



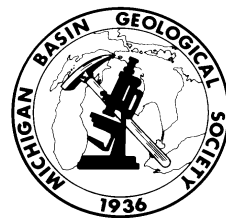
ON THE ROCKS

A Newsletter of the Michigan Basin Geological Society

2017-2018 Edition 1

www.mbgs.org

September 2017



ANNOUNCEMENTS

Membership Meeting, September 20th, 2017: Michigan Basin Geologic Society meeting will be hosted at Western Michigan University in the Michigan Geological Repository for Research and Education Building, Kalamazoo, Michigan. The meeting will include a **"Say Goodbye to Summer Cook-out"** with hamburgers, brats, potato salad, barbecue beans, coleslaw, and beverages. Dr. Peter Voice from Western Michigan University will be presenting "Michigan Historic Mineral Production from 1840 to the Present: A Statistical Summary". In addition to the speaker and the cookout, Western Michigan University students will be on hand and available to discuss their research posters that will be on display along with interesting core samples.

RESERVATIONS ARE REQUIRED: Please email Mike Pozinak to confirm attendance at mike.pozniak@arcadis.com before September 17, 2017.

Where: Western Michigan University, Michigan Geological Repository for Research and Education, 5272 W. Michigan Avenue, Kalamazoo, MI 49006, (269) 387-8633

When: Executive committee meeting at 4:30 pm (members welcome); Beverages available at 5:00 pm. Dinner at 6:00 pm. Presentation to begin at 7:00 pm.

Cost: \$25 for members; \$10 for students. This is a good time opportunity to renew your annual membership. Cost of annual membership is \$25.

INTRODUCING THE 2017-2018 MBGS EXECUTIVE MEMBER COMMITTEE

President – Peter Rose, Michigan Department of Natural Resources

Vice President – Adam Wygant, Michigan Department of Environmental Quality

Secretary – John Yellich, Michigan Geological Survey

Treasurer – Mike Pozinak, Arcadis

Business Managers – Emanuel "EZ" Manos, Detroit Salt Mine

MBGS FIELD EXCURSIONS

MBGS is excited to announce a 2020 Grand Canyon Geological Rafting trip in the making. More details and opportunity to reserve a spot will be announced soon. Stay tuned!



MBGS Membership Meeting
Dr. Peter Voice, Western Michigan University
presenting

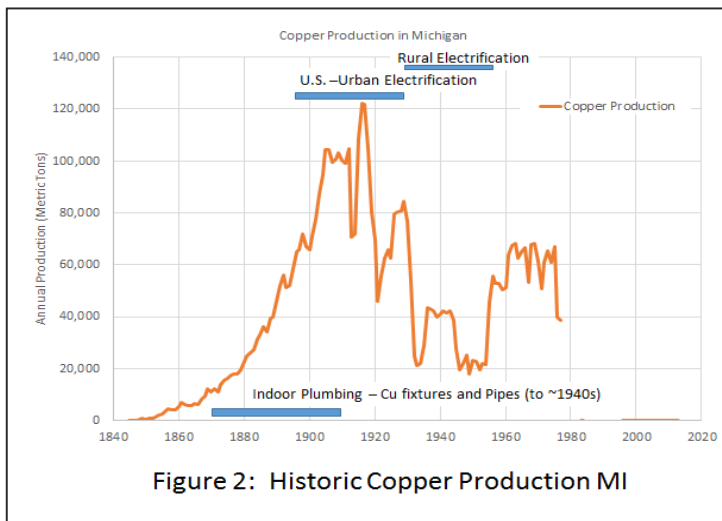
“Michigan Historic Mineral Production from 1840 to the Present: A Statistical Summary”

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Abstract: The Michigan Geological Survey has generated a summary of historic natural resources production from the mid-1800's to the present. Production statistics were gathered from historic Michigan and U.S. Geological Survey annual reports and other sources. Production curves and summary data tables were generated.

Commodities considered in the survey include metallic resources (iron, copper, gold, silver), non-metallic minerals (salt, rock gypsum), aggregates (sand, clay, crushed rock, etc.), and energy resources (oil, natural gas, and coal). Significant resources include iron ore (1.5 billion metric tons), copper ore (6 million metric tons), salt (300 million metric tons), gypsum (110 million metric

tons), sand and gravel (3.2 billion metric tons) and crushed stone (2.1 billion metric tons). Exploitation of energy resources has generated 1.3 billion barrels of oil, 42 million metric tons of coal and 8 trillion cubic feet of natural gas.

Most commodities harvested in Michigan exhibit similar production curves with increasing production from the 1880's to the 1970's. Post-1970 most commodities exhibit declining production. All of the commodities were sensitive to recessions. In 2013 dollars, the estimated value of the historically-produced, geologic resources from Michigan is 500 billion dollars.

Bio: Dr. Peter Voice is a Faculty Teaching Specialist, Director of K-12 Outreach and Research Associate at the Department of Geosciences at Western Michigan University, the Michigan Geological Repository for Research and Education, and the Michigan Geological Survey. He has an extensive background with Silurian carbonates in the Michigan Basin, and more on his research can be found here:

https://www.researchgate.net/profile/Peter_Voice/contributions.



MBGS Membership Meeting - Directions

September 20th, 2017



Western Michigan University, Michigan Geological Repository for Research and Education, 5272 W. Michigan Avenue, Kalamazoo 49006

From the Kalamazoo Airport

Exit the airport and turn right onto Portage Road. Go 0.2 miles to I-94

Take I-94 West toward Chicago—go 3.9 miles

Take Exit #74B/US-131 North to I-94-BUS East toward Grand Rapids—go 2.1 miles

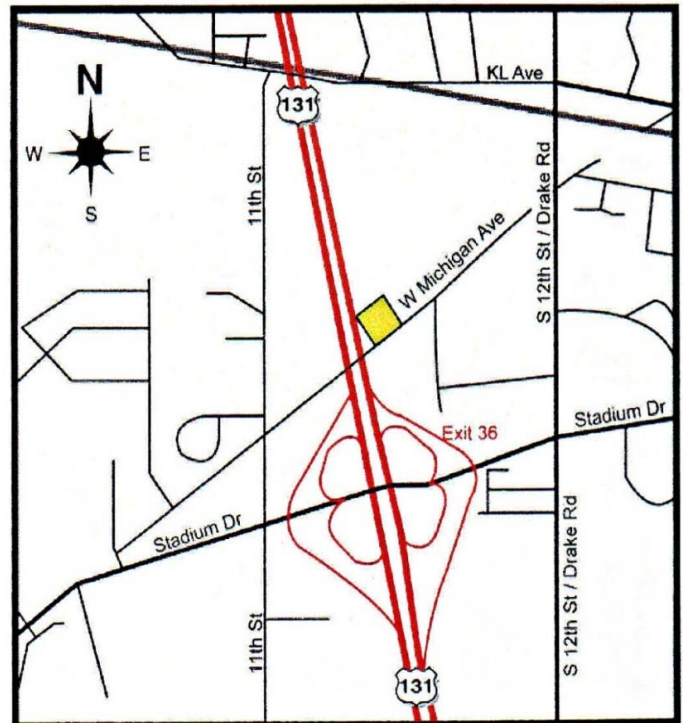
I-94-BUS East becomes US-131 North—go 0.4 miles

Take exit #36B onto Stadium Drive toward Oshtemo—go 0.5 miles

Turn right on S. 11th Street—go 0.1 miles

Turn right on W. Michigan Avenue—go 0.3 miles and arrive at 5272 W. Michigan.

Our driveway is the first one just past the US131 overpass on the left, through the fence gates. Our building is the largest one in this fenced area.



From the South or North

From US 131, take exit #36B/Stadium Drive onto Stadium Drive—go 0.4 miles. Turn right on S. 11th Street—go 0.1 miles. Turn right on W. Michigan Avenue—go 0.3 miles and arrive at 5272 W. Michigan Avenue. Our driveway is the first one just past the US131 overpass on the left, through the fence gates. Our building is the largest one in this fenced area.

From the East or West

From I-94, exit onto US 131 North—go about 2.5 miles and take exit #36B onto Stadium Drive toward Oshtemo—go 0.5 miles

Turn right on S. 11th Street—go 0.1 miles

Turn right on W. Michigan Avenue—go 0.3 miles and arrive at 5272 W. Michigan.

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UPCOMING EVENTS

September 12, 2017: American Institute of Professional Geologist together with Michigan Association of Environmental Professionals meeting. Speaker is Matt Rybar, Alpha Consulting, presenting “What Can Drones Do for You? The Game of Drones - & Draughts”. Lansing Brewing Company, Lansing Michigan.

<http://www.maep.org/>

September 20, 2017: MBGS Monthly Meeting, Western Michigan University, Speaker Dr. Peter Voice, Western Michigan University, Michigan Historic Mineral Production from 1840 to the Present: A Statistical Summary

September 24-27, 2017: AAPG Eastern Section Meeting

September 23-26, 2018: 54th Annual AIPG National Meeting in Nashville, Tennessee.

November 8, 2017: MBGS monthly meeting, the speaker is Barry Harding, CPG, presenting “Geobotany: Accumulators, Indicators, Exploration and Remediation”.

December 12, 2017: MBGS monthly meeting, the speaker is Cameron Manche, presenting “Structural Controls on Migration of Antrim Shale Gas in Michigan Basin”.

January 3-5, 2018: No-Spills Conference, Grand Traverse Resort & Spa, Acme, Michigan

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2017-2018

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MBGS PUBLICATIONS

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



**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. Cercone 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 ONLINE STORE

The Michigan Basin Geological Society now has an on-line store. Shop for shirts, hats, bags and other items. Check it out at: <http://www.cafepress.com/mbgs>.

Passing of James C. Woodruff, Delta Township, past president of the Michigan Basin Geological Society

James died on August 13, 2017 at the age of 95. Jim was born in Watervliet, Michigan on April 12, 1922, the eldest of the three sons of Allen W. Woodruff and Genevieve Pratt Woodruff. He had a small town upbringing and education and in 1940 he went to college at the Colorado School of Mines in Golden Colorado.

His college education was interrupted by service in World War II with the US Army Corps of Engineers in the Pacific Theater, including Okinawa and Korea, during which he attained the rank of captain. After the war, he returned to Mines and graduated in 1948 with a degree in Geological Engineering.

In 1951 he married Elaine Belke of St. Joseph Michigan. They lived in Grand Rapids where their two children were born, and Lansing where the children grew up and attended school. After the kids were married, Jim and Elaine moved to a house on the Grand River in Delta Mills. Their retirement years were largely spent renovating and enjoying the “river house”. They shared a love of gardening, both of their Lansing houses were show places of natural plantings and landscaping. At the time of Elaine’s death in 2009, they had been married 58 years.

Jim’s entire professional career was spent in the natural gas business first in industry constructing and operating natural gas pipelines and later as a governmental regulator of the natural gas business in Michigan. He was a registered professional engineer with the gas division of the Michigan Public Service Commission. He was well known among his peers in both industry and government as an expert without equal and a dedicated highly ethical public servant. He retired as division director in 1986. His dedication to public safety was the most memorably demonstrated by the establishment of the MISS Dig program and the idea he inspired.

In the early years he was active in the Boy Scouts and Girl Scouts, he was a cub master, scoutmaster and a girl scout council committee man. He served as both vice president and president of the Michigan Geological Basin Society. His retirement avocation was “topology”; the study of regions history as indicated by its topology. He researched and wrote several monographs and numerous magazine articles about canoes, rivers, and Michigan history, in particular early British and French explorers. In 2001, the Eaton County historical commission with the Eaton County Heritage award honored him for his work illuminating local history; in 2004, he was honored by the Quiet Water Society with Verlen Kruger award for outstanding accomplishments in documenting the heritage of Michigan waterways and watercraft and drawing attention to Mid-Michigan’s environmentally sensitive Grand River. Along with his friend, Verlen Kruger, Michigan’s famous long-distances paddler, he established the annual “Hugh Heward Canoe Challenge”, an event that takes place every year on the last Saturday of April reenacting a 50-mile paddle by British fur trader Hugh Heward in 1790.

In the last few years of his life, Jim remained connected and engaged with family and friends by continuing his research on genealogy and history and creating military scrapbooks for fellow veterans. He engaged in lively conversations with family, former co-workers and his fellow canoeing enthusiasts. He was an avid user of google, filling book after book with material about his interests, which were broad and deep. His interests were broad and deep. His curiosity keep him young.

Jim was preceded in death by his parents, Allen and Genevieve, his brothers Dick and John, and his wife Elaine. He is survived by his daughter, Karen Elaine Stock, son-in-law, Ken Stock and grandson Adam Woodruff Tury. Son James C. Woodruff III, daughter-in-law Deborah K. Woodruff, and granddaughter, Jessica Michelle Woodruff, and the blended family Joe Stock, Jonna Tury, Michael Balcom, Kelly Corcoran, Eddy, Kyle Corcoran, Tomi Ogundimu, Melissa Garza, and their families who honored him by calling him “grandpa”.

In lieu of flowers, Jim’s family requests that donations be made to the Middle Grand River Organization of Watersheds. <http://mgrow.org/woodruff>



Geophysical Methods to Map Bedrock Valleys Search for Sustainable Water Resources

Demonstration for funding of the Michigan Geological Survey

John A. Yellich, CPG, Director

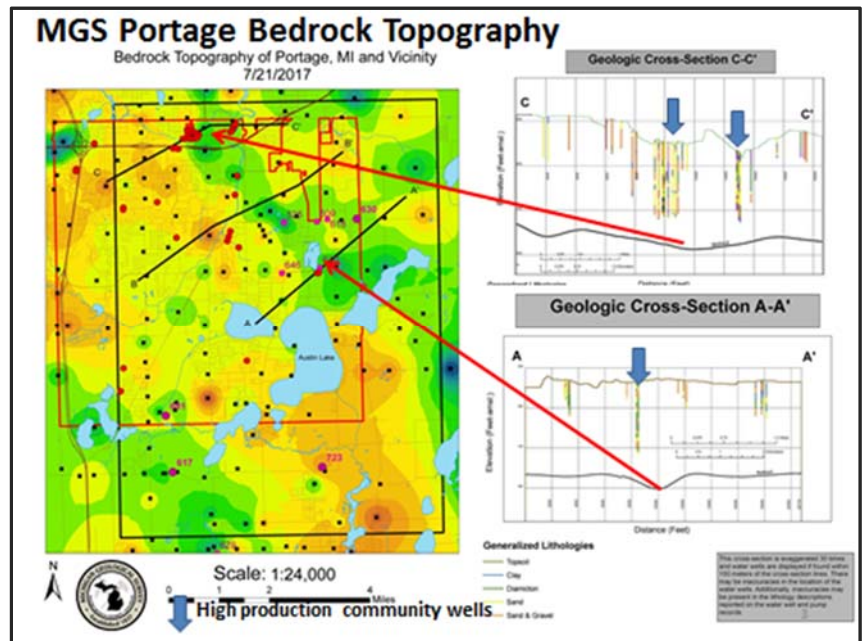
Michigan Geological Survey @ Western Michigan University



The Michigan Geological Survey (MGS) presented a technical summary for the Bedrock Valley demonstration project completed to the City of Portage in August. This project was completed successfully and documents the capabilities of the Michigan Geological Survey to present that geology and geophysical sciences can identify and support the management of selective buried water resources. This is one of the proposed demonstration projects to present scientific research successfully completed by MGS, justification for annual funding. This was initiated after receipt of the Natural Resources grant from the Michigan Legislature in 2016. This type of research can be used to test and assess little or unknown deep water resources at a much lower cost utilizing MGS, WMU faculty and students. MGS has multiple natural resource assessment demonstration projects initiated to support establishing annual funding for the Survey. This demonstration funded the research of a MS Candidate, Benjamin Seiderman and the GIS documentation was supported by WMU Doctoral candidate Ms. Sita Karki.

Summary of Results:

Michigan Geological Survey presented the results of this data collection demonstration project which was to identify and refine the location of any buried bedrock valleys in the area of the City of Portage, Kalamazoo County, Michigan using indirect geophysical methods, the Tromino Passive Seismic system. Many buried glacial bedrock valleys have been known to contain glacially derived sands and gravel which have a high potential for high quantities of permeable water bearing zones that can be



equal to or greater than the shallower water bearing zones. This project has resulted in the refining of the location of several unique bedrock valley features that were suspected but the true location, orientation and significance were not previously known until this compilation of the geophysical and geological data was completed. The older data sets are from 1915, 1955 and 1982, which interprets some surficial and an interpretation of bedrock contact features. This project has provided an interpretation of those areas, validation of the geology by boring logs in the area and presents the estimated depth to those potential zones on a bedrock topographic contour map (Portage Bedrock Topographic/Contour Map) showing the NW-SE trends of the buried valleys within the City boundaries. Two cross sections are also presented to show the relationship of the bedrock valleys to the current production wells, a minimum of 50 feet above the base of the bedrock valley. This is a summary of those results which will be presented in detail on the MGS Website.



**Michigan Section
American Institute of Professional Geologists
together with
Michigan Association of Environmental Professionals**



**MEETING ANNOUNCEMENT
September 12, 2017**

**What Can Drones Do For You?
*The Game of Drones - & Draughts***

Join us to find out what information Unmanned Aircraft Systems (UAS, a.k.a. drones) can collect, and how it's interpreted, as you kick back with colleagues from both MAEP and AIPG at Lansing Brewing Company! Save the date: September 12th (5-9PM). More details coming soon on the MAEP website!

Location: **Lansing Brewing Company**
"One of the first breweries in Michigan's Capital city, the LBC supplied craft beer to artisans, laborers and tradesmen as they built our city over a century ago."

**518 E Shiawassee St
Lansing, MI 48912**

Cost: **Members - \$50 Non-Members - \$75 Students - Free**

Event Schedule:

5:00 – 6:30 - Social
6:30 – 7:30 - Strolling Dinner (various buffet stations)
7:30 – 8:15 - Technical Presentation
8:15 – 9:00 - Social

Registration:

[Register Here](#)



Speaker: *Matt Rybar, Alpha Consulting*



Matt Rybar is a graduate of Hope College in Holland majoring in engineering. He has extensive knowledge in Unmanned Aerial Systems and geospatial solutions. He is a certified UAS pilot and has flown thousands of flight hours gathering aerial imagery. He has walked many organizations through their UAS programs including the Michigan Department of Natural Resources. The presentation and demonstration today will show you a few of the many remote sensing platforms available for use with an Unmanned Aircraft Systems. We will be demonstrating a few different approaches to using a UAS. First, we will show the live, on site capabilities of what you can do with the imagery while the aircraft is airborne. Secondly, we will demonstrate ways to collect data while airborne that can be post processed to create high resolution imagery/models.

Meeting Sponsors:

