



A P E G S

*Association of Professional Engineers
& Geoscientists of Saskatchewan*

THE PROFESSIONAL

EDGE

ISSUE 190 • JANUARY/FEBRUARY 2021



Profiles in Achievement



Just the *facts*

about Engineers Canada-sponsored
Critical Illness Insurance

Maybe you can relate to Jen,* P.Eng., 2007. She's an established civil engineer, loves her job, loves her two children, and she and her partner are grateful for their health.

Or maybe you can relate to Matthew,* P.Eng., 1996. He's an established chemical engineer, loves his job, loves his daughter, and he's grateful for his recovery from a stroke. Unfortunately, his wife was recently diagnosed with breast cancer.

Matthew and his family have had a tough time, while Jen and her family have been lucky. But that doesn't mean Jen's family is immune to critical illness – which is why **it's important to be prepared.**

Manulife

1 Canadian Cancer Society, "Nearly 1 in 2 Canadians expected to get cancer: report," June 20, 2017.
2 Heart & Stroke, "Stroke Report 2016 just released," June 9, 2016.
3 chinnews.ca, "The Health of Canadians: Looking back at 60 years of heart health," February 3, 2015.
4 Net 5-year survival rate.
5 Survival rate for those who have a heart attack and get to a hospital. Heart & Stroke, "Getting to the Heart of the Matter," 2015.
6 Heart & Stroke, "The Heart & Stroke 2017 Stroke Report," July 19, 2017.
7 TheRecord.com, "Cancer patients face high cost of pocket expenses," April 15, 2017.

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Underwritten by
The Manufacturers Life Insurance Company

✓ Critical Illness is all too common.

The statistics relating to critical conditions are eye-opening:



1 in 2

Canadians will develop cancer.¹



1 in 3

Canadians will develop stroke, dementia, or both.²



1 in 2

Canadians will be impacted by heart disease.³

✓ More people are surviving critical illness

Certainly, the good news is that, despite the fact that facing a critical illness can be frightening, **more and more people are surviving** these days thanks to medical breakthroughs. Consider these numbers:

	Cancer	Heart attack	Stroke
Survival rate	60% ⁴	95% ⁵	80% ⁶

✓ But what about the financial cost?

Survival is priceless. However, **many cancer patients spend over \$20,000** on various costs during their treatment.⁷ And consider the lost wages suffered by the more than 400,000 Canadians who live with long-term disability due to stroke.⁶

✓ Critical Illness Insurance can help

Engineers Canada-sponsored Critical Illness Insurance **pays a lump sum** upon diagnosis of a covered life-threatening condition, to help in any way you choose. You and your spouse may apply for benefit amounts between **\$25,000 and \$1 million**. Choose one of two plans to cover either 6 or 18 conditions.

To learn more and apply:



manulife.ca/apecsCI



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& Geoscientists of Saskatchewan





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& Geoscientists of Saskatchewan

Regulating the professions. Protecting the public.

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Deadlines:

Issue: March/April 2021
Submit to APEGS by: February 5, 2021
Publication Distributed Week of: March 29, 2021

<https://www.apegs.ca/Portal/Pages/Advertising-Edge>

Subscription Rates:

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CORRECTION:

In Issue 189 of *The Professional Edge*, a primary source of information for the article on page 32 is Lee Barbour, P.Eng. M.Sc, Ph.D.

Issue 189 of *The Professional Edge* contained an error with regards to the Call for Council Nominations. Corrections have been made and can be found in this issue on Page 18. We apologize for any confusion.

President's Message



Andrew R. Lockwood, P.Eng., FEC

I sit here at my kitchen table recycling a stale joke for my fifth president's message while my editor audibly sighs in resignation. This edition does something engineers and geoscientists typically don't do - we are celebrating our members!

I want to start by giving my coveted first gold star* to our soon-to-be newest professional members that recently completed the Professional Practice Exam. These folks will soon take direct responsibility for their work and contribute to the safety and prosperity of society. I look forward to welcoming them.

My second gold star** goes to the engineers at Sasktel for crafting a long acronym (LoRaWAN), and then developing cutting-edge technology to match it. This type of enabling technology will benefit Saskatchewan (and our future robot overlords) for years to come. I was excited to see we have it for the first time.

Segueing from new members and cutting-edge technology, I want to showcase achievements further down the road. My third gold star*** goes to the Orano Cluff Lake Mine decommissioning.

This profile highlights the need for engineers and geoscientists to be involved in the full life cycle of infrastructure in the province. The responsible winding down of sites falls squarely within our ethical duty to protect the environment on behalf of the public.

My fourth gold star**** goes to Shawna Argue, P.Eng, FEC, FGC (Hon.), a past-president and current director at APEGS for her recent University of Regina Lifetime Achievement Award. This is a person who absolutely deserves the spotlight for the years of effort she has put into the association. I am proud to count her as a friend and colleague.

Finally, I would direct your eyes to the annual meeting notice in this edition. We are only partially in control of our destiny as we conform to health guidelines, but I have a lot of faith in our planning team and the adaptability they have shown in the past. I look forward to seeing everyone there, in whatever form it takes!

* No cash value. May exchange for a lifetime of unpaid volunteerism with the association.

** Again, no cash value. I am not sure why you thought it would be different.

*** Maybe this gold star was mined from Cluff Lake?

**** Mention this gold star and I am certain Shawna will buy you a coffee and cinnamon bun the next time you see her.



Profiles in Achievement

Usually our job at *The Professional Edge* is telling Saskatchewan engineering and geoscience stories to APEGs members. This month we're turning the tables. We invited APEGs members to send us pictures and descriptions of their proudest achievements from 2020.



We want to thank the contributors to this special feature. For those of you who didn't contribute this year, we will be doing it again next year, so keep your cameras handy to capture your 2021 engineering or geoscience success stories.

2020

SRC's Pipe Flow Technology Centre™ celebrates 60 years



Saskatchewan Research Council

Saskatchewan Research Council's Pipe Flow Technology Centre in Saskatoon is celebrating its 60th anniversary.

The Company

The Saskatchewan Research Council (SRC) is Canada's second largest research and technology organization. With nearly 300 employees, \$91 million in annual revenue and nearly 75 years of experience, SRC provides services and products to its 1,500 clients in 27 countries around the world.

The Achievement

SRC is celebrating the 60th anniversary of its Pipe Flow Technology Centre™ in Saskatoon. Pipe Flow, acknowledged as an international leader in its field, has contributed greatly to the needs and the advancement of the mining and oil and gas industries in Saskatchewan and Canada.

Established in 1960, Pipe Flow offers mining and other resource developers a unique opportunity to study slurries and test industrial samples and processes in a controlled environment that mimics the client's actual operating conditions.

The data generated from this work is analyzed by the Centre's experts to understand and improve the client's field operations. This work is valuable to industry because of the difficulty trialling new technologies in live field operations.

Pipe Flow is also home to some of the world's leading experts in slurry fluid mechanics, supported by a strong group of technologists. These two groups work together to design and run experiments, ensuring clients receive usable, high quality data.

In addition to providing pilot plant and slurry loop testing, Pipe Flow has developed mechanistic models to represent slurry flow behavior.

SRC offers courses in slurry pipeline systems which include training in the use of the SRC Pipe Flow Model. To date, Pipe Flow has trained more than 700 engineers in the use of the basic model and more than 100 in the more advanced multi-species model.

Pipe Flow also uses advanced instrumentation in its work to support the mining and oil and gas industries. SRC's 2-D Gamma Ray Tomography (GRT) unit provides near real-time two-dimensional density readings of slurry flows, powerful information that Pipe Flow's engineers use to improve understanding and modeling of complex flow behavior. As well, Pipe Flow is home to the Shook-Gillies High Pressure and High Temperature (HPHT) Facility, which provides experimental capabilities for volatile materials and HPHT operating conditions.

Since its founding, the Pipe Flow Technology Centre™ has conducted hundreds of slurry pipeline research and development programs and projects. This has included ground-breaking pipeline and fluid mechanics applications and projects for clients on topics such as oil sand mixtures, mineral slurries, and heavy crude oil mixtures.

All this important work has helped resource industries improve the efficiency and environmental performance of their operations.

The Team

This work is led by a team of engineers, scientists and technologists including Reza Hashemi, P. Eng., Lesley McGilp, P.Eng., Melissa McKibben, P. Eng., Ruijun Sun, P.Eng., and Ryan Spelay, P.Eng.

Misty Clifton Engineering is Indigenous owned and operated



Misty Ventures Inc.

Misty Clifton Engineering is a partnership of Misty Ventures and Clifton Associates Ltd.

The Company

Misty Ventures Inc. is the economic development arm of Mistawasis Nêhiyawak. Misty Ventures is the holding company that manages all of the wholly owned subsidiaries and partners for Mistawasis Nêhiyawak.

Misty Clifton Engineering is a partnership between Misty Ventures (Mistawasis Nehiwayak) and Clifton Associates Ltd. that specializes in civil, geotechnical and environmental engineering.

The Achievement

Misty Clifton Engineering (2017) is a majority-Indigenous-owned and operated start-up engineering consulting company co-founded by Misty Ventures Inc., and Clifton Associates Ltd.

The joint company collaborates with clients to design innovative solutions, while fulfilling the business development and education strategies of Mistawasis Nehiwayak and Iron Buffalo Training Centre. Its work is primarily focused on the resources, transportation, land development and government business sectors.

Its partner, Clifton Associates Ltd., boasts 43 years of experience delivering technical solutions involving

soils, rock, water and air in western Canada. Its mission is to provide solutions that manage the Earth's resources responsibly, while reflecting the values of the clients.

The core areas of practice include civil engineering, earth sciences, environmental engineering and materials testing.

Clifton believes that a strong understanding of the physical properties of soil and groundwater is fundamental in the ability to understand the range of engineering problems that we deal with. Project teams use innovative technology and industry leading solutions to develop sophisticated, cost-sensitive strategies that support the entire project cycle from inception to approvals, to engineering and to management and closure.

Projects that Misty Clifton Engineering has been a part of since its inception in 2017 include: Enbridge Line 3 Replacement, Cowessess First Nation Solar Energy Farm, landfill feasibility studies, Carry the Kettle First Nation Phase I ESAs, Nutrien Well Installation and Decommissioning, water studies near Dalmeny, geotechnical investigations and reviews for Lac La Ronge Indian Band and Kiewit and an aggregate rail study for Poundmaker First Nation.

The Team

Robert (Bobby) Daniels is President and CEO of Misty Ventures. He grew up in Mistawasis and is an active member of Mistawasis Nêhiyawak and is a Director for Misty Clifton Engineering Ltd.

Steven Johnston, a lifelong resident of Mistawasis, is serving his third consecutive term as chairman of the board for Misty Ventures.

Geoff Haanen is president of Misty Clifton Engineering. He has been in the engineering consulting industry for more than 18 years with a focus on environmental projects. He is currently a Regional Environmental Manager at Clifton Engineering Group.

Wayne Clifton, P.Eng, M.Sc, D.Sc., is the CEO of Clifton Engineering Group.

Successful decommissioning of Cluff Lake mine



Orano Canada Inc.

The Cluff Lake mine produced uranium and gold for 22 years. It has since been decommissioned.

The Company

Orano Canada Inc. (formerly AREVA Resources Canada) has been exploring for uranium, developing uranium mines and producing uranium concentrate in Canada for more than 55 years.

Orano operates the McClean Lake mill, which processes uranium ore from the high-grade Cigar Lake mine and is a partner in the McArthur River mine and Key Lake mill.

Orano owns and maintains the now decommissioned and reclaimed Cluff Lake mine site.

The Achievement

The Cluff Lake mine in northwest Saskatchewan opened in 1980 and for 22 years produced more than 62 million pounds of uranium concentrate. It also produced gold in the late 1980s.

At its peak, Cluff Lake employed more than 300 people and provided extensive training and business opportunities for residents of northern Saskatchewan.

Planning for the closure and decommissioning of the mine was considered as part of Cluff Lake's initial design and operation. Following detailed planning and a full environmental assessment, demolition of

facilities and major earth works were conducted between 2004-06. Unrestricted public access to the site was restored in 2013.

Ongoing environmental monitoring shows the decommissioning was successful. Water quality meets its objectives and radiation levels are well within the regional background range. As well, fish, animals and plants harvested on site have been deemed safe for consumption. The area is open for access and traditional use.

More than 650,000 trees have since been planted in the area.

Orano has applied to transfer control of the site to the provincial government under Saskatchewan's Institutional Control Program.

Orano will provide funds for the long-term monitoring and maintenance of the site and an assurance fund to cover costs related to unexpected events.

The Team

Many Orano employees and contractors worked at this site over the years, including engineers, geoscientists and environmental scientists. The current project manager is Tina Searcy, Regulatory and Environmental Science Manager at Orano Canada.

PAMI researching how crops affected by pesticide drift



PAMI hopes to better understand spray drifts from high-clearance sprayers.

The Company

The Prairie Agricultural Machinery Institute (PAMI) was established in 1975 to provide a unique resource to both prairie farmers and agricultural machinery manufacturers.

In addition to continuing with its agricultural priorities, PAMI evolved in its knowledge and abilities to serve the needs of both the mining and transportation industries.

PAMI provides its clients access to valuable agricultural testing and benchmarking equipment as well as first-rate testing equipment for industry.

PAMI also offers a growing portfolio of computer-aided engineering capability. Through the use of specialized software that can digitally prototype a structure, bulk material or fluid, PAMI is able to analyze the performance of a product or system.

The Achievement

PAMI is leading producer-funded research that is furthering the understanding of the effect of modern high-clearance sprayer performance on spray deposition in an effort to reduce spray drift.

The project, “spray drift management under changing operational requirements”, aims to better understand the operational parameters affecting pesticides’ drift.

High-clearance sprayers are large machines that are operated at relatively high speeds. A better understanding of their aerodynamic properties is required to maintain the high productivity of large sprayers while minimizing spray drift.

This research is funded by Alberta Pulse Growers, Manitoba Crop Alliance, Manitoba Pulse and Soybean Growers, Sask Pulse Growers, and the Western Grains Research Foundation, with support from Agriculture and Agri-Food Canada and the Canadian Agricultural Partnership.

In collaboration with the University of Saskatchewan College of Engineering and College of Agriculture, as well as AgriMetrix Research and Training, PAMI is:

- Working to measure (with full-scale machinery tests) and model (using computational fluid dynamics) the airflow conditions under which spray is released along with the immediate flow dynamics of the spray;
- Measuring spray drift in field conditions and establishing dose-response curves to better quantify the impact of spray drift on multiple crops.

Completion of this four-year project is scheduled for early 2022.

The goal is that this project will yield valuable information on how crops are affected by pesticides’ drift, as well as how drift can be managed from the operation of modern high-clearance sprayers.

The Team

The principal investigator of the project, Ian Paulson, P. Eng., is joined by PAMI Engineer-In-Training Justin Gerspacher. Research collaborators include Donald Bergstrom, Ph.D., P. Eng. and David Sumner, Ph.D., P. Eng. of the U of S College of Engineering, Tom Wolf, Ph.D., of AgriMetrix Research & Training and Christian Willenborg, Ph.D. of the U of S College of Agriculture.

SaskTel delivers more fibre



SaskTel is expanding its infiNET™ service across the province.

The Company

SaskTel is the leading information and communications technology provider in Saskatchewan, delivering various wireline and wireless communications services, including landline telephone, mobile networks and broadband internet.

As of 2020, SaskTel manages 1.35 million customer connections thanks to roughly 3,600 staff, many of which boast diverse engineering backgrounds.

The Achievement

In 2019-20, SaskTel invested \$75 million in its fibre to the x (FTTx) program. FTTx is a key component in SaskTel's strategy to provide the high bandwidth customers demand.

Bringing SaskTel infiNET™ service to Saskatchewan customers is a \$825-million program that aims to have 100 per cent of homes passed in Saskatoon, Regina, Prince Albert, Moose Jaw, Swift Current, Yorkton, North Battleford, Estevan, Warman, Weyburn, Martensville, Melfort, Humboldt, White City, Melville, Nipawin, Tisdale, Rosthern and Emerald Park by the end of 2022.

In order to meet their 2019-20 targets, SaskTel invested:

- \$45.8 million for Fibre to the Premises Program (FTTP) in the major cities.
- \$19.2 million for the FTTP outside of the nine majors.
- \$10 million for Fibre to the Business (FTTB). This portion of the program aimed to pass 4,000 businesses in 2019-20.

In 2019-20, the FTTP passed approximately 22,000 homes and connected more than 16,000 additional customers to infiNET service in Regina, Saskatoon, Moose Jaw, Prince Albert, Swift Current, Weyburn, Estevan, Yorkton, North Battleford, Rosthern, Martensville, Warman, Emerald Park, White City and Melfort.

Fibre optics will allow SaskTel to deploy download speeds up to 300 megabits per second (Mbps) initially, with the capacity to significantly increase speeds over time.

Customers will be able to enjoy faster download and upload speeds which will enhance the online experience streaming video, uploading photos or videos or participating in real-time gaming and video chat.

infiNET service will also support up to seven high-definition-capable set top boxes, the ability to combine faster Internet speeds with maxTV, while improving the TV-watching experience.

SRC opening Canada's first rare earth processing facility



Saskatchewan Research Council

A rare earth processing facility will open in Saskatchewan in 2022.

The Company

The Saskatchewan Research Council (SRC) is Canada's second largest research and technology organization. With nearly 300 employees, \$91 million in annual revenue and nearly 75 years of experience, SRC provides services and products to its 1,500 clients in 27 countries around the world.

The Achievement

In the coming decade, the need for rare earth elements (REEs) will increase many-fold due to their importance in high-growth technology areas such as wind turbines and electric cars.

Canadian rock formations hold 12 per cent of the world's rare earth elements measured resources. But currently, no REEs are being processed in Canada due to both a Chinese monopoly as supplier and end user, as well as the lack of a fully developed supply chain in North America.

SRC is looking to change that by securing an early and important piece of the supply chain for industry – a rare earth processing facility. The \$35-million facility was announced in the summer of 2020 by the Government of Saskatchewan with completion slated for the fall of 2022.

The facility, a first-of-its-kind in Canada, will begin to establish a REE technology hub in Saskatchewan, forming an industry model for future commercial REE initiatives and supply chain development.

A key element of the facility is a commercial processing plant, which will include concentration and separation stages and treat monazite sands at approximately 60-per-cent concentration. Monazite is a source of mainly so called "light" REEs which are some of the critical elements for the permanent magnets used in clean technologies. SRC will work with the mining industry to secure this feedstock from across Saskatchewan, Canada and internationally.

An intermediate concentrate of mixed rare earth carbonates will be produced from the monazite processing unit and further processed in a separation unit to produce separated rare earth oxides, as the market requires.

These will be sold by SRC and further refined and processed to provide the inputs that original equipment manufacturers require.

The Team

This work is being led by a team of engineers, scientists and technologists within SRC including Muhammad Imran, P.Eng., Jack Zhang, P.Eng., Baodong Zhao, P.Eng., Bryan Schreiner, P.Eng., P.Geo., Dennis Wang, P.Eng., Tim Oleniuk, P.Eng., Augustine Adeoye, Engineer-In-Training, Jinhe Shu, Engineer-In-Training, Lucia Xia, Engineer-In-Training, Sheldon Hill, P.Eng., Dave Williams, P.Eng., Anton Farber, P.Eng., Graham Epp, Engineer-In-Training, Tony Kaminski, P.Eng., and Cole Gunderson, Engineer-In-Training.



Saskatchewan Research Council

The facility will be a first of its kind in Canada.

SaskTel launches LoRaWAN®



In August, SaskTel launched its first long-range wide-area network LoRaWAN®.

The Company

SaskTel is the leading information and communications technology provider in Saskatchewan, delivering various wireline and wireless communications services, including landline telephone, mobile networks and broadband internet.

As of 2020, SaskTel manages 1.35 million customer connections thanks to roughly 3,600 staff, many of which boast diverse engineering backgrounds.

With this particular achievement, SaskTel partnered with eleven-x, a company that offers knowledge in wireless technology, connectivity in the wireless world, low-power communication networks and one that assists organizations to leverage the “Internet of Things” (IoT) evolution.

The Achievement

In August, SaskTel launched its first long-range wide-area network (LoRaWAN®), which was purpose-built to handle various smart city applications and deliver the real-time data requirements of modern smart technologies that are transforming businesses and industries worldwide.

With coverage blanketing Regina and Saskatoon, the

SaskTel LoRaWAN creates new cost-effective opportunities for all businesses to enhance and evolve their operations through the deployment of machine-to-machine (M2M) applications and IoT enabled devices by the leveraging the low-data, battery-efficient and inexpensive hardware benefits of LoRaWAN® technology.

In partnership with eleven-x, these two companies combined to ensure a successful new network deployment and to provide ongoing technical and service support. With a reputation as a global IoT innovator, eleven-x works with cities across the country to provide wireless, real-time solutions that can easily be managed remotely.

Together with eleven-x’s network services and solutions, it will enable SaskTel to offer cost-effective use cases ranging from water management and sustainability programs, smart parking and smart agriculture to building management, including air-quality monitoring (to help with re-opening post-COVID and ongoing occupancy) and energy monitoring.

SaskTel’s launch of LoRaWAN® is part of its commitment to invest \$324 million in Saskatchewan in 2020-21 and more than \$1.6 billion over the next five years. These investments will ensure that Saskatchewan businesses have access to the advanced information and communications technologies needed to compete locally, nationally and globally.

Stantec Consulting earns transportation award



Consulting Engineering Companies-Saskatchewan

Stantec worked to replace two bridge crossings on Regina's Ring Road

The Company

Stantec Consulting Ltd., is a team of designers, engineers, scientists and project managers who work in unison to improve the quality of life in the communities where it operates.

Stantec employs more than 22,000 staff in roughly 350 locations around the world. Stantec's Regina office employs 87 people and the Saskatoon office has 100 employees.

The Achievement

Stantec recently received the Award of Merit Transportation as part of the Association of Consulting Engineering Companies-Saskatchewan 2020 Brian Eckel Awards and the Design Category Award with the Saskatchewan Heavy Construction Association.

The project that earned Stantec these lofty praises was the work it conducted on two bridge replacements on a portion of Regina's Ring Road that crosses Wascana Creek.

Stantec provided engineering to remove and replace the bridges within a six-month period with new 75-year structures. This occurred on an expressway with an annual average daily traffic of 40,000+ and within the environmentally sensitive Wascana Creek.

This achievement required:

- Innovative accelerated bridge construction techniques that balanced conventional methods to achieve excellent constructability; and
- Open and clear communication with project team, stakeholders and regulatory agencies.

A unique tendering method was used in which alternate prices were obtained for a condensed schedule. This invoked creativity and innovation from the bidders and resulted in a submission that offered a reduced construction duration and significant cost savings.

This project demonstrated the benefits of successful dialogue and collaborative effort among the owner, the consultant and the contractor in achieving time and cost saving to accommodate the timely replacement of two bridge structures on one of the province's busiest roadways.

The Team

Kevin Paul, P.Eng. and Dr. Hugues Vogel P.Eng., Ph.D. was the Engineer of Record. Matt Bialowas served as project manager and associate structural technologist.



Kevin Paul, P.Eng.



Dr. Hugues Vogel
P.Eng., Ph.D.



Matt Bialowas

Member Profile



Courtney Onstad, B.Sc. (Hons.),
Geoscientist-in-Training

This month *The Professional Edge* chats with **Courtney Onstad, M.A., Geoscientist-in-Training**

Tell us about your personal background. Where are you from? Where did you attend university?

I was born and raised in Surrey, B.C., but grew up travelling to Saskatchewan, where my parents were born, to visit family. That is where my love of the prairies sprouted and it became my goal to attend the University of Saskatchewan.

Why did you choose to go into geoscience?

I was exceptionally lucky to take Earth Science 11 and Geology 12 courses during high school with a former geologist as my teacher (Mr. Milross). I specifically remember the hands-on aspect of the course, the “slate, phyllite, schist and gneiss” chant we sang every day and the way Mr. Milross truly made learning geology an unforgettable and inspiring experience.

Did you have any geologists/geoscientists in the family who influenced you?

In terms of geoscience, Mr. Milross was truly the most inspiring person. However, many of the traits that have allowed me to excel during my professional and academic career are influenced by the high standards set by

my family. I come from a family of teachers, businesspeople and farmers. The achievements and work ethic of the Onstads from Weyburn and the Sawatzkys from Hague are inspiring and have been instrumental in defining me.

What was your first job after university? Where was it and what was your role?

NexGen Energy Ltd. offered me my first position as a summer student in northern Saskatchewan and I loved my time there. I also had the opportunity to work in Nunavut on a BIF-project and with RESPEC Inc. as a geological intern during my M.Sc. working with an incredible team on various environmental projects.

What do you feel has been your single greatest accomplishment?

My most satisfying accomplishment as a geologist has been founding a geoscience outreach program at the University of Saskatchewan. During a work term in northern Saskatchewan, I noticed a lack of geoscience resources in elementary and high schools and realized an outreach program could fill this gap. Our outreach program has been running for two years and during the 2019-2020 academic year, we reached 23 schools and more than 750 students in grades 4, 6 and 7 from the Saskatoon and surrounding areas. We also had more than 20 schools that had to go on a waiting list so there is strong demand for outreach. Next year, we are hoping to initiate a field-trip subsidy program to support travel for remote schools to the University of Saskatchewan.

What is the goal of your outreach program and how can our members help facilitate that?

The goal of our outreach program is to create an additional geoscience resource for Saskatchewan students and teachers. Since the U of S has pristine rock and mineral specimens and students with expertise on the subject, we believe it is our responsibility to share this with others. APEGs members are

encouraged to support the program with their own expertise. Once the COVID-19 pandemic has passed, we hope to initiate the program and feature geoscientists as part of our “Saskatchewan Geology” lesson. Our volunteers are hard-working and dedicated individuals who gain rewarding experience working with these students.

Over the next five to 10 years, where will your career path will lead you?

I am starting a Ph.D. at Simon Fraser University studying geoscience communication so hopefully I will have completed that! I think my career is still evolving and I have new ideas daily as to what my career might look like. I am striving for a diverse career in the geosciences combining my two greatest passions: geoscience education/outreach and geochemistry.

What is your Ph.D. going to be focusing on?

My Ph.D. is focusing on the way geoscience is communicated to various audiences (students, teachers, Indigenous communities, resource companies and the general public) in British Columbia. I am planning to produce various educational resources for these audiences including lesson plans, hands-on experiments, professional development workshops and geoscience displays and

exhibits for museums. I will also be consulting with Indigenous communities to help incorporate Indigenous ways of knowing into curriculum.

What are your interests outside of work?

After work and on weekends I can be found running and hiking. Running has been my escape for many years and allows me to stay fit, sane and competitive. I grew up playing every sport possible: volleyball, fastpitch, track and field, soccer, speed skating, speed swimming and more. To this day, I believe being involved in sports has driven my competitive attitude towards everything in life. Outside of my outreach program, I enjoy volunteering with executive committees, student groups and community programs. Beyond that, I spend my spare time with my cats and my boyfriend watching Netflix.

Have you had any academic mentors?

Having mentors has been critical to my development in the mineral resources industry. It is impossible for me to mention all of them, but Dr. Kevin Ansdell, P.Geo, FGC, FEC (Hon) has been my most influential mentor. He supervised both of my honours theses and my Master's degree and is always available to answer my endless questions, offer advice and assistance with job opportunities and is a genuine and involved person in my career.

Check us out on-line!

The e-Edge delivers all the content of the print edition to your smartphone, tablet or desktop.

www.apegs.ca/e-edge





Gems of Geoscience



Gus Fomradas, P.Geo, is a Technical Manager with Rio Tinto Exploration Canada Inc.

I had just started a new job as a Mine Geologist at Diavik Diamond Mine and had only been there a few days. My cross shift had stayed to show me around but left with my supervisor before my first weekend at site. It was a bit intimidating, but also exciting to be the only geologist on site and have that responsibility and accountability.

During a routine pit-mapping session the next day, I walked up to a small, freshly blasted and only partially dug kimberlite ore muck pile. As I was getting ready to carry on with my daily routine, I noticed a small, polished surface of a rock about five centimeters in diameter that stood out amongst its kimberlite host.

I chipped a small amount of kimberlite away from this very slightly protruding rock only to discover it was growing and getting larger. I continued to mine this rock out to discover it was a magnificent large eclogite.

I was quite excited as there was an impressive collection of mantle xenoliths in the office and a little competition as to who



Eclogite

could find the largest one. After weighing this xenolith, I returned to the office to check the scoreboard.

Being an eager and keen geologist, I made up a little report of this find with a picture of the rock on the scale and sent it to my supervisor. He then reminded me to “watch yourself, you are still on probation” when I noted I had bumped him from the top spot on the scoreboard.

Before coming to work at the mine, I had previously only seen these mantle xenoliths in drill core. Walking across the entire width of a kimberlite with these unique preserved specimens from the mantle was quite surreal.

I had known of their importance as a diamond exploration geologist – the disaggregation of their minerals, often garnets and chrome rich pyroxenes, were key indicator minerals sought after during till sampling in diamond exploration.

The analysis of the chemistry of these indicators could help indicate if they had the potential to be from a kimberlitic source and therefore further imply diamond potential. There was no better indication of diamond potential, however, than to find an eclogite containing diamonds and a rock such as this. It happens to be one of my favourites.



2021 Call for Council Nominations

Nominating Committee

The Nominating Committee is soliciting names for the council positions described below. To propose names of potential candidates, contact staff support to the Nominating Committee, Shawna Argue, at sargue@apegs.ca, by phone at 306-525-9547 (toll free 1-800-500-9547 North America) or facsimile 306-525-0851.

The Bylaws require the Nominating Committee to nominate, whenever possible, the person holding the office of President-Elect for President and one person for the position of President-Elect (typically the person holding the office of Vice President). Kristen Darr, P.Geo., is the current President-Elect and John Desjarlais, P.Eng., is the current Vice President. The Nominating Committee is also required to nominate, whenever possible, at least two persons for Vice President and at least two persons for each vacancy on Council.

Submissions of Nominations

Any five members may nominate over their signatures an eligible nominee for any elective office, except that of President. Such nominations shall be in the hands of the Registrar at least 45 days before the election is to take place. To meet this requirement, the nominations must be in the APEGS office no later than 5 p.m., Thursday, March 4, 2021, as the election will take place when ballots are counted on Monday, April 19, 2021, the polling day.

2021 Vacancies & Terms of Office

Officers

- President-Elect – one-year term
- Vice President – one-year term

Group and Electoral District Councillors – to serve a three-year term

- Group II (Mechanical & Industrial)
- Group V (Agriculture & Forestry)
- South-East District
- Geoscience South District
- Member-in-Training

Terms of Office

Only members in good standing are eligible for nomination.

A person elected to Council may only hold office while a resident of Saskatchewan.

A person nominated for President-Elect must have served at least one full year (i.e. from the close of business at one annual meeting to the close of business at the next annual meeting) as a member of APEGS Council prior to the date on which they would assume office as President-Elect.

A person nominated as a representative of an electoral group must be classified with the association in that electoral group. The Councillor representing Members-in-Training can complete the term of office after obtaining his or her P.Eng., or P.Geo. status.

<http://www.apegs.ca/Portal/Pages/council-elections>

Notes from APEGS Council



The APEGS Council held an online meeting via Microsoft TEAMS on December 3-4, 2020. The meeting was attended by 19 of 19 Councillors and by the Directors to Engineers Canada and Geoscientists Canada. Council will meet next on February 4-5, 2021 via Microsoft TEAMS.

Council received the following presentations and information items:

- The Director of Corporate Practice and Compliance presented the IT-IS strategic plan and work priorities for the next five years.
- The Assistant Director of Registration presented information on a pilot ticketing system to better manage e-correspondence.
- The Communications Manager provided an overview of the proposed 2021 Strategic Communications Plan, which was noted and received by Council.
- The APEGS Director to Engineers Canada provided a written report and a verbal update on the activities of the national organization.
- The APEGS Director to Geoscientists Canada provided a written report and verbal update on the activities of the national organization.

Council passed motions as follows:

- Updating policy ADMIN6.1 – Delegation of Remission of Fees.
- Approving policy HR11.0 – Professional Development, Training and Education.
- Approving version 17.2 of the Competency Assessment Guide.
- Appointing Brad Schmid, P.Eng. as Chair of the Academic Review Committee.
- Approving policy PD3.0 – PD Opportunities Webpage.

- Appointing Darcy Hirsekorn, P.Geo. as chair of the Environment & Sustainability Committee.
- Approving sponsorship of the Nutrien Wonderhub for five years.
- Approving moving the 2021 Annual Meeting activities to online. The Business Meeting will be held on May 1, 2021.
- Approving the 2021 Budget.
- Appointing the following to the Audit Committee: Terry Fonstad, Ph.D., P.Ag., P.Eng., FEC, FGC (Hon.), Wendell Patzer (public appointee) and Erin Moss Tressel, P.Eng., P.Geo.
- Approving 10 new Life Members.
- Approving one-year extension request for one member-in-training.
- Approving one request for remission of fees.
- Approving updates to the following Council policies: Coun1.0 – Council Delegated Authority, Coun2.0 – Attendees at Council Meetings, Coun3.0 – Procedures for Closed Meetings, Coun4.0 – Council Induction and Orientation, Coun5.0 – Conflict of Interest and Coun8.0 – Appointment of EC and GC Directors.
- Repealing the following Council policies: Coun9.0 – Appointment of CGSC Representative and Coun11.0 – Location of Council Meetings.
- Approving new Council policies: Coun10.0 – Email Voting and Coun13.0 – Council Code of Conduct.
- Approving new policy Reg8.0 – Provision of Professional Seals.
- Approving several feasibility plans and some associated recommendations resulting from the Governance Review project, in the following categories: organizational structure, risk management and Council size and composition.
- Approving the following work completed by the Nominating Criteria Task Group: Nominating Committee Procedure and Council Applicant Evaluation Matrix.

Council noted and received the following reports:

- Registrar's reports for September and October 2020.
- The unaudited financial statements for August, September and October 2020.
- Executive Committee minutes, board minutes and the reports from the committees and task groups, abridged Investigation Committee minutes, Discipline Committee minutes, Governance Change Steering Group minutes and Nominating Criteria Task Group minutes.

APEGS Governance Change

Council met on December 4, 2020 and considered action on 15 more of the 33 recommendations on governance change, including recommendations on council size and composition, risk management and organizational structure. A summary of Council's December decisions is provided below.

Staff is continuing to prepare the remaining feasibility plans and further proposals to consider recommendations at the February council meeting. Plans for stakeholder consultation are also underway.

If you have any questions, contact the project director Tina Maki, P.Eng., Director of Special Projects at tmaki@apegs.ca who will relay them to the steering group.

What is this project about?

APEGS is reviewing its governance and regulatory frameworks and practices. The review focuses on 33 recommendations made by a consultant regarding:

- Council size and composition
- Risk management
- Public transparency
- Management of sponsorships
- Organizational structure
- Roles of committees and staff
- Training for committees
- Relationship with constituent societies.

Why is APEGS doing this project?

A growth in membership and changes in the regulatory environment make a review timely to modernize governance that focuses resources on activities aligned with enhancing regulatory effectiveness.

For more, refer to previous issues of *The Professional Edge* from May/Jun, Jul/Aug, Sep/Oct, Nov/Dec 2020.

Steering Group

Stormy Holmes, P.Eng., Past President (2019-2020)
Kristen Darr, P.Geo., President-Elect
John Desjarlais, P.Eng., Vice President
Nicholas Kaminski, P.Eng., Council Member
Peter Jackson, P.Eng., Past President (2012-2013)

Staff Advisors

Bob McDonald, P.Eng., Executive Director and Registrar
Shawna Argue, P.Eng., Director of Registration

Project Director

Tina Maki, P.Eng., Director of Special Projects

Consultants

T. Bakkeli Consultants Inc. and Lana Gray Leadership Services

Summary of Council Decisions and Next Steps

AREA	DECISIONS	NOTES
<ul style="list-style-type: none">• Council Size and Composition	<ul style="list-style-type: none">• Adjust council size from 19 to 13 members through a process of attrition over the next three years.• Replace process of electing councillors based on discipline, geography or member-in-training status with "the process of voting at large for candidates using criteria to ensure council is made up of individuals with the knowledge, competency, character and diversity to regulate in the public interest.• Assign the Nominating Committee responsibility for attracting and vetting candidates using the criteria developed by the Nominating Criteria Task Group.	<ul style="list-style-type: none">• Changes will comply with <i>The Engineering and Geoscience Professions Act</i>, which requires a minimum of four professional engineers, two professional geoscientists and two public appointees.• Bylaw changes are required. Drafts are going to council in February 2021 and if approved, online town hall consultations with members will be conducted in March 2021.

AREA	DECISIONS	NOTES
<ul style="list-style-type: none"> • Risk Management 	<ul style="list-style-type: none"> • Introduce annual self-evaluations for council, boards, and volunteer committees. 	<ul style="list-style-type: none"> • The Nominating Criteria Task Group and staff is now preparing evaluation tools and procedures for consultation with volunteers and council's consideration.
<ul style="list-style-type: none"> • Organizational Structure 	<ul style="list-style-type: none"> • Change the name of the Governance Board to the Regulatory Board, to better reflect its purpose. • Transfer the responsibilities of <i>The Professional Edge</i>, Communications and Public Relations and Connection and Involvement committees to staff and sunset the committees. • Examine and clarify the purpose and objectives of the following committees within the context of the regulatory role and responsibilities of APEGS and how best to achieve those objectives: <ul style="list-style-type: none"> • Equity and Diversity • Environment and Sustainability • Kindergarten to Grade 12 (K-12) • Student Development. • Examine merging the Education Board and Image and Identity Board into a single Professionalism Board, with a clear purpose and objectives. 	<ul style="list-style-type: none"> • Planning, research, and consultation with impacted stakeholders will occur in 2021. • New volunteer options will be offered to volunteers of the three sunset committees.

Below are answers to questions you may have about the project.

What is the governance change project about?

APEGS is reviewing its governance and regulatory frameworks and practices. The review focuses on 33 recommendations made by an independent consultant regarding Council size and composition, risk management, public transparency, management of sponsorships, organizational structure, roles of committees and staff, training for committees and APEGS' relationship with constituent societies.

Why is the governance structure under review?

APEGS last updated its governance structure more than 30 years ago. Since then, there have been changes to the regulatory environment of self-regulating professions

across Canada. In addition, APEGS has transformed – it regulates more members of the professions, now regulates two professions, uses different technologies and communication tools and has more staff. It is time to update the governance structure to ensure it aligns with APEGS' needs.

What needs to change and why?

The governance review did not find any significant gaps that posed immediate concerns to public safety, but it did identify opportunities for APEGS to achieve greater clarity regarding the purpose of the activities it undertakes and to ensure that its governance practices and structure are more reflective of APEGS' regulatory nature and purpose.

Some of the recommendations, if approved and implemented, will result in a shift in the activities and services that occur in the current state. Others are more internally focused and, if approved and implemented, will result in process improvements and realignment of resources to strengthen APEGS' focus on regulating the professions objectively.

What if the proposed changes do not take place?

Lack of action on the governance review recommendations has the potential to decrease public and government confidence in APEGS. By carefully considering all recommendations arising from the governance review, APEGS demonstrates its commitment to modernizing its governance practices and keeping pace with the current regulatory environment.

What are the benefits to those licensed to practice engineering or geoscience in Saskatchewan?

The engineering and geoscience professions have worked diligently to be granted and maintain self-regulatory powers from the provincial government. With self-regulatory powers, the professions – through APEGS – are afforded more flexibility in determining how they hold themselves accountable to the public for safe, sound and prudent practices.

What is the effect on or impact to those licensed to practise engineering or geoscience in Saskatchewan, including any changes to fees?

There are no fee changes expected due to the governance change project. Most recommendations will not have a direct effect on or impact to APEGS members. Some recommendations under consideration by Council will require membership approval to make bylaw changes. Proposed bylaw changes will be presented at the APEGS annual meeting.

Will the changes reduce opportunities for volunteers?

While there are some recommendations to sunset committees, the changes are not intended to reduce volunteer opportunities. The impact on the overall number of volunteers has yet to be determined. Volunteers will continue to be valued and relied upon to help carry out APEGS roles and responsibilities, especially in regulatory areas. As APEGS makes governance enhancements to keep pace with evolving regulatory practices and governance best practices, there will continue to be other opportunities for members who want to volunteer.

What is the anticipated impact on staff if changes are approved?

In some cases, staff will be able to function more efficiently because of the changes. In other cases, the amount of staff time required to do the work will be determined after the relevant recommendations are examined.

How does APEGS' governance review compare to what other associations are doing?

APEGS is not unique. Several engineering, geoscience and other regulators have recently completed reviews, are planning reviews, or have had changes imposed on them. For example, British Columbia now has *The Professional Governance Act*, which is a government regulator of five professional regulators in B.C., including Engineers and Geoscientists B.C. Professional Engineers Ontario has undertaken an independent regulatory review which included governance topics and has taken relevant action in response. Two other engineering and geoscience regulators in Canada have recently initiated the process for a similar review.

Thank you!

**APEGS wishes to thank Dean Elliott,
the Ministry of Education's
science curriculum consultant,
for volunteering with APEGS
for 16 years.**

Dean has been a valuable resource to the K to 12 Committee for advice on matters relating to student education.

Dean retired from the ministry in 2020, which concluded his volunteer role with APEGS.

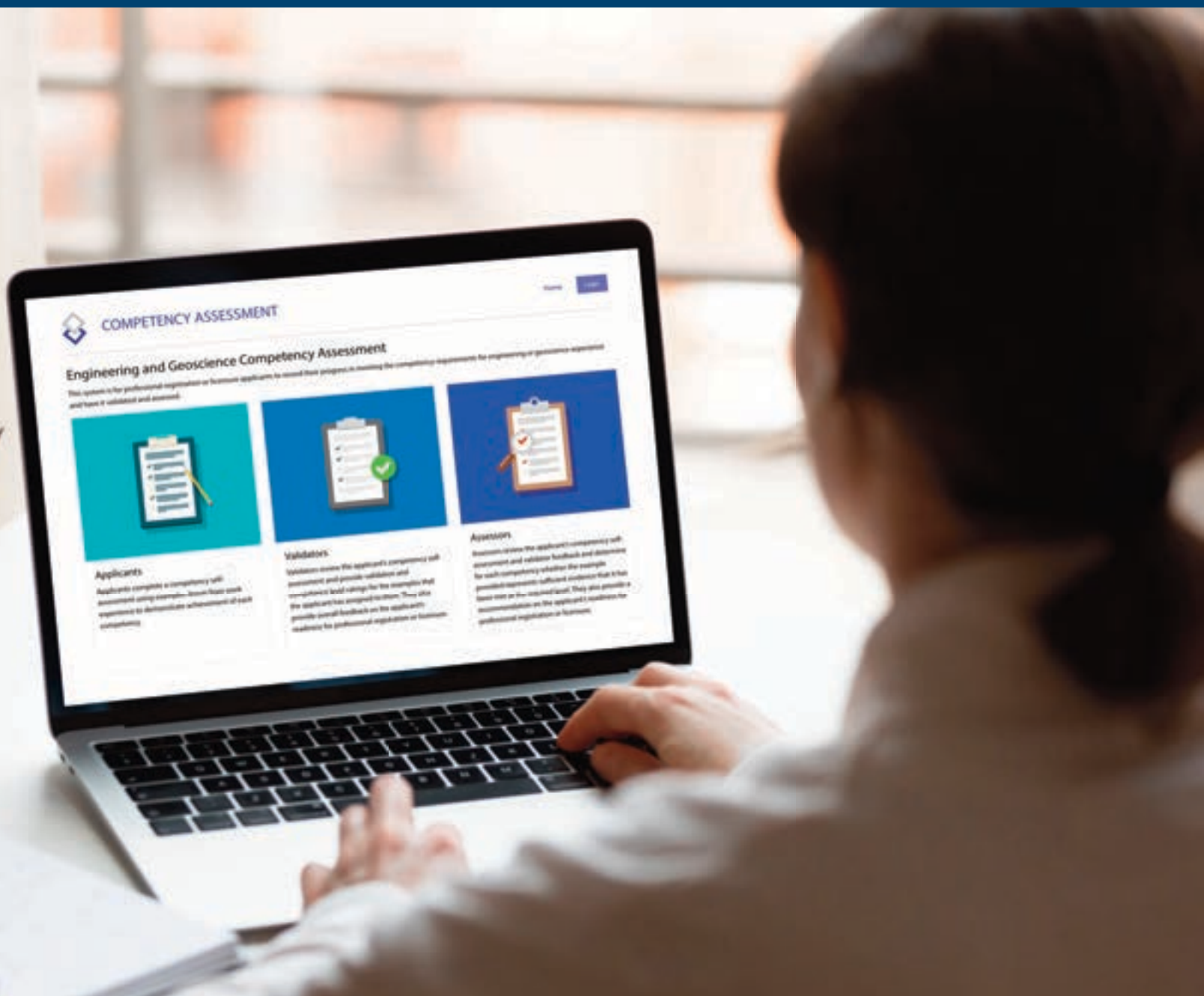
Staff will be retaining the connection with the Ministry of Education's curriculum unit.



A P E G S

*Association of Professional Engineers
& Geoscientists of Saskatchewan*

Competency-Based Assessment for Geoscience



Competency-Based Assessment for Geoscientists-in-Training is here!

Competency-Based Assessment (CBA), the new online experience reporting system for geoscientists-in-training came into effect on January 1, 2021.

For more details, please visit apegs.ca under Members / Competency-Based Assessment - Geo.

For more information, contact:

Tina Maki, P.Eng., FEC, FGC (Hon.), Director of Special Projects
tmaki@apegs.ca • 306-525-9547 (in Regina) • 1-800-500-9547 (toll free North America)

Continuing Professional Development

The Continuing Professional Development (CPD) Program requires APEGS members to complete ongoing professional development activities to maintain and improve their competence.

It encourages members to engage in lifelong learning to protect public health, safety and welfare.

The program provides tools for members to assess their current skills, knowledge and abilities, determine activities to maintain or enhance them and report completed activities online to APEGS as professional development credits.

For more information, navigate to the CPD tab at apegs.ca.

Featured Professional Development Opportunities

2021 Spring Professional Development Days

A variety of online courses will be offered in March 2021.

Get to the Point Writing Course

This popular course is back and it's online. The next offering of this course will be in the Spring of 2021.

For additional professional development opportunities, please refer to the back cover of this magazine or visit apegs.ca.

Does Your Next Meeting Need an Ethics Topic?

Monthly ethics moments are available to APEGS members for use in meetings.

When an ethics moment is included in the minutes of a meeting, along with the start and end times of the ethics moment discussion and an attendance list this time can count as part of the member's annual ethics requirement.

If you would like this month's ethics moment, please email cpd@apegs.ca.

Looking for Ethics Training?

Of the many ways to get your annual ethics credit, here are two free online options that APEGS provides to help members who are working remotely:

- Module 1 - Professionalism and Ethics
- Module 2 - Conflict of Interest
- Module 3 – To be launched in April 2021

For more information and to access the module, please visit the CPD tab at apegs.ca.

CPD Tip



The 'Reporting Elsewhere' Option

Do you live outside of Saskatchewan? Are you also reporting professional development activity to another engineering or geoscience regulator?

If yes, you are eligible to report to APEGS using the 'Reporting Elsewhere' option. This is a quick process, but it must be completed on an annual basis. For a guide on how to complete this process, please visit our website and navigate to the CPD / Continuing Professional Development (CPD) Program webpage and scroll down to the Related Documents/Reporting CPD heading.

2021

Important CPD Program Deadlines

September 30, 2021

Deadline to apply for a 2021 CPD Variation.

December 31, 2021

Deadline to obtain credits for the 2021 reporting cycle.

Change to the Issuance of Professional Seals

The Engineering and Geoscience Professions Act, Section 21(1) describes the requirements for the issuance and use of seals. In addition, Section 16(2)(s) notes that

“...regulatory bylaws may be made for the purposes of prescribing requirements governing the signing and sealing... of documents...”

Regulatory Bylaw Sections 24 & 25 and Appendix 2 define the design of the seals and the requirements for use. Additional details are provided in the document “Authentication of Documents – Use of Professional Seals” at [apegs.ca](https://www.apegs.ca) under Members / Professional Seals.

Over the past year, APEGS has experienced significant delays in receiving the physical seals from our supplier. Thus, effective with approvals dated January 1, 2021 or

later, all new licensees (i.e. members-in-training, professional members, restricted licensees and temporary licensees) will be issued electronic images of their professional seals, upon approval and payment of all associated registration fees. This “electronic” seal does NOT replace the Notarius digital signature.

Requests for all physical seals will be on a cost recovery basis, including costs for postage.

For more information, refer to the APEGS website: <https://www.apegs.ca/Portal/Pages/professional-seals>.



APEGS

91st Annual Meeting and Professional Development Conference



Online Annual Meeting Notice for the 2020 year - Saturday, May 1, 2021

Week of April 26th

- Trends in Self-Regulation Panel Plenary Session
- Professional Development Tracks
- Keynote Speaker

Friday, April 30

- APEGS Awards Ceremony

Saturday, May 1

- Annual Meeting

Because of the continuing concerns with the COVID-19 pandemic, all events will be held online.

More information and registration details to follow by email and at www.apegs.ca.

Professional Practice Exam Results

As a result of the COVID-19 pandemic, the APEGS Law and Ethics Seminar and the Professional Practice Exam (PPE) were provided online in 2020.

APEGS was granted access to the National Professional Practice Exam (NPPE) which is administered by APEGA and was proctored remotely.

The NPPE was written by 354 APEGS candidates in November 2020, and an additional 49 APEGS candidates wrote the APEGS PPE Alternate Exam throughout the year. This represented an increase of 49 examinees from 2019.



EXAM DATE	NPPE NOVEMBER 2020	ALTERNATE EXAM THROUGHOUT THE YEAR
# of Candidates	354	49
Highest Mark (%)	92%	94.5%
Average Mark (%)	75.25%	83.25%
# Failures*	38	0

Photos for the next Saskatchewan Geoscience Calendar

SUBMITTED BY THE SASKATCHEWAN GEOLOGICAL SOCIETY



Pegmatite dyke cutting a layered metamorphic rock near Colin Lake

The Saskatchewan Geological Society is always looking for submissions of photographs featuring the geoscience diversity of our province covering all corners of our province from the Cypress Hills to the Lake Athabasca region and exhibiting all scales from microphotographs to satellite images.

We are seeking submissions in the following categories:

- 1) mineral
- 2) outcrop north
- 3) outcrop south
- 4) fossil
- 5) aerial image (Landsat, ortho, drone, etc.)
- 6) geological landscape north
- 7) geological landscape south
- 8) geological history
- 9) oil and gas industry
- 10) landform
- 11) mineral exploration industry
- 12) microscope
- 13) geological art

We encourage submission of one or more photos, in one or several of the above categories.

Please send your photos to:

Sask.Geological.Calendar@outlook.com by March 15 for inclusion in the calendar of the following year.

If your photo is chosen you will receive two free calendars and bragging rights.

Compliance Report

Titles in Saskatchewan

APEGS is the organization responsible for the regulation of the practices of professional engineering and professional geoscience in Saskatchewan, which includes safeguarding the public.

APEGS has been granted the privilege of regulating these professions by the Government of Saskatchewan, which has given APEGS the mandate to do so through *The Engineering and Geoscience Professions Act*, 1997.

Are You Using Your Title Correctly?

Titles are an important part of the engineering and geoscience professions for the following reasons:

- Only individuals who have met the requirements for Saskatchewan licensure are permitted to use these protected titles in Saskatchewan.
- They signify to the public that you are registered to practice in Saskatchewan.

Title use can vary between provinces and countries.

Here are the correct ways to use title in Saskatchewan:

CORRECT	INCORRECT
P.Eng.	PENG, P.E., PE
P.Geo.	PGEO
Engineering Licensee	Eng. Lic., Eng.L.
Geoscience Licensee	Geo.Lic., Geo.L.
Engineer-in-Training	EIT
Geoscientist-in-Training	GIT

Working in Saskatchewan and Title Use

Only individuals registered by APEGS are permitted to use our protected titles in Saskatchewan.

If an individual is registered outside of Saskatchewan and not an APEGS member they are not permitted to use our protected titles in Saskatchewan or take professional responsibility for any engineering or geoscience work for projects or facilities located within Saskatchewan.

If you have a project located in Saskatchewan, ensure that a Saskatchewan licensed Professional Engineer, Professional Geoscientist, Engineering Licensee, Geoscience Licensee or Temporary Licensee is supervising and taking responsibility for that work.

The licensed individual does not need to be in Saskatchewan, but they need to be licensed by APEGS to work in Saskatchewan.



Did you know ...

Protected Titles in Saskatchewan

The Engineering and Geoscience Professions Act, 1997 (section 26) protects the use of specific words in Saskatchewan. This Act defines who can and cannot use these titles in Saskatchewan.

Protection of Title – Engineers

No person other than a professional engineer registered in Saskatchewan may use titles listed in the Act:

- Professional Engineer
- Engineer (Includes Derivations)
- Consulting Engineer
- P.Eng.

... either alone or in combination with any other word, title, designation... to imply that he or she is a professional engineer.

Protection of Title – Geoscientists

No person other than a professional geoscientist registered in Saskatchewan may use titles listed in the Act:

- Professional Geoscientist
- Geoscientist (Includes Derivations)
- Consulting Geoscientist
- P.Geo.

... either alone or in combination with any other word, title, designation... to imply that he or she is a professional geoscientist.

U of R officially recognized by United Nations University

This is the first of a series of articles by the APEGS Environment and Sustainability Committee describing the United Nations Sustainable Development Goals and how they relate to the practice of engineering and geoscience.

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030.

The 17 SDGs, outlined below, are integrated – that is, they recognize that action in one area will affect the outcomes in others and that development must balance social, economic and environmental sustainability.

1. No poverty
2. Zero hunger
3. Good health and well-being
4. Quality education
5. Gender equality
6. Clean water and sanitation
7. Affordable and clean energy
8. Decent work and economic growth
9. Industry, innovation and infrastructure
10. Reduced inequalities
11. Sustainable cities and communities
12. Responsible consumption and production
13. Climate action
14. Life below water
15. Life on land
16. Peace, justice and strong institutions
17. Partnerships for the goals

Canada hosts two of the International Association of Universities SDG clusters, with Education for Sustainable Development (Goal 4) at York University and Responsible Consumption (Goal 12) at the University of Regina.

Goal 12 focuses on changing world-wide consumption and production patterns that rely on the use of the natural environment and resources towards a sustainable future.

The University of Regina is home to the Regional Centre of Expertise on Education for Sustainable Development (RCE Saskatchewan) and is one of 175 RCEs officially acknowledged by the United Nations University worldwide.

Dr. Roger Petry has been Co-Coordinator of RCE Saskatchewan since its inception in 2007. Dr. Petry remarks “It’s a scholarly movement... we haven’t seen anything like this at the university since the rise of

science... the knowledge that it takes is place-based knowledge, it’s local practitioner knowledge combined with theoretical and scientific knowledge and indigenous knowledge.” He goes on to explain that it is about implementing simple solutions in partnership with our natural environment.

A good example of this comes from the Himalaya mountains, where hulking ice stupas dot the arid landscapes of northern India’s Ladakh region. Villagers of the region have turned to natural engineering solutions to preserve water – an increasingly scarce resource due to accelerating glacier shrinkages.

As glaciers recede, the flow of water has become more erratic – sometimes there is too much leading to flooding and other times there’s not enough. The stupas use runoff collected during the day is then piped underground and shoots through a sprinkler into the air at night and freezes to form ice stupas that can reach the height of a 10-storey building. The meltwater helps farmers get through the spring planting season when villagers sow vegetables, barley and potatoes.



APEGS Environment and Sustainability Committee

Ice stupas are a common sight in northern India’s Ladakh region.

United Nations Development Programme, Sustainable Development Goals

www.undp.org/content/undp/en/home/sustainable-development-goals/

The Art of Building Artificial Glaciers www.newyorker.com/magazine/2019/05/20/the-art-of-building-artificial-glaciers

Engineering and Geoscience Week

Celebrating Engineering and Geoscience Week Feb. 28 - March 6

This year, APEGS is promoting Engineering and Geoscience Week in Saskatchewan digitally.

Teachers and the public can access two online resources on engineering and geoscience.



GeoExplore Saskatchewan is an interactive map and online resource featuring information on an array of geological points of interest and geoscience concepts that explain their origins.

APEGS introduced the resource for Engineering and Geoscience Week 2020 and it has continued to evolve with new content posted on a regular basis.

New resources for teachers are also available under the Extras! menu tab, which links to lesson plans. The easiest way to access it is by Googling “GeoExplore Saskatchewan” or visiting the APEGS website and clicking the Public menu item.

Visit GeoExplore Saskatchewan to learn about these fun facts and more.

- Saskatchewan has been covered by glaciers at least seven times during the past 2.6 million years.
- The most recent energy resource being developed in Saskatchewan is geothermal power.
- Dinosaur bones are not the only fascinating fossils found in Saskatchewan that teach us about past environments.

Go to apegs.ca and click the Public menu item.

APEGS wishes all members of the engineering and geoscience professions a happy and safe Engineering and Geoscience Week.



The movie *Dream Big: Engineering Our World* and accompanying educational resources explore how engineers solve big and small problems to improve people’s lives. APEGS introduced the movie and resources to all Saskatchewan schools for Engineering and Geoscience Week 2019 and they continue to be available to schools through the Ministry of Education’s ROVER service (Recommended Online Video Education Resources).

The public can view the movie on Netflix and the educational resources (short videos and written lesson plans) at www.dreambigfilm.com/education.



APEGS is also continuing with its advertising campaign to raise awareness about the professions and reinforce APEGS’ regulatory mandate to protect the public. This includes online ads and radio and billboard ads.

There is also a feature in the *Regina Leader-Post* and the *Saskatoon Star Phoenix* to introduce the newest professionals licensed with APEGS, to publicize the role that engineers and geoscientists play in the lives of Saskatchewan residents and to reinforce the mandate of APEGS to regulate the professions in the public interest.

2020 BRIAN ECKEL AWARDS

PINNACLE AWARD & AWARD OF EXCELLENCE

PROJECT MANAGEMENT CATEGORY

Associated Engineering (Sask) Ltd. & CIMA +

PROJECT: Regina Bypass Project

CLIENT/OWNER: Government of Saskatchewan Ministry of
Highways & Infrastructure

AWARD OF MERIT

MUNICIPAL INFRASTRUCTURE & WATER RESOURCES CATEGORY

AECOM Canada Ltd.

PROJECT: River Street Reservoir and Pumping Facility

CLIENT/OWNER: City of Prince Albert

AWARD OF MERIT

TRANSPORTATION CATEGORY

Stantec Consulting Ltd.

PROJECT: Ring Road over Wascana Creek Bridge
Replacements

CLIENT/OWNER: City of Regina

AWARD OF MERIT

BUILDINGS CATEGORY

KGS Group

PROJECT: 1825/1855 Lorne St. Electrical Modernization

CLIENT/OWNER: SaskTel



Kai Li, B.E., P.Eng.

YOUNG PROFESSIONAL AWARD

Kai Li, B.E., P.Eng.

Intermediate structural
engineer at Engcomp.

COMMUNITY INITIATIVE

Stantec received ACEC-SK's 2020 Community Initiative
Award for its partnership with YMCA Regina.



Minh Au

BRIAN ECKEL MEMORIAL SCHOLARSHIP

ACEC-SK's 2020 recipient of the
Brian Eckel Memorial Scholarship
is **Minh Au**, a third-year
University of Saskatchewan
student pursuing a dual degree
in Engineering Physics and
Computer Science.

CONSULTING ENGINEER OF THE YEAR

Tetra Tech Canada Inc. is the Consulting Engineer of the
Year as presented by the Ministry of Highways and
Infrastructure. Tetra Tech was the ACEC-SK firm with the
highest average performance evaluation score from Nov. 1,
2019 - Oct. 31, 2020.

Celebrating Our Own



Shawna Argue, MBA, P.Eng., FEC, FCSSE, FGC(Hon.)

Shawna Argue

Lifetime Achievement Award

Degrees Magazine - Shawna Argue has enjoyed a dynamic career as one of the most respected members of Saskatchewan's engineering community.

She also is the first female University of Regina engineering graduate to be recognized with an Alumni Crowning Achievement Award – Lifetime Achievement Award.

"I am a detail-oriented, logical thinker," says Argue, a U of R BA.Sc graduate in 1987. "Engineering is a profession that applies science to solving a variety of problems. I like that about the profession. But, more than that, it is the people that I have had the opportunity to work with over the years, from a variety of professions. Some were classmates, some colleagues, some clients, some volunteers and some all of the above. Many have become lifelong close friends."

She is currently the Director of Registration for the Association of Professional Engineers and Geoscientists of Saskatchewan. Argue previously owned a consulting business and worked with a variety of international clients in industries, including resource extraction, oil and gas production, transportation, utilities and manufacturing.

"I have been told that I was the first woman to undertake a variety of activities in my profession," she says. "At the time, I was not aware that was the case and didn't even think about it. I have never been one to want to accomplish something just because I was a woman. I just wanted to get the job done."

In addition to her professional accomplishments, Argue has been a tireless volunteer in the community - she has raised more than \$40,000 for CIBC Run for the Cure. She also has given her time to many organizations, including the Royal Regina Golf Club, Assiniboia Club, Regina Business and Professional Women's Club, Canadian Red Cross Water Safety Service and Royal Lifesaving Society Canada.

She also has been the Saskatchewan director and president of the Canadian Society of Senior Engineers and is a warden for Camp #25 (Regina) for the Ritual of the Calling of an Engineer Iron Ring Ceremony.

"I started volunteering early in my life for various causes – Red Cross, Royal Life Saving Society Canada, and many others," Argue explains. "As I progressed in my career, my volunteer activities were refocused on my profession. I thought I was giving back to my profession by volunteering. But, in fact, my profession was still giving to me as I continually learned more."

Named a Woman of Distinction by the Regina YWCA in the Science and Technology category, Argue also is a recipient of the Regina Engineering Society's Engineering Excellence and Volunteer Awards. In 2019, she was the first woman to receive the Association of Consulting Engineering Companies – Saskatchewan's Lieutenant Governor's Meritorious Achievement Award.

"I was very surprised and pleased when I was informed that I was receiving this award," she says of her Lifetime Achievement Award. "It is a great honour and a humbling experience to be recognized in such a way. It is very special and meaningful to be recognized for my professional and volunteer achievements."

She also is the first female University of Regina engineering graduate to be recognized with an Alumni Crowning Achievement Award – Lifetime Achievement Award.

Argue and her husband, Kent Walde, have been married for 31 years. They live in Regina and have an all-season cottage at Sunset Cove. They enjoy a variety of activities including vacationing at their timeshares in Kelowna and Barbados, cooking, golfing, gardening and sipping fine wine.

News Beyond Our Borders



www.drdirect.net

N.S. engineer calls for tougher ventilation rules

CBC News - An environmental engineer says the Nova Scotia government should improve ventilation regulations in the building code to prevent the spread of COVID-19.

Jeff Feigin, P.Eng., of Highwater Holding Company near Whycocomagh, Cape Breton, admits he has a financial interest in promoting environmental engineering solutions, but says as a citizen, there are buildings he will not go into because he believes the air quality poses a public health hazard.

For example, Feigin said small foyers with automated teller machines tend to have no ventilation whatsoever and other buildings, like some grocery stores, simply recirculate stale air rather than bringing in fresh air.

He said there is a cost to retrofitting a building and adding a heat exchanger to keep energy costs down, but that's a small price to pay for clean air.

Feigin has written to the province urging changes to the building code that would address ventilation concerns specific to a pandemic.

The Nova Scotia government said it is not considering any changes to the building code.

The government said if a building's ventilation system is designed, operated and maintained properly, the risk of coronavirus transmission is minimal.

The risk of contracting COVID-19 from the air can be mitigated by wearing a mask, keeping your distance, limiting exposure to under 15 minutes and ensuring a regular supply of fresh air.

Engineer found guilty of professional misconduct



Toronto Star

CBC - An engineer who signed off on a Radiohead concert stage that collapsed and killed a drum technician in Toronto eight years ago has been found guilty of professional misconduct, but the findings and the engineer's acceptance of them come too late to provide justice, according to the band and the family of the man who died.

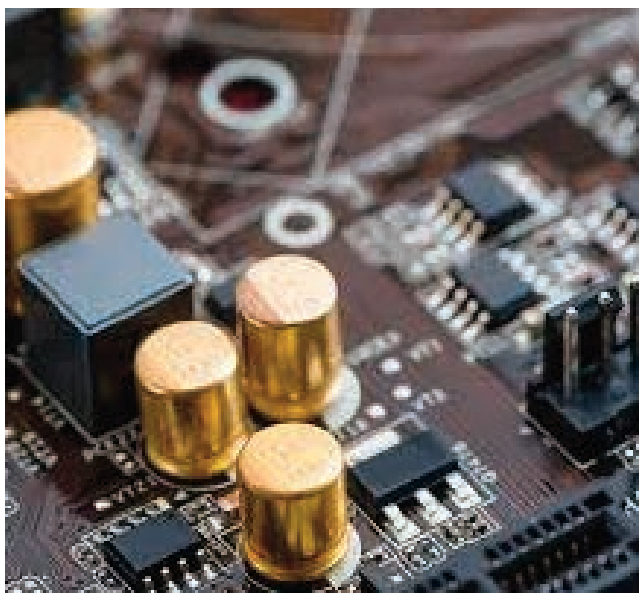
Domenic Cugliari, P.Eng., agreed to conclusions reached by the discipline committee of the Professional Engineers Ontario in the June 16, 2012 incident that killed Scott Johnson.

Johnson, 33, was tuning a drum kit for the band before a concert at Toronto's Downsview Park when the massive outdoor stage structure collapsed on him. Three others were injured.

In December, the discipline committee found Cugliari had not noticed numerous errors and omissions in design drawings for the stage and consequently failed to revise the plans.

It also found Cugliari did not examine trusses holding heavy lighting equipment and failed to realize those trusses were incorrectly connected to other beams.

Cugliari had his engineering licence revoked as a result of the committee's findings, and his company, Construction Control Inc., which declared bankruptcy in 2018, lost its licence.



Summit Nanotech Corp.

Nanotechnology used to create new lithium extraction technology

Global Calgary - Since the downturn in the oil and gas industry, there have been repeated calls for Alberta to diversify its economy. The province invests hundreds of millions of dollars every year to help grow both the tech and green energy sectors, industries that could have a bright future in a province rich with talent.

Amanda Hall, P.Geol., is a prime example of that. She was able to draw on her experience in resource extraction with Alberta's oil and gas industry, developing green technology to be used in energy storage.

Hall left her job in geophysics at Canadian Natural Resources Ltd. in 2018 and began a self-taught foray in nanotechnology. Nanotechnology is a field of research and innovation concerned with building materials and devices on the scale of atoms and molecules.

Hall developed the only female-led mining technology company in the world: Summit Nanotech Corp. Using nanotechnology, Hall and her team say they have created an improved method of lithium-ion resource extraction from produced brine water.

Using sponges developed through nanoscience, Hall and her team have created technology that will allow producers to extract lithium directly from the wellhead without the need for expansive ponds and toxic chemicals. The process is expected to reduce costs and decrease chemical waste by 90 per cent.

The firm's website touts that its process is the most "green lithium extraction in the world".

"The sponge has lithium selective cavities in it, just the exact size of a lithium-ion. And so, as if you put a fluid in against this sponge, it will only suck up lithium, nothing else, and it holds on to it. And then when you wash it, you

wash the lithium off the sponge just by changing the environment it's in. So we don't have to use any acids," Hall said.

Hall and her team have spent the last two-and-a-half years in the lab perfecting their design and are now building the company's first full-scale 12-metre tall unit. "It's our baby, but it's huge," Hall said. "It's a mini-refinery, essentially."

That "mini-refinery" will then be sent via shipping container to the first of the company's three pilot partners: Lithium Chile.

The other two partners are Saskatchewan-based Prairie Lithium and 3 Proton Lithium (3PL) Operating Inc. in Nevada.

Alberta researcher awarded for mask innovation



CTV News

The Canadian Press - Salt that crystallizes with sharp edges is the killer ingredient in the development of a reusable mask because any COVID-19 droplets that land on it would be quickly destroyed, says a researcher who is being recognized for her innovation.

Ilaria Rubino, a recent PhD graduate from the department of chemical and materials engineering at the University of Alberta, said a mostly salt and water solution that coats the first or middle layer of the mask would dissolve droplets before they can penetrate the face covering.

As the liquid from the droplets evaporates, the salt crystals grow back as spiky weapons, damaging the bacteria or virus within five minutes.

"We know that after the pathogens are collected in the mask, they can survive. Our goal was to develop a technology that is able to inactivate the pathogens upon contact so that we can make the mask as effective as possible."

Rubino, who collaborated with a researcher at Georgia State University in Atlanta to advance the project she started five years ago, was recognized with an innovation award from Mitacs.

The Canadian not-for-profit organization receives funding from the federal government, most provinces and Yukon to honour researchers from academic institutions.

The reusable, non-washable mask is made of a type of polypropylene, a plastic used in surgical masks, and could be safely worn and handled multiple times without being decontaminated, Rubino said.

The idea is to replace surgical masks often worn by health-care workers who must dispose of them in a few hours, she said, adding the technology could potentially be used for N-95 respirators.

The salt-coated mask is expected to be available commercially next year after regulatory approval. It could also be used to stop the spread of other infectious illnesses, such as influenza, Rubino said.

Emissions from oilpatch twice as high as thought



Bloomberg

The Canadian Press - Emissions of a potent greenhouse gas from Canada's oilpatch are nearly twice as high as previously thought, says newly published federal research.

The findings on methane from Environment Canada researchers could complicate regulatory attempts to nearly halve releases over the next five years, says an environmental group.

Methane is released from oil and gas infrastructure such as pumps, pipelines and valves during everyday operations. Its effects in climate change are about 30 times more powerful than carbon dioxide and both industry and government have been working to keep it contained.

How much methane is being released has been contentious.

Current estimates are based on the difference between how much methane enters oilpatch infrastructure and how much is left at the other end. In a paper published in the journal *Environmental Science and Technology*, Environment Canada scientists instead used actual measurements of methane in the atmosphere.

Eight years worth of data from four points in Alberta and Saskatchewan show the previous total of 1.6 megatonnes is an underestimate. The study found three megatonnes.

The report's findings are being welcomed by industry.

"The industry is working closely with government and regulators to continue to build a detailed understanding of methane emissions and their efficient management," said Jay Averill of the Canadian Association of Petroleum Producers. "The more we know about the sources of methane emissions, the better we can find ways to target and reduce those emissions."

Oil and gas to see slight recovery in 2021



industrywestmagazine.com

WestCentral Online - As the oil and gas industry continues to cope with the effects of Covid-19 and the continual low prices of oil per barrel, operations are set to improve slightly in 2021.

The Canadian Association of Oilwell Drilling Contractors (CAODC) recently released their 2021 drilling forecast, which sees an increase in wells drilled and overall operating days, compared to 2020.

The association is projecting 3,771 wells will be drilled in the new year, which is an increase of 475 from 2020. The number of operating days is projected to increase to 33,938 from 29,664 – a difference of just under 4,300 days.

Although total jobs are expected to increase by 2,349 to 18,550 total over last year, rig fleets are projected to see a decrease of 27, going from 505 in 2020 to 478 in 2021.

High-speed Internet coming to rural Canada

The Canadian Press - The federal government is launching a \$1.75-billion fund to expand high-speed internet to Canadians in rural and remote communities.

The Universal Broadband Fund will see 98 per cent of Canadians connected to high-speed internet by 2026 — crucial in an era when virtual communication is an essential part of daily life.

The program, originally announced in the 2019 budget as a \$1-billion fund, includes \$750 million of additional cash to advance projects with partners such as the federal infrastructure financing agency.

A \$600-million deal with Ottawa-based satellite company Telesat will link especially remote communities and regions in the Far North with high-speed broadband via satellite.

The CRTC declared broadband Internet a basic telecommunications service in 2016. However, its data suggests just 41 per cent of rural Canadian households have access to at least 50 megabits per second (Mbps) download speeds and 10 Mbps upload speeds.

Engineers rated one of UK's most trusted professions

The Engineer - Nearly nine out of 10 people in the UK trust engineers to tell them the truth, according to new research from Ipsos MORI and the Institution of Engineering and Technology (IET).

The profession, which makes up 19 per cent of the UK workforce, was deemed trustworthy by 89 per cent of the population, closely following nurses (93 per cent) and doctors (91 per cent). This marks engineering's highest placing to date since its inclusion in the Ipsos MORI Veracity Index in 2018.

"As highlighted this year, engineers play a central role in advancing the world around us and finding solutions to global challenges," said Dr. Peter Bannister, P.Eng., biomedical engineer and chair of the IET's healthcare panel.

"The coronavirus outbreak has presented many challenges across the world and has changed life as we know it. Engineers have played a vital role in developing technology and rapid processes to not only keep our infrastructure running but to provide healthcare solutions such as highly efficient ventilators, improve mental health by combatting social isolation, develop remote diagnostics and healthcare tracking apps as well as biomedical engineering which has led to successful vaccine trials.

Groups urge government to 'Build for Recovery'

Daily Commercial News – A group of construction industry organizations and stakeholders launched the Build for Recovery campaign, an effort to encourage all levels of government to prioritize infrastructure investments to fuel Canada's post Covid-19 economic recovery.

The partners who are organizing the campaign include the Canadian Construction Association, Association of Consulting Engineering Companies – Canada, the Canadian Council for Public-Private Partnerships, Associated Equipment Distributors and the National Trade Contractors Coalition of Canada.

"Even though there seems to be a lot of support for infrastructure investment for being a part of recovery, we don't want to take it for granted," said John Gamble, president and CEO of ACEC Canada. "We want to make sure that infrastructure is top of mind for policy-makers."

But it's not as simple as just committing to build infrastructure.

Gamble noted the kind of infrastructure government chooses to invest in matters as well.

He said the current federal leadership is an activist government with a green economy brand. He said while active transportation, solar farms, community centres and other "soft infrastructure" add value, leaders should not forget about bread and butter infrastructure projects.

Honouring the women of the Montreal massacre

Yahoo News - It has been 31 years since the tragic massacre of 14 women at École Polytechnique in Montreal but the flashback of the Dec. 6, 1989 femicide will remain a vivid memory for many in Canada and around the world.

Dr. Mary Wells, P.Eng., dean of the faculty of engineering at the University of Waterloo, graduated from McGill University in 1987, shortly before the Montreal massacre. She was working for Stelco in Hamilton, ON, at the time and still remembers hearing about the shooting on the radio.

"After that happened it really shocked me, the memory of hearing it is like burned in my brain," she said. "All the women and my colleagues, we just considered ourselves engineers, we didn't think of ourselves as women engineers ... it was just so shocking for me to see that he was trying to get rid of people like me, and why would that be? It was just unbelievable."

Dr. Lianne Lefsrud, P.Eng., assistant professor, engineering safety and risk management at the University of Alberta, was a second-year engineering student at the Alberta school when the attack happened.

"I was in civil engineering and there [were] five or six women students ... with me and we just kind of sat together like absolutely dumbfounded," Dr. Lefsrud said. "It was just so unbelievable that where we felt safe in class could be so unsafe for someone else."

Dr. Lefsrud said the tragedy boosted conversations at the University of Alberta about solidarity and celebrating engineers.

"Remembering the Montreal massacre is an opportunity for us to learn from it and to say, what barriers do we still face as women, or different genders ... in STEM more broadly, and there's plenty of them," she said. "This [is] an opportunity for us to reflect on those barriers, on the progress that we've made and the progress to still make."

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News From The Field



omdfortheplanet.com

AGRICULTURE

Expanding uses for local plant proteins

StreetInsider - Protein Industries Canada announced a project and outside partnership focused on developing new plant-based protein products and ingredients that will be sold to markets in Western Canada and Asia.

Mera Food Group, Mera Developments and Benson Farms are partnering to use Western Canadian commodities to develop the products. During the first phase of their project, they'll use these commodities — including oats, lentils, hemp, fava beans and chickpeas — to develop beverages and other products for consumers in Western Canada before targeting Asian markets in the second phase.

Throughout the project, Benson Farms will help determine the best varieties of the commodities to use via trial plots. Mera Food Group and Mera Developments, meanwhile, will focus on developing the plant-based protein products and ingredients, including an outside partnership with Federated Co-operatives Limited (FCL).

While strengthening the plant-protein sector through the development of new products, the partners will also be expanding it by building additional capacity for other agrifood businesses. They will be

bringing new co-packaging machinery into the Saskatchewan Food Industry Development Centre and will make it available for use by other companies.

“Mera Development is excited to provide the consortium with its global expertise in leveraging data and analytics to enhance operational and financial performance,” Mera Development Corp. CEO Heather Quale, P.Eng, P.Geo said. “Through this project, we have the opportunity to utilize our expertise to meet the needs of our customers.”

COVID-19

Testing Saskatoon sewage for Covid-19



CBC.ca

University of Saskatchewan - A new tool developed by researchers at the University of Saskatchewan is predicting an increase in COVID-19 cases in Saskatoon by looking at the city's sewage.

In partnership with the City of Saskatoon and the Saskatchewan Health Authority, researchers have been testing samples of the city's wastewater for the virus since July.

Because infected people shed traces of the virus through their feces, tracking the amount of the virus circulating in the city's wastewater can help determine how many people in the city are sick.

This should predict trends in case numbers ahead of the testing data, reflecting people who have the virus but are not showing symptoms.

The researchers' most recent findings suggest case numbers in the city will continue to rise.

Kerry McPhedran, M.Sc., Ph.D., P.Eng., is an associate professor of engineering at the University of Saskatchewan and part of the research group at the university.

He said the project isn't at the stage where they can pinpoint where in the city the positive cases are coming from.

"Right now, we're just doing the one test so it's all the wastewater coming from all the city going into the Saskatoon wastewater treatment plant," McPhedran said. "There has been talk about doing certain locations in the city. We have some issues in ethics involved with that if we're trying to pinpoint."

USask researchers creating filter to clean viruses



Global News

Global News - Scientific research has shifted this past year in response to the Covid-19 pandemic.

Jafar Soltan, P.Eng., M.Sc., Ph.D., a University of Saskatchewan (USask) chemical engineering professor, and a team of researchers were previously developing methods and catalysts to clean air using technology at Canadian Light Source.

They were focusing on filtering chemicals and air pollutants but are now seeing how the technology can clean viruses. Filtering viruses brought on additional challenges for the researchers.

The filter being created is different than most.

"Our catalysts are active filters. If it's pathogens, they are inactivating that and if it's other pollutants they completely convert them," said Nazanin Charchi, EIT, USask chemical engineering Ph.D candidate.

The team hasn't tested the active filter with Covid-19 yet and is currently working on its efficiency.

"The catalyst in a way would fry the virus, basically oxidizing it and taking away the functionality of it. We call it inactivating the virus," Soltan said about how the filter could clean Covid-19 in the air.

Further collaborations are needed before the team can move forward with testing viruses like the novel coronavirus. Soltan hopes to collaborate with VIDO-InterVac where they could test the filter, as well as air conditioning companies who could include the filter in air conditioning units.

They hope to have a final design and study by June, 2021.

Ventilation as a Covid-19 safety measure



University of Saskatchewan - The University of Saskatchewan (USask) engineering professor is happy to see doctors and engineers in Ontario alerting people about the importance of keeping their indoor spaces well-ventilated as Canada battles Covid-19.

Carey Simonson, P.Eng., M.Sc., Ph.D, an expert in heating, ventilation and air conditioning (HVAC) technology and a professor and researcher at USask Engineering, says he's pleased that people are starting to learn about the role ventilation can play in keeping them and others safe during the pandemic.

"When we're talking about reducing transmission of Covid-19, we need to keep ventilation in mind, as well as distancing, masks and sanitation," he said.

Nearly three dozen doctors, engineers and other scientists in Ontario have called on their government to update its Covid-19 guidelines to reflect that the virus is able to be spread in microscopic droplets or aerosols that can travel beyond two metres. The Public Health Agency of Canada acknowledged earlier this month that this type of transmission is possible.

The engineers and doctors in Ontario ask the government there to give people clear messaging about how they can reduce transmission risk in their homes and businesses, including the following guidance:

- Promoting indoor mask use even when distanced,
- Routinely opening windows to refresh the air,
- Regular HVAC maintenance and filter replacement,
- Turning on available vented range hoods and bathroom exhaust fans.

U of R researchers modelling garbage generation



University of Regina - Drs. Kelvin Tsun Wai Ng, P.Eng., Ph.D., and Golam Kabir, Ph.D., EIT, with the Faculty of Engineering, have joined forces with the City of Regina to examine how the pandemic has affected the city's garbage stream and to develop an improved waste generation model.

Ng anticipates the new model will help the City of Regina better plan and manage its landfill operations and that this research could form the basis for improved landfill management models in other places.

The research involves mapping the number of active Covid-19 cases in Regina during specific time periods and comparing it to the amount of waste generated at those times. Ng will then be able to build scenarios predicting trash totals based on the potential spread of the virus.

The model will also help with waste management planning for future catastrophic events.

The researchers have already been able to determine that the pandemic has had mixed impacts on the city's waste stream.

Compared to 2018 and 2019, there has been a reduction in the city's overall waste generation, but an increase in household waste.

This may be indicative of reduced commercial and industrial activity affecting the amount of waste these sectors generated, whereas household waste generation likely increased as people stayed home, visited fewer restaurants and used more personal protective equipment.

Locally made ventilators to help in Covid fight

Toronto Star - A few days after the global pandemic was declared, Jim Boire, P.Eng., got a text from his daughter. Rebecca Erker, a Royal University Hospital intensive care unit nurse. She is working on her PhD with the respiratory research centre in Saskatoon. As a result, she had a good



The Conversation

understanding of what was at stake with Covid-19, and reasons to be concerned.

Thankfully, Boire is president of RMD Engineering. His company had the expertise and capacity to do something about it. And they did.

"I got my text from my daughter on March 18. On March 24, we had our first prototype built," Boire said.

The Saskatchewan Health Authority (SHA) said it would be taking delivery of 100 new ventilators, known as the EUV-SK1, in short order. The first 20 are ready to go out the door and the company has most of the parts in place to build as many as 1,000 units.

RMD Engineering Inc's subsidiary, One Health Medical Technologies, recently received Covid-19 Medical Device Authorization from Health Canada for an in-house designed, developed and manufactured ventilator. Collaborating with the University of Saskatchewan and SHA subject matter experts, RMD Engineering was able to successfully prototype an emergency use ventilator for Health Canada certification.

According to the Ministry of Health, there are approximately 650 ventilators available in Saskatchewan's health system, enough to meet the need. They range from high-end critical care type ventilators to more basic sub-acute ventilators. The SHA's purchase from RMD will increase that number to about 750.

EDUCATION

Youth engineering education program going digital

Northeast Now - A group that offers science, technology, engineering and math education is going virtual in 2021.

Engineering for Kids of North Saskatchewan is running five-day camps through January and February.

Normally operating in person, Cathi Wilson – director of



SaskNow

Engineering for Kids of North Saskatchewan – said they’ll present their program digitally to follow Covid-19-related health guidelines.

“They’ll build a bridge across the Saskatchewan river, a boat to travel across the ocean and a plane to fly across the sky,” Wilson said. “In doing so, they’ll also learn about the engineering principles involved with that. They’ll build, test, design and improve it and work through that process.”

“We’re mixing science, engineering and math together with geography and international issues,” Wilson said. “If we [hold camp] in person, we’ll provide a lot more elaborate supplies... but for these ones, we’ve adapted everything. They’re primarily household items that they’ll use.”

“They’ll get a travel club membership and supply kit for uncommon supplies – clay, construction straws – a few things like that that they may not have around their house.”

Engineering for Kids of North Saskatchewan hopes to hold in-person camps in the summer – health protocols permitting – as Wilson said they prefer to watch kids grow and get more one-on-one learning. She said their primary topics are robotics, game coding and every aspect of engineering. They hope to hold one-week camps in Melfort, Nipawin, Prince Albert and Tisdale.

MINING

Estevan looks to diversify economy

Regina Leader-Post - As part of southeast Saskatchewan’s move away from burning coal, Estevan is looking to a new partnership struck with a nearby First Nation and a veteran geologist to help keep jobs and money in the area.

The city signed a memorandum of understanding with Ocean Man First Nation and Buffalo Potash Corporation to study how and if it can bring modular potash mines to the area and a processing facility that wouldn’t burn coal, but would still use it to create fuel.



Narcity

Ocean Man sits about 100 kilometres north of Estevan. Buffalo Potash Corp., founded in 2018, is headed by long-time geology consultant, potash expert and former APEGS president Steve Halabura, P.Geo., FGC, FEC (Hon.).

Estevan’s nearby Shand Power Station burns coal to produce approximately 276 megawatts of electricity.

As Halabura explains it, the intent of the new facility would be polygeneration – “using one or two or three raw components. You take them apart and you combine them” into fuel products that can be sold on the market.

Instead of burning coal, for example, he described a process of taking it apart and combining it with potash, natural gas or underground brine to “create synthetic fuel” or “you can make a clean hydrogen fuel”.

The process would also allow for more customizable fertilizers, by adding nitrogen and sulphur to potash mined underground at modular sites, Halabura said, figuring that would open a wider market to farmers looking for a specific fertilizer formula.

Halabura said the small-scale, modular potash mines wouldn’t send people underground. They’d instead mimic the pipe systems used for mining underground oil.

SK expanding access to potash industry tax credits

CJME - The provincial government is hoping upgrades to some tax incentives will encourage potash companies to try new things.

The Government of Saskatchewan announced changes to the tax regulations governing the potash sector. The changes are meant to improve access to a tax credit that covers 40 per cent of costs for new research and development projects and “approved market development programs”.

The province is hoping to inspire junior potash companies to turn towards innovation by removing expiry dates and enhancing the eligibility requirements for the tax break.



CBC.ca

To qualify for the credit, research and development projects have to showcase improved efficiency in potash production, mitigation of environmental impacts, reduction in physical risks to employees and mine operations, or the development of new and improved potash products.

The market development credits will be granted to companies that create new markets or grow existing ones.

According to the province, the potash industry in Saskatchewan is responsible for about 30 per cent of the world's potash production. It also employs around 5,000 people.

OIL AND GAS

What is this oil shale near Hudson Bay?



YorktonThisWeek

Toronto Star - The Dec. 1 Crown petroleum and natural gas public offering highlighted the sale of several leases for "oil shale" southwest of Hudson Bay. But what exactly is oil shale? Is it shale oil, like the Bakken? Is it oilsands like around Fort McMurray? Or is it something else?

Melinda Yurkowski, P.Geol., is the assistant chief geologist of Saskatchewan, working with the Saskatchewan Geological Survey, part of the Ministry of Energy and Resources.

"It's the younger brother of the source rock that

generates oil and gas. Essentially it is very rich in organic sedimentary material called kerogen. And this kerogen, if it gets buried deep enough and has enough pressure to it, it will thermally crack, and it will convert itself to oil, and that's where all the oil comes from. The oil shale rocks are immature and they're usually younger in age than oil-bearing formations."

In other words, the fluid within the rock has the prospect of becoming oil. In natural processes, that could occur over the next tens of millions of years. But it is not oil yet. Where it has been developed around the world, oil shale is mined and then they "retort" it, which is heating to high temperatures, to create a synthetic oil.

The oil shale rocks are exposed at some places on the surface near Hudson Bay.

Under the surface, they run from the Manitoba Escarpment (of which Riding Mountain National Park is the most obvious example) to Alberta, as far north as the Peace River Arch and as far south as Texas.

It is contiguous, for the most part. In Alberta, they are deep enough to form oil and gas.

"You can map it for the southern half of Saskatchewan, for sure," Yurkowski explained.

Shale oil, such as what comes from the Bakken in North Dakota and southeast Saskatchewan, is oil produced from "tight" shale formations of rock. In the case of the Bakken, this is considered the "source rock," where that oil originated, but it is deep and hot enough in the North Dakota "kitchen" to have "cooked" those kerogens into oil.

That depth is not present at Hudson Bay, where the oil shale is just below the glacial till - the layer of the earth closest to the surface that was recently disturbed by glacial ice sheets.

As for oil shale around Hudson Bay, Yurkowski says, "We've been aware of them for a long time and there's been various sort of companies have gone in there and have taken a look at it. And in the past, technology's always been a bit of a challenge."

Saskatchewan driller hits 'gusher' geothermal well

Financial Post - A Saskatoon-based company has drilled and fracked the world's first 90-degree horizontal well for geothermal power in a potentially landmark move that signals the arrival of a new energy source in Canada and provides fresh opportunities for oil and gas workers to apply their skills in renewable power.

No company in Canada has produced electricity from geothermal heat, but Deep Earth Energy Production Corp., CEO Kirsten Marcia, P.Geol., said there's a "big, big future for geothermal power in western Canada," as



deepcorp.ca

demonstrated by the results of the first horizontal geothermal well, which is also the deepest horizontal well ever drilled in Saskatchewan.

“We were looking for a way to explain to people that we drilled a gusher,” said Marcia, who worked in the mining and petroleum industries before pioneering a geothermal business in Saskatchewan.

In the oil and gas world, a “gusher” is an extremely productive well that pumps substantial volumes of oil and gas.

In Canada’s nascent geothermal power industry, Deep’s “gusher” can produce steaming-hot water and brine with a temperature of 127 degrees centigrade at a rate of 100 litres per second. Marcia said those flow rates mean the well will actually be limited by the hardware, such as pump capacity, that are connected to the wellhead.

She said the well, called the Border-5HZ well, is capable of producing three megawatts of renewable, reliable electricity, enough to power 3,000 homes.

The well will form part of a larger 20MW geothermal power project, which is expected to commence construction in 2023 in southern Saskatchewan. The well is also a first for the global geothermal industry.

New energy technologies tested in Sask.

Calgary Herald - Proton Technologies sees a bright future in old oil and gas wells. The Calgary-based company has developed an environmentally sustainable way to extract hydrogen – a clean form of energy – from mature oil and gas reservoirs.

Proton chose Saskatchewan as its base to pilot test its patented technology under operational conditions by purchasing a decommissioned oilfield near Kerrobert.

“The basic concept of what we aim to do is to produce very low-cost hydrogen from existing oilfields,” says Grant Strem, P.Geo., a former oil and gas geologist who now is CEO and chairman of Proton Technologies Inc.



H2View

Proton’s ground-breaking method for extracting hydrogen involves the injection of oxygen into the mature oil and gas fields to induce a reaction that releases the hydrogen, which can then be extracted. This innovative method of hydrogen extraction aims to produce the resource without generating greenhouse gas emissions.

Proton plans to not only use the oil and gas industry’s old fields, but also its infrastructure.

“The produced hydrogen can be mixed into existing natural gas pipelines or used at higher concentrations at electricity assets such as coal and natural gas power plants,” says Strem. “Proton is structuring contracts to supply hydrogen at the same energy price as natural gas and is thus targeting baseload power and heating using existing infrastructure.”

Saskatchewan oil flow halfway back

Western Investor – Saskatchewan’s oil production has rebounded halfway back from its pre-COVID-19 production levels.

Saskatchewan Minister of Energy and Resources Bronwyn Eyre said, “September saw Saskatchewan producing 434,000 barrels per day, which was up from a low of 361,000 in May, but still below the 502,000 when Covid hit in March.”

Overall, 815 wells have been drilled in Saskatchewan this year, which is down over 40 per cent compared to the same period last year.

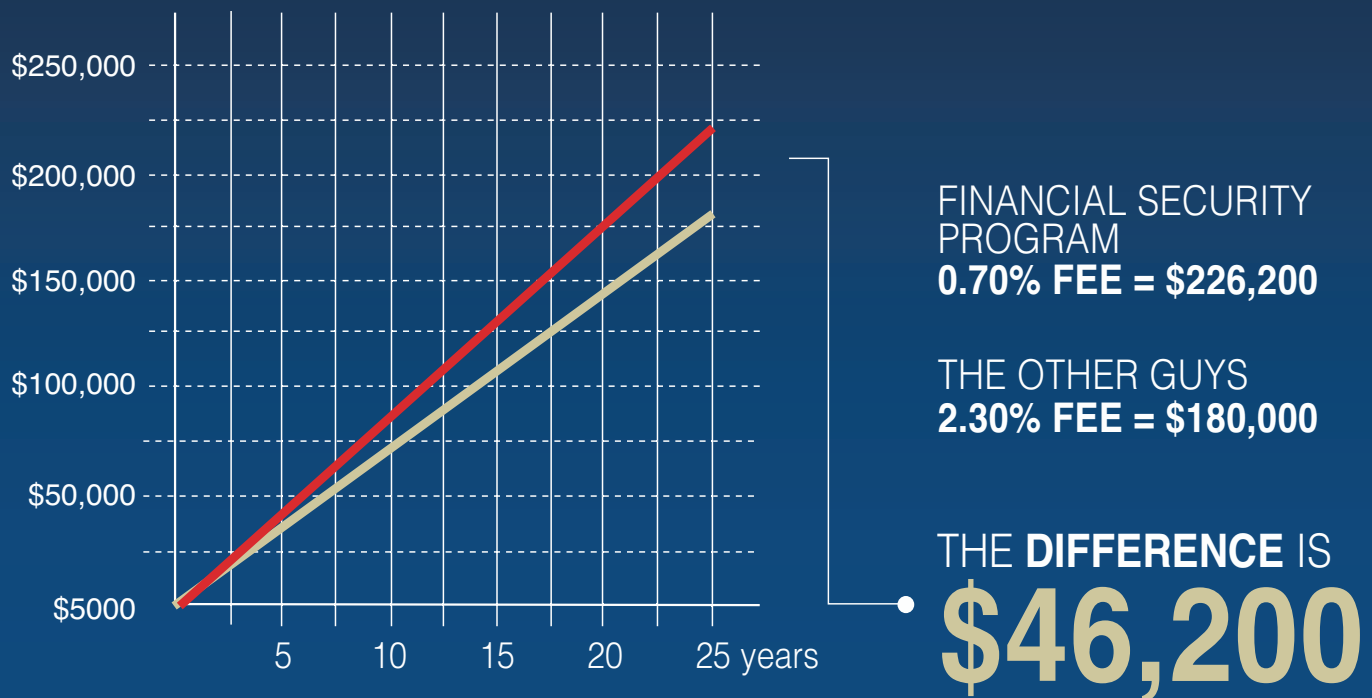
More than 50 per cent of shut-in production has come back online.

In its annual forecast for the coming year, released November 18, the Canadian Association of Oilwell Drilling Contractors (CAODC) is projecting 3,771 wells drilled in 2021, a 14-per-cent increase of 475 from 2020.

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Calendar Of Events

Employment Standards Webinar – Paying Employees When Working in a Week with a Public Holiday

February 17, 2021

www.saskatchewan.ca/business/employment-standards/employment-standards-training

Paleo-tectonic reconstructions Webinar

February 24, 2021

www.sgshome.ca

Indigenous Awareness Virtual Workshops

February 26, 2021

www.acec-sk.ca/event/

Wind Caves in North Dakota Webinar

March 3, 2021

www.sgshome.ca

Employment Standards Webinar – Employment Standards Misconceptions and Misunderstandings

March 3, 2021

www.saskatchewan.ca/business/employment-standards/employment-standards-training

APEGS Spring PD Days – Mental Health First Aid

March 9 and 11, 2021 or March 29 and 31, 2021 (plus pre-course work)

Details to follow at www.apegs.ca

PSMJ Virtual Leadership Bootcamp

March 10, 2021

www.acec-sk.ca/event/

Arctic Paleobotany Webinar

March 10, 2021

www.sgshome.ca

Deadline to register for Spring 2021 Law & Ethics Seminar and Professional Practice Exam

March 12, 2021

www.apegs.ca/Portal/Pages/Professional-Practice-Exam

Employment Standards Webinar – Taking Maternity Adoption and Parental Leave

March 17, 2021

www.saskatchewan.ca/business/employment-standards/employment-standards-training

Geology of Aberdeen Lake area, Nunavut Webinar

March 17, 2021

www.sgshome.ca

APEGS Spring PD Days – Get to the Point! Technical Writing Course for Business and Technical Professionals (6 session series)

April 12, 14, 19, 21, 26 and 28, 2021
Details to follow at www.apegs.ca

APEGS Annual Meeting and Professional Development Conference (online)

Plenary sessions and PD Track Sessions April 25 – 29, 2021

Awards Ceremony – April 30, 2021

Annual Meeting – May 1, 2021

Details to follow at www.apegs.ca

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Attending conferences also counts as credits under the Informal Activity category. For more information visit apegs.ca under the CPD menu.