

Kettle River Watershed Management
Plan: *Syilx* (Okanagan) Centric
Discussion Paper

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Glossary

Syilx Original people who learned to live together on the land in peace; dreaming ones; bound together; of the land

Siw+kw Syilx word for water

Captik^wt Syilx word for story or oral narrative

Tmix^w is central to understanding all aspects of the Syilx environmental ethic. It translates as everything in nature or the life force.

Enowkinwix^w is a Syilx process of decision making to solve issues, ideas through dialogue and always ensuring coexistence with the *tmix^w*.

Tmx^wulax^w Syilx word for land

TEK (Syilx Knowledge) knowledge gathered since time immemorial by the Syilx about the *tmix^w* and the *tmx^wulax^w* (the land, water, animals, community, plants) and the relationships between all things.

Watershed (Syilx perspective of sub-watershed) When *Syilx* think of a watershed, there is no separation from connected creeks, streams, rivers, lakes, wetlands, aquifers, headwaters and snowpack. If one is impacted they all feel a ripple of effect, so when managing a watershed focus and deep consideration needs to be given to the whole system.

nsyilxcen Syilx language

Introductions

Purpose of discussion paper

This paper is in response to the recent engagement between the Kettle River Watershed Management Plan Coordinator and the Okanagan Nation Alliance (ONA) to collaborate with the *Syilx* (Okanagan) peoples and communities on the current plan and its implementation. The Kettle River Watershed is part of the unceded territory of the *Syilx* (Okanagan) Peoples and its health and wellbeing is a central concern to *Syilx* (Okanagan) elders, knowledge holders, and leadership.

In 2010 and 2011 the Kettle River was listed at British Columbia's most endangered river due to extreme seasonal low flows and growing over allocation of water licenses in the region.¹ In response, the Regional District of Kootenay Boundary (RDKB) developed a watershed management plan for the Kettle River with a completed strategy with actions in 2014.² The Regional District of Kootenay Boundary (RDKB) and a stakeholder advisory group foundation for the plan is "we envision a healthy, resilient and sustainable Kettle River Watershed, which functions to meet the needs and values of its communities, who in turn act as stewards of the watershed."³

This specific paper will highlight some key insights of *Syilx* (Okanagan) connections to water, look at the missing key aspect of *Syilx* (Okanagan) Traditional Ecological Knowledge and water management practices, and focus on areas where *Syilx* (Okanagan) TEK can be applied within the Kettle River Watershed. As well, ONA has made recommendations and actions to address the gaps in the Kettle River Watershed Management Plan and the best process to move forward.

Refining the Kettle Valley Watershed Plan

The ONA Natural Resources Department (NRD) is currently under the process of researching and developing a watershed management planning process for the *Syilx* (Okanagan) Nation. As part of this ONA project, the NRD has created a *Syilx Water Responsibility Methodology*. This methodology is primarily focused on how water management planners in the territory can collaborate with *Syilx* (Okanagan) people and traditional ecological knowledge (TEK) in a new plan or current plans. The *Syilx* (Okanagan) Nation is working towards creating an established process to create community-based watershed management plans inclusive of Indigenous perspectives. This TEK methodology will further develop *Syilx* (Okanagan) insight, experience, and key concepts into the management planning process and plan.

Through engagement sessions facilitated by the En'owkin Centre in many of the *Syilx* (Okanagan) communities⁴ⁱ, two major watersheds (Kettle River Watershed, Upper Arrow Lake), and three sub-

¹ Kettle River Watershed Authority., <http://kettleriver.ca/about/>

² The Kettle River Watershed Management Plan, 2014

³ The Kettle River Watershed Management Plan, Executive Summary. p.5.

⁴ Okanagan Nation Alliance.,2017., <https://www.syilx.org/about-us/syilx-nation/>

watersheds (Shingle Creek, Inkaneep Creek, and Ashnola River) were identified to begin initial watershed planning.

The ONA consistently incorporates Traditional Ecological Knowledge (TEK) and input from *Syilx* (Okanagan) academic knowledge into watershed management planning processes. An example of this is the inclusion of *nsyilxcen* (*Syilx* language). *Nsyilxcen* holds many key insightful *Syilx* (Okanagan) concepts and frameworks for water stewardship. The NRD has been tasked with identifying and building upon an existing watershed management plan to include major *Syilx* (Okanagan) land and water governing concepts and frameworks. This *Syilx* (Okanagan) perspective and experience is complex and comprehensive.

There is a *captikʷt* (oral narrative) that renowned storyteller Harry Robinson speaks of, Little Brother⁵, a story about two brothersⁱⁱ an older brother who is indigenous to this land and a younger brother who is non-indigenous. On a basic level they reinforce the *Syilx* (Okanagan) concept of family and of each person belonging to a larger family of one people. Between the two brothers there are tensions, some easily negotiated and others not. This story reflects on choice and consequence and the progression of life beyond unresolved conflict. The *Syilx* (Okanagan) people have a responsibility to teach little brother how to look after the land and the water as the way forward.

NRD strives to bring forth the voices of the Nation, land, water, and all living beings to help demonstrate the benefits of incorporating indigenous values into watershed management planning processes.

Kettle River Watershed Management Plan Overview

The Regional District of the Kootenay Boundary has completed a comprehensive watershed management plan for the Kettle River watershed. The Kettle River Watershed Management Plan (KRWMP) is focused on addressing major issues, strategies to move forward, and action steps throughout the entire reach. These include aspects of water quality, water quantity, and aquatic ecosystems.⁶ This specific management plan had two phases, the first being a technical report to review the conditions and analysis of the entire watershed, and the second phase included the guidance from decision-makers and authority figures in the watershed. The main steering committee who oversaw all research, development, and discussion of the plan included representatives from each of the major electoral areas, Midway, Grand Forks, Big White, and the Granby Wilderness Society. The Stakeholder Advisory Group held representatives from Agriculture industry, forestry, Big White, wildlife associations, irrigation districts, energy companies, the ONA, and localized residents.⁷

⁵ Nature Power, Robinson and Wickwire., 2004.,

⁶ Kettle River Watershed Management Plan., 2014., pg 4.

⁷ Ibid.,

Water Decision Making

The *Syilx* (Okanagan) Nation is seeking to increase their role in water decision-making in the territory consistent with their title and rights and grounded in principles of reciprocity and respect. There are a series of layers of decision-making within the Kettle River Watershed: federal government, provincial government, regional district, local municipality, Indigenous governments, grassroots, and non-governmental organizations. Each of these layers of governance come with specific roles, responsibilities and accountability that govern how water and land are utilized and protected.

Syilx (Okanagan) Water

The *Syilx* (Okanagan) territory spans over 69,000 square kilometres with its northern boundaries located near Mica Creek, BC (north of Revelstoke, BC). Its eastern boundaries reach to Kootenay Lake, the western boundaries reaching into the Nicola Valley and its southern boundaries reaching to Brewster, Washington. The *Syilx* (Okanagan) people have inhabited their territory since time immemorial and continue to inhabit, use and steward their lands and resources, as is their right and responsibility, as laid out in the Okanagan Nation Declaration⁸.

Syilx (Okanagan) communities have always recognized and nurtured a strong connection toward *siwʔkʷ* (water). “The Okanagan Nation has accepted the unique responsibility bestowed upon us by the Creator to serve for all time as protectors of the lands and waters in our territories, so that all living things return to us regenerated. When we take care of the land and water, the land and water takes care of us. This is our law” (AGA Res. No. #3/2013).

siwʔkʷ is recognized as a relation to be protected. The ONA Chiefs Executive Council (CEC) is committed to upholding the inherent *Syilx* (Okanagan) responsibility to steward the *siwʔkʷ* (water) for current and future generations. *siwʔkʷ* centric stewarding has been a long standing concept that *Syilx* (Okanagan) People continue to practice as fundamental guiding principles.

The ONA CEC has ensured that an engagement process with communities is in place to collect and gather cultural knowledge, language, and community perspectives regarding *siwʔkʷ*. The knowledge, experiences, and voices captured in this process derive from various community forums, personal interviews, and on-going Nation projects. This process is an expression of the ways in which *Syilx* (Okanagan) People connect to *siwʔkʷ*, and will guide leadership into understanding the importance of *siwʔkʷ* in *Syilx* (Okanagan) communities.

In July 2014, the Okanagan Nation Alliance endorsed the *Syilx* (Okanagan) Water Declaration. This document recognizes that *Syilx* (Okanagan) communities have always held a strong connection towards *siwʔkʷ*. This declaration serves as a living document on the *Syilx* (Okanagan) relations and values to

⁸ Okanagan Nation Declaration., 1987., <https://www.syilx.org/about-us/syilx-nation/okanagan-nation-declaration/>

water. Water is recognized as an entity to be protected and shapes the norms of *Syilx* (Okanagan) people.

The natural laws of the land have been passed down through *captikʷɪ* (oral narrative). It is through *captikʷɪ* that the *Syilx* (Okanagan) learn about their responsibilities to the water and land. The principles and responsibilities stated in the *Syilx* (Okanagan) Water Declaration reflects the strong collective voice of the Okanagan Nation and it is our responsibility to move forward and act for *siwʔkʷ* for perpetuity.

The *Syilx* (Okanagan) Nation upholds the entity of water. In order to begin understanding the value of water, a look at principles is key to the *Syilx* perspective.⁹

- *siwʔkʷ* is not an element, commodity or tool for human use.
- *siwʔkʷ* is a living entity, our relative, that binds all life and land together.
- *siwʔkʷ* has a strong emotional and spiritual aspect.
- *siwʔkʷ* lives in harmony with land and all living beings of which we are a part of.
- *siwʔkʷ* is our teacher, a powerful and humble relative that takes care of all things.
- *siwʔkʷ* stewardship is a right and a responsibility.
- *siwʔkʷ* is dynamic, there is no one way to properly respect and care for *siwʔkʷ*. Only through listening, deep understanding, reverence and respect can we know how to take care of *siwʔkʷ* and ensure reciprocity.

The *Syilx* (Okanagan) Nation believes that with a deep understanding of the environment gives one the ability to distinguish the diversity of ecosystems and how each of these systems function in relation to water. Through countless generations of place-based, localized stewardship, *Syilx* (Okanagan) people have been able to develop complex and intricate relationships to land and water. These relationships develop over time and indicators such areas where certain animals can be found or best slopes and elevations for berries are, in turn build upon the extensive ecological knowledge.

It is important to recognize that the Okanagan Nation has never relinquished its undeniable sovereign responsibility and mandate to advance our assertion and protection of our lands and water resources through the Okanagan Nation Territory. The *Syilx* (Okanagan) people remain as the protectorates of the land and water throughout our territory, and it is our responsibility to ensure the respectful management and conservation of resources. Furthermore a number of international treaties and norms promote and support indigenous claims to their rights and title to water. These include the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the Indigenous Peoples Declaration on Water, as well as the other national initiatives such as the Assembly of First Nation's Water Strategy.

⁹ *Syilx* Water Declaration., 2014., <https://www.syilx.org/about-us/syilx-nation/water-declaration/>

Water Responsibility Methodology

Traditional Ecological Knowledge

There are many different definitions and understandings of ‘traditional ecological knowledge’ (TEK) (also called “traditional knowledge” or “Indigenous knowledge”). Indigenous communities hold the right and authority to define what TEK means and encompasses in their context. Although TEK is unique in every community, it is commonly understood to be developed over generations as a multidimensional concept with numerous interconnected components; including roles and responsibilities, and conceptualizations of law and governance.

Syilx (Okanagan) TEK is based on *tmix*^w (all living things) protocol and land-use practices required both in accessing resources as well as in preserving the sustainability of an ecosystem to continue to regenerate itself at its optimum. The process of TEK collection is a people process, involving *Syilx* (Okanagan) land users such as harvesters, hunters, medicinal gatherers, fishers, ceremonial and spiritual gatherings. The process is a four seasons approach and incorporates the protocol pillars of the Four Food Chiefs¹⁰ and other *cap̓tik*^{w̓t} in their requirements for sustainable land-use and resource gathering toward 100% regeneration and reciprocity. The four seasons use, occupation, protocols and harvesting practices and knowledge applications are related to four natural ecosystem functions, such as growth cycles, migration, calving or nesting requirements and can be correlated to decisions to be made regarding the interactions between humans and the natural environment ranging from conservation and protection to developmental plans.

The *Syilx* (Okanagan) people have strong connections to the land and water. The cyclical mentorship of youth is part of the *Syilx* (Okanagan) worldview that fosters creativity and analytical aspects on the uses of water and land. Self-education and awareness of local environments, plant and animal communities, cultural practices, and sacred sites has been an ongoing action of *Syilx* (Okanagan) Nation members who often travel along the Kettle Granby mountain range to hunt and gather.

Water is a connecting force that is central to and gives rise to cultural and economic needs of the *Syilx* (Okanagan) people. The *Syilx* (Okanagan) perspective is a macro form of the global network in terms of food sovereignty and kinships that arise from these relationships. Full participation and support is necessary for a robust social framework of a fully functioning economic and social paradigm of water and land. Each member of society brings forth various characteristics, values, experiences, and approaches to how water and land are to be utilized for the good of all living beings. These varying experiences are dependent on the diversity of species, land formations, bodies of water, and ecosystems.

To achieve the inclusion of *Syilx* (Okanagan) perspective, the Regional District of the Kootenay Boundary and its residents need to meet with local *Syilx* (Okanagan) knowledge keepers to begin discussions

¹⁰ *Syilx* Water Responsibility Methodology., 2017.,

moving forward. Traditional knowledge and language contains key concepts and frameworks that are able to build upon the current status quo and process within the Kettle River watershed. Initiating the involvement of language speakers, knowledge keepers, pipe carriers, singers, and hunter and gatherers is part of the first key step towards a comprehensive relationship and a more clarified understanding on the importance of water to the *Syilx* (Okanagan) people. These initial dialogue discussions occur naturally through storytelling, as demonstrated in the four food chief's story and can take up to as many days as possible to get a comprehensive, well-rounded dialogue.

Under Utilization of Syilx Experience and Knowledge

The *Syilx* (Okanagan) understanding of watersheds is based on the diverse and in-depth experience of the close relationship between water and land. It is through roles and responsibilities that create deeper insights and realizations of flora and fauna communities. By actively participating in common practices such as subsistence hunting and gathering, conducting ceremonies, and being out on the land, a more comprehensive outlook on the function of ecosystems is developed by all members of society. Through these activities, styles and regimes of stewardship develop based on the localized characteristics of the diversity of the Kettle River watershed.

Knowledge and experience is passed down through the generations to keep water and land practices alive. Some of these practices include traditional fire burning to prevent the overgrowth of undergrowth, the continual protection of water and land for future generations, the deep understanding of floodplains and movements of water, and the practice of thinning and rotations while harvesting¹¹. Many of these practices include the intrinsic knowledge of actively watching animal movements and practices such as the beaver and how it consistently keeps water quality high and creates wetland habitat¹². Or how *Syilx* (Okanagan) need to understand how plants hold earth in place to prevent erosion that create stability and filter water.¹³ Much of these ecological standards and traditional management protocols have been in place for many years. A more comprehensive approach to understanding water is needed for a proactive and collaborative way forward between the nation and the regional district.

Syilx (Okanagan) Watershed Inventory

Physical features and landforms

The Kettle River is a transboundary watershed that is situated within the southern interior of British Columbia and North Central Washington State. It is a watershed that is predominantly fed by

¹¹ Land Use Plan - Enowkinwixw TEK session., 2011. Pg. 5.

¹² Ibid., Pg 5.

¹³ Ibid., Pg 5.

precipitation in the winter with run-off during the spring months.¹⁴ The Kettle River Watershed is an area that is key to *Syilx* (Okanagan) livelihood and ways of being. Within the watershed are various physical features and landforms that speak to the values of water and land. Since time immemorial, *Syilx* (Okanagan) people have had significant geographical site marks that not only act as direction markers but also as reminders to uphold responsibilities to steward the land. The Kettle River watershed holds many features such as high mountain lakes, streams, grasslands, alpine forests that give occasion for many activities that include spiritual camps and cultural sites. See Figure 3 for a map of some of the cultural features within watershed.

The Kettle River watershed is has six primary soil types ranging from colluvium, fluvial, glacio fluvial, glacio lacustrine, glacial till, and organic. Each of these distinguished types give insight into how the watershed is used based on characteristics and indications of physical formations, chemical indicators, and nutrient distribution within the watershed. Figure 4 highlights these major soil distributions across the watershed. Within increasing development within the reach, disturbances such as higher and faster rates of runoff are leading causes to loss of suitable habitat for subsistence living and cultural aspects.

Climate

The Kettle River Watershed has a variety of climatic zones that can be divided into two main areas: the higher elevations and the lower elevations among the valley bottoms. Both of these zones hold a diversity of ecosystems that are central to sustenance and spiritual ceremonies. Uncontrollable high intensity forest fires, flooding, and droughts are becoming more common within the Kettle River Watershed and impact *Syilx* (Okanagan) title and rights. Figure 5 highlights the slight variation in mean summer temperatures within the watershed based on comparing datasets on an 18-year difference. The increased temperature within the watershed has the potential to alter ecosystems which in turn give rise to the risk of invasive species spread and impact those species at risk. *Syilx* (Okanagan) land and water stewardship practices would ensure the management of both forests, grasslands, and smaller tributaries were in stable conditions by utilizing adaptive burning practices.

Streamflow, Groundwater, and Water Quality

The Nation is focusing on water flows that take into account the amount of water necessary for a healthy riparian ecosystem to flourish including the health of insects, aquatic and terrestrial plant systems, medicines and foods that grow along water bodies, and ceremonial uses of water such as sweats. Both surface water and groundwater are linked together in a way that is valued by *Syilx* (Okanagan) people. This stable relationship between these two forms of water is the physical embodiment of balance. Without the surface water feeding into groundwater sources, and vice versa, they will both fail. The *Syilx* (Okanagan) have an intrinsic living relationship with water.

Foresight for future generations is what grounds the work the nation does especially for future generations and water quality is an indicator of ecosystem health and resiliency. A healthy water system ensures that there is a future for healthy people, land, and all living things. Figure 6 outlines the areas

¹⁴ Kettle River Watershed Management Plan: Phase 1 Technical Assessment. Nov 2012.

within the watershed that are most utilized by food species *Syilx* (Okanagan) people depend on as food, social, and cultural sources.

Building on the Existing Plan

The Kettle River Management Plan has come into fruition to help support build watershed consciousness among its citizens, build relationships, and inspire all groups to come together to find solutions for water issues in the region.

There was and unfunded ONA representative on the Stakeholder advisory group during the early planning process. However, this level of inclusion did not provide the fulsome engagement necessary for effective collaboration in including Indigenous and TEK in watershed planning. As seen from Indigenous Nations across British Columbia this stems from a shortage of financial resources to adequately include Indigenous perspectives in any natural resource management. In moving forward, it is critical that TEK needs to be considered equal to western science in watershed planning. When weaved together watershed planning will be more holistic and ecosystem based. Generally, the western perspective of water has been human centric about control, use, consumption and profit. Whereas, the *Syilx* (Okanagan) people believe that humans need to better manage themselves and change their own practices to fulfill our responsibility to protect and steward the water.

Currently, information about groundwater / aquifers is extremely limited. Below is a list of priorities that the ONA believes need to be addressed further with more research, dialogue, innovation with involvement of the Nation.

An active strategy on education, awareness and communication is crucial moving forward in areas like the Kettle with many different water users and priorities. Many citizens are also unaware that the Kettle Watershed is in the heart of *Syilx* territory and who the *Syilx* peoples are. Communication materials to establish *Syilx* presence and awareness are important.

Missing gaps in Kettle River Watershed Management Plan

Section	What is Missing	Steps to add what is missing
Executive Summary	<ul style="list-style-type: none"> ● In depth statistics of cumulative impacts by various water users ● Direct reference to the <i>Syilx</i> Water Declaration (WD) as a core document in moving forward 	<ul style="list-style-type: none"> ● Combine current data and research to determine high water users ● Utilize key water principles from WD
Introduction: <ul style="list-style-type: none"> ● watershed & planning 	<ul style="list-style-type: none"> ● Overview of Kettle River Watershed specifics such as size, location, elevation, bioclimatic zones, reaches, major tributaries, 	<ul style="list-style-type: none"> ● Both ONA and RDKB to have a preliminary meeting to discuss ways and methods forward.

	<p>transboundary aspect.</p> <ul style="list-style-type: none"> ● Acknowledgement of <i>Syilx</i> (Okanagan) unceded territory. 	<ul style="list-style-type: none"> ● Include overview of watershed as post-plan discussion paper. ● ACTION: RDKB to set up meeting.
<p>A Vision for the Kettle River Watershed:</p> <p>Watershed</p> <ul style="list-style-type: none"> ● Management Goals ● Sense of place: Cultural, spiritual, amenity, and recreational values ● Watershed Challenges 	<ul style="list-style-type: none"> ● Vision for watershed: missing goals for overarching climate change issues, navigating complex authority frameworks 	<ul style="list-style-type: none"> ● Identify areas to build upon to include a more flushed out vision. ● Action item: internal brainstorm session.
<p>Strategies, Directions, and Action:</p> <ul style="list-style-type: none"> ● Strategy 1 ● Strategy 2 ● Strategy 3 ● Strategy 4 	<p>Strategy 1:</p> <ul style="list-style-type: none"> ● Missing changes and adaptive approaches to provincial and federal legislation. ● A more holistic view of the watershed to include transboundary aspects ● First Nations are missing as shared decision makers from Direction 1.1, “Develop leadership and governance through the development of a governance framework”. The <i>Syilx</i> Nation is not a stakeholder. ● Changes, impacts, and challenges in energy sector development (dams, transmission lines, commissions) <p>Strategy 2:</p> <ul style="list-style-type: none"> ● ONA missing from technical and field work <p>Strategy 3:</p> <ul style="list-style-type: none"> ● TEK and ONA missing from direction 3.1 Improve understanding of watershed health and function, including floodplain dynamics` ● ONA missing from direction 3.3 `Maintain or increase the extent and function of riparian areas, wetlands...` 	<ul style="list-style-type: none"> ● Chart legislative and regulatory frameworks as reinforcement of plan. ● Reach out to US counterparts for more cohesive approach. ● Create a transparent reporting grid on accountability ● Include <i>Syilx</i> in “shared decision making” for water management and <i>Syilx</i> need to be included in any long-term funding model if First Nations are to be included in this process ● Include ONA Fisheries to lead EFN work (leaders for Okanagan EFN work and data) ● Consider First Nation rights in water quality and environmental flow protection ● ACTION: Host TEK meetings and interviews ● Include ONA watershed fragmentation analysis of the Kettle Watershed ● Include ONA NR and Fishery technical staff in leading any

	<p>Strategy 4:</p> <ul style="list-style-type: none"> • ONA Fisheries need to be included with Province in any management related to fish in the territory 	<p>riparian, habitat restoration projects</p> <ul style="list-style-type: none"> • ONA Fisheries to conduct Creel surveys • RDKB to fund ONA for continued work of undertaking place-name studies in the Kettle Watershed
<p>Towards Plan Implementation:</p> <ul style="list-style-type: none"> • Overview of Phase 3 (2015-2017) 	<ul style="list-style-type: none"> • Future capacity and funding insights 	<ul style="list-style-type: none"> • Work together to actively write proposal grants for future collaborative work.

Actions and Recommendations

Syilx (Okanagan) people have approached water stewardship as a comprehensive approach to managing not only water by itself but understanding the important and intricate approach of involving the entire environment. This approach looks at systems with a holistic worldview that builds a robust experience in terms of utilizing water and land. This approach is integrally grounded in the concept of thinking and acting as one unit. Is it an underlying *Syilx* (Okanagan) concept utilized for ecosystem management.

It is a vital first step to seek out capacity and funding for next steps with the Kettle River Watershed Management Plan. Being engrossed in co-adaptive management strategies is a part of the way in moving this particular watershed management plan forward to a whole next level.

Both the ONA and the RDKB are striving towards similar goals and objectives for the Kettle River watershed. The NRD puts forth recommendations to move forward in a meaningful and actionable way that involves *Syilx* (Okanagan) knowledge keepers, language speakers, and those with localized specific experience to collaborate between the Regional District of Kootenay Boundary, Ministry of Forests Lands, Natural Resource Operations, Ministry of Environment, Environment Canada, local municipalities, and residents of the Kettle River.

Recommendations for the Kettle River Watershed Management Plan

1. *Discussion.* Both the Okanagan Nation Alliance and the Regional District of Kootenay Boundary need to make time and space for preliminary dialogue on moving forward discussing overlapping water and land initiatives. This would be an opportunity to be inclusive of *Syilx* (Okanagan) communities and knowledge holders and RDKB technicians.

2. *Common Ground.* Focus on big picture goals and objectives that are shared across the watershed such as habitat, fisheries, land use, and water uses. There is a definitive need to specifically and actively look at areas of joint-collaborative initiatives and ways forward for both ONA and RDKB.
3. *Co-Plan.* Move forward with a cohesive systems-based approach. Based on areas, plans, and initiatives where the ONA and RDKB can collaboratively work towards major goals.
4. *Share.* Give opportunities for all water users a chance to give their insight, perspective, and experience. All voices and perspectives are deemed vital to gather a comprehensive idea about water stewardship within the Kettle River watershed. An *enowkinwix*[™] is an option for a dialogue to move forward jointly. Both ONA and RDKB are to provide concrete examples of what 'collaborative' approaches look like with action plans for future projects.
5. *Write.* Actively search for sources of revenue to move forward jointly, the ONA and RDKB need to make progress in the journey of funding and budgets to continue working together on water and land areas.

To bring about the fullest potential of this water work, a series of next steps will guide the process in which *Syilx* (Okanagan) knowledge and experience can be brought to the process. The Natural Resources Department team has identified - below via a table that indicates - the broader issues, actions, and recommendations, and next steps forward for the Kettle River Watershed.

Table of actions, recommendations, and next steps in Kettle River Watershed

Issue	Actions and Recommendations	Next Steps
Syilx Traditional Ecological Knowledge	<ul style="list-style-type: none"> ● Gatherings and meetings to build relationships. ● Sharing of histories, knowledge, and dialogue for solutions workshops inclusion of knowledge keepers, language speakers, hunters, gatherers, fishers, singers, pipe carriers, etc. ● Host a Syilx TEK session for specific use of the Kettle River Watershed ● Build partnerships for TEK meetings and Syilx signage in natural public spaces 	<ul style="list-style-type: none"> ● Funding for on the ground projects or support of Syilx presence. ● Publishing of Syilx Centric Discussion paper as a part of the post-management plan continued discussion. ● ONA to determine planning process for TEK session on Kettle River Watershed (identify who should be involved in the project) ● Plan and work towards land and water outings with RDKB and Syilx (Okanagan) communities.
Agriculture and Irrigation	<ul style="list-style-type: none"> ● Build relationships with farmers and ranchers and their alliances. ● Habitat Restoration Work on private lands such as species monitoring and hunting access. 	<ul style="list-style-type: none"> ● Promote sustainable smart water practices. ● Continue to develop and upkeep partnerships.
Groundwater Withdrawals	<ul style="list-style-type: none"> ● Support awareness for water conservation. ● Develop joint water communications strategy for public outreach. 	<ul style="list-style-type: none"> ● ONA Communications department to work with NRD to begin sharing water data and research. ● Syilx Nation Standards and Policy for groundwater withdrawal.

<p>Habitat and Riparian Zones</p>	<ul style="list-style-type: none"> ● Work with ONA Fisheries Department on Habitat restoration work such as wetlands and connectivity corridors ● Collaborate with other restoration initiatives that have similar goals such as the Christina Lake Stewardship Society ● Share ideas for involving wetlands into current projects ● Identify areas for protection (natural springs; geothermal bodies; snow packs ;) 	<ul style="list-style-type: none"> ● On-going capacity and funding for monitoring mid-long term. ● NRD to reach out to Christina Lake Stewardship Society and other prominent water organizations. ● ONA and RDKB to collaborate on areas of significance to be protected.
<p>Climate Change</p>	<ul style="list-style-type: none"> ● Build Syilx TEK Adaptive Management practices such as prescribed burns, floodplain mapping, plant and animal movements. ● Continue researching mapping (100 year floods, ephemeral creeks, floodplains, wetlands) ● Community engagement on changes on the land via sessions and one-on-one interviews 	<ul style="list-style-type: none"> ● Find funding, capacity, and legislative and leadership support. ● Partner with Colville Confederated Tribes on Climate Change initiatives. ● Seek out US counterparts who are actively involved in water stewardship. ● Develop long term adaptive management practices in Climate Change Strategy
<p>Water Quality and Pollution</p>	<ul style="list-style-type: none"> ● Promote “Water For Fish and ONA Strategy “Fish First!” ● Ensure ONA Natural Resources and communities have a better understanding of legally binding water quality standards, water borne diseases, ecosystem functions, and cultural practices in and about water ● Determine Syilx quality targets and objectives for water managers in territory to work towards 	<ul style="list-style-type: none"> ● Funding and Capacity grants for short - medium term for research on current water quality and pollution issues in kettle and create action plan for proactive ways forward. ● Assessment of federal and provincial acts ● Collaborate with local governing, stewardship, and NGO bodies to determine set standards and procedures

	<ul style="list-style-type: none"> ● Communication material on pollution safety and procedure steps 	for prevention and proactive measures.
Surface flows, groundwater and water quantity,	<ul style="list-style-type: none"> ● ONA Fisheries environmental flow needs work needed (scoping, methods, technical work, writing) ● Determine joint EFN and quantity initiatives with regional district and municipalities 	<ul style="list-style-type: none"> ● Find short - medium term funding for EFN technical research ● ONA to set standards based on title and rights
Industry	<ul style="list-style-type: none"> ● Support Chiefs Executive Council, Natural Resource Committee and community referral process. ● Revitalize the Referral Working Group to support in-depth analysis of impacts in watershed ● Develop Forestry and Mining Standards and Policies from Syilx perspective 	<ul style="list-style-type: none"> ● Find medium term funding for internal capacity to hold meetings ● Outreach to industry leaders to support restorative and protective initiatives. ● ONA to develop and implement policy as a means of
Species At Risk	<ul style="list-style-type: none"> ● Rehabilitate habitat zones for listed species ● ONA to take more supportive role for communities undertaking SAR work 	<ul style="list-style-type: none"> ● ONA to work on mapping areas of SAR in Kettle River. ● Determine action plan and next steps forward to mitigate
Minimal cultural features mapped	<ul style="list-style-type: none"> ● Inter-community protocol set in place to determine information and data shared among communities. ● ONA to assist in creation of mapping of cultural items. 	<ul style="list-style-type: none"> ● ONA to determine next cultural mapping projects

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Figures

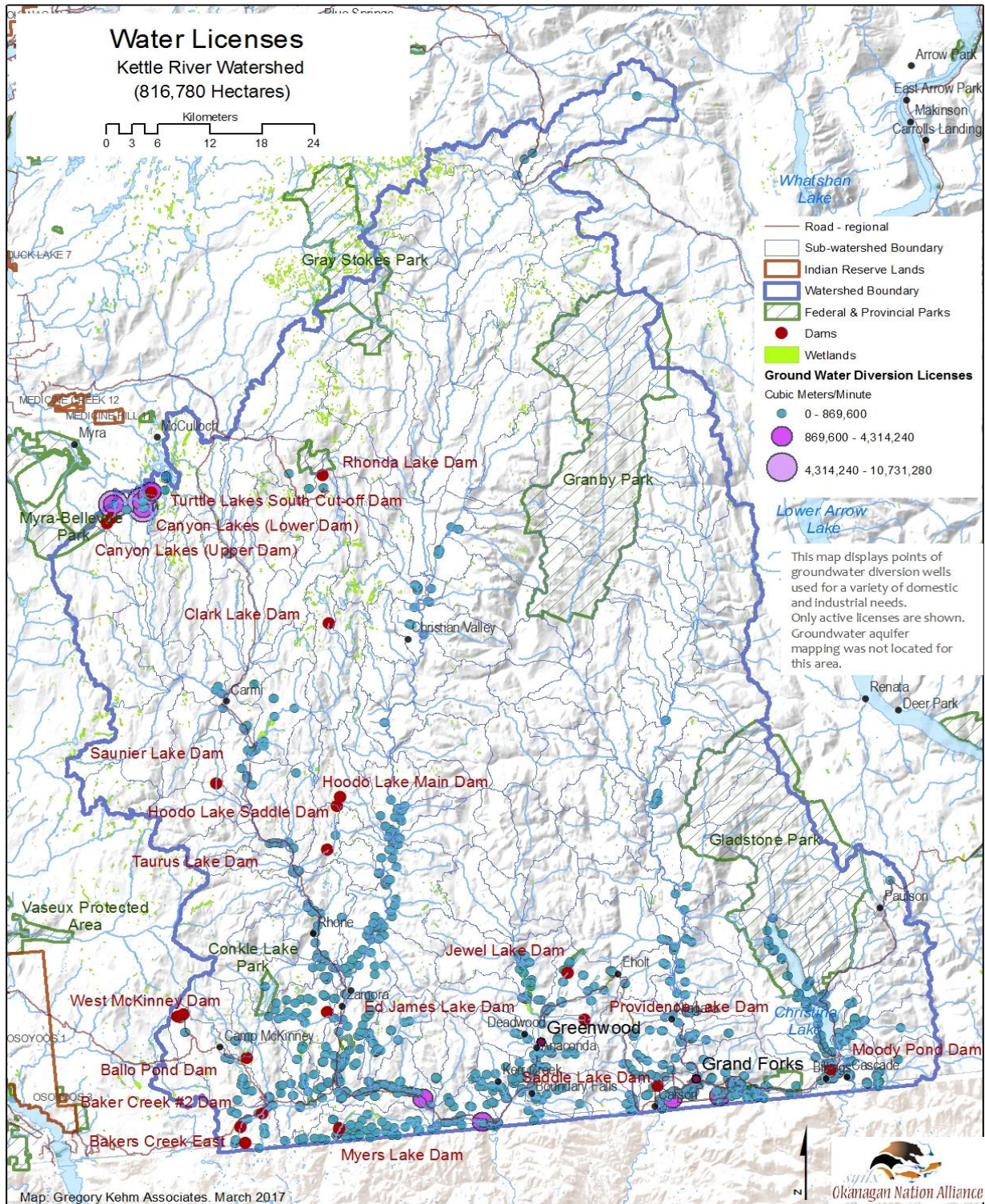
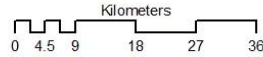


Figure 1. Distribution of water diversions and dams within the Kettle River Watershed.

1997 - Mean Winter Precipitation - 2015 Kettle River Watershed



This map displays the average winter precipitation as modeled using ClimateBC and station data from the year 1997 and 2015. Interpret broad change patterns instead of site specific climate shifts as numeric legend thresholds exaggerate the degree of change.

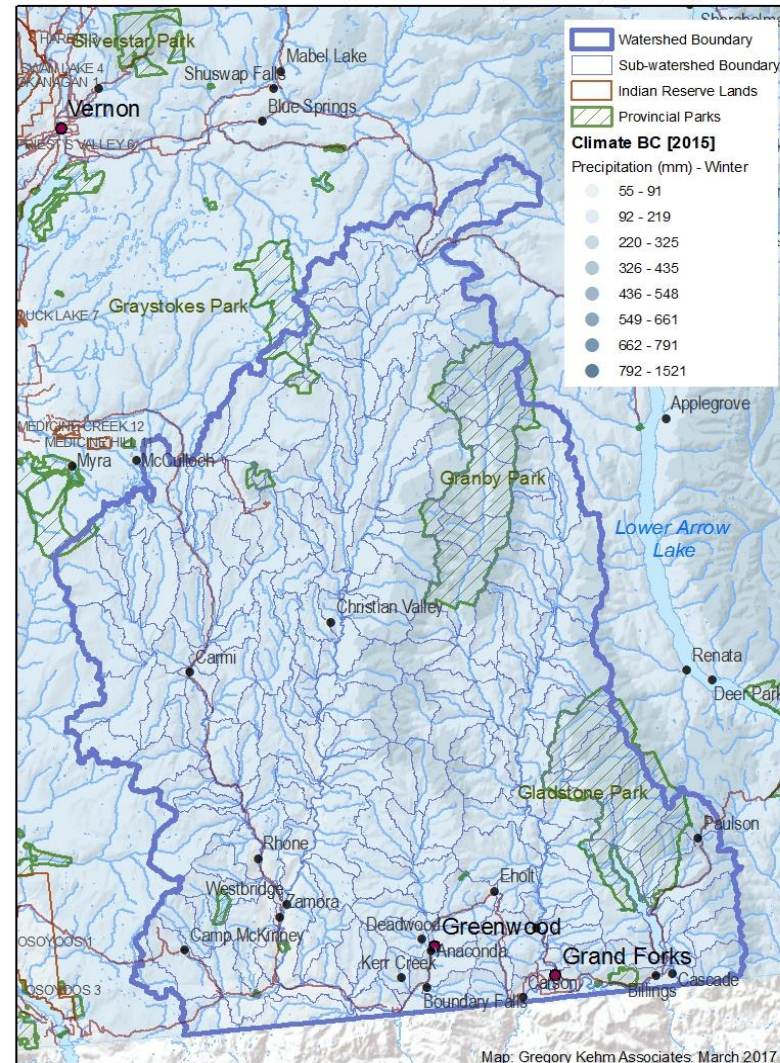
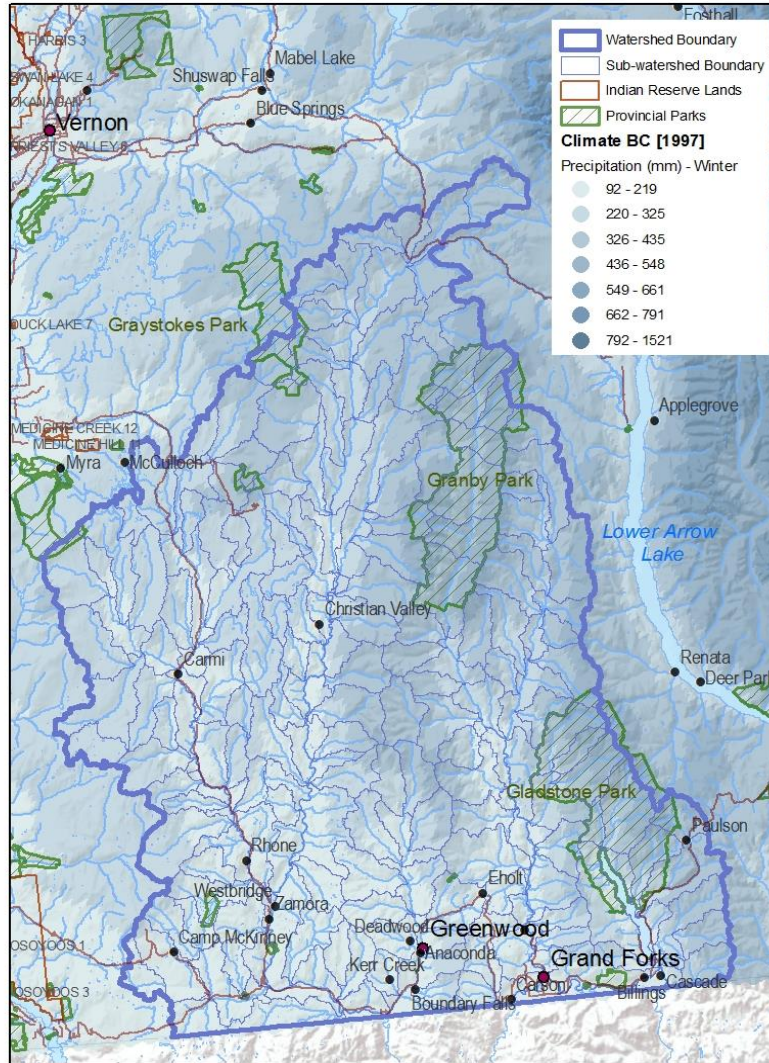


Figure 2. Comparison of mean winter precipitation between the years 1997 and 2015. Currently, the Kettle River Watershed is facing loss of high levels of winter precipitation which decreases snowpack levels and results in lower runoff.

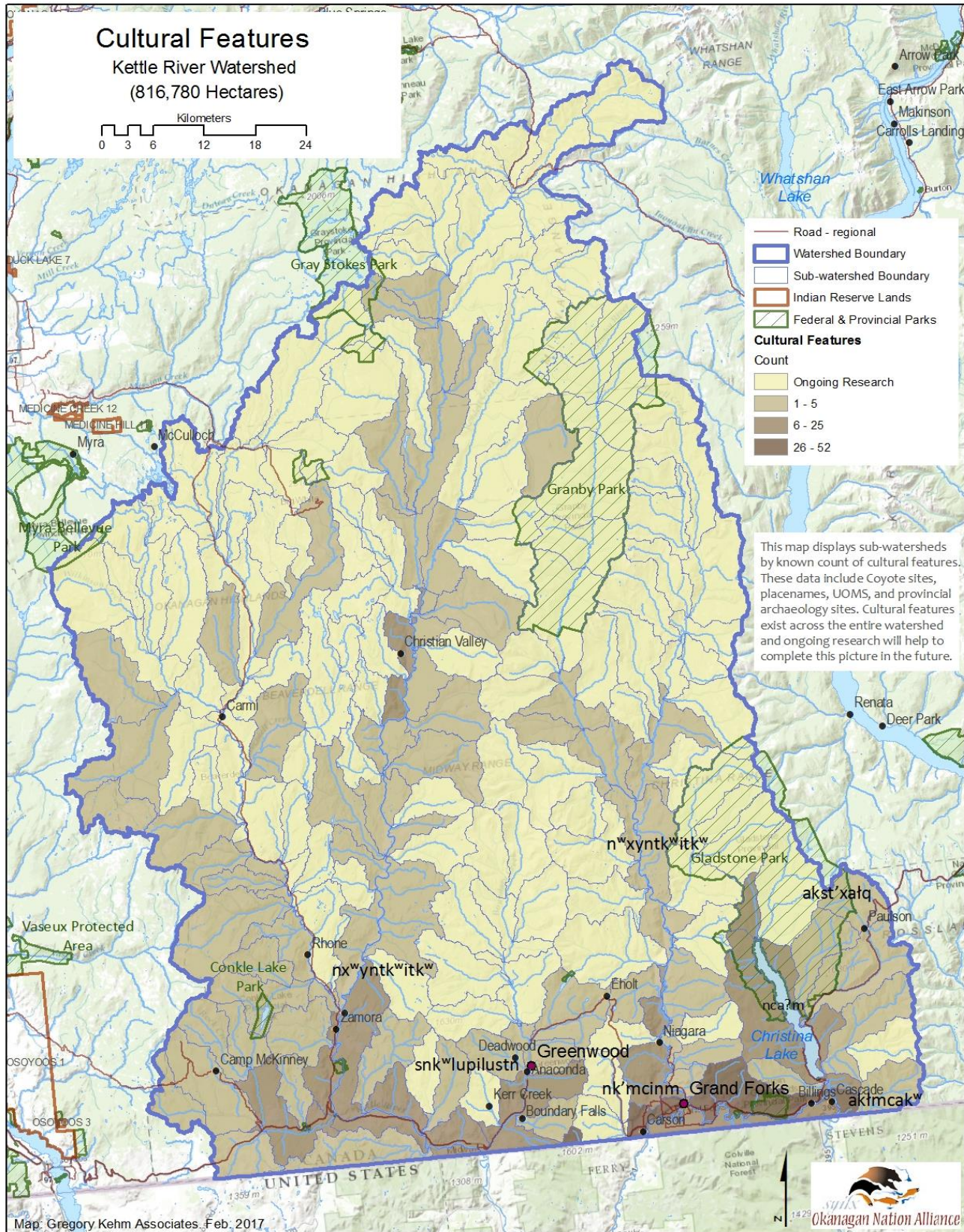
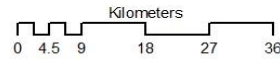


Figure 3. Mapped characteristics of cultural points within Kettle River Watershed. Note the nsylxcen place names for the rivers.



Figure 4. Distribution of soils types in Kettle River Watershed.

1997 - Mean Summer Temperature - 2015 Kettle River Watershed



This map displays the average summer temperature as modeled using ClimateBC and station data from the years 1997 and 2015. Interpret broad change patterns instead of site specific climate shifts as the numeric legend thresholds do exaggerate the degree of change.

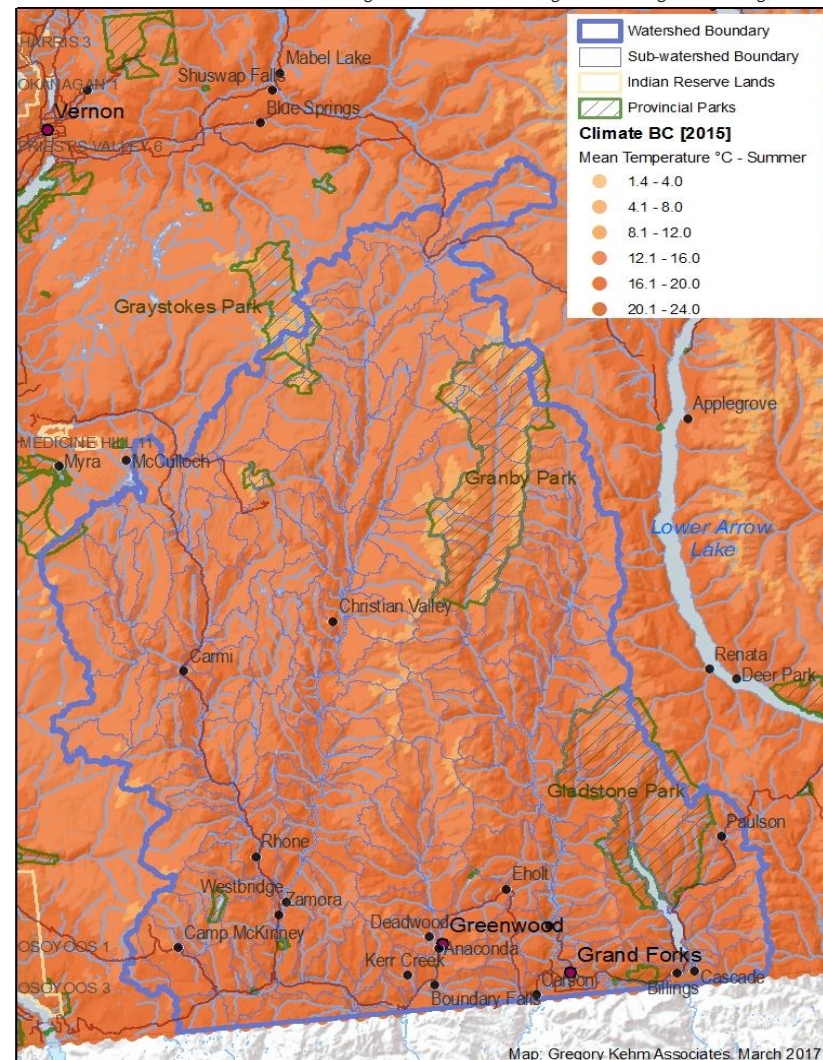
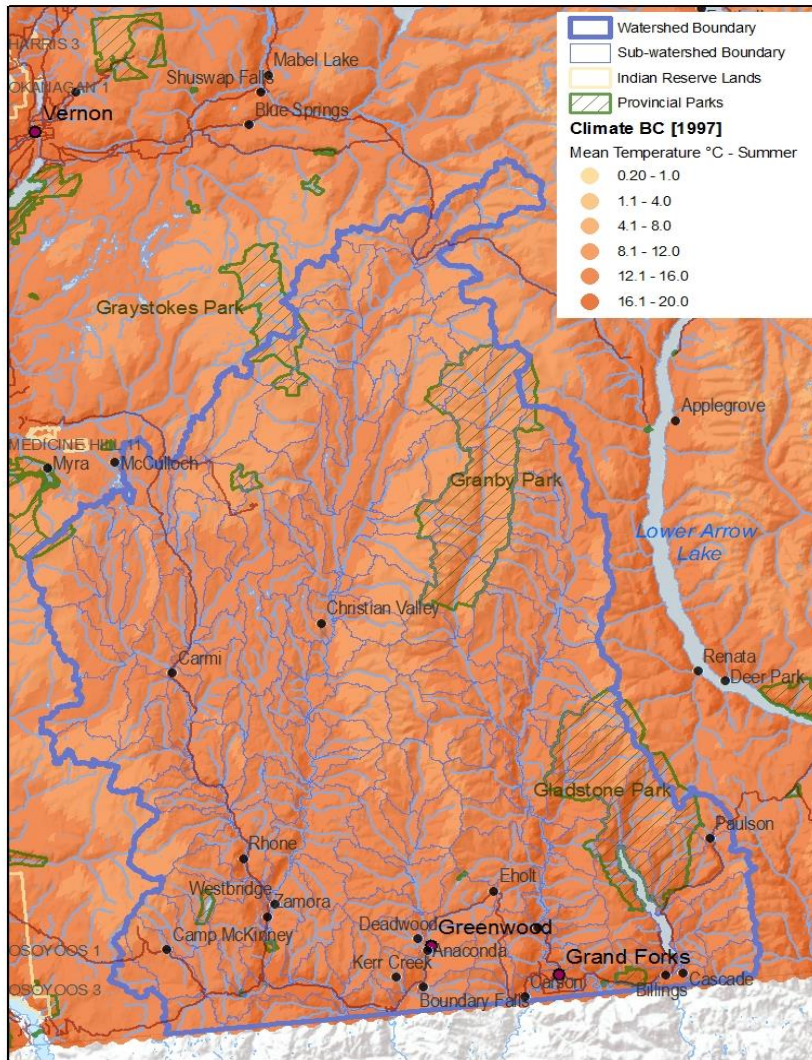


Figure 5. Cross section of mean summer temperature within Kettle River watershed based on comparisons between 1997 and 2015. Note the higher temperatures within the valley bottoms in the current map on the right

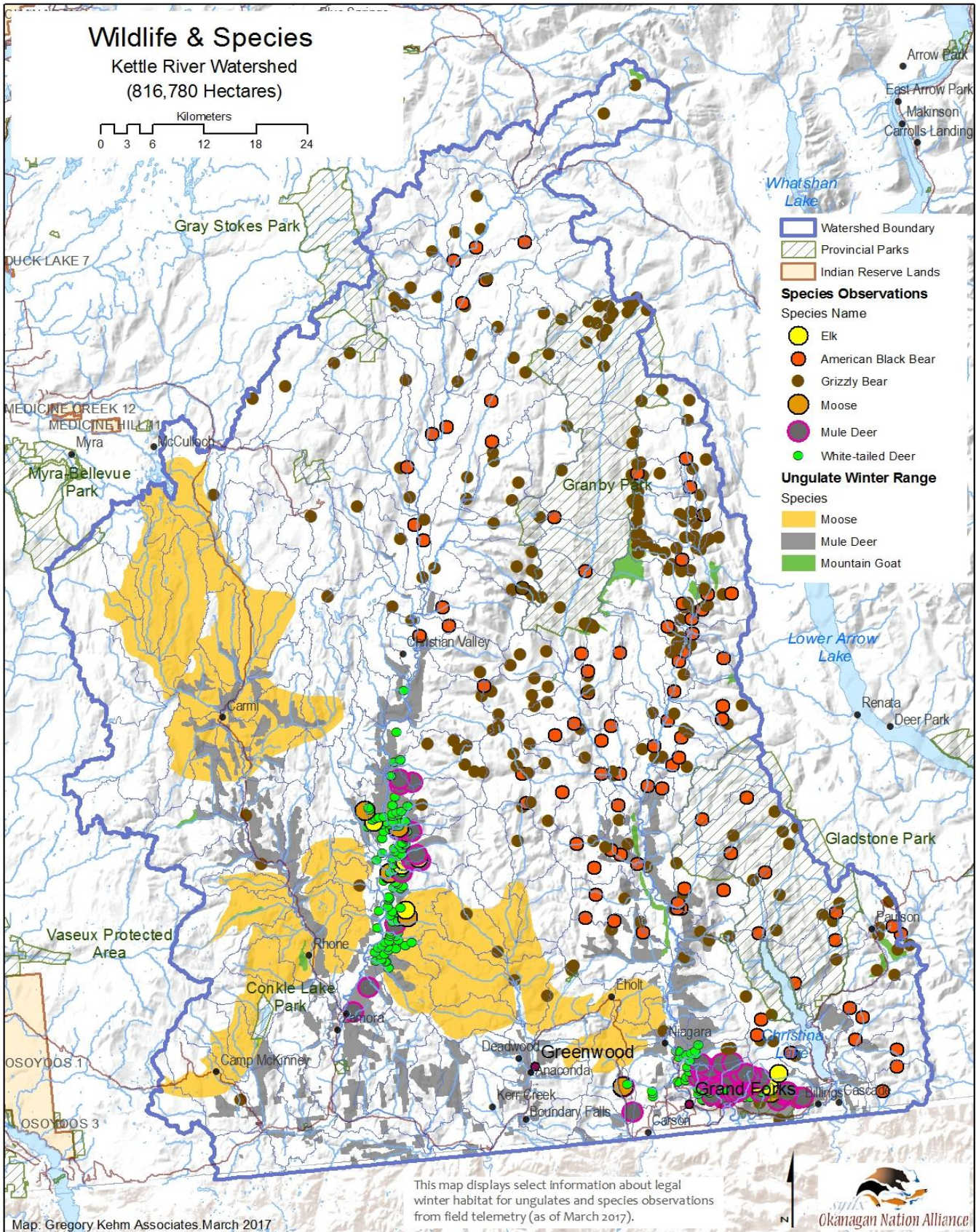


Figure 6. Outlines key areas in the Kettle River Watershed where Sylix (Okanagan) food species utilize

Appendix

Kettle River Watershed Management

The Kettle River Watershed Management Plan encompasses four major strategies each with major directions and specific actions to meet the strategy goal. Below is a condensed version of the strategies, directions, and actions.

Strategy 1:¹⁵ Increase community understanding, support and capacity for stewardship of the Kettle River Watershed.

- Develop leadership and governance through development of governance framework for watershed decision making,
 - Establish a KRWMP implementation team to coordinate implementation of plan
 - Study and recommend governance model for long term watershed management
 - Develop long-term funding model to improve capacity
 - Integrate KRWMP into local government decision making
 - Ensure engagement and collaboration among local government and First Nations
- Improve understanding of watershed function, integrity, resilience and sustainability.
 - Build a digital map-based watershed information system to collect and share water information
 - Develop and implement a monitoring framework for water quality, quantity, ecosystems, groundwater, and land use
 - Quantify ecosystem goods and services
 - Develop and implement a watershed education strategy
- Build public and institutional support for improved watershed management, the development, implementation, and continued support of policies and regulations
 - Develop a public engagement plan
 - Assess and improve the consistency, alignment, and application of policies and regulations for protection of water
- Improve capacity for watershed stewardship.
 - Enable increased funding for conservation and stewardship
 - Create a water supply working group

¹⁵ Ibid., 12 - 18

Strategy 2: Improve the quality, reliability and security of water supplies through sustainable management of water resources.

- Improve understanding of and support for water quality and quantity in the kettle river watershed
 - Implement a monitoring and central reporting of water use, flow, and levels
 - Complete a comprehensive Environmental Flow Needs assessment of Kettle River
 - Design and implement a water quality assessment of main stem of West Kettle, Kettle, and Granby rivers
 - Design and implement a medium-term water quality monitoring network
 - Continue to sample and report program for ambient groundwater quality network
 - Develop an accessible database to compile and share well testing changes
- Build policy support for managing water quality and environmental flows
 - Establish site specific water quality objectives for surface and groundwater purposes
 - Consider legal designations to protect environmental flows needs (EFNs)
 - Prioritize high demand aquifers for groundwater licensing and regulation in support of EFNs
 - Manage water allocation, permitting, licensing, and approval processes
- Improve water conservation and increase efficiency and productivity of water use in all sectors
 - Identify, implement and report on water conservation goals and measures
- Improve water security by developing and implementing drought management plans and water storage strategies
 - Establish and implement drought management strategies
 - Identify water storage needs based on future projections
 - Develop water storage sites
- Improve water quality in relation to point and nonpoint source pollution
 - Identify, implement, and report on water quality improvements
 - Consider strategies for augmenting or replacing wastewater treatment
 - Adjust permitting, approvals, and land use bylaws to support remediation areas
- Protect drinking water supplies through source-water protection assessment, analysis and planning
 - Continue risk screening and assessment activities
 - Develop aquifer management or source water protection plans based on risk assessments
 - Design and implement and extension program for specific groups at risk
 - Consider source water protection, water conservation, and aquifer recharge protection in local government planning

Strategy 3: Improve watershed health and function in the Kettle River Watershed

- Improve understanding of watershed health and function, including floodplain dynamics, in the kettle river watershed
 - Create a sensitive ecosystem inventory for Kettle River watershed
 - Consider updating floodplain maps in areas of risk of flooding

- Consider undertaking a planning-level Channel Migration Zone
- Identify and characterize source, transport, and fate of sediment affecting fish habitat
- Undertake literature review and study of forest harvest impact on stream temperature
- Characterize cumulative impacts of road systems
- Build support and capacity for improving watershed function
 - Utilize findings in Riparian Threat Assessment to implement measures to provide increased protection due to erosion from vegetation removal
 - Update and implement riparian area development permit guidelines
 - Work with local conservation groups to establish a formal stream keepers group
 - Develop and publish a “Riparian Buffer Guide” booklet specific to shorelines
- Maintain or increase the extent and function of riparian areas, wetlands, and permanent vegetation, including forests, in uplands, stream corridors and on floodplains
 - Implement or extend local policies and incentives for retaining native plant species
 - Consider extension and integration of ecosystem based resource management
 - Develop a watershed restoration program
- Protect soil and improve soil health to improve water retention and decrease erosion
 - Implement and align agricultural and forestry stewardship incentives

Strategy 4: Maintain or enhance recreational, cultural and amenity values

- Improve understanding of recreational, cultural and amenity values and celebrate cultural connection to the watershed
 - Undertake a creek survey to characterize angler behaviour, catches, and responses to regulation changes.
 - Consider undertaking place-name, cultural and heritage use studies in watershed
 - Recognize and celebrate cultural connection to water and river
- Maintain a healthy fishery through habitat protection and restoration, continued stocking of recreational lakes and the protection of native fish populations in tributaries and rivers
 - Consider changes to fisheries regulations to protect fish during warm low flow periods
 - Actively promote use of provincial environmental hotlines for all natural resources
- Improve support for protected areas and increase responsible recreation
 - Collaborate with recreation and trail user groups to share information
 - Develop and implement integrated road and recreational access planning
 - Implement regulations or other measures to prevent use conflicts and protect ecosystems
 - Implement park and protected areas master planning in Plan Area and manage protected areas

Enowkinwixw

The Four Food Chiefs, is a *captikwl* (oral narrative) central to *Syilx* (Okanagan) worldview. Within this narrative is a dialogue process - enowkinwixw - which is designed to hear all members of the discussion to gain a comprehensive understanding of the topic. This model can also be utilized as a dispute resolution process.

Once a core group of people have been engaged, the process begins by agreement of all parties to respect the following principles:

1. Each person in the circle has an opportunity to speak.
2. Please do not interrupt a person speaking.
3. Please listen to the person speaking.
4. Please do not debate, disagree with or put-down anyone's views.
5. Please stay on the topic being discussed.
6. Please be brief to allow others the opportunity to give their views.
7. Please do not repeat points already made.
8. Please do not use profane, sexist or racist language.
9. Please turn off cell phones until breaks.
10. Please try not to leave the circle until scheduled breaks.

Visioning for the Kettle River

The Natural Resources team has envisioned a series of short term goals and objectives for the forward movement of the Kettle River Watershed Management Plan.

Short Term (1 – 3 years)	Mid Term (5 – 10 years)	Long Term (20 – 50 years)
<ul style="list-style-type: none"> ● Knowledge holder TEK meetings and active groups ● Raising more awareness of communities in the Kettle ● Secure funding for completion of watershed plan that is grounded in a systems-based approach ● Work towards creating a more comprehensive and organic relationship with the RDKB roundtable ● Update TEK Methodology for watersheds with plans in place ● On-going ceremonies for ungulates, plants, aquatics, and land & water ● Methodology to determine EFN work to be confirmed ● Climate change to be a major aspect of CEC, NRC, NRD, and working groups 	<ul style="list-style-type: none"> ● Government to government relationships established ● Consistent funding from forestry, mining, and energy sectors ● Development of policy and protocols for water and land development ● Land based internships and education co-jointed with regional districts and school districts ● Policy and standards for cultural heritage developed to ensure all Syilx cultural objects/sites/artefacts/ etc are protected 	<ul style="list-style-type: none"> ● Sustainable water use practices for agriculture, residential, and industry ● Rivers are considered healthy functioning ecosystems ● Successful restored wetlands ● Updated baseline data for natural resources management decisions ● Nation control of hunting and wildlife ● No plants or animals listed on the SAR list ● Syilx cultural camps and ceremonies are an annual event

ⁱ The Okanagan Nation Alliance is made up of political representatives from the Okanagan Indian Band, Westbank First Nation, Upper Nicola Indian Band, Penticton Indian Band, Upper Similkameen Indian Band, Lower Similkameen Indian Band, Osoyoos Indian Band, and Colville Confederated Tribes.

ⁱⁱ This particular story of the Little Brother refers to a period of time after the creation of the first people; it speaks of the responsibilities that the Creator gave to the people. In this story the Creator gives the older brother and the younger brother a piece of paper and each are told not to look at it. The younger brother takes the paper and in doing so the Creator sends him across a great water telling him that one day he will return and that it will be a struggle. This story foretells of the Little Brother returning home and of both younger and older brothers living together for all time.