



PEDOLOGUE

Volume 34, Issue 1, 2023

Newsletter of the Mid-Atlantic Association of Professional Soil Scientists

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PEDOLOGUE (ISSN 2641-662X) is published approximately quarterly by the *Mid-Atlantic Association of Professional Soil Scientists* in College Park, Maryland, USA.

Issues are available online at www.midatlanticsoilscientists.org/pedologue

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Calendar of some coming events

October 29-Nov.1, 2023. ASA, SSSA and CSS Annual international meeting, St. Louis, MO. [Home | ASA, CSSA & SSSA International Annual Meetings \(acsmeetings.org\)](http://acsmeetings.org)

Future articles etc.,

Pedologue needs articles, pictures, poems, cartoons, letters to the editor or other things soil scientists and/or other readers may be inspired to submit. Please submit such items to the editor (preferably to DelvinDel@aol.com, alternatively dsf@umd.edu). Be an author, support your newsletter! It's a way to promote your work, our community, and things we all need to know about soils and the environment.

<p><u>2023 MAPSS Officers:</u> President: David Ruppert Past President: Ben Marshall President Elect: Josh Stallings Vice President: Gary Jellick Treasurer: Sarah Roberts Secretary: Jenwei Tsai Member at Large to serve 1 year: Evan Park Member at Large to serve 2 years: Jim Leonard Ex officio Member Phil King</p>	<p><u>Board of Directors</u> Jim Brewer to serve 1 year Diane Shields to serve 2 years Annie Rossi to serve 3 years <u>Chairs of Standing Committees</u> Finance: Vacant Constitution and By-Laws: Gary Jellick Membership and Ethics: Nominations: Ben Marshall Education and Public Relations Delvin Fanning Certification Vacant</p>
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Editor’s Comments: This issue is the first one in recent times without assistance from former Assistant Editor Barret Wessel, who is now the Pedologist at Michigan State University and no longer a MAPSS member, although I, Del, feel that for all of his efforts in support of MAPSS and Pedologue, that MAPSS should consider making Barret an honorary member.

Marty and I were fortunate to be able to attend the 9th IASSC in Adelaide, Australia in March of this year and we are including a report about that in this issue; it was a disappointment to us that we were the only Americans to attend, especially since the US Cooperative Soil Survey program is trying to develop guidelines for the recognition and management of acid sulfate soils for which much good and useful information was presented there. On our return trip, while we were together in the airport in Sydney, Australia, on April 1, Marty received news on his cell phone that UMD had just been recognized the championship team at the 2023 National Soil Judging Contest in windy Oklahoma in the US where it was still March 31, Hooray! In this issue for the first time, the story about this years’ team victory is written by one of the students on the team, Gabriel Acevedo. Thank you Gabriel and all members and coaches of this wonderful team!

MAPSS President’s comments: I’d like to thank Del Fanning for an amazing job putting this Pedologue together, in particular without the help of Barrett Wessel. The notes that Del was able to put together from our April 13 Business Meeting, with Jim Brewer’s and Jenwei’s help (thank you, Jim and Jebwei), are entertaining to read and accurate, and what a great job by Del and Marty re the Acid Sulfate Soil conference in Australia, as well as the wonderful description of the Oklahoma landscape and soils by our National Champion soil judges. As of the writing of this Pedologue it looks like we have two great field tours coming together for later this year (Garrett County; Manganiferous Soils) but the promise of two Workshops has fallen through and we are in the need of a workshop team and idea. Please be in touch if you would like to help (cell 301 787 7970). David (DErt) Ruppert

MAPSS, April 13, 2023, Annual Business Meeting, American Legion Hall, Crownsville, MD, Minutes by former secretary Jim Brewer and current secretary Jenwei Tsai, who unfortunately could not attend.

President David Ruppert Call to Order 5PM – Welcome and thanks to previous Executive Council in keeping MAPSS going the last 4 years

Treasurer Sarah Roberts Treasurer’s Report (see attached 2023 Budget, Page 6 this issue); Bruce Bagley questioned some estimates of expense items. Bagley made motion to approve budget; 2nd by Carl Robinette; Approved by voice vote.

Committee Reports:

Education and Outreach: Chair Del Fanning stated he is not sure who is on the committee; put out 2 issues of Pedologue last year; assistant editor Barret Wessel resigning from committee, need someone to replace him; always need contributed articles by MAPSS members and others, get too few. Do get reports on successful collegiate soil judging teams, much appreciated.

Membership and Ethics: Chair President-Elect Josh Stallings not present.

Constitution and By-Laws: Chair Gary Jellick stated nothing to report; Jellick made a statement for the need of soil scientists to get involved with on-site sewage disposal regulations; "Health Departments don't have a good understanding of soils".

President David Ruppert asked for a show and names of new members:

Grace Boudine, Phil Clements, Don Wilson, Kendall Morris, Amanda Atwell, and Jim Leonard

Nominations Committee Chair Past President Ben Marshall stated the following nominations for 2023: Vice President (1-year term): Gary Jellick; Secretary (2-year term): Jenwei Tsai; Member at Large (2-year term): Jim Leonard (to replace Gary); Board of Directors: Annie Rossi (to replace John Wah); Chris Seitz made a motion to accept all and approve of all with a one voice vote; Bagley seconded; All approved with voice vote. Pedologue Editor's Note – the list of officers in Pedologue has been updated to reflect the results of the election.

President David Ruppert asked the members about how they felt about the location of our present business meeting; Bagley stated location works as being centrally located for membership; Marty Rabenhorst stated this general vicinity works but maybe another venue would work better and that the Executive Council should look into other venues nearby; Ruppert stated possible need for a venue with different food service, menu; Sara Mack suggested the Baltimore City area might be a better location or to even rotate the location around the state.

Possible 2023 money making workshop

President David Ruppert stated Phil King will need a committee for hydric soils workshop that he is planning in Sussex County, DE about a new wetland regulation; Bagley discussed his idea of a workshop in DE covering on-site septic in relationship with wetland regulations that may include both that would cover how to locate septic systems in non-tidal wetlands that would take place in the fall (Oct/Nov), it would be a co-sponsored workshop with MAPSS and DOWRA. Participants would be able to earn CEU's. King discussed the need for the hydric soils/ wetland workshop because Sussex County's new regulation requires the consultants to use a guidance map for determination of the location of wetlands on-site and a lot of MAPSS members work in that county. King suggested that we need to rework and figure out how to do the workshop before we vote on it tonight, then he stated that it will be best to remove his idea of a hydric soil workshop for this year.

2023 members field trips

Phil King discussed his ideas about a Western Maryland field trip to look at peat bog soils, "haven't been there is a long time to look at them as a group", this summer would be good with the cooler temps up there, no soil series name for these type of soils; Del Fanning suggested we could also look at acid mine drained soils, would have to be a two day trip with an overnight stay. Barry Glotfelty stated Nature Conservancy owns the peat bog with private owners, King also suggested looking at high elevation Spodosols; Kendall Morris stated owner of bog might like input from soil scientists, King suggested that Mack, Robinette, Marshall, Glotfelty, Seitz and Fanning be on the committee for the Western MD trip.

Ben Marshall discussed the manganiferous marble soils of Carroll and Frederick counties could also be a part of some members field trip; Ruppert suggested both Bog and Manganiferous could be good idea for members field trips this year.

Jocelyn Wardrop discussed her idea of an opportunity (~early August) to describe (2) soil pits and interact with members of the Pennsylvania Christmas Tree Growers Association at a Xmas Tree Farm in PA just north of Cecil County. She stated it wouldn't really be a member's field trip, but just to inform the tree growers of the soils that they would be looking at. With only two pits open it may not work for a field trip.

Awarding of the Simonson Scholarship (Martin Rabenhorst and Brian Needelman), \$1000 award for 2023-24 goes to UMD student Alex Quigley who was present and appeared with them. Upon request Alex has written a statement about himself and some of his credentials that appears subsequently in this Pedologue issue.

Ruppert stated need for a voice vote to make Del Fanning Poet Laureate of MAPSS, it was approved unanimously.

6:30 Dinner

Updates after dinner

Ruppert discussed how University of Maryland ENST Department has 2 new soil chemistry professors who have recently been hired and that the present chair of the Department Bill Barrowman is retiring in July, 2023. Efforts to select a new chair are underway.

The two new faculty members are:

- 1) Jared Wilmoth <https://agmr.umd.edu/about/directory/jared-wilmoth>
- 2) Candace Duncan <https://agmr.umd.edu/about/directory/candace-m-duncan>

Phillip King discussed that Maryland Natural Resources Conservation Service has a full staff of soil scientists with the hiring of Tyler Witkowski, Phil Clemens, Jim Leonard and a new State Conservationist who is UMD alumnus. Soil investigations are plentiful across the state. There is a possible subaqueous project in Dorchester County to aid shellfish production.

Brian Needleman discussed UMD's recent graduates Gina Jacob and Nicole Zimmerman are ready to be hired.

Presentation(s)

Presentation by the University of Maryland National Champion Soil Judging Team on the Soils of the National Competition in Woodward, OK in March, 2023.

Del Fanning sang his Sulfidization Poem to tune of Ebttide that he wrote in 2017 for presentation to Dr. Needleman's UM soil morphology, genesis and classification class as updated for his presentation on March 27th 2023 at the 9th International Acid Sulfate Soils Conference in Adelaide, Australia as the Pons Medal recipient of the International Acid Sulfate Soils Working Group of IUSS at the 8th Conference at the University of Maryland in College Park, MD in July, 2016.

8:15 Adjourn

MAPSS 2023 SIMONSON SCHOLARSHIP AWARD RECIPIENT. The recipient of the scholarship for 2023-2024 academic year is Alex Quigley. At the request of Dr. Needelman, he has provided information on himself in the following paragraph.

My name is Alex Quigley and I am from Gaithersburg, Maryland. I am a junior at UMD majoring in Environmental Science and Technology with a concentration in Ecological Technology Design and a minor in Soil Science. I currently work in Dr. Rabenhorst's lab, helping process samples that PhD student Jocelyn Wardrup and I collected over the summer. I have been on the soil judging team for one year and was a part of this year's Regional and National Championship-winning teams. I also won 4th place in the individual portion of Nationals. This summer I will be working as an NRCS Pathways Intern in Marietta, Ohio, where I will be updating soil survey descriptions for areas that have been surface mined or reclaimed since publication.

Additional Editor's Comment: For a picture of Alex with other members of the new championship soil judging team, see the last page of this Pedologue issue, Alex is the 3rd individual from the left side of the picture.

More pages follow, Go to next page.

MAPSS TREASURER.S REPORT PRESENTED AND APPROVED APRIL 13, 2023

Prepared by Sarah Roberts, Treasurer
March 5, 2023

2022 Budget Summary		
Beginning Balance		
January 1, 2022	\$	10,695.13
Income		
Dues & Consultant Website Advertising	\$	1,829.80
T-shirts	\$	180.00
Workshops/Training	\$	705.00
Total	\$	2,714.80
Expenses		
Annual Business Meeting	\$	-
Scholarship	\$	-
Scholarship Award Plaque - Student	\$	-
Land Judging Award & Porta John Rental	\$	225.00
Envirothon-MD	\$	250.00
Envirothon-DE	\$	-
UMD Soil Judging (Fall)	\$	500.00
UD Soil Judging (Spring)	\$	500.00
UD Soil Judging (Fall)	\$	500.00
Website*	\$	96.00
Workshop/Training Support	\$	1,571.16
Fundraiser Support	\$	-
David Verdone Flowers & Donation	\$	587.92
NCSS Conference (June 2022)	\$	-
Total	\$	4,230.08
<i>*Reimbursement for 2022 to be paid.</i>		
End of Year Balance		
December 31, 2022	\$	9,275.85

2023 Estimated Budget Summary		
Beginning Balance		
January 1, 2023	\$	9,275.85
Estimated Income		
Membership Dues (assume 30 members pay)	\$	900.00
Field Day (Members only)	\$	1,500.00
Workshop (1 day)	\$	3,750.00
Consultant Website Advertising (assume 10)	\$	100.00
Total	\$	6,250.00
Estimated Expenses		
Annual Business Meeting	\$	1,400.00
Field Day (Members only)	\$	1,500.00
Workshop (1 day)	\$	2,000.00
Scholarship	\$	1,000.00
Scholarship Award Plaque - Student	\$	45.00
Land Judging Award & Porta John Rental	\$	355.00
Envirothon-MD	\$	250.00
Envirothon-DE	\$	-
UMD Soil Judging (Fall)	\$	500.00
UD Soil Judging (Fall)	\$	500.00
Website	\$	105.00
Fundraiser Support	\$	-
Total	\$	7,655.00
Estimated End of Year Balance		
December 31, 2023	\$	7,870.85

NINTH INTERNATIONAL ACID SULFATE CONFERENCE

March 26-31, 2023, Adelaide, Australia

Report by participants, Delvin S. Fanning, delvindel@aol.com or dsf@umd.edu and Martin C. Rabenhorst, mrabenho@umd.edu, Dept. of Environmental Science and Technology. Univ. of Maryland, College Park, MD 20742, USA

INTRODUCTION

This conference was originally scheduled to take place in 2020, about 4 years after the 8th conference at the University of Maryland at College Park, MD, USA in July, 2016. However, because of the Covid virus crisis that developed in 2020 and continued, the conference was set back twice. Finally, in March 2023, it happened, as an excellent in-person conference, for which we were the only American participants -- for three days, March 27, 28 and 30, papers were presented and meetings were held at the Grand Chancellor Hotel in Adelaide, (see on-line book of abstracts in References) and a pre-conference tour took place on Sunday, March 26, a mid-conference tour on March 29 and a post-conference tour on March 31 (see on-line guidebook for tours in References).

The major host for the conference was the Acid Sulfate Soils Centre at the University of Adelaide and for those seeking introductory information about acid sulfate soils, and the conference, much can be found at the Centre web site, <https://set.adelaide.edu.au/acid-sulfate-soils-centre/>

It was proposed and generally accepted at the conference that the next, the 10th, International Acid Sulfate Soils Conference be held in Sweden in 2025.

At the conference dinner on Thursday night, March 30, Rob Fitzpatrick, Director of the Acid Sulfate Soils Centre and a chief organizer of the Conference and a main author of the Guidebook for the Conference field tours, who has been active in all previous conferences going back to the 4th conference in Vietnam in 1992, who previously worked on various aspects of acid sulfate soils in Australia and elsewhere prior to his retirement from CSIRO in Adelaide and with which organization he is still active, was awarded the Conference Pons Medal of the Acid Sulfate Soils Working Group of the IUSS (International Union of Soil Science).

PAPERS PRESENTED

Both of us, among others, were invited keynote speakers at the conference, which gave us some special privileges, such as being able to have abstracts longer than the two-page limit that pertained for most of the volunteer papers presented at the conference. Del's paper was based on the already published paper (Fanning et al., 2017) on historical developments in the understanding of acid sulfate soils that appeared as the lead paper in a special issue of *Geoderma* that published selected papers presented at the 8th conference in 2016. To close the presentation, Del sang his sulfidization poem that he has presented elsewhere including at the MAPSS meeting on April 13. Marty's keynote presentation (Rabenhorst, 2023) led off the session on classification of acid sulfate soils on the second day of the conference, by comparing the classification in *Soil Taxonomy* to that of the World Reference Base and the Australian soil classification system. Marty also presented 2 other papers of which he was senior or co-author. One of these reported on a study about the presence of sulfidic materials found along halinity gradients in estuarine tidal marshes of Chesapeake Bay, which was led by UG student Isabelle Dallam and MS student Jordan Kim (Dallam et al. 2023). The other paper described a new method for measuring

porewater sulfide in subaqueous soils (Rabenhorst et al., 2023). He also chaired a paper session and was active in assisting at some of the stops on the field tours.

A total of 63 abstracts for papers presented are in the conference abstracts publication. Most of these dealt with acid sulfate soils in the countries of the conference attendees, most of whom were from Australia, Finland and Sweden, but a few were from Indonesia and other places. Some of those from Australia that generated considerable discussion dealt with regulations or guidelines for managing acid sulfate soils in various states or nationally in Australia, which country has some of the strictest regulations in the world. Pertaining to the classification of acid sulfate soils in Finland and Sweden, a proposal in a paper by Bomen et al. to reintroduce the term “pseudo acid sulfate soils” for certain soils in those countries, that have a pH a little above 4.0, generated considerable discussion that is to some extent being continued post-conference by e-mail by Anton Bomen, Finland Geological Survey (Chair of the Working Group) and others of the Working Group acid sulfate soils classification committee.

FIELD TRIPS/TOURS

The pre-conference tour visited Lake Alexandrina and the lower reaches of the Murray River east of Adelaide where broad areas of potential acid sulfate subaqueous soils were exposed to aerobic conditions and sulfuricization by the Millennium Drought during the first decade of the 21st century that reached its maximum extent in about 2009. The Acid Sulfate Soils Centre at the University of Adelaide was heavily involved in monitoring the water levels and soil properties in previous subaqueous and surrounding soil areas and changes in the soils during much of the drought with many results covered in the tour guidebook. The actual trip took a different route and visited somewhat different sites than described in the guidebook because of current flooding of some sites where stops were planned. Studies have shown that simply reflooding the acidified soils does not return them to their previous unoxidized state in the short term if ever.

The Mid-Conference Tour visited sites in the area surrounding Adelaide including an area with very sandy soils and an area with dredged materials. A major stop was at a park with a huge area with mangroves vegetation in a tidal marsh with walkways over the soils and within the mangroves. Lunch was served in the park headquarters facility where presentations were made by tour leaders and park management personnel.



This photo (left) shows MCR under the cover of the mangroves extensive through this wetland and holding a gouge auger used to extract a core of a Histosol (probably a Sulfihemist) that had formed in the wetland.



The post-conference tour on Friday, March 31, visited the Mount Lofty Ranges northwest of Adelaide including the Guthries wetland and the Brukunka Mine. The Guthries wetland was where the mineral schwertmannite was first found in a natural setting that permitted its recognition as a mineral by the International Mineralogical Association (IMA), although the mineral is often referred to as the “acid mine drainage (AMD) mineral” because its properties were initially observed and characterized by Jerry Bigham and co-workers at Ohio State University, USA. The photo here at the left shows Rob Fitzpatrick, tour leader and guidebook co-author and Director of the Acid Sulfate Soils Centre at the University of Adelaide, telling the story of how schwertmannite was recognized as a mineral by IMA because of its occurrence here, recognized as a natural setting, where it

is judged to have formed from upwelling ground water from ancient (Cambrian) metamorphic underlying rocks containing pyrite. It was stated that finding the sulfate bearing schwertmannite was a clue to those involved in mining that there might be mineable pyrite in the rocks of this region, and such was mined, for the purpose of manufacturing sulfuric acid, at the huge Brukunka surface mining operation that was subsequently visited in the same region. Such findings kindle the interest of some who think it likely that the pyrite in the rocks likely formed by sulfidization when the rocks were deposited as sedimentary rocks prior to the metamorphism that converted them into metamorphic rocks. Undoubtedly sulfidization has been taking place on the earth’s surface throughout much of geologic time. It caused us to think about the origin of the pyrite at the pyrite mine at Prince William Forest Memorial Park and in the Quantico slate exposure on Mine Road by Garrisonville, Virginia, that we have visited on acid sulfate soils field trips in which we have been involved in the U.S.

REFERENCES

Field Trips Guidebook. [field-trip-guidebook.pdf \(adelaide.edu.au\)](#) A picture of Fanning doing Index of Squishiness test on squishy soil materials on Mid-Conference tour is Fig. 80, page 88 of the guidebook, a picture added to the guidebook after the conference was over.

Dallam, I., J. D. Kim, and M. C. Rabenhorst. 2023. Impact of Water Halinity on the Occurrence of Hypersulfidic Materials in Estuarine Tidal Marsh Soils of Chesapeake Bay (USA). 9th International Acid Sulfate Soils Conference, Adelaide, Australia. March 25-31, 2023.

Fanning, Delvin S., Rabenhorst, Martin C. and Fitzpatrick, Robert W. 2017. Historical developments in the understanding of acid sulfate soils. *Geoderma* 308: 191-206.

Rabenhorst, M. C. 2023. The Evolving Classification of Acid Sulfate Soils. Keynote Presentation at the 9th International Acid Sulfate Soils Conference, Adelaide, Australia. March 25-31, 2023.

Rabenhorst, M. C., J.D. Kim, C. E. Park, B. M. Wessel and J. O. Wyss-Gallifent. 2023. Measuring Pore Water Sulfide in in Benthic (Subaqueous) Soils using Indicator of Reduction In Soils (IRIS) Devices. 9th International Acid Sulfate Soils Conference, Adelaide, Australia. March 25-31, 2023.

The 2023 Oklahoma Soil Judging Contest – A Student’s Perspective

by Gabriel Acevedo (Senior, UMD)

March 26 to 27, 2023-Ground landing (Topsoil)

Upon our arrival in Oklahoma, we embarked on a soil journey that took us to various road cuts around the land. At first glance, the area appeared to be a barren wasteland, with nothing but sand and tumbleweed. However, as we made our way toward the practice pits, we were pleasantly surprised to see numerous cows grazing in the area. This was a clear indication that if the land couldn't be farmed, it could certainly be used for grazing.

Being in the western part of Oklahoma, the area had a semi-arid to desert-like climate. The soils here were incredibly dry, resulting in sandy soil with clay-loam to clay subsoils that were primarily developed on sandstones and marine deposits. This unique soil composition allowed us to witness horizons that we don't often get to see since the soils in Maryland appear like the complete opposite since they developed in a humid climate. Overall, our journey through the land of Oklahoma was an eye-opening experience that allowed us to appreciate the beauty of the area and the resilience of its inhabitants.



Photo 1: As we made our way towards the practice pits, we passed by various road cuts using coordinates to guide us. These horizons represented the unique Oklahoma soils that we were eager to explore. Our quest for these road cuts proved to be incredibly helpful for the team. Not only did it allow us to visualize and memorize new soil terms exclusive to semiarid climate areas, but it also gave us a chance to experience digging through soils containing characteristics that we hadn't encountered at regionals. We were introduced to sand sheets, interdunes, dunes, and other fascinating features. The picture above showcases one of the road cuts we visited. It's a Permian Red bed residuum hillslope, and it's a prime example of the diverse and intriguing soils we encountered during our journey.



Photo 2: The initial practice pit that we judged was in the Quilin area. It was similar to the Carey series. This was an individual pit that served as a pleasant warm-up. The pit featured loamy red soils with prismatic structures, which are frequently encountered in this region. The pit showcased above is a Residuum soil.



Photo 3: Another practice pit used for practice is shown above. This was at the Harper site, which includes alluvium on a broad terrace with buried surfaces from previously deposited alluvium material. There was also a significant amount of calcium carbonate in the underlying soils. This type of horizon is particularly thrilling for us, as it allows us to utilize a new tool in our arsenal - hydrochloric acid. By collecting samples and adding a

few drops of the acid, we can easily verify the effervescence class of the soil. A characteristic that we were previously unfamiliar with.

March 28 to 29, 2023-Gaining a firm hold on our soil material (Eluviated)

As the contest day loomed closer, we knew it was time to buckle down and get serious about our practice pits. We wasted no time eagerly making our way to our practice destinations, ready to jump in and start digging! However, we quickly realized that these pits were unlike anything we had encountered before. As Maryland natives, we were used to soil with an abundance of rock particles to consider. But in these practice pits, there were none to be found. We did however observe routinely very strong prismatic structure which was different from the typical subangular blocky structure we commonly observed practicing in Maryland.

To make matters even more challenging, the landscapes were vastly different from what we were used to back home. Instead of uplands and floodplains, we were faced with sand sheets, interdunes, and dunes due to the desert climate. However, we didn't let these obstacles deter us. We spent the days just before the contest getting familiar with these changes and developing new techniques to help us verify some of the unique soil characteristics we were encountering.

With each passing day, we grew more confident in our abilities to navigate these unfamiliar practice pits. We knew that we were up for the challenge and were determined to do our best.



Photo 4: After each practice pit, we made it a point to visit a roadcut on our way back to the hotel. These last-minute moments were a great opportunity for us to scavenge soil features and potential peds that we could drop acid on to observe the differences in their effervescence reactions. Speaking of which, we found the pinnacle of these soils at the one roadcut below (Photo 5), which featured a Petrocalcic horizon typical in arid and semiarid

climates. This horizon is formed when secondary calcium carbonate or other carbonates accumulate in the subsoil to the extent that the soil becomes cemented into a hardpan. To test this out, we tested a sample (excavated with a rock hammer!) with acid and observed a lot of fizzing and bubbling with the samples from this horizon. The bubbles would rapidly form a thick foam, indicating violent effervescence. It was a truly remarkable sight to behold.



Photo 5: Caption provided with photo 4.

March 30, 2023-The real digging begins! (Subsoil) - Contest Day No. 1!

It was finally the day we had all been eagerly anticipating. The day of the contest had arrived, and we were more than ready to get our hands dirty. We grabbed our soil buckets, sharpened our pencils, and made sure our minds were sharp to test the knowledge we had gained over the past few days.

The contest was divided into two categories: individual and group contests. The main part of the competition consisted of three individual contest pits, each with four selected students from each of the competing schools. The competition was fierce, and the students were all eager to showcase their skills.

As for the rest of us, we were part of an alternate competition that had two pits for us to judge. Although we weren't directly competing, we were still excited to be a part of the event and to witness the impressive skills of our fellow students.



Photo 6: The University of Maryland on the first day of the competition in Oklahoma.

March 31, 2023-The plot thickens...(Bedrock) - Group Judging and Awards Day

After a long and arduous day on the 30th, we finally reached the pinnacle of our competition journey - the group competitions. As is typical in national competitions, we were tasked with judging two pits. However, in this particular contest, we were only given one pit to judge. This meant that we had only one chance to get it right.

As we made our way towards the pit, we couldn't help but notice that it was an eolian soil. The sand was blowing everywhere, making it difficult to see and breathe. We were all exhausted from the previous day's competition and the fact that we had only one chance to get it right under a strict time limit felt intimidating.

But then something miraculous happened. As we were nearing our destination, we all started to sing the soil song that our coach (Dr. Needelman) had taught us during the regional competition. The song gave us the necessary strength and confidence to face the challenge ahead.

Our team had a strong bond, which appeared to be unlike any other soil team in the competition. This allowed us to quickly develop a strategy and put each other's strengths to the test. We researched and discussed the necessary soil characteristics, working together as a cohesive unit to come to the final answer. It was a true testament to the power of teamwork and camaraderie.



Photo 7: The University of Maryland soil judging team before the final pit, the one-group pit of the competition.

Upon completion of the group soil pit, the competition had concluded, and all that remained was for us to await the results and attend the awards ceremony to find out our performance. In the meantime, we went to get ice cream to calm our nerves and divert our attention from the competition (a tradition that appears to have been started by Dr. Rabenhorst the previous year). As we proceeded to the awards ceremony, our anxiety resurfaced,

and we were hopeful to receive recognition in at least one of the categories. We were elated to learn that Alex Quigley secured a fourth place among the top ten individuals, earning a shiny buckle with a soil textural triangle on it! They announced the group judging results, then individual and then overall schools. To our astonishment, the University of Maryland Soil team emerged as the overall winner, prompting us to erupt in excitement, cheering and hugging each other. It was a moment that we would never forget. It was not an easy journey, but we never lost sight of our goal and kept pushing forward. I am so proud of our team and grateful for the opportunity to work with such talented individuals. This win is a testament to what can be achieved with determination and a willingness to never give up.



Photo 8: Moments after learning the University of Maryland secured a first-place victory.

From the left Nickolas Kioutas, Nicole Zimmerman Alex Quigley, Patrick Burke, Gabriel Acevedo (holding the trophy), David Hutch, Madelyn Haines Joshua Edelin, Gina Jacob, and our two coaches on the far right, Jocelyn Wardrup and Dr. Brian Needelman.