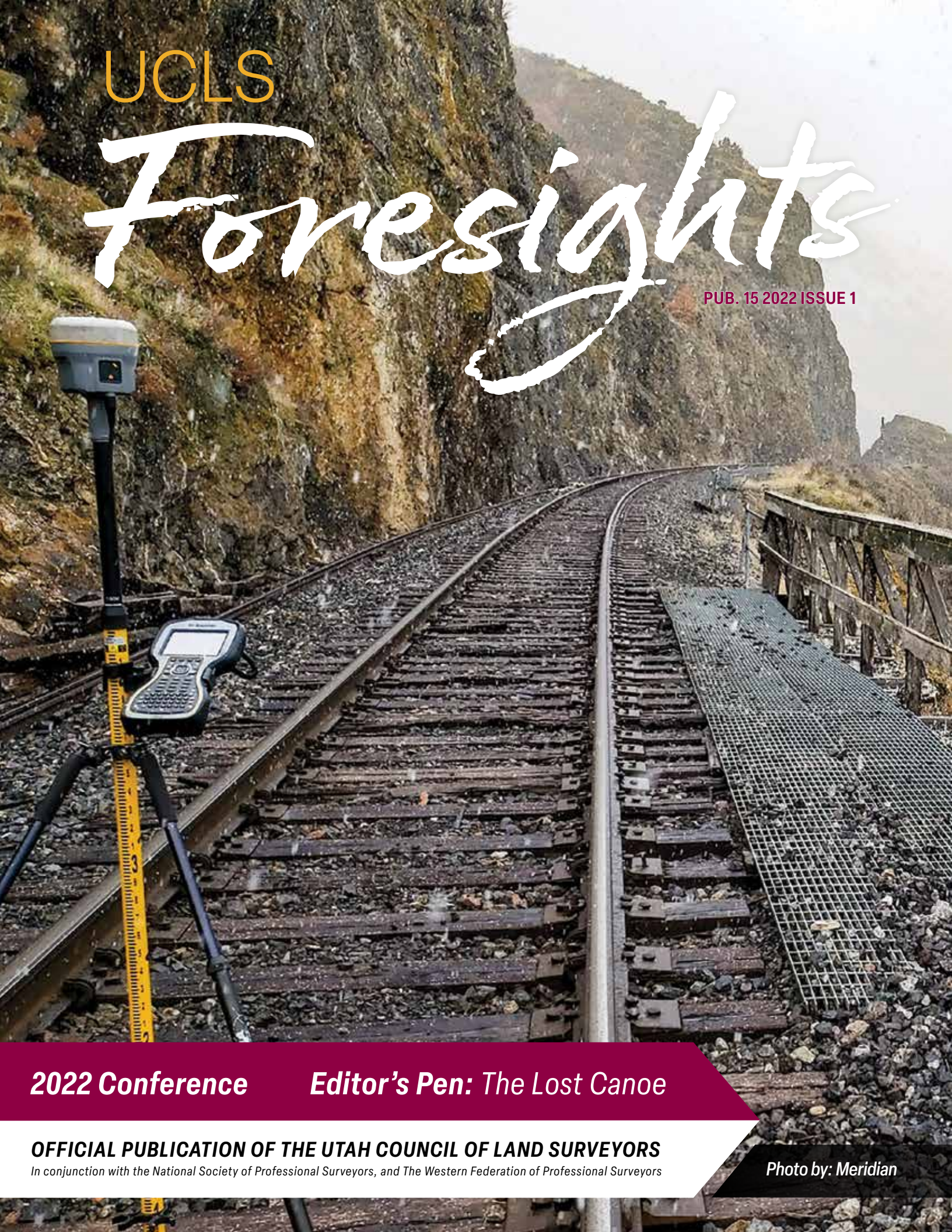

UCLS Foresights

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2022 Conference

Editor's Pen: The Lost Canoe

OFFICIAL PUBLICATION OF THE UTAH COUNCIL OF LAND SURVEYORS

In conjunction with the National Society of Professional Surveyors, and The Western Federation of Professional Surveyors

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Thoughts FROM THE CHAIR

Sean Fernandez
PLS UCLS State Chair 2022

"What do you want to be when you grow up?" is the age-old question that we have all asked ourselves at some point in our life. For me, I did not have a solid answer to this question, but there were several things I did know: I wanted to work in the technology field, and I wanted to be outdoors as much as possible. It is not very common to be able to work in technology and be in the great outdoors, so when I heard of land surveying, I knew I had found my perfect fit.

The average age of a surveyor in the State of Utah is approximately 54 years old. This number rings home to me as this is my current age, and I feel I am in the latter part of my career as a surveyor after 33 years. However, the amount of new/incoming surveyors is scarce, and I feel we are not replacing surveyors as fast as they are retiring.

One of my focuses as the UCLS chair is to increase involvement within the organization with the next generation of land surveyors. Many efforts are being made throughout our organization. Our Education Committee has made great strides by working with students K-12 throughout Utah and letting them know who we are and what we do. They have also worked tirelessly to organize auction items for the scholarship fundraiser, allowing students to continue their education in the surveying profession.

We also recognize our higher education institutions, and congratulate Utah Valley University on receiving the ABET accreditation for the Bachelor of Science Degree in Surveying and Mapping.

These are just some of the great things happening in the land surveying profession here in Utah, and I am encouraged to see where we are going.

The purpose of the UCLS is to "Establish common interests of all individuals engaged in the surveying profession; define a standard of care intent on protecting the public welfare; encouraging professional ethics and sound surveying practices; promote public awareness of professional land surveyors and their work; mentor the next generation of surveyors." As we look ahead to the future, here are some of the happenings within the UCLS:

- The state of Utah was mapped out by many surveyors and has been constantly updated as development has continued. In 1869, the U.S. Coast Survey established a longitude station using astronomical observations and set a monument within the walls of the Salt Lake City LDS Temple grounds to help improve the accuracy of surveying and mapping. A new visitor center building is being constructed over the monument location. The LDS Church is working with representatives from the National Geodetic Survey, the Salt Lake County Surveyor's Office and the State of Utah Geospatial Resource Center (UGRC) to re-establish the location of the monument to a new resting spot along the same longitude to the north of the new building footprint. The LDS Church agrees that a ceremony should take place for this historical event, and the UCLS would like to be a part of this to help promote the importance of our profession's hand in this relocation.

- An important part of our profession is to protect and enhance the Public Land Survey System (PLSS). The state-funded Monument Replacement Rehabilitation Committee (MRRC) grant program has distributed funds to counties to help protect and preserve the PLSS. Thanks to the efforts of county surveyors and other members of the UCLS, this program is successful at accomplishing this task. We look forward to seeing much more work done on the PLSS through the grant program and volunteering time, resources, and other efforts of UCLS members.

- We have reached out to the Utah Geographic Information Council (UGIC) to discuss the possibility of having a combined conference with both disciplines. This collaboration is long overdue and would greatly benefit all involved.

- We want to recognize our local chapters for their contributions/efforts in continuing education and involvement in the UCLS. The conference committee is preparing another amazing conference for February 2023 in St. George. We hope to see everyone there. We also want to welcome Matt Clark as chair of the Historical Committee and Spencer McCutcheon as the chair of the Young Surveyors group. We look forward to working with them in their respective organizations.

Thank you all for your continued support in the UCLS, and I encourage you to be involved where you can. For the longest time, I only focused on doing my job on my small point on the map. Over time I began to see there are many other larger quadrants of the map and that we can have a strong encompassing purpose by working together. ❖

2022 NSPS SPRING Meeting Report

This fall, NSPS met in Arlington, VA, for the Spring Meeting. This meeting was held at the same time as our regional conference. Spencer McCutcheon was in attendance as our young surveyor representative. There were 12 teams in attendance for the student competition, including UVU. Dan Perry traveled with the team. And while we missed seeing everyone at the Regional Conference this year, Utah was well represented at NSPS.

NSPS really rolled out the red carpet for these student teams with a monument scavenger hunt on day one and a skills competition on day two. After the scavenger hunt in the "City of Monuments," we enjoyed a presentation by Dave Doyle, who retired as the chief geodetic surveyor in 2013. He added color and history to some of the monuments retrieved in the competition.

The day on the Hill was a great experience. More than 40 members from 24 states visited with more than 100 members of the House and Senate and their staffers. I personally met with staffers from the offices of Sen. Lee, Sen. Romney, Rep. Owens, and Rep. Curtis. I requested action on two issues, a "Sense of the Congress" resolution and a continuation of the IMAGES Act.

The "Sense of the Congress" resolution states national support for the licensure of professionals. While licensure is a state issue, a congressional resolution would support our efforts to maintain licensure as a protection of the public's health, safety, welfare and property.

Major Government Affairs NSPS Highlights in the past year:

- Secured a "geomatics" provision referencing land surveyors in the Infrastructure Investment and Jobs Act (IIJA) PL 117-58
- Helped to introduce the FEMA Flood mapping reform IMAGES Act in the House.
- Helped to introduce the FLAIR Act, the FIRESHEDS Act, and MAPLand Act in both the House and the Senate.
- Won a $5 million appropriation amendment in the House on the Interior appropriations bill for FY2022.
- Secured report language in the Consolidated Appropriations Act of FY2022 for $3 million for NOAA's Digital Coast, nearly a $5 million increase for USGS 3DEP, and increases for both USGS Streamgages and FEMA FNIP flood mapping.

During the general membership meeting, a motion to amend the by-laws to allow for a vacant position to be filled by appointment of the Executive Committee (Excom) to fulfill the term (usually less than a year) when there is a vacancy. The position would be pro-temp and only allow the seat to be filled and the appointee to serve for the time before the next general election.

CST

I have requested PowerPoint slides that others have used to highlight the benefits of the CST.

Membership Committee

I have asked the committee to draft a Memorandum of Understanding (MOU) for student members (one fee gets membership in UCLS and NSPS). Working towards a motion for the fall board meeting.

GOLF

Is anyone interested in participating in the Fall PAC golf tournament in Oklahoma?

Dale Robinson, PLS
UTAH NSPS Director

Historical Committee Report

Matt Clark accepted the Chair position for the Historical Committee, and we are excited to have him bring his passion for the history of surveying to this committee. Please contact Matt if you are interested in helping with this committee.

The Historical Committee is currently working on two projects to help preserve the history of surveying while promoting awareness of our profession:

The ***first*** is a holdover from the Surveyors Historical Society Rendezvous in 2019. However, the COVID-19 pandemic interrupted and delayed our ability to get things planned and executed. But we believe our patience will pay off.

This is the Place Heritage Park (TITPHP) has a replica theodolite (which Monsen Engineering agreed to determine if it is salvageable) we would like to put into use in a manned exhibit at the "Orson Pratt" observatory in the Park. The staff will explain how the observatory was used to calculate latitude and longitude and other solar observations when it was in use on the grounds of Temple Square.

After going through those explanations, the staff would set up the theodolite over the "known" point and, using a replica chain and turning angles, would establish latitude and longitude coordinates on the Base and Meridian Stone (a replica of the SLB&M). After which, they would explain how the initial layout of Salt Lake City was done and, hopefully, explain the PLSS using the same initial point.

The ***second*** is a plaque commemorating the Hayden Geological Survey of 1871. This plaque would hopefully be placed near the starting point of the survey and explain the importance of one of the Great Surveys of the American West that originated in Ogden. The 1871 Hayden survey party left Ogden on June 8, 1871, and completed their famous Yellowstone mapping expedition at Fort Bridger on Oct. 2, 1871. The improved Yellowstone mapping and great public interest sparked from their survey – and several other expeditions a few years earlier – contributed immensely to the U.S. Congress declaring Yellowstone a national park in 1872.

A third project is in the works, and more details will be available shortly, so stay tuned. ❖

For more information on the surveys or the information listed in this article, please go to the Smithsonian Institution archives (https://siarchives.si.edu/collections/siris_arc_397106) or the USGS (https://pubs.usgs.gov/gip/7000078/report.pdf).

Also, please reach out to Matt Clark or Andy Hubbard if you are interested in helping with this committee, either of these projects, or if you have something you would like to share.

Golden Spike

CHAPTER REPORT

The Golden Spike chapter listened to students present their drone projects for our first luncheon at the Davis Catalyst Center this year. We asked the students questions about how they came up with their determinations. We had Mike Nadeau attend and update us on the ALTA/NSPS Land Title Survey Standards.

In September, we listened to the Property Rights Ombudsman, who touched on recent court cases relative to surveying. They will notify us of any 2022 legislative updates of which we may need to be aware.

We are trying to team up with the Historical Committee to help with the Hayden plaque. We are also working on a museum exhibit, which has been put off due to COVID, but now, it should be ready for completion.

We are also looking forward to presenting to a group of students at a charter school who are learning about topography. We hope to get a few more presenters this year for our luncheons that may be from fields not surveying but related, and give an insight on how they both go hand in hand.

Bahram Rahimzadegan

Western Federation of Professional Surveyors

By Michael Nadeau, WFPS Director, PLS/CFedS

Hello members! As I started to write this report, I decided to check out the last time I wrote a report for you. The summer of 2019 was the last Foresights the UCLS produced, and that was also my last report to you, pre-COVID-19. What an absolutely crazy couple of years it has been, my friends. I hope you all have been well and safe during the last few years. I'm excited that the UCLS Foresights is back, and I'm doubly excited we are on the back end of the pandemic.

Ironically, my entire two-year chairmanship with WFPS happened to be during COVID. So, every single meeting – except my first meeting as Chairman in March 2020 in Washington State – was a virtual meeting. As a side note, as I was getting on the plane at SeaTac leaving this first meeting as chairman, the national news in the airport was reporting the first COVID-19 death in the U.S. just happened to be in SEATTLE, where I was!

Over the last few years since my last report in Foresights, WFPS has been hard at work raising the bar for our profession. Here are some of the highlights of what we've been working on:

1. In the past, WFPS directors met three times a year in one of the member states. Over the last few years and all through my chairmanship, the WFPS Executive Committee (Excom) has been meeting monthly to ensure ongoing activities discussed during the three yearly board meetings are still attended throughout the year between each board meeting. This has proven to be a great extra set of meetings in that work inside WFPS doesn't get dropped between the three annual board meetings. These Excom meetings are held virtually to keep director costs as low as possible for our member states.

2. Most recently, WFPS was very involved in preparing, planning and executing the Western Regional Survey Conference in Las Vegas. This conference was from March 30 to April 2, 2022, and was very well attended. We had over 950 attendees from 31 states across the country. This conference included 22 hours of continuing education spread across four simultaneous tracks. It's possible I'm being a bit myopic here since I'm also the Chair of the Conference Committee for WFPS, but I would dare say this was one of the best conferences I've attended in my 27 years of surveying. Thanks to all the Utah attendees and all four states who helped make this conference such a success, including the UCLS, NALS, CLSA and APLS. Yours truly received the WFPS chairman plaque during the awards ceremony.

3. WFPS is excited to announce the release of the FS Exam Study Course, which includes approximately 16 hours of videos and a manual. Topics included are based on the current NCEES Fundaments of Surveying (FS) exam specifications and recommended knowledge. https://ncees.org/wp-content/uploads/FS-CBT-specs.pdf. Presenters: Dane Courville, PLS, and Knud Hermansen, PLS, PE, Ph.D. WFPS understands the concern of not having enough surveyors in the profession to handle the current and future workloads.





As such, WFPS has researched what prices other FS prep courses are selling their information for, and we set our prep course lower than all of those. Setting this price point so low is to get more young people in our profession to move forward towards licensure. All WFPS member states only pay $199 for the program, and non-member states only pay $299. If you know a young surveyor struggling to pass the FS exam, have them check out the program at wfps.org/publications.html.

4. Scholarships and disaster relief fund: Since my last report in 2019, WFPS issued student scholarships to Nathan Mersino and Heather Keenan and awarded funds for disaster relief to an individual after losing her home to the California wildfires. More scholarship and disaster relief information, as well as the application forms, can be found at http://wfps.org/scholarships.html.

In my mind, one of the biggest benefits of WFPS is the collaboration between the 13 states. For example, the UCLS may be struggling with getting a bill passed through the legislature, and maybe CLSA has already worked through its legislative process on the same issue. CLSA can give UCLS guidance, thoughts, ideas, and lessons learned so that the UCLS can hopefully get its bill through the legislature.

Here are some highlights from each state as of our last meeting in Las Vegas prior to the last conference.

HIGHLIGHTS FROM THE 13 WESTERN STATES

ALASKA (ASPLS) Steve Buchanan – ASPLS co-hosted a virtual conference with HLSA. The conference was held at the end of April, featuring Gary Kent, Landon Blake, and Kris Kline as speakers, in addition to several Alaska and Hawaii-specific educational tracks. More information about ASPLS can be found on its website AlaskaPLS.org.

ARIZONA (APLS) Mike Fondren – Current membership is 386. Last year APLS launched a firm membership option in which firms can join a membership tier depending on how many RLSs they have on staff, and all their survey technicians (associate members) are complimentary. This new membership category has helped to get more survey technicians involved in APLS. In 2021, APLS successfully defeated a bill that would prohibit counties from requiring surveys as a condition for approving land divisions. The bill has resurfaced as HB 2554, and APLS is again on record as opposed. More information about APLS can be found on its website AzPLS.org.

CALIFORNIA (CLSA) Ray Mathe & Kevin Hills – No report submitted.

COLORADO (PLSC) Todd Beers & Steve Parker – Current membership is 408. PLSC continues to actively participate in Quality Based Selection (QBS) meetings. PLSC successfully amended a reciprocity bill to retain the requirement for the state-specific exam. There is a bill that would eliminate the position of County Surveyor from the state constitution, and PLSC is actively opposing the bill. PLSC introduced a bill to require real estate forms to include a line item for improvement location certificate. The Department of Regulatory Agencies (DORA) has voluntarily agreed to amend the forms, and PLSC has withdrawn the bill. GIS in the Rockies was held Sept. 28-29, 2022. PLSC continues to be active in outreach activities such as career days and guidance counselor events. More information about PLSC can be found on its website PLSC.net.

HAWAII (HLSA) Cliff Yim – Current membership is 91. HLSA co-hosted a virtual conference with ASPLS, held April 28-30, 2022. The state of Hawaii has phased out most of the COVID-19 restrictions. House Bill 2332 proposes an exemption on granting of easements on public lands from formal subdivision process. While the bill intends to facilitate the transfer of non-agricultural land from the Department of Natural Resources to the Department of Agriculture, HLSA is concerned regarding the vagueness of the language. HLSA is working with the legislature to amend the bill for clarification. More information about HLSA can be found on its website HLSAhawaii.org.

MONTANA (MARLS) Dick Smith & Russ Kluesner – MARLS 2022 Conference was held in February in Missoula, MT. Attendance was great, and people were happy to be back to in-person conferences. MARLS has hired a new website developer to maintain its website. The site is now more user-friendly. MARLS' board approved funds to hire a lobbyist to assist with tracking bills that may affect the profession. MARLS continues to work on the update of its Standards of Practice manual, and the third edition of the MT Subdivision and Surveying Laws Digest is now available. More information can be found on its website MARLS.com.

NEVADA (NALS) Trent Keenan & Greg Phillips – Current membership is 276. NALS membership continues to increase. NALS participated in the 2022 Western Regional Survey Conference with Arizona, California, Nevada, Utah and WestFed. The 2023 Conference will be held March 25-28 at the Silver Legacy in Reno, Nevada. There are currently 90 students enrolled in the Great Basin College (GBC) four-year degree program, and 12 will graduate this

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year. NALS is working closely with the College of Southern Nevada (CSN) to bring a second four-year degree program to Nevada. NALS continues to publish, print, and mail four issues yearly of the Nevada Traverse. The magazine is also available on the NALS website. The NALS Board of Directors wrote a letter to the NSPS Board of Directors, officially opposing the proposal to remove voting rights from the NSPS membership for the election of NSPS Officers. NALS continues to have strong participation in outreach events. NALS hosted a fall seminar and golf tournament October 21-22 in Mesquite. More information about NALS can be found on its website NvLandSurveyors.org.

NEW MEXICO (NMPS) Allen Grace & Diego Cisneros – Current membership is 225. NMPS held its conference in the fall for the first time on October 21-22 at the Isleta Resort and Casino. NMPS is recruiting new leaders for the Young Surveyors Network. More information about NMPS can be found on its website NMPS.org.

UTAH (UCLS) Mike Nadeau – Current membership is 335. UCLS participated in the 2022 Western Regional Survey Conference with Arizona, California, Nevada, Utah and WestFed. The conference was held on March 30-April 2, 2022, at the Luxor in Las Vegas, Nevada. UCLS Fall Forum focused on CST training. UCLS worked with the legislature to introduce a bill that corrected legislation passed last year that confused the boundary line adjustment and boundary line agreement language. UCLS continues to provide outreach through the scouting merit badge program, CST, and Trigstar. A Young Surveyor Network has been established in Utah. More information about UCLS can be found on its website UCLS.org.

WASHINGTON (LSAW) Ben Petersen & Tony Chenier – Current membership is 860. The 2022 Conference was held at the beginning of March in Vancouver, Washington. Although numbers were down from usual attendance, those present were happy to be back to in-person conferences, and the program was well received. A fall seminar was held November 4-5 in the Seattle area, and the 2023 Conference is scheduled for February 15-17 in Spokane, Washington. The LSAW Foundation has established the James Coan Memorial Scholarship, awarded annually. LSAW continues to participate in a lobbying coalition with engineers and architects. Through the coalition, we opposed and defeated a bill that would have required prevailing wages on private hazmat projects. LSAW will reintroduce its monument preservation bill next year. The Evergreen State Surveyor magazine is available on the LSAW website. More information about LSAW can be found on its website LSAW.org.

WYOMING (PLSW) John Lee – Current membership is 131. PLSW authored legislation to address the 2022 datum that removes the date reference. PLSW is also monitoring HB0002 which proposes adding the same water rights requirements for additions to cities and towns currently required for county subdivisions. Lines and Points magazine is pushed quarterly and is available on the PLSW website. The University of Wyoming continues to offer a minor in land surveying and a land surveying certificate program. Information about PLSW can be found on its website PLSW.org.

WFPS OFFICERS 2022-2023

The following board members ascended or were elected as officers for the 2022-2023 WFPS term. They were installed at the meeting on Oct. 16, 2021, in Chandler, Arizona (this was also WFPS' first in-person meeting).

- Ben Petersen (Washington) – Chair
- Russ Kluesner (Montana) – Chair-Elect
- Trent Keenan (Nevada) – Secretary/Treasurer
- Mike Nadeau (Utah) – Immediate Past Chair

INTERNATIONAL RIGHT-OF-WAY ASSOCIATION

The WFPS Board of Directors has authorized the Executive Committee to negotiate a Memorandum of Understanding (MOU) with the International Right-of-Way Association (IRWA). The MOU will allow the two organizations to collaborate more effectively and disseminate information within our associations.

WESTFED EDITOR'S FORUM

WFPS was pleased to host a virtual Editor's Forum in April. Editors for each of the WestFed state associations were invited to attend and share information and exchange ideas for building better magazines. The meeting was well received, and all in attendance indicated that it was a great benefit that WestFed can provide to the state associations. The WestFed Editor's Forum has officially been established. For information, please email the WFPS Executive Office at admin@wfps.org.

What can WFPS do for you?

As I've always stated in my past reports, I challenge the UCLS members to bring up surveying issues that can be brought to WFPS on a regional platform. As your director of the WFPS and the immediate past chairman of WFPS, I represent you. So please don't hesitate to contact me at MikeNadeau.UCLS@gmail.com. ❖

About WFPS

The Western Federation of Professional Surveyors (WFPS) was formed in 1979. The Board of Directors includes two Delegates from each of the 13 western states. WFPS serves as a regional voice for land surveyors and meets quarterly to discuss practice issues affecting western state surveyors. For more information about WFPS and the state associations, visit WFPS.org.

Book Cliffs Chapter

As we all know, this year has been a fast-paced year for land surveying and many other industries we are associated with in general. Here in the Book Cliffs chapter, we are especially busy as the economy seems to be booming with the influx of the many folks on "Exodus" from city life in search of a more rural setting. This and the constant grind of the oil and gas industry keep those involved on their toes and working long hours.

We have finally been able to get a couple of potential folks lined up to share some knowledge with us about topics that affect all of us.

We will have a safety specialist from a local oilfield company spend some time giving us a refresher on seasonal training.

We will also have a DNR representative meet with us about a local land dispute with a private landowner.

The dates of these two meetings will be released shortly, but we are excited to finally have a chapter meeting after quite a long break.

Thanks to those who constantly put time and effort into this profession, those who work late, put in long hours and make Land Surveying a better profession for all.

Regards,
D. Ryan Allred, Book Cliffs Chapter President

Young Surveyors Network Report

Dear Utah Council of Land Surveying Board:

On Aug. 6, 2022, the YSN had its first annual get-together. We had a really great time and had a good turnout. One of the highlights of the activity was our Historical Monument Hunt. We were challenged to find/show evidence of the oldest original monument we had found within the last two months. Almost everyone participated in the monument hunt, and we had some great finds. In this challenge, we had to provide a picture of the monument, as well as the original notes. Our winner was Taylor Christensen, who found a stone monument that dated back to July 1872.

We had other monuments found dating back to 1878, 1885, and 1898. The winner and runner-up received a cash prize from a private donor.

We also went on a monument search to look for a vertical USGS monument near our site. Taylor Christensen was the one to show us this monument and briefly explained how he found it. The monument was called out 18 feet west of the centerline of the road leading to Strawberry Reservoir. When Taylor was searching for the corner, he was looking north of the new asphalt road. In a last-ditch effort, he flew his drone over the area. He then realized there was an old road going through the brush south of the existing paved road. He searched along the northerly boundary of the old road. Lo and behold, he found the old 1934 USGS monument. He then collected static on the monument and sent it into OPUS.

It was great to see how different survey equipment can help locate old monuments and boundaries.

The YSN had a great time at this year's activity, and we look forward to our next meeting in December 2022. We are really excited to get things going with the YSN here in Utah and look toward growing and helping the future surveyors come into the career with a great network.

Sincerely,
Spencer McCutcheon, PLS

UCLS 2023
Chapter of the Year Award

The chapter with the highest number of points in a year is the "Chapter of the Year." Each chapter can earn points by accomplishing the following achievements listed below:

Chapter achievements

Hold four or more chapter meetings in the year*	20 points
Increase chapter membership by 10% or more	20 points
Increase conference attendance of chapter members by 10% or more	20 points
Run three or more Surveying Merit Badge (or similar youth) events	20 points
Sponsor Trig Star Contests at three or more High Schools within the chapter	20 points
Participate in a community service project as a chapter	20 points
Write and publish four or more articles in the Foresights or Newsletter*	20 points
Give a chapter report quarterly to the board that can be published	20 points
Optional chapter event (approved by Board)	20 points
Nominate a Surveyor of the Year candidate from the chapter	5 points
Nominate a Lifetime Achievement Candidate from the chapter	5 points
Have chapter nominations submitted prior to the first day of November	10 points

**Note: Partial credit may be given for these achievements if the chapter cannot complete all four meetings or articles.*

Prize

The prize for being the "Chapter of the Year" will be an additional budget of $500.00 – $1,000.00 to go toward an end-of-the-year chapter party. The presentation will be made at the UCLS Conference the first of the year.

Application

Chapter presidencies can send emails to Susan Merrill throughout or toward the end of the year, documenting achievements. **The deadline date is December 31.** The achievements will be evaluated and tallied by the ad-hoc committee to determine the "Chapter of the Year." ❖

Education Committee Update

First, thanks to all those who donated or made a purchase at this year's scholarship auction in Las Vegas. We are still waiting on final numbers from the conference organizers, but preliminary numbers indicate we will have raised more than any conference prior.

Over the last year, the Education Committee has been working on formalizing the Walter M. Cunningham Education Foundation Scholarship program. We've put into place specific details, time frames, amounts and awarding processes for the program.

Our next goal is to increase the amount and type of outreach the UCLS does. The Education Committee has partnered with the Davis School District Catalyst Center and alternate high school in Kaysville. The Catalyst Center is a cutting-edge career and technical education (CTE) school that opened this spring. They offer an unmanned aerial systems program, and the students in the program are graduating with their Part 107 license. These kids are flying a couple of sites owned by the school district and are designing a mini city to be judged by the Golden Spike Chapter, city council style.

We are also looking at CTE and STEM fairs across the state. Getting the surveying profession in front of junior high and high school students is one of the key ways to get more surveyors into the profession. We've all heard the statistics about retiring surveyors and the lack of new surveyors. The best way to combat a lack of surveyors is to get a career in surveying in front of these kids.

This is where we need your help. If you hear about a CTE or STEM fair, please reach out to a member of the education committee. We have posters, stickers and other swag/ resources set aside specifically for these events.

Any announcement for meetings, cool projects, accolades, awards can be posted on our social media. We encourage people to use the following tags: #UCLS #WMCEF #surveylife #GKiS.

- Facebook: Utah Council of Land Surveyors
- Instagram: Utah_Council_Land_Surveyors
- Linkedin: UCLS

Fall Education *Letter*

The Education Committee worked hard this summer, preparing for a few great events. We look forward to reaching many youths across the state.

- The Salt Lake Chapter is pairing up with a youth group in Copperton to give a presentation on careers in surveying.
- The Golden Spike Chapter is pairing up again with the Davis Catalyst Center's drone program. We will be mentoring high school youth in learning the ins and outs of drones.
- The Golden Spike Chapter also has a presentation planned with a local elementary school to promote surveying and geography.
- I have received reports of a few companies bringing on high school interns for the current semester This is a great way to get kids exposed to surveying. If you are interested in hosting a high school intern, please reach out, and I will be happy to connect you with program coordinators.

Did you know we have a social media presence? Have a great picture or accomplishment? Tag us or send it over, and we will get it posted.

Facebook: Utah Council of Land Surveyors

Instagram: Utah_Council_Land_Surveyors

LinkedIn: Utah Council of Land Surveyors

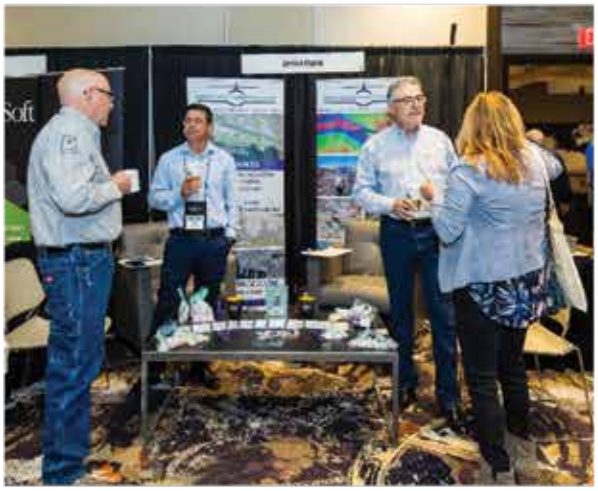
At the Field Forum (formerly Fall Forum) on November 17, we worked on the following areas:

- CST1 – The role of the survey tech field notes and construction plan reading
- CST2 – Survey math/computations, equipment tips and capabilities and office interface
- CST3 – The role of the crew chief, communication, construction principles
- CST4 – Engineering principles, Land Surveyor in Training, School and NCEES test prep

Thanks again for all your support!

Trent Williams
UCLS Education Committee Chair

'22 WESTERN REGIONAL SURVEY CONFERENCE

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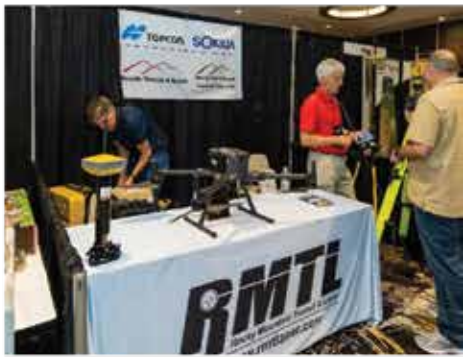

RMTL

Utah Council of Land Surveyors Annual Conference

Planning and Organization

By Todd Jacobsen, PLS

The Utah Council of Land Surveyors (UCLS) is the voice of the professional surveying community in Utah. The UCLS has a strong membership who are proud of our profession and love to be involved in many aspects of the surveying profession. One of these aspects is being the UCLS Conference Chair. Planning the annual conference can be challenging, but very rewarding as well. You will begin early by scheduling an event center and selecting/organizing your main presenter(s) and theme for the conference. There are many aspects of planning this conference, so by working with other committees and using other resources, the conference planning will be simple. Most of the work happens as the conference date approaches, but if you work on the conference a little here and a little there all year, it will make the time spent easier.

The conference is generally held at the Dixie Convention Center in St. George, Utah, the week of the President's Day holiday. The days and times of the conference are generally from one o'clock Wednesday through Friday late afternoon.

The purpose of planning and organizing this conference, according to Rule 22, Professional Engineers and Professional Land Surveyors Act Rule §§ R156-22-304, a licensed professional land surveyor shall complete qualified professional education that is directly related to the ethics, business, and technical content aimed at maintaining, improving, or expanding the skills and knowledge relevant to the land surveying and have an identifiable clear statement of purpose and defined objective. Training must also be relevant to the practice and be presented in a competent, well-organized, and sequential manner. It will need to be prepared and presented by those qualified by education, training, and experience.

Timeline

February during the conference: Schedule the Dixie Convention Center for next year's conference while at the Dixie Center.

February and March: This is the time to research speakers and develop a preliminary theme for the conference. The National Society of Professional Surveyors (NSPS) speaker's list is a great resource. Here you will be able to read each speaker's bio, topics, and contact information.

February through July: Lay out a rough draft of the conference schedule. The Dixie Center will be looking to have a contract signed. Please read through the contract to understand what the Dixie Center is expecting. This will provide timelines for vendors and the administrative secretary to enter the building and set up for the conference, among other information.

August: If you choose to send out a "Call for Presentations" to the membership, this is when you want to do that. These are usually other members of the UCLS but can also be other professionals you choose to invite as a presenter, e.g., title company representative, land use attorney, etc. This affords a broader opportunity for people to share their personal versions and aspirations for the organization.

Other great resources are the State Ombudsman, Utah Department of Transportation (UDOT), Automated Geographic Reference Center (AGRC), United States Geological Survey (USGS), International Right of Way Association (IRWA), Utah Geographic Information Council (UGIC), National Oceanic and Atmospheric Administration

(NOAA), Bureau of Land Management (BLM), Certified Federal Surveyor Transition (CFedS), U.S. Department of Agriculture, Forest Service, Utah Valley University (UVU), and Salt Lake Community College (SLCC).

September: The Department of Professional Licensing (DOPL) will partially reimburse the UCLS for conference expenses for presenters. A preliminary conference schedule will need to be turned into DOPL no later than October 1, along with the expenses for the contracted presenters, and a brief description of their topic(s) presentation.

October through December: Work on finalizing the conference schedule. You should be heavily involved with some of the other UCLS committees in organizing this event. Are you using an app for the conference? This is the time to put it together. Start looking at the purchasing of conference swag. You distribute these items to the members as they check in to the conference.

The UCLS donates a raffle item for the WMCEF scholarship fund. This has generally been a shotgun, but it can be anything that might catch one's eye and give them a desire to purchase tickets.

This is when you begin to coordinate with the Dixie Center on the rooms you plan to use and the layout of tables and chairs for these rooms.

January-February: The conference schedule should be complete. The Dixie Center's catering services will contact you for the number for food and on menu items for meals and breaks.

The Dixie Center is usually where we hold the conference. We get a bigger turnout at the conferences when they are held here. When the conference is held in Salt Lake City, we generally do not get as big of a turnout, and the venue is usually a lot more money. Also, when we combine conferences, e.g., Las Vegas, where they have been combined with other surrounding state societies, the same thing happens. Holding this event at the Dixie Center has by far turned out to be our best location.

Risk Management

Until the viral pandemic of 2020, aka COVID-19, there was not much risk in planning this conference. Now, we see that there could be a risk of not being able to get all of us together to meet in person, having to meet virtually instead. Even in planning the 2021 conference, it was unknown if we could meet in person or not. In the end, we met in person with about 75% attendance, but the conference was also held virtually. We were fortunate to have the time to plan for this, but it was out of the norm.

> The UCLS has a strong membership who are proud of our profession and love to be involved in many aspects of the surveying profession.

In the past, presenters were unable to make it at the last minute due to an emergency. This may cause you to cancel the session or possibly have someone ready at any time to fill in if this happens.

Always have a Plan B and adapt it. ❖

Todd Jacobsen
Todd Jacobsen, PLS, City Surveyor/Development Services Office, City of St. George

DOPL Update

By Amos Wilson, PLS

As of July 20, 2022, Utah has 10,378 Professional Engineers, and 720 Professional Land Surveyors licensed in the state. Here are a few stats from DOPL for the professions from 2017 to 2022:

Complaints: 113
Citations Issued: 35
Administrative Actions: 3
Letters of Concern: 12

DOPL's newsletter detailing disciplinary actions for licensees can be found at https://dopl.utah.gov/discipline/index.html.

Here are some other news items from Utah's Division of Occupational and Professional Licensing (https://dopl.utah.gov/):

- **Fee Increase**
  Effective May 16, 2022, all "state-sponsored" DOPL licensing exam fees will be increased by $10. For questions about this increase, please contact doplexams@utah.gov.

- **Suspended License Scam**
  The Division of Occupational and Professional Licensing (DOPL) has received reports of fraudulent calls and emailed letters informing licensees that their license has been suspended. See "Suspended License Scam Letter" issued Feb. 22, 2022, for further details about this scam.

- **Electronic Only Renewal Notifications**
  Licenses expiring from Oct. 28, 2021, to May 31, 2023, will receive one postcard renewal reminder. Beginning June 2023, ALL renewal notices will be sent ONLY to your email address on file with DOPL. If you are unsure if DOPL has your correct email address on file, you can update your record by visiting: https://secure.utah.gov/doplrenewal/client/addressChange.html. ❖

Welcome New Members

Alex Black
Park City Surveying

Ben King
David Evans & Associates

Brandon Mccloy
Ensign

Brandon Oborn
Meridian Engineering

Brock Christensen
Gilson Engineering

Carlos Rivera
Utah County Land Surveyors Office

Dallas Nicoll
Visionary Homes

Daniel Butterfield
CIR Engineering

David Hamilton
Anderson Wahlen & Associates

Dorian Scoville
Salt Lake City Public Utilities

Gary Pratt
Talisman Civil Consultants

Geoff Bippes
Meridian Engineering

Heather Butler
Meridian Engineering

Herby Blair
Farmington Electric Utility System

Jacoby Langlois
CIR Engineering

Jared Baxter
Baxter Design Group

Jayson Hatfield
UVU Geospatial Society

Jeremy Brodney
Gilson Engineering

Jerron Atkin
T-O Engineers

John Halleck
Retired from the University of Utah

Joshua Christie
Jack Johnson Consulting

Justin Lundberg
Focus Engineering and Surveying

Justin Stocking
USDA Forest Service

Kyle Ogilvie
Benchmark Civil Engineering & Land Surveying

Levi Atkinson
Meridian Engineering

Madeline Beaver
Avenue Consultants

Matt Merrill
Focus Engineering and Surveying

Nathanael Washburn
David Evans and Associates

Nickolas Smith
Coordinare

Patrick Davis
Rocky Mountain Surveyors, Inc.

Sean Lundeberg
Avenue Consultants

Shawn Christensen
Whiteley Oliver, LLC

Spencer Lewis
Ensign Engineering and Land Surveying

Stephen Burt
Entellus

Steven Didericksen
Ensign Engineering

Tanner Beck
JUB Engineers

Tanner Hussey
Ensign Engineering

Timothy Neu
Meridian Engineering

Todd Ferrando
Benchmark Civil Engineering and Land Surveying

Trey Campbell
Cook-Surveying & Associates

Tyler Nielson
Jones and DeMille Engineering

Whitney Droubay
Iron Ridge Land Surveying

2021 Surveyor & **2022** Engineering Educator OF THE YEAR

"I am grateful for the recognition!"

Meridian Engineering's QC/QA Manager Brad Mortensen, PE, PLS, received the 2021 UCLS Surveyor of the Year award. It was presented by Meridian's Michael Nadeau on Friday, April 1, 2022, at the award ceremony during the Western Regional Survey Conference in Las Vegas, NV. Brad received the award based on his volume of service to the Land Surveying Profession, including his most recent participation as chairman of the Utah Council of Land Surveyor's ad hoc Committee developing the 2022 State Plane Coordinate System for Utah. Brad has worked closely with the National Geodetic Survey for the last four years in developing Utah's new system. Brad also presented a breakout session during the conference entitled, "Benefits from the New 2022 State Plan Coordinate System."

Brad has over 36 years of experience, and the last six of those years have been as Meridian's QC/QA Manager. He is well recognized for the quality of his work, especially in geodetic control surveys throughout the state. Brad also teaches "Control Surveys" in the Surveying Program at Salt Lake Community College (SLCC). Brad brings assurance to our clients regarding all aspects of transportation and infrastructure design, ranging from geodetic control, mapping, roadway/right-of-way design, and construction design of modern infrastructure. He also has experience in state, municipal, utility, and commercial/retail capital improvement projects.

All who know Brad would agree he loves to share relevant industry topics through conference presentations and as an educator at SLCC. Many younger licensed surveyors remember with fondness and dread his Control Surveys course. Dread because of the difficulty of the subject matter and fondness because of the way Brad presents the material. Several past students have thanked him for helping to further their careers.

Brad was also instrumental in compiling and writing the 2015 and 2017 updates of the UDOT Surveying and Geomatics Standards Manual, which is used throughout the state as the literal standard for control, topographic and construction survey specifications. Due to Brad's educational involvement in the profession, he has also received the 2022 Engineering Educator of the Year nomination from the Utah Council of Land surveyors at the Utah Engineers Council awards ceremony on Feb. 26, 2022.

When asked about these awards, Brad responded, "I fell into the Land Surveying Profession by accident. I was a student in an agricultural engineering program, and the first two courses were on surveying. I fell in love with being in the outdoors and using my wits to solve problems and collect data. After that, I changed my major and never looked back. The profession has been good to me, so I have tried to give back by mentoring future generations. Receiving the recognition from my peers these last few months has touched me deeply, and with much appreciation, I give my thanks!" ❖

Early American Surveying Equipment

By Dr. Richard L. Elgin, PS, PE, Rolla, Missouri

America's Requirements

Much of America's surveying practice descended from the English, but our early surveying equipment did not. The Old World used the delicate, expensive theodolite to divide its lands, sighting on points and measuring angles on a divided, graduated circle. American surveyors needed to establish boundaries over vast wildernesses that were difficult to traverse, and they needed to do it quickly and cheaply. Enter American innovation, technology and craftsmanship to improve a device used by mariners for hundreds of years, a form of which was being made in England: the magnetic compass. The result was the rugged, inexpensive standard American compass. One commentator said of the American compass: "Where accuracy can be sacrificed to speed and cheapness."

The Compass

Rugged, the compass with its body of wood or brass, two sight vanes, a leveling device and placed on a staff or tripod, it required only a balanced magnetized needle resting on a sharp point. The needle aligned itself with the earth's magnetic field and pointed to magnetic north. Magnetic north was known to move and hence was a poor direction with which to reference boundaries. This movement was well known, noted in some 1746 instructions that it ". . . may in time occasion much confusion in the Bounds . . . and, Contention." Variation, the angle between True Meridian (a line of longitude) and Magnetic North was known to differ at different locations on earth, and the angle was known to change in amount over time and location. True North was a better reference direction, and in 1779, Thomas Jefferson wrote that the plats of surveys were to be drawn "protracted by the true meridian," and the variation noted.

The first standard American compasses were "Plain" compasses. They used magnetic north and had no mechanism for applying the variation angle, converting magnetic direction to true direction.

David Rittenhouse (1732-1796) was an American man of science. He is generally credited with adding a vernier to the plain compass so one could "set off" the variation, the needle still pointing to magnetic north, but the bearing to the object sighted read on the compass circle being the true bearing. Thus the "plain compass" became the "vernier compass," a great advancement in the American compass.

The Land Ordinance of 1785 specifies that all lines be surveyed "by the true meridian . . . the variation at the time of running the lines thereon noted." Tiffin's Instruction of 1815 (the first written instructions issued by the GLO to its Deputy Surveyors) specified "a good compass of Rittenhouse construction, have a nonius division . . ." This is a vernier compass, "nonius division" meaning a vernier. Thus, the vernier compass became the standard instrument for surveys of the USPLSS. Until . . .

William Austin Burt and his Solar Compass

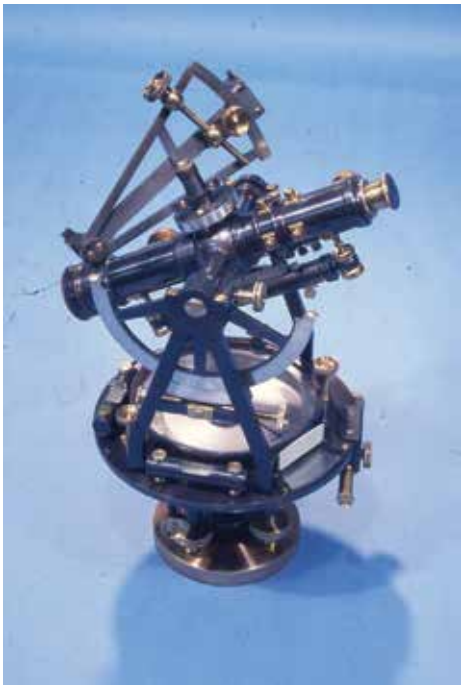
William Austin Burt (1792-1858) was a GLO Deputy Surveyor who, in 1835, while laying out townships in Wisconsin, noted unusual deviations in the lines surveyed using his compass. He began work on a method and form of compass that would determine the direction of the true meridian independent of magnetic north. He invented an ingenious device that uses the observer's latitude, the sun's declination and local time to determine true north. The device mechanically solves the PZS (Pole Zenith Star) Triangle. The prominent Philadelphia maker, William J. Young (1800-1870), built the device, and Burt was awarded Patent 9428X on Feb. 25, 1836.

Burt made improvements to his solar compass, and an improved version was patented in 1840. In 1850, Burt's patent expired, which allowed other makers to produce the solar compass. (The circumstances of the expired patent are a sad story.) There are about 12 known post-1850 makers of solar compasses. All the solar compasses made before 1850 are marked "Burt's Patent" and "W.J. Young" or "Wm. J. Young," as he made them. They are not dated or numbered. Those made by Young after about 1852 are numbered.

Is it a transit or a theodolite?

Generally, theodolite refers to an instrument with divided circles to measure both horizontal and vertical angles to high precision; the telescope is relatively long and will not transit (rotate 360 degrees) about its horizontal axis. The more common term "transit" refers to an instrument with both horizontal and vertical circles (only horizontal on early transits), a four screw leveling head, bubbles for leveling and a telescope that will transit. William J. Young is credited with building the first dividing engine in America. That allowed him to cut circles, and he is credited with building the first American transit in 1831.

The face of a Goldsmith Chandlee (1751-1821) vernier compass; Winchester, VA, circa 1800. Eagle holding banner with "John Orndorf" for whom the compass was made.



Solar Transit by W. & L.E. Gurley; Troy, NY.

This is one of the first transits made in America. William J. Young, Philadelphia. Three-minute least count, bullseye bubble. Was made in the very early 1830s.

The standard American vernier compass by W. & L.E. Gurley. This form with vernier, outkeeper, sights, level vials, was made from about 1860 and remained in the Gurley catalogs into the 1930s. It attached to either a tripod or Jacobs Staff.

Telescopic compass (not a transit) by Blattner & Adam; St. Louis, MO. Late 1800s.

Two alidades by Fauth & Co., Washington, D.C.

A rare Solar Compass by a very rare maker, John S. Hougham; Franklin, IN. Compass was made about 1861.

Gimbaled compass by James Reed (1792-1878) of Pittsburgh. Used in the mines.

An assortment of chains: Gunter's Chain, 66 feet. A half-chain, 33 feet. Railroad or Engineer's Chain, 100 feet.

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Continued from page 23

The transit developed and attachments, such as a variation on Burt's solar compass, were added by many manufacturers. For mining applications, parallel telescopes were added, thus allowing sightings at large vertical angles into steep mine shafts. Large precise transits were constructed for control surveys and astronomical observations. Horizontal circle diameters can be as large as 18 inches.

Collecting and Values

Early and vintage surveying equipment is highly collectible. It is the surveyor's heritage, it represents about 200 years of advancing measurement technology, and some illustrate incredible craftsmanship and artistry (especially the early makers). As with other collectibles, there are highly desirable, usually rare instruments (such as the solar compass). And the early Virginia and Pennsylvania makers made compasses that are works of art. But even instruments by prolific makers like W. & L.E. Gurley and Keuffel & Esser are desirable.

There are many collectors of early American surveying equipment, some with very large collections. Most collectors buy and sell instruments, research makers and surveying equipment, and a few offer repair and restoration services. Most collectors focus on a particular maker (or two), others focus on the makers of a particular city (St. Louis, for example), and others are interested in a particular instrument form (such as transits with unusual attachments). There are online resources for early surveying equipment, such as www.surveyhistory.org, run by David Ingram. The Facebook page "Antique Surveying Instrument & Ephemera," is run by Dale Beeks. And www.compleatsurveyor.com is run by Russ Uzes. Among the collector community, there is broad and deep knowledge of early American surveying equipment, but that knowledge is not well documented. There are not many reference books on the makers and their equipment. A few have been covered in articles and short treatises, but there are not good reference materials on the broad topic.

What are we going to do with Grandpa's surveying stuff, and what's it worth?

Regrettably, there is no national museum or repository where surveying equipment can be donated. Beloved equipment left to families or owned by old surveyors and seeking a home have limited options. The Smithsonian will not accept any such equipment, except for historically important equipment with known provenance. Most such equipment is not highly valuable. It is likely that 90% of such equipment would be worth less than $1,000 per piece. Eight percent would likely be worth up to $10,000. One and one half percent up to $100,000. And the last 0.5 percent over $100,000. Most collectors will have no interest in about 90% of the equipment offered to them (they already have plenty of early to mid-1900s: Gurley and K&E transits and levels). The best recipient for most low to mid-level surveying equipment may be a local museum, particularly if the equipment was used in the area by a local surveyor.

As with most collectibles, old or vintage surveying equipment is not worth what it was 10 or 20 years ago. The rare, unusual, historically important pieces have not lost their value during that time period and can easily be sold.

The Future

Boundary surveyors, being mensurators, detectives and historians have an appreciation for the equipment that laid out America. The equipment is our heritage, to be preserved, admired, studied and displayed. Every boundary surveyor needs an old compass and a chain proudly displayed on their desk. ❖

Generally, theodolite refers to an instrument with divided circles to measure both horizontal and vertical angles to high precision; the telescope is relatively long and will not transit (rotate 360 degrees) about its horizontal axis.

Dr.Elgin is a surveying practitioner, educator, researcher and author. He owns a large collection of early American surveying equipment. He is an expert in the Chandlee family of makers, John S. Hougham (Indiana) and the St. Louis Makers. He's written several books, including Riparian Boundaries for Missouri, Legal Principles of Boundary Location for Arkansas and The U.S. Public Land Survey System for Missouri. He coauthored the Sokkia (Lietz) Ephemeris. He can be reached at elgin1682@gmail.com.

Distractions Created by Smartphones When Not in Use

Smartphones have completely changed how we live our lives, in many ways for the better. Their use, however, can also create hazardous situations. Smartphones are a huge distraction from simply walking down the street and texting to taking a driver's eyes off the road for hundreds of feet of travel at a time. While it is a well-known fact that actively using a smartphone (or a regular cellphone) distracts you from other tasks at hand, recent research reports show negative effects from just having your smartphone in the area near you.

The Distractions of Smartphone Use

Today's modern world is arguably busier and more distracting than ever before. Add smartphones into the mix, and you are guaranteed to lack focus on things occurring around you. It is obvious that using these devices while completing other tasks is distracting, but the studies showing cell phones can negatively affect cognitive abilities even when not in use may surprise you.

A Study Looking at the Effects of a Smartphone in Our Presence

An article published by the Journal of the Association for Consumer Research reported that the mere presence of an individual's smartphone affected test scores that targeted attention and problem-solving. More specifically, the study's two measures of cognitive capacity were "available working memory capacity" and "functional fluid intelligence."

The researchers asked participants to place their smartphones in one of three places: (1) in sight on the desk where they were working; (2) in their pocket/ bag; or (3) in another room completely.

Even though the smartphones did not receive any notifications or alerts during the testing process, the individuals who had their phones on their desk where they could see them did worse on the test than those who had them in their pockets or bag. Furthermore, the individuals who had the phone in their pocket or bag performed worse than those who had their phone in another room.

The researchers also asked participants after the testing process how much they were thinking about their smartphones during the test. The most common response was "not at all," even though the test scores clearly showed a relationship between how close the phone was to the participants and the score received on the test. The researchers concluded that an individual does not have to be actively thinking about their smartphone for it to affect cognitive capacity when it is around them.

Summary

It can be frightening to think of the negative effects technology can have on our brains. While the majority of individuals recognize the dangers of using a cell phone while completing tasks, many do not realize the impact that having a smartphone in our presence can have on our ability to focus and problem-solve. When completing tasks that require your full focus, consider putting your cell phone in a different area where it will not serve as a distraction for you. ❖

LAYTON TEMPLE

Precise Cladding Survey Layout

By Amos Wilson, PLS

Construction of the Layton temple began summer of 2020. Diamond Land Surveying joined the project after the footings and the lower part of the sheer walls were already poured. Diamond was contracted to mark out over 400 precast concrete panels encapsulating the structure. The top left photo on the following page shows the view from the east tower of the temple at approximately 125 feet above the main floor.

The structure's design was orientated east-west, framed with steel, and included massive sheer walls at each end. Each precast panel was required to be spaced 3/4" from the surrounding panels on all sides. Outwest Construction installed the panels and prescribed an 1/8" tolerance for the layout marks. To ensure the precast panels would fit correctly to the building, an as-built scan of the footings, sheer wall, and steel framing was performed. The scan data revealed that the structure's length was built slightly shorter than the design. To compensate for this, new baselines were designed so the panels would fit on what was actually constructed. These new baselines were set and marked with chalk around the footings and roof of the temple. All dimensions were pulled from these baselines.

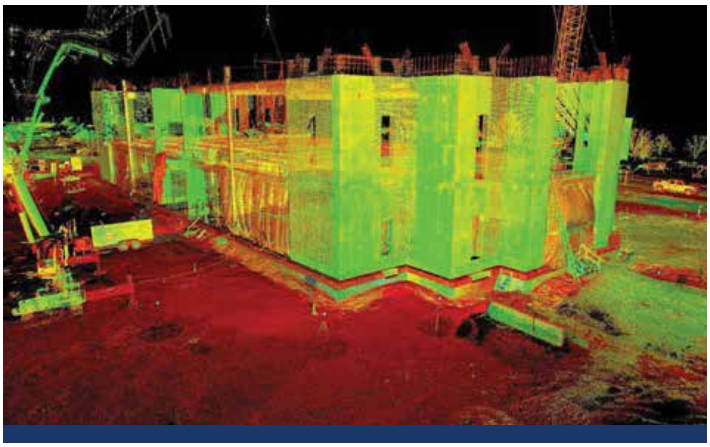
The next step was to mark out the locations of hundreds of steel mounting plates pre-welded onto the structure to hold the panels in place. These pre-welds were marked on the steel framing and steel plates embedded into the sheer walls. Dozens of the embeds had to be marked and dug out of the water-proofing and insulation. Several had to be moved and re-anchored to the sheer walls due to as-built conditions. The layout crew had to adapt based on site conditions and other trades working on the temple.

After the pre-welds were installed, stickers were placed around the structure that showed the exact corners and orientation of every panel. These 6" square stickers were permanent and blank. Before each day's layout, the stickers needed were drawn on with a square and compass and then labeled. Once placed, they controlled the height and position of each panel. A combination of steel tape, laser and total station equipment was used to place the stickers and pre-weld locations precisely and accurately.

Most of the layout was done by setting a laser at a precise spot on the baseline, then pulling a tape up the building to mark the panels. The total station was then used to check the placement of the layout. A lot of the layout was done at night to better see the laser and avoid other trades on site.

The process of marking the locations of the panels involved at least two people. One person was on the ground (or roof when working on the towers) below the other person to move the laser, hold the tape, call out dimensions via radio, and then check the marks with a total station. The other person was in a lift or perched on the steel to mark the panels or place the stickers.

The 3/4" gap between the panels was eventually grouted and finished. Staying within the small tolerances for the layout was crucial to the construction. These panels were fabricated in California and then shipped to the job site. Most of the panels were so large that only one could be shipped at a time, and they had to be installed within a day or two of shipment because there wasn't room on site to store the panels. Each panel had to fit the first time, and there was no room in the design to compensate for any errors in the



survey. Each mark was checked and then checked again. Also, the pre-cast panels were designed to precisely fit over the many windows of the structure. Prefabricated glass panels were installed in these windows. The pre-cast panels and the glass could not be easily or significantly modified on-site. They simply had to fit when they were installed.

One of the major challenges to this project was finding a balance between the building's design and how it was actually constructed. Meeting this challenge involved comparing the terrestrial LiDAR (Light Detection and Ranging) data with the construction plans and then adjusting the plans to mark out where the panels could be placed without any gaps or overlaps in the finished product.

Another problem was finding a way to safely mark out the panels/pre-welds in hard-to-reach places. This was done by a combination of personnel lifts and climbing the steel with fall protection in place. Every tool in a surveyor's arsenal was used, from a lowly plumb bob and string to the most sophisticated total stations and LiDAR scanners. All of this happened while workers were dozens of feet above the ground.

Everyone at Diamond Land Surveying grew as surveyors during this project. The layout lasted about nine months, and there were as many as seven surveyors from Diamond at the site on any given day. Coordination between the trades was crucial to getting the layout done in a safe and timely manner. Almost daily meetings were held between the survey crew and other trades such as the installers, waterproofers, insulators, crane operators, steelworkers, electricians, delivery trucks, etc. Each day saw new challenges, such as a change in the construction plans or how one area was prepped, but the installers needed layout in a different area. Because of this, the layout crew's plans for the day were constantly evolving. Meeting with the other trades at their day's end, and then performing the layout into the night helped the crew avoid surprises and gave them the ability to move the personnel lifts and other equipment without interference. Most of the layout was calculated on-site, so an up-to-date knowledge of the plans, and access to the engineers who designed the panels, was vital. The techniques learned, and the tools used will serve these surveyors for the rest of their careers. ❖

More imagery on page 28

AMOS WILSON, PLS
Amos has been surveying in Utah for over six years and has experience in LiDAR, Drones, Construction and Boundaries. He now owns and operates Aegis Land Surveying.

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Editor's Pen

The Lost Canoe

By Mary M. Root

It would be difficult. USGS Topographic Engineer Claude Birdseye faced enormous challenges to run an unbroken traverse and level line for 251 miles through the Marble and Grand Canyons. His expedition team included able boatmen, a geologist, hydrologist, second topographer, rodman and cook; ten men in all. Four 18-1/2' by 4-1/2' wooden boats "decked fore and aft and fitted with water-tight hatches and airtight compartments" conveyed the party and instruments consisting of "specially-constructed plane-table and telescopic alidades, a custom fourteen-foot long, folding stadia rod (which could be read from 2800 feet away, allowing for long shots through the canyons)," and "three additional alidades of varying styles (sight, Bumstead, and Gale), extra stadia rods, an aneroid barometer, tripod[s], four Brunton compasses, levels, tapes, field glasses, and field books."

With everything assembled, the team set off from Lees Ferry on August 1, 1923. Seven miles downstream they encountered their first rapid (Badger Creek), the first of 84 rapids on their journey. Birdseye would report there were only three instances where portaging was necessary, sometimes by using "long ropes held by men stationed along a cliff" or by taking them out and "dragging them over the rocks." Each boat weighed 900 pounds.

Their fifth boat was of light canvas and was primarily for the rodman's use. To their regret, it was lost at the thirteenth set of rapids and swept away. The survey continued, mapping to elevation 3150' (scale 1:31,680), and with contour intervals of 50' on land, 5' on water surface. At potential dam sites they adopted a scale of 400 feet to the inch, contour intervals of 10' and made a cross-section along the axis of the proposed dam. They developed a rhythm to their work.

On the evening of September 18, Birdseye reported, "the river had begun to rise … and continued to rise at the rate of about 18 inches per hour and reached the peak of 21 feet the following afternoon." They waited four days for the river to subside. While the men calmly waited, the light canvas boat lost at rapid #13 was recovered a hundred miles downstream. Newspapers all over the country breathlessly reported, "The explorers tonight are believed to be battling their way through raging currents in the rock-strewn, tortuous river in one of the most dangerous gorges of their voyage," and likening the journey to "shooting Niagara Falls in a barrel."

On October 13, 1923 the Birdseye expedition closed to a benchmark erected as the highest upriver point in a 1920 survey. The elevations closed within 4-1/2 feet, a remarkable achievement. ❖

See the accompanying article – The Grand Canyon Expedition 1923. This story originally ran in Backsights, Published by the Surveyors Historical Society Spring 2021, Volume 40 Number 1.

THE GRAND CANYON

By Scott Seckel, ASU Now

Ten men are deep in the Grand Canyon. Their expedition – to map the river corridor – marks the end of the era of exploration in the canyon.

But that night the river is trying to end them.

Unseen upstream rains cause a surprise flood. All night long, the river climbs. The men scramble in the darkness, tripping over rocks, repeatedly moving their gear and boats to higher ground.

The river doesn't stop. It rises 14 feet in one night. After daybreak, it rises another 7 feet. Unbeknownst to the men, the outside world thinks they are dead.

The water flow rate has risen from 10,000 cubic feet per second to 125,000 cubic feet per second. In 2021, with Glen Canyon Dam controlling the river, typical flows are around 13,000 to 17,000 cubic feet per second. A 30,000 cubic feet per second flow is sporty. You'd better know what you're doing on the water.

But to witness a flow of 125,000 cubic feet per second is to stare into the face of God.

The party waits three days, miserably crouched amongst boulders high up on a slope, before water levels drop to the point where their survey point is exposed again and they can continue work. When they arrive at Diamond Creek, long overdue, someone brandishes a newspaper. "HOPE NOT GIVEN UP FOR RIVER PARTY!" the headline thunders.

The nation hadn't forgotten them. And, almost a century later, their work is still remembered.

Arizona State University Library's Map and Geospatial Hub has just unveiled a dynamic multimedia exhibit describing, explaining and celebrating a historic collection of maps and charts of multiple Colorado River surveys conducted by the U.S. Geological Survey between 1902 and 1923.

"Visualizing the Survey" visually dissects and simplifies the mechanics of these technical and beautiful survey sheets, while putting their historical and geographical significance in perspective.

Matthew Toro, a research geographer and director of Maps, Imagery, and Geospatial Services at the ASU Library, explained the impetus behind the project. "I started thinking about the role of maps in making us sort of internalize and come to terms with the scale and the grandeur of the Grand Canyon," Toro said. "I started asking questions about how this thing was mapped. It started with the government saying, we need to map the Colorado River for strategic purposes, for scientific purposes, et cetera."

John Wesley Powell, the one-armed Civil War vet who first traveled through the canyon on the river, did some mapping on his second expedition, but nothing significant. Clarence Dutton's 1882 atlas of the canyon treated the entire area, but not the river corridor.

The Birdseye expedition in 1923 was the last of the government surveys. It's legendary among river runners to this day.

"The 1923 trip is an amazing feat," said Tom Martin, founder of River Runners for Wilderness and the Grand Canyon Private Boaters Association. Martin is also the author of river and hiking guides and a volunteer for the Grand Canyon Hikers and Backpackers Association and the Grand Canyon Historical Society. He is widely acknowledged as the leading expert on canyon river history.

Expedition 1923

"They ran a level line survey in oar boats for 260-some miles and closed within four feet (of the starting survey from downriver). There's some very cool history there, including a flood from the Little Colorado River that came down on them as they were working their boats around Lava Falls. These maps, including the Glen Canyon, Cataract Canyon, Green, upper Colorado, and San Juan surveys were all completed in the early 1920s and ended the era of exploration. They were used extensively by later river runners. The oldest river guide I have found is from 1950. It uses these maps."

The intent was to explore possibilities for power generation, identifying potential dam sites. Claude Birdseye, the chief topographic engineer of the USGS, led the expedition.

These weren't zip-from-camp to-camp trips. The men had to maintain a line of sight from one survey point to the next, so they had to land – and hold their positions – every few hundred yards, even in rapids or where the canyon walls were almost vertical.

They floated for two months and 19 days, from Lees Ferry to Needles, California. In all they selected 29 potential dam sites.

The visualization shows the historical surveys in relation to things like modem river mile markers. "We've actually overlaid them with historic aerial photography before the Glen Canyon Dam created Lake Powell," he said. The Birdseye maps were ultimately used in the creation of two dams and a number of water diversion projects.

Researchers today continue to use the maps, photographs and survey points – almost 100 years after they were collected.

"They're really significant," said Bob Davis, chief of cartographic data services for the National Geospatial Program of the United States Geological Survey. "They provided quite a foundation to what became the topographic map division."

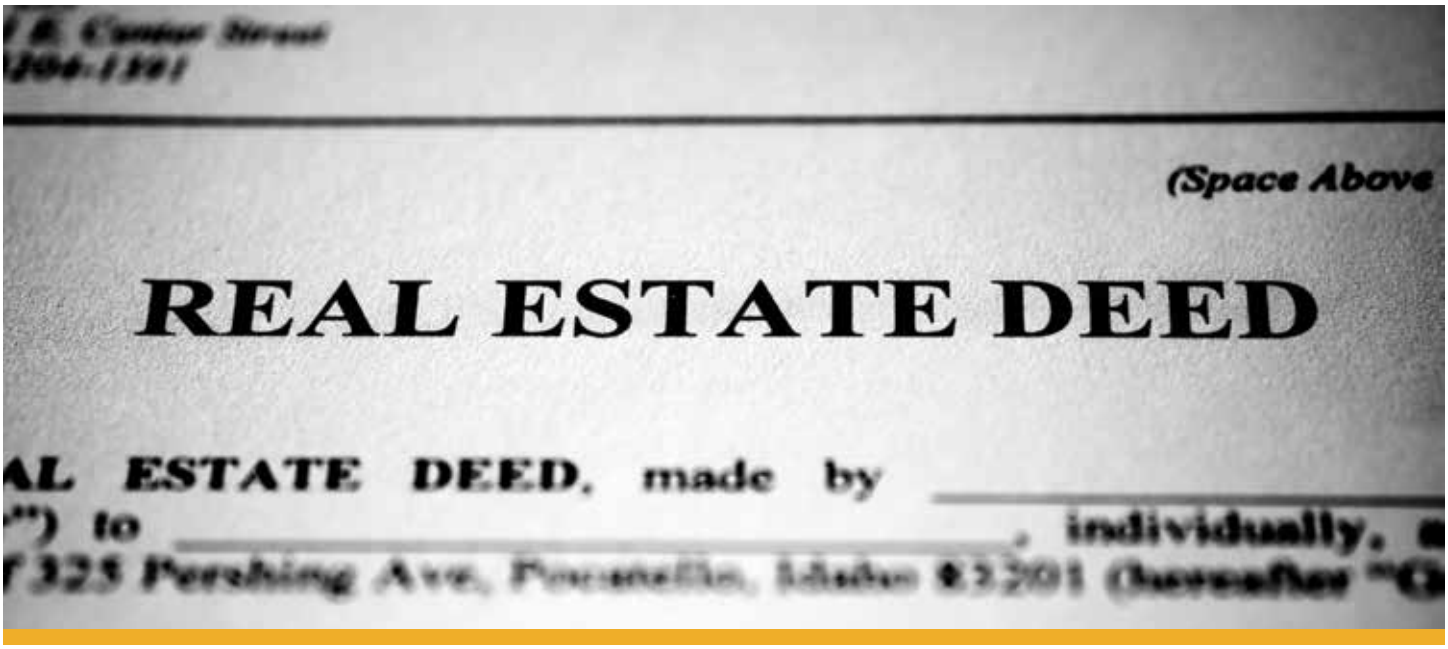
The original maps are in the library collection, bound in volumes. They're accessible to anyone who would like to see them, but putting the collection online opens it up to anyone in the world with an internet connection. ❖

Visualizing the last great Grand Canyon expedition - ASU News
This story originally ran in Backsights, Published by the Surveyors Historical Society Spring 2021, Volume 40 Number 1.
See the accompanying article – Editor's Pen: The Lost Canoe.

Folkways

The Klondike Big Inch Land Co.

By Jack Melver



This article has been edited for clarity and length.

In 1954, the breakfast cereal market was a highly competitive one. Some cereal manufacturers hired tigers and bears to promote their products, while others lured customers by stuffing their boxes with premiums – whistles and marbles, buttons and soldiers, and plastic airplanes. Quaker Oats tried toy cannons that actually shot cereal across the kitchen, and rings with prisms that could really burn holes in Mom's tablecloth, but they hadn't gone over too well – Mom, after all, was the one who bought the stuff.

Advertising executive Bruce Baker wanted a promotional scheme that would tie in with Sgt. Preston of the Yukon, the radio (and later, TV) show sponsored by Quaker Oats. It starred Richard Simmons as a handsome, burly, mustachioed Mountie who always got his man and never got his scarlet tunic mussed. Sgt. Preston had a team of huskies led by Yukon King ("On King! On, you huskies!") The show was broadcast by stations across the U.S. and Canada, and the kids loved it.

Baker's idea was this: Quaker Oats would buy land in Sgt. Preston's Yukon Territory, subdivide it into square-inch lots, and give the lots away to buyers of Quaker cereals. It would be a legal transfer of land: every kid who dug to the bottom of the cereal box would find a deed to one square inch of Canadian Gold Rush land. They'd be "gold-embossed," and have legalistic fine print on them, a corporate seal, and a place to put the new owner's name. The kids would go crazy trying to get them! Quaker Oats would conquer the cereal market! The world!

Quaker Oats hated the idea.

It was impossible, the company's lawyers told Baker. Registering the deeds would cost the company a fortune. Then we won't register them, said Baker. Forget it, said the lawyers.

But he wouldn't forget it. In October 1954, Baker flew to the Yukon looking for land. He paid $1,000 for 19 acres of government property seven miles up the Yukon River from Dawson. By then, Baker had convinced Quaker Oats that the promotion would work.

Lawyers John Baker and George Van Roggen drew up the deeds for the giveaway scheme. "They were very carefully worded," said Van Roggen. "Everything had to be absolutely legal – the competition in the food business was so strenuous that your competitors would try to get you on any small technicality." The deeds excluded mineral rights; although the area had by then been stripped of gold, they didn't want deed owners trying to mine their square-inch properties. It was also stipulated that owners had to allow perpetual access, or "easement," across their land to others who might wish to visit their own inches. Quaker Oats formed a subsidiary, the Klondike Big Inch Land Co., to handle the promotion.

The subdivision plan was a problem. Van Roggen explained: "I just visualized that we would have a land surveyor divide the land into parcels. But 21 million deeds were printed, and since it would take a square inch of paper to mark in the deed number, we'd have to have a subdivision plan the same number of acres in size." A solution was reached: the deeds were numbered consecutively, according to a master plan. If you wanted to find, say, lot number 11,935,000 you simply had to start in the northwest comer of the land, travel east 7,000 inches, go south 1,705 inches, and there you'd be, standing on your inch. "Theoretically," says Van Roggen, "you could find any square inch in the subdivision."

The promotion was first announced on the Sgt. Preston network radio show on Jan. 27, 1955, and advertisements appeared in 93 newspapers. The public response outdistanced Baker's wildest dreams. Quaker Oats cereal sold as quickly as the deeds could be printed and stuffed into the boxes.

Letters from new landowners flooded the Quaker Oats offices. "Where exactly," thousands of children asked, "is my inch located?" "How much is it worth?" One youngster sent in four toothpicks and a piece of string and asked the Quaker people to erect a fence around his property. "Interest in the promotion," says Baker "was unbelievable."

But all good things, alas, must come to an end, or so Quaker Oats thought. The Sgt. Preston show went off the air in the late 1950s. The Klondike Big Inch Land Co., kept alive for a number of years to handle inquiries, was dissolved in 1965. And the 19 acres of Yukon land were repossessed by the Canadian government for non-payment of $37.20 in taxes.

Yes, Quaker Oats would have liked to forget the whole thing, but it couldn't. Unlike plastic whistles, the Yukon land deeds weren't played with for a week and thrown away. You don't, after all, toss out a "gold-embossed" deed to land, even if it is just for one square inch. Who knows, it might be worth something someday. People squirreled them away and forgot about them. For a while.

Quaker Oats received hundreds of inquiries every year, from kids who grew up and rediscovered a deed, and from executors of estates who came across a Big Inch deed in a deceased's belongings. How much, they all wanted to know, is this land worth now? Is the deed genuine? Where exactly is it located?

Officials in Ottawa, only slightly amused, referred all correspondents to the Quaker Oats Co. in Chicago. And Quaker had the unhappy – and time-consuming – task of telling them that the deeds were worthless, that the Klondike Big Inch Co. no longer existed, and that the Canadian government had taken back the land. ❖

Originally published in Canadian Magazine, 1975.

2022 SCHOLARSHIP RECIPIENTS

Maddy Beaver

As a lover of the outdoors and healthy challenges, I am an ambitious junior surveyor at Avenue Consultants. I enjoy hiking, camping, hot springs, and road trips to new places. In my free time at home, I love to play my guitar, sing old country songs, and watch movies. I grew up in Eastern Nebraska as the youngest of four girls and moved to Utah about five years ago. I have an adventurous spirit with an inherent desire to continuously learn about the world. I am an AAS Surveying student at SLCC working to achieve my dream of becoming a professional land surveyor.

At Avenue Consultants, I spend most of my time either in the field doing surveys or in the office producing Right-Of-Way packages and submittals for UDOT projects. The work I do makes me feel accomplished to be a part of something so productive for Utah's infrastructure. I'm very much looking forward to not only continuing my education in surveying but to keep learning with the on-the-job training I'm receiving. I'm truly grateful to have already gained so much knowledge from my talented and intelligent peers in the eight months I've been surveying, and I can't wait to keep the momentum going with my work. ❖

Tyler Nielson

My name is Tyler Nielson. My love for surveying developed while I was actually attending Utah University to become an engineer. I discovered that engineering wasn't my path and happily rejoined the surveying program at Utah Valley University to finish my bachelor's degree. I am now a senior in the program and look forward to graduating and getting a license.

I now live in Blanding, Utah, and work with an engineering firm, Jones and DeMille Engineering, to accrue my hours to become a licensed surveyor. Going to school and having a full-time job keeps my hands full, but when I have free time, I enjoy hunting, camping, playing sports, riding horses, and looking after my two, almost three, daughters.

I love taking my knowledge from school into my everyday life. With my job now, I hope to take this bachelor's degree and become licensed in multiple states. I am grateful for the opportunity to get the best education possible to thrive in my job. ❖

Brandon Oborn

Brandon and his wife Amber have ten kids aged four to 23. He grew up in Utah and currently lives in Tooele. Growing up the oldest of eight kids has helped Brandon realize the importance of family.

Brandon's path to surveying has him starting this phase of his life later than most. Unexpected life circumstances have taken Brandon from two other career paths to surveying. With his family's support and mentors at Meridian Engineering, he landed on the path to surveying and expects to go as far as he can.

Brandon has enjoyed learning the extent to which surveying permeates life. The technology and detail in surveying have drawn Brandon deeper into the career, and the possibilities of where they can take him are inspiring. The opportunity to have been granted the Walter M. Cunningham Education Foundation Scholarship will leave a lasting impression on Brandon's life and career and is a blessing to him and his family. ❖

2022 UCLS Scholarship Auction

Many thanks of appreciation to those who donated items and to those who purchased them.
Your contributions will benefit future surveyors through the UCLS Scholarship program.

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Bany Rahimzadegan	*Vortex Hat*	*$11.00*
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Continued on page 36

Ensign Engineering	*1950's 2.5" Leupold "Sportsman" Compass*	*$165.00*
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It's time to reward excellence in the industry!

Please submit your nominations for the following distinguished awards:

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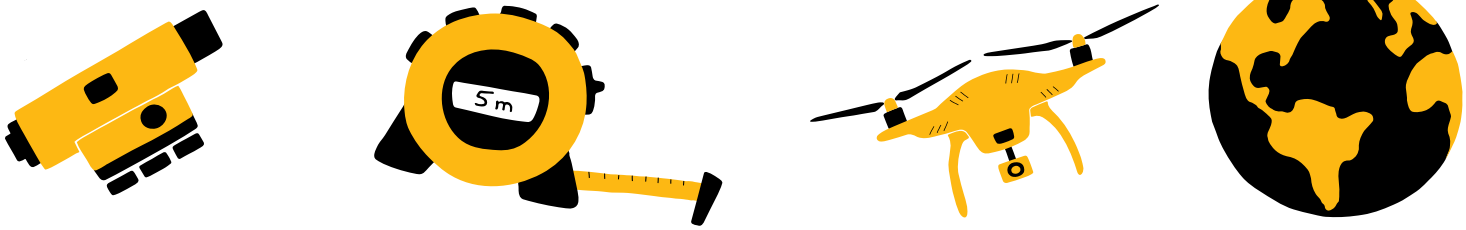
Nominations are due by December 31.



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Please email all entries to Susan Merrill at srmerrill@ucls.org.