



ON THE ROCKS

A Newsletter of the Michigan Basin Geological Society



2019-2020 Edition 6

www.mbgs.org

February 2020

ANNOUNCEMENTS

MBGS Membership Meeting, February 12th, 2020: Michigan Basin Geologic Society meeting will be hosted at Michigan State University in the Natural Science Building, East Lansing, Michigan. Mark Worrall, Michigan Department of the Environment Great Lakes and Energy, Remediation & Redevelopment Division, Grand Rapids District will present "PFAS investigations in North Kent County Michigan, A Hydrogeological Investigation into Tannery Derived Waste". Information is included in the newsletter.

OTHER NEWS

LED Field Lens and MBGS Lanyards Available

The Michigan Basin Geological Society is offering geological field hand lens and lanyards. The field hand lens is a large 21mm lens with a 20X magnification. A pair of white LEDs provides illumination for all those darkened close-up viewing of rocks, minerals and fossils. A case is provided for the field lens with a key to remove the batteries. Batteries are included. The green lanyard has MICHIGAN BASIN GEOLOGICAL SOCIETY printed on one side of the 1" wide webbing. This lanyard is designed with a breakaway buckle clip and detachable keychain for versatile use and comfortable wearing. MBGS is offering the Lanyard/LED Hand Lens and Case combo for \$15 each and the Lanyard alone for \$5 each if picked up at a meeting or field trip. If you request to have your purchase mailed, standard costs for mailing container and postage will apply. Please contact Mark Wollensak at wollensak@att.net to order.



CORE DISPLAY EDUCATIONAL TOOL AVAILABLE TO MEMBERS

MBGS has a core display available for use that visually demonstrates permeability/porosity. There are posters available for use with the core display. Contact Jennifer Trout at jennifer.l.trout@wmich.edu to reserve this great educational tool.





February MBGS Membership Meeting

When: February 12th, 2020, 7:00PM

Where: Michigan State University in the Natural Science Building, East Lansing, Michigan

Speaker: Mark Worrall, Michigan Department of the Environment Great Lakes and Energy

Presentation: "PFAS investigations in North Kent County Michigan, A Hydrogeological Investigation into Tannery Derived Waste "

Abstract

In 1958 Wolverine World Wide started commercial use of Scotchgard™ with the introduction of the Hush Puppy line of shoes. The shoes were waterproofed using Scotchgard™, which generated Tannery wastes containing per- and polyfluoroalkyl substances (PFAS). The Tannery wastes containing PFAS were disposed of in North Kent County at various sites from the late-1950s through the 1980s. Investigation of the disposal areas was initiated in 2017 and led to a twenty square mile study area with PFAS impacting hundreds of residential drinking water wells.

A number of issues have led to a challenging hydrogeologic investigation including PFAS' role as an emerging contaminant and behavior in the environment, the geologic-geographical setting of the waste disposal sites, and the complex geology found in the study area. Through a series of conceptual site models that have been developed for the waste disposal areas, State Regulators have begun the processes of identifying the PFAS contaminant distribution and gain a better understanding of the risks associated with the groundwater aquifers in the North Kent County study area.

Biography

Mark Worrall is currently a district geologist for the Michigan Department of the Environment Great Lakes and Energy, Remediation & Redevelopment Division, Grand Rapids District. Mark has been in the environmental business for nearly twenty-five years as both a regulator and consultant.

For the past two and a half years Mark's primary focus has been the Wolverine World Wide (WWW) PFAS sites of North Kent County. This work has involved analyzing the data collected by WWW's consultants and by the state to develop models of the PFAS behavior specific to the impacted area and to communicate this information to the public to aid in their understanding.

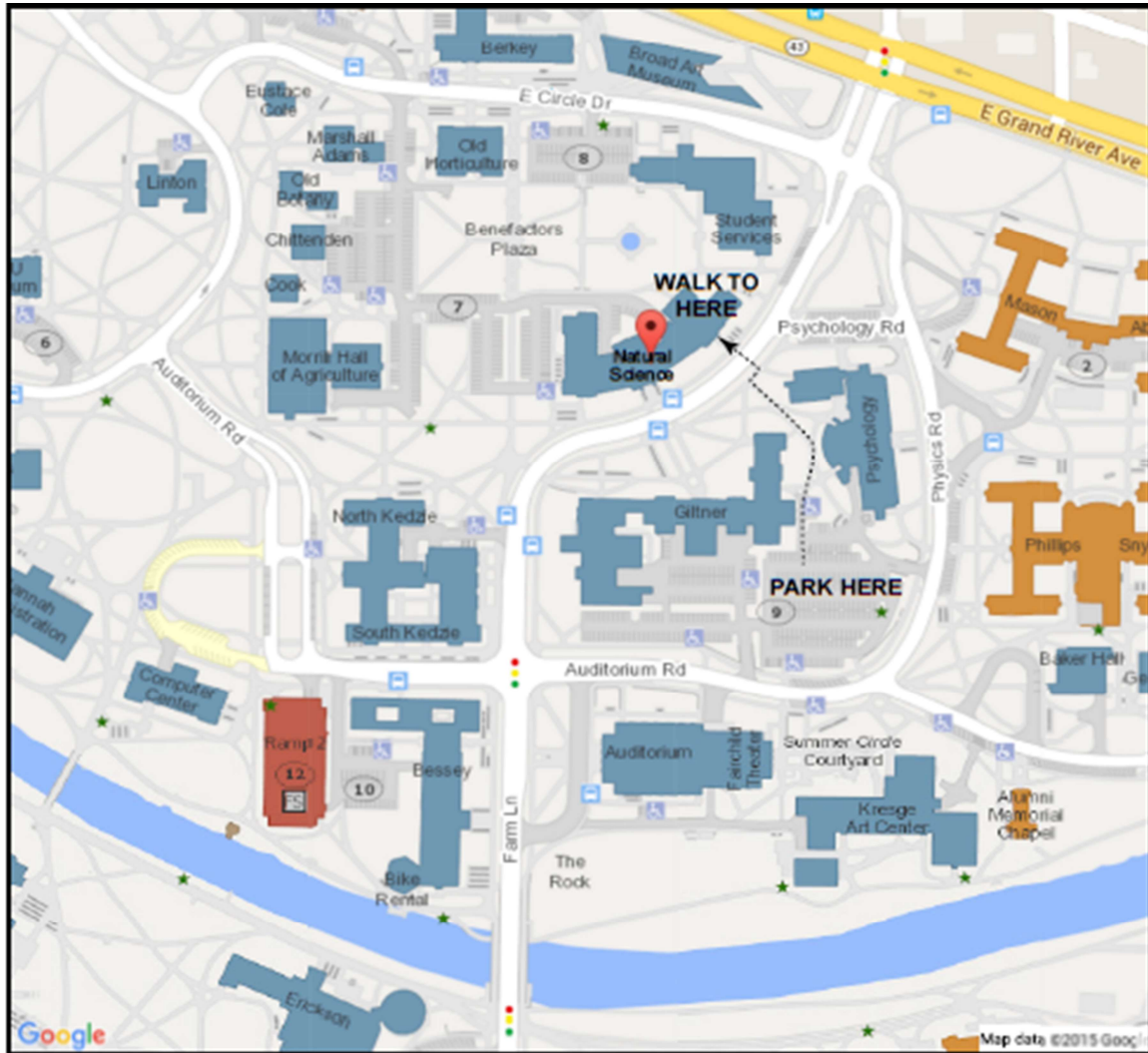
When Mark is not working as a geologist he researches, writes and lectures on Michigan's railroad, mining and industrial history. His family consists of his wife Tina, daughters Ellison and Abigail and their crazy dog pumpkin.

MBGS Monthly Membership Meeting, February 12th, 2020

Michigan State University

College of Natural Science Building, Room 204

288 Farm Lane, East Lansing, MI 48823, (517) 355-4470



Between 5pm & 6pm you can park in Lot 9 behind Giltner Hall and the Psychology Building (former Physics and Astronomy building) for free. Otherwise you can try your luck with the metered slots clustered around the Natural Science Building and the adjacent Student Services Bldg, no charge after 6. MSU Interactive Map: <https://maps.msu.edu/>

EVENTS

March 5th, 2020: Society of Petroleum Engineers - Michigan Section dinner meeting, Shahid Azizul Hag, speaking on “Reservoir Engineering While Drilling In Horizontal Wells”. Alibi of Troy, 6700 Rochester Road Troy, MI 48085. Social Hour is 5-6 pm, dinner is from 6-7 pm, and presentation will follow dinner. Contact Zachary L Melcher zachary.melcher@dteenergy.com for additional information.

March 12th, 2020: Michigan Basin Geological Society membership meeting, Lansing, www.mbgs.org

April 8th, 2020: Michigan Basin Geological Society membership meeting, Michigan Geological Repository for Research and Education (MGRRE) Kalamazoo, www.mbgs.org

May 13 -14th, 2020: 66th Annual Institute on Lake Superior Geology, Mountain Iron, Minnesota, <http://lakesuperiorgeology.org/MtIron2020/index.html>

June 16-17th, 2020: AIPG Michigan Section Environmental Risk Management Workshop (10th Year Anniversary), Roscommon, Michigan at the Ralph A. MacMullen Conference Center, <http://mi.aipg.org/>

EGLE Calendar of Training and Workshops

https://www.michigan.gov/egle/0,9429,7-135-3308_3333---,00.html

ONLINE RESOURCES

- **Michigan Geology Maps Available:** <https://www.michigan.gov/deg/0,4561,7-135-3304-116670---,00.html>
- **Digital Geology Library Overview:** https://www.michigan.gov/documents/deg/GIMDL-Catalog-2010-01-20_307979_7.pdf
- **GeoWebFace:** https://www.michigan.gov/deg/0,4561,7-135-3311_60700---,00.html
- **Digital Geology Library Mining Overview:** https://www.michigan.gov/documents/deg/GIMDL-Catalog-2013_06_22_mining_425595_7.pdf
- **Michigan Geological Survey:** <https://wmich.edu/geologysurvey>
- **USGS Michigan Geological Map Data:** <https://mrdata.usgs.gov/geology/state/state.php?state=MI>
- **CMU, Clarke Historical Library, Michigan Geology:**
https://www.cmich.edu/library/clarke/ResearchResources/Michigan_Material_Statewide/Michigan_Oil_and_Gas_Industry/History_of_Michigan_Oil_and_Gas/Pages/Michigan-Geology.aspx
- **Wisconsin Geological and Natural History Survey** has completed a data preservation and presentation project on their Lake Superior Legacy Collection. This collection contains the raw materials (notebooks, maps, samples, thin sections) of the Lake Superior Division of the USGS. The collection is available [here](#)

MICHIGAN BASIN GEOLOGICAL SOCIETY OFFICERS

2019-2020

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MBGS PUBLICATIONS

<http://www.mbgs.org/publications.html>

Historical publications now available on USB Flash Drives". Each USB Flash Drive is 8GB

Prices include postage, handling and any applicable sales tax.
Orders for publications should be prepaid in U.S. Funds and addressed to:

MBGS — Publications
P.O. Box 14044
Lansing, MI 48901-4044

Historical CD #1: Nine out-of-print publications from 1949 through 1965 and 1998, 2000, \$15

- The Stratigraphy of Manitoulin Island, Ontario, Canada, June 19-20, 1954
- The Devonian and Silurian Rocks of Parts of Ontario, Canada and Western New York, June 22-23, 1951
- The Traverse Group of the Northern Part of the Southern Peninsula of Michigan, June 16-17, 1949
- The Devonian Strata of the London-Sarnia Area, Southwestern Ontario, Compiled by Erwin C. Stumm, Lewis B. Kellum and Jean Davies Wright, June 9-10, 1956
- The Ordovician Rocks of the Escanaba-Stonington Area, Led by R. C. Hussey, June 2-3, 1950
- The Niagara Escarpment of Peninsular Ontario, Canada, June 18-19, 1955
- Lower Paleozoic and Pleistocene Stratigraphy Across Central Wisconsin, Compiled by C. E. Prouty, Led by L. M. Cline, J. L. Hough and R. F. Black, 1960
- Classic Silurian Reefs of the Chicago Area, by Donald G. Mikulic and Joanne Kluessendorf, June 27, 1998
- Geology of Central Ontario, Canada, 1965

Historical CD #2: Four out-of-print publications from 1947, 1959, 1983 and 1991, 2001, \$15

- Copper Country Field Trip, Michigan, June 20-22, 1947
- Geology of Mackinac Island and Lower and Middle Devonian, South of the Straits of Mackinac, June 12-14, 1959
- Tectonics, Structure and Karst in Northern Lower Michigan, August 1983
- Geology of the Pictured Rocks, Upper Peninsula, Michigan, July 11-13, 1991

Historical CD #3: Six out-of-print publications from 1948, 1952, 1990 - 1995, 2001, \$15

- Pleistocene and Early Paleozoic of the Eastern Part of the Northern Peninsula of Michigan, June 18-21, 1948
- Stratigraphy and Structure of the Devonian Rocks in Southeastern MI and Northwestern OH, June 20-21, 1952
- Lower Ordovician and Upper Cambrian of Wisconsin, May 10-12, 1990
- Guidebook to the Precambrian Geology and Metallogeny of the Central Upper Peninsula of Michigan September 12-13, 1991

Historical CD #4: Six out-of-print publications from 1957, 1958, 1961, 1967, 1968 and 1970, 2004, \$15

- Silurian Rocks of the Northern Peninsula of Michigan, 1957
- Cambrian Geology of Parts of Dickinson and Iron Counties, Michigan, June 1958
- Geologic Features of Parts of Houghton, Keweenaw, Baraga and Ontonagon Counties, Michigan, May 19-21, 1961
- Correlation Problems of the Cambrian and Ordovician Outcrops Areas, Northern Peninsula of Michigan 1967
- The Geology of Manitoulin Island, June 1968
- Devonian Strata of Alpena and Presque Isle Counties, Michigan 1970

Historical CD #5: Five out-of-print publications from 1971, 1989, 2001, and Oil & Gas Fields Vol. 1 & 2, 1969 & 1992, 2006, \$50

- Oil & Gas Fields Symposium, Volume 1, April 1969, 200 pp., maps, illus., second printing with updates
- Oil & Gas Fields Manual of the Michigan Basin, Volume 2, 1992, 520 pp., maps, illus.
- Glacial Geology of Southwestern Michigan, 1989, 53 pp. by A. Kehew, L. J. Schmaltz, and W. T. Straw
- Geology of the Lake Erie Islands and Adjacent Shores, 1971, 65pp., maps, illus. by Jane L. Forsyth
- Glacial Geology of Southwestern Michigan, Landforms of the Lake Michigan Lobe, Southwestern Michigan, 2001, AAPG Eastern Section Meeting Field Trip, 32 pp., maps, illus. by A. Kehew and A. Kozlowski

Historical CD #6: Six out-of-print publications from 1946, 1953, 1963, 1966, 1978 & 1987 plus the Richfield Challenge, 1952 & Tom Knapp's MS Thesis, 2007 \$15.

- Guidebook for Ordovician Stratigraphy of the Cincinnati, Ohio and Richmond, Indiana Areas, June 12, 13, 1953 by W. H. Shideler and B. T. Sandefur
- Guidebook for Ontario Geological Excursion to Kettle Point – Owen Sound- Waubesa, June 21, 22, 23 1946 by W. A. Roliff, C.S. Evans and J.F. Caley
- Guidebook for the Stratigraphy of the Silurian Rocks in Western Ohio, May 31-June 2, 1963 by C. H. Summerson, Jane L. Forsyth, Karl V. Hoover and J. R. Ulteig
- Guidebook for Cambrian Stratigraphy in Western Wisconsin, May 21, 22, 1966 by Merideth E. Ostrom
- Geology of the Manitoulin Area, Special Papers #3, September 29, 30 and October 1, 1978 by J. T. Sanford
- and R. E. Mosher
- Middle Devonian Cratonic Carbonates and Shales in Southwestern Ontario, November 14, 1987 by Bruce Wilkinson
- The Richfield Challenge, A Review of the Richfield Developments in Michigan, 1952 by Gordon H. Hautan
- A Theory of Rogers City and Dundee Relationships in Central Michigan, Masters Thesis, 1947 by Tom Knapp

Historical CD #7: Field Guidebooks from 1962, 1969, 1977, 1980, 1985 & 1988, \$15

- Silurian Rocks of the Southern Lake Michigan Area, 1962, James H. Fisher, Chairman, MBGS Annual Field Conference
- Studies of the Precambrian of the Michigan Basin, by Harold B. Stonehouse, 1969
- The Geology of the Marquette District: a Field Guide By F. W. Cambray, 1977
- Ordovician and Silurian Geology of the N. Peninsula of Michigan, 1980, R.B. Votaw, 40 pp., illus., maps
- Special Paper #4: Ordovician and Silurian Rocks of the Michigan Basin and its Margins, 1985 K.R. Cercione and J.M. Budai (eds.), 96 pp., illus.
- Upper Keweenaw Rift-Fill Sequence, Mid-Continent Rift System, Michigan, 1988, P.A. Daniels and R.D. Elmore, M.S. Wollensak, ed., 150 pp., illus., maps

OTHER SPECIAL OFFERS

- **Historical CD Set - # 1 – 7 (detailed above) for a special purchase price of \$95**
- **NE Lower Peninsula Geological Field Conf., 2004, T. Black, M. Wollensak, On CD \$10**
- **Stratigraphic Lexicon for Michigan, 2001, prepared by MBGS and published by DEQ, \$4**
- **Robert E. Mosher Geological Studies** A lifetime of geological research on Silurian Rocks with John T. Sanford. The disks are organized chronologically and include field work in North America and Europe. 2007, 2 CDs \$35.

MBGS HISTORICAL PUBLICATIONS ARE NOW AVAILABLE ON USB FLASH DRIVES (8GB).