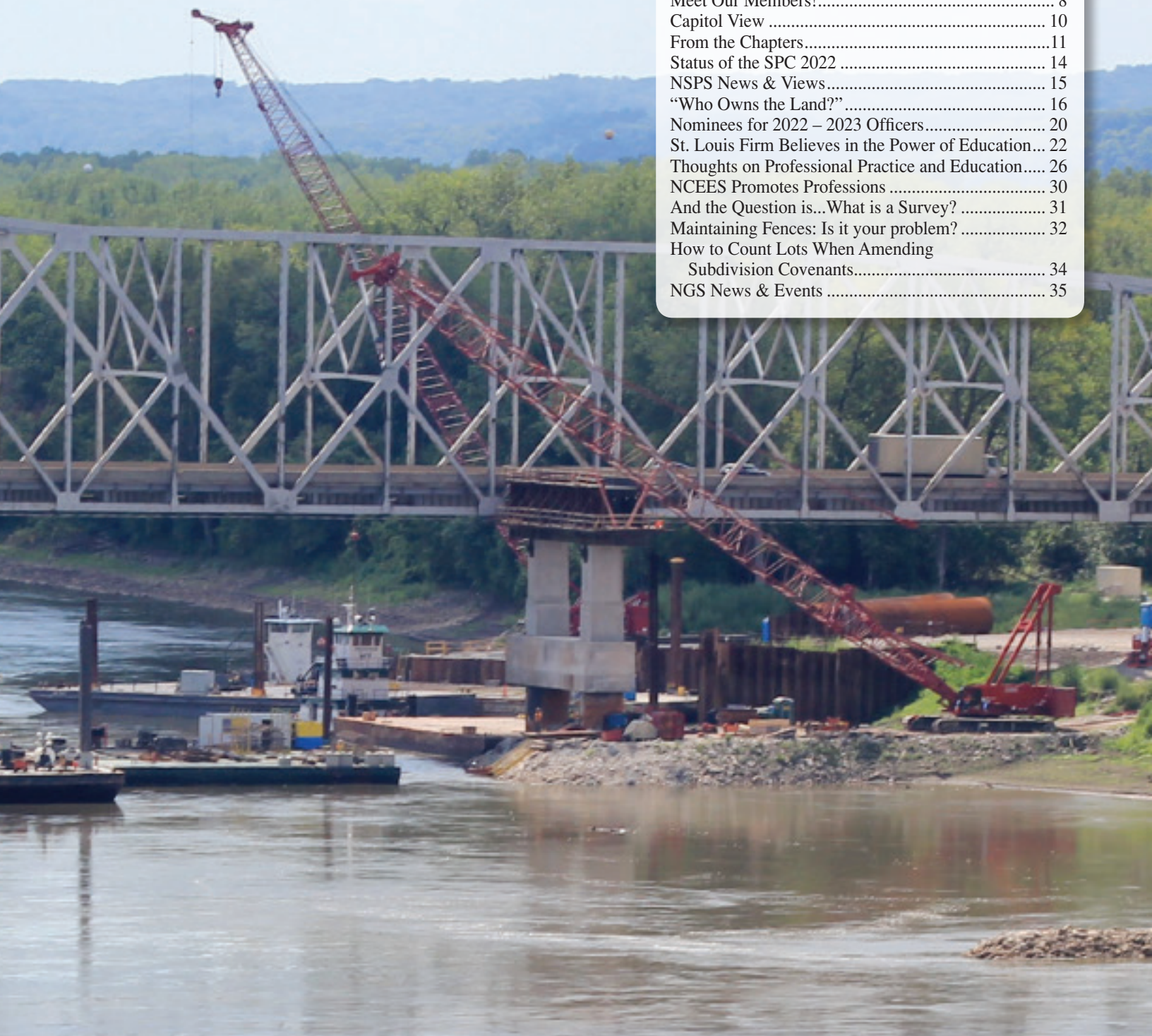
Missouri Surveyor

A Quarterly Publication of the
Missouri Society of Professional Surveyors

Jefferson City, Missouri — September 2022



What's in this issue...

CALENDAR OF EVENTS

2022

October 6-8, 2022
65th Annual Meeting and Convention
Sheraton Westport Hotel, St. Louis, MO

December 3, 2022
Board Meeting
MSPS Office, Jefferson City, MO

2023

February 15, 2023
Board Meeting
MSPS Office, Jefferson City, MO

May 4, 2023
Board Meeting
Lodge of Four Seasons
Lake Ozark, MO

May 5-6, 2023
45th Annual Spring Workshop
Lodge of Four Seasons
Lake Ozark, MO

July 15, 2023
Board Meeting
MSPS Office, Jefferson City, MO

August 14-16, 2023
Review Course Jefferson City, MO

September 28-30, 2023
66th Annual Meeting and Convention
Oasis Hotel, Springfield, MO

December 4, 2023
Board Meeting
MSPS Office, Jefferson City, MO

Cover: One of Missouri's largest capital improvements underway; construction of the replacement bridge of I-70 over the Missouri River 10 miles west of Columbia.

Donald R. Martin, Editor

Notes from the Editor's Desk

Donald R. Martin

As our summer turns to fall, the *65th Annual Meeting and Convention* of MSPS approaches. Billed as the *Survey Party at Westport*, members will gather October 6 – 8 in St. Louis. The success we can count on the meeting to be is built on a foundation of engaged members…engaged members sharing time, skill and knowledge. Those are also elements of this edition of *Missouri Surveyor*. MSPS members sharing their news, writing and ideas.

This issue is loaded with member contributions. From Stan Emerick we have a write-up for the upcoming workshop, *Comparative Error Analysis Workshop*. *From the Chapters* brings news from our local groups by way of members and leaders offering updates of chapter activities. For this edition's report we can thank Randy Presley, Jeff Means, Monnie Sears and Stan Emerick. Frequent contributor Dick Elgin is back again with "*Who Owns the Land?*" Another success from State Tech is brought to us from Joe Paiva as he tells the tale of *St. Louis Firm Believes in the Power of Education*.

Besides the contributions by members, we have news about members. Two proud MSPS members, Melvin Distler and Jonathan Rowsell share their profiles in *Meet Our Members*. Legislative news appears in our regular feature, *Capitol View*, where we see Matt Thomas, Sandy Boeckman and Lynne Schlosser witness Governor Parson signing into law revisions for the educational requirements for becoming a surveyor. Bio's of those MSPS members called upon to be *Nominees for 2022 – 2023 Officers* grace our middle pages.

And then there are articles from beyond our association, yet relevant and of interest to our readers. From NGS we have the *Status of State Plane Coordinate System of 2022*. The bigger picture is shared in *NSPS News & Views*. The legendary Knud Hermansen is back with more in his series *Thoughts on Professional Practice and Education*. Youth recruitment news comes from our national testing organization in *NCEES Staff Promote the Professions at Local Outreach Event*. Don't miss two pieces found and recommended by member Dick Elgin; *Maintaining Fences: Is it your problem? State law can be unclear* and *How to Count Lots When Amending Subdivision Covenants. You may be Surprised.*

Wow! Recounting this edition's offerings is a good way to see just how much *Missouri Surveyor* has to offer. Now it is left simply for readers to enjoy. With that, I best break-it-down and bunch-it-up so I can start getting ready for the next edition …I'll get back with ya' then…

Donald

THE MISSOURI SURVEYOR

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President's Message

Brad McCloud, PLS

This being my last *President's Message*, I would like to say it has been a pleasure and an honor to serve as President. I would like to thank all the committee chairs and members, our Board of Directors, local chapter representatives and Sandy Boeckman for all their hard work this year. They are the ones that keep this society moving forward.

The MSPS Board held a business meeting on July 16th via Zoom. Below are some of the highlights:

- The Nominating Committee selected Kellan Gregory, Phil Grout, Aubrey Meyer and Bart Korman to stand for election to the MSPS Board of Directors.
- Norman Ellerbrock, requested to hold a CST test in St. Louis at the Annual Meeting. The test will be Thursday, October 6, 2022.
- County Surveyors are working on a monument for Norman Brown.
- Katlyn Jones, with the US Forest Service was given a non-traditional scholarship.
- Mat Thomas is working with information provided by the Southwest Chapter on the Osage Treaty Line; he is planning a presentation for 2023.
- In late July we had our two senior board members, Monnie Sears and Jon Cole, resign from the Board. Lucky Mark Wiley was willing to step back in and was voted onto the Board; he will stand for election to be next year's Secretary/Treasurer.

The 65th Annual Meeting is coming up! It is to be held at the Sheraton Westport Chalet Hotel in St. Louis October 6-8th. A special thanks to Stan Emerick and the St. Louis Chapter for their work on the meeting.

Topics for the annual meeting include *Comparative Error Analysis* and *Drone Scanning* workshops; these will include field demonstrations and data collection. We'll also have our Business Meeting and election of officers and directors (the Board of Registration has approved 2 PDU's for the meeting). Further sessions will include *Surveying the Riparian Tract*, *Missouri Standards for Property Boundary Surveys*, *Panel Discussion and Surveyors and Railroad Right of Way*.

The *Young Surveyors* group will be holding a breakfast meeting Friday morning before the annual meeting. Board members and mentors are encouraged to attend. I am looking forward to the presentations and seeing you there.
Thank you again for the privilege of being your President. I would like to encourage those that have not participated in a committee or leadership role do so. This is a great way to meet other surveyors and advance our goals and mission. Committee participation is key to our success.

Brad

Comparative Error Analysis Workshop

at the

2022 MSPS Annual Meeting & Convention

Workshop Overview

Thursday
October 6, 2022
65th MSPS Annual Meeting and Convention
Sheraton Westport Lakeside Chalet
St. Louis, MO

When a surveyor signs his survey, he affirms that his work was done to the accuracy requirements defined in the accompanying standards. When called to task to defend his accuracies, can he do it?

This workshop will lay out a procedure for examining those accuracies. A test course with a set of known and unknown monuments has been built. We will collect sets of field data by a variety of techniques. We will sort the data into relevant groups, based upon the collection methods. We will show how one goes about analyzing that data by applying a comparative error analysis.

At the time of this printing, the test course is in place at Westport Plaza for those that wish to participate in this exercise in advance of the annual meeting. The map below shows the general layout of the course. A more detailed interactive map along with additional information can be found on the St. Louis Chapter's website at Stlsurveyor.org.

The exercise is meant to test the following hypotheses:

1. *Are coordinates collected by a single unit VRS network as reliable (and repeatable) as those collected (from a known point) utilizing a two-unit base & rover system?*
2. *Are coordinates collected by a fixed position (bi-pod) tilt correction (IMU) unit (using either system) of a quality that approaches that required for property boundary surveys?*
3. *Are coordinates collected by a variable position (handheld) tilt correction (IMU) unit (using either system) of a quality that approaches that required for property boundary surveys?*
4. *Are coordinates extracted from point cloud data collected by a drone scanning system (using either photogrammetry of LiDAR technology) of a quality that approaches that required for witness monuments within a property boundary survey.*

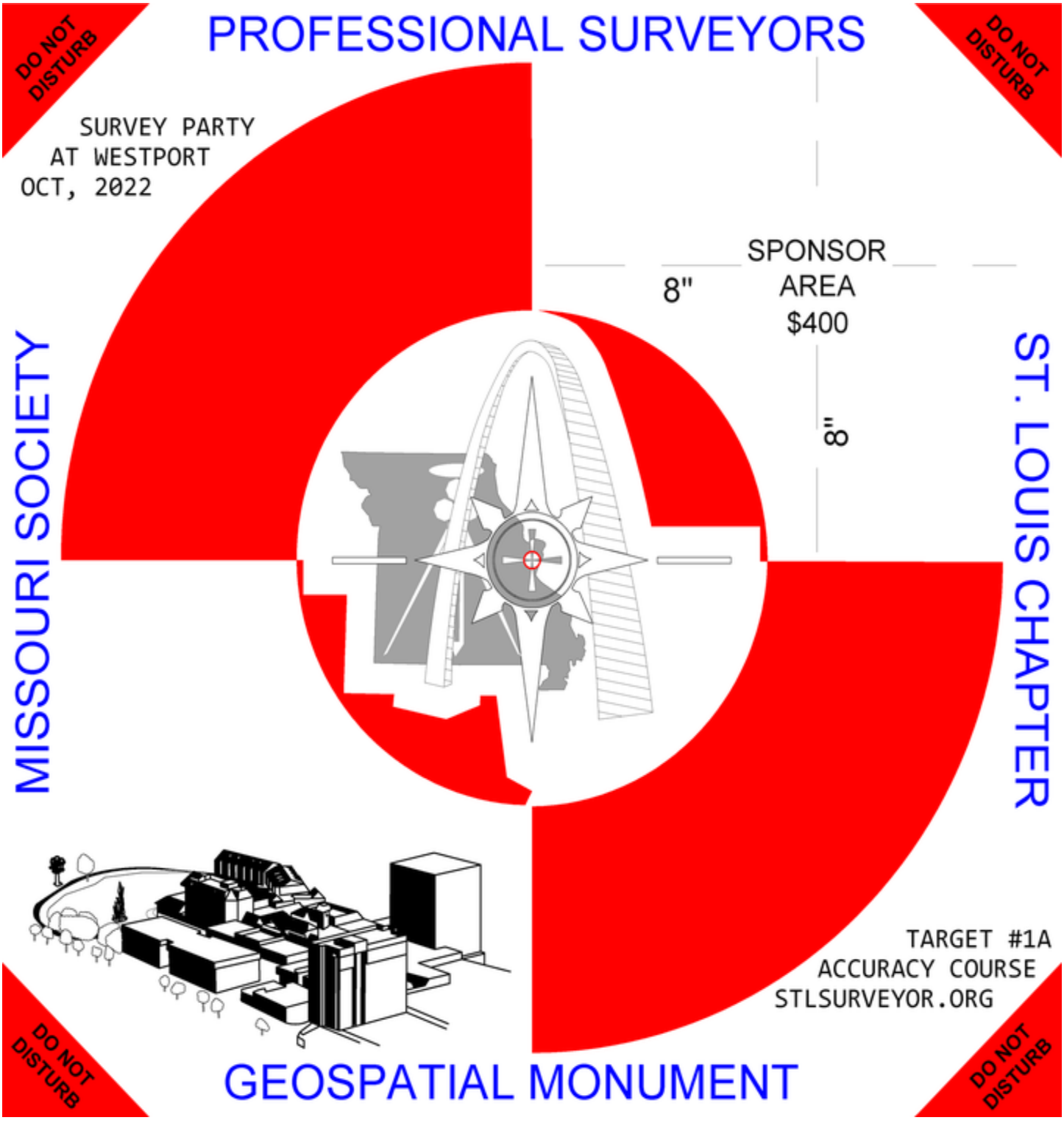
In order for this exercise to be a success, we will need the participation of numerous individuals, both as survey party assistants and course participants. If you would like to be involved, please visit our website and enter your information on our sign-up list.

The type of gear and procedures employed can be at the user's discretion (within the parameters of the course guidelines). They can run as little or as many as they wish. Each participant will have a three-digit identifier that will be applied to the point number, which will afford the individual a modest amount of anonymity for comparing their own particular data runs to the overall sets used in the analysis.

For those that want to participate in the course, but do not have their own equipment, loaners will be made available. A few of the vendors have agreed to have some of their units available. They may also have technicians available with each survey party, that can offer technical advice on the operation of the equipment.

For those that may wish to fly the course with their drone, please be advised that the targets for the control points are not permanently fixed in the field. They will need to be set over the control monuments prior to your flight. For more information on having them set, please reach out to us on our website or at MSPS.STL@gmail.com. For mor information on the course and workshop, please see our Chapter's website at stlsurveyor.org.

When all data has been collected, the unadjusted coordinates on the unknown points will be sorted into groups base on the collection method. From this data, the means and residuals will be tabulated. We will look at the dimensional and directional variances for each of the fifteen vectors connecting these points. We will try to determine if their one-sigma & two-sigma confidence levels fall within the accuracy standards set forth by the Missouri and ALTA Standards.



Sample Target

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Comparative Error Analysis Workshop *(continued)*

The Test Course layout on the grounds of the Sheraton Westport Lakeside Chalet and the Westport Plaza business and entertainment district.

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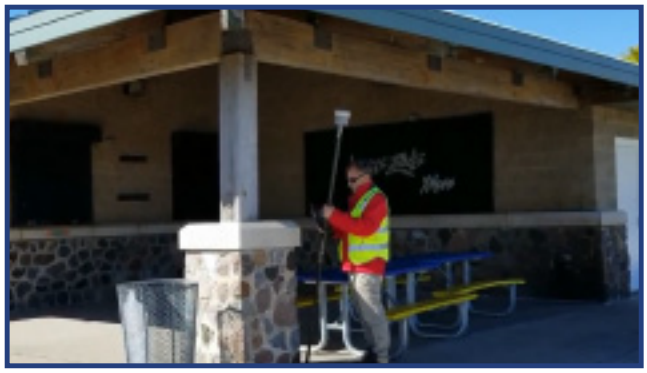

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Meet Our Members!

PLS Members

Melvin Distler

New Bloomfield, Missouri

Position:
Sr. GIS Specialist
Missouri Department of Transportation

Focus of survey practice:
My main focus is Geodetic Surveys; I am working on getting orthometric heights on MoDOT CORS sites and also working on the *GPS on Benchmarks* campaign for NGS.

Most memorable project:
I have two memorable projects - I helped build the MoDOT VRS network, entailing statewide travel with contractors building CORS sites and testing to make sure the network was operating correctly. The other was a LIDAR project I did for our Historic Preservation department. I used a mobile scanner to scan a historic bridge from which I created a 3D rendering of the bridge before it was torn down to make way for a wider, safer structure.

Likes about surveying:
The variety of things that a surveyor does! One day you're looking for USPLSS corners; the next you're retracing an old survey to mark line; the day after that you're doing some topo work, etc.

Why a member of MSPS:
For the meetings and the opportunities of talking with all of the great surveyors that came before me. I also get to meet the ones that are up and coming!

Finding surveying as a career:
I became a surveyor to get out of a job I thought I loved. I used my BS in Engineering Technology to join MoDOT as a Photogrammetric Technician, which I enjoyed. But I didn't want to tethered to a desk for 10 hours a day. Recalling the fun I had taking a surveying course when getting my degree, I joined onto surveying projects with with our staff PLS's of Brad McCloud, Pete Decker and Loran Chick. I was hooked! I took more classes, gathered more experience, and sat for my exams. I couldn't imagine a better fit for a job for me. I really have enjoyed the work that I have done and like coming to work every day!

Jonathan Rowsell

St. Louis, Missouri

Position:
Land Surveying Manager,
ABNA Engineering

Focus of survey practice:
All sorts of surveys for transportation agencies, railroads, utility companies, developers, municipalities and counties – it's a broad scope. My projects range from urban to rural, from design/engineering surveying to construction layout, from boundary surveys and ALTA/NSPS Surveys to lot consolidations and subdivision plats, as well as construction surveying.

Most memorable project:
The National Geospatial-Intelligence Agency site in St. Louis. We worked for the City as they were preparing to transfer the land into federal ownership. From being involved with utility and easement vacations, environmental surveying, all the way through to final ALTA/NSPS surveys for closing, it was such a memorable project. It had its good days and its challenging days, but it's with a proud feeling I look at this site now and see all the years that we put into it. Additionally, my son was unexpectedly born one week before closing, which made for a slightly stressful (but very memorable) wrap up to the project!

Likes about surveying:
The problem solving! I enjoy facing new challenges and approaches to projects. I like the variety of locations and using all of the cool technology (toys) we get to "play" with.

Why a member of MSPS:
While many can see other surveyors as competitors, it's important to have peers around to help you grow and provide learning opportunities… and to share horror stories with.

Finding surveying as a career:
By accident! I didn't know much about surveying, but I started a job and got hooked. I was helping shape our city and region; I decided to make a career of it! Three children later, and I'm still going strong. I got my license last year, so this is only the beginning for me.

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Capitol View

A Look at Surveying Legislative Matters

On June 7th at the State Capitol, Governor Mike Parson signed HB 2149 into law. HB 2149 included modifications to provisions relating to professional licensing. Known within MSPS as the "Education Bill", HB 2149 made numerous changes to the qualifications for becoming a Missouri surveyor found in Revised Statutes 327.

Passed within the 101st General Assembly on May 11th, MSPS and all Missouri surveyors owe a debt of gratitude to Representative Don Mayhew (District 121; Phelps and Pulaski counties). The only PLS in the Missouri legislature, this surveyor and elected official was a devoted, tenacious steward of the legislation all along the arduous journey from proposal to bill to law. This success would not have happened without him! Representative Mayhew filed the bill, attended all committee meetings and counseled partners in both chambers to apprise them of the bill and its issues. It was he who offered it as an amendment onto what became successful legislation, and it was he who coached and informed allies in the Senate who lined-up behind his push. Thank you, Don Mayhew!

On behalf of MSPS, PLS Matt Thomas, Executive Director Sandy Boeckman and Legislative Consultant Lynne Schlosser joined Missouri Governor Mike Parson for the signing into law HB 2129.

From the Chapters

News and events from the MSPS local chapters

KC Metro Surveyors

The local chapter for surveyors in the Kansas City metropolitan area have installed new officers for the 2022 – 2023 year. Leading the chapter are:

President- Wil Anderson
President Elect- Lee (Tuff) Hermreck
Secretary-Treasurer, Tim Wiswell
MO Director- Fred Byam
KS Director- Stan Lloyd

On May 19th, the KC Metro Surveyors gathered at the Seiler Geospatial facility in Lenexa, Kansas for a continuing education session featuring Norman Bowers. Mr. Bowers, a past president of the Kansas Society of Land Surveyors guided those gathered through a discussion on surveying laws including statutes, administrative regulations and case law. Special attention was given to "… subjects often overlooked or ignored by surveyors."

Ozark Chapter

The Springfield area surveyors of the Ozark Chapter have proudly presented a scholarship. The honored recipient was Tyler Dill with the award being applied toward the spring semester of his studies. Chapter President Randy Presley reports the group was pleased to have more than one applicant this year, and they find it "…encouraging to see younger individuals working hard to join our profession."

Members of the Ozark Chapter have recently met with officials from the city of Republic, Missouri. Republic has undertaken an effort to rewrite portions of the city's codes dealing with platting. Members of the chapter sought to meet with city officials in an attempt to eliminate some of the clutter of required information. They advised the bureaucrats about the difficulty of reviewing documents which include both engineering and surveying information on one sheet. Issues addressed included:

1. Reserving preliminary plats for land surveying information only; sealed by a PLS.
2. Having engineering information presented on a separate plan sheet; sealed by a PE.
3. Understanding the final plat is a legal document related to land ownership and should not be used to express extemporaneous data beyond that of land boundary information.

Ozark Chapter members ably represented the interest of surveyors while appreciating the foresight of the City of Republic for welcoming their input.

Southwest Chapter

Meeting at the Christ's Community Methodist Church in Joplin on August 25th, the surveyors of the SW wrapped-up their summer with an educational program. Presenting to the chapter's members was Warren Ward, a PLS in Colorado and Oklahoma. Mr. Ward is an author with the surveying industry publication *xyHt* magazine which regularly features his column, "Art of Retracement."

The program was split into two sessions with the first half of the day being "*Monuments Make the Math and 1001 Reasons Why Surveyors Plant Pin Gardens Anyway*." For the afternoon, the presentation was "*How Surveyors Built a Country and The Courts Followed in Their Footsteps*."

(continued on next page)

Mark Your Calendar for the 65th Annual Meeting on October 6-8, 2022 at the Sheraton Westport Chalet Hotel in St. Louis, Missouri

St. Louis Chapter

While a great deal of time and effort by St. Louis Chapter members has gone towards the MSPS Annual Meeting, they have also found time to redesign their website and enhance the digital footprint.

St. Louis Chapter website homepage available at https://stlsurveyor.org/

The website includes links to the chapter's Facebook page where there are up-to-date Timeline posts of current news and events. The group's current homepage also includes links to upcoming efforts by the chapter regarding the *MSPS Annual Meeting* ("Survey Party at Westport") and a *Photo Contest*.

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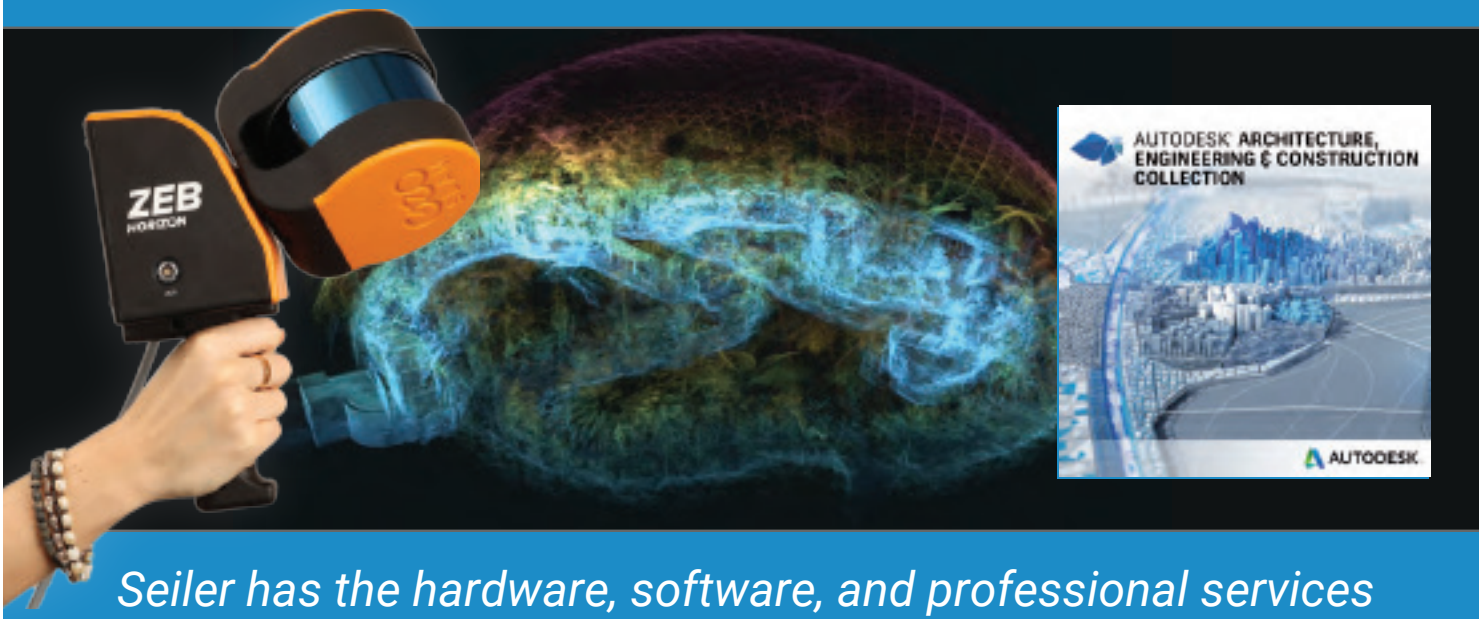

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National Geodetic Survey

Positioning America for the Future

The following is an email message sent to all of the states giving the status of the State Plane Coordinate System of 2022 (SPCS2022) project.

June 2022

In [previous correspondence] I said that NGS planned to complete reviews of stakeholder designs of SPCS2022 zones in late 2021 and provide preliminary designs of all SPCS2022 zones by early this year. However, that same email concluded with the caveat that there may be further delays, and if that happened, I would let you know. It turns out that delays have occurred, due mainly to other competing priorities associated with NSRS modernization and the challenges of allocating limited resources.

The good news is that it appears the delay will be relatively minor, that review of stakeholder designs has so far shown that a large majority need no (or only very minor) revisions, and that we are nearly done with all of the NGS-designed zones. All stakeholders who submitted designs that have not yet received approvals should hear from us no later than this September.

After completing review of stakeholder designs, we intend to provide complete preliminary designs for all SPCS2022 zones before the end of this year, which will give stakeholders and others an opportunity to review the designs. Based on feedback received, we will correct any errors and make minor adjustments to finalize the designs. The final designs should be completed in early 2023.

NGS plans to implement NSRS modernization sometime in 2025. So completion of SPCS2022 zone designs in 2023 will still be well ahead of the overall modernization rollout.

Below are some additional details on SPCS2022 project status for those who are interested. This consists of tasks that have been completed or are currently underway:

1. Currently there are 968 SPCS2022 zones for 56 U.S. states and territories (the total number will likely decrease slightly before designs are finalized). This consists of 162 zones designed by NGS (including 54 statewide zones and 3 special use zones) and 806 zones designed by stakeholders in 28 states.
2. Gave an SPCS2022 webinar on December 9, 2021, available at https://geodesy.noaa.gov/web/science_edu/webinar_series/state-plane-december-2021.shtml. Slides 21-46 are maps showing linear distortion of all SPCS2022 zones in the conterminous U.S. and Alaska as they existed at that time (along with SPCS 83 zones for comparison). In these slides you can readily see the performance of both NGS- and stakeholder-designed zones (which includes aggregate statistics). Creation of the distortion rasters used in these maps is an important part of the review process, and it shows that very good performance (i.e., low distortion) was achieved in the zones designed by stakeholders.
3. Will soon post updated versions of the aggregated distortion maps from the webinar on the NGS website (the linear distortion raster datasets used to make the maps will also be available). Although there have been some changes in designs since the webinar, for the most part the changes are very minor.
4. Evaluated, corrected, and augmented existing NGS projection algorithms to ensure they give results correct to the precision that they will be provided. The new algorithms now also include two new versions of existing projections: the 1-parallel Lambert Conformal Conic and centered Hotine Oblique Mercator.

(continued on page 39)

NCEES Awards 2022 Surveying Education Grand Prize to the New Mexico State University Geomatics/Surveying Engineering Program

NSPS, August 4, 2022

The $25,000 grand prize is the second received by NMSU, the first awarded in 2019. The NMSU program received a $10,000 prize in 2017 and a $15,000 prize in 2020 from the organization. NMSU's program in geomatics received accreditation in 2021 by the Applied and Natural Science Accreditation Commission of ABET.

The NMSU flexible program enables students to attend two years at a community college and two years at NMSU either face-to-face or online to complete the degree. Articulation agreements between NMSU and other two-year institutions have been made to facilitate this process. NMSU has the only four-year degree program in geomatics/surveying engineering in New Mexico. The geomatics/surveying program collected more than $500,000 from private donors, the New Mexico Board of Licensure for Professional Engineers and including the NCEES awards, to upgrade classrooms, update the curriculum, support students, purchase new advanced technologies such as satellites, drones and high-resolution scanners.

"This is a field that is in high demand. With more surveyors retiring nationwide and the rapid advances in this field, the demand for well-educated and skilled surveyors is booming," said College of Engineering Dean Lakshmi N. Reddi. "Our geomatics graduates have 100% employment and earn very competitive salaries."

NSPS FLAIR Act Testimony in the News

NSPS, July 28, 2022

The hearing held in Congress last week on the Federal Land Asset Inventory Reform (FLAIR) Act has garnered news attention. NSPS Federal Lobbyist John "JB" Byrd presented testimony before the Subcommittee on Energy and Mineral Resources of the U.S. House of Representatives, Committee on Natural Resources. The bipartisan bill introduced by Reps. Ron Kind (D-WI) and Bruce Westerman (R-AR) would create a single current, accurate database for lands owned by the federal government. Both NSPS and the Wisconsin Society of Land Surveyors (WSLS) were quoted in support of the bill as found in the *Congressional News Release*, and the news was picked up by *The American Surveyor* and *LiDAR Magazine*.

For the associated article as it appears in *The American Surveyor* go to:
https://amerisurv.com/2022/07/25/flair-act-hearing-in-the-u-s-house/

JB with Rep. Melanie Stansbury (D-NM), a member of the subcommittee.

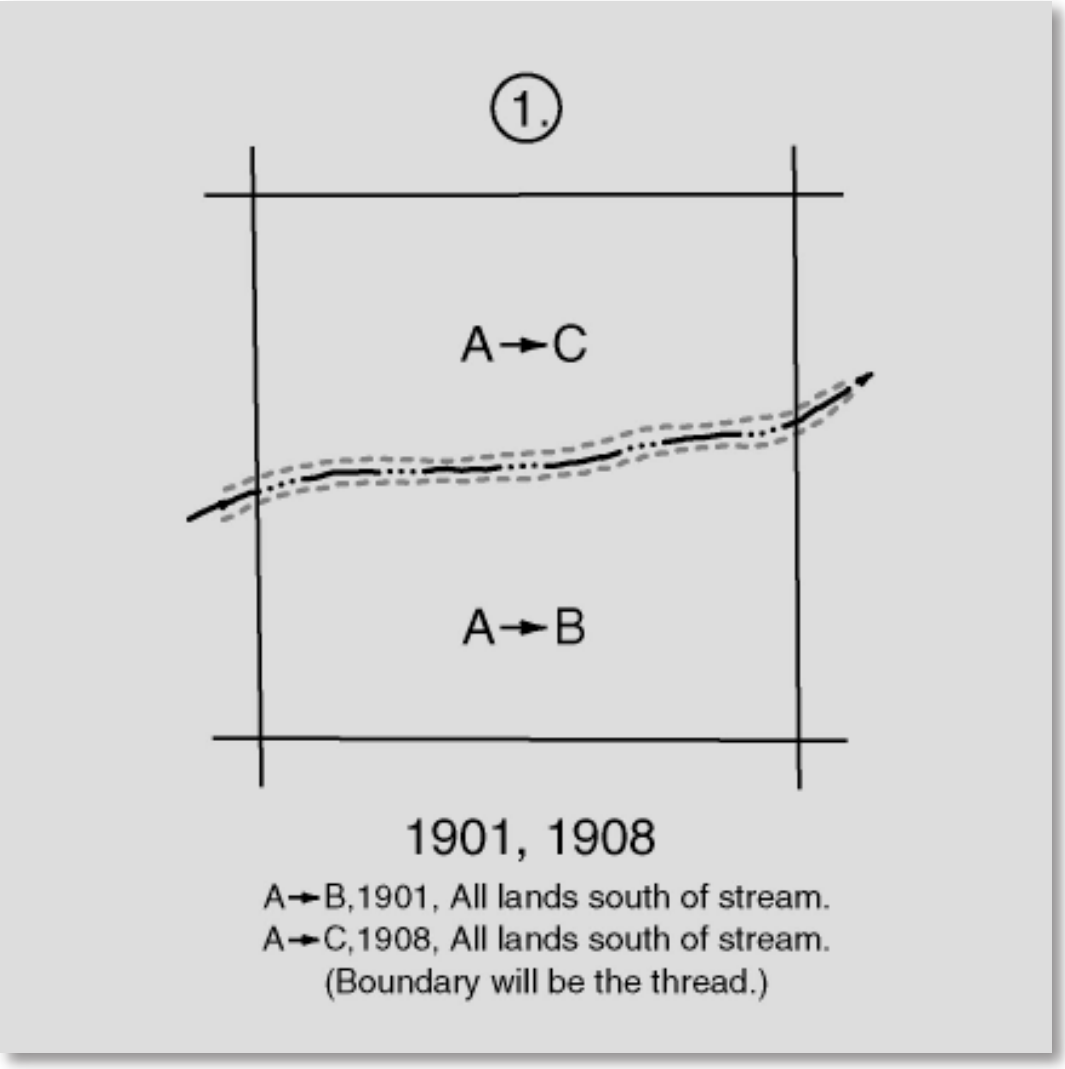
(continued on page 24)

"Who Owns the Land?"

by Dr. Richard L. Elgin, PS, PE

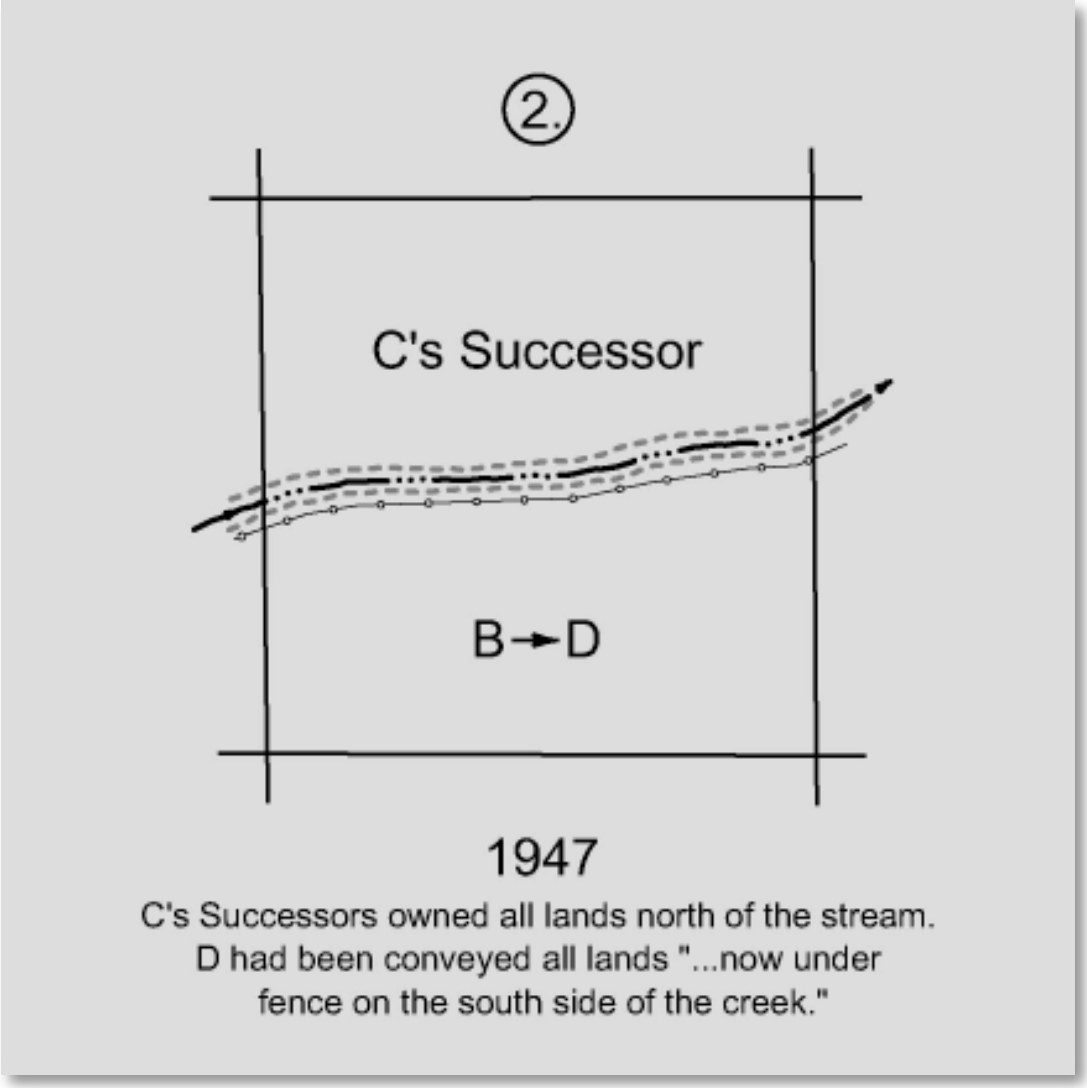
NOTE: Here's an interesting Missouri decision relating to a riparian tract, stream movement and title. This decision is discussed in Riparian Boundaries for Missouri. (Elgin, 2022, available from MSPS.)

In Flowers v. Bales, 615 S.W.2d 103 (Mo. App. 1981), a common grantor conveyed all lands south of a nonnavigable stream (in 1901) and then all lands north of the stream (in 1908). (See Figure 1.) The judgment is not clear on the title history, but apparently all conveyances after 1947 for lands south of the creek described the lands as those "now under fence on the south side of the creek." (See Figure 2.) From 1947 until the 1981 lawsuit the creek had moved north by erosion and accretion, creating an area of about 14.8 acres between the fence and the creek. Those were the disputed lands. (See Figure 3.)



The owners to the north, plaintiffs, brought the lawsuit to quiet title to the lands "between old and new beds of stream, which had moved north." Owners to the south claimed the disputed lands by adverse possession. The trial court found that neither side "can establish title to said property by adverse possession." However, the plaintiffs "have record title paramount to the title claimed by Defendants." The trial court found for the plaintiffs (the owners to the north) awarding them the disputed lands. Defendants appealed.

The court of appeals found that if the stream had moved north by erosion and accretion, the "plaintiffs' boundary is the present location of Logan Creek." And, that the defendants' limit to their record title would be that part of the quarter quarter "now under fence on the south side of the creek," and that there was insufficient evidence to support their claim by adverse possession to the disputed tract. The court of appeals said "it would appear from the record that title to the [disputed] 14.8 acres remains in the heirs" of the person who acquired all that part of the quarter quarter on the south side of the creek, and that his "subsequent conveyances passed title only to that part…south of the fence." Then, as the creek moved north, those lands accreted to the strip between the fence and the thread of the nonnavigable Logan Creek.



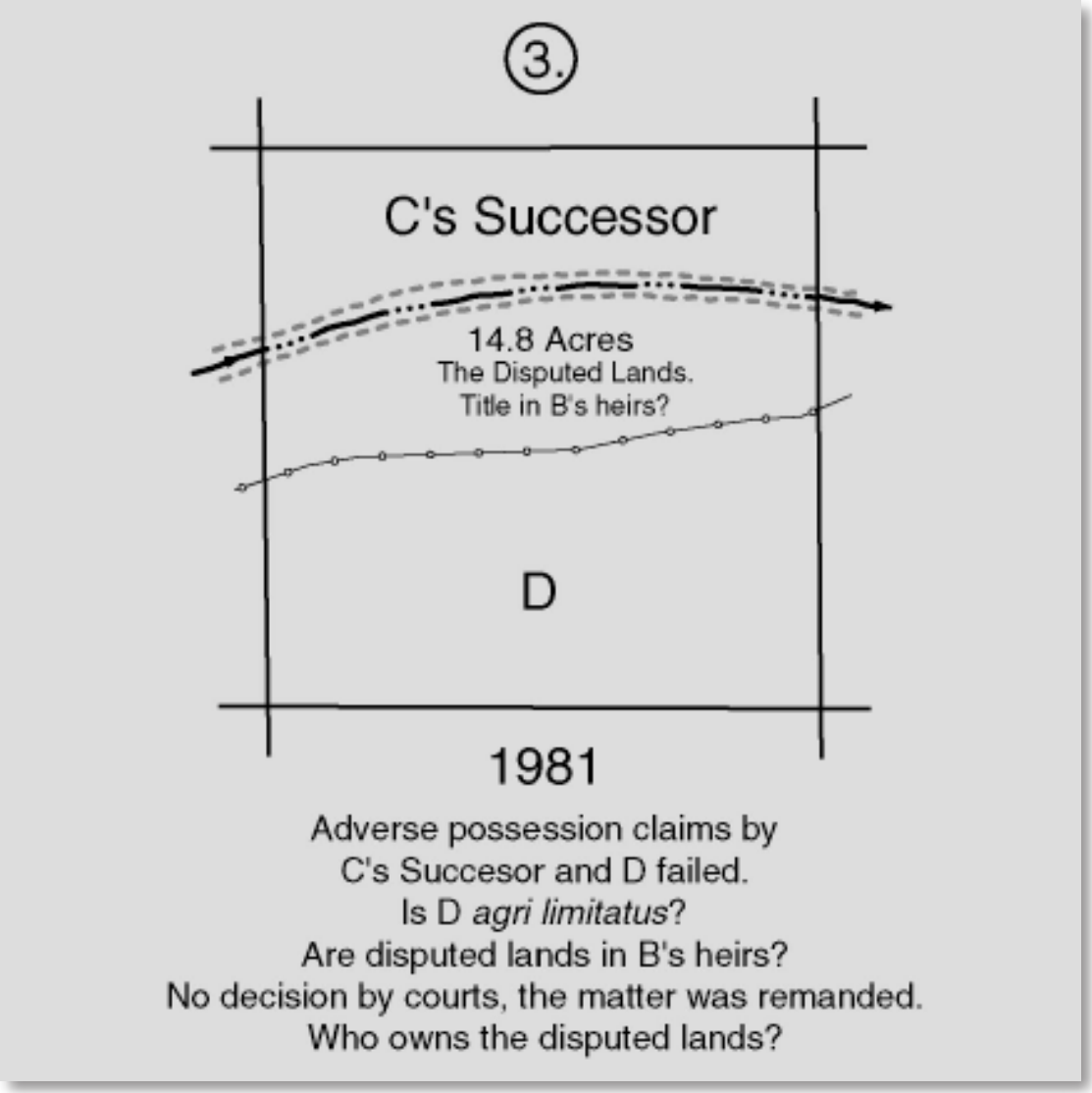
Noting that "rather than decide that neither plaintiff nor counterclaimants hold title to this tract…and upon the meager record before this court…this cause should be reversed and remanded so the facts may be more fully developed." The court of appeals did not decide who owned the disputed tract, but "reversed and remanded [the question back to the circuit court] so that the facts may be more fully developed."

Of particular importance to the boundary surveyor is that a grantor owned all south of a stream, then conveyed all south of a fence that ran along or near the stream's south bank. Then the stream, by erosion and accretion over many years moved north. Although remanded "so that the facts may be more fully developed" (with neither the plaintiff nor defendant prevailing based on their claims), the court suggested title to the disputed lands (between the fence and new, northerly location of the stream) would be in a remote grantor.

(continued on next page)

"Who Owns the Land?" *(continued)*

The "lands south of the fence" boundary description is not quoted in the judgment. Apparently it did not refer to the stream. The tract conveyed was ager limitatus, the deed conveyed was a limited field, the lands between the fence and the thread of the stream were not conveyed. (Although the term ager limitatus is not used in the judgment.)



The appellate court remanded the trial court's decision. There is no subsequent appellate judgment. Presumably the parties came to some agreement regarding the disputed lands.

The "take away" for the surveyor is: Suppose the owner with the deed for lands south of the fence (Owner D in Figure 3) asked you to survey their lands, saying that they claimed and thought they owned to the stream. What would be a prudent response? This is a very interesting set of facts and question for the boundary surveyor. Unfortunately the courts did not provide us with the answer.

Dr. Richard L. Elgin, PS, PE is a practitioner, educator and author. Semi retired, he works for Archer-Elgin Engineering, Surveying and Architecture, Rolla, Missouri. He wrote the books "The U.S. Public Land Survey System for Missouri" and "Riparian Boundaries for Missouri" (both available through MSPS).

Nominees for 2022-2023 Officers

President – Ray Riggs

Ray Riggs is a fifth generation resident of Howell County, Missouri and a first generation land surveyor. He attended rural elementary school in Howell County and graduated from the West Plains High School in 1982. Ray has worked within the surveying profession since graduating from high school; as a rodman, instrument man and crew chief. He has been a Project Manager and Project Surveyor with Riggs & Associates, Inc. since 1989 and beginning in 2018 has served as Survey Vice-President of Florabama Geospatial Solutions. Beginning in 1999 and continuing until 2001, Ray completed the required coursework for licensure as a Professional Land Surveyor in Missouri. These courses were completed by distance learning from the University of Wyoming and the University of Maine. He obtained his Missouri Professional Land Surveyor's license in 2003, his Oklahoma license in 2005 and his Mississippi license in 2011. Ray has been a member of the Missouri Society of Professional Surveyors for many years, has served on committees and has submitted several humorous articles to the Missouri Surveyor. In 2007, Ray was appointed to serve on the Land Survey Advisory Committee and continued until the committee was dissolved in 2012. In 2019, Ray began serving his local community as a member of the Howell County University of Missouri Extension Council. Ray is an active member of the Junction Hill Pentecostal Church, is an ordained minister within the Ozarks Pentecostal Holiness Fellowship and has been the Youth Leader of this fellowship for almost three decades. Ray has been happily married to Tami for over 30 years and they have a married daughter, Tabitha. Ray enjoys reading, local history research, spending time with family, traveling and writing on his blog, bigsurveyor.blogspot.com. However, Rays most important task is serving as "Pawpaw" to his grandchildren, Lucas and Liam!

President-Elect – Bob Anderson

Robert J. Anderson (Bob) is a fourth generation land surveyor. In 1993 he started his career working summers as a rodman for Anderson Survey Company. Following high school, he continued his career working full time and started taking classes at Longview Community College to pursue his professional career as a surveyor. In 2000, he was promoted to crew chief and he became a Land Surveyor in Training in 2004. Continuing to gain practical experience and knowledge, he obtained his Professional Land Surveyor license in Missouri in 2010 and Kansas in 2016. He currently serves on the membership and legislative committees and is a director on the board of the Kansas City chapter of the Missouri Society of Professional Surveyors.

Secretary-Treasurer – Chuck Quinby

Chuck Quinby originally From Northeast Ohio, Chuck joined the Army as a Field Artillery Surveyor at age 18. He earned his High School Diploma from Saint Louis High School in Hawaii, an Associate in Arts and A Bachelor of Science from the University of Maryland while on active duty. Progressing through the surveying "ranks" ranks as Chainman, Recorder, Instrument Operator, Computer and Party Chief he served in South Korea, Germany, Fort Bragg North Carolina, Fort Stewart Georgia and Fort Sill Oklahoma. He attained the position of Chief Surveyor in the 3rd Armored Division, customarily an E-7 positions while still an E-5. His service included being an instructor of Surveying and Land Navigation as well as a Training Developer before closing his Army career in 1993. Chuck began his civilian surveying career in Snyder Oklahoma as an Instrument Operator. Working his way back to Ohio he returned to school to enhance his transition from Army surveying to civilian land surveying at Columbus State Community College. An opportunity with ABNA Engineering brought him to St. Louis in 2001. He is presently Surveyor of Record at Engineering Design Source Inc. in Chesterfield Missouri. A four time President of the Saint Louis Chapter of MSPS, and their current Vice President.

Secretary-Treasurer – Mark W. Wiley

Mark Wiley is a second-generation land surveyor with over 40 years of experience. He has extensive knowledge of the United States Public Land Survey system and topography in the St. Louis region.
Mark is active in the Missouri Society of Professional Surveyors (MSPS) and regularly leads classes / presentations for professional organizations including MSPS, the National Business Institute (NIB), and the Illinois Professional Land Surveyors Association (IPLSA), and has authored numerous articles in the Missouri Surveyor Magazine publication. Mark is well-known and highly regarded in his profession and was recently awarded the MSPS Surveyor of the Year Award in 2019..

Nominees for 2022-2023 Board of Directors

Bart Korman

Bart graduated in 1999 with a BS in Agricultural Systems Management and a BS in Agricultural Engineering the University of Missouri, Columbia. While in Columbia, Bart worked for the City of Columbia's Public Works Engineering Department as an Inspector and Plan Reviewer. He also interned at Anheuser-Busch in St. Louis as a Project Manager. After a busy college career, he joined Lewis-Bade, Inc. in Warrenton, MO as a project engineer in 2000. During his early engineering career he completed land survey classes at Florissant Valley Community College and UMR. He obtained his Professional Land Surveyor license and was appointed Montgomery County Surveyor in 2005. Bart completed his Professional Engineer license in 2007. Bart primarily works with the design of all different aspects of engineering projects, including concept, sewer, waterline, street, storm drainage, grading, commercial site layout, wastewater treatment and water treatment plans and specifications. He works with many residential and commercial subdivision developments in East Central Missouri. Bart married Sarah (Young) Korman of O'Fallon, Missouri in 2008. They currently live near Warrenton in rural Warren County with their three children, Wyatt, Grant and Alice. The family are active parishioners at Holy Rosary Church in Warrenton. Bart coaches youth basketball and baseball and enjoys hunting and fishing when time allows.

Kellan Gregory

Kellan Gregory was first introduced to land surveying by his father. At the time, his dad oversaw the construction of a new addition to the Ford Motor Plant in Claycomo, where he got to know the surveyors doing the staking. Knowing of his son's love of the outdoors and proficiency in math and science, his dad suggested he consider it as a career, and it was a perfect fit. Kellan enrolled in the Land Survey Program at MCC – Longview and graduated with an Associates in Applied Sciences – Land Survey degree in 2004. After several years of study and gaining experience, he earned his Missouri Professional Land Surveyor license in 2011 and just recently celebrated his 20th year in the industry. His career has centered around the civil engineering field, supplying survey services on a myriad of stormwater, water/wastewater, aquatics, and transportation projects. He is now the Survey Practice Lead of Lamp Rynearson's Kansas City office. Kellan currently serves as the Young Surveyors Committee chairman with MSPS and is a former director of the KC Metro Chapter. He is also active in his local church as a Sunday School teacher, and in his free time, enjoys getting out to do some hunting, fishing, and trapping. Kellan currently resides in Cass County with his wife and their three children.

Philip Grout

Philip is the Survey Service Leader for Civil Design, Inc. in St. Louis, where he is responsible for surveying operations across all locations. He earned his BS in Civil Engineering Technology with an emphasis in Surveying from Murray State University in 2003. After graduating, Philip worked for surveying consultants in Kentucky, Kansas, and Arizona before setting roots in Missouri, earning licensure here in 2010. He has since become licensed in Indiana, Illinois, and Kentucky. His experience includes residential, commercial, industrial and municipal surveying for a wide variety of clients including MoDOT, MoDNR, and MoDC, as well as many municipalities, county governments, sewer districts, and private companies. In his position as a leader and mentor, Philip takes pride in building the next generation of surveyors. He is dedicated to raising awareness of the profession, personally volunteering as a Surveying merit badge counselor for Scouts BSA and visiting local schools through the Project Lead The Way program. He has served as president of, and been a long-time director of, the St. Louis Chapter of MSPS and is a co-chair of the standards committee. In his free time, Philip enjoys cycling, playing ice hockey, and canoeing and backpacking rivers and trails in Missouri and across the country with his wife, Catherine, who indulges his hobby of finding benchmarks during their travels. Philip appreciates this opportunity to serve on the MSPS Board of Directors to help build the reputation and future of our profession.

Aubrey Meyer

Aubrey is a Professional Land Surveyor at Affinis Corp where he has worked for his entire 21 years in the profession. Aubrey was born and raised in the Kansas City Metro and has always had an interest in construction and engineering since a he was a child. In 2001 he was presented with an opportunity to be hired on as an entry level field surveyor at Affinis Corp. With this opportunity, he immediate began working away at the requirements to become licensed. Licensed in Missouri in 2007 and Kansas in 2012, Aubrey has become a key person and is involved in nearly every project that is performed at Affinis. Over the years Aubrey has been involved with and volunteered for many community charity organizations in the Kansas City Metro. He currently lives in Lee's Summit, Missouri with his wife of 14 years, Kristen, and their two children, Owen (5) and Evelyn (2). In his free time, Aubrey enjoys spending time at the lake, boating, and fishing, and taking on new adventures with his family.

St. Louis Firm Believes in the Power of Education

by Joe Palva

Cole & Associates, Inc. is a multi-disciplinary firm founded in St. Louis, Mo. with additional offices in the Dallas, Tex., St. Charles, Mo. and Phoenix, Ariz. areas. Founder Melvin Cole, now retired, took a far-sighted view when it came to delivering services to his firm's clients. Those views, summarized in "respect our employees and they will respect us," reaped untold benefits for clients, as they received work products from Cole employees happy with their workplace.

Respect our employees, and our employees will respect us

At State Technical College of Missouri (Linn, Mo.), many Cole employees are diligently engaged in surveying courses aimed at meeting land surveying licensing needs. By asking staff to take these courses, Cole managers are providing an opportunity for employees to become the best surveyors they can by improving their staff's abilities and competence. Senior Project Survey Manager Terry Westerman, PLS, delights in describing the opportunities that the State Tech courses have provided the firm. "It can take us a lot of time to train our people in the basics. Having our employees enrolled at the College where they learn the basics allows us to concentrate on the details of utilizing that knowledge to provide the best service to our clients."

Cole & Associates' technicians (left to right) Cody Shriver, Michael Sansoucie, and Justin Meeker enrolled in the Spring Semester of State Tech for the course "Legal Aspects of Boundary Surveying." Here they meet with their Sr. Project Survey manager Terry Westerman, PLS.

During the spring 2022 term, Cole had three students enrolled in *Legal Aspects of Boundary Surveying*: Justin Meeker, Michael Sansoucie, and Cody Shriver. Cole Survey Office Manager Tom Reynolds, PLS, says "After some hesitancy, they'll come to me with questions from class. Working full time while taking classes is challenging, so I encourage them to ask questions so we can work through them at the office." This is a common situation with non-traditional students for whom surveying as a profession is a late vocation. They refrain from asking questions out of respect for their instructors. Though they do not want to appear unprepared, they don't know how much to ask since these are online courses. Advice from people like Reynolds is vital to ensuring the students are getting the best educational experience offered.

Westerman and Reynolds often say that the students will have questions after work, and the conference room is used to have discussions that may not otherwise happen if they hadn't been prompted by the courses. "If there were less time constraints, these question and answer sessions could run long into the night," says Reynolds.

Terry Westerman (right) meeting with team members Cody Shriver, Michael Sansoucie, and Justin Meeker. These State Tech surveying students frequently discuss their coursework in the Cole & Associates conference room with PLS's on staff.

Cole's policy is to reimburse employees for approved courses with a final grade of "C" or better, covering Tuition and Course fees with the exception of the cost of books. Cole offers this program for any education that improves the employees' knowledge as related to their work. CEO Kevin Riggs is fully supportive of furthering employee education and encourages managers to seek out employees who are willing to pursue additional education.

With the shortage of survey staff, "Finding employees who are a licensed PLS or who have significant surveying experience is difficult," says Westerman. "So, we encourage our existing employees who show potential to get their education and licensure," he continues. "In doing so, we build them up and create strong ties between them and the Company."

NSPS Lobbyist Meets with Congressional Candidate from Missouri

NSPS, July 14, 2022

NSPS lobbyist John "JB" Byrd met with Taylor Burks (R), a candidate for Congress in the 4th Congressional District of Missouri. This is an open seat following the decision of current Rep. Vicky Hartzler (R) to run for an open U.S. Senate seat. Taylor is a fifth-generation Missourian who has served three combat deployments as an officer in the United States Navy and is now Clerk of Boone County, MO. The primary election is set for August 2. Click here to contribute to the NSPS PAC and learn more about it, the Jefferson Club, and NSPS PAC Chairman Jon Warren's "Drive to 75" Campaign.

Certified Survey Technician Program

NSPS, June 23, 2022

Certification in the NSPS CST (Certified Survey Technician) Program verifies one's capabilities and value, enhancing employers' credibility with current and potential clients. A new video shares experiences of the program from the employer and employee perspective. For more information on the CST Program, visit CSTNSPS.com. To watch the video, go to: https://www.youtube.com/watch?v=ZHGs4B1B118

Welcome to the Newest NSPS Sustaining Member!

NSPS, June 23, 2022

Seiler is a family-owned business established in 1945. We offer our clients the most advanced survey, mapping/GIS, GPR, drone equipment, and software technology. Seiler specializes in geospatial sales across Illinois, Indiana, Iowa, Kansas, Michigan, Missouri, Nebraska, and Wisconsin. Our experienced staff are all industry professionals who help guide and educate our clients with a hands-on approach that fits their workflows. Seiler has nationally recognized repair centers and our St. Louis office is the sole U.S. repair center for Trimble Mobile LiDAR equipment. Let us show you the value of working with Seiler. Learn more: www.seilergeo.com or www.seilerds.com or www.seilergeodrones.com.

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NSPS Briefs Congress on NOAA's Use of GPS

NSPS, June 23, 2022

NSPS Executive Director Timothy Burch, PLS, participated on a NOAA panel for members and staff of the House and Senate Appropriations committees on June 13, highlighting the importance of GPS technology as part of infrastructure and the National Spatial Reference System (NSRS). Dr. Julianna Blackwell, Director of NOAA's National Geodetic Survey (NGS) moderated the panel. Coinciding with Tim's appearance was a recent budget primer for NOAA produced by the Congressional Research Service (CRS).

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

For the "NOAA primer" as prepared by the *Congressional Research Service* go to:
https://crsreports.congress.gov/product/pdf/IF/IF11914

Celebrating Benjamin Banneker - A Masterpiece Unveiled

NSPS, June 16, 2022

The Banneker-Douglass Museum made history on February 5th with the historic mural unveiling of "Andrew Ellicott & Benjamin Banneker Surveying the Boundaries of Washington, DC." NSPS Executive Director, Tim Burch was there to present a framed poster to the Maryland Commission on African American History and Culture Chair Dr. Tamara E. Wilson and Director Chanel Compton, Director. Banneker is being honored as the *2022 Global Surveyor of the Year* by NSPS.

NSPS Executive Director Tim Burch presents a framed poster to the Maryland Commission on African American History and Culture, Chair Dr. Tamara E. Wilson (l) and Director Chanel Compton, Director (r).

NGAC Meeting Chaired by NSPS' Gary Thompson

NSPS, May 26, 2022

The National Geospatial Advisory Committee (NGAC) held a virtual meeting in May. The NGAC provides advice and recommendations related to management of Federal and national geospatial programs, the development of the National Spatial Data Infrastructure (NSDI), and the implementation of the Geospatial Data Act of 2018 (GDA) and Office of Management and Budget Circular A–16. NSPS member Gary Thompson of North Carolina is the new Chair of the NGAC.

Gary Thompson during the May virtual meeting of the NGAC.

NSPS Lobbyist Pitches ALTA/NSPS Land Title Survey Standards to Treasury Department

NSPS, May 19, 2022

NSPS Federal Lobbyist John "JB" Byrd made a presentation to the Open Data Standards Task Force, co-chaired by Bloomberg and Data Foundation, with support from the Data Coalition Initiative, at a jointly hosted a public forum on May 5 to facilitate a private-public exchange to help provide insights on federal financial regulatory data. Byrd promoted on the 2021 ALTA/NSPS Land Title Survey Standards, the Treasury Department's role per the Geospatial Data Act (GDA) of 2018 and summary thus far, and the need to populate the National Spatial Data Infrastructure (NSDI).

NSPS Seeks Revision to Davis-Bacon Regulations

NSPS, May 19, 2022

Proposed revisions to regulations implementing the Davis-Bacon Act came under criticism by NSPS in comments filed this week by the society with the U.S. Department of Labor (DOL). The NSPS comment outlined legal reasons, as well as practical surveying practices and procedures that refute the proposal to broadly classify members of survey crews as "laborers or mechanics" under the prevailing wage law. The Joint Government Affairs Committee (JGAC), chaired by Mark Sargent, worked closely with John Palatiello and John "JB" Byrd of NSPS government affairs consultants Miller/Wenhold Capitol Strategies to craft a complete and thorough document filled with specific and relevant information. Thanks also to those affiliate organizations and individual NSPS members who took it upon themselves to comment to the DOL on this matter. Full information on the Davis-Bacon Act can be found on a special page on the NSPS website listed below.

For NSPS information on *The Davis Bacon Act* go to:
https://www.nsps.us.com/page/DavisBacon

Thoughts on Professional Practice and Education

by Knud Hermansen, PLS, PE, Ph.D, Esq.

Article 5: Removing Examination Pre-requisites

This is the fifth article I have prepared in the series offering thoughts on professional practice and education. In this article, I wish to discuss the timing of professional exams. In particular, I wish to advocate allowing an applicant to take their licensing exams before obtaining any required experience.

There are two common models of examination sequence found in the United States. The first model, that appears to be most common at the present time, requires the applicant take the professional surveyor exam and state specific exam after the experience requirements have been met.

> *Broad knowledge of surveying is usually at a maximum retention just before or soon after graduation.*

The second model is to permit an applicant to take all three exams at or near graduation and before meeting minimum qualifications.

There was a third model that may still be present in some states. The third model was to require the experience first then allow the applicant for licensing to take all the exams within a short window of time. When I was first licensed almost fifty years ago, I took the first exam one day and the second exam the very next day.

In this article, I would like to advocate that states allow an applicant to take the exams on sequential days at or near graduation. I offer two reasons for my position.

For my first reason, I would suggest that taking the professional exams near graduation is the best time in life's journey to schedule and have time to take the exams. By the time the graduate achieves the pre-requisite experience for licensure, they are often married – perhaps with young children, involved in community activities, and have a full employment commitment. It is difficult to find time to study or even take time off from work for testing. College breaks are usually far less stressful and a less busy time than the hectic and stressful work schedule a graduate will encounter after graduation. To emphasize this, let me remind surveyors that as a full-time student in college, the student could count on two to three weeks off at Christmas, one week off during Thanksgiving, and a one or two-week spring break. College breaks were known well in advance, allowing for professional test scheduling.

Once the graduate is employed, vacation time or personal days must often be used for testing. Time off from work must often be scheduled in advance and authorized only when work allows. While college can be stressful, the stress of college often pales in comparison to balancing family responsibility, home, and work commitments.

The second reason for allowing all tests while in college or shortly after graduation is the extent of retained surveying knowledge. Broad knowledge of surveying is usually at a maximum retention just before or soon after graduation. Therefore, the best chance to pass all three exams with minimum study is at or near graduation.

Some would argue that testing the graduate on knowledge retention after the graduate has some experience is a reasonable procedure to protect the public's safety. Perhaps this statement is true. Yet, on that basis, all licensed surveyors should be periodically tested from time to time to insure knowledge retention after the passage of time. I suspect there are very few licensed surveyors that would advocate that they be subject to periodic retesting to ensure knowledge retention.

Having given my opinion, I now offer advice by suggesting professional societies encourage statute or rule changes allowing all exams be taken soon or at graduation. Of course, the soon-to-be graduate has another option. The student can apply to test in a state that does allow all testing at or near graduation. The applicant does not need to journey to a particular state since NCEES offers the same exams at testing centers throughout the United States. Perhaps the applicant would have to delay taking the state specific exam until they are eligible for licensing within that state. Of course, the one hurdle that may arise from this recommendation is a state that will not accept the NCEES test score for an exam taken before experience was achieved. I know of at least one state that will not accept the PE exam score if the PE exam was taken before experience was met. I know this does not make much sense but bureaucracies and their rules often do not make sense.

Article 6: Licensing With and Without A degree

This is the sixth article I have prepared in the series offering thoughts on professional practice and education. In this article, I wish to review survey licensing requirements. I have noted that a graduate of a surveying course of study will likely seek multiple state survey licenses. More practitioners seek multiple state licensing than when I started my surveying practice. It is common for four-year surveying graduates to be licensed in two or more states. I know of one individual licensed in more than a dozen states. As I look back on fifty years of surveying practice, over that time, I have held licenses to practice surveying in six states.

While the reader is probably aware of their state licensing requirements, a review of licensing requirements nationwide is appropriate. Requirements for licensure among states vary.

More than 25% of states require some formal education in order to be licensed. Not all of these states require a surveying or geomatics degree. The most stringent academic requirement found for licensure exist in states that require a surveying or geomatics degree from an ABET accredited program.[1] Some states relax this standard slightly by not mandating an ABET accredited surveying or geomatics degree. Relaxing academic restrictions even more, some states accept any four-year degree with a certain number of surveying credits. Next in academic laxity is a state allowing any four-year degree without specific surveying credits. Some states will permit a two-year surveying or geomatics degree with a certain number of surveying courses. Finally, a number of states continue to allow licensing by experience only. Two-years of experience is a minimum requirement coupled with education. The norm for experience among states appears to be four-years of experience coupled with education. More experience is required when there is less formal education.

It stands to reason that a person wishing to pursue licensure as a surveyor with the widest possible opportunity for employment and licensure in the United States should meet the most stringent state requirement for licensure. The person casting a wide net for employment or licensing should obtain an ABET accredited four-year surveying or geomatics degree. There are several universities in the United States and foreign countries with excellent programs that are ABET accredited. Some offer accredited surveying degrees entirely through distance education. Individuals can achieve an ABET accredited degree without leaving their state.

This wide diversity of pathways allowing surveying licensure reveals differing opinions nationwide and within state societies as to what should be the requirements for licensure in a state. The issue has been firmly settled in some states. It is a source of great debate in others. This article is not intended to create controversy in states that has had the controversy and has settled the requirements.

A person that does not have a degree or possesses a degree not accepted in a state of their residency or employment can always seek licensure in another state should they wish to show professional achievement. Of course, I must stress that a person working in one state holding a survey license in another state cannot necessarily provide surveying services in the state where they work. The surveyor must hold a license in the state in which services are offered or performed.

I would also caution that in many states holding a valid survey license to practice in the state is not sufficient. The person must also hold a certificate of authorization (COA) or similar business license or work for a firm that does hold a certificate of authorization in the state. I have seen many disciplinary citations issued to out-of-state firms that incorrectly believed that they could provide services in a

(continued on page 29)

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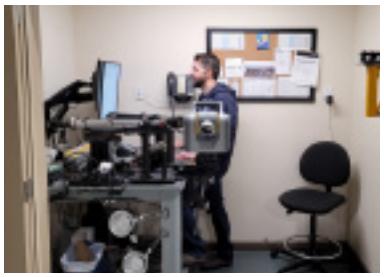
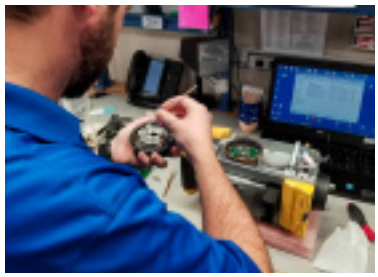

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state by simply having an employee of that firm licensed in the state. I would also caution that the out-of-state firm must often pay income taxes to the state and in some case the municipality in which they performed their services and received payment. A most frustrating time in my past was when a municipality in a state I was not a resident demanded I pay an income tax on a small fee I received for services completed in that municipality. Had I been aware, I would have refused the services or doubled my fee to cover the frustration and time to do the extensive paperwork involved in paying a municipal income tax.

I would also like to dispel some misconceptions that surveying must be thought of as a 'lesser' profession or not a profession at all because individuals can be licensed without formal education in the professional field. I suppose some judges or legislatures feel and have ruled otherwise. Their position allows them to have an opinion that establishes the definition in that state. It is a fact of life that an opinion of a person in power means more than an opinion of some other person.

The fact is there are other professions that surveyors work alongside that permit licensure without a formal education. As I write this article, Washington, Vermont, California and Virginia allow an individual to become a member of the bar without graduation from a law school. Wyoming, New York and Maine allow individuals to be members of the bar without a juris doctorate (J.D.) degree so long as the individual has at least some law school courses.

Not all states require an engineering degree to become a professional engineer (P.E.). Some state permit engineering experience alone to qualify for licensure.

I am sure that some individuals reading this article will wonder what my opinion is regarding a requirement for formal education in order to obtain a survey licensure. I have five degrees and taught in a four-year surveying program for more than thirty years. My background would suggest I am a strong advocate for a degree requirement. Yet surprisingly, I am not in favor of mandating education in order to become licensed. My first surveying licensure was obtained based on my surveying experience alone. There is no question that I learned more about surveying by obtaining my B.S. degree. I also learned a lot more about surveying when obtaining my M.S. degree followed by my Ph.D., and, lastly, my law degree. The fact that I learned more about surveying upon attaining each degree, doesn't mean each degree should be required for licensing.

Some of the best surveyors I have ever met or followed had no formal education or a two year degree only.

My opinion is that an individual that passes the fundamentals of surveying exam, professional surveying exam, and state specific exam has the knowledge necessary to competently practice surveying. Competent practice demands a minimum level of knowledge - not retention of all knowledge possible. A degree will instill the information in less time, with a better understanding, and with more extensive knowledge. Yet, an intelligent individual, through self-study, and extensive experience can also gain the minimum level of knowledge for competent practice. I believe the important point is whether the individual has the knowledge, not the way the knowledge was acquired. Some of the best surveyors I have ever met or followed had no formal education or a two year degree only.

1 A search portal that provides ABET accredited surveying programs can be found at https://amspub.abet.org/aps/category-search?disciplines=69&disciplines=67

† Other books and articles by Knud can be found at https://umaine.edu/svt/faculty/hermansen-articles/

NCEES Staff Promote the Professional at Local Outreach Event

from Licensure Exchange, the NCEES newsletter, June 2022

NCEES recently participated in a local outreach initiative to inspire the next generation of professional engineers and surveyors. The organization was a platinum sponsor for the iMAGINE Upstate STEAM Festival on April 2, 2022, in downtown Greenville, South Carolina, home to NCEES headquarters. Sixteen staff members helped provide a hands-on activity for the community.

Around 10,000 people attended the event, now in its sixth year. The festival included more than 50 exhibits of nonprofit and community groups, educational institutions, and business and industry representatives.

iMAGINE Upstate is a program of South Carolina's Coalition for Mathematics and Science at Clemson University. The STEAM Festival - iMAGINE's signature experience - is an annual event designed to showcase pre-K–12 education and career pathways in science, technology, engineering, arts, and math (STEAM) through hands-on learning.

NCEES presented its X Marks the Spot activity at the festival. Armed with their NCEES hard hats, safety vests, and compasses, children participated in a surveying-themed scavenger hunt that introduced the basics of surveying and setting boundaries. NCEES staff spoke to parents, children, and educators about the fields of engineering and surveying as well as licensure's role in public protection.

"iMAGINE Upstate was a great opportunity to introduce our local community to NCEES and our mission," explained Chief Executive Officer David Cox, who was one of the NCEES volunteers for this event. "We could speak with them in a fun, approachable way about what NCEES does and the interesting and important work of professional engineers and surveyors."

Resources for parents and educators, including STEAM activity ideas, are available on the iMAGINE website, imaginesteamsc.org.

Top: NCEES CEO David Cox and Chief Financial Officer Joe Scheving, CPA, suit up the latest recruits for X Marks the Spot. NCEES was one of more than 50 exhibitors for the festival, which attracted around 10,000 attendees. Above: Lehmon Dekle, P.E., NCEES project manager of exam services, leads an expedition to find the X in the organization's X Marks the Spot activity. Children who completed the scavenger hunt received a sweet reward of candy.

And the Question is...What is a Survey?

On the August 3, 2022 episode of the television gameshow Jeopardy, the contestants were confronted with a final round category of, "George Washington Did it."

Once the contestants had made their wagers and viewers returned from the commercial break, the clue was presented:

"A 1791 proclamation by President George ordered the first this of the District of Columbia; a young George would've done it himself."

For most contestants this had to be an offbeat topic which seemingly was extremely specific. The gameshow's writers must have presumed it would require quite a "Washington" buff to answer this correctly.

Of course, most of our readers would have known the answer…properly stated in the form of a question of course, was…

"What is a survey?"

The background as presented by the hosts – "In a 1791 proclamation, President George Washington ordered a survey of the district of Colombia. This was the first-ever survey ordered by a president. It was named the capital of the United States in January 1791, months before the survey took place. Interestingly, George Washington was a skilled land surveyor himself."

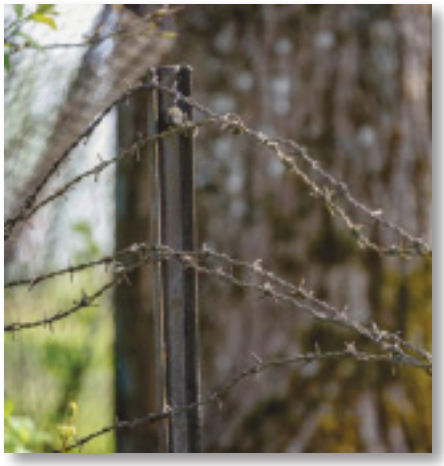
Who knew?

Maintaining Fences: Is it your problem? State law can be unclear.

by Brent Haden, Spring 2022, "Show Me" (the Missouri Farm Bureau member publication)

Missouri's fence law is unusual because we really have two fence laws in our state. Every year I talk with many people going through fence disputes with neighbors, and there's a lot of confusion surrounding landowner fencing obligations and rights. It is important for landowners to know what Missouri's fence law says and what it doesn't say, and to understand the gray areas within the law.

Missouri's general fence law states that a landowner without livestock is not required to share the costs of fencing a common property line with a landowner who does have livestock. If both adjoining property owners have livestock, each landowner is responsible for the half of the fence on his or her right when facing the fence. Under the general fence law, a legal fence must be a minimum of 4 feet high, have four strands of wire or boards, and have posts not more than 12 feet apart. The general fence law is the law for the state unless your county commission has adopted the "local option" fence law.



In contrast, the "local option" fence law requires landowners to maintain half of any bordering fence regardless of whether the landowner has livestock. The law does not specify which portion of the fence each adjoining landowner must maintain, but in most places the right-hand rule is the local custom. Under the "local option" fence law, a legal fence is one that meets the same qualifications as required under the general law, or alternatively a fence must be at least 4 feet high with posts no more than 15 feet apart with a wire stay over the strands in the middle of the fence. The "local option" was left as an option because some counties with a heavy concentration of livestock wanted to retain the prior fence law that was abolished by the general fence law in the early 2000s.

While Missouri law sets out requirements for legal fences, the law is unfortunately silent on some key issues as to the fence construction process. For example, the law is silent as to how much brush may be cleared from an adjoining property to allow the construction of a new fence. While in some parts of the state there is a custom that a fence builder may clear a 10 foot path around a fence, there is no law in Missouri that sets out any specific right to clear a corridor of any width.

A similar question arises regarding trimming of overhanging limbs that extend over fence lines from a tree rooted on a neighboring property. Missouri law does not contain any specific provision regarding cutting overhanging limbs from adjoining properties, but limbs encroaching over the property line can legally be trimmed back to the property line under a general theory of trespass.

The law is also silent on the construction of water gaps. Logically, a water gap should be viewed as part of the rest of the fence and should be the responsibility of whichever party is responsible for the section of fence in which the water gap is located, but the law does not set out this specific requirement.

Increased outside investment in farm properties is creating new challenges in fencing, as absentee recreational landowners tend to be more sensitive about maintaining vegetation on their property line. Given this increased friction, it is likely time for additions to Missouri's fence statutes to clarify these issues. But until there are clarifying statutes, early and frequent communication with your neighbor can prevent problems down the road. If you have concerns about clearing brush, cutting limbs, water gaps, or any other issue, talking about what you want and hearing what your neighbor has to say will often defuse a problem before it starts.

Brent Haden is a partner at the Haden & Colbert law firm in Columbia, Missouri. Brent was raised on a farm near Mexico. He received his undergraduate degree from the University of Missouri and his law degree from Harvard Law School. The firm provides a full range of legal services to farmers, ranchers and agricultural businesses. Services include property dispute litigation, estate planning and regulatory disputes with state and federal agencies. He can be reached at boiurent@showmelaw.com.

This article appears courtesy of Missouri Farm Bureau. It is available online in their publication, *Show Me*, at:
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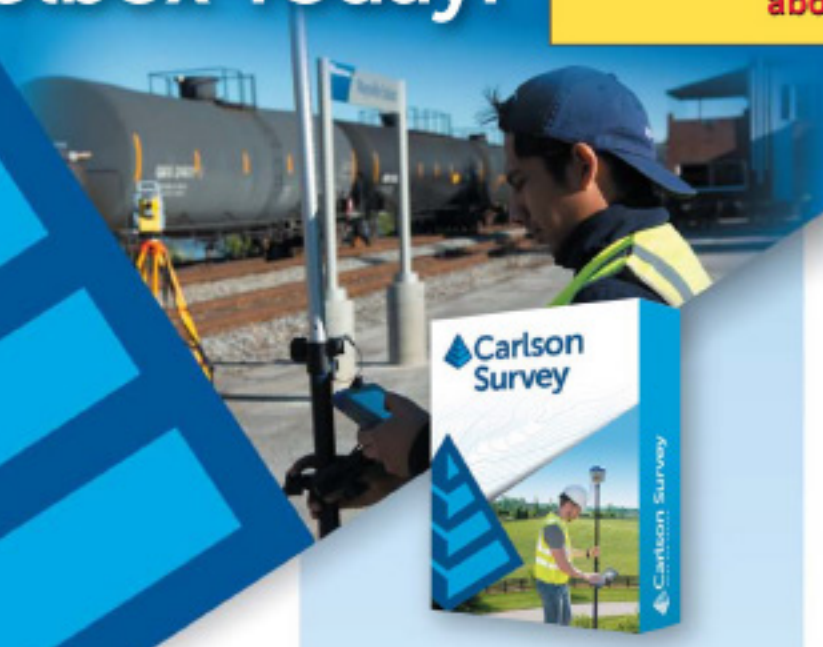

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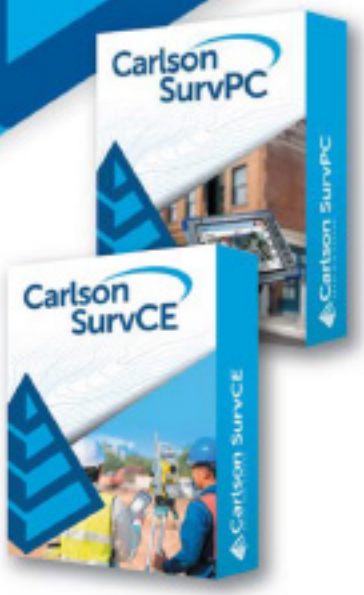

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How to Count Lots When Amending Subdivision Covenants. You may be Surprised.

by Harry Styron, April 2022

Follow the author's blog; https://styronblog.com/

When an HOA looks at revising its subdivision covenants (sometimes called CCRs, declaration, restrictions, restrictive covenants, master deed, or indenture), the board and its attorney generally find a paragraph toward the end of the covenants that requires that the owners of a majority of lots--or units, for a condominium--must approve the amendment for it to be effective. The required majority could be the votes of the owners of more than half, two thirds or three fourths of the total number of lots, or in rare cases, all the owners of all lots. In some instances, certain types of amendments may also require the consent of the developer or a lender.

However, determining what type of majority is required and how the votes are recorded is not always simple. In Wagner v. Nolan, the Missouri Court of Appeals for the Western District of Missouri held on April 19, 2022, that a document terminating the restrictive covenants was not signed by the owners of a majority of the lots, even though the owners of 9 of the 17 lots had signed. The wrinkle was that Lot 2 as originally platted had been divided into four lots, and the 9 votes in favor included Lots 2A, 2B, 2C and 2D, all carved out of the original Lot 2. Nothing in the subdivision restrictions addressed whether additional lots would be given full weight in voting, so the court looked at the language in the recorded subdivision covenants, which stated that the subdivision consisted of Lots 1 through 14. With Lot 2 being allocated only one vote, rather than four, the tally was 6 in favor, 8 against, so the amendment to terminate the restrictions failed.

The issue of the treatment of lots that have been created through replatting or combined is also important for allocating common expenses. Subdivision covenants typically do not address these situations, and HOAs are very inconsistent in counting votes or allocating expenses after new lots are added or old lots are combined.

When an owner divides a lot, creating new lots, well-drafted subdivision covenants will require that each new lot pay a full share and have a full vote.

If an owner of three lots combines them, that owner often expects to pay the same share of common expenses as the owner of a single lot as originally platted, and is willing to give up two votes to achieve that goal, even though this maneuver shifts a share of the total expense burden onto other owners. If there are 10 original lots, and each owner pays 10% of the total HOA expenses, when three of the original lots are combined, the new total is eight lots, which could result in each owner being now responsible for 12.5% of the total. This result is unfair to the remaining owners. In the case Reed v. Sunset Cove Condominium Owners Association, the Southern District Court of Appeals affirmed a judgment holding that the combination of lots in the condominium form of ownership would not reduce the share of expenses of the combined lots.

A lawyer and mediator who lives in Branson, Missouri, Harry Styron's professional interests involve real estate, nonprofits, and local government. As of 2022, he is shrinking his legal practice so that he may have more time to mediate real estate disputes. He is happy to mediate using video platforms like Zoom and WebEx, or in person anywhere in Missouri.

Follow Mr. Styron on his blog – "Ozarks Law & Economy; How people, business and nature compete."

This article appears courtesy of Harry Styron. It is available online at his blog:
https://styronblog.com/2022/04/22/how-to-count-lots-when-amending-subdivision-covenants-you-may-be-surprised/

National Geodetic Survey

Positioning America for the Future

NGS Aligns National System to Global Reference Frame

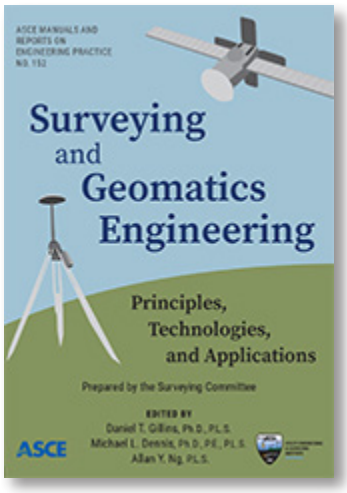
August, 2022

The **International Global Navigation Satellite System (GNSS) Service**, which provides GNSS data products globally, recently released a new GNSS-only version of the International Terrestrial Reference Frame. This provides GNSS users access to the reference frame through coordinate functions for a global set of reference stations. In response, NGS will soon compute the multiyear Continuously Operating Reference Station (CORS) Solution 3, which will modernize the National Spatial Reference System. Aligning the National Spatial Reference System with the updated global reference frame will allow greater access for the global community of scientists, educators, and commercial users of location science.

IGS INTERNATIONAL GNSS SERVICE

NGS Edits Surveying and Geomatics Manual

July 29, 2022



NGS sponsored **Surveying and Geomatics Engineering: Principles, Technologies, and Applications**, recently published by the American Society of Civil Engineers. This manual provides a comprehensive overview to help inform professionals on the modern practice of surveying engineering. Two NGS employees were editors for the manual, and additional NGS employees served as peer reviewers. The manual includes chapters on the fundamentals of geodesy, coordinate systems and transformations, least squares adjustments and error propagation, modern surveying and remote sensing technology, establishment of survey control, geographic and building information systems, construction surveying, and recommendations on best practices. The manual also provides numerous references and can serve as a helpful resource for finding further details on the field of surveying engineering.

NGS Establishes Survey Points for First Responders

July 22, 2022

In June, NGS employees traveled to Boulder, Colorado, to establish a network of georeferenced survey points at the **First Responder Network (FirstNet) Authority** testing facility. The NGS field team used a combination of a Global Navigation Satellite System and terrestrial observations to assign coordinates to exterior marks and translate these positions to a multitude of interior survey targets. The simulation center at the FirstNet facility is a 100-square-meter customized space designed to help first responders practice scenarios such as search and rescue activities or terrorist attacks. FirstNet will use the network of survey targets established by NGS to test and enhance their national broadband communications service, employed by first responders to make faster and better-informed decisions in critical situations.

FirstNet Authority

(continued on next page)

NGS Participates in U.N. Pacific Geospatial Conference

June 24, 2022

NGS's chief geodesist participated virtually in a meeting of the **Pacific Geospatial Surveying Council**. This regional workshop provides a forum for Pacific states to exchange information and consider ways to strengthen national geospatial information management. The workshop promoted peer-to-peer exchange and learning to aid operation of the United Nations Integrated Geospatial Information Framework (IGIF). The U.S. provided expert consultation on the geodetic and vertical reference frames that underpin these broader IGIF efforts. Participating in this workshop supports broader NOAA initiatives focused on harmonizing geodetic and bathymetric surveys in the western Pacific.

Alaska Updates Geodetic Legislation

June 10, 2022

States are planning ahead for the modernized National Spatial Reference System (NSRS) by updating coordinate system legislation. On May 17, Alaska joined Washington and Kentucky by passing HB 148, "An Act relating to the Alaska Coordinate System of 2022." Once signed into law, this legislation will create the Alaska Coordinate System of 2022, define the Alaska Coordinate System via connection to the federally defined State Plane Coordinate System maintained by NGS, and clarify use of the U.S. Survey Foot in the Alaska Coordinate System. **NGS provided technical assistance** to organizations developing template legislation to aid states in modernizing their coordinate system legislation.

NGS, OCS Find New Uses for Shipborne Data

June 3, 2022

NGS and OCS collaborated to improve the **geoid model** in the Great Lakes region. NGS uses gravity data to develop and improve its geoid models of the Earth. Unique gravity signatures over the Great Lakes require higher-density gravity data to better determine the shape of the geoid in that area. In 2022, NOAA Ship Thomas Jefferson collected a variety of data throughout Lake Erie, using the ship's hydrographic survey suite and tools that measure acceleration. NGS scientists used this data to determine the acceleration due to gravity during the transit through the St. Lawrence Seaway.

NOAA Ship Thomas Jefferson underway in the Welland Canal connecting Lake Ontario to Lake Erie.

Web-Based Tools Make Submitting Data to NGS Easier

May 27, 2022

Last summer, NGS introduced new web-based tools for submitting geodetic survey data through **its Online Positioning User Service (OPUS) Projects 4.0**, allowing users nationwide to increase the number and volume of submitted survey data. The web-based tools offer an easy, intuitive way to manage and process geodetic survey projects involving multiple sites and multiple occupations. A quote in a recent California Department of Transportation newsletter called the tool "a great way to process, manage and share high-quality geodetic control with the geospatial community. It can reduce time spent researching by having data in a nationally maintained, recognized, and accessible online location." NGS relies on federal, state, and local partners to supply geodetic-quality data to maintain the National Spatial Reference System.

NOS Meets with Cuban Counterparts

May 13, 2022

Senior leaders from NGS, the Office of Coast Survey, and Center for Operational Oceanographic Products and Services met with leadership from Cuba's National Office of Hydrography and Geodesy in April to provide navigation, observation, and positioning updates under a **Memorandum of Understanding**. The group discussed data from continuous Global Navigation Satellite System receivers in Cuba and the potential expansion of the Gravity for the Redefinition of the Vertical Datum program over Cuba. Both of these efforts would enhance the accuracy and reliability of the Caribbean Terrestrial Reference Frame of 2022 and North American-Pacific Geopotential Datum of 2022 for the Caribbean region and the southern United States.

NGS Measurements Improve Time Accuracy

May 6, 2022

NGS height measurements helped scientists working to improve the accuracy of the second as a measurement of time and helped validate the theory of general relativity. A recent **New York Times article, reprinted in the Seattle Times**, explained the worldwide effort by scientists to improve the accuracy of the second by developing optical atomic clocks. In 2015, scientists at the National Institute of Standards and Technology (NIST) did not understand why three optical atomic clocks at different labs in Boulder, Colorado, measured slightly different times. The theory of general relativity predicts that elevation differences among clocks will affect the passage of time. Surveyors identified height differences among the three clocks, and NGS geodesist Derek van Westrum verified that their different time measurements could be explained by height-related changes in the gravity field. Van Westrum and NIST researchers continue to collaborate, aiming to measure gravity changes with atomic clocks.

NGS geodesist and physicist Dr. Derek van Westrum calibrating a gravity meter in the high altitudes west of Boulder, Colorado.

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

NOTICE: NCAT new version release

NOAA's National Ocean Service sent this bulletin at 03/23/2022 10:00 AM EDT

NGS News

NGS releases new version: NCAT 2.1

The NGS Coordinate Conversion and Transformation Tool is a one-stop solution for coordinate conversion and transformation. NCAT revamps and modernizes the Geodetic Toolkit. It allows users to easily convert between different coordinate systems and/or transform between different reference frames and/or datums, in a single step. NCAT incorporates the capabilities of many NGS computer programs, which originally were stand-alone products, such as VERTCON and NADCON.

NCAT conversions and transformations can be done interactively using single or multi-point conversions directly on the NCAT page. NCAT is also available as a download or an API (application programming interface).

Version 2.1 adds:

- an option to specify units for heights,
- an option to customize data exported,
- more FAQs, and
- a link to the source code on github.

Video tutorials and in-depth Frequently Asked Questions lists are available online for surveyors and geodesists new to the software.

NOAA's National Geodetic Survey
geodesy.noaa.gov

Status of State Plane Coordinate System of 2022 *(continued)*

5. Computed SPCS 83, SPCS 27, and UTM coordinates at every location where those zones overlap SPCS2022 zones to ensure coordinate uniqueness with respect to existing systems.
6. Determined geodetic coordinates (latitude, longitude, and ellipsoid height) for a test point in every SPCCS2022 zone. These will be used to compute SPCS2022 coordinates (and distortion) so that stakeholders, software vendors, and others can check their SPCS2022 computations.
7. Creating a database of (preliminary) zone parameters for all SPCS2022 zones and algorithms for automatically performing comprehensive checks on submitted designs, comparisons to existing SPCS 83/27 and UTM coordinates (and SPCS2022 coordinates where zone layers overlap), and calculation of SPCS2022 test points for every zone, among other computational tasks.

Although we intend to release fine zone definitions in early 2023, the SPCS2022 project report will likely not be completed by that time. However, we will strive to get the report done as quickly as possible, certainly before the NSRS modernization rollout in 2025.

As before, there is a possibility that the SPCS2022 project will again be delayed. But there is a renewed and committed effort to meet the timeline given in this email. We at NGS want to get SPCS2022 completed as soon as possible!

Best regards to all,

Michael L. Dennis, PhD, PE, RLS
Geodesist and SPCS2022 Project Manager
NOAA/NOS/National Geodetic Survey
Michael.Dennis@noaa.gov
https://geodesy.noaa.gov

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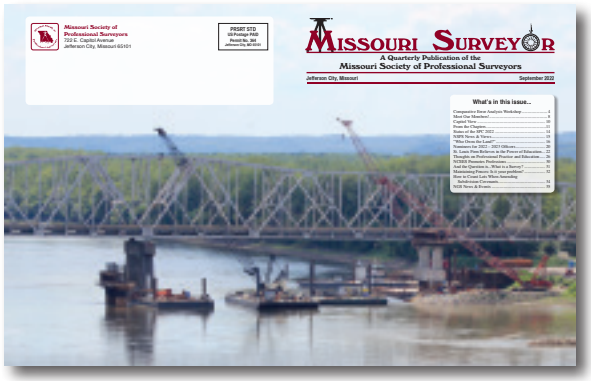

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