



BULLETIN

www.iahcnc.ca
December 2021

President's Message

Hello IAH-CNC Members! As you'll see from the '*departures and arrivals board*' below, we've had some turnover on the Board of Directors at the Annual General Meeting in September 2021. In fact, 60% of the Board are new to their role, including myself. At the AGM, the membership also approved amending our by-laws to incorporate a new director to represent Northern Canada.

The Board's Departures & Arrivals Board

Role	Previous Director	New Director
President	Diana Allen	Brian Smerdon
Vice-President	Brian Smerdon	John Molson
Membership Officer	Kristina Anderson	Claire Milloy
Communication Officer	Barret Kurylyk	Randy Stotler
British Columbia Rep	Laurie Welch	Sylvia Barroso
Alberta Rep	Frank Magdich	Cynthia McClain
Saskatchewan Rep	Nolan Shaheen	Kei Lo
Manitoba Rep	Jeff Bell	Hartmut Hollaender
Northern Region Rep		Brendan Mulligan

On behalf of the IAH-CNC, I want to thank Diana Allen for her leadership since 2015, which included ensuring that IAH-CNC conformed to the Not-for-Profit Corporations Act (new at the time), fostering growth of the [Early Career Hydrogeologists Network](#) (ECHN), and rejuvenating some of our awards/achievements. I would also like to thank the previous directors for their contributions while serving on the Board, and to the continuing and new directors for volunteering to share their time and energy in supporting IAH-CNC events and operations.

The GeoNiagara 2021 conference in September saw 450 delegates attend in-person and another 140 attend virtually. For hydrogeology, there were 2 concurrent presentation sessions, 2 poster sessions (virtual and in-person), 1 technical tour of the Niagara area, and 1 short-course. The hybrid conference format had a blend of live and pre-recorded presentations, which seemed to work fairly well considering the duality of logistics involved. A big THANK YOU to Jim Roy and Magdalena Krol for representing the IAH-CNC on the local organizing committee.

Looking toward our next annual conference, abstract submission for the [Halifax 2022](#) GAC-MAC-IAH-CNC-CSPG Joint Meeting recently [opened](#). The conference is planned to be mostly in-person with the possibility virtual participation for oral sessions, and both in-person and virtual options for poster presentations. Many thanks to Gavin Kennedy and Barret Kurylyk for representing the IAH-CNC on the local organizing committee.

To keep our community connected in between annual conferences, Éric Rosa (Québec Rep) facilitates our webinar series "[Making the Invisible Visible](#)". Most recently we heard from Dr. Barret Kurylyk on the "Drivers and impacts of groundwater-ocean interactions in the Canadian Maritimes." Stay tuned for another webinar in early 2022! And if you have an idea for a regional or national webinar, please get in touch with your regional representative or Éric!

In our first meeting as a new Board, each director shared their goals as part of introducing themselves. A few central themes emerged regarding:

- Getting better connected with students and early career hydrogeologists.
- Learning what we can accomplish related to diversity, equity, and inclusion.
- Raising the profile of IAH-CNC.

Some of the immediate activities we're working on include:

- Transitioning support for our administrative services (e.g. website, membership renewal) from Gibson Group Management Inc. to [Karma-Link Management Services Ltd.](#) as Wayne Gibson transitions to retirement.
- Supporting the ECHN on events aimed at linking early- and established-career hydrogeologists.
- Investigating how to de-couple our Annual General Meeting from the annual conference. This could allow the AGM to be held (virtually) at the same time each year and better align with financial reporting.



President Brian Smerdon paddling on Maligne Lake (AB) in summer 2021.

If you're able to attend Halifax 2022, I look forward to seeing you there! In the meantime, I wish you wonderful holiday season and all the best in 2022.

Brian Smerdon, Ph.D., P.Geo.
President, IAH-CNC Inc.

CONFERENCE UPDATES

2021 IAH-CNC GeoNiagara Conference Summary

The 2021 IAH-CNC GeoNiagara conference was a hybrid conference, hosted in person and online in partnership with the Canadian Geotechnical Society. IAH-CNC members participated or led the sessions below.

Groundwater-focused sessions, tours, and short courses

- Groundwater issues associated with energy development
- Contaminant hydrogeology
- Groundwater modeling
- Cold regions hydrogeology
- Groundwater-surface water interactions
- Regional groundwater resources and mapping
- Hydrogeological characterization
- Rural groundwater issues
- Groundwater and climate change
- Hydrogeophysics
- Fractured and karst groundwater systems
- Tracers, reactions, and geochemistry
- Farvolden special session
- Hydrogeological tour of the Niagara Escarpment
- Critical thinking in aquifer test interpretation
- IAH Keynote by Dr. John Cherry, 2020 Stockholm Water Prize



2022 IAH-CNC Conference Details

The 2022 IAH-CNC annual conference will be held in partnership with the Geological Association of Canada, Mineralogical Association of Canada, and the Canadian Society of Petroleum Geoscientists at the Halifax Convention Centre in Halifax, NS, Canada from Sunday, May 15 to Wednesday, May 18, 2022. This joint meeting coincides with the 50th anniversary of the Atlantic Geoscience Society. [Abstract submission and registration](#) are already open, with **abstracts due by February 14**, but submit by January 31 for a lower fee. In person and virtual presentation formats possible. Thirteen special sessions on hydrogeology, two groundwater-specific short courses, and a field trip focusing on “Geology, Groundwater, and Wines of the Annapolis Valley” highlight the program.

Registration opens on January 1. Please check the [conference website](#) for updated details as we hope to transition back to an in-person (or hybrid) conference in 2021.



2022 IAH Congress Details



The [2022 IAH Congress](#) will be held in Wuhan, China from September 18-23, 2021. Registration and abstract submission both open on January 30, 2022, with abstracts due on March 30. The welcome letter (below) and the [welcome video](#) provide more information.

The theme of the 49th IAH Congress is “Groundwater Sustainability and Poverty Reduction”. Poverty reduction is a top priority for most countries in the world. Unfortunately, most of the poor countries and regions have been faced with serious problems of water scarcity and contamination. It is the mission and ultimate responsibility of the international community of hydrogeologists to help the people get access to sustainable safe supply of fresh groundwater. With your active participation to share your ideas, experiences and knowledge, I believe this congress in China will be a great success. See you in Wuhan!

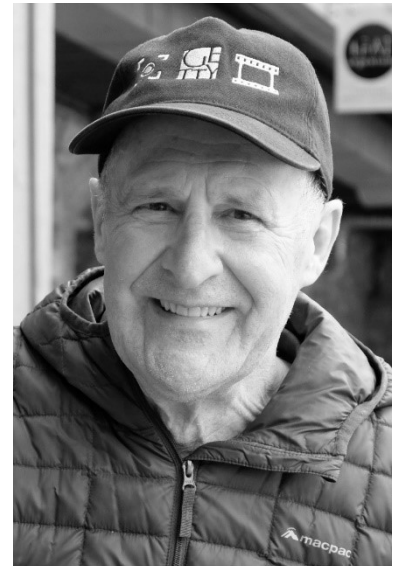
AWARDS

IAH-CNC Lifetime Achievement Award

In addition to the 2021 awardees announced in the June IAH-CNC bulletin, **Alan Peter Kohut**, P.Eng. was presented with the IAH-CNC Lifetime Achievement in Hydrogeology Award in August. Awardees are Canadians recognized by their peers as having made a significant local, national, or international contribution to the profession of hydrogeology over their careers.

Alan was born in Winnipeg, Manitoba in 1946 where he attended the University of Manitoba, graduating with an Honours Science degree in Geology in 1969. As an undergraduate student he worked on field projects during the summer months with the Geological Survey of Canada in the Northwest Territories, Alberta and Saskatchewan. Following several months of extended travel in Central and South America he studied hydrogeology under Professor John Cherry at the University of Manitoba and graduated with a Master of Science degree in 1972. His MSc thesis project involved the early use of oxygen and hydrogen isotopes under the direction of Peter Fritz at the University of Alberta.

Alan then worked for the federal government as an engineering geologist in Saskatchewan on geology and groundwater investigations at damsites and for water supply projects. In 1974-75 he worked on groundwater investigations in northern Nigeria under the guidance of Dr. Robert Farvolden. Alan then joined the British Columbia government in 1975 as a groundwater project engineer. From 1988 to 2002 he was Manager of the Groundwater Section in the Ministry of Water, Land and Air Protection, directing the activities of professional and technical staff involved in hydrogeological investigations, well construction and testing, data management, groundwater quality monitoring, observation wells and reviews of environmental impact projects. His later projects involved developing groundwater regulatory provisions under the Environmental Assessment Act, the Drinking Water Protection Act and the Water Act.



In 2003, Alan established Hy-Geo Consulting in Victoria where he continues to provide groundwater advisory services to various clients in government, industry and to private individuals on topics ranging from monitoring networks, aquifer classification studies, water supply evaluation, expert witness testimony and the preparation of guidance manuals and workshop materials.

Note from IAH-CNC Lifetime Achievement Awardees, Garth van der Kamp and Harm Maathuis

In June, IAH-CNC Lifetime achievement awardees announced included Garth van der Kamp and Harm Maathuis. They sent the following note of thanks and appreciation:

We appreciate receiving the IAH-CNC lifetime achievement awards, especially for the years we worked together on hydrogeological projects and research in Saskatchewan. They were productive and thoroughly enjoyable years. But our work was based on the lifetime achievements of Bill Meneley and Earl Christiansen, who through decades of dedicated and painstaking work laid the foundations of the hydrogeological framework for southern Saskatchewan. It was Bill who established Saskatchewan's groundwater observation well network. Earl's extensive set of publications will forever be consulted for understanding the Pleistocene stratigraphy in southern Saskatchewan. Their signatures remain on thousands of carefully documented and interpreted borehole logs. We salute their memory.



From left to right: Ed Jaworski, Garth van der Kamp, Harm Maathuis, and Dennis Zlipko.

Our thanks in particular go to Ed Jaworski and Dennis Zlipko, our technical assistants, enthusiastic and tireless partners in the field and in the office, and to many others. We've enjoyed the IAH-CNC annual conferences to meet with friends and colleagues and tell stories, both through the formal Proceedings and informally in the hallways and beyond. We are grateful that we were there and could contribute. And the work goes on, in capable hands.

- Garth van der Kamp, Victoria, BC; Harm Maathuis, Saskatoon, SK

2021 Tóth Award

Our student awards are the highlight of our annual conferences. The Tóth Award for the Best Student Presentation in Canadian Hydrogeology was awarded to **Meghan Vissers**, a M.E.Sc. student in the Department of Civil and Environmental Engineering at Western University. Her presentation was titled "*Phosphorus behaviour near the groundwater-stream interface across multiple seasons*". Her abstract is listed below. Congratulations to Meghan for excellent contribution to GeoNiagara!



2021 Tóth Award winner Meghan Vissers sampling for phosphorous.

Tóth Award Abstract: Agricultural practices can cause excess inputs of phosphorus (P) to freshwater catchments leading to eutrophication and harmful algal blooms. The contribution of groundwater and hyporheic (i.e. subsurface) discharges to the delivery of P to streams remains unclear although these inputs may affect the timing and specific form of P (particulate vs dissolved) delivered to a stream. These inputs may contribute to the limited success of prior efforts to reduce P loads in agricultural streams. Improved understanding of the hydrological and geochemical processes governing P fate near groundwater-stream interfaces, and the influence of changing conditions (e.g. seasonality) is needed to better quantify P inputs to streams via subsurface discharges. The objective of this study is to evaluate how spatio-temporal variability in groundwater-stream interactions and streambed chemistry affect P inputs to a headwater agricultural stream via subsurface discharges. Field investigations were conducted along a 40 m stream reach in an agricultural area of the Thames watershed, Ontario, Canada. Streambed temperature mapping and vertical hydraulic gradient measurements provided initial identification of groundwater upwelling and downwelling zones. Groundwater, tile drain and surface water samples were collected approximately monthly over a 12-month period and analyzed for soluble reactive phosphorus (SRP), total P, and parameters that influence P mobility including oxidation-reduction potential (ORP). In addition to discrete monthly sampling, ORP was continuously measured in the streambed sediments at select locations along the reach over a six month period. Preliminary results indicate low porewater SRP concentrations (typically 5 to 70 ug/L) in the high groundwater discharge zones, and high porewater SRP (up to 1000 to 1980 ug/L) in the low groundwater discharge zones. Porewater SRP concentrations are negatively correlated with ORP, and concentrations were found to generally be higher in early fall and early spring compared with winter. Future work will focus on identifying factors contributing to the spatial and seasonal trends in streambed SRP concentrations. The study findings are needed to improve predictions of P loads to agricultural streams via subsurface discharges and thereby improve management practices designed to reduce P stream loads.

2022 IAH-CNC Scholarship for Graduate Studies in Hydrogeology

The Scholarship for Graduate Studies in Hydrogeology was recently awarded to Cécile Coulon of Université Laval. Cécile's PhD research focuses on modelling seawater intrusion in coastal aquifers (and islands). Her approach has been implemented for several islands in the Magdalen Islands archipelago, which has allowed local water resources managers to better locate and quantify freshwater resources. Cécile also contributes to the groundwater community as the Communications Officer for the Canadian Early Career Hydrogeologists' Network of the International Association of Hydrogeologists (IAH-ECHN Canada).

Congratulations Cécile!



PROVINCIAL CHAPTER NEWS

Northern Canada

I'm delighted to announce that, at the 2021 AGM, the IAH-CNC membership voted to approve amending the relevant IAH-CNC by-law to incorporate a Regional Director for Northern Canada. And I'm honoured to have been nominated as the first person to assume this exciting new role!

I look forward to reaching out to northern IAH members and groundwater practitioners to learn directly from you how IAH-CNC might serve you. I would also be pleased to hear from IAH members or groundwater practitioners who reside in southern Canada but practice hydrogeology in the north.

Please consider renewing your membership for 2022 and encouraging other northern hydrogeologists and groundwater practitioners to become IAH-CNC members.

Northern IAH members or groundwater practitioners are encouraged to submit newsworthy items or ideas for future talks or events by contacting me. I look forward to working together!

Brendan Mulligan.
Northern Canada Director

British Columbia

B.C. Recovering After Extreme Weather Event

Many communities are in recovery mode after flash floods and landslides created a provincial state of emergency in mid-November affecting numerous areas in the interior of the province, the lower mainland and on Vancouver Island. The contributing factors and full impacts of these events are still being assessed. Those affected by this tragedy, including agricultural producers and residents will need our support over the short- and long-term. There are many ways to help, including donations to the [British Columbia Floods & Extreme Weather Appeal](#), or to [the GoFundMe centralized hub for B.C. Flood Victims](#).



(Photo credits: B.C. Ministry of Transportation and Infrastructure, Flickr)

Aquifer and Watershed Science Update (Ministry of Environment and Climate Change Strategy)

In light of the recent widespread flooding event across the province, this is a reminder to be aware of the potential for contamination in flooded wells. Wells located in flooded areas should be tested for contaminants (e.g. bacteria and nitrates) and if contaminated by bacteria, they should be disinfected before resuming normal use. Some useful government resources in this regard include [What to do after a flood](#) and the [Water Well Disinfection Brochure](#).

The province recently released the [Compendium of Provincial Groundwater Science and Monitoring Projects: 2020-21](#). This annual compendium is published under the [Water Science Series](#) bringing together a compilation of short summaries of the groundwater science and monitoring projects supported by the province during the 2020-21 fiscal year. The intent is to communicate to a wide audience the nature of the projects undertaken and to provide a quick overview of the project results. Links to key personnel and additional reporting are provided within each summary for anyone who might require more detailed information.

News from the University of Victoria

A community-driven research project called [Koksilah Connections](#) started this year on Vancouver Island, focused on the local First Nations and settler community's engagement in groundwater research. Low flows in the Koksilah River, south of Duncan on southern Vancouver Island, have led to the local first nation, Cowichan Tribes, and the provincial government working together to determine need for and potential scope of a [Water Sustainability Plan](#) under the *Water Sustainability Act*. Koksilah Connections aims to contribute data on groundwater-streamflow interactions through community monitoring, community-driven modeling and to further develop community science such that it has an active role in the shared management and governance of water resources between Indigenous and Settler governments. Koksilah Connections had a successful first summer field season with 11 local volunteers and coordinating M.Sc student, Kristina Disney, collecting over 600 observations of streamflow characteristics. Data collected reveals tributary connection to surrounding water table, tributary-specific fluctuations in temperature and conductivity and which tributaries may have a greater resilience to drought-like conditions. The five-year project funded by an NSERC Alliance Grant is led by University of Victoria in partnership with Cowichan Tribes, FLNRORD, Cowichan Watershed Board and the Koksilah Working Group.

News from Simon Fraser University

The Groundwater Research Group (GRRG) at SFU congratulates the following graduate students who defended over the summer.

Dr. Stephanie Hunter – PhD dissertation “Reconstructing Groundwater Levels from Tree Ring Widths in the North American Cordillera”

Adam Mitton – MSc thesis “An Ecological Assessment of Aquifer-Stream Connectivity in a Groundwater Dependent Stream”

Brynje Johnson – MSc thesis “Mapping the Likelihood of Flowing Artesian Conditions in the Okanagan Basin and Lower Fraser Valley, British Columbia”

Andrew Allen – MSc thesis “Geochemical Compositions of Subsurface Materials and the Potential Impacts on Groundwater Quality from Fugitive Methane within the Peace Region, British Columbia”

The GRRG also welcomes Adam Mitton (PhD candidate), Ariel Greenblatt (MSc candidate), Lea Antesz (MSc candidate) and Stephen Bartlett (MSc candidate) who began their respective programs in September 2021. Adam's doctoral research will focus on understanding groundwater - surface water exchange dynamics in low-gradient and tidally influenced streams in the Lower Fraser Valley. Ariel and Lea will be working on projects aimed at understanding the effects of extreme climate on nitrate contamination and stream temperature, respectively. Stephen, who is co-supervised by Diana M. Allen and Jessica Pilarczyk in the Department of Earth Sciences, is focusing on identifying the inundation extent and depth of the 1964 tsunami and the associated risk of salinization due to similar tsunami events on Vancouver island.

New Scholarship Celebrates the Lifetime Achievement of B.C. Hydrogeologist

In 2021, a new scholarship, the Alan Peter Kohut, P. Eng. Graduate Scholarship in Hydrogeology was established at Simon Fraser University (SFU). This scholarship is in honour of Alan P. Kohut, P. Eng., a former Vice President of the International Association of Hydrogeologists – Canadian National Chapter (IAH-CNC) and supporter of the BC Groundwater Association (BCGWA). In August 2021 Alan also received the IAH-CNC *Lifetime Achievement in Hydrogeology* award (see citation in this bulletin). The scholarship will be granted annually to a full-time graduate student in SFU's Department of Earth Sciences who has demonstrated academic excellence and promise of outstanding achievement with particular emphasis on intellectual ability, originality, and ability in research hydrogeology. The value of the scholarship is \$1500 annually.

Looking to support an SFU graduate student in hydrogeology? Consider donating to the Alan Peter Kohut, P. Eng. Graduate Scholarship in Hydrogeology. More info can be found [SFU Advancement and Alumni Engagement \(https://give.sfu.ca\)](https://give.sfu.ca) A donation receipt is available.

Professional Governance Act Update

The *Professional Governance Act* (PGA) is new legislation that governs the practice of B.C.'s professional engineers, geoscientists, agrologists, applied biologists, applied science technologists and technicians, and forest professionals. The PGA took effect on February 5, 2021, and September 30, 2021 was the Engineers and Geoscientists of B.C. deadline for Firms to Register and obtain their Permit to Practice under the legislation. To find out more about the responsibilities and requirements for professionals under the Act, consult the [Office of the Superintendent of Professional Governance \(OSPG\)](#), and [Engineers and Geoscientists of B.C.](#)

Important Water Sustainability Act Deadline Fast Approaching for Existing Groundwater Users

Water professionals, industry and regulators across the province are promoting a critical deadline which is now less than four months away. **March 1, 2022** is the deadline to apply for a water license for those who were using groundwater from a well or dugout on or before Feb. 29, 2016, for non-domestic purposes such as irrigation, commercial or industrial use. Prior to the *Water Sustainability Act* coming into force on February 29, 2016, groundwater users had common law access to divert and use groundwater. Common law access was extinguished when the WSA came into effect and the legislation provided a 6-year period of transition for existing non-domestic groundwater users to obtain a statutory right (in the form of a water license) that recognizes their historic groundwater use. Existing non-domestic groundwater users who have not applied by the deadline will lose the opportunity to obtain that right and must stop using groundwater after March 1, 2022, until a license is obtained. If they apply after the deadline, they will be treated as a new user and will not receive recognition for their historical date of first use. That historical date is important because during water shortages, older licenses get priority access to water. For existing non-domestic groundwater users in water-stressed areas, it may not even be possible to obtain a license if they do not apply before the deadline. [More information is available at this link](#). Water license applications are submitted via [Front Counter B.C.](#) A water license is not required for a household well or groundwater used for domestic purposes, such as watering lawns and gardens. Domestic groundwater users are encouraged to register their well for free, so that their domestic use can be protected.

Introducing Your New B.C. Director

Former B.C. Director, Laurie Welch, P.Geo., stepped down from the IAH-CNC in September 2021 after over seven years on the board. We are grateful for Laurie's many contributions during her tenure, including organizing in-person and online workshops to promote professional development and networking.

Taking over the B.C. Directorship is Sylvia Barroso, P. Geo., a regional hydrogeologist with the Ministry of Forests, Lands, Natural Resource Operations and Rural Development in Nanaimo. "Over 20 years ago I started off as an environmental technologist doing field assessments of lakes, streams and wells, later completing a BSc in Earth Sciences at the University of Victoria, and an MSc in Hydrogeology at the University of Waterloo. My career has focused on groundwater protection, and studies of groundwater-surface water interaction and drinking water quality/quality using isotopes and geochemistry. I am excited to take on this new volunteer role and to hear from members with ideas for events, training, and other opportunities to work together."



Publications Update - Recent hydrogeology studies of interest in B.C.

Groundwater recharge in a confined paleovalley setting, Northeast British Columbia, Canada. A. Maximilian Goetz, Roger D. Beckie, Aaron G. Cahill in *Hydrogeology Journal* (May 2021)

An analytical methodology to estimate the changes in fresh groundwater resources with sea-level rise and coastal erosion in strip-island unconfined aquifers: illustration with Savary Island, Canada. R. Chesnaux, D. Marion, L. Boumaiza, S. Richard, J. Walter in *Hydrogeology Journal* (January 2021)

Hydrogeology and Environmental Flow Needs Assessment of a Groundwater Licence Application near Lumby, B.C. Richard J. McCleary and David A. Thomson. B.C. *Water Science Series (WSS) 2021-02*. (March 2021)

Classification of Groundwater Response Mechanisms in Provincial Observation Wells Across British Columbia. April Gullacher, Diana M. Allen and Jonathan D. Goetz. *WSS 2021-03*. (March 2021)

Assessment of Managed Aquifer Recharge (MAR) and Aquifer Storage and Recovery (ASR) Potential in British Columbia: Regional Opportunities and Regulatory Approaches. Ministry of Environment and Climate Change Strategy. *WSS 2021-05*. (April 2021)

Estimating Groundwater Availability for Allocation in British Columbia. Alan P. Kohut. *WSS 2021-07*. (June 2021)

GIS Modelling of Sea Water Intrusion Risk along British Columbia's Coast. Tim Sivak and Mike Wei. *WSS 2021-06*. (June 2021)

Sylvia Barroso, P.Geo.
BC Director

Alberta

Happy winter all! My name is Cynthia McClain and I am the new Director for Alberta. Big thanks to Frank Magdich for his tenure and helping to make a smooth transition. My goals for IAH-CNC in the coming 3 years center around bringing the Alberta members together in a digital space, improving diversity & inclusion, and assisting the Early Career Hydrogeologists Network with setting up an informal networking & mentorship program. Please reach out if you are interested in volunteering in Alberta or have announcements for the next bulletin (cynthia.mcclain@ucalgary.ca).

With drought conditions in southern Alberta in 2021, groundwater has been in the [news](#), including recognition of its role in the historic low flows in the Bow River.

A new [Directive](#) was released by the Government of Alberta in September 2021 on managing and monitoring groundwater in contact with bitumen for in-situ oil sands operations. Similar to the 2018 Directive on thermally-mobilized constituents, the new Directive also manages impacts to groundwater from known releases with prescribed monitoring between sources and potential environmental receptors, and data submitted to the Alberta Energy Regulator in reports.

One of the highlights from Alberta IAH-CNC members' presence at the GeoNiagara 2021 conference was Dr. Jessica Liggett's presentation on the recently released [Hydrogeological Regions of Alberta](#) by the Alberta Geological Survey. Please explore the interactive maps, photos, illustrations and descriptions on the ArcGIS StoryMaps!

The University of Calgary and University of Alberta co-hosted the Darcy Lecture by Chen Zhu on November 12, 2021 on the topic of carbon capture and storage.

Looking forward to 2022. The [Canada Water Resources Association 2022 National Conference](#) will be held in the beautiful Rocky Mountains in Canmore, Alberta from June 5-8, 2022. We would like to invite you to consider attending and submitting an abstract to a session I am co-hosting on "Surface Water-Groundwater Interactions with a Changing Climate".

Watch out for a World Water Day 2022 event Groundwater: Making the Invisible Visible hosted by Southern Alberta Institute of Technology on March 22, 2022!

Cynthia McClain
Alberta Director

Saskatchewan

It was with great pleasure to introduce myself as the new IAH-Sask director for the next 3 years. I am currently the Manager of Groundwater Services at the Saskatchewan Water Security Agency (WSA) and have been a member of IAH for over 15 years. I have some big shoes to fill in replacing Nolan Shaheen, the previous IAH-CNC director for Saskatchewan. He originally joined the IAH while studying for his M.Sc in 1988 and has been member of the IAH-CNC since 1989. Nolan is stepping down after being the Saskatchewan director since 2008. Some of Nolan's favorite memories as director include working with the Saskatchewan Geologic Society to host Dr. Hayashi 2018 Darcy lecture at the University of Regina and seeing his friends and colleagues, Harm Maathuis and Garth van der Kamp receive their well-deserved Lifetime Achievement awards in 2021. He will continue to support the IAH-CNC as we navigate the path forward in highlighting the importance of groundwater and find novel approaches to increase the membership in Saskatchewan.

A piece of news I would like to share is that Saskatchewan Polytechnic has re-initiated the educational field camp at the Hannin Creek Education and Applied Research Centre (HCEARC) after it was suspended last year due to the health restrictions. HCEARC is a multi-purpose educational facility located close to the shores of Candle Lake in Saskatchewan. It is jointly owned and operated by the Saskatchewan Wildlife Federation and Saskatchewan Polytechnic. Several programs at Saskatchewan Polytechnic use the HCEARC for field camps where students are able to gain valuable hands-on learning and field skills in a real-world setting. There are 2 groundwater wells and more than 20 piezometers scattered across the HCEARC property. These wells and piezometers are used by the Civil Engineering Technologies - Water Resources program at Saskatchewan Polytechnic to perform an aquifer test during their annual water camp in June. Another activity students undertake is measuring the stage and discharge in Hannin Creek. They also use surveying equipment to produce a topographic map and groundwater surface map of the camp. The groundwater surface map is used to determine the direction of groundwater flow in the landscape. Students from the Master of Water Security program from the Global Institute for Water Security (GIWS)/School for Environment and Sustainability at the University of Saskatchewan are also trained in groundwater field methods at this site each year. The GIWS has also installed a weather station, soil moisture probes and piezometers at the HCEARC for educational and research purposes.

As always, if any of our members have ideas for future groundwater events, please do contact me to explore such opportunities at kei.lo@wsask.ca

Kei Lo
Saskatchewan Director

Ontario

Summer and fall this year in Ontario were busy.

Ontario IAH-CNC events and planning:

The IAH-CNC co-sponsored the 2021 Eastern Ontario Geoscience Open House, which was held virtually on November 23rd through 25th. The event was hosted by the City of Ottawa and the Rideau Valley Conservation Authority. The theme was "Improving the Way We Work", and each day examined different topics related to new geoscience guidelines and regulations to support development planning. Day 1 focused on hydrogeology and regional geoscience information, day 2 focused on excess soils and marine clay hazards and day 3 focused on stormwater management and low impact development. The event included various presentations from Federal, Provincial and Municipal government agencies, as

well as local Conservation Authorities and consultants. There were over 200 participants registered for each day of the event and each session included an engaging question period. We would like to thank everyone involved with organizing and participating in the event and we look forward to next year's event!

Ontario IAH members along with their peers and colleagues from the rest of the country had a great opportunity to join IAH-CNC webinar series in hydrogeology 'Make Invisible Visible' and also IAH members joined some of recent groundwater seminar series in hydrogeology through a webinar session hosted and organized by RQES. RQES webinar conference was very well received and attended by IAH-CNC members who joined webinar remotely from both provinces Quebec and Ontario. We would like to extend our thanks to presenters and organizers for these great webinar conferences and look forward to upcoming events.

The 2022 (7th annual) Regional-Scale Groundwater Geoscience in Southern Ontario Open House organized and presented by the Ontario Geological Survey (OGS), the Geological Survey of Canada (GSC) and Conservation Authorities (CA) will take place as a virtual event on February 15th and 17th, 2022. 'Save the date' details for the Open House are provided in this Bulletin. This event is planned as a live virtual event hosted via Zoom and is sponsored and supported by IAH-CNC Ontario. IAH-CNC Ontario would like to extend thanks to all presenters and hosts.

Get to know your IAH-CNC Ontario Regional Directors:

Tessa Di Iorio is a hydrogeologist working with the Planning, Infrastructure and Economic Development Department at the City of Ottawa. She is the City's Risk Management Official under the *Clean Water Act* and implements the Source Water Protection program. Tessa is also a technical reviewer for new development applications related to private servicing or groundwater impacts, and manages various regional and local groundwater studies within Ottawa.

Nataliya Tkach is a senior hydrogeological and a project manager with the hydrogeology group of the earth and environment department at EXP Services Inc (Brampton, ON). She has over twenty years of experience completing a variety of hydrogeological, hydrogeotechnical and mining projects related to surface water and groundwater resources and its protection. She provides hydrogeological technical support for civil projects including subdivisions, transportation, buildings, and servicing from Class EA, sub-watershed studies, Block Plan and MESP studies to detailed design and infrastructure related projects (e.g. water and sewer mains and transportation systems) in GTHA and beyond. Nataliya has served the IAH-CNC as Ontario Representative since 2012. It is an honour to be re-elected as the IAH-CNC Ontario Regional Director this fall and I am looking forward to continue serving the IAH-CNC.

We are actively looking for presenters for Ontario local webinars and local events and if you have any suggestions or ideas for regional events, presentations and seminars, please fill free to contact us: Nataliya Tkach at nataliya.tkach@exp.com and Tessa Di Iorio at tessa.diiorio@ottawa.ca.

We would like to take this opportunity to wish everyone Safe and Happy Holiday Season and Best Wishes to All for 2022!

**Nataliya Tkach and Tessa Di Iorio,
Ontario Directors**

Québec

The year 2021 is ending and the results of several projects carried out as part of the *Programme d'Acquisition de Connaissances sur les Eaux Souterraines du Québec* (PACES) will soon be available. This is the case for studies focusing on the territories of the (1) Côte-Nord, Mauricie and Lanaudière, (2) Bas Saint-Laurent and Gaspésie, (3) Laurentians, (4) Eastern Townships, (5) Magdalen Islands and (6) territory of the Cree community of Eastmain, which should be published in the spring of 2022. These studies will improve knowledge of the groundwater resources in the province and complement [previous studies conducted over at least the past 18 years](#). The year 2021 was also marked by the completion and

submission to the Ministry of the Environment of several studies associated with the protection of drinking water sources, in particular due to the deadline of April 1, 2021 prescribed by the *Règlement sur le prélèvement des eaux et leur protection* (RPEP). These studies and reports focused on evaluating the vulnerability of groundwater and defining protection areas for Category 1 groundwater catchments which were required five years after the entry into force of the RPEP (April 1, 2015). Finally, I take this opportunity to invite all students, and the professional and scientific community of Quebec, to take an interest in the next IAH-CNC conference to be held in Halifax in May 2022. Abstract submission for this conference will be possible from December 2021.

L'année 2021 tire à sa fin et les résultats issus de plusieurs projets réalisés dans le cadre du *Programme d'Acquisition de Connaissances sur les Eaux Souterraines du Québec* (PACES) seront bientôt disponibles. C'est le cas notamment des études associées aux territoires (1) de la Côte-Nord, Mauricie et Lanaudière, (2) du Bas Saint-Laurent et Gaspésie, (3) des Laurentides, (4) de l'Estrie, (5) des Îles-de-la-Madeleine et (6) du territoire de la communauté crie d'Eastmain qui devraient être publiées au printemps 2022. Ces études permettront d'améliorer les connaissances sur la ressource en eau souterraine au sein de la province, avec [une couverture spatiale en progression depuis maintenant près de 18 ans](#). Notons également que l'année 2021 aura été marquée par la réalisation et la transmission au ministère de l'environnement de plusieurs études associées à la protection des sources d'eau potable, notamment en raison de l'échéance du 1^{er} avril 2021 prescrite par le *Règlement sur le prélèvement des eaux et leur protection* (RPEP). Cela s'explique par le fait que des études étaient requises cinq ans après l'entrée en vigueur du RPEP (1^{er} avril 2015), notamment en ce qui concerne la vulnérabilité des eaux souterraines et les aires d'alimentation et de protection des captages d'eau souterraine de catégorie 1. Finalement, je profite de l'occasion pour inviter l'ensemble de la communauté étudiante, professionnelle et scientifique du Québec à s'intéresser à la prochaine conférence de l'IAH-CNC qui aura lieu à Halifax en mai 2022. La soumission des résumés pour cette conférence sera possible dès décembre 2021.

Éric Rosa
Québec Director

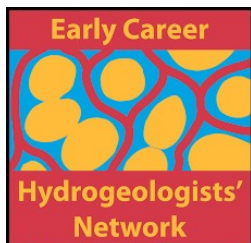
Atlantic Canada

Planning for the [GAC-MAC-IAH-CNC-CSPG Halifax May 15-18, 2022 Joint Meeting](#) is in full swing, with IAH-CNC Atlantic members active on the local organizing committee and on various sub-committees, including field trips, the technical program, early career events, and equity diversity and inclusion activities. The technical program includes 14 hydrogeology sessions, with [the call for abstracts going out December 1st, 2021 and closing February 14th, 2022](#). Presentation options include in-person poster or oral presentations or virtual oral presentations. We look forward to seeing everyone in Halifax for what promises to be a great conference with lots of interesting sessions!

The Atlantic region has been featured in several excellent recent IAH-CNC national webinars, including a talk in June by John Drage of the Nova Scotia Geological Survey on 'Building a low-cost, real-time, shallow aquifer monitoring network in Nova Scotia' and a talk in November by Dr. Barret Kurylyk of Dalhousie University on 'Drivers and Impacts of Groundwater-Ocean Interaction in the Canadian Maritimes'. Both of these talks are available on the [IAH-CNC website](#). The Atlantic IAH-CNC will also be hosting a virtual talk on December 9th, 2021 by new Dalhousie University Assistant Professor Dr. Lauren Somers on 'Groundwater resources in the Peruvian Andes under a changing climate'. Additional IAH-CNC Atlantic talks are planned for early in the new year.

Also, just a reminder that Atlantic IAH members or groundwater practitioners are encouraged to submit newsworthy items or ideas for future talks or events by contacting me.

Gavin Kennedy
Atlantic Director



Early Career Hydrogeologists' Network Update

Ryan Threndyle, ECHN President

The ECHN has had an active fall behind the scenes, planning for the new year and re-structuring internally. Cécile Coulon said goodbye to her role as the director of communications following many years of outstanding service. All of the ECHN wishes her luck as she focuses on closing out her PhD in 2022! Sabina Rakhimbekova, an assistant professor at Western University, has joined the ECHN executive to aid in the planning and promotion of events, we are thankful to have her on board!

Stay tuned to our LinkedIn page and your emails for information on upcoming programs and webinars in the new year. If you haven't yet, check out our [website](#) where you can view up to date information about our programming. As always, feel free to reach out to iahcnc.earlycareer@gmail.com with any questions, we're always happy to hear from you!

We hope everyone has a restful holiday season!

Ryan Threndyle

President of IAH CNC ECHN

Membership Updates

2021 Summary

Members like you are the driving gradient of our purpose at the IAH-CNC, which is to promote the study, knowledge, exchange, and application of hydrogeological information in Canada and to promote and facilitate the international exchange of information on groundwater. **Thank-you!**

In 2021, the IAH-CNC welcomed **over 330 members** from across Canada, including university students, who participated in the annual conference and numerous

engaging academic webinars. We also sponsored 11 members from developing countries, via IAH. These are healthy membership numbers for a second pandemic year and not far from our recent peak membership.

The *Board of Directors* would like to gratefully acknowledge our five national **corporate members**. Your support enables us to better fulfill the IAH-CNC's and IAH's purposes. Please get in touch with us if you would like to discuss options for corporate engagement. See: [CNC link](#) / [IAH link](#)

corporate members

the IAH-CNC *Board of Directors* **thanks you** on behalf of all members

**MATRIX
SOLUTIONS**

BURNSIDE

RWDI

SRK

MTE

2022 Renewal Period

The membership renewal period has begun and we are privileged to announce that **fees are unchanged since 2020**. You should have received or will shortly receive **email notification** with related details.

As a reminder, you are encouraged to **renew via your national chapter's [member login](#)** page. This avenue of renewal better supports our operations, for which we transfer your membership information and fees to our international umbrella association on your behalf.

new Membership Director

Former Membership Director, Kristina Anderson, P.Geo. (ON) relayed-on the membership flag after two terms on the Board of Directors. Kristina's regular behind-the-scenes contributions were invaluable to the continued success of the association, and the *Board of Directors* warmly acknowledges her work and dedication. Best wishes and **thank-you, Kristina!**

As your new Membership Director, my goals for this term include the following.

- Encourage the Board of Directors to explore simple options, which hereto have not been considered, to further fulfill the purposes of the association and that would promote:
 - a more **diverse** membership, which better reflects the breadth of Canadian culture, demographics and groundwater regions;
 - increased membership **engagement** to promote the associations purposes.
- Produce a simple **membership strategy**, as to equitably promote related aspects of the association's purpose within the Board of Directors and wider membership.
- Produce succinct Membership Director **position documentation**, as to fully / formally record the position's roles, obligations, and activities.

My name is Claire Milloy. I am a Professional (environmental) Geoscientist (P.Geo.) in Ontario. I hold a M.Sc. via Civil Engineering at Queen's University (ON) and I am employed by a Conservation Authority located in Ottawa. In my current role, I undertake special interdisciplinary projects and provide technical advice internally and to municipal partners about groundwater resource character, health, protection, and use; and about groundwater roles in watershed hazards and in the hydrological function of natural features. I specialize in fractured-rock groundwater resource characterization, including related surface water groundwater interactions.

Please **contact me** (eongeosci@outlook.com) at your convenience with related suggestions, comments, and question.

**Claire Milloy, P.Geo.
Membership Director**

From the *New* Editor

Thanks for reading all the way to the end! I would like to express appreciation on behalf of the IAH-CNC to outgoing Communications Director, Barret Kurylyk. I am getting up to speed on all of the ways we communicate with the membership, and I hope to live up to the standard set by Barret over the past few years!

Your new Communications Director, **Randy Stotler**, moved back to Canada in January 2020 to take a position as Associate Professor in the Department of Earth and Environmental Sciences at the University of Waterloo, where he previously received Ph.D. and M.Sc. degrees. Between 2009 and 2020, he was a research associate with the Kansas Geological Survey and then a professor at the University of Kansas (2009-2011) in the Department of Geology (2011-2019). Randy has research interests in water availability, groundwater recharge, isotope hydrogeology and geochemistry, permafrost hydrogeology, Canadian Shield hydrogeology ... well the list could go on for quite a while. Somehow, Randy seems to find all of the odd tourist attractions while conducting field work, including the world's largest ball of twine (well, one of three with the claim), and Carhenge! Contact him anytime with ideas or suggestions on how to improve communications with the membership, or ideas/topics to include in the bulletin!



Website: I am finally updating the website again! We are working on making the website easier to update, and are open to feedback on how to improve it to serve you better. What kinds of information would you like to see there?

Bulletin Submissions: The next issue of the Bulletin will be published in June 2022. Submissions are welcomed on or before June 1, 2022. Please send contributions to randy.stotler@uwaterloo.ca.

Advertising: Paid advertisements in this Bulletin are possible. You do not have to be a member to advertise; however, there are discounted rates for IAH corporate member companies. Contact randy.stotler@uwaterloo.ca for current rates.

Webinars: Stay tuned for announcements and details regarding upcoming webinars.

Social Media: If you are on Twitter, please follow [us](https://twitter.com/IAH_CNC) and pass along any relevant information (e.g., web links) you would like tweeted (Twitter direct message or email to randy.stotler@uwaterloo.ca). **We are especially interested in tweeting about new publications from ECHN members.** What other social media platforms should IAH-CNC make use of to connect with you? Email me and let me know!

IAH-CNC INC. CONTACT INFORMATION

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ATLANTIC REGION – Gavin Kennedy

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Other Positions

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e-mail: dallen@sfu.ca

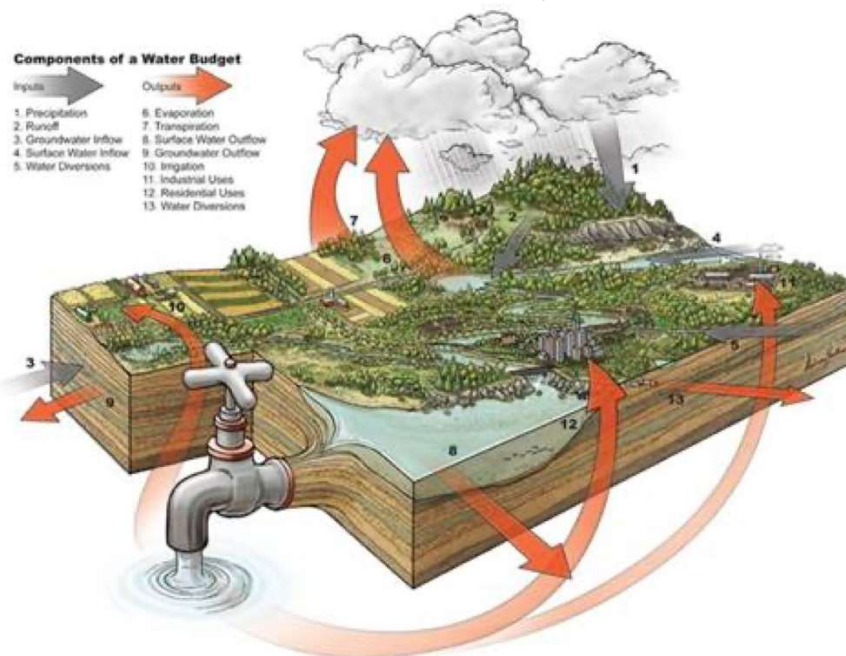
ECHN-CANADA PRESIDENT – Ryan Threndyle

email: ryan.threndyle@dal.ca

SAVE THE DATE

Regional-Scale Groundwater Geoscience in Southern Ontario Open House

February 15th and 17th, 2022
Virtual event hosted by Zoom



The 2022 open house for the southern Ontario Groundwater Community will consist of two half-days of presentations hosted collaboratively by the Ontario Geological Survey, the Geological Survey of Canada and Conservation Authorities. Both days will include presentations by Federal, Provincial, Conservation Authority, academic and private sector collaborators involved in groundwater studies in southern Ontario. The objective of the open house is to update groundwater practitioners and water managers on the activities of the respective agencies and collaborators.

For more information or to provide feedback, please contact:

Abigail Burt (OGS): Abigail.Burt@ontario.ca

Don Ford (TRCA): dford@trca.on.ca

Steve Holysh (ORMGP): sholysh@owrc.ca

Hazen Russell (GSC): hazen.russell@canada.ca

Please circulate this information amongst your colleagues

*** Registration and more information coming soon ***



Ontario 

