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Alan E. Kehew
Professor and Chair

Greetings All,

It is time once again to bring you up to date on the activities of the Geosciences Department. In retrospect, it has been a difficult year for us in the department because of the loss of our longtime secretary, Bev Britt, and the ongoing illness of Lauren Hughes, of the Groundwater Education in Michigan Center (GEM). Bev passed away suddenly in April from complications arising from diabetes. Bev was a fixture in the main office for fourteen years and her absence still feels very strange to all of us. A fund has been set up in the Foundation in her name if you should wish to recognize her service to the department. Lauren has been ill for the past year and we are hoping that she will be able to return to work in the future.

We have been extremely fortunate to find an excellent replacement for Bev in Kathy Wright, who previously worked as an administrative secretary in the Math department. Another change in our office staff occurred in January, when our other secretary Kathleen Keckler left us for an administrative secretary position in the History Dept. Kathleen was replaced by Ginger Cowling, who came to us from the Kalamazoo Public

School District. In December, Ginger decided to return to KPS, and her replacement is Beth Steele, who previously worked in the Physics Department for seven years. I am sure that Beth will be a great addition to the department. If you have any need to contact the department, I am sure that you will find Kathy and Beth as helpful and efficient as we have found them to be.

This last transition is the reason that this newsletter didn't get out on time this year. It was not completed when Ginger left so we had to postpone it until after the first of the year. We hope that you received the short holiday update that was mailed out in the interim.

Fall semester marked the arrival of our new faculty member, Carla Koretsky. Carla will strengthen the geochemistry area of the department and will also teach mineralogy. You can read about her interests and background later in the newsletter. Carla exemplifies the exceptional quality of the recent faculty hires that we have made the past several years. Our new faculty will definitely keep the department in good shape in the years to come.

Also joining us this year is John Luczaj, who is a replacement for Dave Barnes, Chris Schmidt, and RV Krishnamurthy, who are spending all or part of the year on sabbatical. John has a wide variety of interests, several of them involving the geochemistry of dolomite.

Overall, the department is in very good shape. Our undergraduate hydrogeology enrollments are down due to a perceived decrease in job opportunities. I say "perceived" because we often get calls looking for entry level hydrogeologists, for which we have no one to recommend. This decline in majors has been partially offset by a dramatic increase in the number of earth science teaching majors over the past few years. Our graduate enrollments have

shown some declines but are still very strong. We have now graduated about 10 PhDs since 1991, and all of them have been able to find employment in academia, consulting or post-doctoral appointments.

On a personal note, my activities are pretty much the same as they have been over the past few years. I actually finished my textbook, *Applied Chemical Hydrogeology*, which was published by Prentice-Hall and have vowed never to venture into textbook writing again. If I was not brain dead before this experience, I certainly am now. I gave a talk at the Groundwater 2000 conference in Copenhagen last summer, which was a nice diversion. I am also continuing work on bluff recession with Ron Chase and glacial mapping in Van Buren County with several very talented graduate students. Administration has taken a much greater chunk of my time through our office staff transitions, and I am very anxious to spend more time on research in the coming year. At home, wife Kay and daughter Liz are well. Kay keeps the household running smoothly and enjoys trading stocks on line. Liz is a high school junior and developed an interest in forensics last year. She made it all the way to the state tournament and came in second in the state ninth and tenth grade informative category. Those of you who had me in class will know that she didn't get her public speaking skills from her old man.

We are very anxious to publish your personal or professional news in the newsletter next year, so please drop us a line. And to those who sent a contribution to the department last year, we are deeply grateful.

faculty news



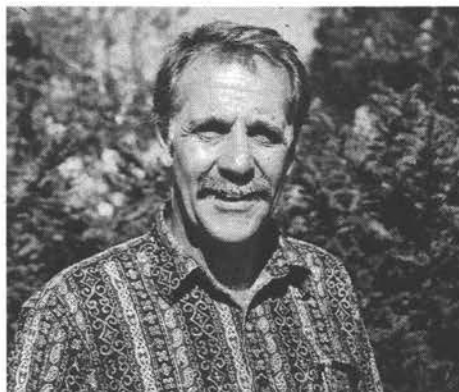
Estella Atekwana

Greetings to all alumni and friends! This year sure went by very fast. It has been a busy and productive year for me. In the Fall and Winter, I resumed my regular role of teaching Introduction to Geophysics (Geol 560) and Earth Studies (Geol 100). Bill and I co-taught the Field Geophysics course this spring. It was an excellent class and our students got real hands-on experience in the use of the different geophysical methods. Projects ranged from subsurface investigations at two former refinery sites to glacial geology mapping. I believe we now have one of the best-trained environmental geophysics students to be found.

I also went back to Botswana in June to attend Kapvaal Craton meeting and presented some of my tectonic work on the Limpopo belt in southern Africa. The Kapvaal project is a multidisciplinary effort funded by NSF with PI's from Carnegie, MIT, many of the universities in South Africa, and the University of Botswana. It was a very productive meeting. Our paper on the Limpopo is completed and will be submitted to Geology. Check the October issue of Geology for my work on the Okavango Rift basin in NW Botswana. We continue our work on microbial influences on geophysical signatures and have been fortunate to obtain funding from NSF to complete a pilot study. This study is multidisciplinary involving two students from Geosciences, Dale Werkema (geophysics), Franklyn Legall (geochemistry/isotopes), and one

student from Biological sciences. We hope to provide a better understanding of the role of microbes and geochemistry on changes in geoelectrical signatures observed at many hydrocarbon contaminated sites. Our paper from the field studies at Carson City was presented by Dale at a national environmental geophysics meeting in Arlington, Virginia this winter and won the best paper award.

On the home front, the kids are growing fast. Seven-year old Kyra is now a third grader, while Kyle is in fifth grade. Baby Kyne is now a three-year old preschooler. Of course he doesn't like to be called a baby and insists he is a boy and not a baby. Eliot continues to work at Indiana University-Purdue University at Indianapolis and comes home most weekends.



Dave Barnes

Hello to all old friends and interested students! I am in the midst of a sabbatical leave (academic year 2000-2001) and enjoying the scheduling freedom that this allows. The main thrust of the sabbatical leave is to develop computer systems in our department for the management, analysis, and display of geological data with a spatial component. I'm sure that you are all aware of the major changes in our science that have been brought about by the information age revolution driven by the mind-boggling development of computer systems. Hand in hand with computer hardware developments is the development of

"spatial technologies": the use of computer systems for study of spatial data, especially large numerical or digital data sets. Geographers have spearheaded the use of these new technologies mainly in the form of Geographic Information Systems (GIS) and geologists are working to make use of these sophisticated (hardware and software) computer systems for geological applications.

I hope to develop a computer systems approach to a wide range of geological studies that involve spatial data, which is useful for both our departmental academic curriculum and departmental research activities. This is a real challenge since these computer systems can be both expensive and complex.

I am fortunate to be involved in a DOE funded research program, with Bill Harrison as co-PI, and have the opportunity to develop computer systems applications in conjunction with the objectives of the project (see Bill's newsletter blurb). At present we are working with a suite of software including ArcView, Rockworks99, Logplot, and a couple other packages to these ends. I should have a departmental server up and running with network installation of important software tools. This in the expectation of delivering software systems for department-wide access and use in both class teaching and research activities. Please drop me a line describing your experiences and suggestions for this ambitious undertaking!

I have also developed a renewed interest in Michigan basin petroleum geology! We are interested in investigating the influence of hydrothermal dolomite reservoir facies (HTD-RF) on petroleum geology in Michigan. A few of us attended a recent short course on this topic and were struck by the relevance of new models for HTD-RF in Michigan, especially in the Dundee FM and the Trenton-Black River. There seems to be a global association of Mississippi Valley Type mineralization (MVT), Sedimentary Exhalative (Sed-Ex) mineral deposits,

and fractured hydrothermal dolomite hydrocarbon reservoir facies. All this AND a possible association with deep clastic "aquifers" (i.e. St. Peter Sandstone) in many basins. Sound familiar to some of you?! Wait and see what we learn about Sed-Ex, MVT, HTD-RF, and the Michigan basin! You know the old saying, "Yesterday I couldn't spell carbonate petrologist, today I am one!"

As a final note, we will be hosting the AAPG Eastern Section Meeting in Kalamazoo next fall (Sept. 22, 2001). I will be the Technical Program coordinator (Sigh). We hope to see you at this meeting and I may put the touch on some of you for contributions to the program. The AAPG has a Division of Environmental Geology (DEG) so don't say, "I'm an Environmental Geologist" and hope to get off the hook!

All the best to old friends, drop me a line and share your experiences.



Dan Cassidy

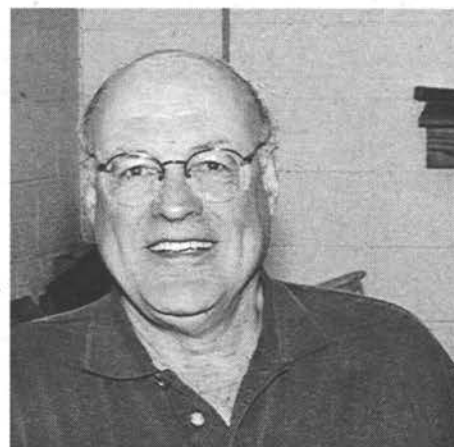
Hello to everyone! As I begin my third year in the department I feel very comfortable and productive. Besides being an enjoyable environment to work in (because of our students and faculty) the Department of Geosciences has provided me the opportunity to be an active researcher and an involved teacher. The new research facilities in Haenicke Hall have been put to good use by the undergraduate and graduate students in our department.

In addition to teaching Hydrogeology, I have now taken over the Soils course that used to be taught by Max Benne. I've changed the format of the course to include some basic soil mechanics and some biogeochemistry. I also teach courses in Remediation and Bioremediation Techniques for soil and groundwater. Developing these courses has been a challenge for me, but will hopefully provide a broader background and enhanced employment opportunities for our undergraduate and graduate students.

Duane Hampton and I have recently received research funding from the Michigan Department of Environmental Quality to work on stabilizing and remediating the PCB-contaminated sediments in the Kalamazoo River. This work is exciting because it draws from so many different disciplines and will provide a tremendous learning experience for students and for myself. I continue to do research on the production of biosurfactants by soil microorganisms in laboratory systems and in field samples from Carson City. Andrew Hudak, a Master's student, has done some very interesting work in this area. With Ahmed Murad, another Master's student, I have conducted laboratory investigations on the use of sodium dithionite and multivalent iron to dechlorinate various chlorinated organics.

This past year I had the opportunity to make presentations in San Francisco for the Fall AGU meeting, in Paris, France for the IWA Water 2000 conference and in Narbonne, France for the Sequencing Batch Reactor symposium.

I would love to hear from all you alumni about your professional activities, and would be particularly interested in learning of information that would support research and job opportunities for our excellent undergraduate and graduate students.



Ron Chase

I extend a fond hello to all geoscience alumni. My thoughts are with you often, particularly when I use your successes to demonstrate to prospective students the positive aspects of careers in geology. Please keep in touch by phone (616-387-5500) or by email (chaser@wmich.edu).

My life in our Department of Geosciences continues as a happy and busy one, as it has been for years. By most standards I am getting old, particularly since my 65th birthday is just around the corner. I feel blessed, however, with good health, a love of teaching, and a research program that seems to keep rolling along on more than one front. I continue to teach the same courses that many of you probably had while at WMU. In addition, I will teach a new course called "Slope Stability Analysis" this coming winter in deference to my rather new interest in the structures and dynamics of slumps along the Great Lakes coast. My teaching highlight this past year was the WMU Alumni Association Outstanding Teaching Award for 1999. For all of you who had a hand in this award, thank you! As you probably know, there are others in our department who are also equally or more worthy of this honor.

Most of my research time is devoted to the investigation of slope hazards along the Lake Michigan shoreline bluff system. A project conducted by Al Kehew and myself and

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funded by the U.S. Army Research Office has been concluded, two publications are in press, a third is submitted and in review, and two papers are nearing the stage of submission. We have found that the bluffs collapse systematically by propagation of folds above upward-climbing normal faults, that the collapse is very predictable given a brief period of displacement monitoring prior to collapse, and that bluff movements are most prevalent during winter months when surface freezing prohibits the release of ground water at bluff-face seeps, thus creating high pore pressures that weaken the soil. Now that we have gained insight into the causes and mechanisms of slope movements, the next step is the development of a technology that will stop the movements without destroying the bluffs or the beach. Al and I have suggested a method of ground-water remediation that we will test during the next five years with support from the U.S. Army Corps of Engineers. We intend to pump water from shallow wells in the slump blocks at periodic time intervals to relieve the high pore pressures that develop during the winter months, then carefully monitor the results. In addition to my involvement in this bluff movement stuff, I have not lost track of the northern Rocky Mountains. I plan, along with two research colleagues at other universities, to examine the isotope systematics of a series of granite dikes, stocks, and one batholith that reside in the overthrust belt of the Sapphire Mountains of Montana, if funding can be obtained. The purpose is to examine the sources and history of inboard continental magmatism that accompanied thrusting during the docking of North America with Wrangellia.

The Chase family, consisting of one lovely wife and four boys, continues to move along at a steady pace as its members pursue their respective careers. Chris is still teaching Adult Education Social Science classes in the Comstock school system. Karl is now a Corporate Sales Manager at the

Watertown Westin Hotel in downtown Chicago. Andy is still a webmaster in Seattle where he currently designs on-line data-management systems for the Kaycee Foundation, a non-profit agency that places foster care children. Scott is a recent medical school graduate (Barry University) and in his first year of a three-year surgical residency at Botsford Hospital, Farmington Hills, MI. Jamie is a recent law school graduate (Georgetown University) and in his first year of a two-year clerkship at the Rhode Island Federal District Court in Providence. I feel truly blessed with an unwavering enthusiasm for teaching and research, a great group of colleagues to work with and a wonderful family that my wife deserves most of the credit for. I have no plans to retire in the near-future.



Duane Hampton

This has been a year of endings and beginnings for me. I have a paper appearing in the fall 2000 Ground Water Monitoring and Remediation (GWMR) which represents the culmination of contaminant transport modeling over the last decade with several graduate students. I am also presenting a paper at a conference in November, which summarizes the work my students and I have done over the last decade using hydrophobic gravel packs in hydrocarbon recovery wells and trenches. This isn't quite an ending for me, because I suspect I will rewrite it for submission to GWMR next year. Also, I have begun, in tandem with Dr. Cassidy, to work in a new research area - remediation of contaminated sediments.

Indeed, Dan and I were awarded grants to work on this topic from USEPA and from the Michigan Department of Environmental Quality—Great Lakes Protection Fund. This is both exhilarating and humbling. It is exhilarating because the ideas Dan and I are pursuing have great potential and that potential has begun to be recognized. It is humbling because we have a tiger by the tail. There is a lot for us to do to adequately test the new remediation techniques we have proposed for PCB-contaminated sediments in rivers and lakes. One of the techniques is to cover these sediments with a permeable geotextile fabric which will allow the river bed to continue receiving groundwater recharge. The geotextile cover would be anchored against erosion using a layer of sand and gravel. The cover's main purpose is to prevent biointrusion and subsequent biomagnification up the food chain. The other technique we will study is to inject ozone and/or a proprietary chemical amendment (BIOX) underneath the geotextile and accelerate the biochemical transformation of PCBs in situ. We think these two methods in concert can replace dredging and disposal (incineration and/or land filling) of contaminated sediments. We are aware that other contaminants such as metals will also need monitoring as we deal with the PCB's. This research should keep us busy for a while.

Although I haven't gone through a midlife crisis, I have noted some age-related changes recently. My children, ages 16 to 23, bracket the ages of most of my students, since I am now teaching Geology 100. My eyesight is such that I now read wearing glasses. When Andy Kozlowski talked about having a Geosciences basketball program starting next semester, I groaned and sighed rather than jumped for joy. But I am happy to have a son-in-law and a granddaughter added to my family circle in the last few years, and for my other daughter to have a boyfriend. So life is good. I hope you are enjoying it as well.



William Harrison

During 1999-2000, Dr. William B. Harrison taught the Historical Geology, Evolution of Life, and Invertebrate Paleontology classes. He also continues as Director of the Michigan Basin Core Research Laboratory and the Michigan Office of the Petroleum Technology Transfer Council. The PTTC program is partially funded by the U.S. Department of Energy for \$25,000 per year. Funding is contracted through the end of 2000. The Petroleum Technology Transfer Council is a nation-wide organization, partially funded by DOE to enhance communication and apply technology to improve domestic oil and gas development. The Michigan office is housed in the Michigan Basin Core Research Lab with Harrison as its Director. Linda Harrison is the Administrative Assistant.

This is the beginning of the third year in a 3-year, \$114,000 DOE joint study with Michigan Tech to evaluate the role of fractures in Michigan oil and gas reservoirs. Harrison also received a new grant for a 3-year project to evaluate the potential for additional oil recovery from old Dundee fields in the Michigan Basin. It is a DOE funded project that is a joint study with Michigan Tech. University and Terra Energy Corp. in Traverse City. The Project is funded at \$325,000 and will also involve Dave Barnes as a co-investigator.

Harrison traveled to a DOE/SPE conference on enhanced recovery technologies in Denver to make a

presentation on the first year results of the D.O.E. sponsored research on Improved recovery from old Dundee fields in Michigan. He also traveled extensively throughout Michigan to visit oil and gas operators and attend meetings of the Michigan Oil and Gas Association, the Society of Petroleum Engineers and the Michigan Basin Geological Society. The A.A.P.G. Annual Convention was held in New Orleans this year. It was a wonderful convention hinting that the oil and gas industry may be getting back on its feet. Harrison visited with several departmental alumni.

Harrison was busy with public relations this year, doing several radio spots, and news interviews about the current energy crisis and oil and gas prices. He was also featured in the Fall issue of WMU's alumni magazine.

Harrison and his wife Linda traveled to Germany, in the Spring. There was plenty of interesting geology as well as great panoramic scenery to see along the vine-covered banks of the Rhine and Mosel Rivers. Linda has also traveled to Germany and Switzerland.



Michelle Kominz

Greetings friends and alumni of the Western Michigan University Geology Department. I've now been at WMU long enough that some of you might even have had me in a class or at least seen me in the hall. This fall I became the department's "graduate advisor." I discovered that this means that I am in charge of the paper work for all of our Master's candidates, now

even more of you will remember me (fondly??? in the future).

Last fall, I taught my graduate class in Quantitative Stratigraphy. As oil prices go up and, consequently, the job market in the oil industry improves, I'm sure that many of our current students wish they had joined the 4 stalwarts who took on this basin analysis class. I continue to enjoy interacting with the non-science undergraduates by teaching large enrollment oceans systems classes. This semester they have changed the call number to 322 from 222, thus reducing the number of freshmen enrolled. To date, winging is down a little bit. Stay tuned.

Over the summer, I taught my earth science/education course, "Our Earth, A World of Change", for the third time. This year I had the pleasure of staying home and teaching in our new labs in Wood Hall. Great facility! With the aid of a Ph.D. student, Andrew Kozlowski, we had a successful field trip to a glacially derived (what else) gravel pit. That was supplemented by multiple field trips to Rood Hall, including our Museum and our "rock garden." A good time was had by all.

Spring and summer included a couple of talks in Ohio as well as trips to New Jersey and to Austin, Texas to give talks and interact with scientists working on modern passive margins. It seems that I am the sea level "expert" since not only does my research seem to consistently center on the subject, but now I'm being asked to write encyclopedia articles on it. Oh dear, I must be getting older. GSA Bulletin editors keep asking for more trivia (e.g., key words) regarding my latest manuscript, on third order sea-level, so any day now I expect to actually see proofs.

My down-hill racing at Timber Ridge remains a highlight of the past year. I no longer am concerned about sunshine in the winter, my concerns are centered on maintaining our base of snow. Hard work resulted in improved times and I didn't break anything, so it was another successful season. While

faculty news

I miss the separate facilities for faculty and staff, aerobics and weight lifting at the Rec. Sports center with the WMU student body is both fun and challenging. Jogging, biking and an occasional set of laps in the Gabel pool continue at a slow pace. Finally, if you visit me in my office, watch your head. The chin-up bar is murder on tall students and colleagues.



Carla Koretsky

Hello friends and alumni! You probably don't yet recognize my name, which is because I only arrived in the department in August 2000. I'm very pleased to be here at WMU, and I'm looking forward to a fun, if frenetic year of teaching Mineralogy and Rocks and Minerals, setting up my new aqueous biogeochemistry lab in Haenicke Hall, and getting my research program going. I am especially happy to join the Geosciences department, because WMU has hired my husband, Johnson Haas (also a geochemist!) in the Chemistry department. Thus, after four years of living apart and commuting between cities, we are delighted to have purchased a house near campus and are settling into the Kalamazoo community.

Before arriving at WMU, I was a research scientist in the Earth & Atmospheric Sciences Department at the Georgia Institute of Technology (GT), in Atlanta. At GT, my research focused largely on the biogeochemistry of redox-stratified saltmarsh sediments. In other words, I spent a good deal of time slogging through humid, bug- and

alligator-infested, saltmarshes at Sapelo Island, GA. In spite of the bugs and gators, Sapelo Island is a wonderful place to do fieldwork and is an amazing example of a nearly pristine barrier island. At Sapelo, I worked closely with a number of researchers in other disciplines, in particular with Tom DiChristina and Charlie Moore, both microbiologists at GT. Crossing discipline boundaries has proved interesting and fruitful; together we have discovered a number of unexpected microbiological geochemical feedbacks in the marsh. I also continue to collaborate with my former postdoctoral advisor, Phillippe Van Cappellen, and his group at Utrecht University in the Netherlands. We have just begun a long-term project to study marshes in Belgium and the Netherlands, which are considerably more impacted than the beautiful Sapelo Island marshes. In addition to travel for field studies, I had some great opportunities for international travel to conferences such as the American Society of Limnology and Oceanography (ASLO) conference, which, strangely enough for an American Society, was held in Copenhagen, Denmark. Then, in September, I was lucky enough to be able to present another paper at the Goldschmidt (Geochemical Society) meeting in Oxford, England.

I am looking forward to establishing an aqueous geochemistry research group here at WMU, so that we can take advantage of the fantastic facilities in Haenicke Hall. I'm also on the lookout for some muddy-marshy places to do fieldwork that are a little closer to home than Georgia or Europe. I have plenty of good candidates in the area, so I should be back in the mud soon enough! If you find yourself visiting the department, please feel free to stop in my office (next to the elevator in the 1st floor of Rood) and introduce yourself.



John Luczaj

Hello to everyone! As a new member of the department in 2000, I'd like to thank everyone for the warm welcome that I've received. It has been a great semester so far, and I am looking forward to the future with great anticipation. I am trying my best to fill the shoes of Dr. Barnes while he is on sabbatical leave this year (big shoes).

I have spent the last several years in Baltimore, Maryland working on my Ph.D., as well as teaching. During the last year (1999-2000), I shared a similar role as a Visiting Assistant Professor at Towson University while I finished up and defended my dissertation. My Ph.D. research involved investigating the history of water-rock interaction on the western side of the Michigan basin in eastern Wisconsin. I detailed the extensive hydrothermal system that operated there and was responsible for massive dolomitization and sulfide mineralization in the region. Having had the chance to do research on the Michigan basin, I'm excited about the prospect of expanding that work with Dr. Harrison and Dr. Barnes here at Western. I have several ideas for continued work on water-rock interaction in the basin relating to diagenesis and petroleum geology.

I'd be very happy to hear from alumni or current members of the department that I haven't already met. I wish everyone a great year!



William Sauck

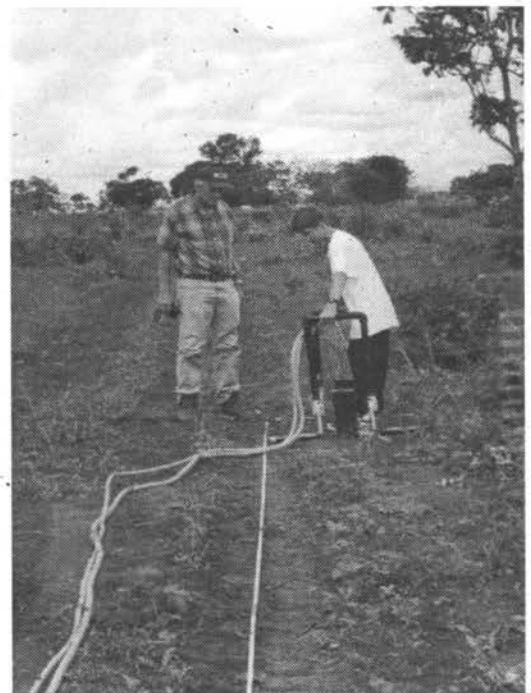
Fall semester, 1999, was the beginning of my "Summer" break, our first experiment with an "Alternate Academic Year" contract, which kept me busy with Winter classes, Spring and Summer field courses. In late September, I received a contract (\$42K) from the MDEQ, Drinking Water and Radiological Protection Division, from the Abandoned Well Management Program. This was to demonstrate which types of geophysical equipment and methodologies could reliably locate lost or abandoned well casings buried 1, 4, and 8 feet deep. I spent many of the fall weeks at the Asylum L. Geophysical Test Site with Adrian Ezeagu and Justin Bailey working on that project. It also involved a series of blind tests in December at the former Wurtsmith AFB, where we successfully located all hidden wells on four sites they had demarcated. Winter term was kept busy with Electrical Methods, and trying to catch up with quite a few graduate student projects. Winter term also included a trip to Arlington, Virginia, for the annual SAGEEP meeting. The Geophysics group was well represented there with two faculty and three graduate students giving papers.

March was busy with in-state meetings: presentations at the MI Academy of Science in Saginaw, at the

Great Lakes Regional Geology Conference (MDEQ & USGS) in Lansing, and a presentation of the MDEQ Abandoned Wells project results, also in Lansing. At the end of April, my oldest daughter, Christine graduated from the University of Michigan with a BS in Psychology. Carolyn finished her second year in the Engineering College, also at the University of Michigan. Needless to say, there was a big party for Christine. In early May, I went to Tucson to help an old friend with a project in Western Arizona. Also, in May, I helped the Field Archeology course for a couple days, and they helped to install numerous "targets" typical of remains from colonial-age settlements in a 10m by 40m area at the Asylum Lake Geophysical Test Site. At the end of May, I presented an update paper on underwater GPR at the International Association for Great Lakes Research Conference at Cornwall, Ontario. The Spring Field Geophysics course was taught locally with 4 enthusiastic and hardworking graduate students (all from Africa). We did projects at Asylum Lake, the former Lakeside Refinery, the former Crystal Refinery in Carson City, and a very interesting profile across the Kalamazoo River valley north of Parchment. These results will be the basis for several papers and stimulation for several theses. The Hydrogeology field course filled, and all 6 modules were taught with enrollments between 13 and 22 students, including 6 who were non-WMU students. We were happy to see several of our students placed into good jobs (Groncki and Bailey), and to see others continuing to impress the environmental industry with the value of high-resolution geophysics (Werkema in his own consulting business, and VanderEide at Envirollogic). On the downside, we learned that Estella has finally given up trying to convince WMU to hire her husband Eliot, and at the end of the year they are moving to Rolla, Missouri. Our

group and the department will surely miss them.

In mid-August we packed our bags (Elen has a fall sabbatical), and left for Brazil. Elen is doing extensive travel to meteorology research centers on 3 airpasses, the girls are in Sao Paulo doing internships and studying at the University of Sao Paulo, and Eric is in Belem, attending an Air Force school and re-learning Portuguese. I am in the middle, writing this from my desk in the Laboratory of Applied Geophysics, Institute of Geosciences, University of Brasilia. They have a strong group in geophysics (5 Ph.D. faculty), and impressive facilities in the rest of the Institute (3 departments). So far, I have seen at least 5 mass spectrometers and an electron microprobe. Geochronology runs 3 dating methods. There is also a fluid inclusions laboratory here. Brasilia is a beautiful city to live and work in, and the climate is great. I'll save the rest of the Brazil story for next year's newsletter.



Dr. Sauck and his son, Eric, mapping the subsurface distribution of a diamond-bearing boulder conglomerate in the north of Minas Gerais state (Brazil).

groundwater education in michigan news



Charles (Chip) Barr

...is, during 2000-2001, facilitator for the grant-funded Kalamazoo River Watershed Project through the Groundwater Education in Michigan Regional Center. A Kalamazoo native, I have experience in tracking legislative and regulatory programs that shape environmental management at several levels of government, and was the Lansing-based communications Director for the Michigan Environmental Council, a nonprofit citizen-group coalition, in the 1980s. I did my undergraduate work in history and biology at Yale College, and studied environmental policy analysis at the University of Michigan, where I also worked as research associate in cognitive and planning sciences. I have fond memories of summer jobs in my "salad days" at a Biological Station Limnological lab and a Rocky Mountain cattle ranch, too, and have an appetite for oriental cooking and road trips to Chicago.

GEM's Kalamazoo River Watershed project, which is moving ahead in cooperation with the GIS Research Center in Geography, will develop a systematic approach to public education of watershed-related issues, including land management and storm water management. Kalamazoo River watershed atlases will be distributed with knowledge to support their interpretation and use. An education strategy will be crafted in partnership with community institutions with a

stake in watershed work or environmental education, while reviewing and evaluating other watershed initiatives. G.E.M. staffers are also carrying out the initial phase of developing a data information center for the Kalamazoo River watershed. This includes developing a strategic plan for long-term sustainability of such a center. The Geography department will produce Kalamazoo River watershed atlases that give perspective on the entire watershed, on sub-basins, and on individual governmental jurisdictions.

Michigan Core Research Lab

The Michigan Basin Core Research Lab continues to act as a repository for Michigan Oil and Gas data. Additional collections of well reports, logs and cores were added in the past year through donations from several companies and individuals. The wireline log collection is catalogued into an Excel spreadsheet and is available on line through the PTTC website listed below.

The lab is in its third year as the Michigan Office of the Petroleum Technology Transfer Council. It is a DOE funded nation-wide organization that acts as a liaison for information and technology transfer to oil and gas operators in the state. This office was established in March, 1998 and will be funded for several years. Two industry workshops were held this year. Dr. Dietmar Schumacher presented a day-long workshop on the "Recent Advances in Surface Geochemistry" and Dr. Bruce Langhus presented a day-long workshop on "New Technology in Downhole Water Disposal."

The PTTC website has been recently updated and has much new information about Michigan petroleum geology. Linda Harrison is assisting Dr. Harrison in running the Office. An extensive file of new

petroleum technologies is maintained at the office. Anyone interested in the PTTC activities should contact the office at (616) 387-8633 or visit our web site at: <http://www.wmich.edu/geology/corelab/pttc.htm>

Visitors continue to come to the Lab to look at core and data. Cores in the Niagaran Reef Play and The Devonian of the Central Basin are still of interest to visitors

New data is continually being posted on the web site. Catalogues of Cores, Wireline logs, Core Analysis data, Cuttings collections, and searchable data bases for production well and lease data are now available online.

Numerous new cores have been added to the Lab's collections, including a thick pinnacle reef section in Oceana County, several Devonian wells from the central basin, Test cores from the Gypsum mine in Grand Rapids and several wells from the Stony Point Field (Trenton/Black River).



Natalie Williams examining a sample at the Core Lab

graduate student news

Delwar Ahmed PhD Candidate

My research project concerns the natural attenuation and biodegradation of a specific group of volatile organic compounds (VOC's), such as *ketones* comprising of *acetone*, *2-butanone (MEK)*, *4-methyl-2-pentanone (MIBK)*, and other alcohols like *tert-butanol*, in the leachate coming out of West KL Avenue Landfill Site, in Kalamazoo, Michigan. My research goal is to formulate a way to predict the contaminant pathway based on the complex geology that we have here, and on the basis of hydrogeochemical zonation that is showing up in the vertical hydrogeochemical profile of the groundwaters in the subsurface.

Brian Bird PhD Candidate

Hidy ho all. Still working on glacial mapping. I will continue to collect some data this summer. I'll be mapping the Lawrence Quadrangle. We're planning on another roto-sonic bore this summer, this one will be in the Paw Paw River valley near Lawrence. Hopefully, I'll have a handle on writing my thesis in the near future. I've been conducting many tours of the museum recently and have a few more in the near future. I am getting married July 8th. Hoping to go to Ireland for the honeymoon. All in all I'm in for quite a summer.

Kurt Carlson Master's Candidate

This is the start of my second year with the Geosciences Department and the beginning of working on my thesis project. My thesis will be on major cation and anion chemistry at Lakeside Refinery. As many of you know, the Kalamazoo Foundation was very helpful in providing a source of funding for my project. I suppose that means I will have to do a really good job! I want to see how the constituent's concentrations change from uncontaminated areas, through contamination and then downgradient from the plume. Major ion chemistry should be useful for monitoring water quality, site characterization and possibly for answering questions on

biodegradation. Some questions include: Which ions are being consumed and/or produced? How acidic is the water?

Outside of school, mountain biking, National Guard duties and bagpiping take up some of my time.

Andrew Kozlowski PhD Candidate

At present I am in my final semester of coursework and am preparing to dive in to an extremely busy field season. My dissertation project involves an investigation into the origin of the Central Kalamazoo River Valley. Geomorphic data suggests the valley formed as a result of a catastrophic outburst flood from the Saginaw Lobe of the Laurentide Ice Sheet. This summer I will combine drilling and near surface geophysics to resolve the stratigraphic composition of the valley and Kalamazoo Moraine to elucidate the Valley Origin. The U.S.G.S. EDMAP program and the NASA Michigan Space Grant Consortium have provided financial support for my project for the last two years.

Bonny True Master's Candidate

My thesis project involves studying the effects of karst features on the ground water-surface water interface in Presque Isle County, Michigan. Of particular interest is the temporal variation in water chemistry that occurs over large (annual) and small (storm event) time scales. I will attempt to determine this with dye tracing experiments and chemical analyses. Because this area contains characteristic features of a true karst terrain - sinkholes, swallow holes, and fractured bedrock, the ground water in this area is especially vulnerable. It is, therefore, important to try to improve the understanding of local ground water flow and the role of fractures on ground water circulation. And who knows, maybe I will discover the first significant cave system in Michigan!

Gerald Unterreiner PhD Candidate

My dissertation research is a study of nutrient and herbicide transport and transformation processes in surface water and shallow groundwater. This is part of the Nottawa Creek Watershed Project, Calhoun County, Michigan, of which my portion takes place on a private farm. The two-year study, which will conclude December of 2001, involves sampling 9 shallow water table wells, 2 streambed wells, 5 domestic wells, a stream, and 8 tile drains for major ions, nutrients, and herbicides. A grant awarded from the Geological Society of America has also provided additional research funds to trace nitrogen sources with isotope fractionation of nitrate-nitrogen and nitrate-oxygen.

Shannon Wong Master's Candidate

This is my last year at Western. This past winter and spring I collected till samples from the bluffs of the Lake Michigan Shoreline just north of South Haven. Who could ask for a better field area? I am now working with those samples in the lab. However my lab work is actually messier than my fieldwork was. I get to work with slurries of clay and silt and a Ro-tap Sieve Shaker that somehow makes me irresistible to grease. I hope to finish my lab work before the end of this semester and I look forward to being a part of the Geology Club this year.

William J. Jackson Undergrad, Senior

I am a teaching assistant for Dr. Harrison here in the Geology Department (Evolution and Invertebrate Paleontology). I also work under a PTTC grant for Dr. Harrison at the WMU Core Research Lab located in West Hall. I consider it an honor for the opportunity to be associated and instructed by the caliber of professors, colleagues, and personnel working in the WMU Geology department.

Upon graduation this spring, I intend to enter Graduate College (Master's Candidate Program) here at WMU. My thesis will be focused on micro-fossils and reef formations in the Michigan Basin.

2000

**Geosciences Department
Awards**

**Graduate College Research &
Creative Activities Award**

Andrew Kozlowski
Dale Werkema

**Graduate Student Teaching
Effectiveness Award**

M.S. -Jon Mollison
Ph.D. -Dale Werkema

Presidential Scholar
Eric Ruckert

Senior Honor Awards

Earth Science

Eric Cushman
Danell Panozzo

Geology

William J. Jackson

**Advisory Council Field Camp
Scholarship**

Andrew Kozlowski
Gerald Unterreiner
Shannon Wong

Kuenzi Memorial Scholarship

Andrew Kozlowski
Bonny True
Gerald Unterreiner

**Distinguished Student Service
Award**

Shannon Wong

**The Maryland Geological Survey
Internship**

Kelly Hanrahan

Chrysalis Scholarship Winner

Alice Mwanda

Tim Dellapenna, MS 1993

After leaving WMU, I attended the Virginia Institute of Marine Science, College of William and Mary, where I completed a Ph.D. in Marine Science in 1998. For my dissertation, I focused on modern strata formation and seabed mixing processes in two estuarine systems, the Lower Chesapeake Bay and York River. I was involved in a few other projects while there, including conducting field work on the northern side of Papua New Guinea, offshore of the Sepik River, a truly exciting experience. I moved back to Texas (I was here in the early 90's while working for Marathon Oil in Midland) in January 1999. I came to Galveston as a Post-doc with the Department of Oceanography at Texas A&M University (TAMU). TAMU maintains a campus in Galveston (TAMUG) which runs a variety of undergraduate programs focused on the ocean, including Marine Science, Marine Biology, Marine Engineering and a Maritime Academy. In May 2000 I became an Assistant Professor in a tenure track position with the TAMUG campus. I started this new position in September 2000, and am teaching Petroleum Geology, a seminar on Global Warming and global carbon cycles and I supervise three undergrads involved with independent research.

I have been involved in a number of research projects since coming to Galveston, I went to French Guiana in March to investigate the formation of offshore mud banks. On this trip, I also spent a week in Martinique and a few days in Puerto Rico. I also spent several days with colleagues from the Marine Biological Lab of Woods Hole; we were investigating bioturbation rates in the sediments of the Rowley River in northern Mass. In terms of on-going research, I am funded by the State of Texas to map the inner shelf along Galveston Island to investigate sand resources and coastal morphodynamic processes. We will be using ship-towed multibeam side-scan sonar and CHIRP high-resolution seismic systems for the mapping.

I am working with colleagues in College Station, investigating the formation of sedimentary furrows along the base of the continental shelf in the Gulf of Mexico, funding for this is coming from

Recent Graduates

Bachelor's Degree Recipients

Earth Science Majors

Cory A. Cunningham
Trapper J. Hallam
Mark E. Saurer
Amelia J. Schmid
Kimberly A. Shephard
Deborah R. Wilson

Geology Majors

Anthony D. Buccellato
Jacob L. Sarna

Master's Degree Recipients

Earth Science

Mohamed M. Al-Mahdi
Carol A. Baker
Ahmed Murad

Geology

Robert V. Brady
Russell G. Downey
William VanSickel

a variety of sources, including a Joint Industry Proposal. This work has lead to articles which will be submitted to Science and Marine Geology in the next few weeks, we have also been asked to write an article for National Geographic. I was on a 10-day cruise aboard the R/V Atlantis that included dives aboard the deep sea submersible Alvin. I am glad to hear that geology at WMU is still doing well. I am always looking for graduate students who are looking for an exciting challenge.

Jacob Sarna, BS, 2000

I am working for Professional Service Industries (PSI) in Plymouth as a Staff Geologist in the Geotechnical Department. I started June 1, and I have been enjoying myself since. I got married on June 16 to Kristen. She graduated from Western also but, unfortunately, she was not a geoscientist. She's still ok though!

Nate Fuller

Yet another year has gone by, and we finished another season with the theatre and started the next. The last three shows of the 99-00 season went well - 1940's radio hour, Barrymore's Ghost, and Tribute. We took Barrymore's ghost to regional competition and were invited to showcase it at State Conference.

Work is a large continuing part of my life but I find I'm wandering off into other areas. It looks like I will actually have my name on a couple of

fish papers that are going to be published. The need to go interdisciplinary is reaching everywhere. Work is still challenging and I'm in no real great hurry to get out. We are still doing enough boat work to keep me interested and also enough to not make me want a boat of my own. The interaction with other professionals is wonderful. A major change is a-foot next year with the section supervisor just telling us that he will be leaving. Who knows where that will lead.

In September I took another booked tour this time to Ireland. Highlights were the Cliffs of Mohr and the Giants Causeway. The most surprising things were the lack of all border control between the Irish Republic and Northern Ireland and the tropical plants in the southwest part of the country. The Guinness Stout was great and I tried to have enough to keep me for a year (it didn't work). I really liked southern Ireland. I don't think I will try to retire there, a bit too much rain, but I really thought it was a special place and so close to the rest of Europe. I still may consider it in the future. The economy of Ireland seems to be growing very fast so maybe if I am going to do it, I had better move quickly.

Kate (Wilson) Boeve

Kate is living with her husband, Joe, and their children in Quezon City, Philippines.

Sam Kitchin, MS 1993

I (along with my wife Margaret and sons Alex (7), Joseph (6), and Adam (1)) moved from Ludington to the Benton Harbor/St. Joseph area in November 2000. I accepted a job with Villa Environmental Consultants, Inc. (formerly Abonmarche Environmental, Inc.) in September 2000. I am one of two staff geologists (Eric Larçinese, company VP is the other). I do work with underground storage tank sites and also a variety of other things. Some of the other projects I work on are wetlands, phase I environmental site assessments, energy conservation, periodic surveillance for asbestos, and indoor air quality.

I lived in Ludington for 9 years. I worked in the environmental business for about 5 of those years. During the other years I worked as an accountant and operated my own painting business. Ludington was such a nice area to live that I was willing to work outside the environmental business. However, since my family was growing and jobs in Ludington don't pay very much, I decided to go back into environmental work. I'm glad I did. Villa Environmental is a great company to work for. Richard Villa, the president of the company, is an excellent leader.

I hope to gain certification with the State of Indiana or AIPG within the next couple of months. As soon as that's accomplished I can get on the State of Michigan's certified professional list for working on leaking underground storage tank sites.

Sounds like the geology department is continuing to flourish. Best wishes, and I hope to swing by the department next time I'm in the area.

Brian Shaw

I have been doing a lot of very interesting things in government service. As you might remember, I left the oil business about 9 years ago and joined the research staff at Pacific Northwest National Laboratory, one of the DOE multiprogram National Laboratories located in Richland, WA. I was transferred to Washington, DC about 5 years ago and have since been assigned to another government agency. I have been extensively involved in national security stuff, with a strong focus on science and technology and the environment. My current position is with the National Intelligence Council where I am Deputy National Intelligence Officer for Science and Technology. I am involved in a wide range of science and technology issues.

Roger Steininger

My consulting business is still alive and well, and now in its thirteenth year. My office is in Reno, Nevada. Most of my work is centered on mineral exploration in the western United States, primarily for precious metals. I am also on the Board of Directors of Apollo Gold, which is a medium size gold producer with mines in Nevada and Montana. I write the Western U.S. Exploration Review column of the Society of Economic Geologists Newsletter, which is produced quarterly.

Nick Stellavato

The Department was saddened to hear that Joseph "Nick" Stellavato passed away on July 18, 2000 in Las Vegas. Nick did a 2nd Master's in Hydrogeology at Western in 1993 and 1994. Since 1993, he was employed at the Nye County (Nevada) Nuclear Waste Repository Project, working with the Yucca Mountain high-level radioactive waste site. According to his colleagues, Nick made many technical contributions to that project.



Awards

Dr. Julie Stein

2000 Alumni Achievement Award Winner

The Department is very proud to announce that the 2000 Alumni Achievement Award Recipient is Dr. Julie Stein of the University of Washington. This award, presented to alumni of each department by the College of Arts and Sciences, is now in its third year. This award is especially significant because Dr. Stein was selected by both the Geosciences and Anthropology Departments. Julie received her B.A. from Western in 1974, with a double major in Geology and Anthropology. Since then, she has become one of the leaders, and indeed, pioneers in the interdisciplinary field of geoarchaeology. Research activities have taken her throughout the world and her many publications have been highly acclaimed. One of her best known research areas is the interpretation of shell middens (mounds). Julie has been a leader in the application of sedimentological and stratigraphical analysis to archaeological sites. Currently, Julie is a Divisional Dean in the College of Arts and Sciences at the University of Washington.

Early this year, Julie was inducted as an alumna into the new WMU chapter of Phi Beta Kappa. The Alumni Achievement Award was presented by Dean Elise Jorgens at a ceremony on October 20th in the Bernhard Center.

Geosciences Department Staff

Kathy Wright	Administrative Secretary
Beth Steele	Newsletter Editor
	Dept. Secretary
Sue Nap	GEM/IWS Secretary

Greetings from the Advisory Council. The Council met on October 20, 2000 during Homecoming weekend, and attendance was excellent. Thanks to everyone who came to this meeting. The Council supports the Geoscience Department through its meetings, and through national exposure to both the Geoscience industry and to the academic world.

The Council members were pleased to have Dr. Julie Stein, the 2000 Arts and Sciences Achievement recipient, visit our meeting. She received the award from both the Geoscience and Anthropology Departments at Western. Dr. Stein attended the morning session. She spoke of her experiences in the Geology Department at Western, and of her subsequent academic and professional work. She is currently a professor at the University of Washington.

The Council members also reviewed the activities of the Geoscience Department, and were pleased that the department had reviewed and accepted many of the recommendations made in the Undergraduate Curriculum Assessment.

The new Provost, Dr. Fred Dobney, was able to attend and present his vision for the University in managing the overall School academic functions. We all hope that his goal of meeting faculty vacancies and expanding student enrollments can be reached with support from the State legislature, and with donations to the University's fund raising campaigns. Dr. Dobney also expressed support for the role of organizations such as the Advisory Council in maintaining contacts with, and in obtaining feedback from Alumni and friends of the University.

The Council members had lunch with the faculty, and were introduced to Dr. Carla Koretsky, (Geochemistry). Her work, and recent studies in progress by other faculty members were presented to the Council.

The meeting was attended by: Paul Daniels, Tom Kamin, Robbie Seng, Hal Fitch, Doug Daniels, Tim Cowen, John Fowler, Bobby Glasser, Jeffery Hawkins, Mick Lynch, Dr. Lloyd Schmaltz, Dr. Thomas Straw and John Yellich.

Our next meeting is scheduled for April 6, 2001. The members of the Council look forward to meeting with the faculty and students.

John A. Yellich

donations for 2000

Your generous contributions to the department support a wide array of activities and we appreciate your help. We try to thank each donor, but as with all bureaucracies we do miss someone occasionally. If we missed you, please know that we rely on your support and will continue to make every effort to acknowledge your gifts. Please accept our sincere thanks.

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The Development fund is used to support a wide array of activities, including undergraduate scholarships, student travel, supplemental support for equipment purchases, student activities and a variety of projects for improvement of teaching and research in the Department.

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Geosciences Community 2000



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Middle row: Delwar Ahmed, Dean Schneider, Michelle Kominz, Gerald Unterrainer, Natalie Williams, Ginger Cowling
Front row: Gamal Abdel-Aal, Andrew Hudak, Shannon Wong, Bonny True, Estella Atekwana, Alice Mwanda, Greg Young, Sue Nap



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We are anxious to keep your current address on our mailing list and, therefore, ask for your cooperation in advising us if you move. Also, if you know of other alumni who do not receive this newsletter, please send their names and addresses, we would like to add them to our file.

Name _____

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Return to: Dr. Alan Kehew, Department of Geosciences, 1187 Rood Hall
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