

UGS BOARD MEETING
Department of Natural Resources
Utah Geological Survey, Utah Core Research Center
240 N. Redwood Road, Salt Lake City
Wednesday, August 10, 2022

The meeting of the UGS Board was called to order at 8:30 a.m.

ATTENDANCE

Board members: Elissa Richards – Chair, Ken Fleck – Vice-Chair, Becky Hammond, and Sam Quigley. Rick Chesnut, David Garbrecht, Riley Brinkerhoff, and Tom Faddies (SITLA) were not in attendance.

UGS Staff: Bill Keach, Mike Hylland, Jodi Patterson, Cheryl Wing, Hollie Brown, Michael Vanden Berg, Jeremiah Bernau, Hector Zamore, Greg Gavin, and Janae Wallace. Shad Ashton joined for new staff introductions. Stefan Kirby and Andrew Rupke joined to discuss upcoming board field trip. Diane Menuz joined for the presentations.

APPROVAL OF MINUTES

Sam Quigley motioned to approve the minutes of the April 13, 2022, UGS Board meeting. Ken Fleck seconded the motion. The Board voted, and the motion carried.

ACTION ITEM

Although contract proposals for external funding are provisionally approved by the Board by email, they require formal approval at the next Board meeting. The proposals are:

Great Salt Lake Bathymetric Lidar; funding from the Division of Fire, Forestry, and State Lands; new funding to the UGS \$74,986; total project \$107,123; estimated start date 7/1/2022; estimated end date 6/30/2023.

Towards an Improved Salt Lake Valley Community Velocity Model through Seismic and Gravity Joint Inversion; funding from the USGS; new funding to the UGS \$24,886; total project funding \$35,552; estimated start date 1/1/2023; estimated end date 12/31/2023.

Battery-Grade Production of Graphite and Lithium from Unconventional Geosources in Utah and Wyoming; funding from the University of Utah, EGI; new funding to the UGS \$800,000; total project funding \$1,000,000; estimated start date 5/1/2023; estimated end date 4/30/2027.

Measuring Evapotranspiration in the Upper Colorado River Basin of Utah; funding from the Colorado River Authority; new funding to the UGS \$537,681; total project funding \$1,422,105; estimated start date 4/1/2022; estimated end date 6/30/2027.

Wetland Water Budget & Wetland Change Analysis for the Nature Conservancy's Great Salt Lake Shorelands Preserve – Year 2; new funding to the UGS \$29,467; total project funding \$54,982; estimated start date 7/1/2022; estimated end date 6/30/2023.

Project Effectiveness Monitoring Water Quality Benefits of Large-Scale Pinyon Juniper Treatments, Montezuma Creek, Utah; new funding to the UGS \$15,000; total project funding \$20,000; estimated start date 7/1/2022; estimated end date 6/30/2023.

Emery Valley Geophysical Study; new funding to the UGS \$25,300; total project funding \$63,250; estimated start date 5/1/2022; estimated end date 1/30/2023.

Ken Fleck motioned to formally approve the project proposals. Becky Hammond seconded the motion. The Board voted, and the motion carried.

DIRECTOR'S REPORT:

COVID-19 Update

With the decline in COVID-19 cases, most UGS staff have returned to normal working schedules. Some still prefer to work from home. Fieldwork is in full swing with an increased focus on personal safety. Going forward, staff are encouraged to implement whatever personal safety measures that are important to them.

Personnel Changes

Retirements:

Linda Bennett, Accounting Technician, retired effective April 15th.

Bob Biek, Senior Scientist in the Mapping Program, retired effective June 1st, 2022, after 26 years of service.

Kent Brown, Senior GIS Analyst with the Mapping Program, retired August 1st, 2022, following 39 years of service to the UGS.

Grant Willis anticipates retiring in the coming year. We anticipate 1-2 others to retire from the Mapping Program in the next six months.

Resignations:

Cyndi Andersen – GIS Manager

DeAnne Morgan – GIS Analyst, Mapping

Will Hurlbut – Geologist, Energy and Minerals, effective August 19

New hires:

Natalie Wride – Geotech, assisting in Wetlands

Eric Walberg – Geotech, assisting in Wetlands

Greg Gavin – Geologist, Groundwater

Hector Zamora – Geologist, Groundwater

Grant Mauk - Geotech, assisting in Wetlands

Shad Ashton – Geotech, assisting in Energy and Minerals, working in Cedar City office

Jake Alexander – Geologist, in Energy and Minerals

Julia Mulhern – Geologist, in Energy and Minerals, starts August 22

Recent Activities – Looking Forward

Energy and Minerals –

- SITLA has agreed to fund E&M (\$60k) to perform high level assessments of CO₂ storage potential on select large SITLA blocks.
- We are writing a new proposal to DOE to investigate the feasibility of a CO₂ storage hub in central Uintah County, Vanden Berg will act as co-PI of the project.
- To help with all these new CO₂ sequestration projects, we have hired Julia Mulhern, PhD.
- Jake Alexander recently started in our Minerals group. He will be working on our new Earth MRI (Mineral Resources Initiative) projects, one at the Fish Springs mining district and the other will investigate possible REE enrichment in the Phosphoria Formation.

The Earth MRI funding is part of a large resource assessment project by the U.S. Geological Survey across the U.S. This project has offered to fully fund the acquisition of LiDAR for all areas in the State of Utah not currently covered. The project also plans to acquire aero gravity and magnetic data across a large swath of the West Desert. This is a huge opportunity that will provide data across multiple disciplines.

Additionally, research continues on multiple projects (geothermal, CORE-CM, Cane Creek, Gold Hill, etc.). Six members of the E&M team successfully presented research at the AAPG Rocky Mountain Section meeting, held in Denver in July 2022. Staff also chaired sessions and presented core from the Cane Creek shale.

Geologic Hazards –

The Geologic Hazards Program recently excavated a trench across the Taylorsville fault (West Valley fault zone) as part of a paleoseismic investigation to determine past earthquake timing. This data includes when an area on a specific fault last moved during an earthquake larger than about magnitude 6.5, and the average recurrence interval of past earthquakes. Data from these investigations is incorporated into updates to the U.S. Geological Survey National Seismic Hazard Maps that are part of the International Building Code (IBC) and International Residential Code (IRC) that are adopted in Utah and govern building design to help prevent collapse during earthquakes. Without data from paleoseismic investigations such as our current project in Salt Lake City on the West Valley fault zone, necessary information would not be available to design

buildings and other infrastructure to withstand anticipated levels of ground shaking, leading to significant deaths, injuries, and financial losses from collapsed and severely damaged infrastructure during an earthquake.

Work has begun on the Earthquake Early Warning System feasibility study. This is funded at \$150,000 for FY23. The bulk of the funding will go to the University of Utah Seismograph Stations to model different scenarios, identify gaps in the monitoring network, and determine how effective such a system might be.

Groundwater & Wetlands–

The Groundwater and Wetlands Program is changing and growing rapidly.

Besides welcoming in three new employees, significantly expanding the size of the section, Groundwater received a \$1M grant from the Colorado River Authority of Utah to expand the Utah Flux Network in the Colorado River Basin. We have begun scoping a major new project assessing Utah's main aquifers; although we are in the very early stages of considering our approach, we know that a major first step should be digitizing select data from our older reports and collating them onto a web-based data app.

The wetlands group hired three TL employees to help with summer fieldwork and ongoing wetlands mapping. After an intensive two-week training period, the montane wetlands assessment crew has been remarkably productive. Pursuant to 2022 House Bill 118, Diane Menuz and Becca Downard are diving into their evaluation of the potential of an in-lieu fee program for wetland mitigation that is required of new construction and have learned a great deal from interviewing managers of programs in other western states.

Geologic Mapping & Paleontology –

Mapping

The Geologic Mapping Program is in the midst of its most significant change in staffing and workflow in decades. Notable recent retirements include Bob Biek and Kent Brown, both of whom have been leaders in geologic mapping and cartography, respectively. As such, we are in the midst of hiring 1 to 2 full time geologic mappers to replace Bob and other pending retirements. We will also fill Kent Brown's position in the near future. In addition to retirements, we are working to complete the current (2nd largest ever) USGS STATEMAP grant and begin the new (largest ever) STATEMAP contract. We are also moving forward with plans for digital archival of all our physical maps and other assets. We will begin a discussion about the future of 3D mapping and other 3D data in the coming weeks. 3D is the new future of mapping and other resource characterization here at the UGS.

Paleontology

The Paleontology section has leveraged two temporary staff to complete a backlog of sample curation and delivery to repositories as well as modernizing the paleontological site database.

Staff are also continuing a paleontological resource assessment for the Island in the Sky and Maze districts of Canyonlands National Park. Discussion and planning are being undertaken to determine the end game for our work on the Megablock.

Geologic Information & Outreach –

- A completely revised and updated version of *Putting Down Roots in Earthquake Country, Your Handbook for Earthquakes in Utah* is at the printer! This is Utah's premier comprehensive source for non-technical information about earthquakes. The project was a multi-program, multi-agency collaborative effort.
- The new Utah Rockhounder interactive web map went live at the end of July. This app is based on UGS's *A Collector's Guide to Rock, Mineral, & Fossil Localities of Utah* (1995). This has been a large collaborative effort among GIO (including our bookstore staff geologists), the Data Management Program, and the Energy & Minerals Program, with funding from the BLM. We will continue to update the app as we gather more information and additional field locations are ground proofed. The public can help as well, through a hot link for submitting feedback. A paper version is being planned.
- The 2023 *Calendar of Utah Geology* is currently in layout and should be at the printer in the next couple of weeks.
- The editorial group continues to help the Department of Natural Resources and other divisions with projects such as a DNR social media graphic that became the basis of a Fox13 story and a full-page advertisement for the Office of Energy Development.
- A long overdue complete update and revision to our perennially bestselling *Commonly Asked Questions About Utah's Great Salt Lake and Ancient Lake Bonneville* (1995) is now in final editorial layout. This publication addresses current hot topics that affect multiple divisions, all of which were provided draft copies for review (this was likely the most thoroughly reviewed UGS publication of all time).
- The Natural Resources Map & Bookstore continues to update and evolve with a new, faster and higher quality dual role plotter and wall-mounted large display screen. We have sent to surplus more than a dozen file cabinets full of redundant and no-longer needed paper publications formerly used for photocopies. A large cache of Utah Geological Association CDs is next in line for disposal. Our goal is to use the space for back stock of popular items, with less stock stored at the UCRC. We will soon offer print on demand, high quality reprints of selected historical maps, including 1842 pre-pioneer and 1849 post-pioneer maps that highlight the greater Great Salt Lake area. Bookstore staff continue to help other UGS programs with fieldwork as needed and Torri Duncan wrote a GeoSights article on Fremont Island.
- Mark Milligan has assumed UGS legislative liaison duties.
- GIO staff continue to answer a wide variety of sometimes intriguing public inquiries.

Data Management

The Data Management Program continues to collect and manage a significant amount of data with the aim of making it available to the public as quickly as possible. To that end, some accomplishments achieved in the past few months include:

- The updated Utah Rockhounder web application was released with new rockhounding locations, user interface, and responsive web design.
- The Utah Core Research Center is working with DMP to create a new core-inventory system using the mobile app, Survey123.
- Cyndi Andersen left UGS for Idaho, and DMP is in the process of rehiring this position as a Data Manager.
- We are working on designing a publication versioning system for all publications that get superseded. A building-block request is in the works in hopes to get one-time funding for this project.
- The beginnings of a Gravity web application is in the works with the Energy & Minerals Program.
- Enterprise Geodatabases are getting test-run in Google CloudSQL as a proof of concept to get rid of dedicated and costly DTS servers.
- New data has been added to the Wetlands, Utah Mineral Resource, Geologic Map Portal, and GeoSights web applications.

Cedar City office – Please see the separate report from Tyler and Lance

Funding and Budget –

The State of Utah weathered well the economic challenges related to the COVID-19 pandemic. The economic challenges of the past two years underscore the need for the UGS to obtain stable resources to ensure the UGS can continue providing critical services to the State of Utah.

Financially, the UGS is in good shape. In 2021 Senate Bill 133 established a restricted account with funds coming from severance taxes on production from oil, gas and mining operations. Though still dependent on energy and mineral-related production, which can be volatile, it provides a revenue source based on all production in the state. Mineral Lease funds come only from royalties collected by the U.S. government on production from federal lands. As written, the bill provides funds based on a three-year average to the UGS. This appropriation is then used to offset and supplant General Funds. The good news is that any amount collected in excess of the appropriation remains in our restricted account. The UGS can then ask for additional appropriations from the funds that accumulate in the restricted account. For FY22, the appropriation from this account was \$622,000. This was used to supplant General Funds. As such it did not affect our overall budget. The excess amount deposited into the restricted account at the end of FY22 came to \$650,914.22. According to the bill, “the survey shall use money from the account to pay costs of programs or projects administered by the survey that are primarily

related to oil, gas, and mining.” The UGS is actively working on how much to save for a “rainy day” and future needs that can be best funded by this account.

Mineral Lease revenues to the UGS further rebounded in 2022, ending up at \$1,639,718.29, which is significantly higher than 2021, once again proving the volatility in this revenue source.

Financial Update –

Financial documents in the Board packet include a summary of the fiscal year 2022 close out and new Fund 1137 activity.

Mineral Lease was trending higher than appropriated early in the fiscal year and therefore we asked the Legislature for a supplemental appropriation to \$1,400,000. It continued to trend higher and therefore Jodi Patterson forecasted an estimated \$1,600,000; in the end we collected \$1,639,718.

We carried over \$997,648 from fiscal year 2021 for the Bonneville Salt Flats Restoration project and spent \$570,344 in fiscal year 2022. It has a balance of \$427,304 which will be carried into fiscal year 2023. The project started with a \$1 million appropriation.

We carried over the full appropriated amount of \$750,000 from fiscal year 2021 for the Great Salt Lake Groundwater Studies project and spent \$25,696 in fiscal year 2022. It has a balance of \$724,304 which will be carried into fiscal year 2023.

In fiscal year 2022, we were appropriated \$100,000 for an economic study. We contracted with the Office of Energy Development who in turned contracted with Utah State University. The funds were underspent by \$6,766 which will lapse back to the general fund.

We carried over \$506,000 general funds for operating expenses from fiscal year 2021. In fiscal year 2022, we built upon that, and we will non-lapse \$834,217 into fiscal year 2023.

This past fiscal year (2022) was the first year of the new UGS Oil, Gas, and Mining Restricted Account (Fund 1137). It was appropriated at \$622,000 and we realized that full amount. The fund earned \$1,272,314 in revenue plus \$601 in interest. Therefore, the fund balance is \$650,914.

We were able to accomplish many equipment purchases again and will continue to set aside funds for this each year.

Total grant and contract revenue collected totaled \$2,384,875. This is a great amount for the Survey. It did keep our employees very busy, and we did have to hire some temporary help.

Linda Bennett, Accounting Technician, retired April 15th and the position has been vacant ever since. It has been very busy, but Jodi has managed with a little help from DNR Administration accounting. We interviewed August 3rd and hope to have a new employee on board soon.

We will now start on the fiscal year 2023 operating budget. Then next month, the fiscal year 2024 budget request will be prepared for the Legislature.

Legislative Update –

The UGS delivered a report on radon gas to the Legislature during the May Interim Session. The 2021 Legislature passed HB 45 which required the UGS to identify ways to:

- 1) INCREASE PUBLIC AWARENESS ABOUT THE RISKS OF RADON GAS, and
- 2) MITIGATE UTAH RESIDENTS' EXPOSURE TO RADON. This project was completed in cooperation with the Utah Department of Environmental Quality.

Several legislators are working to propose new legislation based on the results of the report.

During the summer the UGS is engaged in hosting members of the legislature on visits/tours of geologic importance. The goal of these visits is to increase the legislators' understanding of geologic risks and issues that affect the lives of citizens. In June we hosted Senator Evan Vickers along with staff from the Governor's Office of Planning and Budget on a trip to Parowan Valley and Enoch. The goal was to improve understanding of the subsidence and other issues related to over pumping of groundwater. The first week of August we hosted two field trips. In the first we took multiple groups to visit a research trench that has been excavated across the Taylorsville fault. In the second we worked with Envision Utah and the Weber Basin Water Conservancy District to host 8 legislators on a tour of where a major aqueduct crosses the Wasatch fault zone.

Stephanie Mills has been invited to give a presentation on Critical Minerals to the Public Utilities, Energy, & Technology (PUET) Interim Committee on August 17.

Board Field Trip

Field Trip will be September 15-16, 2022 exploring Great Salt Lake points of interest. The Board will extend an invitation to legislators and Joel Ferry, DNR Executive Director.

Staff Presentations –

Janae Wallace and Diane Menuz presented a summary of the Groundwater and Wetlands Program.

Board adjourned at 11:03 am.