FIMP methods² were collaboratively updated to incorporate First Nations Traditional Ecological Knowledge (TEK) when it is available. TEK is difficult to define because it is not static. It's wisdom that accumulates and evolves over time. Nonetheless, TEK generally consists of: 1) Knowledge about the environment (e.g., specific observations about biophysical phenomena, associations or patterns); 2) Knowledge about the use and management of the environment (e.g., common practices that exist currently or that occurred in the past); and 3) Environmental values (which are strongly influenced by culture and spirituality as well as morals and ethics)³. For the purpose of this framework, authors have chosen to reference the term Indigenous Knowledge (IK) over TEK, as it pertains to this document, to avoid limiting IK to historical and ecological aspects, when informative contributions may also be cultural, social, archaeological, and/or spiritual.*



FOUR FOOD CHIEFS “HOW FOOD WAS GIVEN” ORAL STORY

The development of this framework was guided by the foundational captíkʷt (oral stories) of the Four Food Chiefs⁴ which describes how food was made available to people from the four food Chiefs; land (black bear), water (king salmon), underground (bitter root) and plants (saskatoon).

In the world before this world, before there were people, and before things were like they are now, everyone was alive and walking around like we do.



All creation was talking about the coming changes to their world. They had been told that soon a new kind of people would be living on this earth.

Even they, the Animals and Plant people, would be changed. They had to decide how the People-To-Be would live and what they would eat.

They held many meetings and talked for a long time about what the People-To-Be would need to live. All of the Chiefs thought and thought “What can we give to the People-To-Be to eat that is already here on earth?”

There seems to be no answer.”

Finally, the three other Chiefs said to Skəm̄xist, “You are the wisest and the oldest among us. You tell us what you are going to do.”

Skəm̄xist said, “Since you have all placed your trust in me, I will have to do the best I can.” He thought for a long time and finally he said, “I will give myself, and all the animals that I am Chief over, to be food for the People-to-be.” Then he said to N'tyxtiix, “What will you do?” N'tyxtiix answered, “You are indeed the wisest among us.

“I will also give myself and all the things that live in the water as food for the People-to-be.”

Spíłm, who was Chief of All-the-Roots-Under-the-Ground said, “I will do the same.” Siyá? was last.

He said, "I will do the same." All the good things that grow above the ground will be the food for the People-to-be.

Chief Skəm̄x̄ist was happy because there would be enough food for the People-to-be, "Now I will lay my life down to make these things happen." Because he was the greatest chief and had given his life, all of the People-That-Were (the animal people) gathered and sang songs to bring him back to life. That was how they helped heal each other in that world. They all took turns singing, but Skemxist did not come back to life. Finally, Fly came along. He sang, "You laid your body down. You laid your life down." His song was powerful, Skəm̄x̄ist came back to life.

Then Fly told the four Chiefs, "When the People-to-be are here and they take your body for food, they will sing this song. They will cry their thanks with this song." Then Skəm̄x̄ist spoke for all the chiefs, "From now on when the People-to-be come, everything will have its own song. The People-to-be will use these songs to help each other as you have helped me."





S'ÍĀ'Ā' (BITTER ROOT):

Describes relationships and the inter connectedness among tmix™ including but not limited to the people, animals, plants, the land, and the air and water. This provides the “context” in which individuals, families, and communities endeavor to live in harmony with each other and with their relatives – the animals, plants, and the land.

- Relationship-oriented
- Inclusive
- Aware of all the connections
- Takes others into consideration



SKƏMĀIST (BLACK BEAR):

Represents traditions and cultural practices. The concept of reflection and contemplation on “what is,” informed by an understanding of the past and how that is connected to the future. It is this understanding that then shapes development of protocols

- Tradition-oriented
- Contemplation/thinking
- Knowledge keeper/teacher
- Ties everything into culture



SIYÁ? (SASKATOON BERRY):

Represents all the things that grow above the ground. This chief embodies the spirit of creative energy, vision, and innovation. The perspective here can be associated with the enthusiasm and creativity that is often found in youth.

- Innovation/creative-oriented
- Nothing is impossible
- Thinks we CAN do it
- Thinks outside the box



N'TYĀTIĀ (KING SALMON):

Is chief of all creatures in the water and he exemplifies action. The perspective here is one of determining the objective or aim, getting prepared and then taking action. This chief is often considered to be associated with male perspective.

- Action-oriented
- Finds way through barriers
- Just do it
- Efficient



THE OBJECTIVE

The Local Indigenous Knowledge and Values Framework will instruct ways of harmonizing Indigenous Knowledge and Western science, creating opportunities for both worldviews to work in tandem throughout the Foreshore Integrated Management Planning project process.



THE VISION

An inclusive process for foreshore planning that places cultural and ecological integrity at the forefront of decision-making with a holistic approach supported by relationships.





A LIVING DOCUMENT

The Local Indigenous Knowledge and Values Framework was developed with the intent to direct respectful and consistent inclusion of Indigenous Knowledge and values into the Foreshore Integrated Management Planning project on Nicola Lake. This framework will be applied during the 2023 re-survey of Nicola Lake. It will model the Two-Eyed Seeing approach, a concept developed by Mi'kmaq Elder Albert Marshall⁵, to foreshore surveys and subsequent implementation (figure 1). By providing culturally appropriate directions throughout the project timeline, project team members, advisors, and hired consultants will be guided when developing and maintaining meaningful relationships and connections with Indigenous partners. This tool does not introduce new regulations or alter existing regulations but integrates cultural understanding and awareness of shoreline values in the Foreshore Integrated Management Planning project process.



FIGURE 1. TWO-EYED SEEING⁶

The Local Indigenous Knowledge and Values Framework is a living document that will evolve over time. This document seeks to incorporate place-based practices, recommendations, and significant actions to harmonize Indigenous Knowledge with Western science.



INTENDED AUDIENCE

The primary use of this document is targeted towards the specific project team facilitating a FIMP project process. For the 2023 Nicola Lake FIMP Re-Survey, the project team will be co-led by Upper Nicola Band and Living Lakes Canada. The Local Indigenous Knowledge and Values Framework may be categorized as an internal document until application and project evaluation has occurred. However, various outreach initiatives to Indigenous and non-Indigenous communities, and local, provincial, and federal government, have resulted in a high-level of interest in this project, and there is potential for this framework to act as an educational and outreach tool to be used and referenced beyond the project timeline.





INTRODUCTION

Nicola Lake, situated in the rolling hills of the South-Central Interior of British Columbia, provides drinking water, irrigation, and recreational opportunities to surrounding communities. Representing an important natural resource to local First Nations, residents, visitors, and biodiversity, Nicola Lake is a significant landmark whose cultural, spiritual, and ecological values are in need of protection. The Upper Nicola Band (UNB) is a proud, inclusive Syilx community working together to promote Sux^wtxtəm, teach their Captík^wł, and commit to building foundations through En'owkin'wixw?

Following the signing of the Memorandum of Understanding (MOU) between the Province and the Chiefs of Upper Nicola Band, Lower Nicola Indian Band, Coldwater Indian Band, Nooaitch Indian Band and Shackan Indian Band, the Nicola Government to Government Forum was established. The forum was developed to direct collaborative watershed governance in the Nicola watershed. In support of this forum, the Nicola Watershed Characterization Project assessed and reviewed current water management practices and provided recommendations to improve collaborative watershed management. This project recognized that a lack of coordination, collaboration and conflicting interests have resulted in a history of ineffective watershed governance in the Nicola watershed. Indigenous interviewees highlighted the lack of input from their communities into decisions made by the federal and provincial agencies⁷. This resulted in the following recommendation:

“Improve the use of Indigenous Knowledge (IK) in decision making: The Nicola Forum should adopt a formal process that will guide how IK contributes to decision making. This process should be developed, owned and undertaken by Nicola First Nations, in respect of Syilx and Mlaka’pamux governance principles and protocols. This process would represent the ways that they would like to see their knowledge inform decision-making processes.”

Building from this recommendation, Upper Nicola Band has partnered with Living Lakes Canada to develop the Local Indigenous Knowledge and Values Framework and apply it in tandem with Foreshore Integrated Management Planning (FIMP). The intent behind this framework is to harmonize Indigenous Knowledge and Western science and present an opportunity for both worldviews to work in tandem throughout the FIMP project process. This framework supports the recommendations brought forth in the Nicola Watershed Characterization project, and is intended to guide substantive inclusion of Indigenous Knowledge into a FIMP project; setting a precedent for future Nicola Watershed initiatives.

FIMP is a process intended to help agencies, First Nations, non-profit organizations, local, provincial and federal governments, and landowners understand lake foreshore habitat values and the prospective risks from proposed shore-altering activities on surveyed lakes. This process has been developed to be adaptable to available financial resources, development pressures, lake size, lake ecology and other variables⁸. FIMP documents the foreshore condition of the entire lake and identifies, classifies, and provides an estimate of value for important habitats that should be protected or conserved from development, preferably in legally binding covenants or lakeshore management plans.

Framework application on Nicola Lake will occur during a FIMP re-survey, following a preliminary survey completed in 2011 by Ecoscape Environmental Consultants Ltd. for the Nicola Thompson Regional District and Fisheries and Oceans Canada⁹.

The Upper Nicola Band supports the use of this framework by the FIMP project team to facilitate inclusivity, thoughtfulness, and balance throughout the project, for the ultimate purpose of creating opportunities for both worldviews to work in tandem throughout the Foreshore Integrated Management Planning project process. This framework will strive to support decision-making in adopting climate resilient lake management strategies, with the ultimate intent of bringing cultural and ecological integrity at the forefront of decision-making with a holistic approach supported by relationships.

The information generated from these efforts will diversify FIMP project processes and provide Upper Nicola Band with documented foreshore characteristics to identify sensitive and high-quality habitat, areas with Indigenous cultural and archaeological value, high impact/developed zones, and areas demonstrating environmental degradation.



INTENT OF THIS DOCUMENT

The Four Food Chiefs have guided all aspects of this framework. The Action Plan in this framework is presented as project phases that align with each of the four Chiefs (see summary table 1 presented below for a breakdown of the goals, objectives, outcomes, and project phases associated with each Chief). We recognize that each phase involves characteristics of all Chiefs, some more than others. For example, Chief Siyá? aligns with the entire action plan given that this framework is an innovative and creative approach towards interweaving both Indigenous Knowledge and Western Science into FIMP. However, Chief Siyá? is particularly essential for the assessment, analysis, and compilation phase as these phases involve overcoming barriers to interweaving, requiring the most creativity and innovation so that Chief N'tyxtiĭ can follow with action to implement.

In many ways, the teachings of the Four Food Chiefs embody what this framework is trying to do – balance ways of knowing and being, and ensuring the strength of the collective supersedes the individual. Though this framework was developed within the specific context of the Nicola Lake FIMP resurvey, the intent behind this framework is applicable in many other contexts. Our intent is that the process of developing such a place-based framework for interweaving, rather than the specifics of this framework, is what can act as a model for other contexts. This intent is aligned with the greater vision of the framework surrounding the values of relationships as well as cultural and ecological integrity.

CHIEF	GOALS	OBJECTIVE	OUTCOME	PROJECT PHASE
Chief Spíłm̃ (Bitter Root)	Foster long-term relationships and maintain inclusivity throughout project timeline and beyond.	Ongoing engagement, consistent inclusivity, and open communication with Upper Nicola Band will be prioritized during the FIMP project.	Strong, mutually-beneficial long-term working relationship between Upper Nicola Band, Living Lakes Canada, and the land based on shared values and goals.	1. Project Planning
Chief Skəm̃x̃ist (Black Bear)	Interweave Indigenous and Western ways of learning, knowing, and understanding Tmíxw̃.	Opportunities to promote Indigenous teachings alongside Western ways of learning will be encouraged and sought out to improve understanding of Tmíxw̃.	Project members have a substantive understanding of both Indigenous and Western ways of learning, knowing, and understanding of Tmíxw̃ in a manner that enables the potential for interweaving these systems.	2. Place-based Planning Meeting
Chief Siyá? (Saskatoon Berry)	Promote innovation and adaptability within FIMP through the unique gathering of Indigenous and Western Information, in tandem with one another.	Introduce a creative and place-based perspective to aligning Indigenous and Western information so that it addresses foreshore values and habitat sensitivity of the Nicola Lake foreshore.	With innovation at the forefront of actions, cultural and archaeological values are prioritized alongside ecological values, enabling holistic perspective of foreshore management that places focus on the people, the land, and the relationships between the two.	3. Assessment 4. Analysis
Chief N'tỹxt̃ix̃ (King Salmon)	Persevere through past challenges to develop and disseminate a collaborative Foreshore Development Guidance document for Nicola Lake.	Indigenous and Western knowledge will be incorporated into the Foreshore Development Guidance document for Nicola Lake.	An inclusive and living Foreshore Development Guidance document that informs Nicola Lake decision making, prioritizing cultural and ecological integrity.	5. Compilation 6. Implementation
7. Project Evaluation				

TABLE 1. EXECUTIVE SUMMARY OF FRAMEWORK ACTION PLAN.



ACTION PLAN

Within this framework's action plan, the FIMP project process was broken down into 7 distinct phases; project planning, place-based planning meeting, assessment, analysis, compilation, implementation, and project evaluation. Each phase was categorized based on the dominant Chief it is associated most closely with. The authors of this framework would like to emphasize that this categorization is based on personal interpretation of the Four Food Chiefs and past experiences with the FIMP project phases.

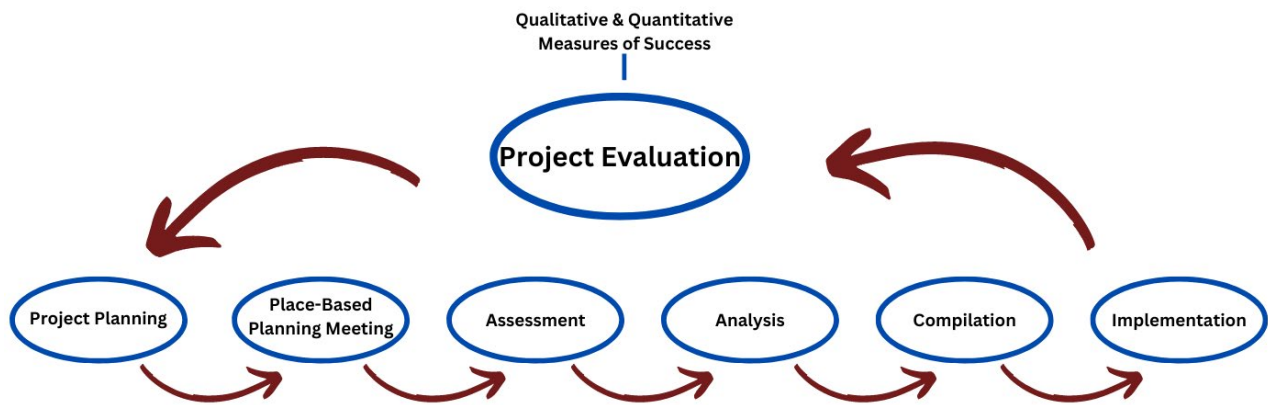


FIGURE 2. REPRESENTATION OF FIMP PROJECT PHASES AND ADAPTABLE EVALUATION PROCESS.

A diagram accompanies each of the seven project phases. These diagrams display the breakdown of project phases and how they relate to the four Chiefs. An interpretive description of each diagram has been included for each project phase, which describes the authors' interpretation of the Four Food Chiefs in their application to each stage.

CHIEF S'PIĀM (BITTER ROOT)

RELATIONSHIP-ORIENTED, INCLUSIVE

Goal: Foster long term relationships and maintain inclusivity throughout project timeline and beyond

Objective: Ongoing engagement, consistent inclusivity, and open communication with Upper Nicola Band will be prioritized during the FIMP project

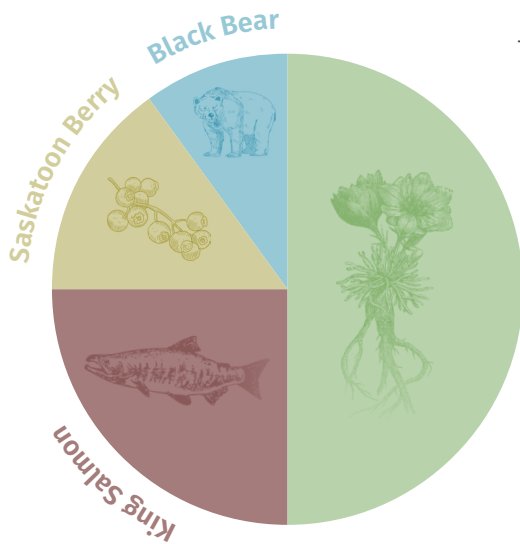
Outcome: Strong, mutually-beneficial long-term working relationship between Upper Nicola Band, Living Lakes Canada, and the land based on shared values and goals





PROJECT PLANNING

The Project Planning phase will clarify the project process and strengthen working relationships. A clear and shared understanding of the project timeline, milestones, and expectations will be established amongst team members. This phase will include the formation of a lake-specific working group, including the FIMP project team, made up of LLC and UNB team members, different levels of government and non-profit partners. The FIMP working group will help facilitate each of the designated partners' roles and responsibilities to complete the key steps of the project. They will also assist with communication and dissemination of information to lakeshore property owners, interest groups and community members. Early engagement and consistent communication will ensure long-term collaboration amongst the working group, throughout the project timeline, and beyond.



The Project Planning phase is dependent on strong, trusting relationships and interconnectedness amongst project members. Chief Spíilín (Bitter root) is the dominant Chief, closely followed by Chief N'tyxtiḥ (King Salmon), who exemplifies action and efficiency. Similar to all project phases, a level of creativity must be held to help overcome barriers and past challenges. This means Chief Siyá? (Saskatoon Berry), proceeds Chief Skəmḥist (Black Bear) who ensures the launch of the project remains closely tied to culture.

KEY ACTIONS

1. Begin engagement and consultation with project partners at the fundraising stage to establish trust and transparency.
2. Identify community champions and a Nicola Lake FIMP Working Group, with planning meetings co-hosted by UNB.
3. Collaborate on the formation of Requests For Proposals and the awarding of contracts to project consultants.
4. Pursue a formalized data-sharing agreement to determine data collection and sharing.

CHIEF SKƏMĀIST (BLACK BEAR)

TRADITION-ORIENTED, KNOWLEDGE KEEPER/TEACHER

Goal: Interweave Indigenous and Western ways of learning, knowing, and understanding of Tmíxw™

Objective: Opportunities to promote Indigenous teachings alongside Western ways of learning will be encouraged and sought out to improve understanding of Tmíxw

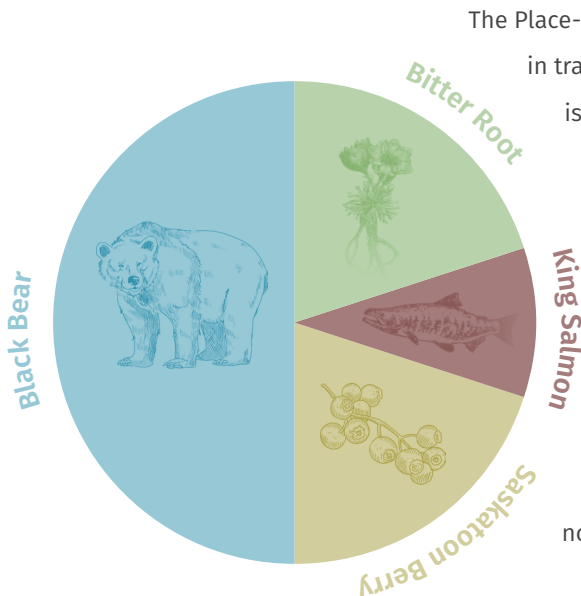
Outcome: Project members have a substantive understanding of both Indigenous and Western ways of learning, knowing, and understanding of Tmíxw™ in a manner that enables the potential for interweaving these systems





PLACED-BASED PLANNING MEETING

The Place-based Planning Meeting phase will be a collaborative meeting at Nicola Lake, hosted by Upper Nicola Band, and will include full participation by project consultants and relevant project team members. This planning meeting will provide an opportunity for team members to experience Nicola Lake from an Indigenous perspective and will encourage open communication and trust-building. Field reconnaissance, an important component to FIMP projects, will also take place and will involve all meeting participants. Field reconnaissance may take place by vehicle and/or boat to evaluate cultural and archaeological areas of significance, development pressure, change in habitat types, and new shoreline modifications and/or structures.



The Place-based Planning Meeting is a critical project phase, steeped in traditional teachings. This means Chief Skemxist (Black Bear)

is dominant, closely, and equally followed by Chief Síya?

(Saskatoon Berry) and Chief Sḫiłm (Bitter root). Framework

authors see innovation and inclusivity playing a large

role together in this phase, given that a place-based

planning meeting will be an entirely new component to

FIMP projects and a first opportunity to bring all project

members together, prior to assessments taking place.

Given the physical action needed to travel and prepare for

this phase, Chief N'tyxtiḫ (King Salmon) plays a smaller, but

no less important role.

KEY ACTIONS

1. Facilitate a collaborative, on the land planning meeting, hosted by UNB and attended by project consultants and project team members to determine capacities, expectations, and shared timelines.
2. Conduct field reconnaissance alongside UNB and project consultants through a lens of both worldviews.
3. Facilitate an understanding of prospective project methods (field survey, cultural assessment, archaeological assessment).
 - This is an opportunity for the consultant to pre-load data collection methods (iPad) with available data (mussel, fish, wildlife, etc...).
 - Discuss QA/QC methods.
4. Finalize a collaborative project work plan amongst meeting participants.

CHIEF SIYÁ? (SASKATOON)

INNOVATIVE, THINKS OUTSIDE THE BOX

Goal: Promote innovation and adaptability within FIMP through the unique gathering of Indigenous and Western information, in tandem with one another

Objective: Introduce a creative and place-based perspective to aligning Indigenous and Western information so that it addresses foreshore values and habitat sensitivity of the Nicola Lake foreshore

Outcome: With innovation at the forefront of actions, cultural and archaeological values are prioritized alongside ecological values, enabling a holistic perspective of foreshore management that places focus on the people, the land, and the relationships between the two



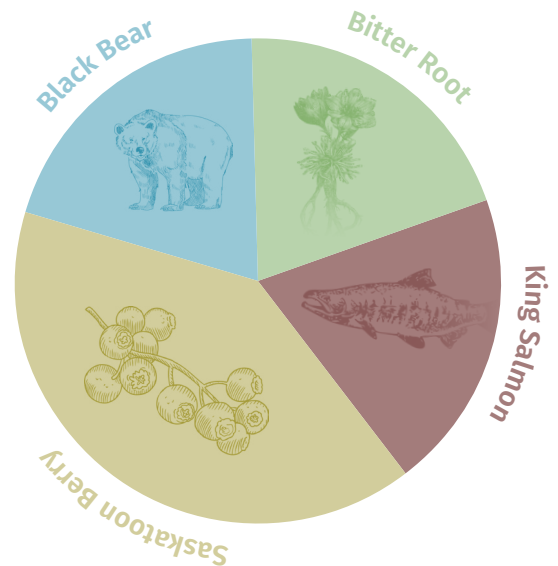


ASSESSMENT

The assessment phase will include three unique data collection methods for ecological values, cultural values, and archaeological potential of Nicola Lake respectively. Indigenous and non-Indigenous project consultants will lead the various surveys or assessments and the FIMP project team will support these initiatives. This phase will reflect a parallel process as Indigenous Knowledge and Western science data is collected simultaneously, but through differing appropriate methods.

The Assessment phase is most closely aligned with Chief Siyá? (Saskatoon Berry) due to the flexibility and creativity required when facilitating separate assessments in tandem with another. However, given the complexity of both FIMP assessments, framework authors believe that Chief N'tyǰtiǰ (King Salmon), Chief Spíǰm (Bitter root), and Chief Skəmǰist (Black Bear) follow in equal measure.

In order to prioritize innovation, Indigenous Knowledge and Western science must work in parallel, where consistent and transparent communication amongst team members is required.



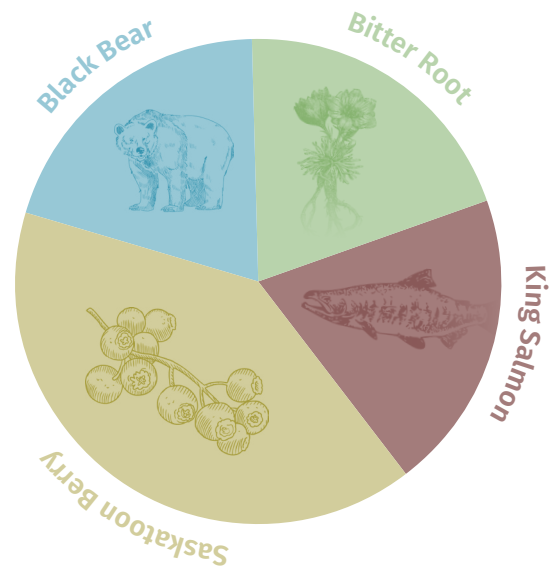
KEY ACTIONS

1. Oversee the collaborative FIM field surveys as described in methods¹⁰ and led by environmental consultants.
2. Conduct cultural overview assessment, as determined by UNB and led by UNB consultant.
 - This includes interviews with elders and knowledge keepers.
3. Conduct archaeological overview assessment, as determined by UNB and led by UNB consultant.
 - This may include previously identified archaeological values being recognized and assessed alongside results from cultural overview assessment.
4. Map individual and overlapping layers (ecological/cultural/archaeological), alongside UNB, and/or Indigenous consultant, led by environmental consultant.

ANALYSIS

The analysis phase will structure the interweaving of Indigenous Knowledge with Western science in the subsequent project phases. Shared areas of concern that were identified in the assessment phase will be recognized and presented in tandem in subsequent FIMP products such as maps and the FDG report. Indigenous and non-Indigenous project consultants will lead their respective analyses and the FIMP project team will provide ongoing support.

The Analysis phase is most closely aligned with Chief Siyá? (Saskatoon Berry) due to the flexibility and creativity needed to facilitate separate data analyses in tandem with another. However, given the complexity of FIMP information, framework authors believe that Chief N'tyxtiǰ (King Salmon), Chief Spíǰm (Bitter Root), and Chief Skəmǰist (Black Bear) follow in equal measure. In order to prioritize innovation, Indigenous Knowledge and Western science must work in parallel, where consistent and transparent communication amongst team members is required.



KEY ACTIONS

1. Oversee the FIM analysis as described in methods¹¹ into a FIM report, led by environmental consultant.
2. Analyze cultural and archaeological assessments, as determined by UNB and led by UNB consultants.
3. Identify shared concerns and collaboratively agree on the presentation of these concerns within FIMP maps and the Foreshore Development Guidance document.
 - Areas of concern (ecological, cultural, and archaeological) will be identified by consultants which will be reflected in FDG through levels of consultation (high, moderate, low).

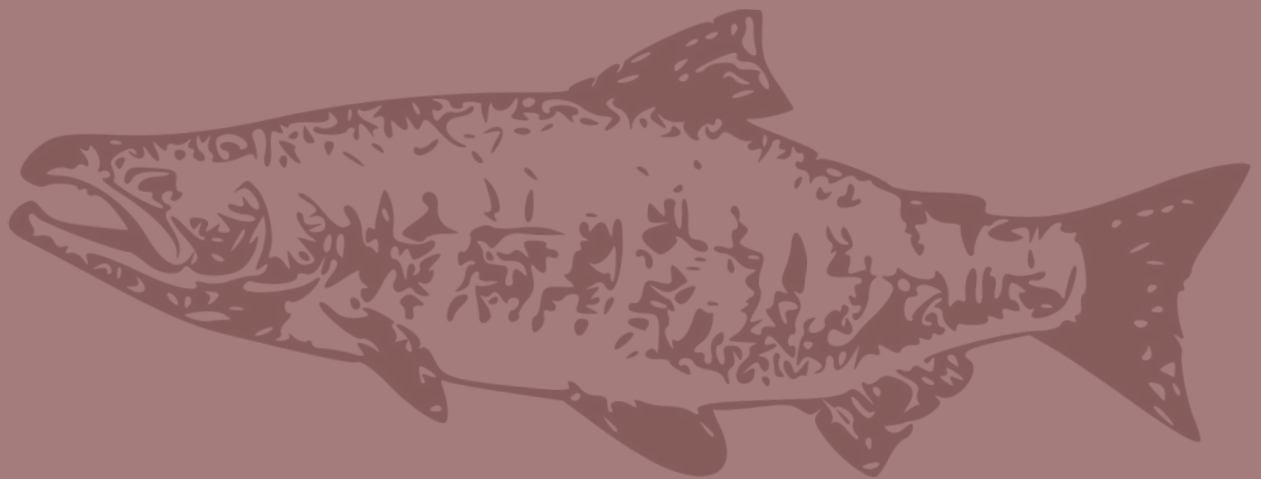
CHIEF N'TYĀTIĀ (KING SALMON)

ACTION-ORIENTED, EFFICIENT, BREAKS BARRIERS

Goal: Persevere through past challenges to develop and disseminate a collaborative Foreshore Development Guidance document for Nicola Lake

Objective: Indigenous and Western knowledge will be incorporated into the Foreshore Development Guidance document for Nicola Lake

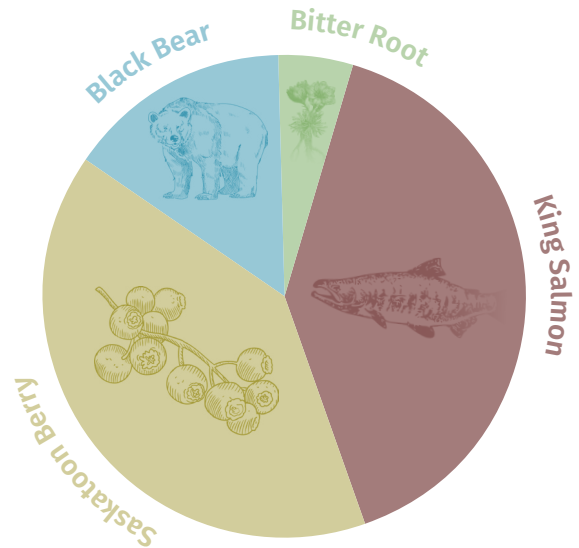
Outcome: An inclusive and living Foreshore Development Guidance document that informs Nicola Lake decision making, prioritizing cultural and ecological integrity





COMPILATION

The compilation phase will interweave the values and respective recommendations produced in the FIM report and the cultural/archaeological assessment report into one living Foreshore Development Guidance document. The bulk of this phase will be taken on by the environmental consultant but will be closely overseen and supported by the FIMP project team. Presentation of cultural and archaeological values within all reports will be done sensitively and only with explicit approval from UNB.



The Compilation phase is unique because framework authors believe Chief N'ty̓xti̓x̓ (King Salmon) and Chief Siyá? (Saskatoon Berry) are equally dominant. Compilation is action-oriented because determination and efficiency will be required when ecologically-based recommendations are interwoven with culturally and/or archaeologically-based recommendations. Innovative vision will be required at all times during this project phase, and the connection to culture must remain at the forefront. This means Chief Skəm̓x̓ist (Black Bear) will proceed Chief S̓p̓i̓á̓r̓h̓ (Bitter Root), who will still ensure an awareness for all connections.

KEY ACTIONS

Reports

1. Develop foreshore recommendations that are composed of the overlapping/shared concerns for the lake and strategies for improved management (consultant collaboration).
2. Identify existing Indigenous protocols and resources relevant to foreshore management with UNB
3. Collaboratively present shared recommendations.
4. Collaborate on report revision (FIM, cultural and archaeological, FDG) throughout the compilation phase.

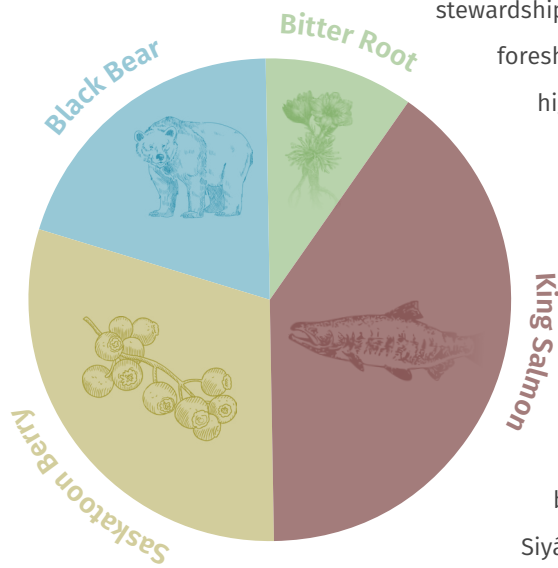
Maps

1. Support environmental consultants in presenting all relevant values on maps by using overlapping layers and sensitive zone polygons.
 - This phase will be reviewed by the FIMP project team to ensure sensitive values are presented appropriately within FIMP maps.
2. Explore a proper method to overlay the various layers (FHSI, archaeological area, cultural areas of interest) to understand overlapping areas of concern.



IMPLEMENTATION

The implementation phase will see the FIMP project team work together to disseminate results of the FIMP project. In collaboration, Upper Nicola Band and Living Lakes Canada will conduct outreach and training with landowners, industry professionals, and government agencies in order to improve local understanding of value, purpose and application of FIMP. Additionally, engagement of the lake



stewardship community is expected to increase compliance for foreshore development regulations, increase conservation of high-value habitats and areas of concern, and increase public awareness of habitat requirements, areas at risk to climate impacts, and the cultural and archaeological values of Nicola Lake.

The Implementation phase will inspire commitment to see the process to its end, regardless of time involved. Chief N'tyxtiḵ (King Salmon) is most dominant, as the FIMP project team will need to break barriers and push for change to the status quo. Chief Siyā? (Saskatoon Berry) is following as unique approaches to project delivery will be required. This phase will incorporate knowledge-sharing by Upper Nicola Band, meaning Chief Skəmḵist (Black Bear) also plays an important role. Finally, Chief Sḵiḵm (Bitter Root) will ensure all audiences are taken into consideration when the Implementation phase is underway.

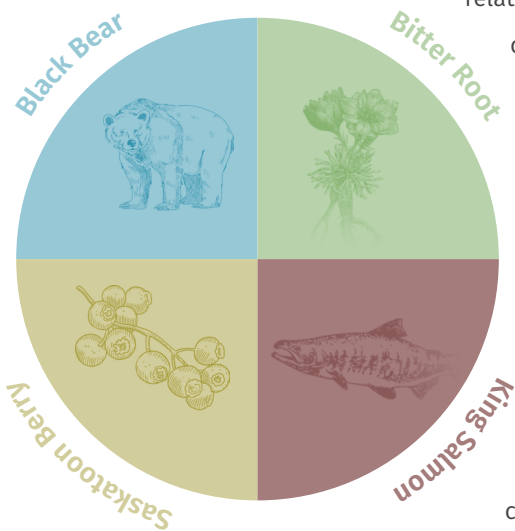
KEY ACTIONS

1. Co-conduct community outreach and education and present FIMP results and recommendations to relevant stakeholders, decision makers, and community members.
2. Co-create additional education materials (brochures, educational videos, infographics) to summarize FIMP results and recommendations and improve communication of project outcomes to a wider and more diverse audience.



PROJECT EVALUATION

The Project Evaluation phase does not fall under a single Chief, and instead, should ensure equal representation of all Chiefs. This phase will encourage reflection and will help evaluate overall project success. This will involve an “effectiveness study”, collaboratively carried out by the FIMP Project Team, as well as community and decision maker feedback and ongoing monitoring of FIMP product use. This phase will provide an opportunity to contemplate working relationships and project experiences by identifying successes, challenges, and areas in need of improvement.



The Project Evaluation phase is dependent on trust and strong connections, so Chief Sᓅiᓗᓄ (Bitter Root) remains prominent. Measuring project success is a significant aspect to project evaluation and due to the innovation required to assess both quantitative and qualitative metrics within this framework, Chief Siyá? (Saskatoon Berry) is equal to Chief Sᓅiᓗᓄ. Chief Skəmᓄist (Black Bear) and Chief N'tyᓄtiᓄ (King Salmon) are present for similar reasons; UNB culture will play a large role in summarizing the application of this framework and developing follow-up actions.

KEY ACTIONS

1. Hold a focus group with UNB members to discuss project outcomes.
2. Evaluate quantitative and qualitative measurements of success through community and FIMP-user feedback.
3. Create a summary report with evaluation information.
4. Maintain working group relationships and ongoing awareness of FIMP product use through regular check-ins and continued collaboration.



HOW DOES THIS DIFFER FROM PAST PROJECTS?

Previously, inclusion of Indigenous Knowledge into FIMP has been limited to knowledge directly related to fish and wildlife habitat and other ecological parameters. Challenges such as strict project timelines and confined budget parameters have limited opportunities to consistently evaluate and redefine the project process to prioritize inclusivity. By describing partnership expectations early on, this framework will better prepare FIMP project team members and support inclusive practices throughout a FIMP survey project.

In recent years, a typical FIMP project timeline would begin on April 1st and would conclude on March 31st, the following year. Typically, projects begin with the formation of a FIMP Working Group which will help facilitate the project by defining roles and responsibilities, and overseeing the key steps of FIMP. The first of these steps would include the release of a Request for Proposal (RFP) and the subsequent hiring of Qualified Environmental Professionals (QEP) who complete the three general steps of FIMP: 1) Foreshore Inventory Mapping (FIM), where shoreline inventories are taken, 2) Foreshore Habitat Sensitivity Index (FHSI), where shoreline habitat sensitivities are determined by rank, and 3) Foreshore Development Guide (FDG), which is prepared to identify risks posed by

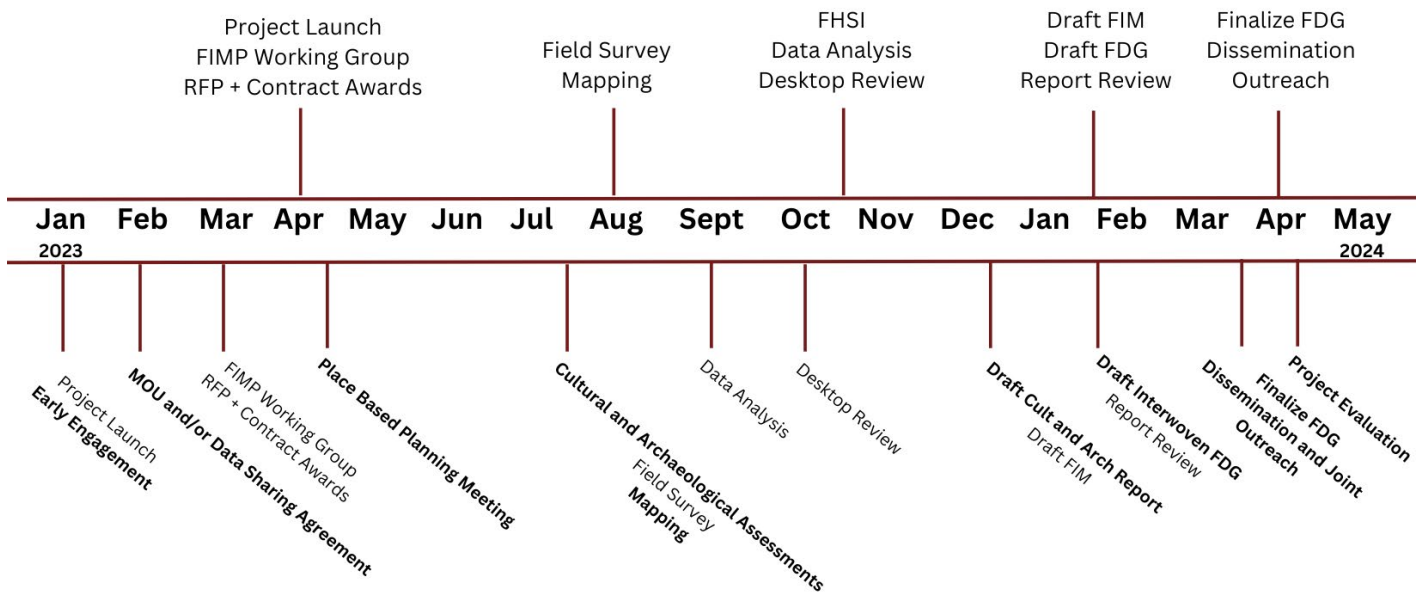


FIGURE 3. COMPARATIVE TIMELINE OF A TYPICAL FIMP PROJECT TIMELINE, PRIOR TO USE OF THIS FRAMEWORK (ABOVE) VS. AN INTERWOVEN FIMP PROJECT TIMELINE, WITH USE OF THIS FRAMEWORK.

different shore-altering activities to inform land use decisions. Alongside these three steps, the FIMP project team develops and maintains partner relationships, manages budgets, reviews and revises reports and maps, completes public outreach and education, and works with decision makers to implement FIMP recommendations and Best Management Practices (BMPs).

The actions above the timeline represent a typical FIMP project process over an April 1-March 31 fiscal year. Such a timeline has challenged past projects by limiting relationship-building opportunities with partners and restricting post-project implementation efforts. Interweaving Indigenous Knowledge and Western science into the FIMP project process will require a larger budget and an extended timeline. A goal of this framework is to identify these greater needs at the fundraising stage, far ahead of project launch, to ensure inclusivity is always attained.

In contrast, the actions below the timeline represent that of an expanded and interwoven FIMP project process, using this framework. The interwoven project timeline summarizes the action plan (pg 12) and indicates the initiatives that have been added to proceed with this project through a Two-Eyed Seeing lens¹².





PRINCIPLES

This section describes overarching principles and values that are foundational to the interweaving of Western science and Indigenous Knowledge in the context of FIMP projects. These principles and values should be embodied by the FIMP project team to guide all stages of planning, delivery, and post-project evaluation.

PLACE-BASED APPROACHES

There is no one-size-fits-all approach to interweaving Western science and Indigenous Knowledge in the context of FIMP projects. Even the overarching principles listed here are intended to guide, but not define approaches to project implementation. This approach is not just about recognizing the place-based nature of the surveys, but includes work with the place-based aspects to explore the unique nuance of each specific context and relationship. This framework was developed within the specific context of UNB and Nicola Lake, and thus, does not detail a specific approach that can be replicated elsewhere, but could act as a model for how to develop other context-specific approaches in a way that centers specific local values, traditions, and protocols.

RESPECTFUL RELATIONSHIPS

Building and maintaining relationships based on mutual respect is central to interweaving knowledge and culture. This respect involves cultural awareness and openness to accepting other ways of knowing and being. A relational approach must focus on relationships as the priority over program execution. Valuing respectful relationships may mean building a longer project timeline to allow for these relationships to develop without all the pressure of project deadlines. From the beginning of the project, this means establishing common ground and mutual respect by defining roles and responsibilities. Another key action is to place value on activities outside of project execution that strengthen the relationships (e.g. attending community events). This also links to indicators of success based on the strength/health of the relationships, which is explored in the Measures of Success section. Lastly, mutual respect means continuing to put effort into these relationships beyond project completion.

RECIPROCITY

Reciprocity is about ensuring that a relationship is mutually beneficial and that for every gift given a gift is returned. Upholding reciprocity can look like compensation for inputs given, which must be a consideration in budget planning. Communication of program findings and deliverables is also a way of showing reciprocity, especially ensuring that the level of communication reflects the audience (eg. a brochure or video format for a broader community audience rather than a long text-based report). Reciprocity could also mean making an effort to understand how FIMP fits into the rest of the Nation's work and making opportunities to support that work where possible. And finally, reciprocity means full participation from both groups with a commitment to see the process to the end.

ADAPTABILITY

Adaptability is key to respecting the time and capacity of the First Nations partners on the FIMP project team. This includes being flexible and accommodating wherever possible. Two major areas for building in adaptability during planning are in the timeline and budget. Time and resources should be allocated to the engagement process, including observing any cultural protocols and ceremonies where appropriate.



MEASURES OF SUCCESS

Relationships are central to the successful interweaving of Indigenous Knowledge and Western science in the FIMP process. We believe measuring success of the application of this framework in the Nicola Lake FIMP resurvey in the standard quantitative-focused “year-end reporting” style does not fully encompass the process of building and strengthening relationships. This relational element of success requires more qualitative, human-centered metrics focused on assessing the strength of relationships and the change in mindset/change in thinking.

Success in the Nicola Lake FIMP resurvey is not only about securing a certain number of people at specific meetings, but also achieving the goal where people feel the project has had a positive impact. This aspect of success is most directly measured by listening to the way people discuss the project. This includes not only what they are speaking about the project, but more importantly how they are speaking about the project, their tone.

Potential evaluation metrics for both qualitative and quantitative measures are presented below for each of the four Food Chiefs as main phases of the project process.

CHIEF SᐅIᐱᐃ (BITTER ROOT): RELATIONSHIPS

Qualitative: Following the relationship-oriented nature of Chief SᐅIᐱᐃ, success from the pre-project and post-project phases will be measured by how the relationships between project groups (e.g. UNB, Living Lakes Canada) are described by each group. Are the relationships described in a positive, negative, or neutral way? Do these descriptions show a strengthening or building of trust from pre-project to post-project? A potential interview question to explore these aspects of the relationship is: how would you describe your relationship with [insert specific group here]? This could include asking participants to define the strength of the relationship on a scale of 1 to 10. Another key metric here is an observation on how engaged people are in meetings. Are all people, regardless of seniority or role, sharing their opinions? This indicates the diversity of input. Another important part of relationships embodied by Chief SᐅIᐱᐃ is the relationship to nature. How do people feel that the land/water is doing? In line with the vision statement of this framework, do people feel that the interweaving of Indigenous Knowledge and Western science into this FIMP project supports the responsibility of Upper Nicola Band to care for the land and water?

Quantitative: Quantitative metrics for Chief Spíłm include measuring the number of meetings attended by all project groups, and the number of attendees for each group. These quantify the level of interaction within the relationships of the project team members.

CHIEF SKƏMĀIST (BLACK BEAR): TRADITIONAL

Qualitative: Encompassing the tradition-oriented nature of Chief Skəmāist, measures of success focus on how well people feel Indigenous Knowledge is respected in the FIMP process. Do Indigenous team members and/or Knowledge Keepers feel that Indigenous Knowledge is respected and well interwoven in the project implementation? This could be asked on a scale of 1 to 10.

Quantitative: Still based on interweaving knowledge, quantitative measures here include the number of interviews made by Elders and/or Knowledge Keepers, the number of Indigenous project team members, and the number of Indigenous-led meetings or learning events. These quantify the level of knowledge that is being interwoven.

CHIEF SIYÁ? (SASKATOON BERRY): INNOVATIVE

Qualitative: Staying true to the innovative nature of Chief Siyá?, measures of success focus on how creative the process of implementing the project has been. How do team members and FIMP users feel project phases creatively align Indigenous Knowledge and Western science? Was the project designed creatively to address and incorporate both Western and Indigenous Knowledge of Nicola Lake? Was the project innovative enough to successfully prioritize cultural and archaeological values alongside ecological values? To what extent do people feel that there is an emphasis on the people, the land, and the relationships between and among them in the FIM report?

Quantitative: Quantitative measures for Chief Siyá? focus on the number of FIM reports integrating the FIMP survey (ecological values) and the Indigenous Knowledge and Values Framework pilot survey (cultural and archeological values).

CHIEF N'TYĀTIĀ (KING SALMON): ACTION-ORIENTED

Qualitative: For Chief N'tyātiā, relational measures will focus on elucidating the extent to which Indigenous team members feel that the project deliverables have incorporated Indigenous values into decision-making. Has the communication of the final FIMP recommendations resulted in more engagements with Indigenous Peoples on the foreshore. This also includes asking project consultants how they feel the quality of the report has changed based on the implementation of new methods.

Quantitative: Quantitative measures include the number of FDG reports incorporating Indigenous Knowledge and Western science in a collaborative list of foreshore recommendations, and the number of evaluation surveys completed. The former quantifies the extent to which this approach is being used.





WHAT COMES NEXT?

The finalization of this framework is taking place concurrently to the Nicola Lake-FIMP re-survey project launch, where official framework application will begin. Applying this framework during a FIMP re-survey is a unique opportunity. Surveying lakes for a second time provides a chance to determine development impacts and the rate of loss of habitats which is useful for future lake management and climate resiliency planning. This also enables the community to better understand where changes are occurring along a shoreline and will help determine the rate at which the shoreline is changing. In tandem, we have the opportunity to compare project processes and evaluate the extent to which Indigenous Knowledge was meaningfully included during the first survey, which was completed in 2009/10. Identifying knowledge gaps within the first survey will provide a benchmark for a more inclusive FDG. An FDG that interweaves Indigenous Knowledge and Western science will identify the anthropogenic risks to riparian, foreshore, and aquatic fish and wildlife habitats, as well as cultural values and archaeological potential from various land-use changes or foreshore activities.

This interwoven project process will be evaluated using the measures of success described in the above section. The next steps would be to incorporate the learnings from the application of this framework to Nicola Lake into a scalable framework that can be dispersed for replication in other regions of British Columbia and Canada. Such a framework would aim to set the interweaving of Indigenous Knowledge and Western science as the norm in future watershed initiatives, supporting the inclusion of Indigenous voices in water management.



ENDNOTES

1 Bartlett, C., Marshall, M., & Marshall, A. (2012). Two-Eyed Seeing and other lessons learned within a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing. *J Environ Stud Sci* 2, 331-340. Available at: <https://doi.org/10.1007/s13412-012-0086-8>

2 Schleppe, J., McPherson, S., Porto, L., & Mason, B. (2020). Foreshore Integrated Management Plan Methods. Prepared by: Ecoscape Environmental Consultants Ltd., Lotic Environmental Ltd., Wood Environment and Infrastructure Solutions, and BC Community Mapping Network. Prepared for: Living Lakes Canada. Available at: https://livinglakescanada.ca/wp-content/uploads/2021/05/3_rpt_dfo_final_methods.pdf

3 Mackenzie Valley Review Board (MVEIRB). (2005). Guidelines for Incorporating Traditional Ecological Knowledge in Environmental Impact Assessment. Available at: http://reviewboard.ca/process_information/guidance_documentation/guidelines.

4 Upper Nicola Band. (2022). *Oral story of the Four Food Chiefs "How Food Was Given."* Available at: <https://uppernicola.com/>

5 See endnote 1.

6 Littlechild, D., & Sutherland, C. (2021). Operationalizing ethical space in IPCAs and Crown Protected and Conserved Areas and Crown Protected and Conserved Areas. Available at: <https://y2y.net/wp-content/uploads/sites/69/2022/04/Operationalizing-Ethical-Space-in-IPCAs-and-Crown-Protected-and-Conserved-Areas-FINAL.pdf>

7 ESSA Technologies Ltd. and Fraser Basin Council. (2019). Nicola watershed characterization - a preliminary evaluation of watershed issues and priority recommendations for the Nicola Forum. Prepared by: ESSA Technologies Ltd. and Fraser Basin Council. Prepared for: The Nicola Government to Government Forum, Merritt, BC. 43 p. + Annexes. Available at: https://www.fraserbasin.bc.ca/_Library/TR_Nicola/Nicola_Characterization_Report_Final.pdf

8 See endnote 2.

9 Patterson, A. & Schleppe, J. (2012). Nicola Lake Foreshore Inventory and Mapping. Prepared by: Ecoscape Environmental Consultants Ltd. Project File: 11-849. Prepared for: Thompson-Nicola Regional District and Fisheries and Oceans Canada. Available at: http://www.nicolaestates.com/dropfolder/Nicola_FIM_Final_Report.pdf

10 See endnote 2.

11 See endnote 2.

12 See endnote 1.

