

On the Rocks



A Newsletter of the Michigan Basin Geological Society

2006-2007 Number 1

www.mbgs.org

September 2006

EVENTS

September 13, 2006: The kickoff talk this season will be **Grant DeWitt** who will discuss **Estimating Release Dates of Hydrocarbons in the Environment**. See abstract and biography below.

September 16, 2006: Our first field trip of the season is to **Petrolia and Oil Springs, Ontario**, to visit the *birthplace* of the North American oil industry. See information below, contact Leonard Espinosa

September 21, 2006: AIPG Meeting, **Jon Allan** on the **New Water Withdrawal Law, The Inside Story**. See information below.

October 16, 2006: SPE will sponsor this month's talk by **Dr. Theo H. Fleisch** on the **The End of Stranded Gas: The Emergence of the Gas to Products Ratio**

DUES TIME AGAIN

Its time once again to renew your MBGS dues for the 2006 season, please take the time to return the information below with your dues. **Your newsletter editor encourages distribution by e-mail** as a more timely and cost efficient way to receive your newsletter. Timely renewal helps your officers plan for the upcoming year and is the best way to ensure there will be no interruptions in receiving your On the Rocks newsletter.

Please use the dues notice to at the end of this newsletter to remit your 2006-2007 dues.

2004-2005 MBGS Officers

The Executive Committee meeting minutes are available on our website at www.mbgs.org

PRESIDENT: ROBERT REYNOLDS,
Reynolds Geological, LLC
509 Hall Blvd. Mason, MI 48854
517-676-9936, fax 517-676-8169,
reynoldsgeo@voyager.net

VICE PRESIDENT: MARK NIDA
LEG, Public Service Commission
PO Box 30221, Lansing MI 48909
517-241-6136, fax 517-241-6121, mcnida@michigan.gov

SECRETARY: KEN PETRIE
Aurora Energy
1951 Penobscot Drive
Okemos, MI 48864
517-347-3043 kmpetrie@yahoo.com

TREASURER & PUBLICATIONS: TOM HOANE
FMFM, DNR
P.O. Box 30452, Lansing, MI 48909-7952
Bus 517-241-3769, fax 517-373-2443 hoanet@michigan.gov

BUSINESS MANAGER: TOM GODBOLD
OGS, DEQ
P.O. Box 30256, Lansing, MI 48909-7756
Ph: 517-241-1545, Fax 517-241-1595
godboldt@michigan.gov

PAST-PRESIDENT: DR. ROBB GILLESPIE
WMU Geology Department
1123 Rood Hall, WMU, Kalamazoo, MI 49008
269-378-5354, fax 269-387-5513 robb.gillespie@wmich.edu

CO-FIELDTRIP DIRECTORS:
MARK WOLLENSAK, CPG
Hamp, Mathews & Assoc, Inc.
15266 Ann Drive, Bath, MI 48808
Ph: 517-641-7333 Fax 517-641-7337
Cell 517-719-8321 wollensak@voyager.net

and

LEONARD ESPINOSA, FMFM, DNR
PO Box 30452, Lansing, MI 48909-7952
Ph: 517-335-3248, Fax 517-373-2443
espinosl@michigan.gov

NEWSLETTER EDITOR: TOM WELLMAN,
FMFM, DNR
PO Box 30452, Lansing, MI 48909-7952
Ph: 517-373-7666, Fax 517-373-2443
wellmant@michigan.gov

ELECTRONIC PUBLICATIONS:
MARK WOLLENSAK

AAPG DELEGATES:
DR. AUREAL CROSS, MSU,
Dept. of Geol Sciences, 206 Natural Sciences Bldg, East
Michigan State University:
Lansing, MI 48824-1115, 517-335-4630/4639,
cross1@pilot.msu.edu

Dr. WILLIAM HARRISON,
Western Michigan University
616-387-8691
william.harrison_iii@wmich.edu

MEETING CANCELLATION POLICY

Monthly meetings will be automatically cancelled whenever the National Weather Service issues a "Storm Warning" for the Lansing area. If driving conditions are poor but a "Warning" has not been issued please contact any member of the Executive Committee for the status of the meeting.

MICHIGAN BASIN GEOLOGICAL SOCIETY PUBLICATIONS

Historical CD #1: Nine out-of-print publications from 1949 through 1965 and 1998, Devonian to Silurian Rock Fieldtrips to MI, WI, IL and Ontario, 2000, \$15

Historical CD #2: Four out-of-print publications from 1947, 1959, 1983 and 1991, Northern Devonian and UP Fieldtrips in MI, 2001, \$10

Historical CD #3: Six out-of-print publications from 1947, 1959, 1983 and 1991, Northern Devonian and UP Fieldtrips in MI, 2001, \$12

Special Price - Historical CD #1, #2 & #3, \$30

Stratigraphic Lexicon for Michigan, 2001, prepared by MBGS and published by DEQ, 56 pp., chart, \$2.65 picked up or \$4 mailed, Can be ordered from MBGS or Geological Survey Div. of the DEQ

Price Includes postage, handling and any applicable sales tax. MBGS Members receive a 10% discount on MBGS publications.

Orders for publications should be prepaid in U.S. Funds and addressed to:
MBGS - Publications
c/o Dept. of Geological Sciences
206 Natural Sciences Building
Michigan State University
East Lansing, Michigan 48824-1115

MBGS Mug and Jacket Sale

The Michigan Basin Geological Society is offering mugs and jackets with the society logo for sale. The mugs are \$5.00 each. The jackets are \$60.00 each plus postage. Please contact Dan McGuire at: Phone (517) 772-5219, Fax (517) 772-7021, or danmcguire@sensible-net.com. Remember to include the correct size of the jacket and the quantity of each item. Checks should be made out to the MBGS.

MBGS Meeting

September 13, 2006 (WEDNESDAY)

Coyote Creek
6951 Lansing Rd, Dimondale, MI.

Schedule: 5:30 to 6:15 PM Social Hour
6:15 PM Dinner
Presentation after dinner

Cost \$25.00/member \$15.00 Student (includes dinner)

Topic: "Regression of Ethylbenzene/Xylenes Ratios for Estimating Release Date"

By
Grant DeWitt

MBGS Dinner Meeting Reservation

Name _____

Number attending _____ Society _____

Enclosed Registration Fee _____

Please make checks payable to **MBGS** and return to Thomas Godbold by **September 11, 2006**.

Members are welcome to attend the presentation after dinner for no charge. Please contact Thomas Godbold to ensure adequate seating. Send reservations to:

Thomas Godbold
P.O. Box 30256
Lansing, MI 48909-7756
Ph: Bus Ph: 517-242-2545, Fax 517-241-1595
E-mail: godboldt@michigan.gov

First-Order Exponential Regression of Ethylbenzene/Xylenes Ratios for Estimating Release Date

By Grant W. DeWitt, PM Environmental, Inc; and Dr. James S. Smith, Trillium, Inc

Abstract

A model is proposed to estimate a “petroleum hydrocarbon release or significant source reduction date range” (RDR) based on groundwater time series data exhibiting anaerobic, first-order exponential biodegradation decay. Groundwater monitoring data for sites with known release or source termination/reduction dates are compared with model predictions.

Gasoline, kerosene, diesel, and heating oil have composition ratios of ethylbenzene to xylenes of approximately 0.17 ± 0.05 . Upon a release, typically aerobic bacteria rapidly use the available oxygen and drive the release environment anaerobic. Ethylbenzene and xylenes are C₂ benzene compounds that have nearly identical boiling points, vapor pressures, water solubilities, and carbon-water sorption coefficients. Therefore, the major fate and transport mechanisms of evaporation, water washing, groundwater velocity retardation, and dispersion treat ethylbenzene and xylenes alike. Anaerobic biodegradation will remove xylenes faster than ethylbenzene and the ratio of ethylbenzene to xylenes (EXR) in groundwater will increase with time.

Petroleum hydrocarbon biodegradation can be reasonably simulated using first-order exponential approximations. The ratios of these hydrocarbons will also follow first-order exponential approximations. Given the 1) difference in ethylbenzene and xylenes biodegradation rates and 2) similar fate and transport properties will not significantly effect the EXR differently over time, simulating the EXR using a first-order exponential approximation will eliminate the need to know the initial ethylbenzene and xylenes release concentrations and allow for modeling the observed groundwater data to predict a RDR using a minimum ($0.17 - 0.05 = 0.12$) and maximum ($0.17 + 0.05 = 0.22$) initial EXR representing a new release.

Ethylbenzene and xylenes groundwater monitoring data that exhibit anaerobic, first-order exponential biodegradation decay are used to estimate a RDR, or at least indicate the release could not have occurred after the estimated RDR, that were in reasonable agreement with known release and source reduction dates. The field examples suggest that regression analysis of post release data can be used or obtained to provide a reasonable estimate of the RDR, without the need for early time data. Historic EXR data are modeled and projected forward in time to support a new from old release determination. EXR data not showing an increasing trend and remaining near the range anticipated for a new release are associated with an example of intermittent free product conditions suggesting a means to indicate the continuing presence of free phase hydrocarbons and significant source material.

Biography

Grant W. DeWitt, BA, MS, PG, CP (professional geologist: Pennsylvania and Alabama and certified underground storage tank professional: Michigan) is a Senior Project Geologist at PM Environmental, Inc., an environmental consulting firm. Mr. DeWitt has managed numerous environmental site assessments, remedial investigations, underground storage tank (UST) closures, feasibility studies, and remediation system design including bioremediation, soil vapor extraction, and groundwater pumping pilot tests.

Specific project experience has included management of geophysical surveys, soil and groundwater sampling, free product recovery, bid specification development, and oversight of UST and soil removal. He has conducted Risk-Based Corrective Action evaluations, aquifer test analyses, groundwater flow and contaminant transport modeling, and water supply evaluations and provided expert opinion/witness for state and federal litigation.

He earned a M.S. degree in geophysics from the University of Utah in 1979 following a B.A. degree in geology from Temple University in 1975.

James S. Smith, PhD, CPC (certified professional chemist) is the president of Trillium, Inc., a consulting firm specializing in environmental chemistry. Founded in 1987, Trillium's areas of expertise are analytical chemistry, organic chemistry, inorganic chemistry, quality assurance and quality control, data validation, data interpretation, planning, sampling and analysis programs, environmental forensic investigations, and expert witness work.

Dr. Smith has published, presented and taught courses on environmental chemistry topics including analytical instrumentation such as mass spectrometry, analytical methods, fate and transport of petroleum and coal products and wastes, chlorinated solvents, PCBs, pesticides, herbicides, nematocides, dioxins, furans, polynuclear aromatic hydrocarbons (PAHs), metals, anions, detergents, plasticizers, paint, isocyanates, antioxidants, etc. in various environmental matrices.

He earned a Ph.D. in organic chemistry from Iowa State University in 1964 following BA degree in chemistry from Williams College in 1960.

Petrolia and Oil Springs Tour

North America's oil industry was born in 1858 when James Miller Williams built the first successful oil well on a deposit of "gum beds" located near the towns of Oil Springs and Petrolia, Ontario. The beds were first recognized in 1851, but never developed. Williams pumped 9,447 bbl of crude oil from his wells in his first two years. After which, he launched the first integrated oil company - exploring, drilling and refining the oil - with the founding of "The Canada Oil Company" in 1860.

For the next 50 years, these fields supplied 90% of the oil consumed in Canada and Petrolia became home to the world's most advanced oil development and refining technologies. The boom times were over by the turn of the 20th century, though commercial wells continue to pump. Thus far, the area has produced an estimated 10 billion barrels. As the Petrolia oil rush began to slow, the local drillers, who had learned how to get oil from the ground efficiently found their skills and methods in high demand. Petrolia oil men then dispersed around the world, to as many as 87 countries, opening some of today's great oil fields in the Middle East, Venezuela, and elsewhere

MICHIGAN BASIN GEOLOGICAL SOCIETY FIELD TRIP

The Birthplace of Commercial Oil Production in North America: Petrolia, Oil Springs, & Fairbank's Farm Historical Tour

9am Saturday 16 September 2006

TOUR GUIDES: Claudia Cochrane (U of Western Ontario), Bob Cochrane (O&G Exploration Geologist), & Charlie Fairbanks (4th generation owner of the Fairbank Oil Properties with its continuously operating oil field since the 1860's). Depending on the # of attendees there may be a bus or van to transport us around. (Those who want more information on Petrolia/Oil Springs can visit www.petroliadiscovery.com/.)

MEET AT: The **Tourist Information Center** parking lot on the Ontario side of the 'Bluewater Bridge' near **Exit 1** on Queen's Highway 402. **Bring a pictured ID for Customs.**

REGISTRATION FEE: \$35.00 for food at breaks, a box lunch, and admission fees at The Oil Springs Museum & Petrolia Discovery. **For student's the registration fee will include the MBGS membership fee.** (We are all invited to stay for 'fish & chips' supper in Sarnia after the tour at our own expense.)

MBGS MEMBERS ONLY! (Our insurance carrier requires field trip attendees to be MBGS members.) Go to www.mbgs.org/membershipapp.html for a membership application and use me as a sponsor if you don't have one.

Please send the membership application with the \$25.00 dues attached.

DRESS & EQUIPMENT: Walking shoes, whatever the weather dictates, and your camera or video recorder.

PETROLIA, OIL SPRINGS, & FAIRBANKS FARM PETROLEUM HISTORICAL TOUR

NAME: _____

ADDRESS: _____

E-MAIL: _____ **TX#:** _____

Registration Fee of \$35.00 enclosed: Yes__ No__ I will pay at the Tourist Information Center__.

MBGS Member: Yes__ No__ Include membership application w/\$25.00 dues or bring it with you on the tour.

Please mail, fax, or e-mail this MBGS field trip registration by Friday 15 Sep 06

**TO: Len Espinosa, Forest, Mineral, and Fire Management, PO Box 30452, Lansing, MI
48909-7952; Fax# 517-373-2443, TX# 517-335-3248, E-mail espinosl@Michigan.gov**



MBGS Outreach

MBGS again has a number of packets of Michigan rocks and minerals to be given out. We purchase approximately 150 packets each year and they are available on a first come basis to members to be used for the outreach program. If you would like to request packets please contact Tom Hoane at 517-241-3769 or hoanet@michigan.gov.

MBGS would like to keep a record of our members outreach to the public. After you have given a presentation to a group (school class, boy scouts, etc.) please fill in the requested information and send to:

Tom Hoane, 1748 Danby Lane SE, Grand Rapids, MI, 49506, or hoanet@michigan.gov.

MBGS Geological Outreach Form

Name _____ Date of Talk _____

School/Location _____ Grade/Age _____

Number of people/students _____ Amt. Time _____

Handouts Given _____

Title/Other Info _____

The following is a note from the folks at the Michigan Basin Core Research Laboratory regarding MBGS recent donation of \$500 to their building fund.



William B. Harrison, III
Director
G. Michael Grammer
Assistant Director
David A. Barnes
Robb Gillespie
Professors
Linda K. Harrison
Administrator

Michigan Basin Core Research Laboratory

Department of Geosciences
Western Michigan University
Kalamazoo, MI 49008-5241
Fax: (269) 387-5513
Phone: (269) 387-8633
Email: Harrison@wmich.edu

August 12, 2006

Michigan Basin Geological Society
c/o Mr. Thomas Hoane
1748 Danby Lane SE
Grand Rapids, MI 49506-4823

Dear Tom and all our friends at MBGS,

We are so grateful for your Check for \$500 for the new building. Support from our colleagues and old friends means so much to us.

We have been remodeling the building and moving cores here all summer. We are about to start bringing in the huge collection from the University of Michigan. We hope to have everything here and in place for the open house and dedication.

We'll be sending out official invitations in the next couple of weeks, but I want to let you know early that we plan a building dedication and open house for Friday, October 13 at 11:00. We'll have lunch at noon, followed by tours from 1pm to 4pm. We hope you can be here. We wouldn't be here without your support.

Best regards,

Bill
William B. Harrison

Linda
Linda K. Harrison

Thanks so much, Tom!

**Michigan Chapter
American Institute of Professional Geologists
MEETING ANNOUNCEMENT**

September 21, 2006

Michigan's New Water Withdrawal Law, The Inside Story

Featured Speaker: Mr. Jon W. Allan

Manager of New Generation at Consumers Energy

Location: Tony Ms Banquet, 3420 South Creyts , Lansing, MI (Map attached)

Cost: Students \$25.00, Members \$35.00, Non-members \$40.00

Dinner: Buffet - Choice of Prime Rib, Lasagna, or Pasta Marsala, garlic roasted red skin potatoes, California blend vegetables, salad, bread, coffee, tea, and choice of cheesecake or chocolate cake.

Time: Cash Bar 5:30-6:30 PM, Dinner 6:30 PM, and Speaker 7:30-9:00 PM

Space is limited

Guest Speaker: JON W. ALLAN is the Manager of New Generation at Consumers Energy. In this role, he is responsible for programmatic leadership of a number of planning and policy-based initiatives associated with the analysis and development of new generation assets within the Utility. Most recently he was Director of Environmental Services, Land and Water Management for Consumers Energy Company and also Department Head of the Company's Analytical Chemistry Laboratory. He has worked on many water-related issues with the Michigan Chamber of Commerce's Environmental Quality Committee and is a past chairman of this Committee. He was also a member of the Great Lakes Fisheries Trust for a number of years. Jon currently serves as the utility representative on the Advisory Committee to the Water Management Working Group of the Annex 2001 implementation program, is Co-chairman of Michigan's Groundwater Conservation Advisory Council and is the immediate past Chairman of Michigan Environmental Laboratory Association. He has previously worked for the Institute for Environmental Toxicology at Michigan State University. He has taught a number of courses over the years in ecology and natural sciences, environmental impact assessment and marine biology at Michigan State University, Lansing Community College and for the Philadelphia Academy of Science. He holds an undergraduate degree in Fisheries and Wildlife (Environmental Education), a Masters Degree in Zoology (Aquatic Ecology) from Michigan State University, and completed substantial additional post graduate work in Resource Development and Environmental Policy also at MSU. He is a published author on topics principally related to wetlands, stream ecology and fisheries.

RSVP: Sara Pearson, at pearsons@michigan.gov or (616) 356-0253 no later than September 11, 2006.

Michigan Basin Geological Society Dues Notice

Please fill out this form when paying your dues for 2006-2007. Dues are \$25.00 for active member and \$10.00 for students.

Name _____

Address _____

Phone _____

E-Mail _____

Amount enclosed _____

Send Newsletter by e-mail _____ or Mail _____ @ address above

Make check payable to: MBGS

Send to: Tom Hoane
1748 Danby Lane SE
Grand Rapids, MI 49506