

USGS RETIREES

NEWSLETTER No. 189
November 2020

An organization of retirees of the U.S. Geological Survey, whose purpose is to keep its members in touch with each other and their former agency.

PRESIDENT'S MESSAGE

Hello Members,

I continue to hope all of you and your families are staying healthy during the continuing COVID-19 pandemic. With November being our last Newsletter in 2020, I want to wish you happiness and joy with your loved ones during the coming Holiday Season. I think most of us will be thankful when 2020 ends with the hope that vaccines become available and some normalcy returns to our lives in 2021. Most of us can say that 2020 was probably the most troubling and disruptive year, to date, in our lifetime.

It's becoming obvious that we made a correct decision to postpone our next reunion to March 2022. Mark Anderson has signed an amendment to the agreement with the Marriot University Hotel changing the Reunion dates to March 10-12, 2022. Early next year, Mark will reconvene the Local Area Committee to begin completing plans for an outstanding and fun reunion. It will be great to see old friends and colleagues and to be able to really celebrate again, hopefully, with a large attendance. Our next issue in February will have updated information. I suggest marking your calendars on the dates to avoid any conflicts and begin thinking of travel plans to Tucson.

This issue presents on pages 2 thru 6 the seven awardees of 2020 Technician Scholarships. Awarding seven scholarships is an annual record for the 13 years of the Scholarship Program. We congratulate these seven employees and hope their scholarships assist them in achieving long and successful careers with USGS. For next year Vice President, Phil Turnipseed, has organized and convened an ad hoc committee to review, and refine the Scholarship process and eligibility requirements with a goal of distributing the Scholarship Application package to Water Science Centers this month.

We now are trying to include a continuing series of past and present USGS science articles in our Newsletters. Because cost limits the number of printed pages, this issue with the Scholarship awardees will not include a full science article. In this issue our Editor, Jeff Stoner, has provided a link to an excellent and informative video on Hawaiian volcanoes. Jeff and the rest of your Officers strongly urge members to consider contributing articles on science and technologies they worked on during their careers. We would love to have a lot of articles in queue for future issues.

In my first President's message I stated my top priority for our organization is to maintain our viability. A major effort needed is to enhance communication with USGS offices, which has been difficult this year with office closures from the pandemic. We are exploring with some employees their work experiences for future articles. Meanwhile, the scholarship program has provided contact and visibility. We also have increased the number of Affiliate Liaison members from 12 in February to 20, with 2 additional pending commitments in October. We have filled several State Representative vacancies. Recently, we are working with USGS Human Resources to have an Information Flier on our Organization and a Membership Application included with the information material they provide pending retirees. We have recruitment posters available for bulletin boards when offices reopen. Hopefully, these efforts will increase the percentage of membership of new retirees. Another effective recruitment action is to have members personally contact and promote our organization to employees they know who are planning retirement. Our State and Regional Representatives and Affiliate Liaisons are making contacts, but they need your help so that we don't miss any new retirees. A personal contact is more effective than a poster or flier.

Enjoy reading the Newsletter and keep sending articles for, "News of Retirees". We all want to hear the latest from you.

Pete

National Officers:
Peter W. (Pete) Anttila, President
Phil Turnipseed, Vice President
Kate Flynn, Secretary
Cathy Hill, Treasurer
Herb Freiburger, Archivist

Regional Directors:
Norm Grannemann, Northeast
Ed Martin, Southeast
Ken Lindskov, Central
Sandy Williamson, Western

Newsletter Staff:
Editor: Jeff Stoner
Layout Editor: Merilee Bennett
NR: Debbie McLean
SR: John Clarke
CR: James (Jim) Bennett
WR: John Klein

Address:
USGS Retirees
P.O. Box 280
Herndon, VA 20172-0280
Phone (703) 596-5468
Web Page: <http://wrdretirees.org/>
Email: wrdretirees2014@gmail.com

2020 USGS RETIREES' SCHOLARSHIP WINNERS

Seven 2020 Scholarship awarded, totaling: \$7,454

Since the program began in 2006, our organization has awarded 35 scholarships, totaling \$73,154



Jessica Cain (South Atlantic WSC - \$600) writes: I was a contractor for the USGS for approximately 1.5 years and I have been in my current position for approximately 12 years. Hydrology within the USGS is my chosen career path. I enjoy the work environment with my colleagues and supervisors. The USGS has invested time and money into me, which motivates me to do quality work daily. I also enjoy the variety of my job; it evolves as time passes and keeps me interested in learning new skills. Overall, I enjoy the work and I feel proud of the data that we collect and publish. Most recently, I have started authoring data releases for reports. I also assist with discrete sampling, data analysis, and report preparation for an ongoing water-quality project. I work continuous water quality records for a variety of sites, as well as check and audit other USGS gage height and water quality records. Occasionally, I help with hurricane and storm events to obtain peak samples and high-water data. Field work with the USGS has taught me the best lessons. Good quality data starts with clean

equipment and proper sampling techniques. There are no shortcuts for quality data. The attention to detail that we learn at the USGS makes me proud of the data we provide.

I will need to complete two classes, which I can accomplish during the Fall 2020 semester. I will be attending Wake Technical Community College in Wake County, North Carolina.



Matthew Hardebeck (Ohio-Kentucky-Indiana WSC - \$700) writes: I started with the USGS in August of 2016 as a student contractor and converted to a Hydrologic Technician in May of 2018. The most important reason I want to work for the USGS is having an agency in which consistent practices, whether it be from sampling or the work-check-review process, are employed for obtaining quality and realistic results. Providing the best quality data and science for our nation is paramount for real-world decisions and effective policy management. I work in the Projects section of our office, with most of my work focused on the nutrient pollution that flows into the Western Lake Erie basin. Tasks can include sample

collection and preservation, electronic repair and installation, stream gaging, sediment source tracking, edge of field investigations, data collection and entry, continuous record processing, collaboration with state and federal agencies, providing assistance to other sections in the office, and numerous water quality investigations.

Pictured above is Jeff Frey, Associate Director of Indiana Ohio-Indiana WSC presenting Matthew with the certificate and award check.

I need to enroll in a physics course for eligibility to be converted to a Hydrologist. The local community college (Ivy Tech) offers the course at a price of about \$700. I would like to work towards a Master of Science in Environmental Policy and Management.



Will Long (Oregon WSC - \$800) writes: I have served as a hydrologic technician for the USGS in Klamath Falls for 15 months while taking online courses at PCC and Oregon State University. I find the USGS mission and resulting data products to be among the most valuable services provided by the Federal Government. I hope that my pursuit of graduate level education will help me continue to contribute to Oregon Water Science Center with increased capacity and in anticipation of replenishing the workforce. I have performed a wide range of duties while stationed at the Klamath Falls Field Office. Firstly, I analyzed lake samples for microcystin concentration using the EISA method. This involved extraction of microcystin toxin and spectral analysis to determine concentrations. Secondly, I assembled, programed, and installed a floating dock with depth integrated water quality

sondes, Iridium DCP, and solar panel. This project was part of my responsibilities as the lead technician on the Upper Klamath River continuous water quality monitoring project. Thirdly, I performed water quality sampling on Upper Klamath Lake and associated tributaries for the Upper Klamath Basin project. This involved discreet sampling using a DH-95 from bridges and cableway as well as whole-water column and depth-integrated sampling from a boat. Lastly, I analyzed a variety of water quality records using Aquarius Time-Series through the 2019 water year. The most valuable experience that I have gained thus far has been learning to use R-Studio and Gnuplot to retrieve published NWIS data and write script to produce graphics and plots for use in reports and manuals. What I enjoyed most about this was how it allowed me to combine data collection and processing to interpret large scale processes in the Klamath Basin. This work is aligned with my interest in two-dimensional modeling of fluvial systems, providing tools for managers to better understand underlying watershed dynamics. The most valuable experience that I have gained thus far has been learning to use R-Studio and Gnuplot to retrieve published NWIS data and write script to produce graphics and plots for use in reports and manuals. What I enjoyed most about this was how it allowed me to combine data collection and processing to interpret large scale processes in the Klamath Basin. This work is aligned with my interest in two-dimensional modeling of fluvial systems, providing tools for managers to better understand underlying watershed dynamics.

I will be working towards a Master in Geography with an emphasis on watershed modeling at Portland State University.



Ryan Mesmer (California WSC - \$504) writes: I have been with the USGS for 4 years. I love working for the USGS because I feel like I can make a difference. I realize the need for unbiased and impartial scientific data and am therefore proud to work for the USGS.

I need to complete Physics and Calculus requirements with 3 classes. I will be attending San Diego Community College District.

Thank You Note: My USGS appointment started in 2015, but it was nearly a decade before that I started making my way toward a career. From working with USGS streamflow data in my hydrology classes in New Jersey, to collecting water samples in Colorado or Florida, no matter where I was working, the USGS was involved. Several times I had been told that, “If you want to work in the federal government, and you want to do the best science, then the USGS is where you want to be.”

My experiences so far have not let me down. As a database administrator and data/metadata reviewer for the California Water Science Center, I have been in a great position to see all the excellent work that everyone is doing within the USGS. To see a project progress from the early proposal stages through to publication has been extremely rewarding.

Maybe not surprising, it has not been publications and presentations where I have learned the most. On a regular basis, I get to work with technicians who are collecting data in the field, as well as project chiefs and authors. Whether it is one-on-one teaching someone how to access data more efficiently in our database, or at a conference with scientists from around the country, we all are learning from one another to accomplish common goals. These are the interactions that have made working for the USGS so rewarding. This exchange of knowledge is only available at such a large, diverse workplace such as the USGS.

I look forward to going to work nearly every day and I'm excited to continue advancing my career with the USGS. Your scholarship is what I needed to return to school and to take the next step to advance my career. Thank you all for making this possible.



Shannon Pace (West Virginian WSC - \$1500) writes: I interned with the USGS in college (George Mason University Honors College) in Reston, VA from October 2014 through October 2015 (1 year). I joined the Richmond, VA Water Science Center as a Hydrotech October 2017, and I plan to work through July 2020 (2 years and 9 months), when I will move to start my MS degree. The best experiences I have had with my group at the USGS have been on our hardest field days. I joined the group during the start of the Pipeline Monitoring Network, which allowed me to be present for the site installations. We had many long field days, but I was able to learn the ins and outs of a field site, how to set one up, how to fix and troubleshoot faulty equipment, and how to always be flexible! I love the constant challenge that my job provides – no site visit is ever the same.

Throughout my experience as a hydrotech, I have worked as a positive, professional member of a team, sought help and guidance when I needed it, and served as a leader.

After graduating college in May of 2016, I was offered a position in environmental consulting as a Junior Environmental Scientist. My group focused on site remediation of gasoline stations throughout the state of New Jersey. We observed underground storage tank removal, collected soil and groundwater samples, and calculated classification exception areas. During this time, I improved my technical writing skills while I gained experience in the industry beyond research.

When the USGS contacted me with a job opening in the summer of 2017, I jumped at the opportunity! I love that the field work and quality control of data that I complete can lead to a better understanding of hydrologic conditions and water quality. I look forward to seeing the societal change in the years to come. I love my job because the work is difficult, challenging, and rewarding.

Throughout my time with the USGS, I determined that I want to continue to research the impact of ecosystem and land use change on hydrologic conditions and water quality over varying scales. To continue to grow as a researcher and scientist, it is critical that I continue my education. I would love to be able to work for the USGS after completing my MS degree as a project scientist.

I will be attending The Ohio State University starting this Fall 2020 to pursue a Master of Science in the Environment and Natural Resources.



Zachary Perkins (West Virginia WSC - \$1350) writes: I have been with the USGS for nearly 2 years, beginning in June 2018 as a contractor and transitioning to a Pathways recent graduate hydrologic technician in November 2018. Before working with the USGS, I was already familiar with the reputation of the organization as a worldwide leader in quality hydrologic data collection and analysis. I would visit USGS streamgage websites for school projects or to help prepare for paddling trips, which illustrated the benefits that the USGS provided to both the greater scientific community and the general public. Being a part of an organization that conducted such meaningful work about a topic for which I am passionate was the main reason I wanted to become a hydrologic technician. Now that I have spent time as a USGS employee, these motivations still exist, but are coupled with the prospect of working alongside other like-minded individuals that are as passionate about hydrologic science as I am. Ever since I

stepped through the door on my first day, I have felt welcomed into the family of technicians, hydrologists, and other members of the organization that share my passion for water science. On numerous occasions, my coworkers have set aside their work and taken time to explain complex concepts to me, offered advice for my career development, and assisted me when confronted with a difficult task. Working alongside a group of individuals like this, for an organization that is as wholeheartedly committed to quality data collection and communication as the USGS, would be an honor.

My best experience was attending the 2019 Nation Water Data Training Workshop. Coming from a group that primarily focuses on water quality, being exposed to the many different disciplines within the USGS hydrologic network gave me a new perspective on the sheer scope of the science conducted by the organization.

Furthermore, attending numerous presentations taught me valuable lessons about some of the fundamentals of USGS data collection. Presentations were either instructional, such as the HIF courses on telemetry basics or battery maintenance, or a discussion on unique experiences from other centers, such as one presentation that discussed important considerations for establishing and installing gage houses.

Currently, I am the lead technician responsible for the Fairfax County surface water monitoring network. This network consists of 5 intensively monitored sites, which include continuous water quality monitors and automatic pump samplers, and 15 other sites that are sampled monthly to estimate nutrient and sediment loads. I am responsible for maintenance, records processing and data-quality assurance at the 5 intensively monitored sites, in addition to 4 other sites located across the state. I also am a primary technician responsible for collecting discrete nutrient and sediment samples at 24 sites across Virginia as a part of the River Input Monitoring (RIM) project of the Chesapeake Bay Program. I am also a primary technician responsible for maintenance of water quality instrumentation and sample collection equipment located in our in-house

laboratory. Aside from these primary duties, I assist other technicians in the Watershed Monitoring Section as needed. Some of these secondary responsibilities include surface water sample collection, discharge measurements at a variety of hydrologic conditions, installations of continuous monitors, maintenance of continuous water quality monitors, and training new technicians.

I will pursue a Master of Science in Environmental Science at the University of Virginia starting in Fall 2020 and would like funding to cover a physics course not under my graduate assistantship.



Kate Wilkins (New Mexico WSC - \$2000) writes: I have been with the USGS since May 2015 and am a hydrologic technician in water quality in the Albuquerque Project Office. I lead water-quality collection for a variety of projects in the center. I am responsible for preparation of sampling equipment, field trip, post-sampling work, and record processing. My experiences throughout my 5 years with the USGS have shaped my future career goals. I want to continue and expand a career where I am contributing research to better understand and manage water resources. I especially enjoy studying water resources in the Southwest where water is scarce and proper management is crucial. The New Mexico Water Science Center has been very accepting and flexible with my goal of obtaining a master's degree at the University of New Mexico (UNM). This support is an example of how the USGS promotes career growth and is another reason of why I want to continue working with USGS. I feel it is a place where I can

continue to learn and be a part of high-quality research. I know my skills of a hydrologic technician will enable me to be a better hydrologist.

On my second day at the New Mexico Water Science, I was sent into the field to collect groundwater quality samples. Little to my knowledge, the wells that we were sampling required long purge times (14+ hours) due to well depths and a slow purge rate. This gave me a lot of time to get to know my coworkers while troubleshooting why there were leaks or the pumps stopped working. It also gave me time to become very familiar with the comprehensive protocols of collecting water-quality samples, and the importance of details and documentation in data collection. The next few days we worked till 8 p.m. to collect the samples properly. I remember a coworker telling me after the week was over that the workdays are not normally like this. He was probably trying to make sure I did not leave after a trying first week. Looking back, those are the days I learned the most about the importance of high quality data collection. There are still long days when equipment malfunctions or there is something unpredictable at the site, but I know those days are what sets USGS apart. High-quality data takes a lot of experience, time, and attention to detail. These are lessons I will hold with me for the rest of my career at USGS.

I am pursuing a Master of Science in Water Resources at the University of Mexico.

Thank You Note: I am very grateful for receiving the 2020 USGS WRD Retirees scholarship. This opportunity will greatly help me with my goal of continuing a fulfilling career with the USGS. My experiences throughout my 5 years with the USGS as a hydrological technician shaped my career goals. I want to continue and expand a career where I am contributing research to better understand and manage water resources. The Master's in Water Resources degree I am pursuing at UNM is an interdisciplinary program that allows me to take classes in different departments throughout the university. While I am focusing my degree on water-quality studies, I also will be taking classes in water resource policy. This diverse set of skills will be extremely useful for a career at USGS. Because I am continuing to work as a hydrologic technician while obtaining my degree, I can apply my classwork to my work at USGS immediately. I am very honored to receive this scholarship! I just want to send a quick follow up email that UNM received the funds and to thank you for the scholarship!

RETIREEES' SCHOLARSHIP PROGRAM – 2020 AWARDS

Since the program began in 2006, our organization has awarded 35 scholarships. Including this year's awards, we have awarded \$73,154 in all.

YEAR	NUMBER of AWARDEES	AMOUNT	REMARKS
2020	7	7454	
2019	2	4000	
2018	5	8700	
2017	0	0	Retirees' President decision
2016	3	6000	
2015	2	7000	
2014	2	8000	
2013	0	0	Summer Hiring Freeze
2012	3	10000	
2011	4	10000	
2010	2	5000	
2009	2	2500	
2008	1	1500	
2007	1	1500	
2006	1	1500	
TOTAL:	35	\$73,154	

NOTE: A complete listing by Fiscal Year, awardee's name, amount of award and educational institution attending, can be found at: <http://wrdretirees.org/scholarships.htm>

MEETINGS AND GATHERINGS

Social Distancing Lunch Reston, VA September 2020



The socially distanced, bring-your-own lunch & chair gathering at Temporary Road Park in Reston wasn't the usual Amphora Restaurant gathering, but we did have a good time and the weather was great. Though smaller than usual, the group included representatives from Water, Geology, and Mapping. No formal program, but we did manage to share some good memories (most of which contained at least a sliver of truth.)

Left to right: Tony Meunier, John Keith, Tom York, Ken Lanfear, Lee DeCola, Cathy Hill, and Debbie McLean with Kate Flynn behind the camera.

Social Distancing Lunch Reston, VA October 2020



The Reston Retirees' lucked out with a nice day October 5 for a second socially distanced, bring-your-own-lunch gathering in the time of corona. John Keith provided an overview of what is happening with the different Survey programs and the budget outlook. There was also time for remembering the good old days. We are hopeful the weather will be cooperating for November 2.

Left to Right: Mary Jo Baedecker, Katherine Lins, Ken Lanfear, Linda Debrewer, Frank Manheim, Tony Meunier, John Keith, and Cathy Hill, with Kate Flynn behind the camera. And, no, Linda has NOT retired.

October Second Tuesday Lunch October 13, 2020



L to R: George Garklavs and James F. Blakey. COVID-19 has kept a lot of retirees at home. Hopefully, as things ease up, attendance will improve.

Neither rain, Nor snow, Nor Pandemic can keep the Reston retirees from stuffing envelopes

The Retirees' Board would like to express their appreciation to (R to L) Debbie McLean, Lenny Konikow, Kate Flynn and Cathy Hill (not pictured) for stuffing envelopes with the May and August newsletters, and the updated 2020 Retirees' Telephone Directory. This took place on the patio of the Headquarter's office, Reston, VA.

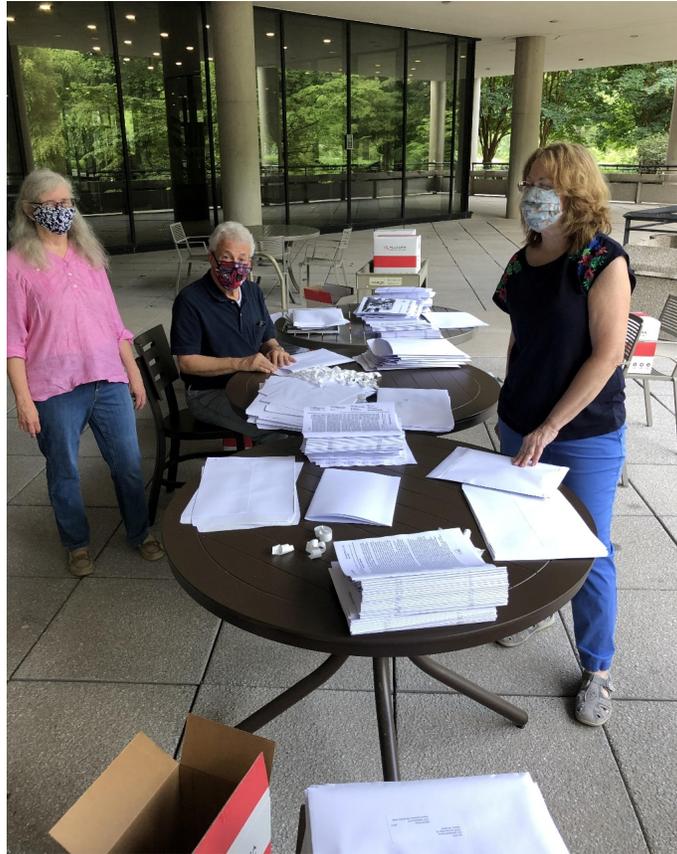


Photo taken by Cathy Hill

USGS Science News

EDITOR'S NOTE: *The Retirees' Board members receive regular notices prepared by Tim Smith summarizing activities and information related to sustainable water resources. We will continue to reprint selected summaries and associated links for the members. Let me know through the e-mail address if you wish to have this feature included in future Newsletters.*

Thanks,

Jeff Stoner, USGS Retirees' Newsletter editor. wrdretirees2014@gmail.com

Note from the Editor: I stumbled across this link to a video about the **USGS Volcano Observatory in Hawaii** recently. Given the enthusiasm we heard about anniversary article on Mt St. Helens, I thought you might enjoy this on a cool winter evening: <https://www.youtube.com/watch?v=gNoJv5Vkumk>

NEWS OF RETIREES

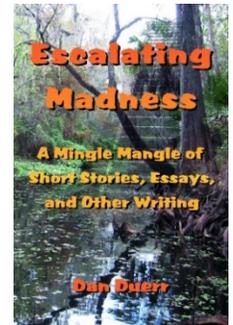
Andy Anderson (thru Kate Flynn): Other than regular dinners with his daughter and trips with daughter to visit his brother, Andy is mostly staying in. Occasional visits to the grocery store.

Dave Click writes: I want to send along a 'Thank You' to all the staff of the newsletter, and Retirees' Directory. I was able to download and print everything.

Dale Cotter writes: A Note from the Provinces – Gerry and I continue in our senior living apartment. We pass our neighbors in the halls wearing masks. Our meals are delivered and are quite good. We see our kids by driving out of the parking garage to the parking lot where they have set up folding chairs. I enjoy getting the newsletter but recognize fewer names each year. Marv and Rosanne Sherrill and Rosemary Stenback are the only SURVEY people we see locally, but after you put out the last directory, I had a call from my old boss Dick (Richmond) Brown. It was good to reminisce.



Dan Duerr writes: After retiring in 2002 from the Tampa office, I began writing light-hearted stories and memoirs that contrasted with the serious nature of my previous USGS reports. I guess I missed the “adventure” of completing projects and writing reports, something I never thought I would miss. Kathleen, my wife, calls me a recovering science writer. In July, I published *Escalating Madness*, a collection of memoirs, essays, and quirky short stories. The book is available in paperback and e-book at Amazon.



Jack Fischer writes: Thanks to all for holding our family together!

Linda Gerner writes: Your directory is phenomenal! Great to spot folks we've worked with over the years and find out where they are now. I will try to put a list together soon of known retirees that are not in the directory and get back to you. As usual, until I retiree, work takes precedence. Just wanted to let you know that what you're doing is great! Keep connecting. More as soon as I am able (Linda is an 'Affiliate Liaison' for the UT/WSC)

Diane Gravlee writes: George and his wife, Diane, moved to Connecticut last September to be near family. He has since had 2 more strokes and now resides in a nursing home near their independent living apartment in West Hartford, CT. Diane visited him on an outdoor patio with masks on and social distancing during the virus restrictions. After 58 years of marriage, with half of those in retirement they have traveled in their motor home, and now they are adjusting.

Dennis Hensel writes: After 30 years with the USGS, 23 in the Water area and 7 in Geology, I retired from the USGS in May 2008. I couldn't think of a better place to work unless it was in my home office so I started my own training and consulting firm (Practical Stats), training and mentoring other scientists from 2008 to the end of 2020. That took me to many places across the US and Canada, as well as to the Netherlands and Singapore, so it has been an adventure. Now I've finally fully retired, so it's time to join up with the rest of you. I'm looking forward to retirement. My older brother has said that once he retired, he was so busy that he had no idea how he ever found time to be employed. But then he bought and fixed up a cabin in the North Carolina mountains. Cindy and I are still in the Denver area as are our two daughters, so we're staying here for the foreseeable future and I look forward to spending more time with them (I think the feeling is mutual too). Get in touch anytime. I've heard that retirement means not being tethered to a cell phone anymore, so best to connect by email. Hope to hear from you.

Bill Herb writes: He and Marian are weathering the Covid19 crisis just fine on Maryland's Eastern Shore. Every day they are grateful for the beautiful spot in which they live, and their opportunities to view nature all around them. They are enjoying socially distant visits with their granddaughter, and similar visits with their sons who are both within an hour's drive. Bill's work on his old boat gave him plenty of opportunity to use up some of

that extra time the outbreak has provided. That and trying new drink recipes. They remain active on the Board of Directors of Emerge, Inc., an organization that provides support to developmentally disabled adults; Marian is involved with the League of Women Voters; and Bill is an active member of a local political club. They did have to cancel a planned trip to Greece and Turkey in the spring, and hope they are still in their “go-go” years when foreign travel opportunities open up again. Instead of the Adriatic, they had to content themselves with road trips to Lake Erie in August and western Virginia/eastern West Virginia/western Maryland in June. Did you know there are snakes (and no lights) in the 3,000-foot Paw Paw Tunnel? Bill noticed he was a year behind in his dues, and in a moment of anticipated longevity, will pay ahead for 4 extra years.

John Klein writes: We are working in Wall, SD this summer. Had major computer issues, spent night trying to clean up drives which only provide minimal relief, so I finally had to look for some assistance. Found a wonderful computer specialist in Philip, SD about 20 miles to the east. He had a computer lab in ½ his garage many would die for, and the other half of the garage houses the collector cars he rebuilds. I knew I had found the right person. A few days later, he delivered the laptop to me at work, said try it out for a few days before I bill you. He finally sent us a bill after several months. Life in small towns is great, as are the people. Wall, SD is a small rural town but one impacted by the huge inside flea market called Wall Drug. Wall is impacted by this world-famous store and is also a small town adjacent to a National Park, the Bad Lands. So it does get folks from all over the US as visitors, but as we found out this year was a major anomaly due to this crazy virus and the stress the folks in adjacent states that were rigidly closed down were facing. It took a while for us to really understand the people shopping in our store who were embarrassed to admit they were from Minnesota, Michigan, New York. You see the trend. While talking to a young couple from New York they told me they may not be able to return home since they have traveled in states the Gov of New York had listed as no travel states and put in place a 14-day quarantine for those returning home after being away in these states like South Dakota. Likewise, we soon heard other stories from other states. Everyone was trying to get away from the mess in their own states. California shoppers showed up so distraught about things happening they don't know what to do. Since we winter there we can relate to those frustrations and we will soon be making a move ourselves. We kept our masks on for a few weeks but soon found conversations were difficult so we discontinued masks much to the relief of our customers who would then take theirs off. Plus, it is difficult to compare a picture ID of a customer who is wearing a mask. One of the parts of America that we thought would be to experience was the Sturgis Motorcycle Rally. For two weeks we had many of the attendees in our store, both going to Sturgis and returning if they had any money left. We sold Black Hills Gold Jewelry and they pretty well cleaned us out. But what a great bunch of people, all trying act intimidating and tough, but we found them all to be easily to talk to and heard some great stories. They were all dressed in very patriotic attire and all outspoken supporters of Trump and they all paid with cash. And none were wearing masks. But after two weeks filled with the constant rumble of large groups of bikes heading into and out of town, it was nice to return to our regular composition of customers. Customers that I will add were now becoming very open with their own Trump attire and outspoken frustration with their local political situations. Polls don't pay attention to this part of the world based on a very wide difference between the reported standings vs what Joyce and I heard and saw all summer long. Joyce and have worked at a variety of jobs and volunteer positions around the country since our retirement in 2006. We had planned on a return to Skagway, AK this summer but the lack of customers via cruise ships shut Skagway and other Alaskan cruise ports down. We are planning on a return there next year as the cruise industry returns to AK. This is a lifestyle we enjoy, and we will continue until we, or our truck wears out. But the truck is a Dodge, and they never wear out.

Katherine Lins writes: Life continues as it has – only by Zoom now. Harry is still active in the WMO and I stay active in church activities here in Reston and with grandchildren. If I hadn't broken my arm in February ice skating I'd write more – still in PT.

Dick Luckey writes: Hello to all from Dick and Pat in southeast Aurora in Colorado. I finally retired after 38 years with the USGS and eight years as a consultant. I may have to go back to work just to get some rest. As all of you know, being retired is a tough job. I missed the last couple of reunions, the first being because I was in a wheelchair. I hooked a 10 -inch trout and he broke my leg. I can't blame him because he had a hook in his mouth. That is NOT a fish story. Our adventures include trips to Italy, Mexico, Alaska, the Carolinas, and the Maritime Provinces of Canada. That was spread over a number of years. We got to Halifax just behind a hurricane. Seeing a crane wrapped around a skyscraper was impressive for a Colorado boy. We also learned that the largest man-made explosion prior to the atomic age occurred in Halifax. A ship load of ammonium nitrate exploded in the harbor and destroyed miles of the waterfront and surrounding areas. In Italy we saw

beautiful art but there were way too many people. Each summer we take a vacation in Rocky Mountain National Park with the kids and grandkids. We see a lot of elk and deer and sometimes a flock of turkeys. A couple of years a bear with cubs came calling. We stayed inside and fortunately she didn't know the walls were so thin that a good smack would leave a large hole. We take hikes and a boat-ride and the grandkids wear us out. We now have one great grandson in addition to nine grandkids. Being a great grandfather doesn't make me feel old, but my son being a grandfather seems impossible. Take care all and stay safe.

Larry Pettinger writes: I enjoy receiving all the news; even though I was in Mapping. I knew quite a few WRD folks. Keep up the good work in these trying times!



Barney Popkin writes: I was a USGS/WRD/Texas District hydrologist from 1966-1972 and learned much from colleagues and mentors, such as Trig Twitchell, Al Winslow, Ernie Baker, and Ed Legget in Austin, Robert Lee and Bob Gabrysch in Houston. Also, Jack Joerns in Wichita Falls while on leave during the last two years while at the University of Arizona for my Hydrology MS and fellowship work at the Arizona Water Resources Research Center. I learned more at the Survey than at NYU, NMT, UA, and UC Berkeley. During my time at the Survey, I worked on the Permian Basin with Pete Stevens and George Knapp, East Texas with John Wesselman and Bill Sandeen, Central Texas with Sergio Garza, Dick Reeves, and Bill Hardt, and Texas Panhandle with Luis Madrid. I studied under Stan Sauer in Austin and worked with him on stream gaging and urban hydrology programs. I produced several Geological Survey reports on thermal and salinity stratification of the Brazos River Reservoirs with Clarence Welborn and Herb Mendieta, and geology and ground-water resources of Montgomery, Donley, Hall and Briscoe Counties. Thanks also to great Austin editor Edna Shaw and DC editor Edith Chase. Ms. Chase wouldn't let me publish my poem on the Brazos, saying, "The Geological Survey does not publish poetry!" My last USGS assignment was in DC to help computerize hydrology records. I've done much since leaving the survey, for consulting firms, USAID, USACE, and for the private sector, including managing the Edwards Aquifer Study for Metcalf & Eddy, saving the Navy millions in innovative designs in San Francisco, discovering MONA (monitored natural attenuation) for Southern Pacific Railroad, for USAID in Asia and the Near East plus consultants in over 25 developing countries, and last year for the World Bank as Team Leader for the Jaffna, Sri Lanka stormwater drainage master and procurement plan. My most interesting work was to move the Red Sea in Massawa, Eritrea for a commercial integrated seawater farm for Carl Hodges. Marin Sheen narrated a video on that for Seawater Farms Eritrea. Now taking remote assignments from Tucson, AZ.

Larry Prakken writes: I want to thank John Walker for summarizing the career of Don James in the August 2020 newsletter. I started my Survey career in 1980 with a 10-month stint in the same north woods field office (Grayling, MI) as Don, already an experienced tech. Finding myself no longer actually employed, I had to move on, but damn if Don didn't put together a heck of a career. I had no idea. Forty-one years? Thirty-three was enough for me. Congrats to Don.

Dianne Putnam writes: Received the current newsletter and as always it is great to hear how everyone is doing. Recently I downsized and moved into Wilmington, NC. Many of you have gone through this and it is a love/hate event. In the process you find so many mementos and memories. Remember the 'chocolate room' we did in NMD? The whole building smelled like chocolate! So many good friends to remember! It was good to be a part of the USGS family. Retirement has been good. Recently doing more with my church and quilt groups. So far health has been good and I'm able to travel and do most everything I want. If you are in the area, let me know and we can get together. Many thanks to the Retirees' staff for all you work! Looking forward to the next edition. (See Directory page for new address)

Dennis Stewart writes: I always look forward to the Newsletter. It has been 30 years since I retired, so I read less and less about my former colleagues and friends with the USGS. After retiring from professional work in 2012, life has been eventful. My wife, Mary Ann, passed onto a new life in 2014 after coping with Pulmonary Fibrosis for 5 years. In 2017, I married Linda Williams who I met at our Church. Linda lost her husband to brain cancer in 2012. To share life with two wonderful ladies has been a wonderful blessing. Linda and I have avoided COVID-19 so far. Golf has become a passion and I play as much as 4 or 5 times a week. Thanks to

Jeff Martin (Indiana District) who sets up retiree's meetings periodically, I enjoy seeing some of my Indiana District colleagues. As I reflect on my life, I feel so fortunate to have had the opportunity to spend 34 years with so many great people in a really class organization.

Russ Wagner writes: Hard to believe it's been 25 years since I retired. Still keeping busy but sure would like to go somewhere - anywhere! Don't know what's going on with USGS and how we get anything done anymore.

Loyd Waite writes: Thanks for the great job you are doing with the newsletter!

Dues Received since last August's Newsletter: We apologize for any confusion that resulted when the February dues list was sent out with the electronic version of the August Newsletter. A few members sent a second check; these were credited to their accounts and extended their membership forward. Since the August Newsletter, \$1,460 in dues and \$195 in contributions have been received from the following. Thanks for keeping your membership current.

Stephen S Anthony	Dennis Helsel	Stewart A Rounds
Walter R Aucott	William "Bill" Herb	Lessie Runner
Colleen Babcock	Alfred Knight	Barb Ryan
James Barks	Katherine & Harry Lins	Albert "Al" Rutledge
Stephen Blumer	Kathy Long	Donald Schaefer
David Click	Richard Luckey	Mary Jo Schlotfeld
Alberto Condes	David Lystrom	LeRoy Schroder
Ralph Cotter	Michael Mallory	Richard & Elisabeth Snyder
Brian Drost	Kenneth Markham	Rick Spechler
John "Jack" Fischer	Clinton Nagel	James Stark
James J French	Mike Nolan	Dennis Stewart
Gary Gallino	LaRue Odenbach	Jeff Stoner
Robert Goemaat	Robert Perry	James VanZandt
George L Gray	Charlie Peters	Russ Wagner
Richard Grover	Dianne Putnam	Loyd Waite
Steve Hammond	Robert Renken	Joe Willmon

RETIREMENTS

Gregory K. 'Greg' Boughton, a hydrologist in our Cheyenne Office, WY retired on August 30, 2020. Greg started his career in the Illinois Water Science Center in March 1990. Caught chickenpox during the drive from Colorado to Illinois to report for duty. On sick leave for first two weeks on the job. Worked on a variety of projects, including cableway measurements over the Illinois River. Eventually took over the statewide sediment program. Greg transferred to the Wyoming Water Science Center in November 1992 to investigate trichloroethylene contamination in the groundwater of F.E. Warren AFB. 70+ people worked on that project at one time. Spent many long, frigid days purging monitoring wells, collecting samples, and operating a pump-and-treat remediation facility. Cranked out many administrative reports with short deadlines. One of three employees to remain at the Center following the Water Resources Division's one and only reduction-in-force when the project was taken over by a contractor in 1996. Greg worked on a variety of water quality, groundwater, surface water, and aquatic ecology projects, including the Yellowstone River Basin National Water-Quality Assessment, Environmental Mapping and Assessment, National Rivers and Streams Assessment, Metal Loading in Soda Butte Creek Upstream of Yellowstone National Park, and the Wyoming Groundwater-Quality Monitoring Network. Currently deskbound and tracking and verifying analytical results of surface water-quality samples, performing collateral-duty safety and environmental compliance duties, searching for potential funding opportunities for new and ongoing projects, maintaining the internal legacy Center website, creating content for the external CMS website, and assisting the Environmental Health Mission Area in transferring their content into CMS and tracking publications. We will miss Greg and wish him well in his retirement.

-John Kilpatrick, Center Director, WY/MT Water Science Center

Bruce Campbell is retiring. Please join me in recognizing Bruce's accomplishments in hydrology over the last 31 years with the USGS. His work has been absolutely vital in the effort to manage and protect South Carolina's groundwater resources. We wish him all the best in a well-deserved retirement! Bruce Campbell, Hydrologist, with the South Atlantic Water Science Center is getting his last model runs done with the USGS. "It's about time!", says Bruce, with a chuckle. He started with the USGS in 1989 after 7 years of consulting work and as a Hydrologist with the U.S. Navy. On a recommendation from Frank Chapelle, Rod Cherry and Glenn Patterson took a big chance and let him start in the Charleston field office on Sullivan's Island as a new USGS employee. They had a groundwater project with the SC Water Resources Commission ready to go that involved simulating the groundwater resources in the Charleston area. This was the old days when models started with a blank text editor screen and a lot of trial and error. He's glad those days are gone! While working on the Charleston project, his former colleagues with the Navy started calling and asking about getting the USGS involved in their groundwater contamination work around the southeast. This led to Bruce being funded by the Navy to coordinate their USGS work. Some of the projects that were started at various Navy bases in those days (early 1990's) continued for 20 years or more. Bruce started working in the national USGS DODEC (Department of Defense Environmental Conservation) Program that was headed by John Powell and helped John with Navy work around the country. In the meantime, the USGS Charleston field office grew to 3 employees with the addition of Kevin Conlon and the transfer of Brady Long from Columbia. Some additional groundwater projects in the Charleston area came along involving the SC Aquarium site, aquifer-storage and recovery with the City of Charleston, and work with Mount Pleasant Waterworks – that continues to this day. Matt Petkewich was an integral part of these projects. Somewhere along the way, Bruce became the SC District Groundwater Specialist, too. However, the Southeast Regional office decided that he could make a bigger contribution to the USGS by relocating to the Columbia office. Bruce was in Columbia a couple of years and caught the international hydrology bug. In 2000, he spent part of the summer in Saudi Arabia at the USGS Minerals office in Jeddah working with the Saudi Geological Survey on their groundwater data. Next in 2001/2002, he moved with his family to run a US Agency for International Development project in Cyprus. This involved working with both Greek and Turkish Cypriot water agencies on the politically divided island developing a water-resources database and provided numerous training classes. Bruce was back to reality in 2003 in Columbia to run, along with Alissa Coes, one of the initial Groundwater Resources Program projects for the Atlantic Coastal Plain of SC-NC which resulted in a USGS Professional Paper. Along with Jim Landmeyer, Bruce studied the groundwater resources and groundwater contamination problems of Chesterfield County, SC. A USGS Focus Area Study started in 2015 that partly involved updating the Groundwater Resources Program model. Also, about 2015, Jim and Bruce started a project in Aiken County, SC to look at groundwater availability. Bruce has been working closely with two SC State agencies for many

years and values the contributions made to their work. It's safe to say that working for the USGS all these years has exceeded his expectations. He has met and worked with highly talented people across the country and been lucky to have such a varied career with the USGS. He's looking forward to a slower pace, more time with family, some more golf, along with a return to some long-delayed woodworking projects. He plans to volunteer with the USGS for a while to finish a couple of reports.

Thank you and take care Bruce!

-Vic Engel, PhD, Center Director, South Atlantic Water Science Center

Gary Cottrell retired after 32+ years at the National Water Quality Lab on August 28, 2020. Gary plans to travel, garden, and read a stack of books that has been building for years. Gary and his wife already travel regularly so they would like to request your help by providing some of the unique, out-of-the-way places you might recommend for a visit. For example, the Chichester Country Store in NH makes great cider donuts, the Mead CO Beet Festival (food, music, and classic cars), or Smokin' Dave's BBQ in Estes Park CO are worthwhile stops. Gary will compile all the suggestions received and share with anyone interested. Please use Gary's personal email; garylcottrell@yahoo.com. Gary started at the NWQL as a chemist in the Nutrients Unit and eventually became the supervisor of that unit. Since he did not think a chemistry degree had prepared him to be a supervisor, Gary went back to college and got a Master's in Business Administration degree to make himself a better supervisor. Over the years Gary was fortunate to supervise many of the units at the NWQL including the Business Development Team where he suggested and sent out the first NWQL Rapi-Note. As Chief of the BDT, Gary commonly guided tours of the NWQL and had the pleasure of giving tours to many USGS personnel, visitors from dozens of countries, universities, high schools, and professional organizations. One of Gary's favorite duties was visiting various Water Science Centers to provide them with updates from the NWQL and to get feedback from them on how the NWQL was performing, what new trends had arisen, and what suggestions they had for the NWQL. This duty allowed Gary to visit every state except Alaska (he will get there soon) and introduced him to the strength of the USGS: her people. Gary was involved in some amazing, interesting science, but it is the dedicated people he met and worked with that has made his time with the USGS a true pleasure. Everyone provides the public with the best science they can and working with all of you has made Gary's career a joy, so he wants to thank all of you for that interaction. Gary wishes all of you the best both professionally and personally and he hopes you all enjoy your work as much as he has.

-Jeff McCoy, NWQL Chief and Greg Clark, LASD Director

Deb Curry retired on August 29, 2020 from the California Water Science Center (CAWSC). Born in Lindsay, CA, Deb had a front seat to water science and management from an early age: her father was an engineer who worked on Bureau of Reclamation water projects in California, Texas, New Mexico, and Oklahoma. Deb started her own water-science career at the University of Oklahoma, where she received her B.S. and M.S. degrees, and co-authored a book on saltwater intrusion. She moved to New York in 1986 to join the USEPA, Region II, as a hydrologist working on Superfund sites. Deb developed protocols for reviewing Superfund remedial investigations, feasibility studies, and records of decision for groundwater contaminated sites. She wrote and negotiated interagency agreements and sat on an international committee charged with developing a model to define the reduction of toxic loadings in the Niagara River and Lake Ontario. In 1990, Deb was hired by the New York City Department of Environmental Protection (NYCDEP) to create a new Water Quality Impact Assessment Section. With her team, she developed a pesticide permit review and monitoring program, protocols for determining impacts of wastewater treatment plants, and monitoring programs for fish and benthic macroinvertebrates. Deb also served as senior technical reviewer and technical team lead for NYCDEP. Deb joined the USGS in 2003, taking on the position of Program Chief of the CAWSC Watersheds, Ecology, and Integrated Hydrologic Modeling Program (WEIHMP). Under Deb's leadership the WEIHMP, which has over thirty employees—including many research scientists, has made wide ranging science contributions in California and beyond. Current projects include integrated hydrologic modeling throughout the state, ecological investigations in the California Bay-Delta, and sediment studies in watersheds and reservoirs across California. Deb also has been an active member of the CAWSC Leadership and Program Chiefs Teams. As the longest serving Program Chief, and with her thoughtful and supportive attitude, Deb is a highly valued team member and great resource for all parts of the CAWSC. She will be greatly missed. In retirement, Deb and her partner Mark intend to travel much with their new teardrop trailer. In her own words, she just wants to "be out on the land." She loves the Rockies, but also hopes to visit many other places, including spending several months on the Camino De Santiago in Spain – as soon as the COVID-19 pandemic has passed. In the

meantime, she is hoping to be out on the land and the water closer to home, including perhaps through volunteering for some USGS field work.

-Eric Reichard, Director, California Water Science Center, U.S. Geological Survey



Sue Kahle retired on July 31, 2020 and it is with mixed emotions that we send Sue off into her well-deserved retirement. Sue has been a leader in our Pacific Northwest groundwater investigations over the past 30-years and is recognized as an involved but unbiased voice in issues faced by the dozens of partners and cooperators her science has served along the way. As a Hydrologist, Groundwater Specialist, and Section Chief in the Washington Water Science Center, Sue provided exemplary leadership and expertise in groundwater investigations. With her fresh Geology degrees in hand from Western Washington University in Bellingham, she launched her USGS career in 1990 with multiple investigations throughout the Pacific Northwest. Because of her excellent communication and organizational skills, Sue became particularly adept at leading regional-scale groundwater studies in areas with particularly contentious issues, such as the Spokane Valley-Rathdrum Prairie Aquifer in Washington and Idaho and the Columbia Plateau Regional Aquifer in Washington, Oregon, and Idaho. In addition to those high visibility investigations, Sue designed, led, analyzed, and reported on hydrogeologic and water-quality studies throughout the Pacific Northwest where she was able to use her gift for constructing three-dimensional hydrogeologic frameworks using her knowledge of geologic processes to interpret driller's logs and geophysical data. She worked with multiple investigators and diverse stakeholders to complete investigations concerning issues such as reallocation of excess surface-water irrigation that has recharged groundwater, tribal groundwater resources, and effects of groundwater withdrawals on instream flows. Most recently she completed an important assessment of naturally occurring uranium concentrations in groundwater and domestic wells in northeastern Washington that led to support from the USGS Hazards Mission Area to better communicate the associated risks to local health departments and the general public. Sue has continuously explored and improved our understanding of hydrogeology and the linkages between science and water-resource management and decision making, and along the way has built a high performing Groundwater Systems Section that will continue her cause. Although her many skills and camaraderie will be sorely missed, her friends at the USGS wish her a long and happy retirement.

-Dr. Cynthia Barton, Center Director, Washington Science Center



Kevin Linn retired on August 28, 2020 after 40 years plus with the USGS. Kevin has been a Hydrologic Technician in the Western Washington Field Office (WWFO), Washington Water Science Center for most of those years and has provided exemplary technical leadership to the Hydrologic Data Program. He began his career in Vernal, Utah, as a hydrologic technician and four years later transferred to the WWFO where he honed his skills as a technician, operating gaging stations, installing gaging stations and providing guidance to junior level technicians in collecting stream measurements and working records. He later transferred to the wilds of Juneau, Alaska continuing to further his expertise by planning, budgeting, and installing gaging stations at extremely remote sites. He worked on a variety of sediment and water-quality projects while maintaining a stream-gage network as well as serving as safety officer. During this time in Juneau, he was a one man show, performing administrative and IT duties alongside his other work prior to returning to the WWFO in 1996. During his tenure at the WWFO he served as a section lead, where he earned the reputation for always asking for one more measurement from the field crew! His hydrologic skills also were called upon as a member of the Western Region Technical Advisory Committee currently known as the Hydrologic Data Advisory Committee. Kevin has run almost every field trip in the WWFO and has exceptional knowledge of the unique characteristics and needs of most stations. Likewise, his breadth of experience with most types of gage installations makes him the go-to person for troubleshooting questions and gage installation guidance. Kevin's long-term perspective and knowledge of the solid foundation upon which our work is built is appreciated by his coworkers and cooperators. In a time of rapid change (measuring technology, database, workflow, etc.) his voice is sought to make sure that the USGS criteria are still being met. Kevin has been a model in how to do the job well and has earned the respect of colleagues in the USGS, WAWSC, and stakeholders throughout Western Washington.

-by Reagan Huffman -Forward by: Dr. Cynthia Barton; Science Center Director, Washington Water Science Center



Mark Mastin retired on August 28, 2020 after 36 years with the USGS. Mark has been a hydrologist, Surface-Water Specialist, and Assistant Director for Hydrologic Data (Data Chief) in the Washington Water Science Center (WAWSC) for most of those years and has provided exemplary technical leadership to the Hydrologic Data Program and Investigations Program. He began his career in Vernal, Utah, and then a year later transferred to the WAWSC as a hydrologist leading surface-water projects resulting in 34 publications addressing flooding, water availability and trends analyses. Mark has

been an excellent modeler throughout his career and did a lot of varied projects with different models. Mark has been a recognized expert in watershed modeling, serving as a technical advisor to the U.S. Bureau of Reclamation developing watershed models used in water supply allocations to manage inflows to the Yakima River Basin and Potholes Reservoir to improve runoff estimates and hence water-allocation decisions. His work using these models to forecast climate change effects in these watersheds provided an indication of future management challenges. Mark also applied his watershed modeling skills to urbanizing basins in Puget Sound, rain-on-snow flood warning in the Cascade foothills, and recharge processes through the extensive glacial till of the Puget Sound lowlands. Mark's modeling work has also included flood-inundation mapping for several watersheds in Washington and for 15 watersheds in Honduras in response to the devastation resulting from Hurricane Mitch. Mark's role as the WAWSC Surface-Water Specialist has been outstanding, providing beyond-the-call-of-duty technical expertise that has not only improved the quality of the WAWSC surface water products but also has been called upon to provide impartial analyses of sometimes confounding and contentious historic streamflow records used for flood protection designs. Mark's technical expertise was also evident in the SR530 Oso landslide response, where he worked tirelessly at the FEMA Joint Field Office advising on the stability of the debris dam, impoundment lake, and North Fork Stillaguamish River conditions for the safety of search and recovery teams and for communities downstream of the slide. Mark's expertise in surveying also has been invaluable to the Center in establishing gage site datums and for indirect measurements. Mark's excellent golf skills were evident in his design of the Center's annual holiday putt-putt golf classic, not to mention his frequent winning style. His famous award-winning rum balls have been the hit of every holiday party. Mark's dry wit and surprising humor has often helped lighten the challenges of the job for all of us in the WAWSC. Mark has been an inspiration and model in how to do the job of a hydrologist well and has earned him the respect and admiration of his colleagues in the USGS, the WAWSC, and throughout the State of Washington. Because of the pandemic, Mark retirement party will be delayed until we can gather together.

-Dr. Cynthia Barton, Center Director, Washington Science Center



Mark Munn retired on July 31, 2020. With his last few manuscripts in the final stages, it is time to send Mark off into his well-deserved retirement in Bellingham, WA. Although Mark spent his USGS career stationed at the Washington Water Science Center (WAWSC), his 28-years of research and leadership as a nutrient and aquatic Ecologist for the National Water Quality Assessment (NAWQA) program has led him around the nation. Mark was an exemplary researcher and leader for investigations of interactions between nutrients and biota in streams. Following a few years of consulting work, Mark started with USGS in 1992 as a NAWQA Study Unit Ecologist exploring such topics as how land use activities contribute to the transport and uptake of pesticides in agricultural streams. He also worked as a Research Ecologist for the WAWSC where he studied the relative influence of geography

and local habitat conditions on benthic invertebrate communities, contaminant uptake in fish in Lake Roosevelt, and baseline data on the Elwha River prior to dam removal. His success led to appointment as National Coordinator of the NAWQA Nutrient Enrichment Effects Team, a team of scientists from around the country that tackled various aspects of nutrients, including chemistry, ecology, hydrology, and land use. He also was honored with appointments to the technical review committee for the National Science Foundation's National Ecological Observation Network and the NAWQA Cycle 3 planning team. His final stint with NAWQA was as lead nutrient ecologist on the Regional Stream Quality Assessment team where he focused on effects of nutrients on algal, invertebrate and fish communities, and the use of continuous water-quality data for assessing nutrient dynamics and biological response. During this time, Mark also maintained his leadership skills as a Supervisory Research Ecologist for the Watersheds and Fluvial Systems Section in WAWSC. Mark's research undoubtedly improved our understanding of stream ecology and the linkages between nutrients and biota. Along the way he has mentored and worked with many talented scientists that will continue

his cause. Although his skills and camaraderie will be sorely missed, his friends at the USGS wish him a long and happy retirement. And you can all guess what our favorite aquatic ecologist will be doing a lot more of!

-Dr. Cynthia Barton, Center Director, Washington Science Center



Steve Pickard writes: It's an odd feeling visiting all the sites you've serviced for 20 ,30 years or more knowing that this will be each one's last measurement made, last csg read and you'll never wade them again. Many of the little towns and roads I will most likely never see again. I have said for years I would be going very soon after turning 56, which was Aug. 1. There are several things that have helped me decide this is in fact the best time to retire. Stacey is having health issues and is having a hard time watching the girls without help and I feel my own check engine light flickering. I have

known of too many people that stayed a few years past when they could go and then retire and die. I have things I want to do before then. I want to watch those two granddaughters grow up and help spoil them. I hope to get a few good years in hunting, fishing, and trapping knowing that I am not limited by vacation time—only energy. I have been walking two or three miles every morning in preparation. I am going on a two-week trip to Northern Maine, staying in a cabin in late November to trap fisher, marten, and weasels (a bucket list trip) with a guide in an area the size of Connecticut. No houses, people, or cell phones. Might even be running on a snowmobile. I was also planning on a trip out west with Leon and Dennis leaving the 19th of this month, but Dennis's wife had a stroke and that has been cancelled. So, since I already have all my paperwork submitted, **Aug. 14 will be my last day with USGS.** When I started there were no field computers, any sensors that required a laptop for communication or Dopplers. In fact, office computers were very new on a system we called The Prime.... green letters and numbers on a black screen, as were very basic DCP's that were programmed with heavy briefcase like test sets. I could never have imagined running a field trip without a pencil, wristwatch, and stopwatch. I have traveled the same 11 miles every morning and afternoon for 44 years between riding the school bus, driving to high school and college, and working here. (Except for the last few months of course) I have always tried to balance, delegate, and encourage what I thought each person was best at and keep the office as efficient and old school as possible, never playing favorites. I hope you guys will continue that as much as the "new survey" will allow it. All of you are well rounded in all aspects of gage construction, levels, QM's, and records processing. You can all train others to do it right. With all the changes the last five years or so the Williamsburg office is the strongest it ever has been and will continue to excel I am sure. When you begin more and more working across offices take the time to explain things to newer employees. They will appreciate that, even if they do not tell you, and it will make the center better.

-Steve Pickard's email forwarded by: Michael S. Griffin, Center Director, OKI Water Science Center



Tim Reed, Office Chief, California Water Science Center (CAWSC) Redding Field Office, retired on August 29, 2020 after 32 years with the USGS. As Tim describes in the writeup below, has had an extremely rewarding career. Thanks to Tim for his many contributions to the USGS, both here in the CAWSC and at his previous home in the NJWSC. This includes his technical leadership, his commitment to staff, and his enthusiastic dedication to fulfilling the mission of the USGS. Tim will be greatly missed. Here's wishing him all the best in his next adventure. Now, I will leave it to Tim to have the last word:

- Eric Reichard Director, California Water Science Center, USGS, San Diego, CA

"After graduating from West Virginia University and being a land surveyor in Western New York, I soon realized that since surveying jobs fluctuated with the construction industry, I needed to find a more stable career. I applied for a position that was advertised by USGS for NY/NJ and was soon working as a hydrologist at the NJWSC in 1988. After 18 years in the Data Program and a Low-Flow Project, I transferred with my wife and three children cross-country to the Redding Field Office in 2006 to be the Field Office Chief for an awesome crew (Redding & Eureka Offices) at the CAWSC. Training others and data collection have been staples of my career. I was a trainer for AQUARIUS, GRSAT, and ADAPS 201 and participated in Surface-Water Reviews in California, Missouri, New Mexico, Kansas, and New York. The transfer of ideas and knowledge between WSC's during these reviews was priceless. I got to meet many awesome streamgagers, see beautiful gaging stations during these reviews, and found out about the Redding Office when I reviewed California. I enjoyed the challenge of indirect measurements in New Jersey and Pennsylvania and co-authored several reports (flood, water temperature, and data reports). To my surprise, I was able to assist several police investigations in both New Jersey (Delaware River) and California (Klamath River) by showing detectives which river peaks

potentially moved the deceased to a resting place along the riverbank. At the NJWSC, I had an idea that the USGS should have its own survey nail (USGS stamped on the head) for high-water marks, reference points, etc., so I worked with HIF to discuss this with a survey-nail manufacturer. The manufacturer did not want to make the nail, so the HIF made a metal washer with United States Geological Survey stamped on it to be coupled with a standard survey nail. I was really stoked to see one set in a cement weir as a survey marker in CA when I transferred years later. These past 32 years have afforded me with the gift of incredible memories. Here are a few: An Osprey dove into Hat Creek within arm's reach while I was making a discharge measurement. The Osprey pulled out a large fish, hovered for a second with the fish in its talons, and we were face to face before it banked and flew downstream. The hospitality of a New Jersey homeowner giving us Goo-Goo Clusters (wound up being dinner) while we surveyed the high-water marks on their recently flooded house as daylight disappeared (disclaimer: the USGS does not endorse this candy!). Making high-water measurements in the dark via streetlamps on bridges. Making my first ADCP measurement (2002) with a borrowed ADCP and a swamp boat that almost ran into it. As the swamp boat did a 180 just feet from the ADCP I was sprayed of water but thankful there was no contact with the ADCP. Presenting streamgaging at middle & high schools, several colleges, and World Water Monitoring Day events. I was able to instruct West Point Cadets how to streamgage at the Ramapo River near Mahwah gage several times. Besides streamgaging, the cadets really looked forward to skipping their box lunches to run down to McDonald's. Other highlights are setting transducers just downstream of Oroville Dam (around the time the town was being evacuated) to potentially map out the flood wave if the dam failed and kayaking beautiful Northern California rivers with the ADCP. Moments like the cablecar being pulled downstream as a submerged root-ball wrestled with the Columbus weight during high-water are etched in my memory. I am proud of the USGS. The rich history and dedication of all before us and especially all of you who will carry on with the Survey's mission. I wore my USGS visual identity with pride and so often that my youngest child thought that USGS was how to spell my name. I have always believed that we should do the best we can when in the field because the data we collect will be so crucial to studies throughout the years. I will sign off with "Life is Good". **Tim**

Dick Smith retired at the end of July 2020 after a 45-year career with USGS. In 1975, Dick Smith was recruited by Nick Matalas to join the USGS "Systems Analysis Group" in Reston after completing a PhD in Geography and Environmental Engineering at Johns Hopkins University. It turned out to be a very successful conscription as Dick spent the next 45 years with the USGS in Reston. His first project (done in collaboration with Jim Slack) was developing an oil spill risk analysis model for the Interior Department's offshore leasing program. The model simulated offshore oil spill movements with a home-made GIS system, since commercial GIS was not yet available. The first publication from this project (an Open File Report) was considered very "sensitive" and was colleague-reviewed by the Director and the Assistant Secretary of the Interior for Energy and Minerals. This work continued for five years as risk analyses were conducted for numerous prospective oil and gas development sites on the East and West coasts and in Alaska. Toward the end of the risk analysis work, Dick joined Bob Hirsch and Jim Slack in developing the "Seasonal-Kendall" test for trends in water-quality time series. This statistical procedure continues to be used world-wide for non-parametric trend testing of a wide range of environmental time series. Dick's next ten years were spent applying the Seasonal-Kendall test in numerous national-scale interpretive analyses covering a wide range of water quality metrics and topics, including acid deposition, nutrient, sediment, microbial, and toxic metal transport, and trends in "natural background" conditions in the USGS Hydrologic Benchmark Network. In the late 1980s Dick began focusing on two long-standing problems in interpreting data from water-quality monitoring networks: 1) using network monitoring data to estimate regional and national water quality conditions at unmonitored stream and river locations; and 2) relating water quality observations to specific contaminant sources. Dick invited colleagues from several USGS "Divisions", along with Keith Robinson, then working for the State of New Jersey, to collaborate on a project to combine remote sensing, land-use/land-cover classification, and newly-developed GIS techniques for digital-elevation-based delineation of stream networks in a water quality modeling framework. A winning entry in a Survey-wide competition provided the funding for *purchasing* (required in those days) the NASA Landsat imagery needed to classify land-use/land cover for the entire state of New Jersey. The resulting regression-based water quality model related USGS network monitoring data in the state to spatially-referenced "pollution sources" and other watershed "attributes". Following up on the New Jersey effort, Dick, Greg Schwarz, and Rich Alexander developed the USGS SPARROW model in the 1990s and early 2000s with a series of statistical refinements and national-scale applications of the modeling approach. The "SPARROW Team" also helped other research groups in several USGS Water Science Centers build

SPARROW models of their regional watersheds, beginning with the Chesapeake Basin. These modeling efforts were focused on regional management applications and received significant external support. Over time, regional SPARROW modeling became a central part of the USGS Water Quality Program. Increasingly frequent publication of the results of SPARROW modeling for more than twenty years has led to very widespread use of the methodology in research and management applications, nationally and internationally. In the second decade of the 2000s, Dick began developing a dynamic version of the SPARROW model, which allows for prediction of the time-varying behavior of water quality. An important challenge in this regard is accounting for long delays in the response of stream water quality to pollution control actions, which may occur when contaminants are temporarily detained in groundwater, soils, and vegetation. NASA, along with other academic and government institutions, was early to recognize the importance of dynamic SPARROW and has supported it with two research grants. Dick (until retirement) is the PI for the second project, which includes 28 participating scientists from nine institutions. Dick has authored or co-authored many publications including USGS Professional Papers, book chapters, and journal articles in *Science*, *Nature*, *Environmental Science and Technology*, *Environment*, *Water Resources Research*, and *The American Journal of Tropical Medicine and Hygiene*. He has served as an Associate Editor of *EOS*, and currently serves on the Editorial Board of *The Scientific World Journal*, which focuses primarily on scientific communities outside of Europe and the US. In addition, Dick has participated on three National Research Council study panels. Dick's intellectual creativity has led to development of enduring scientific investigation approaches and improved understanding of many water-quality issues. His contributions have shaped and moved the science forward, resulting in many practical applications. It has been a pleasure to be one of Dick's colleagues and I am happy that he will soon be a Volunteer for Science continuing his efforts in water-quality modeling.

-William R. Guertal, Ph.D., Deputy Associate Director for Water Resources

Pete Van Metre retired on August 28, 2020 after 40 years of exceptional performance and dedicated service to USGS science. Pete will continue to be around the USGS in Emeritus status working with colleagues on data interpretation and scientific papers. When not Thinking Great Thoughts, Pete will be working in his heirloom apple orchard with his wife Barbara in southwestern New Mexico, enjoying good wine and friendships in the south of France, and figuring out ways to beat the heat in Austin, TX. Pete began his career with the USGS as an entry-level technician in Tampa, Fla., in 1980, where his construction experience was more valuable than his Bachelor's degree in Geography. Regular site visits to Weeki Wachee Springs convinced him to hitch his wagon to the USGS. After a stint in Tacoma, Wash., as an entry-level Hydrologist he moved to Tucson, Ariz., pursuing a Master's degree while working with the USGS on a sediment study of the Puerco River. Thus, began his long interest in playing in the dirt. When the NAWQA Program began its first decade in 1991, Pete took a position as a water quality specialist on the Trinity River Basin (TRIN) NAWQA Study Unit project in Austin, TX. While in that role, Pete and Ted Calendar refined an approach to investigate water quality trends using sediment cores. Pete became the lead of the NAWQA Reconstructed Trends Sediment Coring Project which has examined long-term contaminant trends across the country using lake and reservoir sediment cores. Among the significant findings from Pete's sediment coring work was identification of reasons behind national upward trends in polycyclic aromatic hydrocarbons (PAHs) in urban areas, and the effects PAHs on human and aquatic ecosystem health. Pete's research was featured in the DOI Green Book, presented at two Congressional briefings, repeatedly featured in media outlets, and consequently recognized by a Meritorious Service Award of the Department of the Interior. Along the way Pete also earned a Ph.D. in Geology in 2007 from the University of Rouen, France. In 2012, Pete designed and then led the Regional Stream Quality Assessment studies for the NAWQA Cycle 3 decade. He guided multi-disciplinary science teams in conducting "gold standard" holistic evaluations of factors that influence the health of aquatic systems in five large-scale regional studies across the country. Most recently, Pete has left his mark on new directions of the Water Mission Area in his contribution to the design of the next generation of Water Availability Studies. Pete's research productivity has been prodigious, with over 100 publications and 2,600 citations. He plans to surpass that in retirement by producing 2,601 bottles of homemade apple cider. Please join us in congratulating Pete on a wonderful career in public service, increasing our understanding of the Nation's water quality and ecosystems. If you wish to send good wishes to Pete or contact him in the future, you can use his personal email: pvanmet@gmail.com

-William L. Cunningham, Senior Science Advisor for Groundwater Director, Earth System Processes Division, USGS, Reston, VA

NEWS NOTES ON SUSTAINABLE WATER RESOURCES
USGS Geohealth Newsletter

“The U.S. Geological Survey’s Environmental Health Newsletter”

“The GeoHEALTH–USGS Newsletter—published since 2004—provides information on new USGS science activities pertinent to safeguarding the health of fish, wildlife, domesticated animals, livestock, and people from environmental exposures to contaminants and pathogens.”

Links to a large number of past issues are included: <https://www2.usgs.gov/envirohealth/geohealth/>

Links to previous Epidemioecology News are included at the bottom of the USGS Geohealth Newsletter page.

Renewable Natural Resources Foundation Report on Infrastructure

This is an item in the RNRf news section, so be sure to read down to where it is displayed.

“On August 10, RNRf conducted a virtual round table on the issues facing America’s infrastructure and explored how to create a progressive path forward during climate change. Speakers were Doug Sims with the Natural Resources Defense Council (NRDC), and Cris Liban with the Los Angeles County Metropolitan Transportation Authority (LA Metro). Both speakers discussed the intricacies of implementing sustainable infrastructure projects and practical lessons learned.” <https://rnrf.org/news/>

Commentary from member Frank Manheim: The above information was of extraordinary interest to me because deep-sea minerals were a prime focus of my research in the 1980s. I was the commodity specialist for manganese and cobalt in the oceans. We (Atlantic Marine Geology at Woods Hole) received a grant from the Bureau of Land Management to do a global assessment of ocean ferromanganese crusts and nodules. Candace Lane and I led collections and analysis of specimens from all the available ocean research organizations in the U.S. plus did a global literature search, summarized in a *Nature* paper in 1988 (“Cobalt in ferromanganese crusts . . . “ v. 335 p. 59-62). The data are in a big Open-File Report: 1989-020. The work was brilliantly assisted by the late lamented Analytical Laboratories, plus our labs in Woods Hole. Later work in cooperation with German investigators and US cruises led by Jim Hein in Menlo Park expanded USGS studies in the South Pacific. After the bottom fell out of USGS mineral research in the 1990s, Jim continued cooperation with Chinese and Korean institutions. Other mineral interest centered on potentials for silver and heavy metals in submarine volcanic hydrothermal sulfide deposits, offshore phosphorite deposits, and sand and gravel.

My perspective on the RNRf deliberations: nothing in international waters will ever happen until maybe 1000 years in the future. Besides water depth and distance, humans are involved. If you want to know about the complexities of ocean governance, I just reviewed a Dutch book for CHOICE Magazine by Trevisanut et al (*Regime Intersection in Ocean Governance Problems: . . .*), 2020. A chapter entitled “The Institutional Schizophrenia of Ocean Governance . . . “ tells it all. Polarization over environmental policy has gotten so strong that powerful environmental organizations (e.g. NRDC) will in effect oppose touching anything in the ocean except fish.

Deposits with realistic recovery potentials are exclusively within national Exclusive Economic Zones (200 miles from shore). The U.S. did comprehensive EIS studies in the Johnston Island sector in the Pacific Ocean in the later 1980s. The State of Hawaii sponsored studies for metal recovery industries to be fueled by volcanic thermal energy, replacing its lost pineapple industries, but the U.S. did not have an effective system to bring such initiatives off. The U.S.’s most favorable and recoverable cobalt deposits are on the Blake Plateau off Georgia where 14,000 square km of the sea floor ranging from 400 to 1000 m are covered by phosphorite pavements with ferromanganese nodules and crusts. The Reynolds Company sought leases on the deposits in 1976, planning to replace platinum catalysts in autos with ferromanganese oxides followed by extracting nickel, cobalt, and vanadium from the spent catalyst. Though the Blake Plateau is a biological desert, the request was not approved.

MEMORIALS

Stephanie Beeler died Wednesday night July 29, 2020 after a short but courageous battle with cancer. Those of you who knew her, remember her bright smile, work ethic, and willingness to help that will be sincerely missed. For those of you who did not know her, she was a talented Hydrologic Technician in the Data Section in Lansing, she served as an NWIS Database Administrator, helped lead the Workplace Improvement Team, and assisted on several Data and Studies projects. As soon as we have any additional information, I will share with you all. Condolences to her husband Dan Obenauer and their son Emmet. Please keep them in your hearts and prayers.

-Ralph J. Haefner, Deputy Director (Data), Upper Midwest Water Science Center



Robert W. 'Bob' Craig, 74, of Las Vegas, died on April 14, 2020 in Las Vegas, NV. Robert was born in Red Bluff, CA to Claud and Marjorie Craig on February 8, 1946. Robert as a youth was active in sports playing football, baseball, and running track. He also served as student body president for the Corning Union High School student body. He was proud of his early firefighting experiences jumping from helicopters with the initial strike team. Robert defended his country in the United States Army, and then attended California State University, Chico, CA where he received his Master's in Hydrology. Robert spent his career working at the USGS where he received numerous accolades for his service retiring in 2005. Robert enjoyed coaching his children's soccer teams, hunting with his son, watching both the San Francisco Giants and the 49ers, and collecting Native American art. Robert was preceded in death by his parents, and stepson Corporal Matthew Commons. Robert Craig is survived by his beloved wife, Kay Craig, a son, two daughters, a stepson, and two grandsons. Funeral services were held later in Northern California.



David Dawdy, 94, died July 28, 2020 peacefully without pain after having a stroke that paralyzed his left side and shut down his ability to swallow. David was born July 1, 1926 in San Antonio, TX where he attended high school. He was discharged at end of World War II after 3-years of service when he was 20 years old and returned to San Antonio, TX where he got a BA in History from Trinity University in 1948. In 1950 he left Texas to go to California. In January 1951 he landed a temporary Hydrologic Field Assistant position with the USGS in San Francisco. After a few months, the position became permanent as a GS-5 Hydraulic Engineering Aid. Most of the office staff was in the field repairing gaging stations damaged by a major flood in CA that occurred December 30, 1950. David was asked to work streamflow records from this flood. He continued in this work in addition to measuring streamflow until 1954 when he was promoted to a GS-7 Hydraulic Engineer. After major floods in CA, OR, and WA in December 1955, he was asked to lead a group of hydrologists (two GS-9 hydrologists and university students) to compile and compute indirect-discharge measurements in those states where gaging stations had been destroyed by flood water.

After successfully completing this effort, he was promoted to a GS-9 Hydraulic Engineer and was asked to join a new Hydrologic Research team of the Surface-Water Branch, USGS Washington DC led by Manuel Benson who was doing research on flood frequency analysis and distributions. While examining discharge records of sand channel streams during the 1950 flood in CA and the 1955 flood in CA, OR, and WA, David had noticed unusual discharge ratings which had breaks or discontinuities. While working with Manuel Benson, David discovered more such ratings and showed them to Luna Leopold, USGS Chief Hydrologist. Luna encouraged David to investigate such records as his research project. That led him to New Mexico, Arizona, Wyoming, Nebraska and Mississippi to study such streams and resulted in several scientific publications on the subject.

In 1958 David left the Hydrologic Research team to work with Walter Langbein on regional precipitation mapping, stochastic hydrology, and information theory applied to hydrology. From 1960-63 David worked with James Culbertson at the Field Research Unit in Albuquerque, NM to revise a report on fluvial characteristics and hydraulic variables of the Rio Grande River. He also collaborated with Herb Skibitzke, a mathematician and groundwater modeler, in Phoenix, AZ, to develop analog models of surface water systems. In 1963 David was asked to go to the USGS Operation Research Office in Menlo Park, CA and to consider graduate school to study statistics. David chose to go to Stanford University where he got a MS degree in Statistics and Probability in 1964. After getting his MS degree he continued working at the Operation Research Office in Menlo Park developing rainfall-runoff models with researchers such as Terence O'Donnell from Lancaster University, UK. His work resulted in the publication of the distributed routing rainfall runoff model (DR3M) in 1969. The model allowed for regionalization and localized optimization of rainfall runoff and was implemented in many States.

In the early 1970's David was a research hydrologist for the USGS at the Engineering Research Center (ERC) on the Foothills campus at Colorado State University (CSU). He worked with researchers studying sediment transport in fluvial channels using flumes. He also mentored graduate students while on the faculty of the Civil Engineering Department of CSU. He had an office in the basement of ERC, and when he went up against the CSU powers, he and his students created a short-lived program known as "Underground Hydrology" involving stochastic simulation of streamflow. His point of contention with CSU was over their denying him academic credit toward a PhD for the courses that he taught. From 1972-1974 David was the Assistant District Chief for the California District. He was the technical assistant to the District Chief reviewing the work of 50-100 SW, GW, and WQ professionals. In 1974 he became the first Regional Research Advisor for SW.

After 25 years of service with the USGS, he took early retirement in 1976 and went into hydrological consulting. He worked on flood insurance mapping, flood hazards on alluvial fans, flooding from hurricanes, and participated in developing hydrology manuals and flood control/drainage master plans for counties, cities, and special districts in California and other western states with Dames and Moore in the Washington DC area. He returned to California in 1982 to work as an independent consulting hydrologist. He worked on litigation issues involving the Trans-Alaskan Gas pipeline, floods and channel migration problems, water-rights issues involving in-stream flow protection, and multiscaling theory of flood flows. From the late 1980's to 2020 David consulted on hydrologic studies in the Klamath Basin, CA related to dam removal and fishery restoration, flood control on Bay Area creeks, and saving Lake Merced in San Francisco, CA. In 2010 David and his wife Doris created and funded an endowment for Hydrologic Research at San Francisco State University.

Through work assignments with prominent hydrologic researchers such as Luna Leopold, Manuel Benson, and Walter Langbein, David became a recognized authority in the USGS in hydrology, hydraulics, and sediment transport, and internationally through consulting and his participation in international symposia. He was active in AGU, IAHS, and AIH, where he helped set the criteria for becoming a professional hydrologist. He also was active in ASCE, where he fought a long battle to become a Member without a degree in engineering. He was never permitted a rank higher than Affiliate Member, but David was awarded the ASCE Ven Te Chow Award for lifetime contributions in hydrologic engineering – the only Affiliate Member to receive this prestigious honor. He also received the Arid Lands Hydraulic Engineering Award from the ASCE and the Ray K. Linsley Award from the American Institute of Hydrology. He was named a Fellow of the AGU in 1990. He has served on AGU committees on surface water, sedimentation, and the history of hydrology. He served for 12 years on the editorial board of the AGU Water Resources Monograph Series. He was instrumental in initiating the AGU History of Hydrology interview series starting in 1995. David is the author of over 100 papers in hydrology and has been a guest lecturer at many universities. He made fundamental contributions to many topics in hydrology, including flood frequency analysis, flood flows in sand channel streams, hydrologic modeling, network design for various water resource inventory purposes, characterizing resistance to flow in alluvial channels, mapping flood hazard zones on alluvial fans, and urban hydrologic modeling.

He and his wife Doris were married in San Francisco, CA in 1951 and enjoyed travelling to the South Western U.S. to collect Navajo rugs, western paintings, and information for her books on artists of the American west. She also wrote books on George Montague Wheeler, the leader of a government exploring party of the western U.S. and on the Bureau of Reclamation. They were married 65 years until her death from stroke complications in 2016. He was an avid collector of stamps and rare Roman and Greek coins, and he had a well-trained palette for excellent wines. He was a bright and dedicated hydrologist who could discern hydrologic processes from data that others found difficult to interpret. David was a good friend and colleague of many with whom he worked in the USGS and as a national and international consultant. He was a special person—an advocate for those that he respected, but also proud of his list of those who thought less of him than he deserved. He will continue to inspire those who were his colleagues and friends. We have fond memories of our times with him. He will be missed. He is survived by his stepdaughter Barbara Dahl

-Contributed by Marc Sylvester, Barbara Dahl, and Marshall Moss



Mary J. Dunn, 89, of Hoschton, GA passed away peacefully at her home on September 24, 2020. She was born in Lewiston, ME on June 5, 1931, daughter of Paul J. and Joy G. Brown. In 1949, Mary graduated from Greely Institute (H.S.) in Cumberland Center, ME and married John Fabricius (now deceased) the same year. She worked as a telephone operator and later as a secretary in Portland, ME. After her divorce, she was married to Norman Dunn, Jr. Through their 44-year marriage the family was transferred to Latham and Central Islip, NY, North Kingstown, RI and finally to Stone Mtn., GA in 1968. In 1973, she began working at the US Geological Survey as an Administrative Assistant. She retired in 1998 after 25 years of service. She has always been active in the church, most recently a member of Christ the King Lutheran Church in Cumming, GA. She was always generous with her time and participated in many church activities

including sewing quilts for worldwide distribution. She took after her mother (Grammie Brown) being a great cook and making deserts for family, friends and coworkers. Everyone that knew her loved her fun-loving spirit, her laugh, everything she made, and her Maine accent. She was very thoughtful and generous to everyone that knew her. Her favorite hobbies were shopping with her daughter-in-laws and baking. She especially enjoyed getting together for family reunions each year on Sebago Lake, ME. She was predeceased by her husband Norman A. Dunn, Jr. and her companion Richard Bloyd, her parents and her brother. She is survived by three sisters, her three sons, nine grandchildren and two great grandchildren. A memorial service was held at Christ the King Lutheran Church in Cumming, GA on October 24, 2020. A grave side service was held in Maine this coming summer of 2021. **Ed Martin** wrote: Thanks to Nancy Thurman and Connie Smith for letting me know about Mary Dunn. Mary faithfully organized the Georgia Retirees monthly luncheon for more than 20 years, from before she retired in 1998 until late last year. She told me in a phone call a few months ago that Jim Cook, her boss, asked her to be responsible for this while they both were still working. She felt obligated to continue as long as she was physically able. That's dedication. Mary started with the lab in Doraville next to the Georgia District in the 1970's (?) and later became secretary to the SE Regional Hydrologist. Mary and Dick Bloyd (USGS retiree now deceased) were engaged for several years. Dick got sick and Mary cared for him until he died. We will all miss her.

Bob Faye wrote: Mary Dunn was my good friend and coworker for many years both at the old Doraville Lab and later at the SE region. Her passing is a double heartbreak for me as my wife passed away just several weeks ago. Mary had a delightful and devilish sense of humor and we would enjoy exchanging a double entendre or two during coffee breaks when hardly no one else understood what was going on. Mary was a fabulous cook and she often brought to the office baked desserts, such as, Mississippi Mud cake, Better Than Sex cake, and, my favorite, mincemeat muffins during the Holidays. Mary was a beautiful person inside and out and I know she will be dearly missed by her many friends and family.

Fred E. King wrote: Mary Dunn was a wonderful person. I met her on the job when we both worked with the USGS; we were coworkers for thirteen years. We shared stories about raising each of our teenage boys. Mary was an excellent employee who was always friendly and positive. I am happy to have known her. She will be greatly missed.

Grace Terrell-McCoy wrote: Mary and I worked together from 1973 to 1986 at the USGS Lab on Peachtree Industrial Blvd. Mary was always smiling and we traded Bake Good recipes and baked a lot. The sweetest person with a beautiful personality that always made me laugh. I truly missed her when the lab closed and most of us went our separate ways. My condolences and heartfelt sympathy to the family. Rest Well Sweet Mary.

Nancy Barber wrote: I knew Mary from that period when I worked in the District office as a GS employee, and she was always a sweet and helpful person.

Alice Dempster, 89, (wife of USGS retiree George Dempster) was born on August 10, 1930 and passed away on April 15, 2020. Arrangements are under the care of Swan-Law Funeral Directors.



Richard L. Druther, 76, of Etters, died on April 4, 2020, at Harrisburg Hospital in Harrisburg, PA. Richard was born September 24, 1943, in Carbondale, PA. the son of Jean M. (Milewski) Druther and the late Leonard H. Druther of Carbondale, PA. He graduated in 1961 from Saint Rose School in Carbondale, PA. Then he joined the United States Navy for 3 years before he graduated from Penn State University in 1967. Richard was employed for over 35 years with the USGS and he retired in 1999. He was married to Patricia (Klikus) Druther, formerly of Waymart, for 53 years. In addition to his wife, he is survived by a son and a daughter; and one granddaughter and three grandsons. Services and burial were private.



Lynda Lee Emmett, 76, (wife of USGS retiree William 'Bill' W. Emmett) passed away on August 13, 2020 at hospice in Lakewood, CO. Born in Cleveland, OH on December 14, 1943, she moved to south Florida as a child and lived in several states before spending the last 45 years in Littleton, CO. She was preceded in death by her parents, Milton and Ruth Plunkett, and her twin brother, Lawrence Lee. She is survived by her husband of 50 years, William W., sons, Benjamin Lee and William Lee (Karis Maile), and grandchildren Olivia Ann and Greyson William. At the family's request, there will be no public services held.



Kayrin 'Theresa' Faye, 77, (wife of USGS retiree Robert E. 'Bob' Faye) died on September 11, 2020 at her home in Blairsville, GA. Kayrin was known as Theresa throughout her life. She was born on August 17, 1943 in Ardmore, Carter County, OK the daughter of Artie Lee Blalock and Josephine Setliff. Kayrin's ancestors included the Blalock and Fox families of Gordon County, GA. Her family left OK, first settling in Kansas and finally in Stanislaus County, CA near Ceres, where Kayrin graduated from high school in 1961. Kayrin married Robert E. Faye in Ceres in August 1966 and immediately moved to Sacramento CA, where Robert completed college. Following graduation in 1970, Kayrin and

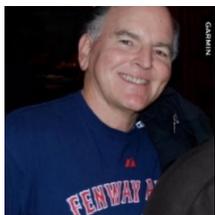
Robert began a life that reflected the American Dream; first settling in Jefferson County, CO, where their son was born in 1970, then completing various transfers to Sunnysvale, CA, Atlanta, GA and within GA to residences in Duluth, Dahlonega, and finally to Blairsville in 2010. Kayrin was a woman of many talents, avocations, and careers enhanced by a modest but warm and engaging personality that attracted many friends wherever she lived. Her first and primary career began as a full-time loving wife and mother and highly accomplished home maker. Following high school, Kayrin worked for the Pacific Telephone & Telegraph Co. as an operator and trainer, first in Modesto, CA and later in Sacramento. While living in Duluth, GA she decided to return to college and graduated from DeKalb Junior College in 1984 with an Associate of Arts degree in Home Economics. She continued her academic career at Georgia State University, graduating in 1986 with a Bachelor of Science degree in Health Sciences. Kayrin was a trail blazer, showing older, mature women with families that successful academic and professional careers were possible. After college, Kayrin worked as a professional dietician with various agencies in the Atlanta metro area including the Gwinnett Hospital System and DeKalb and Gwinnett county health services agencies, finally retiring in 1997. Kayrin was a loving and devoted wife and mother and that love was returned many fold by her family. She loved flowers and gardening and was a highly accomplished seamstress, quilter, and baker. Her artistic skills were displayed over-and-over in the many beautifully decorated cakes she would create for family celebrations and social gatherings. The beautiful quilts she created are family heirlooms. Kayrin lived a rich and fulfilling life and will be greatly missed by her husband, and many friends. Both of her parents preceded her in death. She is survived by her husband and son. Graveside services were held on September 13, 2020 at Union Memory Gardens Cemetery, Blairsville, GA.

Bob Faye's Address, if you would like to send a card: Robert Faye, 109 Mustang Lane, Blairsville, GA 30512



Jane W. Ferrigno, 79, died peacefully on August 14, 2020. She was born February 26, 1941 to Cecil and Esther Goodwin in Boston, MA, and married to James "Jim" Ferrigno September 1, 1963. After graduating from Hull High in 1958, and Brown University in 1962 (BA in geology), Jane went on to work as a geologist at the Smithsonian Institution where she met and married Jim. After that, she went to work with the USGS, spending nearly 50 years studying Landsat imagery, and authoring and editing many works published within the field of glaciology. To be with her young children, she also drove a school bus, and dabbled in real estate for a time. Jane was an avid explorer and spent her lifetime embracing everyone and living life to its fullest potential. She loved reading, sailing, bowling, swimming, hiking, camping,

volleyball, bridge, cribbage, jigsaw puzzles, crossword puzzles, dancing, researching genealogy, and spending time with her grandchildren on intergenerational adventures. Jane served on countless committees at Great Falls United Methodist Church, and spent many years as the UMW president, as well as serving as lay leader and liturgist during many Sunday church services. She loved to travel and has been to every continent, including Antarctica; visited over 40 countries, and been on 30+ cruises. There is even a Ferrigno Glacier in Antarctica named after her in honor of her extensive contributions to glacial research. Jane is survived by Jim, her husband of nearly 57 years; 2 daughters and a son, and 3 great grandchildren. Jane is preceded in death by her parents and a brother. A funeral service was held on August 20, 2020 at the Adams-Green Funeral Home Chapel, Herndon, VA.



Gale K. Fullerton, 75, passed away on June 6, 2020 from injuries sustained in a bicycling accident. Gale was born September 2, 1944. He leaves behind his wife Bobbie Fullerton, his brother Kent Fullerton, and numerous nieces, nephews and great nieces and great nephews. **Merilee Bennett writes:** I met Gale in June 1971 when I was hired in the USGS Personnel Office, Menlo Park, CA. Gale worked as an Employee/Labor Relations Specialist in the Western Region Personnel Office, Menlo Park, CA for nearly 25 years (1971-1995). He said the best part of his job was assisting managers and employees of the WRD

Division - especially the many trips to the field offices. As long as I knew Gale, he rode his bike to work almost every day— and wore a bike helmet way before it was in style or mandatory. For his service he received the Department's Meritorious Service Award and was the first USGS administrative employee to receive the Superior Service Award. After I left the Personnel Office, Gale and I continued a long friendship and over the years; attending his wedding to Bobbie; after his retirement Facebook pictures of his adventures traveling the world far and wide; his support of his high school's athletic programs as an alumni; he and Bobbie attending several of the WRD Reunions and their visiting Jim and I in Colorado. If someone were to ask me about his best qualities – kindness, his warm smile, and his dedication to his friendships (through the good and the bad). I will miss our talks.



Charles Michael 'Mike' Hacke, 75, died on July 28, 2020 after a battle with cancer in Las Cruces, NM. Mike was born on April 23, 1945, and raised in Alton/Godfrey, IL by his parents, Charles Hartwig and Dorothy A. Curvey. He graduated in 1963 from Alton High School, and later earned BS degrees in Mathematics and Geology from Georgia State University. Mike had 25 years of Federal service including the Navy and USGS. He received a 4-year academic scholarship to Regis University in Denver as a Math major. In 1967, he attended Naval Officer Candidate School in Pensacola, FL where he ranked 1st of

the Radar Intercept Officers. His military career was with Naval Air and Naval Intelligence and retired as a Lt. Commander, Vietnam Veteran, USGS Geologist-Paleontologist, 4th Degree Knight of Columbus in Las Cruces. Mike was the navigator and operated the weapons system on the F4 aircraft. After active duty, he was a Reserve Officer until 1988. For four years, he was a case worker for Family and Children's' Services in Georgia. After that, Mike worked full time as a lab technician at the Georgia Geologic Survey while pursuing his 2nd bachelor's degree in geology. In 1982, he became a USGS volunteer for science in Atlanta, was hired as a hydrologic technician, and then a hydrologist. Mike's expertise focused on geologic studies including geophysics and paleontology. His most notable publication was Georgia Geologic Survey Bulletin 113 on the geology and groundwater resources of coastal Georgia that he coauthored with Clarke and Peck. In the latter part of his career, Mike became the Collateral Duty Safety Program Coordinator as well as security and environmental officer for the Georgia Water Science Center. In 1990, Mike received the "Point of Light Award" for volunteer work with the Boy Scouts and the St. Vincent DePaul Society. One of Mike's coworkers, **Ed Martin writes**: "Mike was a dedicated employee. He had a rigorous approach to safety procedures. Mike had a great sense of humor and a gigantic heart for those in need. We will all miss him." Mike is survived by his wife, Bonnie Louise Ward Hacke and his brother. Mike gifted his body to Saint Louis University School of Medicine and will have a grave marker at Jefferson Barracks National Cemetery in Saint Louis, MO.



John Havens, 89, died on July 15, 2020 in Edmonds, OK. John was born on January 6, 1931 in Globe, AZ and grew up in Gallup, NM. His mother Beatrice Havens was a teacher and administrator in the Gallup schools. His father O.C. Havens was a businessman and a noted photographer. John graduated from the University of New Mexico with degrees in geology and art. He served aboard an aircraft carrier as a Navy photographer during the Korean War. A hydrologist with USGS for nearly 42 years, he had many duties culminating as a Reports Specialist with authorship or co-authorship of 35 reports. He received a

Superior Service Award from the Department of Interior in 1991 and retired in 1995. John and Judith Marilla Clingo married June 9, 1961 in Lovington, NM. Their son was born in Lovington, and their daughter in Carlsbad, NM. They moved to Oklahoma in 1970. They celebrated their 59th anniversary apart because of the 2020 Covid-19 pandemic. John and Judy enjoyed trips to National Parks and Monuments in the western United States including Glacier Park, the Grand Canyon, Mesa Verde, and Carlsbad Caverns. One of their most memorable park experiences was the celebration, with their family, of their 50th wedding anniversary at Yellowstone and the Grand Tetons. In December 2004, they had a long-anticipated trip to England for the Christmas Eve celebration of Nine Lessons and Carols at Kings College Chapel in Cambridge. As an artist, John was interested in and tried his hand at several art forms including ceramics, sculpture, serigraphs, acrylic and oil painting, and marble paper. He concentrated on creating watercolors and exhibited as a guest artist at the Penn Square Gallery. He was a member of the Edmond Art Association for many years and participated in its annual shows and activities frequently winning a prize ribbon. John was the "in-house artist" for his music teacher wife during the entirety of her more than 25 years in the classroom. He enjoyed creating a Christmas card for friends and relatives every year. The last Havens original was sent the holiday season of 2019. John

was a collector and accumulated many musical recordings, ranging from ragtime to classical, beginning in the days of 45's and 78's to cassette tapes and CD's. His collection of pop sheet music began with songs, from 1900. John and Judy worshiped at Westminster Presbyterian Church of Oklahoma City for several years. John served as Deacon, sang in the choir, and played the carillon on occasion. John was confirmed at All Souls' Episcopal Church OKC in 2007 where he sang in the choir. Music selected for All Souls' annual service of Nine Lessons and Carols oftentimes served as inspiration for his Christmas cards. Their immediate family is son Patrick Lewis Havens and spouse Danielle Comby, daughter Eleanor Carol Havens and spouse William Blumberg, and granddaughter Marilla Danielle Havens. He is Godparent to Cousin Tim Vidal and great nephew Jackson Powers. He has several cousins including Shirley Newcomb of Gallup who considered John her "little brother." There will be no funeral service until such time as clergy, choir, family, and friends can gather in one place. There will be a prayer service of interment attended by the immediate family at All Souls' Episcopal Church in Oklahoma City. Memorials in memory of John Havens may be given to the Music Ministries of All Souls' Episcopal Church or the National Parks Foundation. (nationalparks.org)

Kathy Peters writes: *John worked for the USGS WRD 42 years in New Mexico (his home state) and Oklahoma (where he retired). <https://matthewsfuneralhome.com/john-schuyler-havens/#comment-18591> I think of John just walking around the house because we have three pieces of his art that I enjoy every day. A significant scientific finding of John was describing the process of recharge to the High Plains Aquifer through runoff to playas in eastern New Mexico. (Havens, J. S., 1966, Recharge studies on the High Plains in northern Lea County, New Mexico: U.S. Geological Survey Water-Supply Paper 1819-F, 52 p.) He also modeled aquifers in Oklahoma before taking on the sometimes-thankless job of reports specialist. John had a way of adhering to the strict USGS rules without stressing out the authors. There was not the usual squawking, maybe because we all liked John as a person, maybe because he would enhance our reports with his hand drawn illustrations for the covers. When Darrell Walters suggested taking all of John's past illustrations and inserting them in the two volumes of the annual streamflow report, we were amazed that there were more than four dozen images of sites in Oklahoma. Gosh, I can think of several stories about John that bring me a smile, like Rocco the Rabbit, John's post-lunch naps in his chair (which alarmed his co-workers when he was on a detail in Wyoming), and a naughty piece of hidden cover art that he sent to tease the Regional Report Specialist. John brought a lot of good things to our lives. My sincere sympathies to Judy, Ellie, Pat, and all who loved John.*



James Leon Hudson, Jr., 68, of Charlotte, died on Monday, July 20, 2020. He was born in Mecklenburg County, son of James Leon Hudson, Sr., and the late Margaret Elizabeth Summerville Hudson. In addition to his father, those left to cherish his memory include his sister Kathy Hudson Pack and her husband Ray; a niece Jennifer Pack Taylor and her husband Maurice; a nephew Jason Pack and his wife Lindsay; three great nephews; one great niece; long-time friend Bruce Crede; and his furry companion Stella. Services for Leon will be private. Arrangements are in the care of Woodlawn Funeral Home in Mount Holly.

Katherine Jeffries died on January 26, 2018. She retired from USGS in 1982. **(No obituary/memorial was located on the web. Notification was received by email from her stepdaughter.)**

Antonius 'Tony' Laenen, 80, of Jacksonville, OR died on August 23, 2020 at Providence Medford Medical Center, OR. Tony was the only child of Stephanus Matheus Laenen and Hildegard Hoche born December 20, 1939 in Den Haag, Netherlands. He was raised in Buffalo, NY and Fort Pierce, FL. He enlisted in the Navy and became a member of the VX-1, Experimental Squadron and was assigned to the Fleet Air Reconnaissance Squadron in Japan for two years. Tony's college years were at the University of Florida in Gainesville where he earned a B.S in Civil Engineering. He chose a career with the U.S. Geological Survey Oregon District in Portland, OR where he settled and lived until 2012. He wrote numerous hydrological science books and papers plus his true-life family story about escaping Nazi-occupied Europe. Tony married Julija (Julie) Margaret Hansen (1968) who also worked at USGS. They had two children, a daughter and a son and three grandchildren. Julie passed on in 1995. Tony, always an artist, seriously began painting with watercolors in 2000 by painting his own yearly Christmas card. His talent became obvious to all who saw it. He also was an avid hiker/walker and spent many hours and miles on the trails. He enjoyed being actively involved with Art Presence, Jacksonville Boosters (board member), Jacksonville Woodcarvers and

Jacksonville Presbyterian Church and the Mission Committee. Tony became a Christian as a young man and was active in his faith. Early on he shared his talents by working with the children at his church and painting stage sets. Over the past 25 years he was extensively involved in various mission projects and committees. Tony married Carol in 2004. They spent the past 15 years together enjoying travel; active church participation; and life and friends in Jacksonville, OR. Condolences can be mailed to Carol at PO Box 1749 Jacksonville, OR 97530. **Carol Laenen** writes: *I want to let you know that Tony had been in and out of emergency over the past few months with intestinal blockage but this time it was the result of chemo killing too many platelets and destroying too many white blood cells so that he contracted pneumonia and sepsis. In and out like an energizer bunny-back on his feet and hiking 5-7 miles but finally his body just gave out. Could you please pass the word to his fellow retirees of the USGS. Also tell them that we talked about it a month ago and he truly felt like you all had celebrated his life last December when so many of you came to his 80th birthday celebration. There will be a memorial here but because of circumstances in the country with Covid19 it will be for family and a few local people. Raise a glass to him and know he always enjoyed the times you all got together.*



Deborah G. Lord, (noticed was dated September 12, 2020) formerly of Moorestown N.J., died peacefully surrounded by family in her Cushing, ME home. She will be remembered as a kind and compassionate person who loved her family and the natural world. Debbie graduated from Franklin and Marshall College with a BA in 1978. She received her Master of Science from the University of Pennsylvania in 1982. Early in her career she worked as a geologist for SMC- Martin and at the USGS until 1988. While raising her family, she pursued her true love, environmental education. During this time, she worked for or served with many groups including Rutgers University, Woodford Cedar

Run Wildlife Sanctuary, the Pompeston Creek Watershed Association and Palmyra Cove Environmental Foundation. After her children were grown, she began a career as a teacher. She taught sixth grade science at Moorestown Friends school for four years. Retiring to Cushing Maine in 2015 she worked as a substitute teacher in the Rockland School District and ran an after school environmental program at the Cushing School. She was an avid kayaker and hiker and was her happiest in the outdoors. Hundreds of school children and countless acres of land along with animals of every type felt her love and were better from her efforts. She is survived by her husband of forty years Craig, a son, and a daughter, and three sisters and a brother.



Ronny Lee McCracken 83, of Madill, OK died on August 4, 2020 at Texoma Medical Center in Denison, TX. He was born on July 29, 1937 in Madill to the late Otha A. McCracken and Francis A. Boatright McCracken. Ronny lived in several places and graduated in Raton, NM. He served for 3 years in the United States Army before going to work for the USGS Water Resources. While working he went to college and received his master's degree. After retirement he worked part time for Lake Country Petroleum as delivery driver. He married Barbara Sue Bell on March 31, 1983 in Carlsbad, NM. He was a member of the Cumberland Baptist Church and he enjoyed reading and working jigsaw puzzles. In Ronny's younger years, he enjoyed hunting and going to garage sales. He is survived by his wife Barbara, and 3 daughters, and 6 grandchildren and several great-grandchildren. Ronny was preceded in death by his parents, and a son. Due to COVID-19, services will be at a later date.



Barbara Jean Rathbun, 85, (wife of USGS retiree Ronald Rathbun) died on June 28, 2020 in Arvada, CO. Barbara was born in Seattle on October 1, 1934, the daughter of Gilbert and Eileen Mills, both of whom have preceded her in death. Barbara was the son her father never had, so she grew up hunting and fishing with him, and she could cast a fly with the best of them. She was educated in various schools of western Washington, moving fairly frequently because both of her parents were educators. She entered the University of Washington in 1952 and graduated with a degree in physical education in 1956. During the three summers of her college years, she worked as a forest fire lookout in the Cascade Mountains northeast of Seattle. She was an accomplished artist, working in both oil and watercolor. She won many awards and was a signature member of the Colorado Water Color Society. She especially liked to paint animals, the bison being her favorite. She was an avid bridge player and always enjoyed the challenge of making the hand. For many years, she was a dedicated gardener and home canner until arthritic hands forced her to give up gardening. But the pain in her hands was never so severe that she

could not hold a paint brush or a bridge hand. Finally, she was the mom “extraordinaire.” She is survived by Ron, her husband of more than 61 years, a son, David (Ginger), a daughter, Catherine, grandsons Daniel and Michael, and a sister, Dorothy (Don) Mills Kerbel of Lake Sammamish, WA. A Celebration of Life for Barbara was held on July 23, 2020 at Horan & McConaty, Arvada, CO.



Lloyd Allan Reed, 81, of Elizabethtown, PA passed away on September 8, 2020 at his home from Lymphoma Cancer. He was born March 31, 1939 at the J.C. Blair Memorial Hospital in Huntingdon, PA, to the late Julia Dueno Reed and James Clair Reed. His mother was born in Puerto Rico and his father was born in Alexandria, PA. In 1957, he graduated from Juniata Valley High School and joined the Army. Encouraged by his brother John, at age 23 he enrolled at Penn State to study agricultural engineering and graduated in 1966. He was employed by the United States Geological Survey as a hydrologist for 34 years in the Harrisburg District's Water Resources Division. He collected water samples for projects involving acid mine drainage and strip mining. Following the Mt. St. Helens eruption, he was sent to the volcano to conduct surveys on impacted streams. He supported the Federal Women's Program for female co-workers to gain equal pay for equal work. He authored numerous studies and papers on topics such as "Appraisal of Stream Sedimentation in the Susquehanna River Basin", and "Sediment Runoff During Highway Construction". He enjoyed surveying streams to revise Flood Insurance Studies. He loved to indulge his passion for golf with Patsy and Andrew. He loved to ski with his sister in Colorado, and to visit Branson, MO, with his brother. He taught his son and grandchildren to golf, ski, and bowl. He was a founding member of the DER Golf League at Sportsman's, playing continuously for 48 years. One of his fun adventures was keeping his bowling team together for 20 years and never having a winning season. He helped his family with numerous home and auto projects at which he was adept. The pride of his later years were his grandchildren with whom he loved to ride roller coasters at Knoebels and Disney World, play mini-golf and spoil them with his delicious homemade pies. He is survived by his loving wife of 53 years, Patsy Ann (Meyers) Reed, his son, and two grandchildren, all of Elizabethtown. Lloyd is also survived by his brother John Reed (Sharon) of Topeka, Kansas and his sister Carmen Parker (Millard) of Conifer, Colorado.

Elizabeth Smith, 98, (*widow of USGS retiree Earl L. Smith*) died peacefully at Park View Villa with her children and favorite companion Snowball present May 4, 2019. Elizabeth was born July 5, 1920 and raised in Lawrence, MA, daughter of Charles Ernest Wood and Eva Alice Warburton. She was a graduate of Lawrence High School in 1937 and earned a Bachelor's degree from Bridgewater Normal School (Now Bridgewater State Univ.) with a degree in Education in 1941. She completed a Master of Education from Harvard School of Education in 1943. Elizabeth married Earl LeRoy Smith in Twin Falls, ID July 25, 1947, moving to Yakima, WA. (Deceased Nov. 5, 1985). Elizabeth was a fulltime homemaker but involved extensively with community and church activities, in scouting, being a den mother to her three sons, and then became a troop leader for their daughter's Girl Scout troop. Her scouting involvement progressed to an adult trainer in several areas and she held a Scouting Life Membership. In 1992 she was awarded the Thanks Badge, the highest award presented to Girl Scout volunteers. Elizabeth was also an avid traveler. She and Earl made many trips throughout the US and abroad acquiring numerous lifelong friends. After Earl's passing, Elizabeth continued traveling alone with Elderhostel (now Road Scholar), making many additional friends on numerous trips. Just in the past year she traveled to Rhode Island, Hawaii, and in March a road trip to Twin Falls, ID. Even under hospice care, she was always ready for a wheelchair ride around the block. Her wonderful sense of humor and compassion made her a friend to everyone. She is survived by their four children, (three sons and a daughter), nine grandchildren, eleven great grandchildren and five great-great grandchildren. A memorial service was held in Sequim, WA, and ashes will be interred next to Earl in Tahoma National Cemetery, Yakima, WA. A family reunion and Celebration of Life was held in the summer of 2020. This would have been her 100th birthday.



Wendell V. Tangborn, 93, died peacefully on October 3, 2020 at the Mirabella Retirement Community in Seattle, WA. He was admired by all who knew him for his genuine modesty, his intellect, kindness, and generosity. Wendell was born in Sioux City IA to Vaner and Jennie (Oase) Tangborn and grew up with four brothers and one sister on a farm near Bemidji MN. After serving with the US Army, he graduated from the University of Minnesota with a degree in Geological Engineering. Over a twenty-year career with the USGS in Tacoma WA, he became

an expert on glaciers, first by spending summers observing the South Cascade Glacier in the North Cascades and later by creating some of the first computer models of glaciers. In 1983 in Seattle he formed Hymet, a hydrology consulting firm that worked with glaciers and streamflow in Washington, Alaska, Nepal, Norway, and Switzerland. Wendell enjoyed the Seattle Symphony, Seattle Opera, theater, travel, and long walks; his sharp recall of early family events and life on a farm in the 1930's made for several moving family memoirs. He published many scientific papers and a children's book on glaciers. He loved Vashon Island, where he lived for sixteen years. Wendell was preceded in death by his eldest son John and is survived by his wife, Andrea Lewis, and his sons Andrew (Sara) and Eric (Susan) and daughter Inger (Ashir). He leaves behind two honorary families from Nepal with whom he had a close relationship: the Birbal Rana family and the Moti Thapa family, both of Vashon Island.

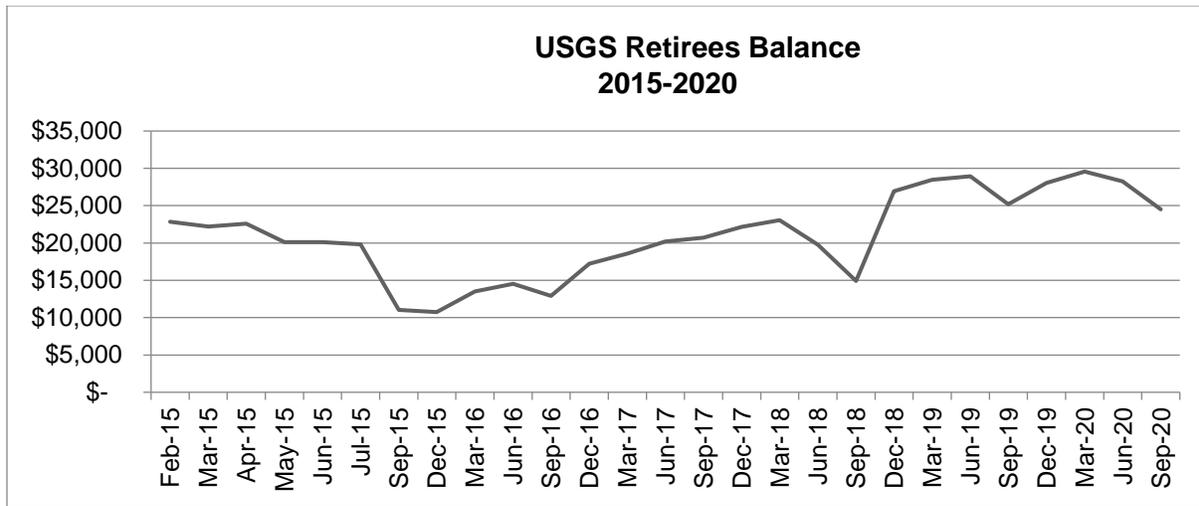


Roger M. Waller, age 90, died on Tuesday, April 25, 2017 in the Pigeon Falls Health Care Center in Pigeon Falls, WI after complications from pneumonia. Roger was born on December 30, 1926 in Taylor, WI to Alfred and Esther (Rogness) Waller. He played basketball for the Taylor High School graduating with the class of 1944. Roger served in the United States Navy during World War II. He was a proud veteran and a lifelong member of the Hanson-Lien American Legion Post #368 of Hixton-Taylor, WI. After the war, Roger went to college on the GI bill. He studied geology and graduated from the University of Wisconsin-Madison in 1949. As an adventurous young geologist, Roger spent the summer after graduation prospecting for uranium in the wilds of

Saskatchewan and found it! Roger's professional career was in the employment of the USGS from 1951-1987 working as a hydrogeologist. He was stationed in cities and capitols across the United States including California, Arizona, Ohio, New York, Wisconsin, Alaska and in Washington, D.C. While living in Anchorage, AK, Roger met a young schoolteacher named Ruth Pariser from New York City. They married in 1955 and had three daughters. His life in Alaska was exciting. His research helped bring fresh well water to remote Eskimo villages. He also studied groundwater on the tundra for the Atomic Energy Commission. Roger led the USGS response to the great Alaskan earthquake of 1964 and his documentation was an important contribution to the historical record. Roger was one of the first men to climb Mount Iliamna, an active volcano. He also enjoyed big game hunting, winter sports and was an avid amateur photographer. After his retirement from the USGS, Roger moved back to Wisconsin where he spent many enjoyable years as a gentleman farmer, traveling the world and doing extensive research of local history and the Waller family genealogy. In 2004, Roger founded the Taylor Museum of History, located in the old Taylor Elementary School, to preserve the artifacts from his hometown. Roger was a quiet man, perhaps due to the hearing loss he suffered as a youth. He wasn't the kind of guy who liked to go to parties (unless it was a reunion)! Roger would rather visit with the "Old Timers" to hear them tell their tall tales, mow the lawn on a hot day with a cold beer or bring the trash to the dump and return with a treasure. Roger was a generous and humble husband, father, grandfather, brother, and friend who was loved and respected by those who knew him. He gave selflessly to those in need and never asked for anything in return. Roger will be remembered by his good works and will be missed by all. Roger is survived by his wife, Ruth Waller of Eau Claire; three daughters, three grandchildren, and four sisters. In addition to his parents, Roger was preceded in death by three brothers and two sisters. Graveside services with military rites was held on July 22, 2017 in the Trempealeau Valley Lutheran Cemetery in rural Taylor.

TREASURER'S REPORT, THIRD QUARTER 2020

Treasurer Cathy Hill reports the organization had \$24,497 at the end of the third quarter, September 2020. Special thanks for contributions significantly above dues to Mike Nolan and James VanZandt. Many thanks for your generosity.



DIRECTORY

NEW MEMBERS

Helsel, Dennis R. (08) (Cindy) – 2838 Mashie Circle, Castle Rock, CO 80109, (h) 720.335.6301, dennis.helsel@yahoo.com
Mangual, Ernesto (18) (Wanda) – 6172 Gracie Pl., Lakeland, FL 33812, (c) 786.271.3843
Nishikawa, Tracy (20) (Gail Masutani) – 1534 Vanessa Circle, Encinitas, CA 92024, (c) 760.473.2052, tnish.usgs@gmail.com
Rounds, Stewart A. (18) (Bernadine A. Bonn) – 7609 S.W. 33rd Avenue, Portland, OR 97219, (h) 503.246.5660, roundsstewart@gmail.com

AFFILIATE LIAISON

Faunt, Claudia C. (AL) – 1382 Eolus Avenue, Encinitas, CA 92024, (c) 760.917.2040 (w) 619.225.6142, ccfaunt@usgs.gov
(California Water Science Center, San Diego, CA)
Jenkins, Yvonne S. (AL) (Rex) – change Affiliate (A) designation to Affiliate Liaison (AL) – **Headquarters, Reston, VA**
Werner, Kelly L. (AL) – 2206 Brookshire West, Champaign, IL 61821, (c/h) 217.840.8414, (c/w) 217.722.5700, klwarner@usgs.gov *(Illinois Water Science Center)*

Vacant – Hawaii Water Science Center

DIRECTORY CHANGES

Anderson, Clarence W. 'Andy' (92) – cwajr9290@gmail.com email
Anthony, Stephen S. 'Steve' (19) (Leona) – P.O. Box 3435, Sun Valley, ID 83353 addr
Blumer, Stephen P. (11) (Paula) – **correct City/State to Williamston, MI, remove phone no.**
Dougherty, Lorraine L. (S) -- request received to remove name from the mailing list
Douglas, Lois J. (94) – (c) 810.265.3390 phone
Gravlee, George C. (94) (Diane) – Apt. 125 addr remains the same, change is only new Apt #
Hahl, Daniel C. (88) (Melva) – mdhahl@frontiernet.net email
Jeffries, Katherine (82) – remove from directory – **passed away January 26, 2018**
Peters, Jim (04) (Barbara) (04) – 540.550.6349 phone
Pettinger, Larry (07) (Connie) – corrected year of retirement
Putnam, Dianne (15) – 1106 Avenshire Circle, Wilmington, NC 28412, 910.471.2071 addr phone
Roberts, John W. (16) (Aileen) – 740.739.7082 phone
Runner, Lessie (S) (G. Scott) – request received to remove name from the mailing list
Schneider, Verne R. (20) (Donna)– 44860 Audubon Square, Belmont Commons Apt. 206, Ashburn, VA 20147, 703-598-4029, vrschnei@gmail.com **addr, phone, email and change membership from (A) to (20)**
Schroder, LeRoy (03) (Kathleen) – correct spelling of last name as reflected
Stewart, Dennis K. (90) (Linda) – 317.730.6880 phone, add wife's name
Tai, Dorren Y. (96) (Han) – htai317@comcast.net email
Thompson, Judy Fretwell (97) – 608.432.1999 phone
Werho, Barbara (S) – received email requesting to be removed from directory

Geography Matters **Randy Olsen (Retired 2006)**

This is the fifth article in this series – recall that the first was mostly background and organization, the second one focused on topographic maps, the third one was hydrography, and the fourth one was elevations. This article will focus on orthophotos. Orthophotos get their name from orthographic projections – in the case of aerial photos, that means that the effects of non-vertical orientation of the aerial camera, and perspective distortions due to elevation differences have been re-projected such that the aerial image is scalable to be a map or serve as a map's backdrop.

Let's look back to pre-orthophotos, the early 1970's and before. The closest thing to an orthophoto was rectification. These were machines in a photo-lab setting that could tilt both the image and projection easels to create a focused reprojection of an aerial photo to remove the effects of tilt and also have some degree of control of the scale within the range of the projector. The technology could not remove the effects of relief (elevation) distortions. At that time, the applications were photo revision of topographic maps and photo mosaics in relatively flat terrain.

In the mid 70's, the Research Program in the USGS-Topographic Division developed a modified Kelsh Plotter that could profile scan a stereo-model and create a re-projected aerial photo that corrected for tilt, scale, and relief distortion – thus: an orthophoto. It was called a T-64 Orthophotoscope. It also had encoders that digitized the profiles to create a Digital Elevation Model (DEM). At about the same time, the Eastern Mapping Center acquired an orthophoto machine called a Gestalt Photo Mapper (GPM) that used stereo-image correlation to create both an orthophoto and a DEM. Applications of both technologies provided orthophotoquads (OQs) in unmapped areas and the ability to make photo mosaics in steeper terrain.

In these early days of OQ's, there were a lot of prototype products. Orthophotomaps used an OQ backdrop with a full collar and overlays of some topo features such as hydrography, boundaries, roads, and names. These were primarily made for flat-terrain areas where imagery could be more interesting than contours.

In the late 70's, early 80's, the OQ technology improved. My experience at the Western Mapping Center (WMC) was with two Wild Heerbrugg machines. The first was a modified Wild B-8 plotter with an OQ drum called a PPO8. It made both orthophotos and Digital Elevation Models (DEM's) in a more friendly non-darkroom environment and had better accuracy than the T-64. Then, a few years later, the Wild OR-1 machine used a DEM to drive the terrain rectification rather than a stereomodel. The Wild Heerbrugg software to drive the OR-1 was fairly clunky, so in my free time other than being a Section Chief over aerotriangulation and DEM units, I wrote a FORTRAN program to drive the OR-1 machine – I called it OR1ON – an acronym for OR-1 orientation. The algorithms were not too different from producing a digital orthophoto, so I wrote out an outline of what a digital orthophoto computer program should be. The only problem was that computers of that date that were available to USGS didn't have the memory to do the job. Looking back on it today it seems unbelievable that a room-sized IBM 370 computer had less than one megabyte of memory for these math problems. Now one photo on a cell phone uses more memory. After I left the center for my HQ stint, WMC acquired a second OR-1. A few years later, WMC had access to a better computer and developed a successful digital orthophoto capability before the private sector.

In the late 80's, early 90's, WMC produced digital orthophotoquads (DOQs) as a new product in the National Mapping Program. They were primarily produced from quarter-quad National Aerial Photography Program (NAPP) and digitally resampled into a quadrangle format for availability as a digital product using the same user access as other digital products such as elevation models and digital line graphs. The raw data was a scanned aerial photo on an Optronix scanner, then software using a DEM resampled the image pixels into their DOQ location. Private sector firms now had the same DOQ capability, so there was a lot of pressure to contract this out rather than produce in-house. Contracts were done, and ten or so years after starting the concept, there was near national coverage of DOQs. In my opinion, this is a great success story for USGS in partnership with the private sector.

Things really changed in the late 90's, early 2000's – three companies successfully launched satellite imaging at one-meter resolution. This brought about quite remarkable changes such as almost DOQs from space, Google Earth, maps in car dashboards, maps on websites that can switch between roads and imagery, etc. This revolution was great for public awareness and access to up-to-date maps and imagery—perhaps not so good for NMD production centers.

What is happening now at USGS with regards to digital orthophotos? The newest intergovernmental aerial photo contract is administered by the Department of Agriculture and is called the National Aerial Imagery Program (NAIP). The standard product is a one-meter resolution, natural color, leaf-on aerial imagery acquired every 2 to 3 years in the lower 48. The only negative is that NAIP imagery is not available in Alaska, Hawaii, and U.S. Territories. Coverage there may be available using other imagery sources. The bottom line is that one can download from USGS a new U.S. Topographic map with an option to have a color DOQ as a backdrop. Pretty cool!

[Thanks to Sheila Martin (ret. HQ), Alan Mikuni (ret. WMC), and David Brostuen (NGTOC) for contributions and edits]