



Elk River  
Watershed  
Qukin  
ʔamakʔis Collaborative  
Monitoring  
Program

## Interim Monitoring Working Group Annual Forum - Dec 9, 2022 - Partner Meeting Notes

### Attendance

1. Bill Arling, Director of Environment, *North Coal* - online
2. Kevin Atherton, Director on Board of Directors, *Elk River Alliance* - online
3. Dave Baines, Director Project Development, *NWP Coal* - in-person
4. Karen Bergman, Co-Chair, *Collective for Lower Elk Aquifer Restoration (CLEAR)* - in-person
5. Maggie Finkle-Aucoin, GIS & Database Assistant, *Living Lakes Canada* - online
6. Nicolas Francoeur-Leblond, Senior Engineer - Water Quality, *Teck Coal* - online
7. Cait Good, Senior Lead - Aquatic Sciences, *Teck Coal* - in-person
8. Jason Gravelle, Land & Resource Manager, *Yaqit ʔa-knuqʔi'it* - online
9. George Greene, Chair, *Elk River Alliance* - in-person
10. Chad Hughes, Executive Director, *Elk River Alliance* - in-person
11. Chris Hust, Engineering Technologist, *City of Fernie* - in-person
12. Jon Jeffrey, Hydrometrics Specialist, *ENV* - online
13. Goeller, Neil, Unit Head: Groundwater, Hydrometrics & Hydrology, *ENV* - online
14. Ashlee Jollymore, Hydrologist, *MacHydro* - in-person
15. Ania Javorski, Coordinator, *Collaborative Monitoring Initiative (CMI)* - online
16. Myra Juckers, Environmental Officer, *Yaqit ʔa-knuqʔi'it* - online
17. Anne-Caroline Kroeger, Program Manager, *Elk River Alliance* - in-person
18. Jeremy Krogh, Geomatics and Data Specialist, *ENV* - online
19. Nick Lapointe, Senior Conservation Biologist, *Canadian Wildlife Federation* - online
20. Mike Low, Director, *Collective for Lower Elk Aquifer Restoration (CLEAR)* - online
21. Jessica Mackie, Manager - Water Quality Modelling, *Teck Coal* - in-person
22. Evgeni Matveev, Education & Outreach Coordinator, *Elk River Alliance* - online
23. Kaileigh McCallum, Junior Ecologist, *Elk River Alliance* - in-person
24. Josh McSkimming, Head Guide, *Kootenay Fly Shop* - in-person
25. Kelly Munkittrick, Research Chair in Ecosystem Health Assessment, *University of Calgary* - online

26. Stewart Rood, Professor of Biological Sciences, *University of Lethbridge* - in-person
27. Paul Samyca, Owner and Guide, *Elk River Guiding Company* - in-person
28. Simran Sandhu, Emergency Program Coordinator, *RDEK* - online
29. Hunter Smith, Program Assistant, *Living Lakes Canada* - online
30. Stella Swanson, Director on Board of Directors, *Elk River Alliance* - in-person
31. Cassidy Van Rensen, Cumulative Effects Coordinator, *LWRS* - online
32. Margot Webster, Impact Assessment Biologist, *ENV* - online
33. Patrick Williston, Senior Environmental Impact Assessment Biologist, *ENV* - online
34. Wanda Wishart, Emergency Program Coordinator, *RDEK* - online
35. Laroche, Kevin, Director on Board of Directors, *Elk Valley Land Trust* - online

### Meeting outcomes

<p><b>Part 2: Update on Initiative</b></p>	<p>Partners support the use of the proposed data sharing platforms presented, i.e. the Columbia Basin Water Hub operated by Living Lakes Canada as the Collaborative’s primary platform and the new EnMods operated by BC ENV and launching in March 2023 as a central government platform. Partners had specific questions about the functionality of both platforms which they can follow up directly with the responsible leads - Maggie Finkle-Aucoin for the Water Hub and Jeremy Krogh for EnMods.</p>
<p><b>Part 3: Monitoring Design</b></p>	<p>Partners approved the Monitoring Questions for Theme 1 (Climate Change driven flood and drought), Theme 2 (Fish habitat) and Theme 3 (Ktunaxa land uses), as put forward by the Monitoring Working Group Chair, with some improved wording and sub-bullets for more characterization of each theme question. Partners are ready to have these Monitoring Questions publicly known.</p>
<p><b>Part 4: Communications</b></p>	<p>Partners felt comfortable with the Elk River Alliance Education &amp; Outreach Coordinator building a website for the Elk River Watershed Monitoring Collaborative and Partners said they intend to link their own organization’s websites to the latter. Additionally, Partners said they will work on developing a Communications protocol, through the Steering Committee, to decide on the purpose, principles and methods for Collaborative communications with community groups and the public.</p>
<p><b>Part 5: 12 month work planning</b></p>	<p>Partners noted the need for work plan costs not to be underestimated, and agreed to be asked to formally approve the workplan and budget once these are finalized and validated for the next Steering Committee meeting coming up in February 2023.</p>

## Meeting follow-up actions

<b>Steering Committee</b>	Schedule a Steering Committee meeting for <i>February 2023</i> to present amended draft Year 3 - 2023 - work plan and budget, including expectations and responsibilities for fundraising activities, with the intent being to finalize and approve the Year 3 work plan and budget.
<b>Monitoring Working Group</b>	Schedule a Monitoring Working Group meeting for <i>January 2023</i> to present the amended Monitoring Questions and develop the Monitoring Designs for the latter.
<b>Communications</b>	Develop a draft communications protocol and draft website by <i>May 2023</i> .

## Meeting minutes

<b>Part 2: Update on initiative: Data Portals</b>	<p><b>[Columbia Basin Water Hub - intro and demo]</b> The Water Hub is operated by Living Lakes Canada, and it officially launched in March 2021, now hosting 253 + datasets from 45 contributors <b>[Interoperability Water Hub - R-packages]</b> Re: Ashlee Jollymore asked if it is possible to develop any tools to link the databases to analysis tools like the R-packages ? Re: Hunter Smith explained that this is indeed possible. <b>[EnMods - intro and demo]</b> The environmental monitoring and data system (EnMoDS) will replace EMS in March 2023 with greatly improved usability for data ingest, data export, data visualization and data quality control activities. EMS like EnMoDS are the provincial databases for discrete water, sediment, air, biological tissue, and taxonomic information, and are intended for data collected from government monitoring programs at the local, provincial, and federal levels, as well as for data collected by industry through permit requirements. These provincial databases are also available for First Nations and community stewardship groups who wish to upload data. EnMoDS will have an advanced data viewing portal - with an interactive web map - to visualize data on a graph and download data. While continuing to force users to standardize their data to the data transfer template before data can be uploaded, Jeremy assured that the data upload will be simpler with less time and effort required for data uploads. Jeremy Krogh explained that while data standardization is time consuming it is an important step as data can then be easily incorporated and linked to third party systems like R-packages. Re: Cait Good said she is excited about improvements to the Government portal, and notes that Teck increased data uploads to government portal on their end in 2022. Re Karen</p>
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	<p>Bergman asked for systematic data uploads, pointing to Teck specifically, and Cait Good noted that Teck data are inputted quarterly into government portals. <b>[Water Hub - EnMods - interoperability]</b> Anne said she would like to test her understanding that the Province and Living Lakes Canada are building their portals to become interoperable. Jeremy Krogh suggested that Living Lakes Canada adopt the provincial government upload format to build interoperability. <b>[Water Hub - EnMods - licenses]</b> Anne emphasized the distinct feature of the Water Hub offering customizable and flexible data licenses - in opposition to the open government license that the Province has established as the only license for EnMoDS. Re: Jeremy agreed to this description of the open government license to being: data published is becomes publicly available to all for viewing, download and publishing, and noted that any group wishing to publish data on to EnMoDS will have to sign a data sharing agreement to give permission to the Province to use the data in any capacity. Re: Partners: said they see value in working with both the Government and Living Lakes portals. <b>[Water Hub - EnMods - anecdotal information]</b> Paul Samycia spoke up for outfitters saying they are always in the field seeing things but not recording them, collecting essentially anecdotal information, and are feeling unsure how to put this anecdotal information into a form that could be uploaded. Re: Cait Good suggested perhaps using photos to capture this information. Anne noted there are methods and values for the capture of qualitative data and presenting this qualitative data alongside scientific data.</p>
<p><b>Part 3: Monitoring Design working session: General</b></p>	<p><b>[Characteristics]</b> There was general agreement in the room and thumbs up from Kelly Munkitterick and Hunter Smith online on proposed principles for developing good monitoring design and characteristics of good monitoring questions. In addition, these need to be 1. Clear, 2. Use consistent, available and acceptable methods, 3. Applicable to relevant spatial and temporal scales, 4. Inform decision-making and 5. Increase our understanding of the monitored system. Re: Kelly: additional characteristic to frame questions with yes or no answers. Re: Jon Jeffrey: additional characteristic to have clear expectations on data quality coming out as a result of monitoring question – ie. how good is good enough? <b>[Spatial scale]</b> Stewart Rood called for monitoring the bottom third of the watershed (Wigwam/Lodgepole tributaries) as a sort of reference area, with Stewart noting that all coal mines are in the upper 2/3rds of the watershed <b>[Temporal scale]</b> Cait Good said temporal scale is an important characteristic to think about to define carefully for our monitoring questions, and we need to ensure the timescale we choose will be relevant to decision makers.</p>

**Part 3:  
Monitoring  
Design  
working  
session:  
Frame  
Monitoring  
Question for  
Theme 1**

**[Monitoring Questions]** Stella Swanson presented tentative monitoring questions: 1. *“What are the climate change-related trends in the frequency and/or severity of floods and droughts? [as indicated by water flow, turbidity and temperature?]”* 2. *“What are the land use-related trends in water flow, turbidity and temperature?”* **[Comments - Stewart]** Asked to include the understanding of mechanisms in monitoring questions, ie. contribution of snowpack **[Comments - Ashlee]** Commented that the terms “flood and drought” are too anthropogenic, and suggested referring to “extreme flows” instead. Ashlee explained that drought is, by definition, meant to be referring to transient changes in hydrological regimes; but we are experiencing a shift into a new permanent hydrological regime. **[Comments - Kevin Atherton]** Asked for the Collaborative to explain how we will fit in the role and impact of man-made alterations (bridges, culverts, etc.) on hydrological regimes to separate these from climate driven effects. **[Comments - Karen Bergman]** Felt unsure of the wording “land-use trends” as she wondered if we would cover all human-caused effects, ie. including the “in-water” human impacts, and suggested alternative wording “land and water use” Suggested to extend spatial boundaries to include South Country. **[Comments - Nick Lapointe]** Said these tentative questions need re-framing and more specificity, namely clarifying and specifically stating the land use elements we want to monitor. Alternative wording proposed by Nick is “How do these indicators relate to land use change?” to explicitly ask about whether observed changes in indicators are related to climate change and land use changes. Nick proposed that we explore these relationships over time. Nick also proposed wording as: “How can we directly link indicators to specific land use issues?” or “How does flow, turbidity, and temperature change with land use?” Nick also suggested involving statisticians from the start to establish data quality objectives to characterize this relationship between variables from the start – making sure we know what you want to do with data before starting to collect them. Nick further commented that we should clearly emphasize the dimensions that we are interested in, and that the changes of indicators should be the focus, rather than starting with climate change and moving down to find indicators **[Comments - Kelly Munkittrick]** Explained we usually stage questions as 1. Is there change? 2. Can we confirm it? 3. What is the extent and magnitude? AND THEN 4. What is the cause? Another comment from Kelly is that monitoring and looking for “trends” is challenging as this is the enemy of “adaptive monitoring” if the goal is to get trends you can never adapt the monitoring program because you lose track of changes - the only way to get around that is to continuity add new monitoring stations wherever you need to for your adaptive evolving

	<p>monitoring needs while maintaining the older monitoring stations to continue monitoring trends <b>[Comments - Cait Good]</b> Liked the addition of sub-questions to help build a better understanding of the proposed monitoring questions, to facilitate the understanding of decision-makers and allow for community outreach using lay language where possible.<b>[Comments - Jessica Mackie ]</b> Jessica proposed to develop sub questions, including forest fires as a stress indicator and being more specific on forest loss mechanisms – disease, forest fires, logging.</p>
<p><b>Part 3: Monitoring Design working session: Frame Monitoring Question on Theme 2</b></p>	<p><b>[Tentative Questions]</b> Stella Swanson presented the tentative questions: 1. <i>“Are in-stream water flow needs of fish met for all seasons and all life stages?”</i> 2. <i>“Are turbidity levels meeting guidelines for protection of fish habitat?”</i> 3. <i>“Is water temperature staying within the range for Westslope cutthroat trout?”</i> 4. <i>“Is the abundance and species distribution of benthic invertebrates staying within reference conditions, as measured in relatively undisturbed locations?”</i></p> <p><b>[Comments - Cait]:</b> is the focus all fish species or only some? Re: Stella: ideally the focus is all fish species. Re: Cait: all fish species is a large challenge – may be worth looking into specific species. Re: Stella: temperature will probably then focus on Westslope Cutthroat trout, and turbidity may be focused on mountain white fish. Cait also mentioned that temperature is the number one concern for Teck at the moment and proposes exploring temperature preferences for fish at different life stages.</p> <p><b>[Comments - Jessica]:</b> proposed to include more of BC Water Sustainability Act wording in the questions. <b>[Comments - Kelly]</b> liked that these are yes or no questions but suggests that decision makers will want to know about lethal changes before it gets there – well before - using “triggers” to warn us at “that we are experiencing changes and moving towards exceedances.” Re: Stella agreed with Kelly that we will need to look at different guidelines and levels of thresholds, knowing that there is no one threshold – many smaller thresholds before the levels become fatal. <b>[Comments - Nick]</b> : Comments that exceedance points are hard to establish for some parameters but if we are able to establish these, it gets easier to measure indicators. Proposed to also look at the range and duration of exceedances. <b>[Comments - Chris]</b> Asked if we will look at any other water quality characteristics other than temp and flow? Re: Stella: plans are to look at benthics (CABIN) and water chemistry parameters with locations for benthics, water chemistry and hydrometrics to be close to one to another.</p>
<p><b>Part 3:</b></p>	<p><b>[Tentative Questions]</b> Stella Swanson presented three tentative Monitoring</p>

<p><b>Monitoring Design working session: Frame Monitoring Question on Theme 3</b></p>	<p>Questions for Theme 3, which are: “1. <i>What were the traditional Ktunaxa land uses in Qukin ʔamakʔis?</i>” 2. “<i>The current Ktunaxa land uses in Qukin ʔamakʔis are...</i>” and 3. “<i>Where, when and what traditional Ktunaxa land uses in the Qukin ʔamakʔis were lost, and where and what can be restored?</i>” <b>[Comments - Myra and Jason]</b> Both happy with the proposed questions 1. and 2. but asked to amend 3. so that instead of saying “uses that were lost”, we use the wording ‘uses that were lost and uses that have declined’ as to a lesser degree, they are interested in restoring uses that have been impacted/have declined although these uses remain available to their communities. Additionally replace the wording ‘traditional land uses’ in 1., 2. and 3. by the wording ‘traditional land and water uses’ or ‘traditional uses’. Additionally, Myra and Jason asked that Yaqit ʔa-knuqit’it lead, control and govern the data coming out of these monitoring programs, as they do not wish to disclose information on some traditional uses. <b>[Design: Spatial scale]</b> Stella suggested further extending to the South Country. Re: Myra and Jason supported the idea of extending the spatial boundaries.</p>
<p><b>Part 4: Communications</b></p>	<p><b>[Website]</b> Re: Evgeni Matveev: is the group in favor of building a website for the Monitoring Collaborative? Re: Partners in the room and online were in agreement, asking to ensure that the website is built so that Partners, including Elk River Alliance, can link to it on their own websites. Re: Stella Swanson: is the group ready to go public with the monitoring questions that were drafted and amended today? Re: Partners were in agreement to go public with monitoring questions for Themes 1, 2 and 3, with some improved wording and sub-bullets to characterize these further <b>[Communications protocol]</b> Re: George Greene proposed to develop a communications protocol jointly with partners, through the Steering Committee, where we clearly state the purpose of public communications, and the guiding principles for public communications. <b>[Community notice board]</b> No consensus was reached on the proposal to inform the community through a <b>[Social media channel]</b>.</p>
<p><b>Part 5: Planning for next 12 months</b></p>	<p><b>[Partners sharing responsibilities]</b> Partners were in agreement to collaborate on fundraising opportunities that were identified including the expected opportunity for a proposal to the EDF. <b>[Estimated fundraising need]</b> Re: Cait Good commented that we need to be careful with budgets for theme 2 - the \$100,000 annual budget is a low estimate, and asked the Collaborative to keep in mind that there are large costs associated with hiring experts and consultants, who are now increasing their consultant costs by at least 20%.</p>