

From Climate Change to water wealth and health: Inuit researchers advancing monitoring capacity for Arctic water systems in Nunavut

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Climate Change can determine water quantity and quality and can easily impact community source water if they occur within a source water watershed; proving harmful to the supply of community fresh water. The protection of source water is critical to ensuring the sustainability of clean community drinking water and local ecosystem health and function. Yet, there is an immense lack of knowledge with regards to source water landscapes, the hydrological regime, and water quality for most Nunavut communities as well as no current source water protection policies.

Building on a previous 2-year youth-based water monitoring project in *Mittimatalik* (Pond Inlet) piloted by Tim Anaviapik Soucie and supported by academic partners and ARCTICConnexion's mentors, we wanted to expand into a project that would build the foundations for source water protection. We aimed to 1) advance local monitoring capacity by promoting youth skills development (*pilimmaksarniq*) and leadership (*nagligusuk*), 2) conduct integrated watershed-scale water monitoring by gathering local observations, field data and satellite imagery, and 3) build water quality indices and decision making tools to aid in community source water protection planning. In parallel to these objectives, we also wanted to create strong connections between this project, the research capacity of our team and the specific needs of community members, and be able to quickly respond to them. In the long run, we also hope for this project to become a model for other Arctic communities and particularly the youth.

Here, we present the preliminary results of our first year of integrated monitoring work. From mid-June to Late September 2017, our local research team monitored 5 streams and 2 lakes for physical parameters (ph, dissolved oxygen, conductivity and temperature), hydrological parameters (water level and flow), and microbial content (fecal coliforms indicators and DNA markers). We are developing and conducting local and regional watershed map analyses and conduct interviews and workshops with the community to identify land use and water provisioning patterns. We also had substantial success in answering community needs with regards to source water,

providing advice and knowledge to residents and fetching and delivering freshwater to community elders during period of water scarcity (Iceberg-made water was not accessible last winter). We also developed a trust relationship between our local team and the academic mentors who provided guidance and training all along the way. This project is continuing on for another two years.