

Master's Opportunity in Assessment of Sediment Quality in the Saskatchewan River Delta

[Markus Brinkmann](#) and [Graham Strickert](#) with SENS are seeking an MES candidate with interest in assessing the quality of sediments in the Saskatchewan River Delta and several reservoirs upstream, who has a solid background in toxicity testing, and/or environmental chemistry. The student will be part of a team of researchers and community partners funded through the [Global Water Futures](#) Indigenous Community Water Research Funding project titled “We need more than just water: Assessing sediment limitation in a large freshwater delta”.

Over the past century, profound changes have occurred upstream of the Saskatchewan River Delta, the largest inland delta in North America and home of Swampy Cree and Métis people. Changes to the delta include major alterations to natural flow patterns, with less water reaching the delta during summer months and erratic flow pulses occurring on a daily basis. Importantly, changes also include trapping of sediment in upstream reservoirs – sediment that was once headed for the delta. To date, sediment starvation in the delta has led to erosion of the channel bed and banks, leaving once-productive off-channel wetlands high and dry, including the Old Channel, a critical water supply line for the Cumberland Marshes, an Important Bird Area. This project will examine whether sediment restoration may be feasible for this once vibrant delta ecosystem. Together, we will determine historical understandings of floods and sediment transport through interviews with elders in the community whose lifespan predates upstream dam construction. We will test for toxicity in the sediments that are currently depositing in reservoirs to ensure that moving sediment back into the delta will not come with harmful side effects. We will create a model of sediment transport to determine where sediment will deposit under different scenarios (reduced or increased flow, addition of sediment, construction of additional dams and weirs). The entire process will be guided by a Delta Stewardship Committee whose members come from all three communities at Cumberland House – Cumberland House Cree Nation, Northern Village of Cumberland House, and Métis Local 42. They will ultimately make a recommendation, based on the information gathered, as to whether to pursue sediment restoration to help rejuvenate and sustain the delta ecosystem and its people.

This Master's Opportunity in Assessment of Sediment Quality in the Saskatchewan River Delta will focus on performing chemical analyses, sediment toxicity tests, contaminant desorption studies and prepare a chemical risk assessment. The candidate student will be trained in aquatic toxicology techniques and risk communication.

Qualifications

- Undergraduate four-year honours degree, or equivalent, in a related field of study from a recognized college or university
- Familiarity with (sediment) toxicity tests and/or chemical analytical methods
- Aptitude for working with qualitative and quantitative data
- Outstanding interpersonal skills
- Must meet all of the College of Graduate and Postdoctoral Studies (CGPS) eligibility requirements

In addition, the candidate should have

- Ability to work in a collaborative manner with team members
- Strong oral and written communication skills
- Willingness to conduct field work in remote environments with extreme temperatures (hot and buggy and well below freezing) while maintaining a sunny disposition
- Experience working in rural community settings
- Valid driver license and a clean driving record
- Valid pleasure craft operator card
- Can back-up and parallel park a truck with a trailer attached

Funding

Funding is available through the [Global Water Futures](#) Indigenous Community Water Research Funding project titled “We need more than just water: Assessing sediment limitation in a large freshwater delta”.

How to Apply

Prior to applying, please contact [Drs. Markus Brinkmann](#) and [Graham Strickert](#). Please quote the title of the position in your email subject. Once permission is received from them to proceed, please begin the admissions process outlined on grad.usask.ca.