Winter LakeKeepers 2025-2026 Methodology:

Participants in the Winter LakeKeepers program are provided with a field manual in their sampling kits, with an online version available at www.alms.ca/winter-lakekeepers. Lakes are sampled up to four times during the winter season, typically between December and March. The sampling design allows participants to choose their lake of interest and sampling site(s), which can be historical sampling locations, areas of cultural significance, or sites of specific interest or concern. Sampling is conducted through the ice at the selected location using an auger.

Each participant receives a sampling kit containing field sheets, insulated gloves, hot water bottle, ice measuring stick, a YSI ProSolo water quality probe (for Dissolved Oxygen (DO), Temperature and Conductivity), nutrient bottles with preservatives, and a chlorophyll-a (ChlA) sample bottle with a filtration kit. Nitrile gloves are included to protect volunteers from the sulfuric acid preservative and to maintain sample integrity during ChlA filtration.

Profile measurements for DO, Temperature and Conductivity are taken at 0.1 and 0.5 meter depths and then at 1-meter intervals starting from just below the ice surface to the lake bottom. Nutrient samples were collected using a composite bottle filled as a grab sample from the lake, then poured into the individual nutrient bottles to prevent the preservative in the pre-charged ammonia vial from entering the lake. Chlorophyll-*a* samples were still collected directly as grab samples near the surface, approximately 0.5 meters below the ice. Chlorophyll-a samples are filtered onshore, with filters submitted to the lab for analysis.

Environmental observations recorded by participants include air temperature, snow/slush depth, total and white ice thickness, water clarity, colour and odour. GPS coordinates of the sampling location are recorded for precise location tracking. ALMS coordinates the delivery of all samples to analytical laboratories and handles the shipment of sampling kits to participants.

Data from the Winter LakeKeepers program is compiled and formatted for upload to the Gordon Foundation's DataStream platform https://mackenziedatastream.ca/explore/#/dataset/f24cde0d-c5d6-4286-921c-6d12cf8e53b7/?ref=search&startDate=2024-12-01T00:00:00.000Z&endDate=2025-04-09T23:59:59.000Z. It is also used for ALMS data visualization and reporting. Data analysis was conducted using the R programming language.