Geosciences Newsletter - 2012

Department of Geosciences

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Dear Friends and Alumni

Geosciences, with its dedicated faculty, staff, active research programs, and state-of-the-art facilities, continues to attract students at the graduate and undergraduate levels. We have record graduate students (56) and undergraduate students (122) enrolled this year in our programs, up from 50 gradu-

ates and 114 undergraduates last year. This is all happening despite the challenges geosciences recently faced with Ron Chase retiring, Mike Grammer accepting an endowed chair position at Oklahoma State, and Carla Koretsky becoming the Associate Dean of the Lee Honors College. Moreover, Susan Grammer who championed our Core Kids program moved with Mike to Oklahoma. I want to first take this opportunity to thank Ron, Mike, Carla, and Susan on their phenomenal efforts, dedication, and sincerity. The department would have never been what it is today without their contributions over the years. To this date, they all continue to support the mission and activities of geosciences. We will forever remember their valued contributions.

The retirement or departure of our distinguished faculty presented challenges to geosciences, especially at a time when we are taking on the additional responsibilities of staffing and running the Michigan Geological Survey (MGS). A major concern, of course, was to find replacements to teach the classes. Summer was quite busy; five positions were advertised: mineralogy/petrology, sedimentary/stratigraphy, a director, a GIS specialist for the MGS, and a manager for Core-Kids. With the exception of the director position, all other four positions were filled. We were very pleased to have talented and dedicated researchers apply for these jobs and join the geosciences family. Dr. Joyashish Thakurta accepted the mineralogy/petrology position, Peter Voice the sedimentary stratigraphy position, Jeff Reicherts the GIS position, and Jeff Barney the Core-Kids position. Our new additions brought expertise, enthusiasm, and energy to the department and the MGS. Joyashish is teaching our mineralogy and petrology classes for our majors, general education classes for non-majors, and plans on putting the GEOS 1000 class on-line in the summer. He is heading the economic geology unit in the MGS, pursuing his research interests in Alaska, and is embarking on establishing an active economic prospecting program in the Upper Peninsula. Peter Voice is teaching senior level sedimentary classes, he designed and taught our on-line ocean system class for the first time, and is assisting Dave Barnes and Bill Harrison in their ongoing research. Only a few weeks after joining the MGS, Jeff Reicherts teamed with Alan Kehew and produced the first geologic map published by the MGS from its new home at WMU. Jeff tells me that he wants to bring together, as quickly as possible, a comprehensive collection of the geologic records for the State of Michigan and make it available to the community at large. Jeff Barney brings to the table expertise in geology and education. With Susan Grammer’s help, Jeff was able to pick up from where she left off and now he is developing additional modules, applying various assessment tools, and expanding the program to the Detroit area. All of these efforts will contribute to the growth and success of the Core-Kids program.

The MGS is doing quite well. Two units are functional, the subsurface geology unit headed by Bill Harrison and the surficial mapping unit headed by Alan Kehew. Three other units are getting off the ground: the economic geology unit headed by Joyashish Thakurta, data distribution by Jeff Reicherts, and outreach by Jeff Barney. Only with the support and efforts of the geosciences faculty and staff could we accomplish the necessary progress. They are dedicated to the success of the MGS. They formed a committee that meets every week to run the affairs of the MGS, in the same way they run the departmental affairs in the faculty meetings. In the selection of new faculty members to join geosciences, preference is now given to candidates who can advance the mission of the department and the survey as well. WMU has provided two-year funding for hiring a director and a GIS specialist for the MGS and we are now exploring all avenues to secure permanent funds that are needed to support the MGS following these two years. In this regard, Alan Kehew has been successful securing partial funds for the MGS from continued on page 2
the State mapping and coalition mapping programs. Likewise, our faculty continue to accrue considerable Research funds for the department. This last year our research funds were close to $700,000.

This has been another productive year for my research team. One of my students Mohamed Ahmed finished his Ph.D. Mohamed is a geophysicist interested in the application of space-borne geophysical methods. Using temporal gravity measurements (GRACE) over Africa, he was able to demonstrate for the first time that GRACE could be applied to relatively small areas and to differentiate between areas that are getting wetter from areas that are getting drier with time. He then found ways to relate these mass variations to climatic and man-made effects. Our research team gave over 15 talks last year in the GSA and AGU annual meetings, four of which were invited talks, two in Egypt, one in China, and the fourth at Wayne State University. We published an article in Geosphere describing our integrated approaches for groundwater exploration in arid lands and summarized our collective research on the Nubian Aquifer in NW Africa in a chapter of a book to be published shortly.

Our loyal alums continue to be a valuable resource that we can depend on to support and advance the missions of the department. Over the past two years, the advisory council members played an important role in expanding our research interests and capabilities in the general area of economic geology. They had good reasons for steering us in this direction. Mining is coming back to the Upper Peninsula and we, as the MGS, should be in the forefront of these activities. They are also laying the foundation for establishing a mineral trade association in Michigan that will work closely with the MGS to advance the mining mission in the State. I was recently approached by a faculty member from the Department of Biology at WMU who asked me how we manage to get our alums to be so supportive and dedicated to geosciences. My answer was, they are just a great group of individuals and we are lucky to have them on our side.

I continue to be a proud member of the family of geosciences, a department that continues to grow and excel on all fronts even when things seem to be going in the wrong way. Thanks to the faculty, staff, students, alums, and friends for their dedication. With their collective effort and wisdom they manage to make and opportunity out of a challenge. I am looking forward to seeing all of us get together in our spring banquet on April 19, 2013 at WMU, so mark your calendar, and please make time to come and meet our students and faculty.
Hello friends and alumni,

It is always interesting (and useful in preparation of our “official” professional activities report) to review the past year for the newsletter. The last several years have been very research intensive and much of my professional activity has been related to my own research and the supervision of a number of talented graduate and undergraduate students. This has been very rewarding and I am pleased that virtually all of the students working in and around the Michigan Geological Repository for Research and Education have found great things to do upon completion of their degrees, both undergraduate and graduate. Our department is very fortunate to have such a collegial group of students who know how to get ’er done AND enjoy this most precious time in most people’s lives, their college years.

First, I would like to acknowledge the students that I have worked with and who have done the heavy lifting in the course of our diverse research activities in the last year: Abrahim Abduslam (completed the MS), Amanda Walega (Haden) (completed the MS), Amy Manley (nearing the end of the MS), Beth Vanden Berg (deeply engaged in Ph.D. research), Bradon Vanderbeek (successfully completed and important undergraduate research project and admitted to the Ph.D. program at the University of Oregon), Earl Yetman (a bright new face in MGRRE), Jeff Halleck (a huge contributor to our team in the IT area), Jessica Szkody (a stalwart undergraduate research assistant now starting the M.S. program), John Sosulski (“the new guy” transferred from Illinois and deeply involved in his M.S. research), Josh Sampson (an energetic undergraduate working in the “patch”), Kate Pollard (our “go-to” but needs to “get done” M.S. candidate at the all-but-thesis stage), Nick Bull (highly motivated second year M.S. student), Shannon Towne (talented regional sedimentary geologist near completion of his M.S. degree), and Steve Zdan (also near completion and on the way to Houston M.S. student). All have been strong contributors to the collegial and profession environment at MGRRE and the research products that we have generated. I realize (as students move off to their professional careers) that we have access to an extraordinary pool of talent in the University (albeit for a limited amount of time) that is financially rewarded, in the geosciences professional world, at impressive levels that we can’t even approach while they are here. Thanks to all of them.

This fall I am assigned to be preliminary adviser for five new M.S. students: Earl Yetman, Joe Adducci, Kirk Wagonvelt, Kyle Cox, and Nate Wiersma. I look forward to much additional science and interaction with the talented fellows.

We are nearing the conclusion or have concluded many of the funded research projects that have fueled our program for the last several years. Much exciting geology has come out of these activities and it is now our challenge to get this stuff out with reports and publications. I can only encourage our recent grads to pester me to get those manuscripts going and encourage our current students to finish up and do the same. I have traveled to meetings and other professional activities and presented at several this year in; Chicago, Washington DC, Pittsburgh, Bloomington, and Indianapolis. I have exciting trips planned for Cleveland, OH (ES AAPG) and Kyoto, Japan (GHGT-11) this fall in addition to the annual Kentucky field trip that has become a real favorite for our sedimentary geology community. I have over 20 students in Sed-Strat this year and a number of other grads coming along. Pray for no rain.

I have participated in an interesting University advisory committee addressing campus energy/environmental planning to establish a program and timetable for a zero carbon footprint on the WMU campus. The President signed a document committing the University to zero carbon footprint and our committee was charged with determining how and how long it would take to do this. A very interesting cross disciplinary effort incorporating both academic (pointed headed professors) and staff (the do-it people on campus) contributed to a report to the President compiled by physics professor, Paul Pancella. Paul did a very professional job and we may do this by 2060 or something like that. The energy-environment picture is changing quickly in the U.S. and such long range planning is a guess at best although a worthy exercise.

We have had several important changes in our faculty this last year and I am sure that you will hear lots about that elsewhere in this newsletter. We welcome Peter Voice to the MGRRE community and look forward to his important contribution to teaching and research.

Best regards to all and I look forward to hearing from
any and all of you!
Dave Barnes

Robb Gillespie
Cheers to all alumni and friends.

Once again, it’s hard to believe another great year has gone-by.

I taught both sections of GEOS 3220 “Ocean Systems” this past year, and integrated them into the new “Desire to Learn” (D2L) on-line learning system. Homework and unit exams were all available on-line for the students to work on at their own pace (to a point). Clickers were used in class for lecture quizzes, although mid-term and final exams were still done the old traditional way in class. All this was graded and tracked by D2L, and real-time feedback and grades were made available to students throughout the semester. It all received very good reviews from the students, and with a few minor tweaks, primarily to address my grading concerns, the “Ocean Systems” D2L approach will be put back into service again this fall.

The GEOS 1500 “Geological Hazards and Disasters” course is more popular than ever. Andrew Macleod and Seth Workman did great jobs as teaching assistants for the course last year. We are anticipating an even greater enrollment for the course this coming fall semester, so the TAs are going to be busy.

Planetary Geology (GEOS 2500) was offered for the third time last spring semester. Andrew Macleod had to put up with me a second time last year, and taught the lab portion of the planetary course. Many of the lectures were revised and updated, and the webpage was greatly expanded. The unit exams were moved into the D2L system, and I’m hoping to move more of the class in that direction when it’s offered again next spring.

I’m still serving on a number of master’s committees, and all those students are making good progress. Peter Fuetz finished up his master’s thesis about the Trenton – Black River system, and is off working now. Jennifer Trout is close to finishing her fossil/core thesis. Jason Asmus and Seth Workman are making very good progress on their topics, and both have summer internships with oil companies. Shepanie Ewald has asked me to return to my glacial geomorphology roots and be part of her committee. She and Dr. Alan Kehew are coring Calhoun County this summer – so drumlins beware. It looks like I’ll still be busy for the next couple of years, no matter what. Tom Howe replaced Mike Durham as our department’s geotech. We knew Mike would be hard to replace, but Tom is doing a great job. He has been particularly helpful to me updating and getting ready for the GEOS 4380/90 field camp, changing over to a new computer and resolving all my usual ongoing computer issues (especially moving into the D2L environment). Once again, the Department of Geosciences is being well served. This was the fifth summer helped Dr. Ron Chase teach the GEOS 4380 “Field Studies in Geology” course. And, once again, it was a great time – great geology and a great bunch of students. But it was a somewhat bitter-sweet trip, knowing that this was Dr. Chase’s last time to officially teach the course due to his retirement later this summer. Hopefully, we can arrange to “get him back” for one week of teaching each year, and continue doing the field camp with him. It just wouldn’t be the same otherwise.

I was leader for a three day Marquette area field trip for the Michigan Basin Geological Society (MBGS) in September. We had a “sold-out” tour bus full of geologists from all walks of life, and I think I learned as much as they did. The weather was absolutely beautiful, which just added “that much more” to the lively outcrop discussions. The trip was a big success.

This past year, Tres Rios Resources, Inc. (the small Texas based oil-and-gas company I’m associated with) sold its last major investment, and I decided to sell my remaining corporate interests to my partner (although I’ll still retain an over-riding interest in one project). I’m finally sliding into corporate retirement.

The new/getting-older-fast house (11 years old now) continues to be a black hole for all forms of currency. I’m still cleaning up after the big storm a year ago. Chainsaws are the best invention ever - mine’s getting lots of use. I’ve gone through 4 chains that just didn’t have enough steel left to be sharpened again. I now have a much deeper appreciation for the hard work men endured in the lumber industry before the invention of the chainsaw. Also, now that I have a 15 year supply of firewood, I’ve had to put in a new patio and outdoor fire-pit area just to keep up with supply. Be careful what you wish for.

Faculty updates

continued
Duane Hampton

Last year was crazy busy, and I lost three of my colleagues. This academic year is a lot better.

Rachel Salim recently gave a talk at the annual meeting of the Soil Science Society of America. It was a big session, and she gave a good presentation on measuring values for capillary rise in porous media. It was a big warm fuzzy for me to have been part of this. I hope this will help her finish her thesis soon. This work should help us debunk some free product cleanup claims being made.

Nicholas Bull has worked hard modeling carbon sequestration in the Sylvania sandstone in conjunction with Dave Barnes and me. This fall he gave a poster presentation in Laramie on his work and got an internship for the coming summer. He was ecstatic. Experiences like these are why I enjoy my job. Education can and should be life-transforming.

Amy Manley is wrapping up her geomechanical modeling of carbon sequestration in the Mt. Simon sandstone. She hopes to have her M.S. done by the end of the academic year. I believe that is possible, and expect to apply myself to help her.

Hussain Alfaifi is moving forward on his doctoral project of testing the Bouwer and Rice slug-test analysis method. We installed by hand four shallow monitoring wells in my back yard for this work, since it is increasingly hard to do research at Asylum Lake. We will install one more, but we have already done slug testing and used an electromagnetic borehole flowmeter in my back yard. Hussain and I drove to Knoxville, TN, to pick it up and learn to use it. It wasn’t as good as I expected. I hope Hussain can pull all this together.

Last year I attended short courses in Houston and Calgary to learn how to use GEM, a numerical model that we use to simulate carbon sequestration. I am happy that Nicholas, Amy and Tony Clark have acquired some ability to use this model. Dave Barnes, several students and I went to Bloomington, IN, to learn to better use Petrel. Nicholas, Beth Vanden Berg, Kate Pollard and Amy have put this tool to good use.

Last year I did undergraduate advising in place of Dr. Kominz, who was on sabbatical. It was good for me to get to know many of our undergraduate students, whom I rarely have in any of my classes. I did teach a bunch of classes last year, including 33 students in my biggest group ever for the pump test week of the hydrogeology summer field course, now the oldest of its kind in the U.S. It started the summer of 1987 after Dr. Kehew and I arrived at Western. I am teaching a more normal schedule in 2012-13.

I am gearing up for the annual meeting of the North Central section of the Geological Society of America: Al Kehew is in charge, and I am the program chair. The meeting is in Kalamazoo on May 2—3, 2013. I invite you to come. Bring your spouse and attend the wonderful performance of Wicked, which will be at Miller Auditorium that week. We would love to see all of you again.

My family had a reunion at a working cattle ranch near Laramie, WY, in late July. Our four children and seven grandkids were all there along with two of their spouses. We have been richly blessed. I wish the best for you and your loved ones.

Tom Howe

Gooooooood morning, geosciences friends and alumni!

Hey, this is not a test! This is hydrogeology! I am reporting in to you live from the Hydrogeology Field Camp at Asylum Lake. I just want to begin by saying to you all… what it is, what it shall be, what it was.

Enrollment and applications for the HFC continued to be on the rise this year - undoubtedly due to the diligent efforts of the current and preceding faculty, staff and distinguished alumni of this department. This continued

Drilling on a drumlin in Battle Creek, June 2011. Sayed Alfaran and Stephanie Ewald in foreground.
summer’s HFC marks our 25th year in existence, making us the oldest and longest running program of this kind in the U.S. (and maybe the world?). The students came from California, Nevada, Nebraska, and Maine - and even as far as Norway and Peru.

The support the HFC receives from our alumni contributors and local industry professionals is continuing to provide an excellent opportunity for our students to gain real world experience and technical insight into an applied science curriculum which requires skills that cannot be taught in a classroom. Believe it or not, hydrogeology is a feat that can, at times, be equal parts geology, plumbing, computer technology and small engine repair.

So far this year, the students have been introduced to, spoken with, or supported by representatives from: Envirologic Technologies (special thanks to Dave Stegink for all his efforts), Milan Supply, Terra Contracting, West Michigan Drilling, Dune Technologies, the National Ground Water Association, Sanders and Sons Well Drilling, MDEQ, Trimatrix Laboratory, Franklin Electric, Johnson Screens, Stearns Drilling, Katz Well Drilling and Soil and Materials Engineers, Inc., to name a few. (I know I missed some…that’s a lot of support!!) It is great to work with all of those folks who are dedicated to assuring a quality experience for the students.

The administrators in geosciences, the faculty and my teacher’s assistants, are truly indispensible to me at this early stage of my career at WMU. I see them working hard, on and behind the scene, to make it all come together for the students – thanks again!

We continue to conduct a majority of our field activities at the Asylum Lake Preserve and the adjacent Colony Orchard Farms properties. I am very grateful for the opportunity to use these areas once again. I have been continually impressed with the support and efforts that our program receives from many different entities within the College and the University (natural areas, landscaping, surplus, technology services, Sindecuse Health Center, OIS and Immigration - to name a few). They have made the transition into my role as director fairly painless and I certainly appreciate that!

I am very pleased with the caliber of students we have drawn to the program this year and the positive attitudes that they bring with them to class each day. Specifically during this week’s Field Geophysics module which rarely offers much shade, short of a large hat?

Speaking of the weather, here is a live report….

Imitating Walter Cronkite. The weather out there today is hot and #cuss with continued hot and #cuss in the afternoon. Tomorrow a chance of continued #cuss with a #cuss weather front coming down from the north. Basically, it’s hotter than a snake’s #cuss in a wagon rut.

It is an exciting year so far. I am not going to begin to tell you of the great stories I am compiling from this summer’s HFC – let’s save those for the annual alumni reunion and awards banquet this spring, shall we?

Best regards,
Tom Howe

**Faculty updates**

**Alan Kehew**

**Hi to Everyone,**

Although every year is significant, this one was more eventful than usual, both for me and the department. The highlight of last summer for me was attending International Quaternary Association in Bern, Switzerland. This organization meets only once every four years. I gave a paper on Saginaw Lobe tunnel valleys in a subglacial processes session and am just now finishing the final edits on a paper that will appear in a special edition of the journal Boreas. I stayed after the meeting for a great field trip on modern glaciers in the Alps (they are retreating like crazy) and I have

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Core from a tunnel valley, Barry County, June, 2011. The reddish material is either weathered Saginaw Fm. sandstone or a paleosol on top of the Saginaw. Depth is approx. 110 ft.
attached a photo of me with some weird goats that are only found in one valley (I hope you can tell which is which). Also during the year, the review paper on tunnel valleys that I did on sabbatical with two colleagues in Denmark, was published in Earth Science Reviews. I also published a paper on the Saginaw Lobe with several colleagues and students in a special issue of Quaternary International honoring Jim Teller on his retirement, who I worked with quite a bit earlier in my career.

Last fall, the long anticipated transfer of non-regulatory functions of the Office of Geological Survey in MDEQ to them Department of Geosciences finally took place. The bill authorizing this transfer, which passed unanimously in the legislature, created the Michigan Geological Survey at WMU. The OGS in MDEQ became the Office of Oil, Gas, and Minerals. Becoming the state survey gives us the responsibility for investigation and applied research on all geological resources in the state and archival of cores, samples and records (MGRRE). I am currently serving as director of the Survey as we begin a search for a full-time director funded by the University for two years. This has proven to be a very challenging role because we now must find a way to generate base funding for a survey staff of some size either through State appropriation, industry, or some combination of both. Our small survey committee has been meeting on a weekly basis to address this issue. We have made presentations to industry groups in oil and gas and aggregates, as well as state legislators, but as yet have not been successful. We hope that we are building a case that will eventually bear fruit.

Being the state survey also means that we can now apply directly for federal (USGS) geologic mapping grants under two programs, STATEMAP and the Great Lakes Geologic Mapping Coalition. I have worked on these grants for a number of years, but as a subcontractor to MDEQ. Now we have the responsibility of administration of both programs. This is not a trivial task, as STATEMAP requires a statewide mapping advisory committee. In the first full year, we have received about $150k between the two programs. The University has also funded a position for GIS specialist, who we are searching for now, who will assist in the production of the maps as well as other functions of the survey. Stephanie Ewald is near completion of an outstanding thesis on our mapping in Barry County and I hope that several new students will be involved in various current and future mapping projects. John Esch, of MDEQ, also participates in the mapping and is an invaluable resource on all aspects of Michigan geology and GIS applications.

When next year’s newsletter comes out, we will be finished with another huge commitment hosting the north central section of GSA on campus for its annual meeting on May 1-3. Our dedicated committee of Duane Hampton, Kathy Wright, Robb Gillespie, and Tom Howe and I are working very hard in the planning of this meeting. I’m sure it will be successful.

The family had a major milestone this year with the birth of Madelyn Kay Prybylo on April 18, the first grandchild for Kay and me. Her mother is our youngest daughter Liz, who lives with her husband Jason in Weymouth, MA. I am writing this letter from our house in Maine where we will live in retirement, whenever that happens. With the poor state of the economy, that seems to getting farther away rather than closer. Kay already spends most of the year here and I get back 3 or 4 times a year, during university breaks. Our older twin daughters also live in the area here.

I always enjoy emails or seeing former students on campus or at conferences, so keep in touch!

Best,
Al

Michelle Kominz
Hello alumni and friends.

It has been another busy year for me, but not all of it at WMU. This year was my sabbatical year.

I took advantage of my sabbatical with three short trips. The first was the most exotic. In November I was in New Zealand for a month. It was all related to my 2009-10 Integrated Ocean Drilling Program Expedition 317 Canterbury Sea-Level Change. Our Science Workshop was held in Oamaru, about a three hour drive south from Christchurch along the east coast of the South Island, New Zealand. IODP paid almost the price of the plane ticket and the rest was covered out of my wallet. Good thing WMU pays me so well! We had a three-day field trip in advance, going to outcrops of the same age material that we sampled while drilling. The three days corresponded to the time it took my luggage to catch up to me, so I was pretty nasty after three days of slogging through braided streams and up and down sheep pastures and hillsides.

A small group, myself and four other scientists, took advantage of a post-cruise field trip on the North Island where we got to see spectacular Miocene seaside cliff...
exposures. I recommend New Zealand geology field trips to anyone who gets the chance. That was followed up by several days at the Geological Survey of New Zealand in Wellington where I obtained a new data set and talked with tectonics experts. From there I flew via Cessna back to the South Island and the city of Nelson, where I attended the New Zealand Geosciences Conference. This was rather like attending a specialty conference in the U.S., so it was possible to meet and discuss geology with many of the local experts.

My preliminary results from the IODP 317 Expedition were received with mixed enthusiasm. Our results are contrary to commonly held assumptions about the Canterbury Basin and even scientists don’t really like change. Neither do I, but I have to report what I see.

I ended my New Zealand trip in Christchurch where I had the dubious pleasure of viewing some of the earthquake damage from a February 2011 aftershock that destroyed their entire downtown. They had built a shiny new “container mall” (made of shipping containers) to provide storefronts for evacuated high-end retailers as the Christmas shopping season was in full swing. And they opened a pedestrian walk up to a good spot to view the destroyed Christchurch Cathedral. It was a sobering end to my visit and a confirmation of my results: There is nothing “passive” about the Canterbury Basin.

My second visit was shorter, with a one-week trip to the Institute for Geophysics at the University of Texas’ Austin's Jackson School. This was also an IODP Exp. 317 related trip. In this case, I was obtaining two-dimensional seismic data in preparation to generate a collaborative proposal (with UTIG National Science Foundation, NSF) for further work on the results. I spent my time with my nose deep in my computer but found a little bit of time to visit with old friends from my previous life working and teaching at the Department of Geosciences there.

I have recently ended my third trip. A month in New Brunswick, New Jersey can hardly be considered exotic, but a lot of good science was accomplished. In the summer of 2009 the European Consortium for Ocean Drilling (part of IODP) drilled IODP Expedition 313 New Jersey Sea Level. In this case they used a rented industry “jack up rig” to drill the sandy shallow sediments beneath the coastal plain, targeting Middle and Late Miocene clinoform sequences in and effort to test the sequence stratigraphic model and, in so doing, provide estimates of the amplitude of sea level change. Much of the sediments have been analyzed and it was time for the first, one-dimensional backstripping efforts. While I was there the scientist doing the benthic biofacies work drove down from Albany and we all sat down to generate input for modeling. The one-month visit provided results for a preliminary sea-level paper based on the one-dimensional approach. We also developed the broad outline of a two-dimensional approach that will result in an NSF proposal (Joint WMU, Columbia University and Rutgers University). Finally, backstripping of the Late Pleistocene showed that the backstripping approach can actually predict correct amplitudes of sea-level change. We also showed that New Jersey is not entirely “passive” as a margin either.

Now I am returning to WMU and my undergraduate advisor responsibilities. And I have a lot of writing to do, of papers and proposals.

Despite my sabbatical, the ski season was pretty much a bust for me this year. In addition to the fact that it was a very bad year for snow, it turned out not to be so good for my health either. After two weeks of racing, I was at Timber Ridge, getting ready to hone my skills with some weekend time when a disc shifted in my lower spine. The rest of the winter was spent on back exercises and the racers had to muddle on without me. Hopefully next year I will be able to return to the slope and to racing.

Carla Koretsky
Hello friends and alumni!

I hope it has been a good year for all of you. As I am sure many of you have heard, I have recently started a new position as the associate dean of the WMU Lee Honors College. I am very excited about the prospect of working with talented undergraduate students not only in geosciences, but from all across the campus. I am hoping to attract more honors students into STEM fields and to get them conducting internships and research early in their college experience. As I’m sure you know, we have some truly excellent undergraduate students at WMU. So, if you are in a position to talk to me about internships for our STEM honors students, please con-
Faculty updates

...tact me! I will, of course, remain highly engaged in the Department of Geosciences, for example, by continuing to teach my environmental field geochemistry course in the fall. I also have a terrific and active group of graduate and undergraduate students, who continue to make me proud and who I am counting on to make it possible for me to continue an active research agenda as an administrator (no pressure, guys).

This past year, I am delighted to have mentored not one, but two All-University Graduate Student Scholar awardees: Michelle Barger (Ph.D.) and Ryan Sibert (M.S.). Sadly for me, but not for them, both students have defended their work and have moved on to new and exciting opportunities. Michelle is a postdoc at the University of Iowa with Michelle Scherer, a premier researcher in the field of Mossbauer spectroscopy and trace metal contamination. Ryan Sibert has been accepted into the doctoral program at the University of Georgia, where he will work in the marine sciences department with Mandy Joye. Ryan is starting off his doctoral work with back-to-back summer research cruises in the Gulf of Mexico, looking in particular at the impacts of the Deepwater Horizon spill and also at the naturally-occurring brine lakes at the bottom of the Gulf. Andrew MacLeod and Ann Gilchrist, both M.S. candidates, have successfully completed their thesis proposal defenses. Andrew and Ann are both working on a DOE-sponsored project to investigate surface complexation of hexavalent chromium with a variety of environmentally-relevant substrates. Two new graduate students, Allie Wyman and Denisha Griffey will continue to study the impact of road salt on urban kettle lakes, following on the impressive study completed by Ryan Sibert (whose field assistant, incidentally, was undergraduate and Presidential Scholar Allie Wyman). Last summer, we also hosted two Howard Hughes Medical Internship program undergraduates in my lab: Nicole Parry and Biju Padmanabhan. Nicole and Biju are working toward becoming STEM educators at the K12 level, and I have no doubt that they will both be very successful in their endeavors.

The work that Ryan, Andrew and Christine Snyder conducted on comparisons of road salt in urban and kettle lakes has recently been published in *Water Air and Soil Pollution*, and Ryan is working on a follow-up manuscript now. Thomas Reich and I published an article in *Geochimica et Cosmochimica Acta* regarding interactions between hexavalent chromium and γ-alumina surfaces. I have also just received an acceptance notice for my first publication in the geosciences education literature – Heather Petcovic, Kate Rowbotham and I have written an article about the environmental field geochemistry course that we developed with help from an NSF Geosciences Education grant. It will soon be published in the *Journal of Geosciences Education*. As usual, my group also attended a number of conferences last year: Three students (Michelle, Andrew and Thomas) and I presented our work at the Geochemistry of the Earth’s Surface meeting in Boulder, CO last June. We followed that up with an exciting trip to Prague for the Goldschmidt conference, where I gave a keynotes lecture and four of my students presented posters (Michelle, Andrew, Ryan) or talks (Thomas). This summer, I am looking forward to attending the Goldschmidt Conference, which will be held in Montreal, with Ann and Allie. Allie won a highly competitive student travel grant from the Geochemical Society, and Ann was awarded a travel grant through The Graduate College at WMU. We are also planning a “team geochemistry” reunion at the Goldschmidt, as it looks like a number of WMU alumni will be at the Goldschmidt this year.

Finally, for those of you who have followed my equine sagas over the years, it would seem that I never learn. For my 40th birthday, I bought myself a present: a new horse. His name is Ritz, and he is a seven year old Quarter Horse/Westphalian cross (yes, for those of you who know horses, he’s different!). We will be attending our first dressage show in a few days, so fingers crossed for not too much excitement. I hope that all of you have had a terrific year, and please contact me to let me know what you have been up to (Carla.koretsky@wmich.edu)!

Heather Petcovic

After earning tenure in June 2011, I spent the past year playing golf, scuba diving, skiing, and hiking the Rockies – NOT. Somehow my teaching, research, and involvement with many committees and professional organizations have kept me as busy as ever.

This past year I had the pleasure of teaching a graduate-level course in science education research methods, in which students designed and conducted an education research study. In addition to teaching my earth science course for future elementary teachers, I also taught the minerals and rocks course for the first time in several years – a real treat as I enjoy helping students to learn the
“story” contained in each rock. (Plus rocks are just pretty and cool – yes, I was one of those kids whose rock collection took up several shelves). This summer I again taught Kalamazoo- and Jackson- area teachers through the MiTEP program, funded and organized by Michigan Tech (http://www.geo.mtu.edu/~raman/Silverl/MiTEP_ESI-1/Welcome.html). The goal of this professional development program is to enhance the earth science knowledge of local teachers and their ability to teach earth science through inquiry. We first spent a week in Houghton, where we went on mine tours and learned about the history and environmental impacts of the copper mining industry, sampled water in an urban stream, examined lava flows to learn about the history of the Mid-Continent Rift, and worked on the beaches of Lake Superior to learn about shoreline processes. Many thanks go to WMU folks who assisted with our downstate week, Carla Koretsky and her geochemistry students for organizing the water quality study of Woods Lake, Jeff Barney and Bill Har-...
Plainwell. We enjoy camping in Michigan State Parks, only visited two this past summer; P. H. Hoeft (Rogers City) and Clear Lake (Atlanta). The summer of 2012 has been very busy for me; I started constructing a 32’ by 48’ pole barn in May and hope to have it closed up before the snow starts falling!

In closing, I am very excited about my new role here at WMU / MGS. I look forward to collaborating with faculty, staff, and students and growing with the Michigan Geological Survey. I hope to be able to provide technical support, as well as, learn from many of you. Have a great year.

William Sauck
Hello friends and former students!

In the Fall, 2011, semester I taught Geos5600, Intro Geophysics, with a class of 13. That was also the semester for Electrical Methods (Geos 5630) which had five enrolled. Teaching during spring term was Geos 6500, Ground Penetrating Radar, with six enrolled.

The exchange program with Suez Canal University continued with the end of Ihab Ibrahiem Ahmed Ali’s visit, who returned to Egypt in Oct. Lamees M. ElSayed Mohamed is busy with course work as a Ph.D. student. Mohamed Ahmed is finishing his Ph.D. work soon, dividing his efforts between satellite (GRACE) and ground-based gravity data. We also have Middle East students from other countries as well as Egypt. Muthanna Yaqoob (Iraq) has gotten me into the field a couple more times, looking at resistivity, EM, and seismic anisotropy due to fractured rock concealed by glacial drift.

I paired with Ph.D. graduate, Laura Sherrod, in presenting a paper in Tucson on using GPR to map out animal burrows – a fairly unique use for geophysics! She was back at WMU again last summer to lead the Geophysics week of the hydrogeology field course for the last time. We will miss the energy and enthusiasm she brought to this course for the past five years. I also presented Mohamed Ahmed’s paper on the water potential of the El Qaa Plain at that SAGEEP meeting.

Regarding the family, Christine (Ph.D. in clinical psychology) is a full-time employee at the clinic where she did her internship in Worcester, MA, and also the mother of a son born in March. Carolyn is still wrapping up her M.S. in environmental engineering at the Colorado School of Mines. Eric is in his second year in an engineering job with KIA Motors in Irvine, CA. He travels quite a bit, twice to Korea, as well as to many U.S. cities. Oldest son Jeff and his wife Jennifer live in Crystal Lake, IL., with our two grandsons, ages 10 and 6, where he heads a small engineering group at a manufacturing facility. We have been there again this Fall to watch the oldest grandson play football – very entertaining.

Kelly and I made three long road trips in early summer. The first was to the east coast, stopping along the way to visit family in Ohio and PA. We spent a fine evening with the Passeros in Connecticut. Dick was only a few days out of hip replacement surgery, but was already getting around the house quite well. We spent a couple days in Worcester, MA, getting to know my newest grandson. We were also able to meet Franklyn Legall in Boston for dinner one night. The return trip included the Finger Lakes, Niagara Falls, and Toronto. The next trip took us as far as Omaha, NE, with stopovers in Des Moines to visit family. The third trip was to northern MN via the west coast of MI, Mackinac Is., the Soo locks, and the whole UP. Kelly had never been north of Grand Rapids, and I was happy to revisit places not seen in 25 years. The Porcupine Mtns and Lake of the Clouds were “high” points, as was the Bayfield Peninsula in WI. In Aug we went to São Luis, Brasil for the month, where we enjoyed sitting on our veranda watching both the Aug. full moons rising from the sea. We enjoy our own mangoes, cashew fruit, acerola, and coconuts, but we also took many opportunities to eat fresh seafood. Plan on visiting us there on a summer trip!

Chris Schmidt

Although I can’t say the past year was very professionally productive, I did see Kate Titus and Steve Tatum through the interpretation phases of their master’s work. Kate is nearly done and is the last revision stages of her thesis on minor structures in the Ordovician Wilhite Formation in the Western Blue Ridge Province of Tennessee. She is currently working for Sunburst Consulting (out of Billings Montana) in the oil patch in North Dakota (Mississippian-Devonian Bakken Formation). My son Gene is there as well and working for the same company. Steve is in the modeling stage of his detailed gravity study of the Tobacco Root batholith in southwestern Montana. He hopes to have a much improved interpretation of that pluton which was original-
I have been told that in the local Potawatomi Indian dialect “Kalamazoo” means “boiling water” or a “place where water boils”. From a Geological standpoint, emergence of boiling and/or fuming water indicates the closeness of magma to the surface. When Fleet Foot, the legendary Indian hero, ran towards the Kalamazoo River, it is certain that he did not run away from any kind of lava flow. In fact there has not been any magmatic activity in the southern Michigan area in the last 1 billion years! According to the legend, Fleet Foot ran from a point in the Indian settlement to the river and back before water that was being heated in a pot boiled away. But what would have really happened if there were active volcanoes in southern Michigan, or at least a few hot springs spraying out hot, “boiling” water every now and then? It would have been easier to justify the name “Kalamazoo”. If the Potawatomis lived in Wyoming, the name Kalamazoo would even have been appropriate for the geysers and hot springs up there.

Alas! We do not have hot springs in southern Michigan. But, I have heard about natural springs in the Upper Peninsula area. Thus, as an Igneous Petrologist, I feel that it is my job to look for real “Kalamazoos” in the old rocks of the Upper Peninsula area. I have been working in Alaska, I have lived in the American mid-west for the most part. I went to school in University of Wisconsin-Madison and to Indiana University Bloomington and was a visiting assistant professor at Ohio University, Athens before I moved in to WMU-Kalamazoo. Upon my arrival, the warmth of reception that I have received from the members of the geosciences department and all personnel at WMU campus clearly indicates that the legendary association of hot water with Kalamazoo must have been legitimate.

To go further into the story of hot water, it is one of my specialties to trace the pathways of hot water escaping from magmas through cracks and crevices of surrounding rocks. In scientific terminology, the hydrothermal fluids released from cooling plutons are sometimes responsible for precipitation of valuable sulfide ore minerals. Immiscible sulfide liquid droplets separate out from crystallizing magmas and accumulate at the bottoms of magma storage chambers.
of magma chambers. It is my research specialty to locate these ore-deposits that frequently hide in the neighborhood of ancient magma chambers. I have worked as an exploration geologist for a mining company in Arizona (Freeport McMoRan Copper & Gold, formerly Phelps Dodge) looking for copper and molybdenum sulfide deposits in southern Arizona and central Colorado. Thus, as an economic geologist, the exploration and mining activity in the Upper Peninsula area for economic sulfide deposits of copper, nickel and platinum group elements opens up a remarkable opportunity for me. I have started to take a leadership role in the “Economic Geology” program of the Michigan Geological Survey and I aim to keep working with my colleagues in order to develop a long term work plan for the survey.

Finally, Fleet Foot was a Potawatomi Indian. I am an Indian too, but I am from the eastern hemisphere. I was born and brought up in the eastern Indian city of Calcutta. I moved to the United States for research on the applications of stable isotope geochemistry in high temperature systems. I worked with the facies metamorphic rocks in the Salinian Block of California, climbing mountains on the Pacific coastline and then hopped around in southeastern Alaska in helicopters exploring the remains of subduction zone volcanoes that were spewing out andesitic lava about a hundred million years ago. Now, it’s time to explore Michigan.

Peter Voice
Good Day Everyone!

I am glad to be back as a temporary instructor for the department. After leaving the department back in 2005, I went to Virginia Tech to earn a doctorate. I started a small side project that year which turned into my dissertation. I had planned on working on a paleoclimate project using stable isotopes of Miocene-Pliocene bivalves and instead ended up constructing the Global Detrital Zircon Database (a meta-analysis of all published detrital zircon studies prior to 2010). My advisors (Michal Kowalewski and Ken Eriksson) and I explored continental crustal growth/crustal recycling using the database, which led to an article in the Journal of Geology. I didn’t spend all of my time at Tech in front of a computer; I also managed to do a small field project in southeastern Virginia near Danville in the Danville-Dan River Basin looking at Triassic sandstones. I actually collected some samples for detrital zircon analysis. While working on the Danville project, I had the chance to go to the famous Solite Quarry where a number of Triassic insects and small aquatic reptiles have been found in what has been interpreted as a rift-valley lake.

While at Tech, I used my experience from assisting Ron Chase with the Marquette field camps to lead my own field trip for a group of graduate students and faculty members back in May of 2006. We spent a day driving north from Blacksburg, VA to Paradise, MI and then did a loop around Lake Michigan. The highlight of the trip was the pleasant weather in central WI, where we stopped at the Krukowski Quarry to look at Munising Formation-equivalent Cambrian sandstones with jellyfish fossils and amazing trace fossils (called Climactichnites) that looked almost like tire treads running across the bedding planes.

Now that I am back to WMU, I am teaching two courses this fall: The online version of GEOS 3220 Ocean Systems and GEOS 6110 Advanced Stratigraphy. I am quite excited to have the chance to teach some of the courses that my former advisor, Mike Grammer, taught. The online ocean systems course already has 50 students. It has been a real learning experience trying to figure out the new elearning system and how to teach in an online environment. Advanced stratigraphy has seven students. I am having the students tag along with Dave Barnes’ GEOS 4350 course’s field trip to southern Ohio-Central Kentucky this fall. I am also planning on torturing them with a couple visits to the Core lab to work on core profiles, facies identification and depositional environments.

I am also a research associate at MGRRE and plan on working on several ongoing projects related to Niagaran reefs. Since there are some new Burnt Bluff Group cores as well, I might go back and take a look at this unit that I spent a great deal of time on.

I hope all of you have a good year!
ROMANOSKY DEANNA J., “DEE” Muskegon

Deanna J. “Dee” Romanosky, age 23, passed away early Thursday morning, April 19, in Grand Rapids following a brief illness. Dee was born May 21, 1988 to Mark A. and Gloria J. (Cook) Romanosky in Muskegon where she lived most of her life. She graduated from Oakridge High School as the Salutatorian in 2006, and graduated from Western Michigan University in 2011 with her BA in Secondary Education/Mathematics, and a minor in Earth Science. She skillfully played various musical instruments, and marched for four years in the BMB, Bronco Marching Band. She was also involved in many ministries, especially in praise and worship, playing in the praise bands at Orchard View Congregational Church, the Comstock Praise Band, His House in Kalamazoo, and Mission to the Point; she was also an organ donor. Dee taught at the Whitehall Learning Center, tutored at WMU, and substituted at Oakridge, Whitehall, and Ravenna schools. She loved God, mathematics, reading, and hanging out with Dad and Mom. SURVIVORS include her Dad and Mom, Mark and Gloria Romanosky; brothers and sisters, Daniel Romanosky of Eastpointe, MI, Devon (Brian) Bell, Darci and Dylan Romanosky, all of Muskegon; Tanya (Ty) Miller of Fremont; two nephews, Christian and Matthew; two nieces, Dannielle and Sierra; aunts, uncles, cousins; and very dear friends, Todd and Kathy Smith of Coloma, MI. She was preceded in death by her grandparents. THE FUNERAL SERVICE for Dee will be held at 11:00 AM Tuesday, April 24, at the Orchard View Congregational Church, 2175 Marquette Ave., Muskegon, with Pastor Tom Beetham officiating. Burial will take place at Egelston Township Cemetery. VISITATION at The Sytsema Chapel 737 Apple Ave. (231) 726-5210 from 5-8 PM Monday. You may sign the family’s online guestbook at www.sytsemafh.com In lieu of flowers contributions in Dee’s memory may be made to her family.
Kehew


Koretsky


Kominz


Krishnamurthy


Petcovic


Sultan

We hope the past year found you in good health and enjoying life. For those of you working in industry, we know the past year was very productive. We’re so proud of the work you do for your companies and for your communities.

It’s been a busy and exciting year here.

Repository and data management news:

Thanks to a generous donation from EnCana Oil & Gas (USA) Inc., we brought four more truckloads of Michigan cores home from Texas. Many of those are from the Glenwood/St. Peter/PDC formations. We are already using them to produce reservoir property data that we’ll evaluate for their use in CO2 sequestration.

We’re also making these cores available to many visitors interested in the Utica/Collingwood and A-1 Carbonate plays. We also had visitors prospecting for Potash—a major component in fertilizer. We hope those visits result in economic development for Michigan.

We also received a core collection from MDOT’s highway and bridge work. These shallow bedrock cores add new data to our collections and we are excited to have them here.

Bill Harrison just received a new grant from the USGS to continue adding metadata to our repository datasets. That’s part of a national repository data program in which we have been active for several years. Linda Harrison continues to train and supervise the work-study students who do the heavy lifting around here. Linda still enjoys photography and Bill joined her in trips to photograph parts of Maine and Arizona. Bill is very active in the vineyard and had a great crop, despite a very early spring followed by a frost. Dave Barnes had another big garden this year, so no one was short on greens. The hens are molting now, so nix on the egg production.

New Faculty member:

We are excited that Peter Voice has joined MGRRE and the Michigan Geological Survey as a research associate. He comes to us from Virginia Tech where he recently completed a dissertation entitled “The Global Detrital Zircon Database: Quantifying the Timing and Rate of Crustal Growth”. Peter has a strong background in carbonate sedimentology, numerical and statistical sedimentology, and provenance analysis. He is currently involved with the CO2 sequestration project, where he will be generating facies analyses and core profiles of Niagaran reef material.

Peter also teaches an advanced stratigraphy course. His students have worked on several lab assignments here at MGRRE, generating core profiles, facies descriptions, parasequence stacking patterns and sequence stratigraphic models. Peter has been researching his family’s history through old photos, visits to family cemeteries and spending time with older relatives, listening to their stories.

Web Work:

Lolita Krievs has updated our MGRRE website. Many of our datasets now link to the State’s datasets. She also has compiled resources and constructed the new Web site for the Michigan Geological Survey. The “CoreKids” links are useful for parents, teachers and students. Learning modules focus on geology, natural resources, rocks, minerals, water, coastlines, and climate change.

The “Links” go to information from the state and US Geological Survey, mineral guides, directories and
dictionaries. Imagery and photos are at “Multimedia”. Our research is accessed at “Data” and “Publications” and “MGRRE’s online data” has lists of cores, core analyses, drill cuttings, mudlogs, thin sections, and oil and gas data.

Please explore these websites and let us know what you think. They’re at http://wsh060.westhills.wmich.edu/MGRRE/index.shtml and http://mgs.geology.wmich.edu/

Industry outreach and research:

Bill Harrison headed up our PTTC workshop in March. We had a record-breaking attendance, thanks to interest in the new Trenton/Black River wells. We gave our first life-time achievement award to Robert E. Tucker, Jr., President of West Bay Exploration. For more than 30 years he has produced new energy from the Basin while pioneering methods to minimize environmental impact—that’s an outstanding contribution.

In June, MGRRE welcomed U. S. Department of Energy assistant secretary Charles McConnell. He spoke at a press conference about the “un-mined gold” in abandoned oil fields in Michigan and how that oil is now being produced as a result of the research done here at MGRRE, and the technologies developed by industry leader Core Energy of Traverse City. Core’s President, Robert Mannes, discussed its leading role in producing previously inaccessible domestic energy. Dave Barnes and Bill Harrison fielded questions about their research in carbon dioxide sequestration and utilization to produce a win-win: greenhouse gases being stored underground AND producing more energy.

Please see the Kalamazoo Gazette on-line article about the event at http://www.mlive.com/news/kalamazoo/index.ssf/2012/06/michigan_un-mined_gold_in_aban. html

Dave Barnes and Bill Harrison are busier than ever trying to keep up with all the CO2 sequestration projects they are working on. This research is taking a new direction now, aimed at not only storing greenhouse gases underground, but also at the result of producing more domestic energy. Four more years’ of funding are anticipated in our role as partners in a DOE regional program to inject at least one million tons of CO2. Our industry partner in this work is Core Energy, which has produced more than 1.5 million barrels of crude oil by using enhanced carbon recovery methods since 1997.

Bill Harrison continues his research gathering data from Michigan wells relative to subsurface temperatures to evaluate Michigan’s potential for geothermal energy. He has gathered data on deeper wells and will now focus data from shallower wells. These data from all over Michigan will be integrated into the National Geothermal Data System (NGDS) http://www.geothermaldata.org/. Bill says, “This project will help us understand the geothermal potential in Michigan to an extent never possible before. It’s exciting to be part of this national effort with all the other states to address such a critical energy need for the state and the country.”
K-12 Outreach

After a brief hiatus, the CoreKids K-12 Earth Science outreach program is back in action. We are updating our presentations and scheduling school visits to classrooms around SW Michigan, including Kalamazoo, Vicksburg, St. Joseph, Benton Harbor, Hastings, Middleville, Battle Creek and Coldwater. We are also expanding our geographical coverage to include schools in the metropolitan Detroit and Grand Rapids area. CoreKids program director Jeffrey Barney, faculty advisor Dr. Heather Petcovic, and CoreKids educator Steve Barone, are also developing new presentations on natural gas, hydraulic fracturing and the geology of Michigan state parks and recreational areas. We are also expanding each presentation to allow grade-level appropriate lessons for elementary, middle school and high school classrooms. Ultimately, we plan to be able to respond to teacher requests to integrate existing lesson modules to meet the needs of their students.

This year we have already taken our presentations to community events such as the Kalamazoo Gem and Mineral Show and the Water festival at Cranbrook Institute for Science in Bloomfield Hills, and we hope to install permanent displays at the Cranbrook Institute Museum, as well as other local museums.

We are grateful to DTE Energy for their generous donations to support CoreKids’ mission during the 2012/2013 academic year.

From the Faculty, staff and students MGRRE, we wish you a happy and rewarding year to come. Please keep in touch.
Thomas Drean graduated from Western Michigan University in 1974 with a B.S. degree in Geology. In addition to his degree from Western, Thomas also holds a M.S. degree in Geochemistry from Pennsylvania State University and is a graduate of the Executive Development Program from the S.C. Johnson School of Management at Cornell University.

He is currently serving on the Cabinet of the State of Wyoming and is the State Geologist and Director of the Wyoming State Geological Survey. He serves on the Wyoming Oil & Gas Conservation Commission, the Enhanced oil Recovery Commission, the Wyoming Board of Professional Geologist, the Groundwater Commission, and the Consensus Revenue Estimating Group for the State of Wyoming. Thomas also holds the position of Chairman of the Board of the Laura Jane Musser Fund which is a U.S. based philanthropic fund that reviews proposals and donates money to selected non-profit organizations and initiatives.

Prior to becoming the Wyoming State Geologist and Director of the Wyoming State Geologic Survey, Thomas Worked in the oil and gas industry for 31 years. Twenty-six of those years were with ConocoPhillips where he held a variety of technical and managerial positions around the world.

Thomas credits Western Michigan University with providing him with a great foundation in geology and instilling a lifelong interest in learning. An additional benefit is the fact that Western is also where he met his wife and best friend for the past 38 years.
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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Endowments

Department of Geosciences Endowment $14,934.70
Douglas Daniels Endowed Geosciences Scholarship and Award $11,820.74
Envirologic Technologies Endowed Scholarship $17,222.18
Geosciences Advisory Council Quasi-Endowment $10,650.78
Lloyd Schmaltz Quasi-Endowment $11,540.09
Geosciences Operating Quasi-Endowment $22,621.26
W. David Kuenzi Memorial Quasi-Endowment $57,240.72
William and Linda Harrison Endowment $18,343.97
Barry and Beth McBride Endowment for Geosciences $11,379.29
W. Richard Laton Field Camp Endowment $28,496.04
Randall Kerhin Graduate Scholarship in Geosciences $11,048.46

Endowments Pending

Geosciences Study Abroad Endowment $1,100.00
Mohamed I. Sultan Endowment for Geosciences $4,450.00
Peter J. Kaczor Geology Scholarship $3,675.00
Ronald Chase Endowment $1,847.00
Alan E. Kehew Endowment $5,042.78
Chris Schmidt Endowment $1,086.58
John and Kelly Grace Endowment of Geosciences $10,250.00

MGRRE

Michigan Geological Repository for Research and Education $586,313.81
MGRRE Operations $394,331.96
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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.

You may also update your information online at http://www.wmich.edu/geology/alumni_form.htm.

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