

**Canadian Geoscience Education Network**  
**Wednesday, December 4, 2013; 12:00 noon -1:30 p.m.**  
**Salon Batoche, Delta Bessborough**  
**601 Spadina Crescent East, Saskatoon**

**MINUTES**

**Attendance:** Fran Haidl – Saskatchewan Ministry of the Economy, Regina; Melinda Yurkowski – Saskatchewan Ministry of the Economy, Regina; Donna Schreiner – Saskatchewan Ministry of the Economy, Regina; Kate MacLachlan – SGS Education and Outreach Committee & APEGGS staff, Regina; Kate Grapes Yeo - Saskatchewan Mining Association, Saskatoon; Gabriela Mangano – U. of Saskatchewan Geological Sciences Department, Saskatoon; Kim Mysyk – Consulting Geologist, Saskatoon; Sandy Bonny, U. of Saskatchewan, Saskatoon; Jeanette Roelofsen –U. of Regina Geology Department, Regina; Michelle Hanson – Saskatchewan Ministry of the Economy, Regina; Kathryn Bethune – U. of Regina Geology Department, Regina; Grant Young – SIIT, Saskatoon; Kim West – U. of Saskatchewan, Saskatoon; Larry Bogdon – ES30 Curriculum writer, Prairie South School Division; Joyce McBeth - Canadian Light Source/U. of Saskatchewan Geological Sciences, Saskatoon; Alison Donmez - North Rim, Saskatoon;

**1. Introductions and Welcome:** After a quick round of introductions Fran welcomed everyone and thanked the sponsors of the meeting, CGEN national, and the Ministry of the Economy Open House organisers.

**2. Review of outstanding ACTION ITEMS from 2012 meeting.**

- Kate Grapes Yeo will contact Gary Sibley of FSIN to discuss putting together an activity for their (FSIN's) mobile unit. Kate will contact Frank McDougall re: the possible inclusion of a resource for the museum mobile unit. (Ongoing)
- Kathy Bethune and Jeanette Roelofsen will check with the U. of Regina faculty to see if they are aware of the new courses being developed and what workshops are being held to help Education students/teachers to prepare to teach the courses. (Ongoing)
- Printing of the Northern Geoscape poster – Kate MacLachlan to talk to executive of Sask. Geological Society re: having more printed: this has stalled, need to determine who has the rights. NRCAN is redoing their web materials and have only archived the full poster as a pdf file. CGEN is keen to take over hosting the Geoscape posters. The northern poster is in French, English, Dene and Cree.
- Link to the Careers: Next Generation - <http://nextgen.org/>

**3. Earth Science in renewed High School curriculum (Larry Bogdon)**

- Revision of the ES30 curriculum is ongoing and will continue over the summer.
- Piloting in 2014: There are currently 2 teachers piloting the course with up to 12 teachers piloting in the fall. Physical Science 20 and Environmental Science 20 are currently being piloted.
- Teachers will contact us for information/resources; Fran Haidl and Kate Grapes Yeo to be Ministry of Education's contacts
- Resource development should be done with a teacher familiar with the new curriculum
- Most teachers do not have a geoscience background.
- How the geoscience community can help: Develop or find YouTube videos; keep language at grade 10 level; provide real data; correlate resources we already have, to the new curriculum; keep resources unbiased; develop both videos (other visual resources) and printed materials; provide PD workshops; classroom guest speakers with an activity; webinars.
- **Discussion:** Workshops for Education students – one being presented at U of S in March (SMA); Discussed possibility of dedicated YouTube channel.

- Fran pointed out the ES30 poster posted in the meeting room and shared the abstract (see attached). This poster was developed with Dean Elliott (Ministry of Education, Science Curriculum Writer) and Kate Grapes Yeo for display at the Min. of Economy Sask. Geological Survey Open House in Saskatoon. Several geoscientists signed up at the display to volunteer as a resource for the ES30 course.

**ACTION ITEM:** Kathryn and Jeanette will make an appointment with the U. of R. Dean of Education re: strategies, how to help with the development of lesson plans to support ES30.

**ACTION ITEM:** Gabriela will check with the U. of S. Education Department re: Geology Dept. providing resources for lesson plan development

**ACTION ITEM:** Kate will get back to the committee re: webinar presentations through the Saskatoon school board and Saskatoon Industry Education Council.

**ACTION ITEM:** Joyce (point person), Sandy and Gabriela will look into the development of videos to support new course. Will contact Tim Molnar in the Education Dept. of U. of S.

**ACTION ITEM:** Members of the Saskatoon Branch will meet to discuss development of resources for the ES30 course.

#### 4. Highlights of outreach and education activities in SK (See written reports attached)

- **SK Mining Association** (Kate Grapes Yeo)
- **SK Indian Institute of Technology (SIIT)** (Grant Young)
  - ACTION ITEM:** Module 3 sounds similar to PAA Energy and Mines 10, 20, 30. Grant is looking for content. Fran will contact Grant.
- **Canadian Light Source** (Joyce McBeth)
- **Saskatoon CIM/Sciematics 2012** (Kim Mysk)
- **Saskatchewan Cradleboard Initiative** (Sandy Bonny)
  - ACTION ITEM:** Volunteers are required to work with Education students.
- **University of Saskatchewan Science Ambassador Program** (Sandy Bonny)
- **APEGS K-12 Committee** (Kate Grapes Yeo)
- **SK Geological Society** (Kate MacLachlan):
  - ACTION ITEM:** SGS to contact the Saskatoon CIM re: future presentations.
- **SK Ministry of the Economy** (Donna Schreiner)

#### 5. WHERE Challenge (<http://www.earthsciencescanada.com/where>) (Donna Schreiner)

- Kim West, Kate Grapes-Yeo, Donna Schreiner and Sandy Bonny participated in the Where Challenge as regional judges. Saskatchewan again had a large selection of entries which were of very good quality. Kate Grapes-Yeo also judged the national competition.
- Our Saskatchewan students ranked very high with 3 national winners from the 12-14 year age group ( Best Creative (2)and Best Research), and one from the age group of 9-11 years won Best Overall.
- This year if people wish to judge, they must apply on line on the Where Challenge site

#### 6. Update on CGEN (<http://earthsciencescanada.com/cgen/>) (Fran Haidl): **See attached report.**

- CGEN has a new website that includes a new EarthLinks page which is “a collection of online resources selected by the members of CGEN” (<http://earthsciencescanada.com/earthlinks/>).
- CGEN membership is free and open to anyone with an interest in Earth Science education and outreach. All that is required to join CGEN is to register on the member registration page of the CGEN website (<http://earthsciencescanada.com/cgen/index.php?page=member-registration>) or send an email Christy Vodden at [cgen@sympatico.ca](mailto:cgen@sympatico.ca) telling her that you would like to become a CGEN member.
- EdGEO funding is still available for teacher workshops (\$3000/workshop; [www.edgeo.org](http://www.edgeo.org))

**7. Other opportunities for collaboration/cooperation at local, provincial and national levels (all)**

**ACTION ITEM:** Gabriela will send information about the Canadian Women in Geoscience.

**8. Other business – none**

**9. Adjournment:** 1:30 p.m.

**Summary Reports Submitted for the Saskatchewan 2013 CGEN Annual General Meeting, December 4<sup>th</sup>, 2013**

**University of Saskatchewan College of Arts and Science Outreach (Sandy Bonny)**

In 2013 the University of Saskatchewan Science Ambassador Program spring placements (4-6 weeks) reached 2800 students (80% Aboriginal) and 135 teachers in remote Northern communities (Beauval, Pinehouse, Green Lake, Black Lake, Stony Rapids, Wollaston Lake, Fond du Lac, Flin Flon, Opaskwayak Cree Nation, Flin Flon, The Pas). Science Ambassador activities in the school respond to local teaching and learning needs, and evolve during the relatively long-term placements. We aim to support hands-on learning in science classrooms that is fun, creative, culturally-relevant, and fills gaps in teacher development. This year we had explicit requests to support teachers working with the grades 4 and 7 Earth science units. The 'biogeology of teeth' was a big hit, which co-taught mineral identification, dissolving eggshells in vinegar, exploring human teeth donated from the College of Dentistry, and sorting phosphate mine gravel donated by PotashCorp to find shell fragments and shark's teeth. A second activity included soil typing, and settling clay in water columns to make earth-based paints. A third activity involved identifying minerals using Moh's hardness scale, and relating this to a 'two-eyed' Moh's scale where hardness and cleavage are also used to understand the physical utility of rock samples as stone tool technologies (developed through Saskatchewan Cradleboard Initiative). We are looking for donations of rock and mineral samples, sieves, maps, and rock i.d. kits for the program, as well as materials that can be left in the schools beyond our spring 2014 placements.

The Saskatchewan Cradleboard Initiative is a three-way partnership between U of S, Wanuskewin and the Nihewin Foundation Canada (Buffy Sainte-Marie's non-profit charity in support of Aboriginal education initiatives). 2013 was a 'pilot year' for the program - we have been hitting multiple nails on the head by developing cross-cultural experiential learning assignments in University science, education and Native studies classes (facilitated through the University Learning Centre), which generate educational media to support the renewed provincial science curriculum's integration of Western and Indigenous perspectives across science learning foci. A limited suite of activities and media relevant to topics in grades 4-6 has been developed. Pending a formal MOU we will share them as open-access resources co-hosted on a U of S server and Buffy's International Cradleboard Teaching Project site. The idea is for the resource to be 'live' and responsive to teaching and learning needs in the province. In terms of Earth science, we are currently looking for donations of copyright-cleared images of rocks in Saskatchewan and information and contacts familiar with Indigenous rock and mineral use, past, present and future (e.g. cold copper smelting in [N.SK.](#), traditional use of salt sloughs, petroglyphs, mineralogy of spray paint) to inspire student projects in winter term.

## **SIIT Mining Industry Preparation Program: (Grant Young)**

Program delivery:

July 1, 2012 to June 30, 2013:

- Regina in the fall of 2012 (12 students)
- Yorkton in January 2013 (12 students)
- Saskatoon in March 2013 (12 students)

This report is for activities that have occurred at the three Centres with Potash Job Coaches, the Yorkton Industrial Career Centre (**YICC**), Construction Careers Regina (**CCR**), and Construction Careers Saskatoon (**CCS**).

Category	CCR	CCS	YICC	Totals
MIPP Applicants	42	71	42	155
MIPP Completions	9	9	10	28
MIPP Students employed by PCS	0	2	2	4
MIPP Students employed by Mosaic	0	1	2	3
MIPP Students employed by contractors	6	4	2	12

2013-14:

- Was delivered in Regina in Sept – Nov 2013 (12 students)
- To be in Yorkton in January 2014 (12 students)
- To be in Saskatoon in March 2014 (12 students)

### **Program Development:**

- A Petroleum Industry Preparation program has been developed for delivery in the spring of 2014.
- This program will have a geoscience component in one course (see attached outline).
- Any suggestions regarding the geoscience component are still welcome.

### **Module 3 - Petroleum Industry Overview PTRO 130**

This course provides an overview of the petroleum industry. The first commercial discovery of oil in Saskatchewan was in 1944. Subsequent exploration activities in the 1950's and 60's revealed three main oil fields: south/east, south-west and west-central. Since 1990's, there have been over 18,000 wells capable of producing oil.

Oil and gas are a big part of the Saskatchewan economy. Saskatchewan is the second largest producer, next to Alberta, of oil in Canada. This course will examine the geological basis for oil, the key elements of the oil industry, and also include the different industry processes used for crude oil, heavy oil, oil sands, and natural gas. (30 hr)

**Objectives:**

1. Describe basic geology and geological conditions in Saskatchewan.
2. Identify the main elements in the upstream of the petroleum industry.
3. Identify the main elements in the midstream of the petroleum industry.
4. Identify the main elements in the downstream of the petroleum industry.
5. Identify the main elements in oil sands and off-shore petroleum operations.

**Saskatchewan Mining Association (Kate Grapes Yeo)**

1. SMA hired an Education Outreach Coordinator in April 2013 (long term contract).
2. Potash Kits: SMA has developed a Potash Kit to accompany the Potash Solution Mining lesson plans which correlate with the grade 4 Rocks, Minerals and Erosion, Grade 7 Mixtures and Solutions, Grade 7 Earth's Crust and Resources, Chemistry 30 Solubility and Solutions units and the new Physical Science 20 and Earth Science 30 courses.
  - 718 kits have been sent out to 9 school divisions (upon their request) with the potential to reach over 16,000 students this year.
  - SMA is following up with workshops for teachers using the kits.
3. Workshops: SMA has developed three workshops, two for teachers one for students.

Potash Workshop: Presentation of solution mining lesson plans and kit in a 1.5 hour, workshop to teachers (grades 4 – 12). Presentations at: Sciematics, ASSIST, 3 School Divisions, and to the Northern Aboriginal Teachers' Association (NATA).

Ores and Mines Workshop: Presentation of general Geoscience and Minerals Industry activities in a 3 hour workshop to teachers (grades 4 – 12) at ASSIST and NATA.

Careers Workshop: This is a new workshop focusing on the variety of careers in the Mining Industry. It is a 45 minute workshop presented to students. It is a combination of PowerPoint, video and hands-on activity. Three workshops – 61 students (grades 9, 10, 11).

Contributed to two summer workshops sponsored by PotashCorp and the City of Saskatoon, for students of the Saskatoon Tribal Council. Hands-on potash solution mining and career activities were presented to 25 students ages 14 – 19.

Total workshops (May – November) 11, reaching 50 teachers and 85 students directly and ~1,200 students indirectly.

4. SMA has a new Education/Outreach website. [www.saskmininged.com](http://www.saskmininged.com). This is an interim website set up to post SMA's lesson plans and other educational resources including GeoVenture.

5. Pinterest Page: <http://www.pinterest.com/educationsma/> SMA has created a Pinterest page with information/resources focusing on Saskatchewan mining, careers in the mining industry, as well as general resources.
6. Lesson Plans: SMA continues to develop/adapt lesson plans that are curriculum correlated and relevant to the Saskatchewan Minerals Industry. All our lesson plans are freely downloadable from our website. Our most recent lesson plans include a collaboration with Sherritt's staff at the Poplar River Mine, to develop a coal mining simulation which could be used in grades 4, 7 and possibly the new Earth Science 30.
7. Over the past year SMA has been involved in meetings with the Saskatchewan Science/Education Consultants and Earth Science 30 curriculum writers. As a teacher and a geoscientist Kate was available for writers to consult as well as to present SMA resources available to the writers and pilot teachers.
8. ORE – The Official Publication of the Saskatchewan Mining Association. Distribution of 22,000 twice a year (April and October). Distributed to the Ministry of Education, U of R, U of S, SIAST Campuses and Regional Colleges, and High Schools (upon request).
9. SMA Rock'n the Classroom GeoVenture – 20 educators and 1 rep from SIAST participated in the SMA GeoVenture which included a ½ day introductory workshop, followed by field stops at underground and surface potash mines, uranium mines and milling operations, coal mines, Potash Interpretative Centre, T-Rex Center and Grasslands National Park.
10. E- newsletter currently being sent out to 200+ educators. This will most likely be sent out in September, December, March and June to provide information re: new resources and events.
11. In the Works:
  - Explore For More Saskatchewan: Working with MiHR and Saskatchewan Mining Companies to develop Saskatchewan career profile cards. Paper copy as well as on-line.
  - Mining Rocks Saskatchewan (MRSK): Using the format of the successful Mining 4 Society event put on by the National CIM, SMA, Saskatchewan Mining companies, Saskatchewan Industry Education council and PDAC Mining Matters, SMA is developing a smaller scale event which will showcase the Mining Cycle and careers in the Minerals Industry to students. Pavilions will cover Exploration, Mining, Processing, Products and Fabrication, Careers, Safety and Sustainability. This event will be able to travel to smaller communities but will initially be held in Saskatoon on May 7<sup>th</sup>, 2014.

**CIM Geological Society, Saskatoon Section, and Saskatchewan Geological Society Participation in Sciematics 2013 (Kim Mysk - Laramide Petrologic Services)**

- Sciematics is a provincial K-12 science teachers conference held every 2 or 3 years alternating between Saskatoon and Regina. This year it was held at the U of S in Saskatoon from May 10 to 12. The theme this year was Resources, Renewal, Relevancy (R<sup>3</sup>).
- At the 2012 CGEN Saskatoon meeting it was decided to look into a joint society presence for Sciematics 2013.
- Booth presence was jointly funded by CIM GeoSoc and SGS.
- Rachele Boulanger, Alison Donmez, Karina Tyne and Kim Mysyk staffed the booth.
- Fran Haidl and Kate MacLachlan obtained a large amount of resource material for us to give to teachers.
- Resources included the Geological Highway Map of Saskatchewan, Saskatchewan mineral posters, APEGS career booklet for geology and engineering.
- We also gave out a CD that I put together, which included:
  - a PowerPoint general geology presentation,
  - an extensive list of references and resources for geology plus some general science,

- a “*Careers in Geoscience*” video from the Geological Society of America (GSA),
- a video “*Why Earth Science Matters*” from the American Geological Institute (AGI), and
- a video of Mount Etna eruptions, “*Etna 2011-2013: Paroxysms on the Catwalk*”.

We gave out our individual business cards to numerous teachers and invited them to contact us if they had any questions about geology. Unfortunately as of Dec. 2, none of us had any follow-up from teachers.

### **Brief Overview of Canadian Light Source (CLS) educational activities 2013 (Joyce McBeth, Tracey Walker)**

1. General overview of CLS educational activities:
  - a. SoTB (Students on the beamlines): CLS’s SoTB program is a hands-on authentic experiential science program where teams of high school students from across the nation create student-designed and driven experiments. Teams work with CLS scientists to design an experiment that can be analysed using the synchrotron. During the program the students run samples from their experiment using the synchrotron, analyse their data, and create a presentation they present to the scientists at the CLS. They also prepare a poster which enters an annual competition for SoTB teams at the CLS Annual User’s meeting. Teams have included students from First Nations communities in the Yukon Territories (Old Crow) and northern Saskatchewan (La Loche). Last year 10 groups came to the CLS to run experiments (94 students total).
  - b. Teachers’ Workshop: Every fall the CLS offers a weekend Pro-D workshop where teachers come and learn how to use the synchrotron, incorporate synchrotron sciences into their curricula, and potentially bring a team of students to do a SoTB project. This year 23 teachers from across the nation participated.
  - c. Teachers on the beamlines course: for the past few years CLS has offered a hands-on course for teachers in the U of S Faculty of Education, in cooperation with Prof Tim Molnar. The course offers teachers the opportunity to experience an authentic process of scientific discovery. Feedback from teachers attending both the teachers’ workshop and the teachers on the beamlines course have indicated that these experiences have transformed the teachers’ approaches to teaching science.
  - d. University education: CLS offers user training workshops that are attended to graduate students who plan to use the synchrotron in their research.
2. Specific projects relating to Geosciences:
  - a. SoTB: numerous teams have designed and conducted experiments on soils, and one team did a project looking at a meteorite sample.
  - b. Teachers’ workshop: Two of the hands on workshops offered this year were focused on earth science topics (soils and fossils)
3. Future work:
  - a. Continuation of the CLS education activities outlined above.
  - b. Geoscience workshops: Tracy, Joyce, and Derek Peak (U of S) have been discussing the possibility of offering workshops or courses in the coming year or so which focus on training university undergraduate students in using the synchrotron for soil science and environmental geochemistry/geomicrobiology applications.
  - c. Joyce has a personal interest in driving forward more geoscience-related educational activity at the CLS (high school and university level students). Hoping to make contact with Canadian high school geology teachers and get them to attend our teachers’ workshop and hopefully bring students for geoscience-focused SoTB projects.
4. Contacts:
 

Tracy Walker, CLS Educational Coordinator: 306-657-3525 [tracy.walker@lightsource.ca](mailto:tracy.walker@lightsource.ca)  
 Joyce McBeth, CLS Staff Scientist – Green Mining: 306-657-3674  
[joyce.mcbeth@lightsource.ca](mailto:joyce.mcbeth@lightsource.ca)

## **Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) K-12 Committee (Kate Grapes Yeo)**

- Redesign of the APEGS website, including K-12 Committee page is in the works to better enable teachers, students and parents to access resources.
- Working with high school students from Walter Murray Collegiate to develop videos of Engineers and Geoscientists. First series of videos produced and will be posted on the new APEGS website.
- Pilot draft of “Dam Effects” a resource for grade 8 Science Water unit. Presented to Science Consultants December 2013.
- Judges for SIEC Cardboard Boat Races Spring 2012
- Volunteers for Career Fairs.
- Supported through funding:
  - Saskatchewan Science Fairs
  - EYES – University of Regina
  - SCI-FI- University of Saskatchewan
  - ASSIST – Saskatchewan Science Teachers Society
  - Science Rendevous – University of Regina Faculty of Science
  - Swift Current Robotics Club
  - La Loche Robotics Club

## **Saskatchewan Geological Society (Kate MacLachlan)**

- School presentation over two days in October, 2012. >800 students from the Regina area in attendance (grades 3+5/ 7+8). Presentations (lectures and demonstrations) about the Oil and Gas industry, volunteers from the Ministry of Economy.
- Public lecture co-sponsored with the Royal Astronomy Society held at the Science Museum (full house) – Jim Rice on NASA’s Mars rover program.

## **Saskatchewan Ministry of the Economy (Donna Schreiner)**

Outreach activities this year included:

- The provision of material goods including rock kits, the Southern Geoscape Poster and Mineral information posters as requested.
- The staff from the Saskatchewan Geological Survey are part of the Geological Society that put on two public lectures this year as well as a school lecture.
- Staff gave a rock talk to a classroom with an assortment of samples.
- On going response to general questions from teachers and the general public.
- Participation in the regional judging of the National Where Challenge.
- Supports the public talks at the Open House