

# Geologically Speaking

A Michigan Section AIPG Publication

## Inside This Issue:

Michigan Section's Mozola Scholarship Information  
Geology in Michigan: An Urban Erratic in Commerce  
Township, Oakland County, Michigan  
Student Chapter News: WMU and WSU

## THE MERIT ADVANTAGE

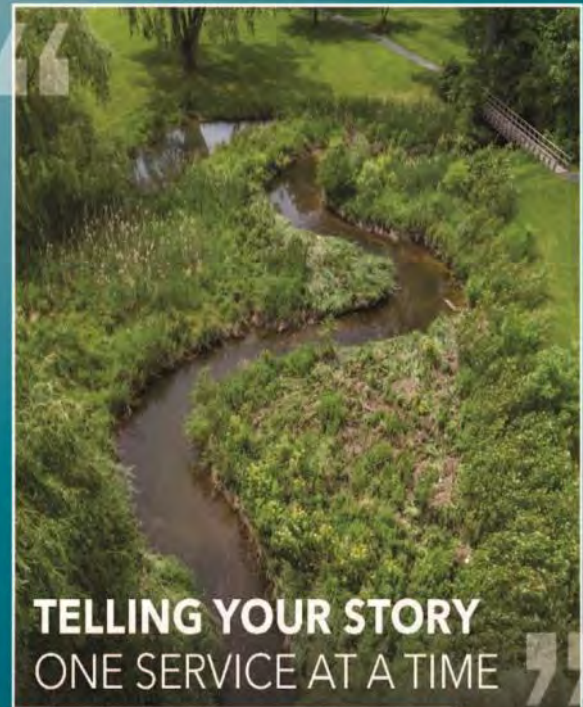
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**Front Cover:** Gowganda Tillite boulder placed as a decorative stone near a bicycle and pedestrian trail in Commerce Charter Township, Oakland County, Michigan. See the Geology in Michigan article on page 19 of this issue of *Geologically Speaking*. Photo credit: Carl Brink, AS-0057.

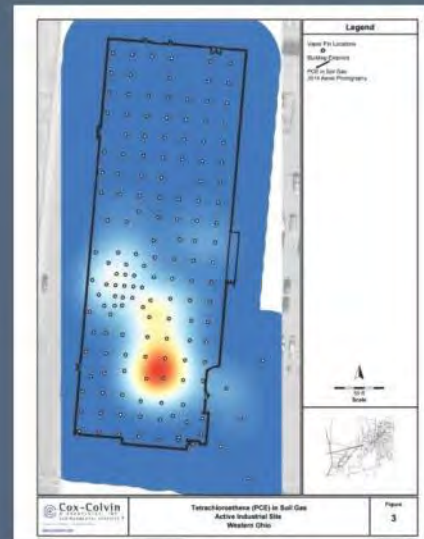
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## Geology Crossword #20 Solution

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| A |   | E |   |   |   |   |   |   |   | E |   | G | A | M | M | A |   |   |   |
| G | E | O | P | H | O | N | E | S |   | S |   |   |   |   |   | L |   | A |   |
| N |   | D |   |   | H |   |   | P |   | I | N | D | U | C | T | I | O | N |   |
| E |   | E |   |   | M |   |   | A |   | S |   |   |   |   |   | P |   | O |   |
| T |   | S |   | T |   | C |   | C |   | T |   |   |   |   |   | E |   | M |   |
| O |   | Y |   | R |   | O |   | I |   | I |   | L |   | T |   | R |   | A |   |
| M |   |   |   | A |   | N |   | N |   | V |   | O |   | R |   |   |   | L |   |
| E | M |   |   | N |   | D |   | G |   | I |   | G | R | A | V | I | T | Y |   |
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|   | E |   |   |   | N | O | I | S | E |   |   |   |   |   |   |   | C |   |   |
|   | A |   |   |   | B |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|   | R |   |   |   | P | R | E | C | I | S | I | O | N |   |   |   |   |   |   |

## Across

1. Study of earth's magnetic field
5. Third greek letter
6. Receivers of seismic energy
10. A type of cooking surface
15. Measurement of magnetic field, abbv.
16. Said of a serious situation
17. Of a mirror or pool of water
19. A series of questions
20. Reduction in energy
23. Same atomic number, different mass
26. Used to find USTs, abbv.
27. Something precious as we age
28. An unwanted signal; something loud
29. Reproducibility

## Down

1. Measures earth's magnetic field
2. Study of earth's shape, gravity and mass
3. Resistance to passage of current
4. A precision measuring device
7. A unit of resistance
8. Distance between transmitters and receivers
9. Something out of the ordinary
11. Fleeting
12. A measure of the passage of current
13. A tree trunk on the ground
14. A transmitter or receiver in a probe
18. Energy waves travelling through strata
21. Time domain electromagnetics
22. Ripples form through this action
24. Something done to sheep
25. Something sent into the unknown

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Write a cover letter introducing yourself and explaining why you want to be a geoscientist. Tell us what sparked your interest in the field, what inspires you to pursue this career, and share details about your involvement in geology-related extracurricular activities. Whether it's fieldwork, research, club participation, or other initiatives, we want to know how you're engaging with geosciences beyond the classroom.

#### 2. Academic Transcript:

Provide a copy of your transcript (unofficial is acceptable) as proof that you're a current student. Include documentation showing that you've declared a major in geology or geoscience.

#### 3. Letter of Recommendation:

Submit a recommendation letter from a geology or geoscience professor. This letter should highlight your academic performance, participation in department activities, character, and how you collaborate with and support fellow students.

#### 4. AIPG Student Membership Number:

Include your AIPG Student Membership number in your application. If you don't know your number, contact AIPG headquarters for assistance.

**Submission Deadline:** June 1, 2025 by 5 pm. Winner notified by June 30, 2025.

#### Submit to:

Attn: MI-AIPG Scholarship Committee Chair

Mr. Timothy B. Woodburne, CPG

Prein & Newhof

3355 Evergreen Drive, NE

Grand Rapids, MI 49525

e-mail: [twoodburne@preinnewhof.com](mailto:twoodburne@preinnewhof.com)

# From the President's Desk

We made it! There was a collective sigh of relief as we turned the page to May, right? Like it might just be okay to put the snow shovels away? In the UP, we are still drying out from a wet transition to spring and the snow we had last week. In the northern lower, the recovery from the historic ice storms in April is ongoing and will continue to keep some State parks closed for the foreseeable future, potentially through summer. However, I saw a photo posted on LinkedIn last week of blooming flowers and budding trees in southeast Michigan. For us northerners, it gives us hope for spring, warmer weather, and sunshine, but we also know that bug season will soon be upon us. Life is about compromise, right?

Field season is ramping up for many of us, but so is summer vacation season. I recently returned from a post-winter trip to Mexico where I ate my weight in tacos and bathed in the sunshine (from underneath my SPF 60 and sun hat) after a long and bleak winter. I had the opportunity to visit the pre-Hispanic city of Teotihuacan, the UNESCO World Heritage Site that includes the Pyramids of the Sun and the Moon about an hour drive north of the city.

Built between the 1st and 7th centuries by people that pre-dated the Mexica, known by historians as the Aztec Empire, the size and scale of the pyramids and surrounding city complex was incredible to experience. As you wander the immense archeological achievement with plastered walls, painted murals and underground tunnels, you are surrounded by the volcanic mountain ranges of the Trans-Mexican Volcanic Belt in the distance.

Locally sourced volcanic rocks, including tezontle, and other basalts were generally used to construct the urban center. Blocks of andesite obtained from outside the Teotihuacan Valley were also used, among other materials for plastering and mudding. The experience made me stand in awe of the duality of times scales. While the timing of the Pyramids' construction may fall short in impressiveness to just about all geologic time, the materials used to build the massive complex reinforced the appreciation for even "new" earth material like volcanics. Pausing to reflect on comparisons like this isn't something I remember to do daily, but I also don't get to stand on a pyramid every day.

For me, the trip to Teotihuacan served as a reminder of our need for a connection to the natural world in all shapes and forms. Human existence is such a small part of Earth's long and dynamically changing history, and for our existence, geology has played such an important role. A role that can remind us there is still so much to learn and experience.

In other travel-related topics, the Michigan Section's very own Adam Heft has been working hard to plan a field trip to the New Lock in Sault Ste. Marie this summer. This may not be a trip to the location of an ancient civilization that mysteriously disappeared, but it should be an excellent opportunity to learn about the geologic connec-

tion to our current built world, including the economic impact of the Locks. I hear there may be an opportunity to collect Jacobsville Sandstone from near the construction areas too. A save-the-date went out for the July 19th trip. More information will be available soon, so stay tuned!

If your schedule doesn't allow for a trip to the Upper Peninsula for the New Lock Field Trip, what about a work trip to mid-Michigan? Hopefully you can join us June 10 and 11 at the RAM Center in Roscommon for the 14th Environmental Risk Management Workshop: Remediation, Risk Management, & Closure. It's always a great opportunity to gain technical knowledge while networking with others and Sara Pearson does a tremendous job coordinating every year.

If you already have plans and are looking forward to fall, consider a golf trip for the 21st Annual AIPG Michigan Section Golf Outing. It is slated for Thursday, September 11 at Fox Hills – Classic in Plymouth and registration is currently open. Laura Lambert is the new chair this year, and there is no doubt she's planning a stellar day.

Finally, if you have the chance this summer, I hope you can get out and explore. Take that trip, marvel at the world around you, soak in all the unfamiliar things that you may not get to experience on the weekly grind. There is so much to see and do in our Great Lakes State... Geologically Speaking, but also otherwise.

See you at the next meeting, the summer workshop, field trip or somewhere in between.

Cheers!

*Ashley E. Miller*

P.S. If you have a snazzy geological photo from your travels or experiences, pass it along! We would love to showcase it on the new AIPG Michigan Section website that is being developed. Jason Lagowski has been instrumental in making that effort happen and it should be rolling out shortly!

## WANTED!

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# Did You Know?

*This article is intended to remind members of various aspects of AIPG and benefits of membership. If there is something you would like to see featured in this column, please contact the Editor...*

## Member Categories

### 2.3.5 Requirements to be an Emeritus Member

A CPG Member may be designated “Emeritus” upon request at the age of 65 or older, provided that the Member is no longer actively engaged in the practice of geology for financial gain. An Emeritus Member may be paid for the occasional professional opinion. The Executive Committee shall have the authority to reduce or waive dues payments for Emeritus Members, individually or as a category.

### 2.3.6 Requirements to be a Non-Practicing Member

Professional Members may be designated “Non-Practicing” upon request at the age of 65 or older, provided that the Member is no longer actively engaged in the practice of geology for financial gain. A Non-Practicing Member may be paid for occasional work. Those Members who had requested and received “Non-Practicing” status prior to June 24, 2017 and who were not yet 65 will retain their “Non-Practicing” Member status. The Executive Committee shall have the authority to reduce or waive dues payments for Non-Practicing Members, individually or as a category.

### 2.3.7 Requirements to be an Adjunct

#### 2.3.7.1 Requirements to be a Student Adjunct

Student Adjunct Members shall be currently enrolled in a geoscience program at a college, university, or similar institution, who shall:

1. Be currently enrolled in an accredited institution of higher learning approved by the Executive Committee; and
2. Be a declared major, or the equivalent, in a geological science as recognized by the Executive Committee; or have a vocational or recreational interest in the geological sciences.

#### 2.3.7.2 Requirements to be an Associate Adjunct

Anyone interested in the profession of geology and the aims of the Institute but who is not qualified for another membership category may be an Associate Adjunct Member. There are no educational requirements to be an Associate. To be an AIPG Associate, one shall:

1. Have a vocational or general interest in the geological sciences; and
2. Affirm adherence to applicable professional and ethical standards and attest to same by affixing the applicant’s signature to an affidavit, on the application, which states: “I affirm adherence to applicable professional and ethical standards, have not had a certification, license, or similar qualification suspended or terminated for ethical or disciplinary reasons during my career, nor have I resigned from such designation in anticipation of or in settlement of proposed grievance or disciplinary proceedings.”

## I Want To Publish Your Articles!



Hey everyone, I would like to encourage you to submit your articles for publication! As the Michigan Section Editor, and also the 2021-24 National Editor, I am working to put together two top-quality publications for our members. This is not a one person job. This is where you come in. I welcome your technical articles, case

studies, opinion pieces, mini field guides, and letters to the Editor.

The guidelines are pretty simple for articles for *Geologically Speaking*. All submissions must be professional and may not violate the AIPG code of ethics. They also may not have been submitted for publication elsewhere.

While most submissions will be accepted, we do not accept articles that are a sales pitch for a product or company.

The deadline for submitting articles for *TPG* is two months before the start of the quarter for which the *TPG* edition is published. Thus, February 1 is the deadline for the Apr/May/June edition.

Please submit your articles of no more than 3,200 words in MS Word format directly to me or to Dorothy Combs at National Headquarters at [aipg@aipg.org](mailto:aipg@aipg.org). All graphics (photos, figures, or tables) should be submitted in .jpg, .tiff or other standard format at 300 dpi. Please ensure your graphics are clean and easy to read to make things easier for the editorial staff. Complete information on submitting an article may be found on National’s website at: <https://aipg.org/page/TPGInformation>.



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# Where in Michigan?

The January 2025 edition of *Geologically Speaking* featured a photograph of Pleistocene age tunnel valleys located near Cassopolis in Cass County. **Peter Rose** correctly identified the photograph and gets choice of swag!

This edition of *Geologically Speaking* features a new image **at right** - not the photo on the cover page. The first person to correctly identify the location and what significant event occurred at this location will win AIPG swag! Submit your entry via email to the editor; only one per person per issue please.

Don't forget to check out the feature article "Geology in Michigan" in this issue (as well as the last several editions) that presents a geologic feature of interest as a mini field guide. One of the best parts about being a geologist is field trips, and we are hoping that in your travels around the state or country you include these featured spots as a stop. Why not incorporate them into a family vacation or bring friends who may not be geologists and share these locations that make Michigan unique? We hope you enjoy reading about it, and more importantly, go see it in person! We invite you to share unique geologic features that you know about and submit a "mini field guide" to share with our members in future editions.



## Invitation to Our Members!

### Do you have a case study to share?

The Michigan Section AIPG promotes knowledge sharing and would like to feature case studies from projects where others may benefit from successes as well as lessons learned. We feel as professionals that learning from each other is a great opportunity that AIPG offers our members. AIPG offers connection with other professionals and their experiences in the work we do every day. This case study represents what we would like to offer more to our members, not only as a way to solve problems, but unify us as professional geologists. Additionally, do you have a suggestion for other types of information to share that would be of interest to our membership?

Please send your case studies and suggestions for future publication in upcoming editions of *Geologically Speaking* to the Editor.

## Update Your Information!

Please be sure that you continue to receive the Section's *Geologically Speaking* publication and other announcements. Submit an updated e-mail address to Adam Heft at [adam.heft@wsp.com](mailto:adam.heft@wsp.com). If you move or change places of employment, don't forget to send your new contact information to both the Section and to National. If you are not receiving announcements directly from the Editor, it is because your email address is not up to date with the Michigan Section or because your IT group may classify it as junk or a bulk sending.

Please help the Editor by making sure that your email address doesn't bounce when the next announcement is sent. And be sure to cc Dorothy Combs, National AIPG Membership Director at [aipg@aipg.org](mailto:aipg@aipg.org) when you update your contact information. Thank you!

## Students - Reminder

Don't Forget: Each Student Chapter must submit two articles for publication in *Geologically Speaking* each year to qualify for Section funding. Send the articles to Adam Heft at [adam.heft@wsp.com](mailto:adam.heft@wsp.com).

## Support our Sponsors!

The Section Executive Committee would like to remind its members to support the companies advertising in this publication. Consider working with these companies, and when you speak with their representatives, let them know that you saw their ad in the Michigan Section AIPG publication *Geologically Speaking*.

# Interesting Geology Links

The Editor has received links to various interesting geology-related sites. Some of the more interesting links are included here. If you have any links to geology-related sites that you would like to share, please forward them (with a citation, if applicable) to the Editor.

Top 10 natural disasters caught on camera: <https://www.youtube.com/watch?v=scRUGRreKmY>.

Geology Professor Shawn Willsey YouTube Channel: <https://www.youtube.com/@shawnwillsey>.

The AIPG YouTube Channel: <https://www.youtube.com/channel/UCZJVHi1yAPLJe1AksLOV3pA>.

Michigan Geological Survey (MGS) and resources from the Michigan Geological Repository for Research and Education (MGRRE) YouTube Channel. <https://www.youtube.com/@michigangeologicalsurvey/videos>.

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# Up at the Drumlins

By Hayden Gough, SA-12514



Near the end of last May, I was woken up by a call from two friends of mine at about 1:00 AM. They were laughing and giggling, telling me about some family owned, three-person cabin in the middle of nowhere Kalkaska, MI. I could hardly keep my eyes open while they spoke.

The two were rambling on for what must have been about thirty-minutes, but everything they said went in one ear and straight out the other. By the end of it, all I managed to catch was something about “the Drumlins,” “collecting fossils,” and the statement “we’ve decided you’re coming.” Before I could bring myself to ask any questions or cause any protest, the call was over. Not two days later, I was standing in my front yard under the shade of a big oak tree with a duffle bag full of four days’ worth of clothes and waiting for a little blue 2014 Subaru Forester to take me away on my first personal geology trip.

The cabin was only about a two-and-a-half-hour drive from my house. It was small, with only one door and what

must have once been an earthy green paint job now turned dirty grey over the years without a wash. I learned on the way it was the property of Elizabeth Plank’s family, it being her idea to come visit here for a few days. She had apparently been looking for an excuse to travel there again to collect some fossils. Having two friends who ‘volunteered’ to join her made for the perfect opportunity.

The inside of the cabin was made up of a single room consisting of a kitchen, a short brown table covered in dust ridden board games with names like “Balderdash” and “Outburst,” a pullout couch, and hundreds of fossils from the Paleozoic era filling up any remaining space. Crinoids, Petoskey stones, and brachiopods could be found resting all over bookshelves, coffee tables, or stacked up on top of each other in cabinets. I even discovered an *Atrypa* fossil hiding behind what was, by the looks of it, a just as ancient carton of milk. Ania, the other guest on our little expedition, seemed surprisingly un-phased by everything around us in comparison to my entirely shocked expression.



Photo 1: Drumlins in Kalkaska, Michigan. Photo Credit: Hayden Gough.



Photo 2: Drumlins in Kalkaska, Michigan. Photo Credit: Hayden Gough.



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She and Elizabeth had been friends since middle school, but if you saw them talk, you'd think they would have known each other since birth. That much I knew going into this trip. What I didn't know, was that Ania used to spend a week of her summer each year up at the cabin with Elizabeth's family. Hearing this, I felt a sudden keen awareness of my being an "outsider." Of the three of us, I was the only one who was completely unfamiliar with the space. I had no real ties here yet, or any prominent memories. This experience was entirely new to me, and that filled me with a certain kind of excitement.

As we unpacked our bags and made our beds from the few clean-ish blankets we could find, my mind drifted off to what it would be like to dig my hands through the patchy mix of sand and dirt, looking for what was essentially small pieces of our world's history. Besides the few common minerals scattered about my room, up until this point I never really showed any strong intrinsic interest towards geology. However, now that I had been (willingly) kidnapped, brought to a semi-decrepit cabin no one had touched in almost four years, and been encapsulated by a room of countless fossils, the topic suddenly seemed a bit more alluring. I spent most of that night lying awake with a smile on my face imagining all that the three of us would do in the coming morning.

The following day was spent entirely at the Drumlins. We arrived at roughly noon, at which point I realized "the Drumlins" was really just a long, sandy hill formation off the side of a rural highway (Figure 1A and 1B). Elizabeth, wasting no time, told me as much as she could about them as she unloaded our small amount of tools and portable cooler from the car. According to her, most of these drumlins were suspected to have been formed by the Wisconsin glaciation nearly ten thousand years ago. As glaciers traveled, they shaped the landscape through erosion and deposition of glacial drift, creating tear drop shaped hills made up of the sediment they left behind.

That's why the drumlins are so perfect for fossil hunting. All that sediment gets mixed up by the water and ice, bring all sorts of long buried fossilized creatures back to the surface.

Once the three of us had everything set and had applied what must have been copious amounts of sunscreen, we made our way up the hill and began our search. Immediately, a competition began for who could find not the most fossils, but the most beautiful or rare. Within seconds we switched from friends to enemies, playfully battling each other which spots we thought seemed promising. By the end, it had gotten so intense that Ania had chased me so far away from where we started neither of us could see the car we arrived in. Thanks to her, Elizabeth had to drive down the street just to find us sitting under a row of thin trees, having made a brief alliance to share the little shade they created.

By nightfall, I walked away from the drumlins with a bag full of nothing but Petoskey stones, and Ania's fierce nature and good eye brought her the, admittedly deserved, competition winning find: A rock covered in various different fossilized corals such as honeycomb and Petoskey. We spent the rest of the night sitting by a bonfire shuffling through our new collections and planning out what we were to do tomorrow, but for me, the rest of that trip feels like a blur. All I care to remember is that initial feeling of looking out over the outstretched sandy hill, believing it to be something not too unlike a museum. Within the land before me so many answers could be found, and even more questions could be formed. All I had to do was take the time to learn how to find them, and that's what I've been doing since.

## Section Website Reminders

The Michigan Section has created a database of geologic photographs on our website. Please submit photographs that you are willing to share to Adam Heft at [ad-am.heft@wsp.com](mailto:ad-am.heft@wsp.com). Don't forget to include your name and a short explanation of what the photograph depicts. The photographs will be uploaded to the website periodically.

If you have suggestions on other items that should be included on the History page, please let a member of the Section Executive Committee know.



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# An Urban Erratic – Clast Morphology, Lithology and Structural Detail in a Gowganda Tillite Boulder

By Carl F. Brink, AS-0057



Figure 1: Map showing the general location of the area. The erratic is at the Glengary Creek Trail pedestrian bridge location (#2) immediately east of the Martin Parkway tunnel (#3).

## Introduction

The Wisconsin-stage continental glaciers retreated some ~11,000 years ago from the Great Lakes region. Ice-transported material eroded from bedrock in Canada was deposited throughout the area as glacial sediment. Rocks that are different from the bedrock on which they are deposited are termed erratics. Erratics with distinctive lithology may often be traced back to their source area.

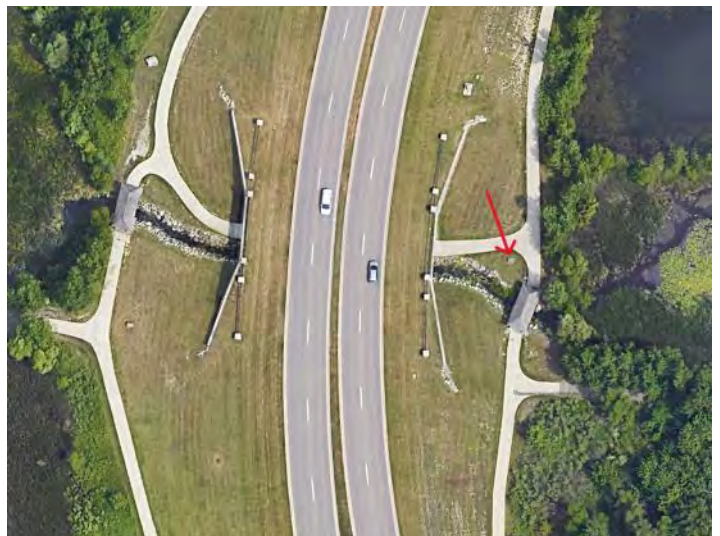


Figure 2: Google Earth Pro image (heavily cropped) showing the pedestrian bridge noted in Figure 1 above; the red arrow points to the erratic. Google Earth Pro – imagery date 6/22/2022.

Notable Canadian erratics found in lower Michigan and as far south as Ohio include those of the Gowganda Tillite, a striking dark green rock with pink and red granite clasts. Although not as popular among rockhounds and collectors as the much sought-after Lorrain Formation “puddingstone”, a jasper conglomerate, Gowganda Tillite remains a very interesting rock from a geological perspective.

This photograph-rich article describes a distinctive

erratic boulder of Gowganda tillite placed as a decorative element beside a popular bicycle and pedestrian trail in the Charter Township of Commerce, Oakland County, Michigan.

## Location

Charter Township of Commerce, MI. “Downtown Development Authority – The Charter Township of Commerce”.

## Gowganda Tillite

The Proterozoic (2.3 - 2.6 Ga) Gowganda Formation occurs at the base of the Cobalt Group of the Huronian Supergroup and crops out along the northern shore of Lake Huron in Canada. Geological investigations since the 1840's established a glaciogenic depositional model for the formation.

The basal member with its characteristic boulders and cobbles of pink and red granite in a grey-green greywacke matrix has been described as tillite, conglomerate, polymictite, diamictite, orthoconglomerate and paraconglomerate.

The probable source of the basal tillite or diamictite was from a granite-greenstone-gneiss basement to the north of the present-day Lake Huron area.

The erratic boulder mentioned in this article appears to be a large block of Gowganda Tillite and that name will be used for this article.

## Photographs

Photographs of Gowganda Tillite may be found online and in many geological reports although many professional publications' images are often monochrome (black and white).

The author's photographs of this particular Gowganda Tillite erratic include: general views, clast lithology and morphology, and possible depositional structures. There were so many fascinating aspects of the geology of this boulder it became a daunting task limiting image selections for this article!



Figure 3: The erratic as seen from the trail approaching the pedestrian bridge. Just another unassuming dark green boulder passed by hundreds of people every week without a second glance.

## General Views

This section illustrates the general setting of the boulder in the urban environment.



Figure 4: Viewed from the opposite direction the boulder suddenly becomes interesting – look at those huge pink granite inclusions!



Figure 5: Oblique view of the erratic with geological hammer for scale. Note the characteristic Gowganda Tillite features – abundant pink and red granite clasts in a dark green matrix!

## Clast Morphology and Lithology

This photograph-heavy section shows a selection of the different clast types visible in the erratic. Photographs of granite clasts predominate; however, other lithologies of interest were included.



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Figure 6: A “mold” of a now-missing clast in the greywacke matrix. Seen in Figure 5 at the tip of the large granite clast. The mold is approximately three inches in length.



Figure 7: Molds surrounding and above an exposed rounded mafic clast. Field-of-view approximately six inches).



Figure 8: A vertical flat surface on one side of the erratic depicts the unsorted and chaotic lithology that perfectly defines the term diamictite. Note the variety of lithologies, including granites, mafics, possible limestone/sandstone, quartzite and quartz. A few of the clasts visible in this photograph are shown in more detail later. Field-of-view approximately twenty-four inches.



Figure 9: A beautifully-polished cobble of fine-grained red granite is exposed on this fractured surface. Contrast this cobble with the two larger and coarser-grained pink granite clasts on the left of the image. Consider the probable history of the cobble – abraded in a river or on a beach to attain the well-rounded morphology; then incorporated into the basal till of a glacier; then “frozen” in place into the glacier’s matrix during lithification some 2.3 billion years ago; then again incorporated into a Pleistocene glacier with its parent tillite boulder; then finally deposited as an erratic in the Great Lakes region hundreds of miles from its source in Canada.



Figure 10: Close-up view of the polished granite cobble showing red feldspar and white quartz/feldspar. The dark streaks appear to be indentations on the cobble's surface filled with matrix greywacke.



Figure 11: A cross-section of a red granite cobble. The cobble's smooth outline indicates that it is probably polished like the smaller cobble shown in Figure 9. Approximately one inch in diameter.



Figure 12: An elongated fine-grained red granite with muscovite mica and hornblende crystals. Approximately three inches in length.



Figure 13: Two granite clasts showing color differences – the pink-color clast has been exposed on the surface of the erratic for an unknown period, while the fresher-appearing red-color clast has only recently been broken out of the matrix. Red cobble approximately two inches in length.

Figure



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Figure 14: A fractured granite cobble – note the curved and probable polished surface on the right side contrasting with the other three flatter surfaces. Cobble approximately one inch in width.



Figure 16: Closer view of the quartz crystal noted in Figure 15. The well-rounded morphology and frosted surface are inconsistent with the other quartz crystals seen in this particular cobble and would appear to indicate that this grain is part of the enclosing greywacke matrix and was cemented onto the surface of the granite; however, detailed examination showed that it is in fact embedded in, and thus crystallized in, the parent granite. Crystal diameter approximately 3mm.



Figure 15: Polished coarse-grained granite cobble surface showing large feldspar and quartz crystals. Note the tiny round quartz crystal slightly above and to the right of the large pink euhedral feldspar crystal in the center of the cobble. Field-of-view approximately six inches.



Figure 17: Unidentified green clast. Note the quartz and feldspar grain-rich matrix between the green clast and the granite clast. Green clast approximately one inch in length.



Figure 18: Possible gneiss fragment next to a red feldspar-hornblende-quartz-muscovite granite fragment. Field-of-view approximately four inches.



Figure 20: A red quartzite/sandstone clast. Note the broken surface extending into the greywacke matrix – this clast must have been broken prior to incorporation into the till before lithification. Clast approximately 2 inches in length – see also Figure 8.



Figure 19: Numerous granite clasts and an unidentified inverted tear-drop shaped clast.



Figure 21: Vein quartz clast? See also Figure 8.



Figure 22: Closer view of Figure 21 – note the iron stained and conchoidal fractures.



Figure 24: Rounded and semi-polished green chert cobble. Approximately one inch.



Figure 23: Cross-bedded sandstone clast? Approximately one inch in length.



Figure 25: Possible matrix sediment flow around a (kaolinized?) granite clast. The dense lichen growth over this part of the erratic's surface aided in defining the flow structure banding. Clast approximately one inch in length.



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Figure 26: Diagrammatic interpretation of possible flow banding around the clast.



Figure 28: Diagrammatic interpretation of possible flow structure around the clasts.



Figure 27: A polished green chert clast and an unidentified mafic clast wedged against a boulder-sized granite clast. Possible sedimentary flow structures are visible around the clasts as well as the nose of the granite clast. Note the flat sides of both the mafic clast and the chert clast - they appear to have been forced into direct contact with the granite clast. Green chert clast approximately two inches in length.



Figure 29: Clasts showing possible long-axis orientation indicative of sediment flow structure. Confined to a small section of the erratic and aligned with the structures shown in Figures 25 and 27. The dense lichen cover prevented clast identification. Field-of-view approximately eight inches.



Figure 30: Diagrammatic outline of the flow-aligned clasts shown in Figure 29.

## Conclusion

Photography of the Gowganda Tillite erratic boulder that is the subject of this brief but photo-rich article proved to be quite a rewarding exercise. The at-first-glance uninteresting rock stimulated many return visits and research of geological literature to provide education and explanation of its origin and composition.

While the provenance of the Gowganda Tillite is well-established from the north shore of Lake Huron in Canada, the similarly-aged early Proterozoic Reany Creek Formation in Michigan's Upper Peninsula contains a basal polymictic conglomerate that shares many similarities to the Gowganda Tillite; it may be possible that the erratic is from that source.

The boulders placed as rip-rap for bank stability and erosion control along Glengary Creek (see Figure 2) were examined for other examples of tillite erratics. One possible example was found; however, that boulder contained predominantly small clasts of white granite and was not otherwise similar to the Gowganda Tillite erratic. It may be that all these boulders were sourced from area gravel pits commonly used for construction purposes.

Finally, the somewhat serendipitous finding of this erratic boulder in the midst of a heavily populated and built-up urban environment proved that geologically-fascinating "discoveries" can occur anywhere – never stop exploring!

## Notes on Photography

A Sony A6700 and a Panasonic Lumix G100D were used to make the photographs illustrating this article. Lenses included a Sony 50mm Macro; a Lumix 30mm Macro; and a Tamron 18-300mm zoom.

All photographs were captured hand-held as Jpegs. Photos were taken in natural light – no flash strobe or

LED ring lights were used.

Processing of images was limited to cropping and minor adjustments to exposure and contrast. Colors were preserved and presented as seen in their natural environment.

The shape and position of the erratic made photography difficult. Positioning of scale aids (a geo-pick and multi-tool ruler) could only be done on suitable surfaces. Lighting was problematic – only one side and the surface of the boulder were exposed to sunlight, necessitating numerous visits at differing times to clearly illustrate the various subjects' colors and morphology.

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## AIPG Headquarters has a New Address!

On May 10, 2025, AIPG headquarters moved to a new location. The new address is:

10701 Melody Drive, Suite 612  
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The phone numbers and email addresses for all office staff remain the same.



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# End of Year Field Trip

## Colorado Springs, CO

By Abbey Neal, SA-11732 and Andrew Lash



I am Abbey Neal, a senior at Wayne State University majoring in Geology and Vice President of our AIPG Chapter, along with Andrew Lash, also a senior at Wayne State University majoring in Environmental Science and Geology. Last year's AIPG end-of-year trip to Colorado Springs was a thrilling addition to our undergraduate experience. From May 5th to May 15th 2024, we embarked on a ten-day road trip that took us across some of the most geologically rich and visually stunning landscapes in the American West. Over the course of our journey, we traveled through time-literally-across Colorado's diverse geologic landscape. Here, we share our reflections and geologic insights from each incredible stop along the way.

### Red Rock Canyon Open Space

Abbey: Our first stop, Red Rock Canyon Open Space near Colorado Springs, showcased sedimentary structures and the dramatic tilting of the Fountain Formation, composed of arkosic sandstones and conglomerates. These rocks were deposited during the Pennsylvanian Period as alluvial fans from the ancestral Rocky Mountains, then uplifted and tilted during the Laramide Orogeny.

### Garden of the Gods

Andrew: At Garden of the Gods, the towering red and white sandstone monoliths, also part of the Fountain Formation, stand almost vertically. We discussed the mechanics of thrust faulting and how the Laramide compressional forces uplifted and rotated these beds, creating this iconic scenery. The area is also rich in cross-bedding and ancient fluvial features.

### Pulpit Rock

Abbey: Pulpit Rock, composed of the Dawson Arkose Formation, provides great views of the white sandstone of the later eroded Pikes Peak Granite. The coolest part was learning the history of the unique 55 million year old weathered stone and clay. We discussed modern erosion processes and urban encroachment between ourselves.

on the hike to the top.

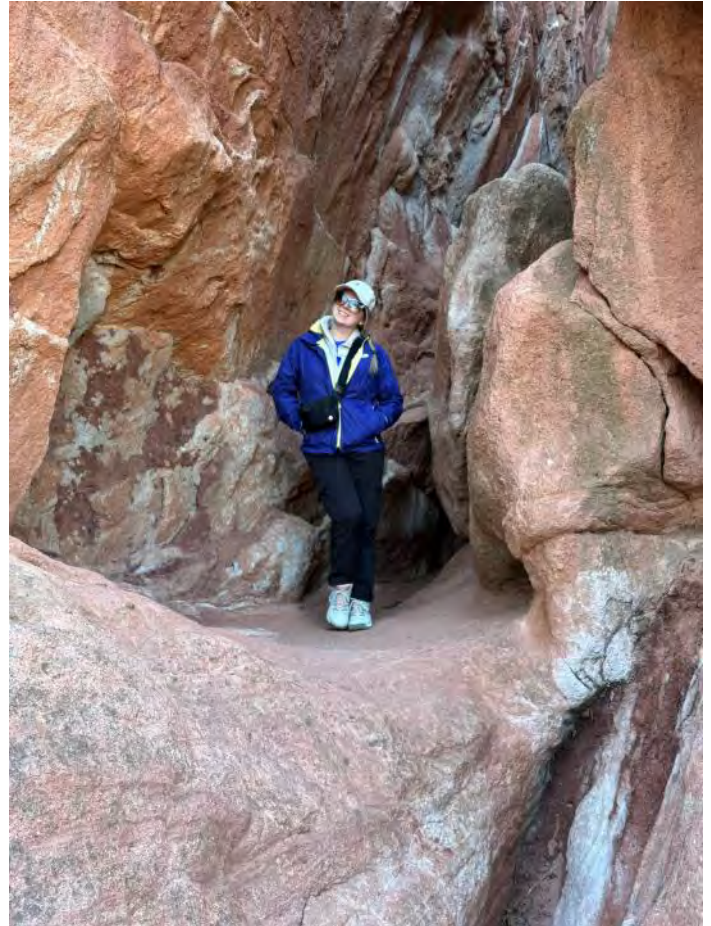


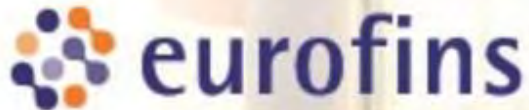
Photo 1: WSU AIPG chapter Vice President Abbey Neal during the hike at Red Rock Canyon Open Space. Image provided by Abbey Neal.

### Paint Mines Interpretive Park

Andrew: This was a hidden gem. The brightly colored clays of purples, reds, and yellows are part of the White River Formation and were formed through weathering and oxidation of iron-bearing minerals. These badland-like features show the power of fluvial erosion in semi-arid climates and represent ancient floodplain environments. Also, an amazing picture opportunity!

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Photo 2: Student Member Andrew Lash enjoying the Paint Mines, featuring the oxidation of the iron-bearing minerals at the top. Image provided by Andrew Lash.

## Red Rocks Amphitheater

Abbey: An iconic concert venue and a geologic classroom. Like Garden of the Gods, Red Rocks features tilted Pennsylvanian-aged Fountain Formation rocks. We viewed ripple marks and the arkosic composition. The rocks not only tell of ancient rivers, but also serve as a natural acoustic amphitheater. Seeing the link between geology and human culture was a unique intersection of science and recreation.

## USGS Geochronology Lab

Andrew: Visiting the USGS lab was like peeking behind the curtain of time. We were introduced to high-precision U-Pb zircon dating and Ar-Ar methods. It was very informative to talk to professionals who have devoted their careers to research and experience a work day of handling isotopes and geological samples. For me as an Environmental Science major, it reinforced how foundational geochronology is to understanding climate and evolutionary patterns.

## Colorado School of Mines Geology Museum

Abbey: This museum is a treasure trove of mineralogy and historical mining artifacts. It was my second time visiting this museum, but I was nevertheless amazed by the plethora of specimens including some of my favorites: rhodochrosite, fluorite, and gold nuggets from Colorado's mining districts. The displays can entrap mineral lovers for hours on end.

## Dinosaur Ridge

Andrew: Dinosaur Ridge brought out our inner children, but also our scientific curiosity. We saw dinosaur trackways, ripple marks, and mud cracks in the Morrison Formation. These features indicate a dynamic environment of lakes and floodplains during the Late Jurassic. The preserved tracks of ornithopods and theropods were especially compelling in contextualizing the history we walk amongst.

## Great Sand Dunes National Park

Abbey: Nothing prepares you for the scale of these dunes; the tallest in North America. The dunes form from sand deposits in the San Luis Valley, trapped against the Sangre de Cristo Mountains. Many of us became junior rangers while we were there which aided in the fun learning of the hike.

## Royal Gorge

Andrew: The Arkansas River has incised a deep canyon through Precambrian gneiss and schist, creating one of Colorado's most dramatic features. The gorge shows classic examples of fluvial incision and uplift, and we discussed how isostatic rebound and base level changes contribute to such deep carving over time.

## Florissant Fossil Beds National Monument

Abbey: This site is a paleontologist's dream. The Eocene-era volcanic ash layers preserve a wide array of fossilized plants and insects. We studied fossilized redwood stumps and learned about the ancient lake ecosystem that existed here before being buried by lahars from the Guffey volcano. It was an amazing example of rapid burial fossilization.

## Florissant Fossil Quarry

Andrew: We got hands-on here, and many of our peers were filled with excitement about being able to split shale slabs to reveal leaf and insect fossils. The fine-grained volcanic tuff and shale create perfect preservation conditions. It was an unforgettable experience to find and hold a 34-million-year-old leaf impression.

## Paradise Cove

Abbey: This natural pool is carved into Precambrian granite. We traversed a small hike that involved a little bit of climbing over boulders to be able to view this wonder which was a bit challenging to jump from rock to rock as a short person! Though a recreational stop, it offered a look at jointing patterns, exfoliation domes, and water-driven erosion. It was a good reminder that geology underlies even in our moments of fun.

## Cave of the Winds

Andrew: This cavern system in Mississippian-age Leadville Limestone features classic speleothems such as stalactites, stalagmites, flowstone. Our quirky but impassioned tour guide talked about karst processes, the role of groundwater acidity in limestone dissolution, and how cave formations act as paleoclimate proxies. This was all intersected with very tasteful dad jokes for the entirety of our journey into the depths. However, many were not fond of the abundance of Lampshade Weavers, a cave-dwelling spider that was a little too big for comfort.



Photo 3: The Beautiful natural pool carved into the Precambrian Granite in Paradise Cove. Image provided by Andrew Lash.



Photo 4: Scenes in the depth of Cave of the Winds caverns, featuring stalagmites and stalactites. Image provided by Andrew Lash.

## Pikes Peak Cog Railway Ride

Abbey: Riding to 14,115 feet on a granite massif was unforgettable. Pikes Peak Granite, about 1.08 billion years old, represents Proterozoic plutonism. We observed exfoliation domes and discussed the intrusive history of this batholith. The ride itself transitioned through ecological zones, paralleling our geologic ascent.

This trip brought everything we've learned in our majors together: sedimentology, tectonics, geochemistry, paleontology, hydrology, and human-environment interactions. Colorado's geology is more than beautiful—it's instructive, dynamic, and alive. For us, it wasn't just a road trip but a journey through Earth's history itself. Our end-of-year trips offer unforgettable opportunities and we are extremely grateful for our sections' learning experiences.

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# Coming Events

**June 1, 2025:** Deadline to submit applications for the Michigan Section AIPG Andrew Mozola Scholarship.

**June 11-12, 2025:** 14th Michigan Section AIPG Environmental Risk Management Workshop, Ralph A. MacMullan Conference Center, Roscommon, Michigan. Details Forthcoming!

**June 21, 2025:** Hybrid AIPG National Executive Committee Meeting. Look for a meeting invite from Headquarters via email, or attend in person in Boise, Idaho.

**July 8, 2025:** MAEP Golf Outing at Coyote Preserve Golf Club, Fenton, Michigan. Details may be found at: <https://maep.org/event-5973544>.

**July 19, 2025:** IL/IN Section Field Trip to the Indiana Dunes National Park. Registration here: <https://www.eventbrite.com/e/fieldtrip-to-indiana-dunes-tickets-1338568838429?aff=oddtcreator>.

**August 2, 2025:** Ishpeming Gem & Mineral Show. Ishpeming Elks Club, 597 Lake Shore Dr., Ishpeming, Michigan 49849. Details at: <https://xpopress.com/show/profile/493/ishpeming-gem-mineral-show>.

**October 4-7, 2025:** 62nd AIPG Annual Meeting, St. Louis, Missouri. Registration is open at: [2025 National Conference - American Institute of Professional Geologists](#).

**October 17-19:** Central Michigan Annual Gem, Mineral, Fossil, Lapidary & Jewelry Show, Ingham County Fairgrounds Main Arena, 700 Ash Street, Mason, MI.

# Member's Corner

*The Member's Corner includes information about the Section's membership. This is your chance to provide information on where you are and what you are doing. Simply send the information to the Editor for inclusion in this section.*

No Member's Corner articles were received for this edition of *Geologically Speaking*.



Looking out over the Rockport Quarry from the southeast edge of the pit. Photo taken by Sara Pearson on May 16, 2025.

# Welcome New Members!

The Michigan Section is continuing to grow. Please welcome the following new CPGs, Professional Members, Early Career Professionals, Associate Members, and Students:

Christina Hurney, AS-0226; Peggy Straub, AS-0229; Leslie Hartig, CPG-12275; Amie Baelstrom, CPG-12282; Daniel Trekas, ECP-1191; Spencer Hower, ECP-1194; Maureen Bellaire, ECP-1200; Ethan Gardner, ECP-1204; Jillian Cain, ECP-1213; Elizabeth Birmingham, ECP-1215; William Davis, MEM-3748; Scott Cathey, MEM-3763; Eric Hojnacki, MEM-3775; Alexander Smith, SA-12632; Sara McNett, SA-12635; Nyasha Mhindu, SA-12662; Kudakwashe Mutanga, SA-12690; Rhys Campbell, SA-12693; McKenzie Hatfield, SA-12721; Ben Mperekwa, SA-12707; Patience Madzorera, SA-12732; Lillian Majeske, SA-12737; Miciah Krisel, SA-12739; Emily Junghans, SA-12753; Devon

Risacher, SA-12756; Alora Mullins, SA-12758; Poppy Hobbs, SA-12760; Alexandra Grabowski, SA-12761; Christopher Cunningham, SA-12766; Tori Brown, 12774; Jeri Copley, SA-12788; Linsey Hula, SA-12798; Jing Ci Neo, SA-12817; Lain Harrelson, SA-12816; Helen Foldenauer, SA-12818; Ashley Jones, SA-12819; Lily Brown, SA-12820; Delaney Novach, SA-12821; Richard Riekse, SA-12752; Victoria MacGregor, SA-12822; Coreena Crummel, SA-12823; Marlayna MacKay, SA-12824; Priyanka Dhamala, SA-12815; and Hayden Gough, SA-12825.

To each of our new members, welcome to our Section! We encourage you to attend Section meetings and other events. You are also invited to provide information for the Member's Corner articles so that our members can get to know you.

# Regulatory Roundup

## Regulatory Roundup: Environmental, Water, and Energy Legislation in Motion – Michigan's 2025 Session So Far

Michigan's 103rd Legislative Session has brought forward a wide array of proposals aimed at addressing the state's environmental, water, and energy challenges, and lawmakers are actively seeking solutions to complex issues like pollution control, infrastructure resilience, and climate adaptation. These challenges are deeply rooted in science, and Michigan is fortunate to have a wealth of geoscientists, engineers, and environmental professionals with the expertise to guide effective policy. However, without your active engagement, policymakers may lack the technical insight needed to craft regulations that are both practical and protective. Therefore, it is essential for professionals in the field like you to stay informed, participate in public processes, and share your knowledge—ensuring that Michigan's environmental policies are grounded in sound science.

### Legislative Highlights: January 1 – May 15, 2025

#### Water and Wastewater Management

**HBs 4192 & 4193** (VanWoerkom, Snyder) – Groundwater Discharge Permits: Modify groundwater discharge permit requirements.  
Committee hearing scheduled for 5/21/2025.

**HB 4314** (St. Germaine) – Surface Debris Removal: Allows removal of surface debris without a permit.  
Introduced 4/16/2025.

**HBs 4352–4355** (Carter, T. & Mueller) – Municipal Utilities Authority: Modify the authority of municipal utilities.  
Heard in House Regulatory Reform Committee on 5/15/2025.

**HBs 4364 & 4366** (Robinson, DeBoyer) – Water Pollution Enforcement: Address discharge permit applications and sentencing guidelines for excess discharges.  
Introduced 4/22/2025.

**HB 4389 / SB 247** (Wegela / Camilleri) – Injection Well Fees: Propose disposal fees for injection wells.  
Introduced in April.

**HB 4427** (St. Germaine) – Sewage Alerts: Requires a "brown alert" for dangerous levels of sewage or E. coli.  
Introduced 5/6/2025.

**SBs 248–253** (Chang, Damoose, Bayer, Cavanagh) – Water Affordability & Access Package:  
- Establish water rate affordability funds

- Create a low-income water task force  
- Enact water shutoff protections  
- Allow tenants to hold water/sewer accounts  
Introduced 4/23/2025; Referred to Housing and Human Services Committee.

**SB 46** (Irwin) – Mobile Home Water Systems: Regulates water delivery systems in mobile home parks.  
Reported in Senate 5/20/2025.

**SBs 61, 62 & 66** (Hoitenga) – Water Supply Regulations:  
- Exempt filtration system requirements in schools/child care centers if no lead is detected  
- Prohibit local mandates forcing adult foster care facilities to switch from private wells  
Introduced February 2025.

#### Solid and Hazardous Waste

**HB 4257** (Neyer) – Anaerobic Digestion Definitions: Defines anaerobic digestion and digestate.  
Heard in House Agriculture Committee on 5/15/2025.

**HB 4265** (Andrews) – Anaerobic Digester Compliance: Modifies reporting and compliance requirements.  
Heard in House Agriculture Committee on 5/15/2025.

**SB 201** (Singh) – Solid Waste Fund: Establishes a fund for waste reduction, reuse, and recycling.  
Introduced 4/15/2025.

**HB 4393 / SB 246** (Miller / Camilleri) – Landfill Regulation: Increase disposal fees and limit TENORM and certain disposal wells.  
Introduced in April.

#### Air Quality and Pollution Control

**HB 4304** (Smit) – Weather Modification Ban: Prohibits atmospheric dispersion of substances to affect weather.  
Introduced 3/26/2025.

**SB 141** (Irwin) – Methane and VOC Capture: Requires emissions control at oil and gas wells.  
Introduced 3/12/2025.

**SB 305** (Chang) – Pollution Fines: Directs fines to benefit impacted communities.  
Introduced 5/15/2025.

#### Pollution Prevention and Local Control

**HB 4299 / SB 195** (Foreman / Shink) – Plastic Bag Preemption Repeal: Repeal laws preventing local regulation of plastic bags and containers.  
Introduced in March.

**Infrastructure and Cleanup**

**HB 4411** (Green, P.) – Vehicle Debris Removal: Enables cost recovery for removing damaged vehicles and debris. Introduced 4/30/2025.

**SB 307** (Bayer) – Lead Fixture Labeling: Requires labeling of plumbing fixtures containing lead. Introduced 5/15/2025.

**Energy and Clean Technology**

**HB 4007** (Bohnak) – Clean Energy Definition: Expands the definition of clean energy systems. Received in Senate 5/13/2025.

**HBs 4027 & 4028** (Alexander) – Zoning and Renewable Energy:

- Remove zoning exemptions for large-scale solar, wind, and storage
- Clarify zoning authority under clean energy law

Received in Senate 5/6/2025.

**HBs 4124–4129** (Wendzel, McFall, Steckloff, Thompson, VanWoerkom, Andrews) – Nuclear and Hydrogen Innovation Package:

- Tax credits for SMRs
- Education and workforce development grants
- Definitions and incentives for advanced nuclear technologies

Reported or heard in committee between March and April 2025.

**HB 4283** (Prestin) – RICE Generators: Allows electricity from RICE generators to count toward renewable energy standards.

Received in Senate 5/13/2025.

**HB 4361** (Green, P.) – Power Line Maintenance: Modifies tree trimming guidelines around power lines. Introduced 4/22/2025.

**HB 4363** (Wendzel) – Repeal of Homeowners' Energy Policy Act. Introduced 4/22/2025.

**HB 4424 / SB 235** (Neyer / Singh) – Sustainable Aviation Fuel: Provide tax credits for use of sustainable aviation fuel.

Introduced in May and April, respectively.

**HB 4486 / SB 275** (Frisbie / Bellino) – Natural Gas Infrastructure: Prohibit local bans on natural gas use or infrastructure installation.

Introduced in May and April, respectively.

**SB 84** (Hoitenga) – Energy-Efficient Appliances: Prohibits local bans on energy-efficient appliances in residential buildings.

Introduced 2/12/2025.

**Funding and Appropriations**

**HBs 4459 & 4460** (McKinney, Paiz) – Clean Michigan 2 Initiative: Propose general obligation bonds and funding allocations for environmental protection. Introduced 5/6/2025.

**SB 181** (Irwin) – EGLE Budget: Appropriations for fiscal year 2025–2026.

Passed Senate 5/13/2025 (19–18); Received in House Appropriations Committee.

**Judicial Spotlight: PFAS Rules Case Returns to Court of Appeals**

In a significant legal development, the Michigan Supreme Court on March 7, 2025, vacated a prior Court of Appeals decision that had invalidated state rules setting limits on PFAS (per- and polyfluoroalkyl substances). The case, 3M Company v. EGLE, was remanded to the appellate court for further consideration.

The high court's majority—Justices Bernstein, Cavanagh, Welch, and Bolden—did not rule on the merits but directed the Court of Appeals to revisit several key legal questions, including:

- Whether the case is moot due to EGLE's updated rule set;
- Whether 3M failed to exhaust administrative remedies before filing suit;
- The implications of any failure to exhaust those remedies on the court's jurisdiction and 3M's standing.

The original dispute centered on whether EGLE's regulatory impact statement adequately addressed the costs of groundwater cleanup. While EGLE argued that such estimates were not required due to lack of data and the rule's focus on drinking water, the Court of Appeals had disagreed.

This remand is seen as a procedural win for EGLE and keeps the PFAS limits in place while the legal questions are reexamined.

**Importance of Funding for EGLE Programs and Michigan Geological Survey**

The appropriations bill (SB 181) is crucial for funding the Department of Environment, Great Lakes, and Energy (EGLE) programs and the work done by the Michigan Geological Survey. These funds support vital environmental protection initiatives, research, and regulatory enforcement, ensuring Michigan's natural resources are safeguarded and sustainably managed.

Summary: Michigan as a Top Location for Carbon Capture

Members of the House Energy Committee were told that Michigan could be a national leader in carbon capture

and sequestration. Industry officials urged lawmakers to move potential legislation that would give the state primacy over permitting such projects.

Carbon capture, utilization, and sequestration involve technologies that reduce CO<sub>2</sub> emissions from industrial facilities or power plants. The CO<sub>2</sub> is captured before being released into the atmosphere and is either stored underground or used in products like concrete or chemicals.

Robert Mannes, president and CEO of Core Energy, LLC, highlighted the upcoming legislation that would create a regulatory framework for carbon capture. Michigan's geologic formations, including saline reservoirs, depleted oil and gas fields, and basalts, make it an ideal location for carbon storage.

Autumn Haagsma, director of the Michigan Geological Repository for Research and Education, emphasized Michigan's potential to lead in carbon capture, noting the state's diverse storage options and sources of CO<sub>2</sub> emissions.

### Stay Informed:

As professionals in environmental and energy sectors, your expertise is vital. Track legislation, participate in public comment periods, and contribute to shaping science-based policy. Stay tuned to the Regulatory Roundup for the latest developments—and let's continue working together to protect Michigan's environment and energy future.



Michigan legislative bill [search](#)



Michigan Administrative Code Rulemaking System [search](#).

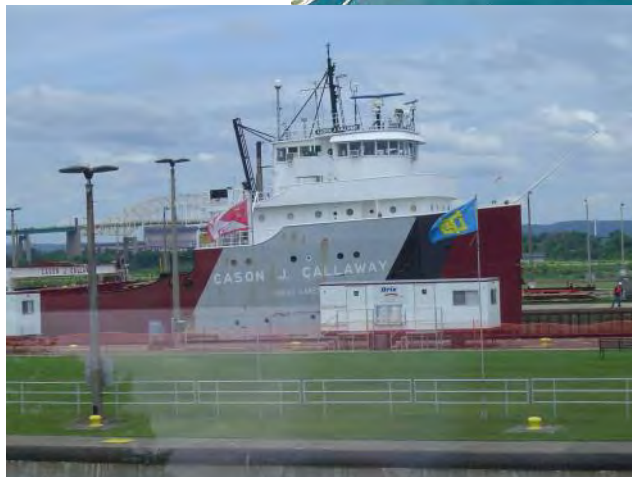
# 2025 Michigan Section AIPG Field Trip to the Soo Locks!

The Michigan Section AIPG is sponsoring a 2025 summer field trip to the Soo Locks in Sault Ste. Marie on July 19, 2025. As part of this trip, we will have the opportunity to enter the area where the new lock is being constructed to see the Jacobsville Sandstone. We will also be provided information about the construction process by on-site engineers.

After our visit to the locks is complete, we will make several other stops to see interesting geological features in the eastern upper peninsula. These stops will fill out Saturday afternoon and will culminate with a BBQ dinner at a local park. A few additional stops will be made on Sunday morning before participants head home.

This field trip will be limited to 30 participants, and because of safety issues related to the construction area, all participants must be at least 18 years of age.

Registration will be opening the second week of June, and full details of the planned stops will be provided at that time. We are looking forward to seeing you in the U.P. this summer!



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# ASBOG Exams

The ASBOG Fundamentals of Geology (FG) and Practice of Geology (PG) Examinations are administered using Computer Based Testing (CBT). All examinees must be certified to take the examination at an approved Prometric/Iso-Quality Testing (IQT) facility. Multiple testing centers are located throughout Michigan. Central Michigan University (CMU) qualifies candidates to take the FG examination in Michigan and surrounding states.

The FG and PG exams are given in March and October each year. **The next scheduled examination dates are Thursday, October 2nd and Friday, October 3rd, 2025.** Two days will be available this October to accommodate the anticipated demand.

There are three fees for taking the FG examination: \$50 CMU administration fee, \$200 ASBOG examination fee, and \$75 Prometric testing center seat fee. **For October, the deadline to apply through CMU is August 15th.**

Complete information on applying to take the FG exam is available at [se.cmich.edu/asbog](https://se.cmich.edu/asbog). Useful information to help prepare for the FG Exam can be found in the ASBOG Candidate Handbook, which is accessible on the [ASBOG website](https://www.asbog.org).

## Member Input Sought

The Section Executive Committee is seeking input from members on a variety of topics. Do you have any suggestions regarding speakers/presentation topics that you would like to hear? What about field trips or other events? Some place you'd like to see us go, or something you think the membership would enjoy doing? Then

make your voice heard; please send your suggestions to one of the members of the Executive Committee; any of the seven members would be glad to hear from you. AIPG is your organization. Please help keep it relevant and interesting for all by participating.



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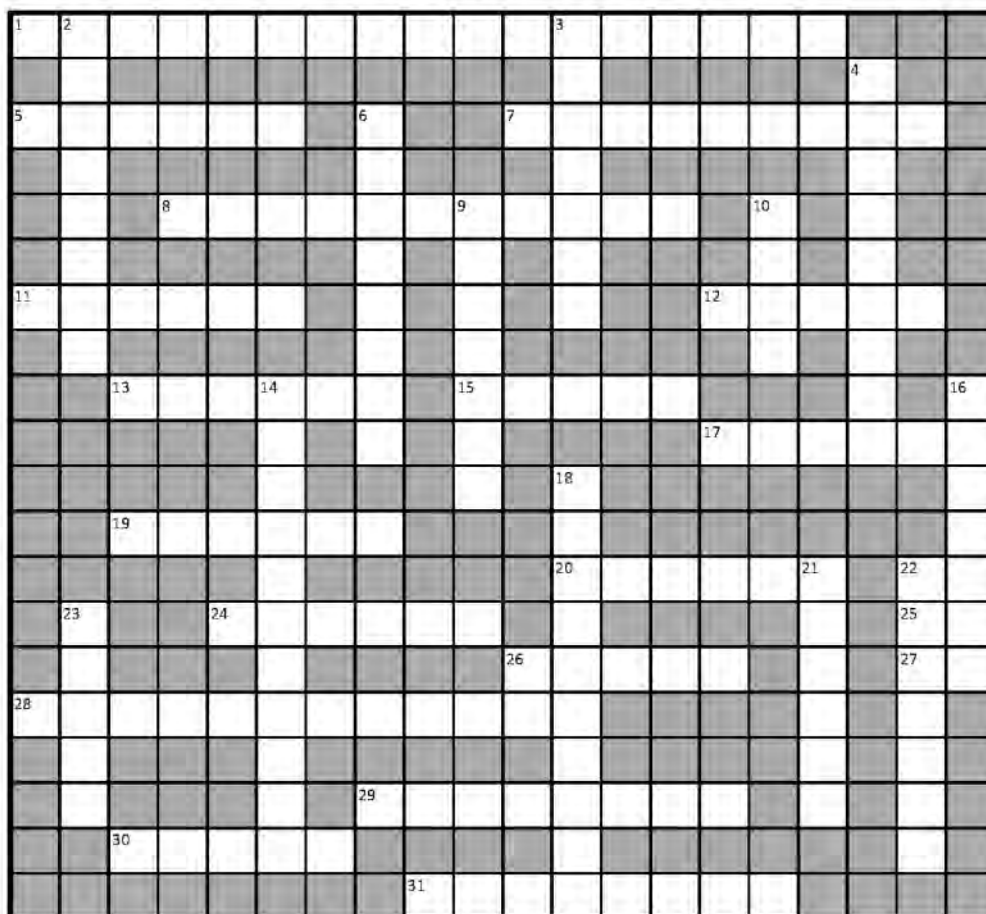
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## Geology Crossword #21



## Across

1. Formation of new crystals in a rock
5. Not the ninth planet
7. Planar arrangement of textural features
8. Mineral assemblage formed ~300-500°C
11. Nonrigid component of deformation
12. "It's not my \_\_\_\_"
13. "Sausage" in German
15. Minerals having the shape of an eye
17. Force per unit area
19. Zone of minerals surrounding a mineral
20. A product of hypervelocity impacts
22. Element 68
24. Collision of two planetary bodies
25. One's father
26. Soft layer between a vein and country rock
27. The third part of the ego and superego
28. Mineral precip. From hot aqueous fluid
29. Cracks, joints, and faults
30. Parting in a rock w/o shear displacement
31. Force exerted on a surface

## Down

2. Rock composed of garnet and pyroxene
3. Minerals formed in lowest metamorphic grade
4. Steepening in otherwise uniform dip
6. A fold with youngest rocks at the core
9. State of physically touching
10. The \_\_\_\_ is on
14. Fabric development as a result of stress
16. A line showing similar temps and pressure
18. Large discordant plutonic bodies
21. Material blasted out of an impact crater
22. Uppermost depth zone of metamorphism
23. Any tabular body of rock

\*The solution to this geology crossword will be included in the next edition of *Geologically Speaking*.

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