

# 2025

## Annual Report

# Geology and Mineral Resources



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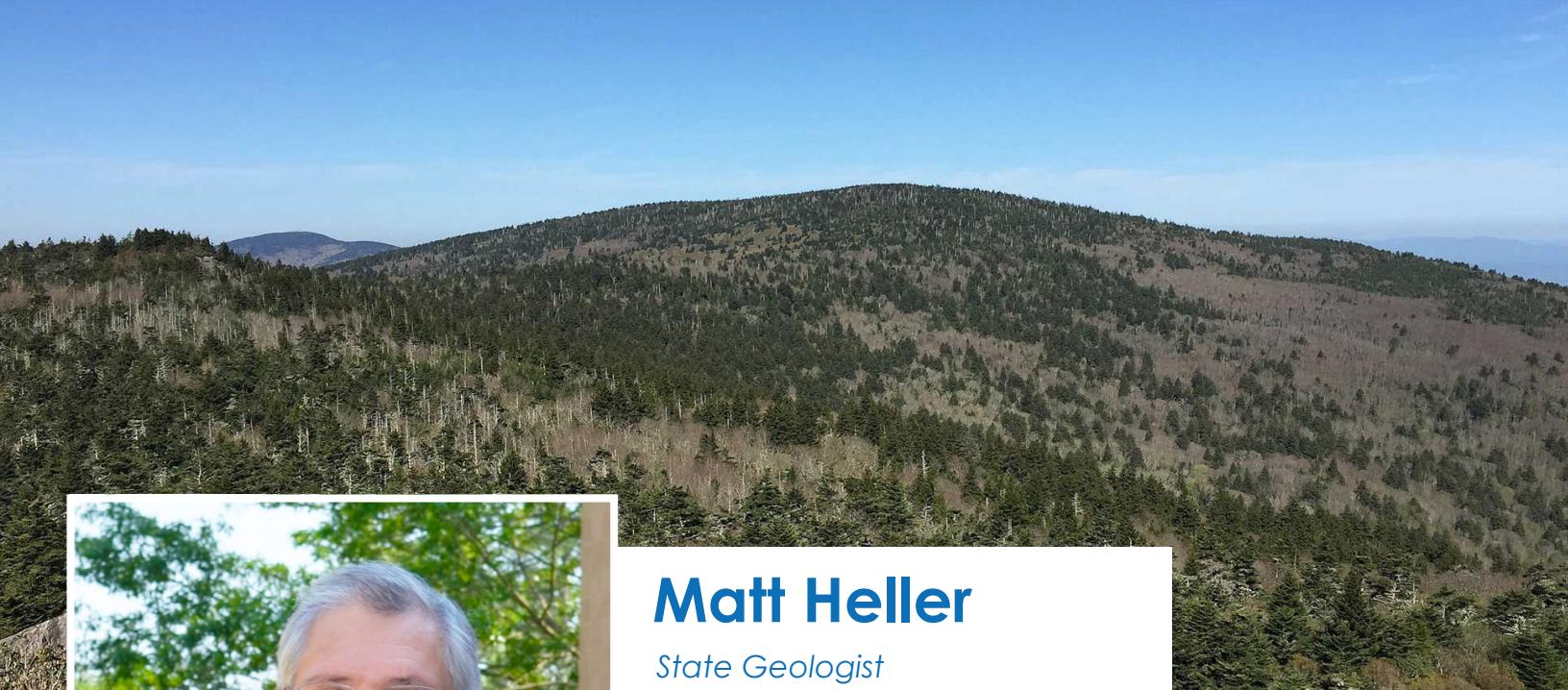
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Showcasing  
the great work  
accomplished  
by our State  
Geological  
Survey this year.



Discovering  
the depths  
of our state  
beyond  
imagination.





## Matt Heller

*State Geologist*

It has been a busy and successful year for Virginia Energy's Geology and Mineral Resources (GMR) Division. Locating new critical mineral resources remains a top priority and we are currently studying granite regolith, mine tailings, mafic and ultramafic rocks, and heavy mineral placer deposits. Virginia was one of 13 states to receive funding to assess mine waste through the USGS Earth MRI Program and invited to develop a proposal to determine the ages of heavy mineral placer deposits in eastern Virginia.



We continue to identify geologic hazards through a statewide landslide inventory, a landslide mapping project in Grayson County, and a third phase of karst mapping along the I-81 Corridor, with more than 20,000 new features identified. Funding has been secured for a third phase of work to identify aggregate resources in the Coastal Plain to support coastal resiliency projects.

During the year we produced new geologic maps covering 2,000 square miles and released three reports, nine geodatabases, and 17 maps to support land use planning, economic development, and environmental protection projects. We also received funding from the USGS Data Preservation program to preserve additional geological information, improve our Mineral Resources database, and purchase storage for radioactive specimens.

Our staff descended on the 2025 Southeastern Section Meeting of the Geological Society of America in Harrisonburg, giving 17 oral and poster presentations highlighting grant-funded work and leading two field trips. In July, with support from agency leadership, the Secretary of Commerce and Trade, and the Governor, we received \$225K to purchase a new geoprobe to improve our capabilities to map stratigraphy and complete mineral resource assessments.

We are excited about the upcoming year. An extensive high resolution geophysical survey across central Virginia is almost complete, and we hope to use this survey to identify new targets for mineral exploration and improve our geologic maps. We are hosting the Forum on the Geology of Industrial Minerals in April and co-hosting the Association of American State Geologists Meeting with the West Virginia Geological Survey in June. We look forward to seeing you at our upcoming Virginia Geological Research Symposium, which is scheduled for May 1.



Rudy Bland - Division of Geology and Mineral Resources Contractor.

## Data Preservation

Virginia Energy successfully completed deliverables for Priorities 1 and 2 activities. The period of performance was April 1, 2024 to March 31, 2025. This project involved:

- Scanning historic Richmond Coal Mining Records, which will become a new collection.
- Scanning historic Mineral Mine slides including the images of mines from Smyth and Wythe Counties (George's Branch, Glade Mountain, Slab Town, Iron Mountain Mines, Pugh Mountain, and Cripple Creek) from mid-1960 through 1990 on loan from the USDA Forest Service. These images will become part of our Historic Images Collection, and many will be included in the Abandoned Mineral Mine Land App to complete the historical records.
- Preserving samples from the Rutherford pegmatite Mine in Amelia. These will be images for a new collection.
- Completing the update of our Virginia Geologic Information Catalog. This has been a two-year effort to improve the discoverability of the items in our collections. This will not only be advantageous to our customers, but also for our geologists! One of the major improvements is the ability to "relate" items. There will be a section on each record where you can relate these items reciprocally and build these important relationships.
- Purchasing a scissor lift and work platform to access our physical collections in the warehouse. This has been particularly useful for our rock and fossil collections that require lifting on racks.

Chrissi Wood-Smith, a part of the Division of Mineral Mining, is the Principal Investigator. Michael Smith, Rudy Bland, Colton Strough, Anneka Myers, Anne Witt and Lisa Colletti have worked hard to accomplish this work. Feel free to reach out with questions!



Active sand pit in Northumberland County, VA

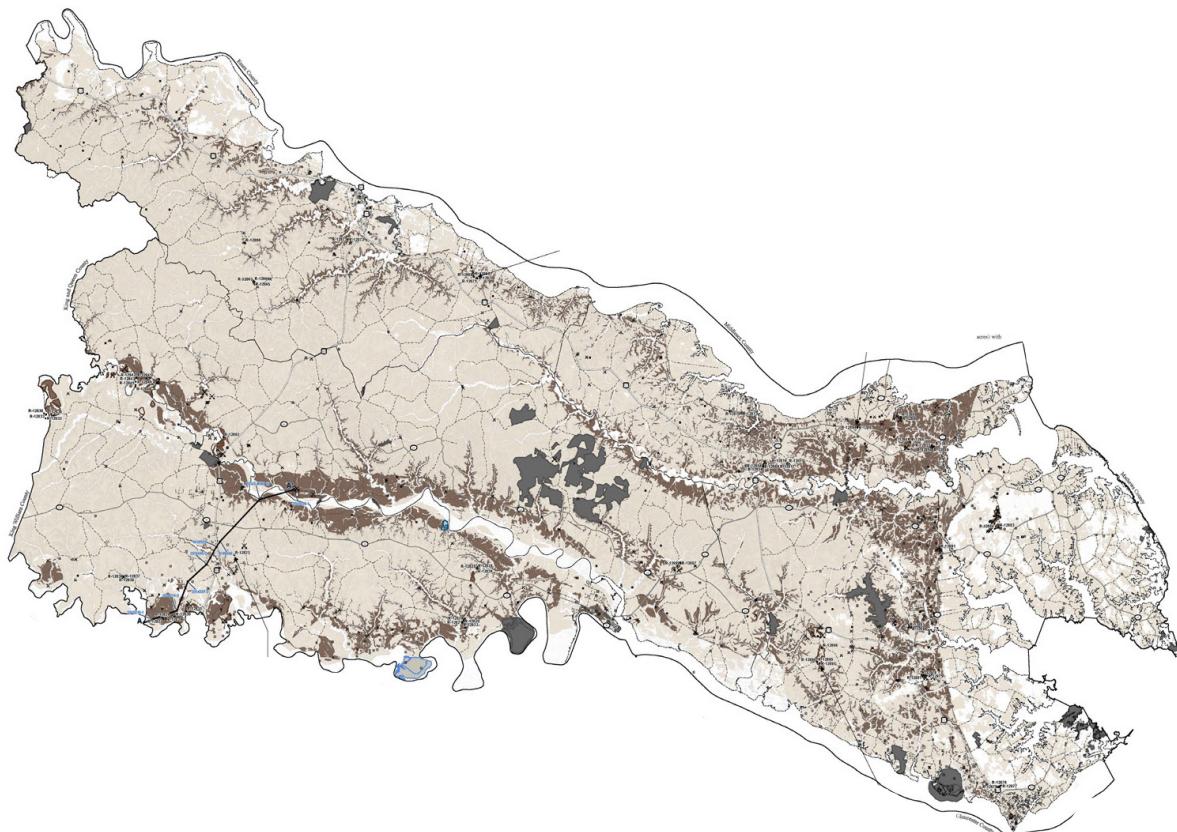
## Evaluating Aggregate Resource Potential to Promote Coastal Resiliency

In February 2025, Virginia Energy (VE) submitted FY23 deliverables for the first phase of a three-year focal area project to advance coastal resilience planning in rural coastal Virginia. This study evaluated the potential for aggregate resources, particularly sand and gravel deposits in the Coastal Plain using legacy and new geologic data. This one-year effort was funded in part by the Virginia Department of Environmental Quality's Coastal Zone Management (CZM) Program through a grant provided by the U.S. National Oceanic and Atmospheric Administration (NOAA). The focus for this pilot phase of assessment was Virginia's Middle Peninsula, which encompasses almost 900 thousand acres, with over 1,000 miles of shoreline. Around the same time, VE staff began assessment of the 2nd phase of the project (FY24), which encompasses the Northern Neck Planning District. The Northern Neck Planning District comprises approximately 477 thousand acres and over 1,370 miles of shoreline. Deliverables for the Northern Neck assessment are anticipated to be available this spring on our website. 2026 rounds out the third year of the focal area study, with the Eastern Shore as the study area (FY25).

Both the Middle Peninsula and Northern Neck study areas followed a similar methodology, using a multiparameter geospatial analysis in ArcGIS including the comparison of geologic and soil maps, 1-meter lidar, mining permit data, VE sample repository and commodity datasets, borehole logs, and sensitive land-use areas. Staff also visited active mine sites across the project areas for field mapping and characterization of existing sand and gravel deposits. VE staff had the opportunity to present results of the FY23 work at two professional meetings (2025 Southeastern GSA Meeting, 2025 VA Geological Research Symposium). The geology of both of these regions consists of comparable units, including Pleistocene marginal marine, estuarine, and fluvial terraces along modern river valleys and Pleistocene to Pliocene units capping higher elevations. However, there are noticeable geomorphic differences, especially in the Northern Neck where older Neogene marine units are exposed along eroding cliffs on the Potomac and Rappahannock Rivers. Generally, there are fewer active mine sites in the Northern Neck, which could be due to the smaller area and lack of proximity of sites to urbanized areas. Interestingly, more excavation and pit related features were identified in the Northern Neck than in the Middle Peninsula from lidar, with the latter having larger sand and gravel pits in general.

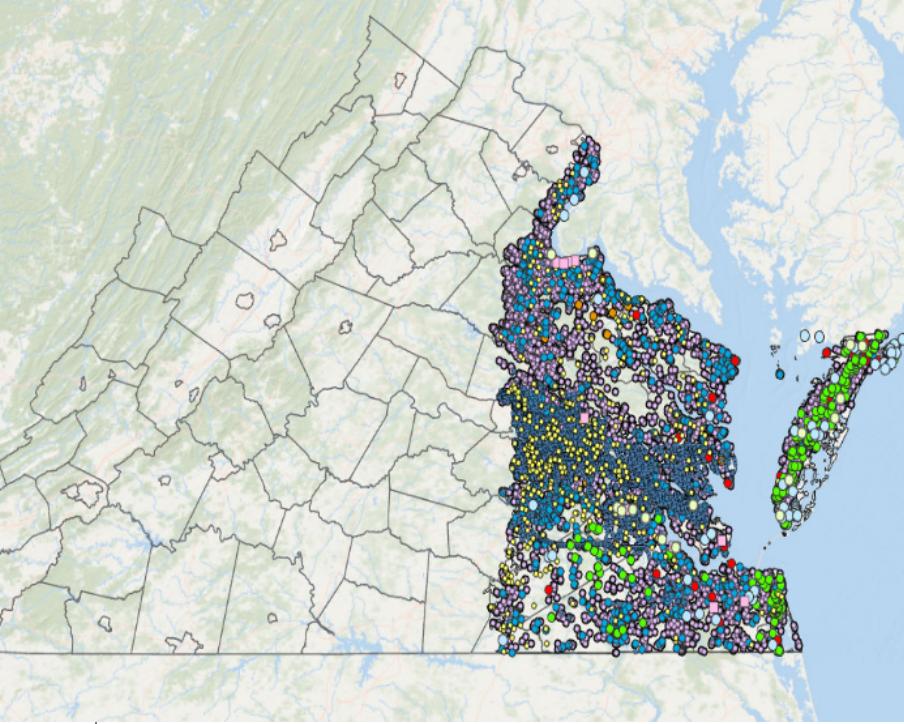
These data can support resilience initiatives that have been identified for the Commonwealth, which include efforts to mitigate widespread habitat loss, impacts to critical infrastructure, and potential residential displacement due to increased coastal flooding. Planners and contractors who are interested in materials for elevating roads, shoring up existing structures, providing shoreline protection, and restoring wetland habitats can utilize the data to understand where potential resources may occur. Other ongoing work includes characterization of dredged sediments for beneficial use potential throughout the study region and how this could tie into onshore resources. Our characterization efforts supplement previously completed work by the Virginia Institute of Marine Science, who continue to work with localities on dredged material management initiatives. Beneficial use of dredged material has become a high priority in recent decades due to the lack of disposal options and for the recognized resource applications of these sediments.

Continued



1:100,000-scale sand and gravel potential map for the Middle Peninsula, included as Plate 1 in the technical summary report, finalized February 2025. **This report will be published in the near future.**

Please check our project webpage in the near future for updates on these projects and new data releases: <https://www.energy.virginia.gov/geology/AggCoastalPlain.shtml>.



## SE-COOP

In August of 2023, the Division Geology and Mineral Resources became a subrecipient of grant funding for the Southeastern Atlantic Coastal Plain Stratigraphic and Nomenclatural Equivalency and Reconciliation Project (SE-COOP). The goal of the SE-COOP is to identify gaps in our scientific understanding of sediment layers (stratigraphy) within the Coastal Plain. Understanding Coastal Plain stratigraphy is critical for groundwater management and land use planning. As part of the deliverables for the SE-COOP project, geologists in GMR have compiled over 37,000 data records related to boreholes, geochronology, outcrops, rock samples, type locations, and seismic lines within Virginia's coastal plain. As the SE-COOP wraps up, these data will be submitted to the U.S. Geological Survey and added to the National Geologic Map Database.

By Wendy Kelly

## STATEMAP Deliverables

In August and September, GMR geologists delivered another set of new geologic maps and geodatabases as part of the USGS STATEMAP program. Newly published 24,000-scale geologic map pdfs of Crockett, Dabneys, Dinwiddie, and Long Spur 7.5-minute quadrangles, in addition to the Charlottesville 100,000-scale geologic map are available on the webstore. Their associated geodatabases are available for download at the National Geologic Map Database ([https://ngmdb.usgs.gov/ngmdb/ngmdb\\_home.html](https://ngmdb.usgs.gov/ngmdb/ngmdb_home.html)).

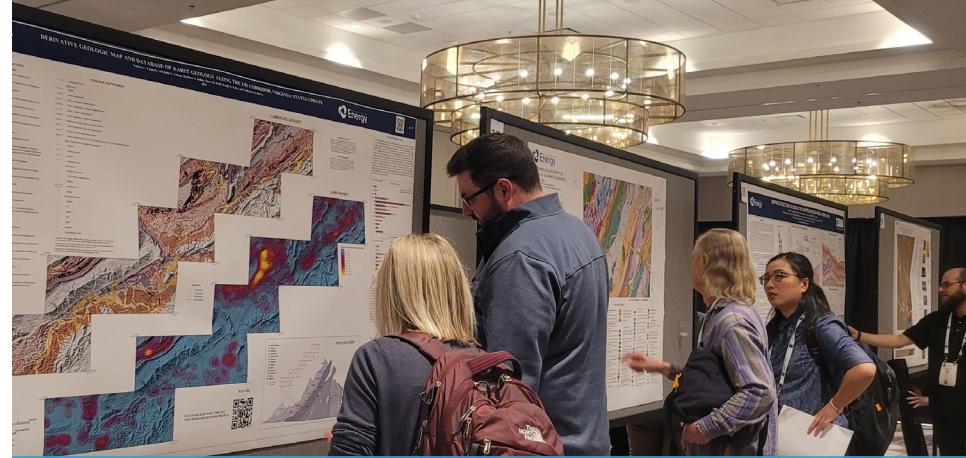
New geodatabases and map plates are available for Looney and Hallsboro 7.5-minute quadrangles, and a new geodatabase for Eagle Rock. Map authors are grateful to all who attended field reviews and reviewed the maps and databases. We encourage anyone at VE interested in these or other maps to visit our webstore <https://www.energy.virginia.gov/commerce/Default.aspx>, or reach out to Marcie Occhi for more information.

Marcie.Occhi@energy.virginia.gov

By Michelle Nelson



Laura Warrington and Cindy Harris at the GMR booth in the poster hall.



Row of GMR posters: Patrick Finnerty, Nick Evans (with Jenny Meng) and Bill Swanger.

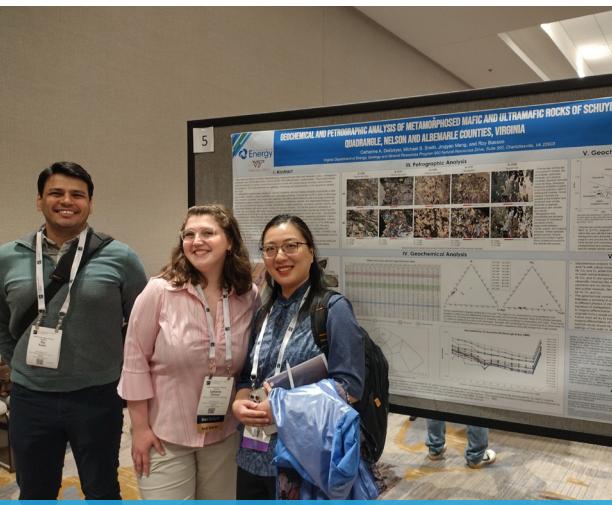


Lorrie Skiffington describing karst geology during a field trip focused on water and mineral resources in the Shenandoah Valley.

## SE GSA

The 74th annual meeting of the Southeastern Section of the Geological Society of America (SE GSA) took place on the campus of James Madison University in Harrisonburg, VA, from March 19-21, 2025. Geologists from the Division of Geology and Mineral Resources were out in full force, presenting new data, leading field trips and technical sessions, and engaging with colleagues. Virginia Energy had a booth in the poster hall that was busy with visitors asking about our role as an agency, division, our products, and rocks and minerals from around the state.

Staff presented on a wide range of geologic topics in Virginia, focusing on mapping, geochemistry, mineral resources, and geologic hazards related to our grant-funded projects. Several mapping section presentations highlighted new geologic maps, including those of the Dillwyn and Dabneys quadrangles, as well as structural mapping in the Draper Mountain area. Other presentations explored advancements in digital mapping techniques of bedrock and surficial layers, including a GeMS-compliant mapping framework for the complex Fall Zone in east-central Virginia, and updates on sinkhole and carbonate bedrock geologic mapping along the I-81 corridor. Research on surficial geology and geochronology of the Virginia Coastal Plain provided a foundation for potential future collaborations with other southeastern states. Key themes presented from the applied geology section included landslide susceptibility mapping in Central Virginia, investigations into offshore heavy mineral sands, aggregate resource reconnaissance, as well as petrologic studies and carbon mineralization potential of mafic and ultramafic rocks. State Geologist, Matt Heller gave a well-received talk on recent scientific collaborations between state geological surveys in the Mid-Atlantic region and how funding and staffing trends impact the larger community.



Roy Bassoo, Catharine DeGolyer, and Jenny Meng in front of their poster on mapping and geochemistry of rocks with potential for carbon mineralization. Their project is in collaboration with Virginia Tech and funded by the US Department of Energy.



Attendees fully engaged at the GMR Symposium.

# GMR Symposium

On April 25, 2025 GMR hosted the 16th annual Virginia Geological Research Symposium at its Charlottesville office, offering both in-person and virtual participation. This day-long event brought together more than 120 geoscientists from government, consulting, industry, and academia to network and learn about recent geoscience-related research in the Commonwealth.

Two presentations explored mineral resources, highlighting rare earth elements and aggregate, while another described an ongoing large-scale airborne geophysical survey. Groundwater and cave systems were the focus of two additional talks. Speakers also addressed geologic hazards, with presentations on landslides and sinkholes. One talk examined how geologic mapping supports engineering projects, and four talks offered new insights into the stratigraphy and age relationships of regional geologic formations.

In addition to the oral presentations, the symposium featured a lively midday poster session that highlighted new geologic maps, innovative research, and ideas for future projects. This year set a new record with 17 poster presentations. Breakout sessions allowed for additional short presentations on diverse research, highlighted tools for identifying critical minerals, and focused discussion on the benefits of a broader geological society in Virginia. The meeting proved to be an inspiring and successful gathering, and attendees left feeling energized about their work and what lies ahead for Virginia geology.



Jenny Meng discussing critical minerals with a meeting attendee

# Agriculture Extension Workshop

On June 11–12, 2025, 17 agricultural extension agents from across the state gathered at the VE's Charlottesville office for a workshop on Virginia's Underground Wealth. Hosted by Virginia Cooperative Extension, which is a partnership of Virginia Tech, Virginia State University, the U.S. Department of Agriculture, and local governments, the workshop featured expert-led sessions on topics ranging from mineral rights and leasing to the geologic resource potential across the state. Many of the speakers were from Virginia Energy, as well as Virginia Tech and Penn State Extension. This event was designed to explore the opportunities, risks, and responsibilities tied to the Commonwealth's subsurface resources.

Mike Skiffington gave an excellent overview of who we are and what we do across the department, along with data on how mining contributes to Virginia's economy. Matt Heller introduced the geology of Virginia and described how geologic resources are distributed across the state and what constitutes as fuel and non-fuel minerals. Agricultural extension agents and geologists mapping in the field interact with some of the same landowners, it was a great opportunity for Marcie Occhi to talk about what mappers do for the Commonwealth and where the mapping directives come from at the federal level.

After a morning of introductory talks, the afternoon dived into policy, social, and environmental aspects of mining. Michelle Nelson provided a summary of how mineral rights can be severed from surface rights, and Mike Skiffington explained the complexity of forced pooling in southwest Virginia. Paul Saunders clearly explained mine permitting and the role local zoning ordinances plays on approval process. In addition, Paul discussed how complaints, big or small, are handled and thoroughly investigated. The extension agents were very interested in Mike Smith's discussion on mining impacts to surface and groundwater resources. The second day of the workshop featured mining and fuel extraction case studies, which included discussion on (in no particular order): Coastal Plain heavy mineral sands, the Coles Hill uranium deposit, and gold mining among others.

The Virginia Energy team really came together and, with support from Virginia Tech colleagues, delivered a comprehensive look at how extension agents can help landowners understand and make informed decisions about managing their underground assets. The workshop emphasized the importance of proactive education, collaboration, and stewardship in navigating the complex landscape of mineral rights development.



# Meeting of the Minds in Tornado Alley

Jennie Latane and Holly Mangum of GMR traveled to Norman, Oklahoma to attend the 28th annual Digital Mapping Techniques workshop (DMT) in late May. DMT is an annual informal meeting of geoscientists that has a strong focus on the technology, techniques, and processes used to collect geologic data for the creation of maps and geospatial products. The workshop's objective is "to foster informal discussion and exchange technical information and expertise, and to develop more efficient methods for the many aspects of creating, managing, and serving digital geoscience map information."



Holly Mangum standing in front of thousands of feet of core in the Oklahoma Petroleum Information Center's repository.

By Jennie Latane and Holly Mangum

Invitees to DMT include geologists, GIS specialists, and cartographers representing state and federal agencies, universities, industry, and international mappers. Twenty-four state geological surveys plus Canada sent representatives to this year's meeting. DMT typically rotates locations to a new state every year. The Oklahoma Geological Survey (OGS) used the opportunity to showcase the state's rich geological history. In addition to presentation and discussion sessions, attendees toured the Oklahoma Petroleum Information Center's extensive core repository. The storage facility houses thousands of feet of core samples taken from Oklahoma and other states. Much of the collection is donated by private companies and comes from gas and oil wells. Core samples still fuel geological research by OGS, academics, and private industry today.



Jennie Latane giving a lightning talk on database organization.

Jennie and Holly each presented on topics related to the organization of geologic mapping data and methods to create consistency across geologic map databases. Presentations spanned the entire process of creating a geologic map, from examining different data collection methods and technologies to serving finished 3D geologic surfaces out to the public. The USGS and Illinois Geological Survey also facilitated spirited discussions about distributing geologic map data in the digital age, and the ongoing compilation of an updated national geologic map. Formal presentations and informal discussions allowed attendees to trade knowledge and form connections. The proceedings were only partially interrupted by the presence of tornadoes in the area, giving attendees the “full Oklahoma experience”. Next year's workshop will be hosted in Maine.

Continued

# Mid-Atlantic Regional Sand Resources Coordination Meeting

David Hawkins attended the 2025 Mid-Atlantic Regional Sand Resources Coordination Meeting on June 4, 2025 at the University of Delaware. The hybrid meeting was convened by staff from the Delaware Geological Survey and the U.S. Bureau of Ocean Energy Management (BOEM), with about 18 in-person attendees and upwards of 40+ attendees virtually. The meeting provided the opportunity for state geological surveys and federal partners from BOEM, the U.S. Geological Survey and the U.S. Army Corps of Engineers (USACE) to engage in discussions on offshore sand resources and near- and long-term planning needs. Virginia Energy presented an overview of our completed offshore sand and critical mineral resource assessments through recent cooperative agreements with BOEM. Other agencies provided overviews of ongoing mapping and characterization efforts, particularly within the Mid-Atlantic region between North Carolina and New Jersey. BOEM and their contractors collected new geophysical and vibracore data in the summer offshore of Virginia Beach and within the Atlantic side of the Chesapeake Bay entrance, and offshore of New Jersey in federal waters.

There was a lot of discussion on how to best leverage existing data and what types of data would benefit proposed and ongoing projects. Many organizations reiterated the importance of offshore geologic mapping to better understand the overall geologic framework and resource potential for sand deposits, and brainstormed ideas on how to better utilize onshore geologic mapping expertise to apply to offshore units. Discussions included estimated demands for sand resources over the 21st century and how there is an anticipated deficit based on need. Other topics included how to better communicate the significance of offshore sand resources to the public, innovative uses of these resources, and how to recuperate costs associated with stalled projects.





GMR's landslide mapping team members Holly Mangum and Wendy Kelly examine a landslide that occurred during Hurricane Helene with staff from the U.S. Geological Survey during a Weather and Landslides Workshop in Asheville, NC

## Weather and Landslide Workshop

Three staff members from GMR attended the Weather and Landslides Workshop on the campus of UNC-Asheville on Sept 3 and 4. This free workshop brought together stakeholders from the U.S. Geological Survey, the North Carolina Geological Survey, National Weather Service, VA and NC Emergency Management, county and local government and academia. The workshop had about 150 in-person and 50 virtual attendees. Presentations, discussed what we have learned about landslides and the weather that triggers them since Hurricane Helene ravaged western North Carolina and SW Virginia nearly a year ago. Through presentations and small-group discussions we collaborated to define actions to build more resilient communities and plan next steps so that stakeholders and residents could be better prepared for the next landslide-producing storm. GMR Applied Geology Section Manager Anne Witt was a meeting organizer and helped manage the technical session. Anne also provided a presentation about the capabilities of State Geological Surveys for landslide science and emergency response.

Immediately following the workshop, GMR had the opportunity to join the U.S. Geological Survey and the Kentucky Geological Survey to assess a major debris flow (a type of swift-moving landslide) that caused numerous fatalities in a small rural community east of Asheville. This was an excellent training opportunity for staff who had never had the opportunity to view a major debris flow. Onsite we discussed opportunities for monitoring continued downslope movement, triggering mechanisms, and geological factors that may have influenced landslide initiation.



## The Hallsboro Field Review

GMR's biggest field review yet! This trip was led by Hallsboro's first author, Phil Prince, with help from Marcie Occhi and Matt Heller. The draft publication is on the Geology Webstore: <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3075>. The Hallsboro quadrangle covers a unique place in Virginia, at the eastern edge of the Richmond Triassic basin, which formed as the proto-Atlantic Ocean began to open. Sediments deposited into the basin during rifting were conglomerates, sandstones, and shale. Coal is present in some locations of this basin and was historically mined. Today, visitors can re-trace some of the mine ruins at the Midlothian Mines Park (<https://www.midlomines.org/>). To the east of the basin is the Petersburg granite, known for its large phenocrysts of pink potassium feldspar and numerous xenoliths and enclaves of mafic rocks. Outcrops are not always easy to find, but the group made their way to 8 great exposures, thanks in part to generous landowners and public

By Michelle Nelson, Geologist



State Geologist Matt Heller talking to the group in front of Mining ruins along the trail at Midlothian Mines Park.



Attendees observing conglomerate rock exposed in the stream. Photo courtesy of Holly Mangum.



Marcie Occhi and Patrick Finnerty discussing the tectonic setting during granitic intrusion. Photo courtesy of Matt Heller.



Geologist Marcie Occhi speaking with VA Master Naturalists about the 'Petersburg Granite' at Belle Isle in Richmond

## VA Master Naturalist Field Trip

Geologists Marcie Occhi and Michelle Nelson participated in this year's Virginia Master Naturalist Annual Conference as field trip leaders. The conference took place in Richmond, which made for an excellent opportunity to take attendees to Belle Isle along the James River. Marcie and Michelle introduced the group to the evolving science around the geologic history and age of the Petersburg Granite. Detailed mapping in the Richmond area by GMR geologists and USGS colleagues over the past decade, in combination with high-resolution age dating played a pivotal role in dividing up what was once thought to be one of the largest single batholiths in the country.

Belle Isle is an accessible park near downtown Richmond. It is a unique place to see extensive exposure of crystalline bedrock in the eastern Piedmont, which is often covered with Coastal Plain sediment or thick soils and vegetation. At Belle Isle, one can observe the many textures of the Petersburg Granite, from equigranular to porphyritic to foliated granite. Cross-cutting relationships are easily observable due to the many dikes that formed in the late stages of the Alleghenian orogeny. Many deep potholes are visible and result from sand abrasion during flood events, which slowly pluck away the bedrock at weak points in the rock, such as joints and fractures.

It wouldn't be a true field excursion without some complicated weather, however. A large thunderstorm ripped through the middle of the field trip forcing the participants to take refuge in a nearby fire station. While the time at the rocks was cut short by weather disturbances, Marcie and Michelle continued engaging discussions with trip participants about geology around the fire trucks.



Marcie and Michelle fire station group



Michelle and group with survey meter

By Michelle Nelson

# Earth Day



Virginia Energy Geologists David Hawkins and Lauren Schmidt attended the 2025 Earth Day on the Rappahannock Festival at Old Mill Park in Fredericksburg, Virginia. The annual event is sponsored by Fredericksburg Parks, Recreation, and Events. Thousands of attendees made their way through the festival over the day with upwards of 100 or so people directly interacting with us at our table. The Festival included numerous vendors highlighting the importance of Earth Day through providing fun, interactive activities for the public. Attendees were able to learn more about what the agency does on a day-to-day basis and took advantage of the outreach materials we provided at our table. We showcased common rocks, minerals, and fossils found across the Commonwealth and encouraged citizen science through hands on demonstrations using some common geological tools.

## TABLE EVENTS

### Grand Caverns Cave and Karst Expo

In celebration of National Cave Week, over 100 visitors explored the 2025 Cave and Karst Expo and Grand Caverns on June 7th, 2025. Geologist, Wendy Kelly set up an exhibit with information about our Karst Mapping project, carbonate rocks (limestone and dolomite), and cave formations such as stalagmites, stalactites, and travertine. Other exhibitors included the Virginia Department of Conservation and Recreation, James Madison University Department of Geoscience, Virginia Master Naturalists, and the National Speleological Society.





## Mission Tomorrow

Mission Tomorrow was held at the Richmond Motor Speedway in late October – bringing together 12,000 8th grade students from across central VA to learn about careers in STEM fields. Staff from our Richmond office coordinated and supported participation in the event, and inspectors from our Coal Mine Safety and Mined Land Repurposing Divisions brought a mine car, mining gear, and a coal mine model to showcase careers in mining and reclamation. Geology and Mineral Resources staff Wendy Kelly, Jenny Meng, Laura Warrington, Matt Heller, and Roy Bassoo designed and operated a booth with three activities related to heavy mineral sands. Students who stopped by learned about the rocks and minerals associated with heavy mineral sand deposits and the uses of these resources, tested the density and magnetism of mineral sands using magnets, scales, and a gold pan, and examined sand grains under a microscope. It was hard to say who was having more fun, but we hope it was the students.



By Michelle Nelson

# Virginia Tech Award

Virginia Tech recognized a former Virginia Energy geologist as one of four distinguished individuals during University Commencement for their outstanding contributions to the university and communities. The University Distinguished Achievement Award honors individuals whose professional or personal accomplishments have made a national impact. This year's recipient was Bill Henika, who has brought his passion for geology to the community through research and scholarship. Henika's love for geology started with a simple curiosity about the world beneath our feet, a curiosity that turned into a lifelong calling.



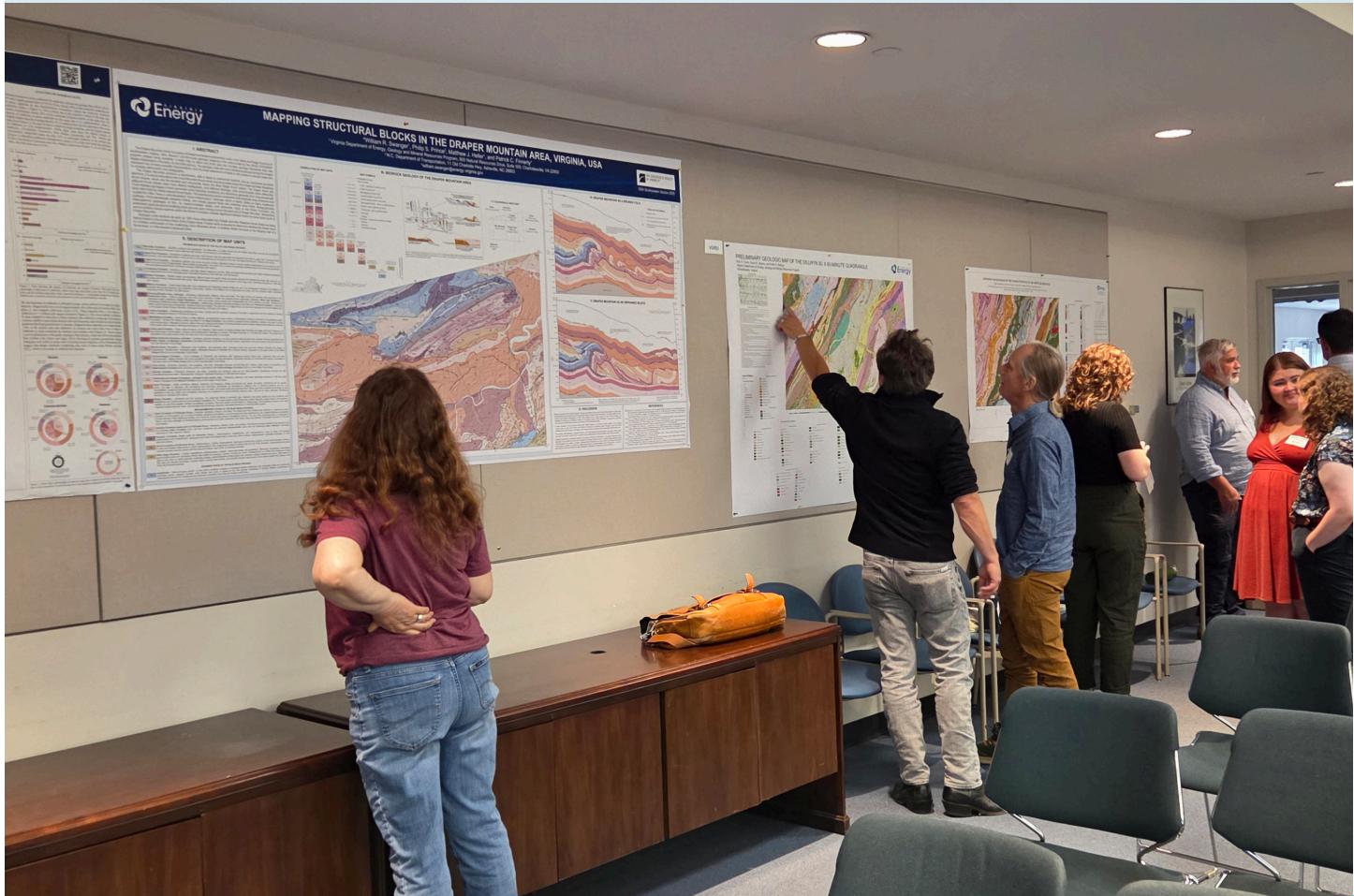
Bill began working at the Division of Mineral Resources in 1968, while finishing up his master's program at the University of Virginia. He was employed with the division from 1968 to 1981 and 1985 to 2003. During that time, Bill completed geologic mapping of more than 35 7.5-minute quadrangles spanning every geologic province west of the Coastal Plain. He also mapped two 30- x 60-minute quadrangles, and a portion of a third quadrangle. In his "retirement" Bill completed the mapping or field checking of ten additional 7.5-minute quadrangles as a contractor for the agency. For the majority of his time with the agency and in retirement, he was based in Blacksburg and co-located with Virginia Tech's Department of Geosciences. That gave him the opportunity to share his deep knowledge of the earth with generations of faculty and students. Bill also shared his vast knowledge of Virginia geology with his colleagues at VE, professional geologists, naturalists, museum staff, and faculty and students at other universities. His career has been a remarkable blend of science and service, spanning regional geology, applied geophysics, research, and curation. A U.S. Navy veteran and respected scholar, Henika has never strayed far from the principles of duty and discovery. From mentoring young scientists to advising on land use and conservation, he's spent a lifetime translating earth science into public good.



# Geologic Mapping Advisory Committee

GMR convenes a 10-person Geologic Mapping Advisory Committee that meets in person twice each year in Charlottesville to review and discuss GMR's proposed geologic mapping projects. The committee provides expert guidance on mapping priorities that are ultimately submitted as competitive grant proposals to the National Cooperative Geologic Mapping Program (NCGMP) through the STATEMAP Program.

Committee members represent a broad cross section of perspectives from across the Commonwealth, including geologists and scientists from industry, consulting, academia, tribes, and state and federal agencies (such as DEQ, VDOT, DCR, and GMAC), as well as non-scientists who bring applied and stakeholder viewpoints. Required under the National Geologic Mapping Act of 1992, this advisory committee plays a critical role in evaluating the scientific merit, relevance, and practical value of GMR's proposed mapping work, ensuring that STATEMAP-funded projects address current needs and priorities in Virginia.



Attendees at our annual geologic symposium viewing Virginia Energy made maps

## Brand New GeoProbe

In November 2025, GMR received a new direct-push geotechnical drilling rig capable of collecting in-situ, unconsolidated subsurface material. The system advances small-diameter tooling hydraulically into the ground without rotary drilling fluids, allowing relatively rapid, minimally disruptive recovery of continuous cores of fine-grained sediments (up to small pebbles). These high-quality cores are essential for mapping Coastal Plain stratigraphy and surficial deposits, particularly in low relief landscapes where natural exposures are limited. Core data will be added to our borehole database, and material will be sampled for geochemistry and/or geochronology depending on the project. Additional core material will be archived in the GMR warehouse for future research. The new equipment is already supporting a USGS Earth MRI-funded project on rare earth elements in Piedmont regolith. In addition, GMR has plans to use it in future work related to heavy mineral sand provenance studies near the current Atlantic Strategic Minerals mining operation in Dinwiddie and Sussex Counties.



## **Joint Southeastern, North-Central, and South-Central Section Meeting of the Geological Society of America**

March 8-11, 2026 in Memphis, Tennessee

## **Virginia Geologic Field Conference**

March 20 - 22, 2026, The Eastern Shore of VA

Fall 2026, Piedmont: Chuck Bailey and others: Just Where  
Does the Piedmont End

<https://vgfc.blogs.wm.edu/>

# **Upcoming In 2026**

## **Society for Mining, Metallurgy & Exploration (SME)**

April 20-23, 2026, The Forum on the Geology of Industrial  
Minerals Charlottesville, VA DOF Headquarters

<https://smefgim.org/>

## **VA Geological Research Symposium**

Scheduled for Friday May 1, 2026

# Recent Maps, Reports And Publications

## 1. Open File Report 2024-19

- I. Aggregate resource potential reconnaissance mapping of the Middle Peninsula, Virginia
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3108>

## 2. Open File Report 2024-17

- I. Bedrock and Surficial Geologic Map Compilation and Geochemical Investigations in the Earth MRI Virginia Fall Zone Placer Ti-Zr-REE Focus Area Phase 2
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3127>

## 3. Open File Report 2025-01

- I. Geothermal Resources in the Eastern Mid-Atlantic United States: Contributions to the National Geothermal Data System
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3109>

## 4. Open-File Report 2025-02

- I. Bedrock geologic map of the Virginia portion of the Middlesboro 30- x 60-minute quadrangle, 1:100,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3118>

## 5. Open-File Report 2025-03

- I. Surficial geologic map of the Virginia portion of the Middlesboro 30- x 60-minute quadrangle, 1:100,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3117>

## 6. Open-File Report 2025-04

- I. Middlesboro 100K Geodatabase
- II. Lang, K.E., 2025, Geologic map database of the Virginia portion of the Middlesboro 30- x 60-minute quadrangle: Virginia Department of Energy, Geology and Mineral Resources Division, Open-file report 2025-04, 1:100,000-scale database.

## 7. Open-File Report 2025-05

- I. Bedrock geologic map of the Charlottesville 30- x 60-minute quadrangle, 1:100,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3116>

## 8. Open-File Report 2025-06

- I. Surficial geologic map of the Charlottesville 30- x 60-minute quadrangle, 1:100,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3115>

## 9. Open-File Report 2025-07

- I. Charlottesville 100K Geodatabase
- II. Hill, H.D., Lang, K.E., Evans, N.H., and Mangum, H.E., 2025, Geologic map database of the Charlottesville 30- x 60-minute quadrangle: Virginia Department of Energy, Geology and Mineral Resources Division, Open-file report 2025-07, 1:100,000-scale database.

## 10. Open-File Report 2025-08

### I. Eagle Rock 24K Conversion Geodatabase

- II. Gannon, H.L., 2025, Geologic map database of the Eagle Rock quadrangle, Virginia: Virginia Department of Energy, Geology and Mineral Resources Division, Open-file report 2025-08, 1:24,000-scale database [Haynes, J.T., Swanger, W.R., and Mangum, H.E., 2020, Geologic map of the Eagle Rock quadrangle, Virginia: Virginia Division of Geology and Mineral Resources Open-file report 2020-02, 1:24,000-scale map.].

## 11. Open-File Report 2025-09

### I. Eagle Rock Quadrangle Geologic Map

## 12. Open-File Report 2025-10

### I. Hallsboro 24K Conversion Geodatabase

- II. Latane, V.M. and Wolf, D.H., 2025, Geologic map database of the Hallsboro quadrangle, Virginia: Virginia Department of Energy, Geology and Mineral Resources Division, Open-file report 2025-10, 1:24,000-scale database [Prince, P.S., Occhi, M.E., and Heller, M.J., 2025, Geologic map of the Hallsboro quadrangle, Virginia: Virginia Department of Energy, Geology and Mineral Resources Division, Open-file report 2025-11, 1:24,000-scale geologic map.].

## 13. Open-File Report 2025-11

- I. Geologic map of the Hallsboro quadrangle, Virginia, 1:24,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3123>

## 14. Open-File Report 2025-12

- I. Looney 24K Conversion Geodatabase
- II. Latane, V.M., Swanger, W.R., and Wolf, D.H., 2025, Geologic map database of the Looney quadrangle, Virginia: Virginia Department of Energy, Geology and Mineral Resources Division, Open-file report 2025-12, 1:24,000-scale database [Prince, P.S., 2019, Geologic map of the Looney Quadrangle, Virginia: Virginia Department of Energy: Geology and Mineral Resources Division, Open-file report 2025-13, 1:24,000-scale geologic map.].

## 15. Open-File Report 2025-02

- I. Bedrock geologic map of the Virginia portion of the Middlesboro 30- x 60-minute quadrangle, 1:100,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3118>

## 16. Open-File Report 2025-13

- I. Geologic map of the Looney quadrangle, Virginia, 1:24,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3122>

## 17. Open-File Report 2025-14

- I. Geologic map of the east half of the Bland quadrangle, Virginia, 1:24,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3114>

## 18. Open-File Report 2025-15

- I. Geologic map of the south half of the Carson quadrangle, Virginia, 1:24,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3113>

## 19. Open-File Report 2025-16

- I. Geologic map of the Cedar Springs quadrangle, Virginia, 1:24,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3112>

## 20. Open-File Report 2025-17

- I. Geologic map of the Rural Retreat quadrangle, Virginia, 1:24,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3119>

## 21. Open-File Report 2025-18

- I. Geologic map of the Winterpock quadrangle, Virginia, 1:24,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3120>

## 22. Open-File Report 2025-19

- I. Bedrock geologic map of the Dillwyn 30- x 60-minute quadrangle, Virginia, 1:100,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3111>

## 23. Open-File Report 2025-20

- I. Surficial geologic map of the Dillwyn 30- x 60-minute quadrangle, 1:100,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3110>

## 24. Open-File Report 2025-21

- I. Geologic map of the Crockett quadrangle, Virginia, 1:24,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3126>

## 25. Open-File Report 2025-22

- I. Crockett Quadrangle Geodatabase

## 26. Open-File Report 2025-23

- I. Dabneys Quadrangle
- II. Lang, K.E., Mangum, H.E., Spears, D.B., and Finnerty, P.C., 2025, Geologic map of the Dabneys quadrangle, Virginia: Virginia Department of Energy, Geology and Mineral Resources Division, Open-file report 2025-23, 1:24,000-scale map.

## 27. Open-File Report 2025-24

- I. Dabneys Quadrangle Geodatabase
- II. Lang, K.E., Mangum, H.E., Spears, D.B., and Finnerty, P.C., 2025, Geologic map database of the Dabneys quadrangle, Virginia: Virginia Department of Energy, Geology and Mineral Resources Division, Open-file report 2025-24, 1:24,000-scale database.

## 28. Open-File Report 2025-25

- I. Geologic map of the Dinwiddie quadrangle, Virginia, 1:24,000-scale
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3121>

## 29. Open-File Report 2025-26

- I. Dinwiddie Quadrangle Geodatabase
- II. <https://www.energy.virginia.gov/commerce/ProductDetails.aspx?productID=3113>

## 30. Open-File Report 2025-27

- I. Long Spur Quadrangle
- II. Prince, P.S., 2025, Geologic map of the Long Spur quadrangle, Virginia: Virginia Department of Energy, Geology and Mineral Resources Division, Open-file report 2025-27, 1:24,000-scale map.

## 31. Open-File Report 2025-29

- I. Downhole Stratigraphic Information Spreadsheet and Report
- II. Meng, J., Wolf, D.H., Swanger, W. R., Downhole Stratigraphic Database in Southwestern Virginia: Virginia Department of Energy, Geology and Mineral Resources Division, Open-file report 2025-29, database and report.



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