



North/South Consultants Inc.

Aquatic Environment Specialists

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Expertise and experience for Surface water quality

I obtained my Masters of Science degree in the area of aquatic toxicology. Since joining NSC in 1999, I have participated in and/or managed a variety of projects dealing with surface water quality over the last 18 years. These projects include: nutrient studies and assessments; design and interpretation of water quality studies for mines; design, conduct, and interpretation of various baseline and post-Project monitoring programs at hydroelectric facilities; monitoring at a coal-tar contaminated site; preparation of the surface water quality component of environmental impact statements (EISs) and Aquatic Effects Monitoring Programs(AEMPs); preparation of reviews relating to water quality and water quality modeling; and development of site-specific surface water quality objectives.

Expertise and experience in the hydroelectric sector

I have gained considerable experience with the hydroelectric sector through involvement in a number of studies conducted over the last 18 years. I have prepared the surface water components of three EISs for hydroelectric facilities, attended Hearings for two of these Projects, designed construction and operation water quality monitoring studies for new hydroelectric developments, and have been managing a long-term multidisciplinary (water quality, phytoplankton, benthos, fish, fish mercury) monitoring program being conducted across Manitoba Hydro's hydraulic system since 2008. I have also assisted with desktop reviews of effects of past/existing hydroelectric developments on surface water quality.



EDUCATION

- 1998** **Master of Science, Department of Biological Sciences, University of Manitoba**
Thesis – The accumulation, distribution, and adverse effects of dietary uranium in Lake Whitefish (*Coregonus clupeaformis*)
- 1993** **Bachelor of Environmental Science (Honours), Department of Environment and Geography, University of Manitoba**

MEMBERSHIPS AND AFFILIATIONS

- Registered Professional Biologist, Alberta Society of Professional Biologists

AREAS OF EXPERTISE

- Project management and client liaison
- Aquatic impact assessment
- Design and supervision of aquatic studies, monitoring programs, and environmental assessments
- Provision of technical expertise on water and sediment quality
- Data analysis, interpretation, research, assessment, literature review, and report preparation

RELATED EXPERIENCE

- **Manitoba Hydro:** Prepared the water and sediment quality components of the environmental impact statement (EIS) for the Keeyask Hydroelectric Generating Station in northern MB and attended the Clean Environment Commission Hearing for the Project. Developed the water quality component of the aquatic effects monitoring program (AEMP) and overseeing implementation of the water quality monitoring program.
- **Manitoba Hydro:** Prepared the water and sediment quality components of an EIS and AEMP for relicensing of the Pointe du Bois Generating Station, MB.
- **Manitoba Hydro:** Prepared the water quality component of an EIS for the Wuskwatim Generating Station in northern Manitoba, attended the Clean Environment Commission Hearings; oversaw and contributed to the preparation of responses to interrogatories (>1000), and designed the water quality component of the AEMP for the Project.
- **Manitoba Water Stewardship/Manitoba Hydro:** Managing implementation of a long-term joint coordinated aquatic monitoring program (CAMP). The program covers waterbodies on and off the Manitoba Hydro hydroelectric operating system and extends from south-central to northern areas of MB and includes aquatic habitat, water quality, sediment quality, phytoplankton, benthic invertebrates, fish, and fish mercury.