

Geological Society of Minnesota Board Meeting Minutes 5/11/2026

Prepared by Stephen Willging - 05/30/2026 Final

Approved 6/15/2026 see Appendix N - Posted on website 6/15/2026

Meeting: Monday 05/11/2026, 6:30pm

Location: Keller Hall, Room 3-230

Board Members present:

David Wilhelm (President)
Mary Helen Inskeep (Vice President)
Dan Japuntich (Treasurer)
Stephen Willging (Secretary)
Kate Clover
Lowell Hill
Javier Guzman
Wolfgang Bielefeld
Dick Bottenberg

Other attendees:

Joanie Furlong
Alan Smith
Kay Smith
Steve Erickson
Patrick Pfundstein

Note: **Board motions and votes are bold, underlined and highlighted in yellow.** **Action items are bold and underlined.** Please complete your assigned action items by next meeting or date specified.

Previous minutes 2/16/2026: approved via e-mail and posted on GSM website

Agenda Topics:

1. Treasurer's report – Dan Japuntich

- a. See Treasurer's Report in Appendix A.
- b. The GSM investment funds at Merrill Lynch has been moved to the GSM checking account at Huntington Bank.

2. Financial oversight – Finance Committee consists of Stephen W., Dan J. and Dave K.

- a. See Finance (Audit) Committee report in Appendix B.
- b. Over the last 3 years the GSM has been running an increasing deficit. The problem is due to increased expenses and income variability due to the multiple year memberships.
- c. It was proposed to eliminate the multiple year memberships and increase the membership dues by \$10/yr.
 - In the discussion, several people expressed support for continuing the multiple year memberships even though it results in income variability from year to year. No changes were made to the duration of the multiple-year memberships at this time. However, this may come up for discussion again in the future.
 - See Agenda Item 4 for the discussion around the increase in membership dues.

3. Membership – Joan Furlong Note: Joan F., Dave W, and Stephen W. have mailbox keys.

- a. See Appendix C for summary report.
- b. 173 memberships; last year 12 new members, this year so far 13
- c. In her report Joan F. had a question of why she needed to track online membership payments. The answer is we need to understand the impact of the credit card fee on the GSM income as

the fee may be paid by the member or passed on to the GSM. Going forward, Joanie F. will track how many pay online.

4. Proposals to change membership dues

- a. See Finance (Audit) Committee report in Appendix B.
- b. **Javier G. made a motion that the membership dues be raised to \$30/yr for individuals, \$45/yr for families and student remain at \$10/yr starting Aug 1st 2026. Kate C. seconded the motion. The vote was 9 in favor, none opposed.** Motion was agreed to.
- c. In order to implement the change, the new dues will be printed in the State Fair fliers and updated on the GSM website on Aug 1st.

5. Recruitment of members to fill the 2027 GSM Board.

- a. Three Board members (Dick B., Kate C., Stephen W.) will leave the Board at the end of 2026 due to term limits. We will elect members to replace them at the Fall Banquet in September. It is time to start recruiting nominees for the Board.
- b. David W. has talked to Deborah Naffziger about rejoining the Board. She agreed to be nominated for another term on the Board.
- c. **Let David W. know if anyone else is interested in joining the Board.**

6. Lectures & Labs

- a. Lecture attendance report – Dave Wilhelm
 - See Appendix D for details.
 - Summary for all 2025/2026: 15 lectures, 960 total attendance, 64 average attendance, ~97 (10%) identified new attendees
 - Summary for winter/spring 2026 (excluding special presentation & lab): 8 lectures, 484 total attendance, 60 average attendance, ~52 (11%) identified new attendees
- b. Spring Banquet report – Dave Wilhelm, Lowell Hill
 - The Spring Banquets was held on Monday May 4th at the Bethlehem Lutheran Church 436 N. Roy St. in St. Paul. Food was catered by the nearby Black Sea Restaurant. The speaker was Mark Jirsa M. Sc., a retiree from the Minnesota Geological Survey. Mark's talk was entitled: 45 Years Mapping Minnesota's Bedrock: My Life on the Rocks.
 - There were 64 attendees, \$1,352.45 expenses, \$945 collected, net cost \$407.45
 - The Board thanked Lowell Hill for organizing the location and caterer.
 - **Suggestions for location and caterer for the Fall Banquet should be sent to David W.**
- c. Planning for 2026-2027 – Steve Erickson
 - See Appendix E for current status of the 2026 – 2027 lecture schedule

7. Video/Zoom recordings and posting to YouTube – Lowell

- a. See reports in Appendix F and G for updates.
- b. Ken Severson lecture will not be posted due to comments he made in the presentation. **Steve E. will discuss this with Ken.**
- c. Steve E. suggested we should promote GSM membership as part of the posted videos
- d. **Send any feedback on posted videos to Lowell H.**

8. GSM markers –Dick Bottenberg

- a. Committee membership: Dick Bottenberg (chair), Zenobia Evans, Javier Guzman, Dan Japuntich, Kevin Welk, Erika Wilder.

- b. The team has made significant progress in the last 5 months in the areas of: funding identification, marker repair, marker status and management, selection of new marker sites and the development of a whole new approach to education via DIY Field Trips. See Appendices H, I, J and K for the full report.
- c. Dan and Javier met with the Minnesota Historical Society in March and identified realistic funding opportunities for marker installation and repair. Also discussed was the process we will need to follow to get that funding. In addition to MNHS funding, support from the GSM via fund raising and grants will likely be needed.
- d. The Marker committee recommended decommissioning several markers with missing plaques. **Dick B. made a motion to decommission the 4 markers as recommended in Appendix J and to edit the Marker brochure accordingly. Dan J. seconded the motion. The vote was 9 in favor, none opposed.** However, the committee needs to come back to the Board for authorization to spend money related to the decommissioning.
- e. Javier presented a new approach to the GSM's efforts related to geologic education and outreach. See Appendix K. This approach would focus the GSM on geologically significant sites (not necessarily the physical markers) and revamp or replace the GSM road markers webpage with a self-guided field trips page. **The Board feels this is a good idea and gave the Marker committee the go-ahead to establish a new committee to develop the DIY field trip approach.** The new committee will need to investigate how to protect the GSM from any liability claims.

9. Minnehaha Marker – Patrick Pfundstein

- a. See report in Appendix L. Progress continues to be very slow.

10. State Fair and other venues to promote GSM – Patrick Pfundstein

- a. See report in Appendix L. Invoices for 2024 and 2025 State Fair costs have been submitted for reimbursement. Volunteer on-line sign up will be set up shortly. Changes to lecture schedule and Marker location brochure need to be done by Aug 1st so they can be printed before the Fair.

11. Outreach:

- a. MESTA conference
 - Steve Erickson and Theresa Tweet represented the GSM.
 - See the May 2026 GSM Newsletter write up.
- b. Mill City Museum
 - Patrick Pfundstein and Mary Helen Inskeep represented the GSM.
 - See the May 2026 GSM Newsletter write up.
- c. Robbinsdale Spanish Immersion Elementary School STEM Night April 30
 - Steve E. & Dave W. participated.
- d. Environmental Fun Fair at Springbrook Nature Center on Saturday, May 2, 2026.
 - Stephen W., Mary Kay Arthur, & Dave W participated
 - **Stephen W. will do a write up for the next newsletter.**

12. Video Library – Dave W (no new purchases; 12 rentals this quarter, \$22 cash on hand) Have asked Deborah to suggest new titles. Discussion question: What is the future of the library?
Nothing to report

13. Field trips – Dave Wilhelm

- a. Black Hills June 1 to 7, headed by Randy Strobel & Joan Furlong, organized by Dave W. About 16 participants.
- b. Dave W. trying to reschedule a “Soils Lab” at UW River Falls, hosted by Holly Dolliver, our presenter from Feb 10, 2025.
 - February 19 was postponed due to weather; looking now for a summer date.
- c. Dave W. trying to organize a weekend field trip to the Wisconsin Ice Age Trail, led by our presenter from Feb 23, Lisa Siewert.
- d. Dave W. will look into another tour of St. Anthony Falls Lab.
- e. Mary Helen I. is thinking about a potential trip to the Chicago museums (Field and Science Museum). Also, the “big hole in the ground” along I-80 and possibly the Indiana Dunes. Trip could be a week to 8 days long. Now looks like 2 years out.
- f. Trip to GSM markers around Minnesota possibly led by Randy S. and/or Roger B.
 - Nothing to report.

14. Creating video walking tours for the GSM YouTube channel – Kate Clover, Patrick Pfundstein
Nothing to report. Still in the works.

15. GSM Website – Alan Smith

- a. Alan S. reported working on security issues with the website. He recommended spending \$100 - \$120 for software to help with the issues.
- b. **Mary Helen I. made a motion that the Board authorize Alan Smith to spend up to \$250 on software for malware detection, defense and recovery for the GSM website. Dick B. seconded the motion. The vote was 9 in favor, none opposed.** The motion passed.

16. Aiming for a younger and more diverse membership, Meet Up group - Mary Helen Inskeep

- a. See Appendix M status report.
- b. After a review of the number of new members the GSM has gained from the Meet Up site, it was determined that the Meet Up experiment only resulted in a couple of new members. With that Mary Helen I. recommended we do not renew the Meet Up site in August.
- c. **Lowell H. made a motion that the GSM defund the Meet Up site. Javier G. seconded the motion. The vote was 9 in favor, none opposed.** Motion was agreed to.
- d. It was suggested to focus activity to college students. **Steve E. will ask for U of MN contacts. If anyone has contacts at St. Thomas or Macalester let Mary Helen I. know.**

17. GSM Newsletter:

- a. The May 2026 issue was just released.
- b. Kate has resigned as chief editor after many years of exemplary service, effective with the upcoming August 2026 issue. The Board thanked Kate for her many years of service.
- c. Jon Wolf generously stepped up and will start with the August 2026 issue.
- d. The remainder of the editing team remains in place: Mark Ryan, Harvey Thorleifson, and Rich Lively.
- e. The submission deadline for the August 2026 newsletter is July 15th.

- f. **Wolfgang B. suggested developing GSM promotional information for the newsletter. He will work on it. If anyone has any ideas spend them to Wolfgang B.**

18. GSM funding request from Olivia Rowe – David Wilhelm

- a. Nothing to report. **David W. will contact Olivia.**

19. Donations to GSM

- a. “Minnesota Fossils and Fossiliferous Rocks” from Sally Sloan, widow of author Robert Sloan.
- David W. reported we distributed 10 copies at the 2026 Spring Banquet and we received \$50 in donations.
 - **Steve E. will take a few copies to distribute at ILSG.**
- b. Various rocks, minerals, and other items from the Steffners
- No further progress

20. Any other agenda items?

No additional items

21. Date & location of next Board meeting

Next Board meeting will be Monday Aug 17th at 6:30p at a location TBD.

Stephen Willging made a motion to adjourn the meeting. Mary Helen I. seconded the motion. The vote was 9 in favor, none opposed. Meeting was adjourned.

Appendix A:

Treasurer’s Report
GSM Board Meeting
May 11, 2026

1. Bank statements balanced for the months of Feb, Mar, Apr 2026.
 - a. No issues or concerns.
2. Income, deposits, for the three months \$1969.03
 - a. Donations = \$1,700
 - b. Memberships Form, incl. dues and donations = \$254.03
 - c. Video Library = \$15
3. Expenses for the three months = \$2776.07
 - a. Banquet Catering = \$1173.69 (to be reimbursed by dinner fee collection)
 - b. Lecture Honorariums = \$925.
 - c. U Haul Storage space rent = \$462
 - d. Rock Hammers = \$126.15
 - e. Name Tags = \$14.11
 - f. Newsletter
 - i. Postage = \$33.31
 - ii. Printing = \$20.82
 - g. Web Hostmaster = \$20.99
4. Checking account balance as of 4/30/2026 = \$24,128.88
 - a. The actual checking account balance should be \$18939.88 after the State Fair receipts are received and paid: \$2,566 for 2024 and \$2,633 for 2025. (Total = \$5199).
 - b. In reference to the approved motion from the Feb.16, 2026 Board Meeting, the Merrill Lynch investment account was liquidated and combined with the Huntington Bank checking account.
 - c. The Merrill Lynch account gave a 9.5% increase in year 2025, an increase of \$1101.

- d. A check for \$400 was sent to ILSG on 3/5/2026 and was recently cashed this month. Amy Radakovich is the new contact with Mark Jirsa retiring.
 - e. The Annual Minnesota Tax renewal form was submitted last year to the Secretary of State.
 - f. Federal tax form 990-N has not been submitted to the IRS yet, pending technical problems with their website. Japuntich is working on getting it submitted.
5. Audit Committee Results are Attached (Dan Japuntich, Dave Kelso, Steve Willging)

Submitted by Daniel Japuntich
GSM Treasurer

Appendix B:

Audit Committee Results 5/11/2026

1. Audit Committee Budget Accomplishments
 - I. An Annual Incremental Budget Plan was created as an average of lines-items for the past three years. As shown in the attachment, the Incremental Budget Table takes this average as a baseline, and line-item adjustments may be made adding or subtracting adjustments (increments) for the new period's totals.
 - II. GSM committees may recommend adjustments to their plans to the GSM Board for approval on focused increment adjustments to Assets, Income or Expenses. It assumes existing activities are still necessary, focusing only on the changes. For instance, U-haul storage has inflated 7%, and the table adjustment is 14% above the 3-year average.
2. The Audit Committee recommends that GSM should focus on generating Income, rather than the need to cut Expenses which are essential for our activities.
 - I. From the table below, the annual Net Surplus (Income-Expenses) has been negative for past years. This means that annual GSM expenses have been increasing while income has not kept pace. This is not an emergency since we have ample Assets (\$24,129) to cover this for years, but it does mean a plan is in order. Dues are the major portion of Income Total.

	2023	2024	2025
Income Total	\$7,116	\$6,294	\$7,059
Expense Total	\$7,994	\$8,068	\$9,575
Net Surplus	-\$878	-\$1,774	-\$2,516

- II. The Audit Committee recommends a reduction in Membership categories from 13 to 3 categories and an increase in dues to \$30/member to address the negative net surplus.
 - i. Membership Categories Reduction Need
 1. Membership totals have been static: 2024(168), 2025(172), 2026(175), and do not appear at first to be the reason for the income decrease. However, there is a cyclical nature to projections of dues alone income from \$3200/yr to \$5600/yr (\$4391yr average) because of Membership categories.
 2. GSM's 13 Membership categories complicate any Income calculation: Family 1yr, Family 2yr, Family 3yr, Family supporting, Family sustaining, Individual 1yr, Individual 2yr, Individual 3yr, Individual student 1yr, Individual supporting, Individual sustaining, Individual guarantor, Lifetime.
 3. Individuals pay \$20/yr, while a Family Membership for a couple is only \$15 per person.
 - ii. Below is an example calculation for using 150 society members with category reduction and dues increase to \$30 per person which gives a simple, non-cyclical GSM Income increase of nearly \$2000/yr. (Individual dues comparisons: MN Mineral-\$34/yr, MNHS-\$65/yr).

Membership Category	Dues	Members	Income
Family 1yr	\$60	41	\$2,460
Individual 1yr	\$30	100	\$3,000
Individual sustaining 1yr	\$100	9	\$900
		Total	\$6,360
Present Dues Average Projection			\$4,391

Appendix C:

From: Joan Furlong

There are 173 memberships

113 memberships are up for removal September 2026

33 memberships are up for renewal September of 2027

28 memberships are up for renewal September of 2028

Attached is a list of new members. Last year there were 12 new members. This year so far there are 13.

I don't know why. I will keep track on how many new members pay with our new ability to pay online.

	2025	
Sarah Waterworth & Maria DeLaundreau	January	Attended Oct 2024 mineral show
Ezra Vaughn	February	I have attended some the free lectures. Searched google online
Javier Guzman	February	Steve Willging
Greg & Sheila Paul	April	GSM Friends
Rod Sykora	September	State Fair
Mary Picard & John Dufresne	September	Minnesota State Fair, Retired natural science teacher
Michael Zlonis & Susan Streitz	September	
Molly Cross	September	Friend, Mary Kay
Sharon Lewandowski	September	Terry Mackin, My brother
Dan Mulvaney	October	Internet
Ginny Black	November	
Carrie Kroll	November	I attended a meeting with a friend
	2026	
Anna Schoeneberger	January	My colleagues and I (middle school teachers) try to attend the speakers when possible
George Murray	January	Email regarding presentation and interest in MN geol. attended UMD with a BA in Earth Science 1975.
Laurie & Robert Hanson	January	Did a google Search. I'm studying to be a master naturalist. Both my husband and I love looking for fossils and collecting rocks.
Samantha Kaplan	January	Did not say
Mark Jirsa	February	
Elisabeth Heying	February	I learned about GSM by researching MN geology. I am an artist, a painter & pigment researcher. Geology is a major backbone of my work. I've been in MN for the past year. Spent few years abroad-Cyprus, Chile, Spain. I use iron oxide based mineral pigments.
Zsuzanna Allerton	February	Steve Erickson invited me to give a talk and I decided to become a member.
Andy Frost	February	Claude found you and recommended I join
Mikell Schoonover	February	
Travis Engelhaupt	April	ChatGPT and GSM website
Claudia Morgan	April	GSM member Charlotte Herman
Keith Burck	April	Bulletin Board in Rothsay MN
Jim & Chris Chilies	April	Google

Appendix D:

From: David Wilhelm

GSM Lecture/Lab Attendance

2025-2026

Summary for all 2025/2026: 15 lectures, 960 total attendance, 64 average attendance, ~97 (10%) identified new attendees

Summary for winter/spring 2026 (excluding special presentation & lab): 8 lectures, 484 total attendance, 60 average attendance, ~52 (11%) identified new attendees

2026-05-04	64 Spring Banquet: 45 Years Mapping Minnesota's Bedrock: My Life on the Rocks (<i>5 new attendees – invited by Lowell</i>)
2026-04-20	71 My Adventures in Glacier Bay (<i>20 new attendees – friends of the presenter</i>)
2026-04-06	47 Oxide Ultramafic Intrusions in Minnesota's Midcontinent Rift – What They Are, How They Form, and a Potential Environmentally Conscientious Processing Scheme to Produce High Value Critical Metal Products (<i>1 new attendee – wife of presenter</i>)
2026-03-23	64 How the Midcontinent Rift nearly split ancient North America apart 1.1 billion years ago—and why it stopped (<i>9 new attendees – invited by friends, lecturer; website</i>)

Appendix D continued:

- 2026-03-09 ~50 devices (~54 persons) ONLINE Geologic Hydrogen, Abiotic Methane, and Volume Changes Associated with Aqueous Alteration of Mantle Rocks in Submarine Environments (*the attendance count is an estimate as the record was lost*)
- 2026-02-23 52 devices (57 persons) ONLINE Integrating GIS & Geoscience: A Capstone Project on Geology of the Ice Age Trail (*6 identified as non-members: website, MESTA, friend, Ice Age Trail volunteer*)
- 2026-02-14 38 SATURDAY LAB: Rocks and the Minerals that Define Them – an Exploration of Minerals that Make Up Common Rocks (*8 new attendees: MeetUp, website, invited by friend; one attendee was 10-year-old grandson of a member*)
- 2026-02-09 63 devices (68 persons) ONLINE Hematite Ore Formation in the Lake Vermilion-Soudan Underground Mine State Park, Northeastern Minnesota (*6 identified as non-members: website, Nebraska Geo Soc, invited by friend*)
- 2026-02-02 59 devices (64 persons) ONLINE The Role of Snowball Earth Events in Bedrock Weathering (*5 identified as non-members: Nebraska Geo Soc, RAS, MMC show*)
- 2026-01-15 105 SPECIAL PRESENTATION by GSM and Lake Minnetonka Historical Society: Geology of Lake Minnetonka (*estimate that 75% of attendees were not GSM members*)

Summary for Fall 2025: 7 lectures, 476 total attendance, 68 average attendance, 45 (9.5%) identified as new attendees

- 2025-12-08 63 devices (66 persons) ONLINE Origin and Mineralogy of the Sudbury Structure (*8 identified as non-members: family, state fair, RAS*)
- 2025-11-24 59 devices (65 persons) ONLINE The Rock Elm Meteor Impact Structure, Pierce County, WI: Discovery and Basic Geology (*4 identified as non-members*)
- 2025-11-10 84 Lake Superior and Its Gales (*10 new attendees: invited by friends/relatives*)
- 2025-10-27 55 From Formations to Foundation: The Geology of Bridge Construction (*no new attendees*)
- 2025-10-13 70 Upper Mississippi Valley: Proglacial Origins to Modern Evolution (*8 new attendees: State Fair, invited by friends/relatives, website*)
- 2025-09-29 86 Feathers, Flight, & Fossils: Current Perspectives on the Evolution of Birds from Dinosaurs (*15 (!) new attendees: State Fair, invited by friends/relatives, GSM YouTube channel*)
- 2025-09-15 50 Annual Meeting; Beautiful Ohio: Sedimentary Dreams – A Virtual Field Trip (*no new attendees*)

Appendix E:

From Steve Erickson

GSM Lecture/Lab Schedule 2026-2027

Revised March 16, 2026

Mondays, Fall 2026

September 14 - Fall Banquet 2026 - Patrick Steury, "Mountains to Metal"

September 28 - Michael Ginsbach, MS, Minnesota Pollution Control Agency, "Multimedia Fate and Transport of PFAS in Minnesota"

October 12 - Richard Taylor, BS, Regional Quarry Manager, Cold Spring Company, "Dimensional Stone Production in Minnesota with Coldspring USA"

October 26 - Prof. Donna Whitney, University of Minnesota, "Geology & Civilization: the intersection of geology and humans through time in the eastern Mediterranean"

November 9 - Esther Stewart, Wisconsin State Survey, Baraboo Hills

November 23 - Protiti Roy, PhD candidate, University of Iowa, "Mars Demystified: What Everyone Should Know"

December 7 -???? Michigan

Mondays, Winter/Spring 2027 Lab TBD

January 25 - Kevin Theissen, St. Thomas University, Croatia-Roman Settlement

February 8 - Zenobia Evans, GSM Member, Antarctica

February 22 - (Zoom) request sent to U of Illinois energy group

March 8 - (ZOOM) Pennsylvania

March 22 - Harvey Thorliefson, U of M, Minnesota Waters

April 5 - Allison Severson, Ph.D, Minnesota State Geological Survey, Minnesota River Valley

April 19 - Julia Steenberg, Minnesota State Geological Survey, Dakota County Impact structure, update

May 3 - Spring Banquet 2027, Roger Sharp, Retired US Gypsum Company,

Appendix F:

From: Lowell Hill

Attached are files with status and statistics on video rollouts that Barry S. and Joe W. put together. As additional information:

For YouTube statistics and updates from Barry;

1. As far as I know all the Zoom recordings have been uploaded to YouTube.
2. I have enclosed a spreadsheet with statistics from the YouTube channel. I've highlighted the columns with the really useful stuff. I'm not sure we want to get too deep into the other stuff, and I don't know what some of it is.

Updates from Joe – see attached report

In general

- We'll edit and upload the video from Mark J's presentation on 5/4/2026 soon, "45 Years Mapping Minnesota's Bedrock: My Life on the Rocks".
- We have the recorded lecture from 4/20/26, "My Adventures in Glacier Bay", on Dropbox – we can discuss its status at the board meeting
- There are several videos in the queue for editing and distribution. We'll work at making them accessible for Barry to work with too.

Appendix G:

From: Joe Wright

GSM Video Report 11 May 2026

We use two methods of recording seminars, in person and zoom. Lowell and I work together to video the in-person seminars and I am responsible for getting them published. Barry has picked up the zoom related seminars and has been publishing those to the GSM You Tube page.

2024 -2025 GSM Seminars and Video

Three seminars, Kate Clover's from the 2024 Spring Banquet, Carrie Jennings on Groundwater Governance, and Cat Kantner's on Plan, Core, Scan, Store (Core sampling) were completed and published.

Harvey Thorleifson's was started but has not been completed. Stephen Delong's is still in queue.

2025-2026 GSM Seminars and Video

The 25-26 season has started off well in that we have gotten video recorded for five seminars before the semester break. We also took video of the seminar at the Wayzata City Hall in conjunction with the Lake Minnetonka Historical Society in January. We have three videos from the spring season. See the list below.

I am very much delinquent in competing videos and will pick up the pace. The first video that will be finished will be the Carrie Jennings Lake Minnetonka seminar followed by the Paul McKinney Lake Superior Gales seminar. After that I will address them in order of recording.

Lowell and I use Dropbox to transfer files when needed.

Camera and tripod use

The camera and tripod are available for member usage as long as we have them for the lectures. If anyone would like to use them just give me a call or text at 763-229-1455 and we can work out a transfer. The camera is a Panasonic Lumix G85 with a 12-60mm F3.5-5.6 lens. We have two battery packs for the camera. We also have a very nice Manfrotto tripod (takes a little while to figure it out but very versatile).

Video in hand, all other seminars do not have video available for publishing:

2024-2025 seminars and video:

<u>Date</u>	<u>Video</u>	<u>Presenter</u>	<u>Title</u>
11/11/24	Started	Harvey Thorleifson	Geological Mapping
03/24/25	In queue	Stephen Delong	Earthquake Hazards

2025-2065 seminars and video:

<u>Date</u>	<u>Video</u>	<u>Presenter</u>	<u>Title</u>
09/15/25	In queue	Deborah Naffziger	Beautiful Ohio: Sedimentary Dreams – A Virtual Filed Trip
09/29/25	In queue	Peter Makovicky	Feathers, Flight, & Fossils: Current Perspectives on the Evolution of Birds from Dinosaurs
10/13/25	In queue	Andrew Wickert	The Upper Mississippi Valley - Proglacial Origins to Modern Evolution

Appendix G continued:

Date	Video	Presenter	Title
10/27/25	In queue	Jill Mickelson Matt Ruble	From Formations to Foundation- the Geology of Bridge Construction
11/10/25	In queue	Paul McKinney	Lake Superior and its Gales
01/15/26	In queue	Carrie Jennings	Geology of Lake Minnetonka
03/23/26	In queue	Nick Swanson-Hysell	How the Midcontinent Rift nearly split ancient North America apart
04/20/26	In queue	Kent Syverson	My Adventures in Glacier Bay
05/04/26	In queue	Mark Jirsa	45 Year Mapping Minnesota's Bedrock My Life on the Rocks

Appendix H:

From: Dick Bottenberg

GSM Marker Team Status – 6 May 2026

- 1) The team has made significant progress in the last 5 months in the areas of:
 - a) Funding identification
 - b) Marker repair
 - c) Marker status and management
 - d) Selection of new marker sites
 - e) Development of a whole new approach to education via DYI Field Trips
 - 2) Funding: Dan is working on funding for new markers and repair of the old. He has established communication with Todd Mahon, the State History Services Manager of the Minnesota Historical Society (MNHS) and Andrea Weber of the Minnesota Department of Transportation (MnDOT). Dan and Javier met with Todd in March and identified realistic funding opportunities for marker installation and repair. Also discussed was the process we will need to follow to get that funding. In addition, a meeting with Liz Koele is planned for 21 May to go over what she learned when she inventoried all the MNHS markers in Minnesota. In addition to MNHS funding, support from the GSM via fund raising and grants will likely be needed.
 - 3) Repair: Dan and Zee plan to visit MnDOT to understand/learn the restoration process for roadside monuments. Also plan to visit the maintenance group experts at the MNHS to learn about site cleaning and restoration. Dick is tasked to work with the Park Board to understand their position on marker repair and maintenance.
 - 4) Status and Management:
 - a) The team plans to decommission 4 markers that are missing brass plaques. Request Board input. ***See attachment*** for details and rationale
 - b) The team plans to remove the following markers from the GSM website: 17 proposed but not installed, 2 missing and 4 decommissioned. ***See attachment*** for details and rationale.
 - 5) Selection of new marker sites proposal: Javier has developed a proposed approach to site identification and selection. **We would like Board review and comment. *See attachment.***
 - 6) DYI Field Trips proposal: See part 2 of Javier's attachment. **This approach will require a significant amount of effort and the formation of a new GSM committee. We would like Board review and comment. *See attachment.***
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Appendix I:

From: Dick Bottenberg, Javier Guzman

GSM Markers To Be Removed From Website – 6 May 2026

Following up on the action from Saturday's Marker Team meeting, below is a list of missing markers according to Patrick Steury's report. We agreed to have all of these marker sites removed or hidden from the GSM road markers webpage.

Markers that were never erected (these will be moved to proposed markers in the spreadsheet):

- #32 The Mississippi Finds a Way (North Mississippi Regional Park)
- #33 The Geology of Palmer Lake
- #35 The Geology of the Coon Rapids Dam Area
- #84 Mystery Cave
- #86 Geology of Sinkholes (Fountain)
- #136 Water and Ice Shape the Landscape (Fort Ridgley State Park)
- #143 Geology of the Adrian Area
- #152 Geology of the Minnesota River Valley (Tiger Lake, Morton)
- #172 Geology of the Rice Lake Area
- #200 Savanna Portage Continental Divide
- #224 Geology of the Hill Annex Mine
- #232 Geology Behind the Waterfalls (Gooseberry Falls State Park)
- #243 Kettle River Rapids (Banning State Park)
- #270 The Geology of Bad Medicine Lake
- #307 Glacial Crossroads Becomes a Lake (Father Hennepin State Park)
- #401 Glacial Meltwater Carves out the Minnesota River Valley (Minneopa State Park)
- #TBD Upper Gooseberry Falls

GSM markers with missing plaques (we agreed to decommission these):

- #37 St. Peter Sandstone (Battle Creek Park, St. Paul)
- #38 Indian Mounds Park (St. Paul)
- #290 Geology of Lake Mille Lacs (there are two in the area; make sure to remove the correct one)
- #328 Geology of the Elk River Region

Missing MNHS or MNDOT markers (these will be moved to proposed markers in the spreadsheet):

- #170 Sioux Quartzite and Pipestone (I-90 MN Welcome Center at Beaver Creek)
- #TBD Glacial Lake Aitkin/Peat (McGregor Wayside)

Let me know if you have any questions.

Javier

Appendix J:

From: Dick Bottenberg, Javier Guzman

GSM Markers With Missing Plaques: Decommission Proposal

Marker Team
April 2026

Introduction

- The 2025 GSM roadside marker inventory by Patrick Steury identified four previously erected markers with missing plaques:
 - #37 St. Peter Sandstone, Battle Creek Regional Park, St. Paul
 - #38 Indian Mounds Park, St. Paul
 - #290 Geology of Lake Mille Lacs
 - #328 Geology of the Elk River Region
- After thoughtful consideration, the Marker Team proposes to formally decommission each of the four marker sites (justifications on the following slides)
 - Effort and resources may be devoted to other potential new marker sites rather than replacing these markers

St. Peter Sandstone Marker #37

- Scenic site overall, well-visited; extensive outcrop of St. Peter Sandstone around parking lot and along trail
- Area surrounding the pedestal is heavily overgrown, and pedestal is in very poor condition with a significant portion broken off
- A new interpretive sign is posted at the trailhead, approx. 70 yards from the GSM marker pedestal; the sign briefly describes St. Peter Sandstone
- A replacement GSM marker would be somewhat redundant with the interpretive sign
 - Site is likely a good DIY field trip stop, however



Indian Mounds Park Marker #38

- The plaque is missing and pedestal defaced
- The overlook is significantly overgrown with mature trees and brush, fully obstructing views of the Mississippi River during much of the year
- The marker's geological story about glacial River Warren is very much like numerous other GSM marker sites along the Mississippi River
- Most importantly, there is increased recognition that the site is a Native American cemetery; erecting a new geological marker would be culturally inappropriate



2019 photo

Geology of Lake Mille Lacs Marker #290

- The site is located at a public boat access near Garrison, on the NW side of the lake
- The marker site is significantly overgrown
- A newer GSM marker (#306) is on the SE side of the lake, near Isle (approx. 35 min. drive)
- The marker texts of both sites are very similar, making the missing marker site redundant



Marker #290
[Credit: Patrick Steury]

Marker #306
[Credit: Patrick Steury]

Geology of the Elk River Region Marker #328

- Located in Babcock Memorial Rest Area, the park was once considerably larger but was reduced in 2024 to build the Hwy. 169/10 cloverleaf interchange. It is now more of a wayside rest and small picnic area
- The geology primarily described by the marker (glacial sediments & differing soils) are not readily visible at the site
- Overall, the geological story described by the marker is not unique or very compelling
- Link to missing marker text:
<https://gsmnwp.geosocmn.org/display-road-marker/entry/54867/-gsc.tab=0>



Photo Credit: P. Steury

Appendix K:

From: Dick Bottenberg

New Geological Marker Guidelines and Self-Guided Field Trips

Javier Guzman
May 2026

Part 1: New Geological Marker Guidelines

Appendix K continued:

Purpose/Outline

Purpose:

- This document proposes a framework and systematic methods for deciding on new or replacement geological marker sites

Outline:

- Purpose of Markers, Target Audiences
- Getting the Most Value from Marker Sites
- Scoring Methods/Options
- Scoring Examples
- Example Scoring Chart
- Marker Maintenance & Upkeep
- Ongoing & Proposed Actions

Getting The Most Value From Markers

Ideally...

- The site should be **highly visited**
 - Preferably a destination that people travel to, not just visited by locals
- The site should be **visually compelling**
 - Demonstrates the geology described by the marker and/or inspires a visitor to ask, "How was this formed?"
- The marker should tell a **compelling geological story**
 - Geology is everywhere; why is a particular site important and interesting to the general public?
 - In addition, the marker itself should be attractive and easy-to-read

Why Place Geological Markers*?

The goal of geological markers is to provide the public with easy-to-read information on sites and areas of significant geological interest throughout Minnesota.

Target Audiences:

- The Passersby:** Purpose for visiting site not primarily educational or scenic (e.g., rest stop, picnic, fishing, biking). Need to get their attention and tell a compelling story. Site should be highly visited to reach the most viewers (many are probably not interested).
- The Curious:** Visits a site for scenic or nature education, but not necessarily with geology in mind (sightseer, hiker, birdwatcher). May be curious about how the site was formed or inspired to find out more. Marker needs to convey information about a specific site.
- The Enthusiast:** Has at least some prior geological knowledge about a site and specifically sought out site for its geological value. Additional, more detailed information could be made available to them (e.g., via QR code link to GSM website).

Existing markers can generally be placed in one of two categories:

- Interpretive:** The marker is coincident with the geology being described (e.g., Interstate State Park potholes).
- Advertising:** The marker is not coincident with a visible example of the geology, but still provides educational value (e.g., how much?) and hopefully entices readers to delve further (e.g., MN welcome centers).

* Note: The term "marker" is used broadly in this report to encompass both traditional bronze plaques as well as interpretive signs.

Getting The Most Value From Markers

Markers are expensive and visitors' time is valuable. We should set the bar high, instead of being something like this:



Photo: <https://lovelinemphiblog.com/2013/05/on-this-date-something-happened-or-didnt-happen>

Jokey historical marker in Memphis, TN

Scoring Methods

- Implementing a scoring method can lend some rigor to the decision making process and keep important factors at the forefront.
- The two possible scoring options outlined below are equally valid; the team can select whichever works best and not make things too complicated.
- Option #1: 3-Level Scoring**
 - Assign a numerical score corresponding to what level ("Low", "Medium", or "High") a site satisfies a specific factor. Recommend using 1,2,5 numeric values rather than 1,2,3 to get better separation between scores.
- Option #2: Rubric Scoring**
 - Develop a detailed rubric or checklist of key factors to be considered, then tally up a site score based on how many of the items are "ticked".

Scoring Important Factors

- Visitation Score**
 - One could ask responsible agencies for visitation estimates at proposed marker sites, but this could be time-consuming and slow.
 - In lieu of that, a rough visitation score can be gleaned by counting the number of parking spaces near a proposed site using Google Maps images.
 - Proposed scoring: 0-29 spaces (Low)= 1; 30-50 spaces (Medium)= 2; greater than 50 spaces (High) = 5.
- Compelling Site Score**
 - Does the specific site (or nearby roadside terrain) demonstrate the geology described by the marker and/or inspire a visitor to ask, "How was this formed?" Is the site visually appealing?
 - Does the site offer a unique, iconic, or textbook example of the geology?
 - Assigning scores may be qualitative
- Compelling Geology Score**
 - Is the geological story important and interesting to the general public?
 - Assigning scores may be qualitative

Scoring Example* #1 of 3: Existing Marker

Marker #4- Glacial Potholes (Interstate State Park)

- Visitation Score: 5 (High, 100+ parking spaces)
- Compelling Site Score: 5 (High)
- Compelling Geology Score: 5 (High)

Note: This is likely the "gold standard" of sites!



Photo Credit: P. Steury

* The scores on this and subsequent slides are solely Javier's assessments, for demonstration purposes.

Scoring Example #2 of 3: Existing Marker

Marker #190 – The Geology of SE Minnesota (Enterprise Rest Area, EB I-90)

- Visitation Score: 2 (Medium, 48 spaces, almost "high")
- Compelling Site Score: 2 (Medium)
- Compelling Geology Score: 2 (Medium) or 5 (High)

Notes: Rest stop is adjacent to a scenic little valley overlook, but does not strongly demonstrate driftless or karst features. Sites of significant interest are 30–60 minutes away. Nevertheless, this marker may be a good "advertisement" for the driftless area of SE MN. Probably not worth visiting on its own, though.



Photo Credit: P. Steury



Photo Credit: Google Maps

Scoring Example #3 of 3: Missing Marker

Marker #328 – Geology of the Elk River Region (Babcock Memorial Rest Area)

- Visitation Score: 5 (High-??? See notes)
- Compelling Site Score: 1 (Low)
- Compelling Geology Score: 1 (Low)

Notes: This park was once considerably larger but was reduced to build the Hwy. 169/10 cloverleaf interchange. It is now more of a wayside rest and small picnic area; parking area appears significantly underutilized. The site and the marker's geological story are neither unique nor inspiring (IMO).

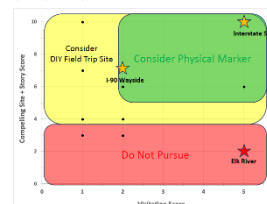


Photo Credit: P. Steury

Link to missing marker text: <https://gsm.nwp.geosocmn.org/display-road-marker/entry/54867/-gsc.tab=0>

Scoring Examples: Chart

- Here's an example of how a scoring chart can be used to guide decision making.
 - Black dots are new marker sites proposed by Patrick Steury; scoring done by Javier.
 - Some established markers are included for reference.
 - Again, this is for example purposes only.



- Scoring should help guide decision making, but not necessarily dictate it—there can be room for discretion.

Appendix K continued:

Marker Maintenance & Upkeep

- Every new and existing marker should come with a commitment and budget for ongoing maintenance and eventual replacement
- Otherwise, we will just be creating the eyesores of the future!
- Note: New applications for MNHS marker funding require explicitly stating which organization will be responsible for future maintenance & repair
 - Who "owns" the markers? (Probably the land owner/administrator-- not the GSM)



Marker #78: Granite Falls



Marker #227: Grand Marais



Weathered and defaced MNDNR sign



Weathered MNDNR sign



Marker #17: St. Paul



GSM Marker Photo: P. Steury



Trempealeau River S.P.



Ironstone S.P.

Part 2: Self-Guided Field Trips Proposal

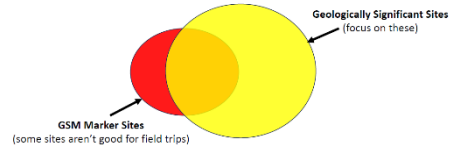
Actions

- Finalize a scoring method for proposed new marker sites-- Marker Team
 - Team has agreed to use proposed method as-is, for now; may be modified later, as needed
- Determine who gets to score & decide on proposed new sites: Is it the marker team, select subject-matter experts, or general club membership?-- Marker Team
 - Draft proposal in progress
- Explore use of QR codes in interpretive signs and potential implementation as low-cost site "benchmarks"-- Javier
- Propose to remove (or hide) all current sites without existing physical markers from GSM marker webpage and reassess/score them along with new proposed sites-- Marker Team
 - **Set the bar high for new physical marker sites!**

Self-Guided or DIY Field Trips

The Proposal:

- Revamp or replace the GSM road markers webpage with a self-guided field trips page
 - Focus GSM's educational and outreach efforts on **geologically significant sites**, not necessarily the physical markers



Why Focus on Sites instead of Markers?

- There are many more geologically significant sites than existing markers
- Placing new markers is very expensive and very time consuming
 - GSM should reserve new physical markers only for the highest value sites
- Numerous existing marker sites are:
 - Not geologically significant (e.g., MN welcome centers, municipal parks)
 - Missing (stolen) plaques, defaced, or difficult to access due to road re-alignment
 - Inaccurate based on new research
- Physical markers weather and degrade over time
- Other agencies (e.g., MNDNR) may have already placed interpretive signs/ markers at geologically significant sites; GSM should leverage and add value to what's already in place
- Physical markers and interpretive signs are limited in what they can communicate; GSM website content (perhaps linked by QR code benchmark) can provide much richer and more detailed information (e.g., videos, multiple graphics, reference links)

Poor Field Trip Marker Example #1 of 3

Marker #170 – Sioux Quartzite and Pipestone (I-90 MN Welcome Center at Beaver Creek)

- The site is a large wayside off a busy interstate-- not visually compelling
- The site is actually in South Dakota (really!)
- The plaque has been removed
- The geology described is not visible anywhere near the marker site



Photo Credit: P. Steury

More appropriate field trip sites (w/o GSM markers):

- Blue Mounds State Park
- Pipestone National Monument

Poor Field Trip Marker Example #2 of 3

Marker #147 – Geology of Minnesota (Rochester)

- Site is a municipal park overlooking an artificial lake and a power plant
- Local geology of interest is not visible
- The plaque generally describes statewide geology; it says NOTHING about the local geology of the area!



More appropriate site: Quarry Hill Nature Center

- Small display of local fossils in the visitor center
- Former quarry with large cephalopod fossils

Link to marker text:
<https://gsm.mn.gov/essocmn.org/display-road-marker/entry/54863/-gsc-tab=0>

Poor Field Trip Marker Example #3 of 3

Marker #38 – Indian Mounds Park (St. Paul)

- The plaque is missing and pedestal defaced
- The overlook is significantly overgrown with trees and brush, obstructing views of Mississippi River
- The marker's geological story about glacial River Warren is very much like numerous other sites & markers along the Mississippi River



2019 photo

More appropriate field trip sites:

- St. Anthony Falls, Minneapolis (no GSM marker)
 - Scenically and geologically more compelling
- Red Wing (GSM marker #96), or any of several other marker sites along the Mississippi River

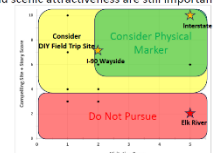
Building Self Guided Field Trips: The Basic Idea

Proposed steps for assembling self-guided field trips to place on the GSM website:

1. Select regions or themes of geological interest (e.g., quaternary glaciers, Minnesota River, Southeast Minnesota)
2. Provide a major city or town in each region as a starting point for the field trip (e.g., Minneapolis/St. Paul, Duluth, St. Cloud, Rochester, Red Wing, etc.)
3. Scout out and select some number (5-6?) of geologically significant sites that can be reasonably visited in a day, round-trip, from the starting city or town; document GPS coordinates
 - Some bonus or alternate sites might also be provided, at the travelers' discretion
4. Provide educational content on the GSM website regarding each field trip site
 - The content can include video, multiple graphics, links to research references, etc.
 - Perhaps provide different content for different age or education levels
5. A field trip site might be tied to GSM website content via a QR code benchmark or other signage; however, this is not a critical requirement for the field trip concept

How to Select Self-Guided Field Trip Sites?

- Field trip site selection might leverage proposed scoring system used in selecting physical marker sites, but with looser thresholds (example below)
- Compelling geology and scenic attractiveness are still important; high visitation may be less so



- Assess/score sites with existing GSM markers like any other potential field trip site
- **Safety (and liability) remain paramount**– Most highway roadcuts will not be suitable self-guided field trips sites! (Exception: roadcuts abutting wayside rest stop or other parking area)
- Other potential factors: accessibility, parking fees

Appendix M:

From: Mary Helen Inskeep

My report for recruitment of new + younger members:

1. The MeetUp site, whose purpose was to garner new + younger members, has garnered all of 2 new dues-paying GSM members, AT MOST, in 18+ months of operation. Given that the cost is \$300 per year, the MeetUp experiment clearly seems to have failed, so I recommend we NOT continue beyond the term we've already paid for (basically the 1st week of August). We can certainly maintain it until then, but I think the YouTube site is having far more success, & the MeetUp effort can be ended.
2. Assuming the Board concurs with this opinion, I will soon begin drafting a heads-up-this-MeetUp-Group's-about-to-end letter, explaining the reason for the closure, and referring people to our main website (which is also referenced on our MeetUp site and in each event, I've been posting).
3. I'm thinking that other than the YouTube site, which seems successful, we should be thinking about ways to reach the college students more effectively.... Ideas??? (3 geology programs exist in the Twin Cities: @ UofM, Macalester, & UST.) Do we have members who're working for UofM Duluth? ND School of Mines? Anyone else who can reach more college students??

Appendix N: Email approval dates – 8 approvals, 0 opposed, 1 no response

	<u>Approval Date</u>		<u>Approval Date</u>
David Wilhelm	05/30/2026	Dick Bottenberg	05/30/2026
Mary Helen Inskeep	05/31/2026	Lowell Hill	05/30/2026
Dan Japuntich	05/30/2026	Javier Guzman	05/31/2026
Stephen Willging	05/30/2026	Wolfgang Bielefeld	No Response
Kate Clover	05/30/2026		