Arctic Rivers Summit Action Plan:

State of Rivers

December 2022

Action Plan: State of Rivers

1.0 Introduction

The Arctic Rivers Summit was a gathering that brought together nearly 100 people to discuss the current and potential future states of Alaskan and Yukon rivers and fish and how we can adapt. The summit was held in Anchorage, Alaska from December 6-8, 2022. People who attended included Tribal and First Nation leaders, community members, managers, and knowledge holders, western scientists, federal, state, and provincial agency representatives, academic partners, non-governmental organizations and others. The Summit was held as part of a five-year Arctic Rivers Project funded by the National Science Foundation's Navigating the New Arctic Program. The Arctic Rivers Project was co-led by the University of Colorado-Boulder and the National Center for Atmospheric Research, and both the project and the Summit were guided by an Indigenous Advisory Council. Additional Summit partners included the Institute for Tribal Environmental Professionals, the Yukon River Inter-Tribal Watershed Council, the U.S. Geological Survey, the University of Saskatchewan, and the University of Waterloo.

One of the key goals of the summit was to develop action plans centered around four topics:

(1) State of Salmon
(2) State of Rivers
(3) Partnering Indigenous Knowledge and Western Science for Management
(4) Youth and Elders: Building a Bridge of Traditional Knowledge

This action plan focuses on the State of Rivers. Rivers are a lifeline for human and non-human relatives and are integral to Indigenous peoples' cultures and food systems. Although this plan is presented separately from the other three plans, interconnections exist among all of them, with rivers and water flowing throughout the plans and the entire summit. To develop the State of Rivers Action Plan, two small group activities/ discussions were held.

2.0 Process for developing the State of Rivers action plan

The process for developing the State of Rivers action plan consisted of three steps completed during two in-person meetings during the Summit. The steps consisted of:

1) Developing a collective vision of a desired future for the State of Rivers in Alaska and the Yukon
2) Engaging in a Strengths, Weaknesses, Opportunities, Threats (SWOT) activity that took into account the desired future
3) Identifying potential actions to work towards the desired future based on the SWOT activity

2.1 Collective vision

During the first gathering, group members first developed a collective vision for a hoped-for future for the state of rivers in Alaska and the Arctic. When creating this vision, group members were encouraged to consider different points of view, for example, how might *communities who live along rivers* answer a question about a desired future state for the rivers. How might *salmon* answer this question, or *ancestors*, or *future generations*? For the State of Rivers action plan, the group developed two statements summarizing the discussion. This is described below.

2.2 Strengths, Weaknesses, Opportunities, and Threats (SWOT)

The hopes/desires identified while developing a collective vision for the future laid the foundation for the next activity, a strengths, weaknesses, opportunities, and threats exercise that also took place during the first gathering. Strengths and opportunities were considered to be factors helpful in reaching the collective vision. Weaknesses and threats were factors presenting challenges to reaching the desired future. In general, strengths and weaknesses were described as happening during the current time while opportunities and threats were described as potentially or likely to happen in the future, however, in practice, overlap among the various categories occurred.

To promote brainstorming, group members were encouraged to consider the LESTER categories, which include **L**aws and policies, **E**nvironmental and biological factors, **S**ocial factors and Indigenous Knowledge, **T**echnology and infrastructure, **E**conomic factors, and **R**esearch and monitoring. These categories overlap with one another and were not intended to limit in any way the strengths, weaknesses, opportunities, and threats identified.

For the SWOT activity, the group focused on a single category at a time (ex. strengths were discussed first). Each group member individually filled out sticky notes and then added them to the collective board. Once all group members had a chance to contribute their thoughts, the group discussed the overlap and connections between all the ideas on the board. This process was repeated for all four categories of the SWOT. During both the Gathering 1 discussion and later by facilitators, similar factors (sticky notes) were grouped into themes.

2.3 Identifying Potential Actions

During the second gathering, group members reviewed the themes and, in some cases, the individual strengths, weaknesses, opportunities, and threats characterized and were then asked to identify key potential actions. These actions could build on strengths, address weaknesses, take advantage of opportunities, and mitigate threats.

The results for all three steps are described in Sections 3 through 5 below.

3.0 Collective Vision

During the first gathering, the State of Rivers working group summarized the discussion of their future vision for rivers in Alaska and the Yukon into two statements

We have beautiful, pristine, sanctuary rivers

We have a lot of strengths and opportunities and at least a little bit of time

4.0 Strengths, Weaknesses Opportunities, Threats

During the first gathering, working group members also identified and discussed strengths, weaknesses, opportunities, and threats that could further or hinder their desired vision of beautiful, pristine, sanctuary rivers.

4.1 Strengths

For the strength category of the SWOT activity, several themes emerged. The top themes revolved around:

1) Traditional knowledge,
2) Rivers as sanctuaries, and
3) Monitoring, modeling, and research

Additional themes included:

4) Engaged communities
5) Motivation to take action
6) Knowledge sharing and co-production

These strengths are discussed in more detail below.

Traditional knowledge (TK) strengths noted included: thousands of years of stewardship, story and oral history, local projects to document and share TK, and inter-tribal organizations involved in river management. Kinship with one another and with the river was also brought up as were "*lessons we learn from the river like how to be adaptable*". Rivers in Alaska and the Arctic were also described as sanctuaries providing unique spiritual experiences; wild, intact, pristine habitat with clean water supporting biodiversity and strong cultural ties. Observation networks such as the Indigenous Observation Network (ION), Arctic Guardians, and Riverwatch were also brought up as strengths as were continual improvements in modeling and ongoing research and studies by groups such as

the International Joint Commission. Additional strengths included engaged communities collaborating and communicating with one another upriver and down, the "*common concern by all to take action,*" and the co-production of knowledge by Indigenous knowledge holders and western scientists.

4.2 Weaknesses

For the weaknesses category of the SWOT activity, some of the main weaknesses that emerged were:

1) Displacement, loss, and siloing of traditional knowledge,
2) Colonization, and
3) Data gaps and the mismatched pace of science.

Other weaknesses identified included:

4) Challenges related to the regulatory environment,
5) Lack of funding and capacity,
6) Climate change, and
7) Additional increasing pressures on rivers.

These weaknesses are discussed in more detail below.

Displacement, loss, and siloing of traditional knowledge; colonization

The displacement, loss, and siloing of traditional knowledge include factors such as the separation often present between TK holders and Western scientists. However, when attempts are made to connect the two by documenting TK, for example, some in the group noted that such efforts may overlap leading to fatigue among TK holders. Some group members also identified a lack of oral history research on the rivers as a weakness. If such research is conducted, it should always be conducted within a framework of honoring and protecting both TK holders and the knowledge itself. In some instances, climate change may be contributing to knowledge displacement, for example, by necessitating either the full or partial relocation of riverine communities and possibly the abandonment of fish camps. This, in turn, results in the shifting of knowledge holders and their knowledge from what were traditional areas. The loss of knowledge holders as they age also contributes to TK loss. In addition, colonization has been an extremely significant contributor to TK loss through the cultural genocide it perpetuated. One example is the damaging impacts that boarding and residential schools have had on multiple generations. The resulting trauma from colonization has been detrimental to the physical and spiritual health of Indigenous communities and in turn to the rivers for which they care. In addition, group members noted that in a colonized world, Indigenous voices are "*voiced but not heard*."

Data gaps and the mismatched pace of science

Another weakness identified by the group were data gaps and sparsity in water quality and hydrology with limited winter water quality data being a particular gap noted and increased

community river/river ice observations being a specific need identified. Challenges related to the continuity of projects and observation networks were also documented as contributing to data gaps. Related challenges mentioned by participants included how science operates on a scale that is usually longer than what communities need and that existing data may not be adequately shared. People may not know information exists, or if they do, they may not know how to access it.

Regulatory environment and lack of funding and capacity

The group also identified challenges related to the regulatory environment including current water rights statuses, split jurisdictions, the limited ability to leverage TK for agency decision-making, short-term governments that result in short-term thinking, unclear communication between upper and lower parts of a river, and challenges related to the Alaska Department of Environmental Conservation's water quality regulation implementation. A fifth weakness discussed was limited funding, which included discussion about the availability of funding for transboundary water quality monitoring. Many relevant programs are grant-funded and thus must fit into agency priorities and may be subject to funds running out. Frequent staff turnover also poses difficulties for project consistency and sustainability.

Climate change and additional pressures on rivers

Climate change is affecting rivers through glacial recession, permafrost thaw, changing flood regimes, and by making river ice less predictable and more hazardous. Additional pressures on rivers identified included potential long-scale development, the use of rivers for energy extraction, and the utilization of rivers by non-traditional users for recreation and other purposes. Decreases in salmon catches are causing increased pressure on additional fish species to make up for this loss.

4.3 Opportunities

A variety of opportunities were identified during the SWOT activity. Some of the principal opportunities identified included:

1) Promoting Tribal sovereignty,
2) Collaborating on joint TK and Western science studies and knowledge co-production, and
3) Making the most of the momentum of this time to drive action.

Additional opportunities included:

4) Bolstering youth education,
5) Supporting workforce development, and
6) Advancing an Indigenous holistic approach to wellness

Some of these opportunities are discussed in more detail below.

Tribal sovereignty and knowledge collaboration
Ideas promoting Tribal sovereignty included asserting Indigenous rights including those mentioned as part of the United Nations Declaration on the Rights of Indigenous Peoples, forming a Yukon River Women's Council, utilizing TK to drive planning, designating the Yukon River as a world heritage river, and supporting Alaska Tribes in receiving treatment as a state, which would allow them to establish water quality standards that could be precedents for other Tribes. Joint TK and Western science studies and knowledge co-production were noted as an opportunity to provide better guidance for decision-making. The Arctic Rivers Summit was cited as an example of co-production while Alaska was noted as a place where natural, undisturbed river systems could be investigated.

Making the most of the momentum of this time to drive action
Group members noted that the time during which the Summit took place was one during which there was greater enthusiasm for social and environmental justice and for the integration of Indigenous Knowledge and Western science and during which there were higher levels of federal infrastructure funding that could be used to help make communities more resilient to a changing climate. The timing of the summit provided an opportunity and momentum to drive action.

Youth education and workforce development
The importance of youth education programs was also emphasized including conducting youth outreach and connecting youth with elders. Particular examples included youth programs hosted by Dr. Jessica Black with the University of Alaska Fairbanks and culture camps. We refer readers to another action plan from the *Summit - Youth and Elders: Building a Bridge of Traditional Knowledge* for greater discussion of culture camps. River science education, both traditional and western, was also identified as an opportunity. Workforce development ideas included employing Tribal community members as a knowledgeable local workforce for monitoring projects in often remote, difficult-to-access locations. One example the group noted with community members being employed to potentially take river level or ice thickness measurements for the National Weather Service

4.4 Threats

Three of the main threats to river systems identified were:

1) Climate change,
2) Resource extraction, development, and contamination, and
3) Degradation of fisheries (related to both of the above)

Additional threats noted were:

4) Regulatory/funding-related challenges
5) Procrastination and/or lack of action due to the complexity of the threats being faced, and
6) The misuse of TK or lack of proper attribution

Some of these threats are discussed in more detail below.

Climate change, resource extraction, and fisheries degradation
Climate change affects rivers and communities in a variety of ways. Some of those noted by group members included: permafrost thaw and subsequent contamination, increasing turbidity and blocking of drainages, erosion leading to loss of land and infrastructure damage, thinner river ice making river travel dangerous, expanding freeze-up periods limiting travel, wildfires, and changes to marine-derived nutrients reducing productivity in rivers. The rapidity with which environmental changes are occurring is challenging as are increasing extreme weather conditions.

The group also identified mining, hydro-energy dams, and large-scale development and commoditization and associated impacts on water and air quality as significant concerns. Many of the aforementioned factors, as well as overfishing and management of fisheries on a commercial-scale model, are contributing to the loss of fish habitat (ex. due to hydrology changes), degradation of fisheries, and loss of subsistence resources.

Regulatory environment
Other factors identified as threats included Environmental Protection Agency funding cuts, in particular for Tribal consortia, and shifts in the focus of federal funding. Special interest lobbies were also brought up as a challenge as was a lack of international collaboration on water quality protection and proposed changes to the Clean Water Act.

5.0 Actions

During the second gathering for this working group, people discussed actions to support the collective vision of beautiful, pristine, sanctuary rivers. As described above, these actions can build on strengths, address weaknesses, take advantage of opportunities, and mitigate threats.

In addition to identifying actions during the second gathering, in some cases, group members identified actions during the Strength, Weaknesses, Opportunities, and Threats activity that took place during the first gathering. Actions identified during both gatherings are listed in Table 1 below.

Seven overarching action themes emerged, including actions related to:

- *Collaboration*
- *Community planning and resiliency*
- *Technology*
- *Traditional knowledge*
- *Training and outreach*
- *Workforce development*
- *Yukon River*

Table 1. State of Rivers Actions to Pursue

Category	Examples
Collaboration	• Collaboration on monitoring • Co-drafting legislation • Establishing interagency working groups
Community planning and resiliency	• Improve community flood preparedness and resiliency • Improve river/flood forecasts
Technology	• Draw more on remote sensing to fill in data gaps
Traditional Knowledge	• Reconstructing river hydrology and TK • Oral history research within the TK protection context
Training and outreach	• Building the capacity of watershed councils and conservation districts
Workforce development	• Training Tribal community members as a local workforce for monitoring projects • Employment opportunity taking river level or ice thickness measurements for National Weather Service
Yukon River	• Form a Yukon River Women's Council • Designate the Yukon River as a world heritage river

5.0 Conclusion

The Arctic Rivers Summit brought together a diverse array of people, both Indigenous and non-Indigenous, to share knowledge about rivers and communities in Alaska and the Yukon and to brainstorm options for supporting both in adapting to a transforming world. The group of people who gathered were driven by concern about the future of these rivers and by the energy to shape what lies ahead.

It is our vision and intention that the discussions and ideas presented in this plan will motivate conversations and inspire actions to sustain Alaskan and Yukon rivers, cultures, and communities for the generations to come.

For questions

Please contact Karen Cozzetto, Institute for Tribal Environmental Professionals (ITEP) Tribal Wellbeing for Seven Generations Program Co-Manager and Nikki Cooley, ITEP Co-Director, with any questions or comments about this plan.

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