

62nd Annual Meeting

OF THE
MISSOURI SOCIETY OF
PROFESSIONAL SURVEYORS

“Making New Decisions Based on Old Decisions”

SPEAKERS

Dick Elgin, PhD, PE, PLS
Ron Heimbaugh, PLS
Jess Moss, PLS
Joe Paiva, PhD, PE, PLS
Carol Payne
Jim Peterson, PE, PLS, PhD
Brian Portwood, PLS
Joe Svoboda
Jacqueline Walters
Steve Weible, PLS
Chris Wickern, PLS

HOLIDAY INN EXECUTIVE CENTER
COLUMBIA, MO
OCTOBER 3-5, 2019

PLANNING COMMITTEE

Dan Govero, Susanne Daniel, Joe Clayton and Sandy Boeckman

THURSDAY, OCTOBER 3, 2019

7:00 am Registration and Buffet Breakfast

8:00-5:00 pm Hospitality Room Open

8:00-10:00 am **Searching for Information on the Katy Trail and Rock Island Spur**

The National Trails System Act provides for the interim use of existing railroad rights-of-way for trail purposes as a means of preserving those rights-of-way for future reactivation of rail service. Missouri State Parks took advantage of this provision of law in the late 1980s and early 1990s to acquire part of the right-of-way of the former Missouri-Kansas-Texas Railroad for the purpose of building what we know today as the Katy Trail. Additional right-of-way from the former Chicago, Rock Island and Pacific Railroad was acquired in 2012 and 2015 to create the Rock Island Spur. Now that the trails have been constructed and the railroad rails are gone, retracing these rights-of-way can be a challenge. This presentation will begin with a brief review of the applicable part of the National Trails System Act followed by an examination of the acquisitions of the former railroad rights-of-way by the Missouri Department of Natural Resources. Available railroad track maps and original railroad deed information, as well as, actions taken to preserve evidence of the rail centerlines will be discussed. The presentation will include recommendations for retracement procedures and insights gained from actual field experience with projects completed on both trail systems.

Steve Weible, PLS

10:00-10:30 am Break

10:30-11:15 am **How the Land Survey Program Can Work for You**

This presentation will take you through the Land Survey Index and the Corner Master Index in detail. It will provide you with the tools you need for maneuvering it to your advantage. To expedite your research you will learn tips on the fastest way to find a plat, survey, subdivision or GLO Field Notes. There will also be training on the recently combined Land Survey & Corner Master Shopping carts.

Carol Payne, Repository Section Chief, Missouri Department of Agriculture-Land Survey Program; Jacqueline Walters, Missouri Department of Agriculture-Land Survey Program

11:15-12 noon **Don't Leave Your Windows Open to Cybercriminals**

The presentation will be discussing what the upcoming End of Life of Windows 7 and Windows 2008 Server means to business. What steps should be taken to upgrade your systems. What may happen if you don't. Is the cloud something to consider?

Joe Svoboda, CEO, The Miller Group

12:00-1:00 pm Luncheon

12:30 pm Golf Tournament at Eagle Knoll Golf Course

1:00-3:00 pm **Our Old Measurement Concepts...Do They Match Up with Today's Technology?**

If you are old enough, you measured with transit and 100 ft steel tape at some time. A bit more recently, it may have been theodolite (anywhere from 1" to 1') and a steel tape or an EDM (they started with an uncertainty of $\pm(5 \text{ mm} + 5 \text{ ppm})$). We had some pretty good rules of thumb about how we were positioning then. Today, we use total stations with angle specs in the 1-5" range most commonly and distance specs in the $\pm(1-3 \text{ mm} + 1-3 \text{ ppm})$ range, or if its RTK GNSS, perhaps $\pm(1-2 \text{ cm} + 1-2 \text{ ppm})$. Do those old rules of thumb still work? What can these modern systems deliver with respect to relative accuracy or precision (when surveyors report 1:150,000 are they really getting

that)? More to the point many specifications for performing surveys want positioning uncertainty. What can we achieve, and are there rules of thumb for evaluating (and then keeping) a particular level of accuracy? This session will break things down, comparing older technologies with today's, providing rules of thumb for evaluating positioning uncertainty and identifying points of weakness that surveyors need to watch for to maintain a desired level of accuracy. (Two (2) hours Minimum Standards credit.)

Joe Paiva, PhD, PE, PLS, GeoLearn

3:00-3:30 pm

Break

3:30-5:30 pm

Understanding Today's Specifications-Complying with Standards of Accuracy

Whether it is the required accuracy for Missouri Standards for Property Boundary Surveys, ALTA/ NSPS Title Survey accuracy standards or horizontal and vertical accuracy standards for control surveys, how do we take what we know about our technology and use it properly to achieve what the specifications call for? This session will break down the accuracy components of various specifications and relate it to specific things surveys can do while surveying with modern technology to meet the specs. While that is a good start, this session will also discuss some of the ways to evaluate your surveys to ensure that your intended accuracy result was achieved. (Two (2) hours Minimum Standards credit.)

Joe Paiva, PhD, PE, PLS, GeoLearn

6:00-8:00 pm

Exhibitor Set-Up

FRIDAY, OCTOBER 4, 2019

7:00 am

Registration and Buffet Breakfast with Exhibitors

8:00-5:00 pm

Hospitality Room Open

8:00-10:30 am

Business Meeting & Election of Officers and Directors

10:30-11:00 am

Break to View Exhibits

11:00-12 noon

Options for a State Plane Coordinate System of 2022

The National Geodetic Survey will be replacing the existing "Missouri Coordinate System of 1983" with a new state plane coordinate system, State Plane Coordinate System of 2022 (SPCS2022). This presentation will focus on the different options for SPCS2022 and how they compare. One of the new options for SPCS2022 is a Low Distortion Projection Coordinate System; this option will be briefly explained and compared to our current system. A general time-line for the selection and implementation of the new system will be discussed as well as how the new system may impact future office and field work.

Ron Heimbaugh, PLS, Missouri State Land Surveyor, Director, Department of Agriculture-Land Survey Program; Jess Moss, PLS, Geodetic Section Chief, Missouri Department of Agriculture-Land Survey Program

12-1:30 pm

Awards Luncheon

1:30-3:30 pm

Construing Descriptions of and Writing Descriptions for Riparian Tracts

The deed description says "thence to the bank of the river, thence along the bank..." or "all lands south of the river" or "all lands south of the river's north bank." For each of these, where's the boundary? What line do you survey? How do we write a boundary description of a riparian tract,

knowing the river is going to move? The acreage of the surveyed riparian tract will depend on the river being navigable or nonnavigable (perhaps drastically so). The surveyor has no authority to make that determination. When writing the boundary description for the tract, how do you address the acreage? This presentation prepares you to answer these questions.

Dick Elgin, PS, PE, PhD

3:30-3:45 am Break to View Exhibits

3:45-5:45 pm **Computer Vision (CV) vs Light Detection and Ranging (LiDAR)**

Most surveyors have encountered a point cloud. But not all point clouds are the same. This presentation covers the differences between point clouds created by computer vision (CV) and Light Detection and Ranging (LiDAR). Drones typically utilize CV image processing, however, some high end drones are utilizing LiDAR. Many surveyors have been using LiDAR collected from static laser scanners and are already familiar with this type of point cloud. Points clouds created from CV methods are very different. The pros and cons of each type will be addressed.

Jim Peterson, PhD, PE, PLS

6:00 pm Reception with Exhibitors

SATURDAY, OCTOBER 5, 2019

7:00 am Registration and Buffet Breakfast with Exhibitors

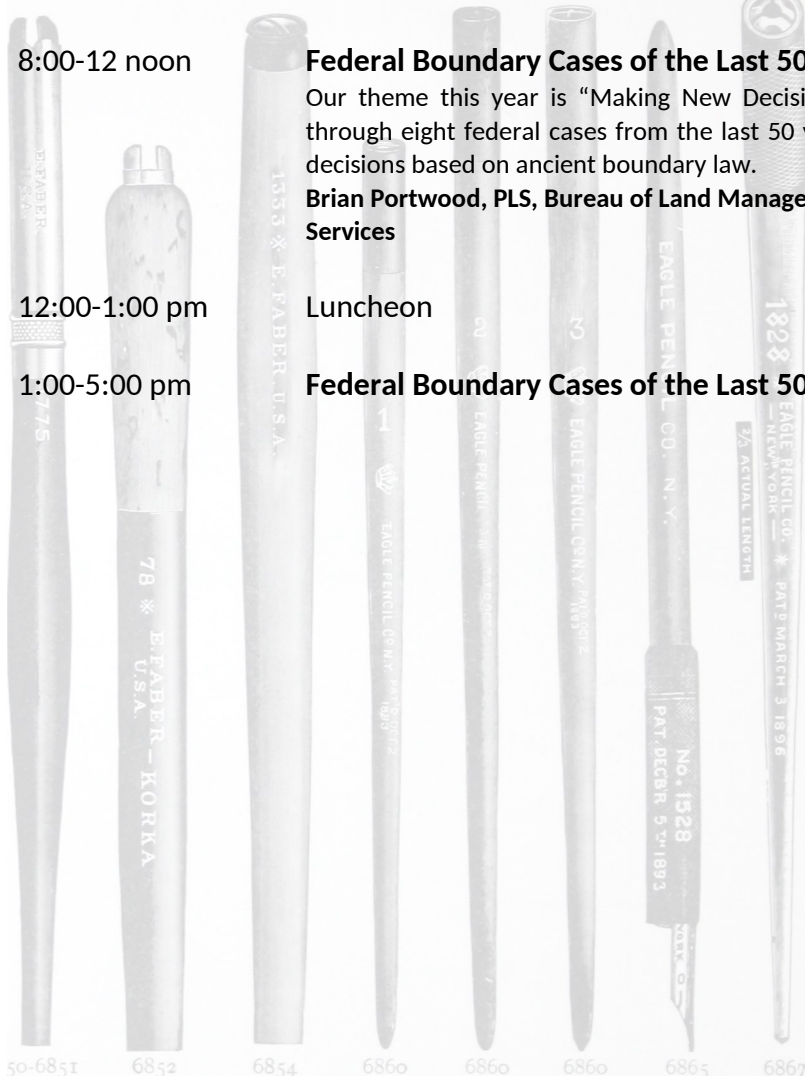
8:00-12 noon **Federal Boundary Cases of the Last 50 Years**

Our theme this year is "Making New Decisions Based on Old Decisions". Join us on a journey through eight federal cases from the last 50 years demonstrating how the courts are making new decisions based on ancient boundary law.

Brian Portwood, PLS, Bureau of Land Management; Chris Wickern, PLS, Engineering Surveys & Services

12:00-1:00 pm Luncheon

1:00-5:00 pm **Federal Boundary Cases of the Last 50 Years continued**



Dr. Dick Elgin, PLS, PE a second-generation surveyor, was raised in his late father's surveying business in Rolla, Missouri. After serving meritoriously as an Army helicopter pilot in Vietnam (1969), he received the degrees BSCE and MSCE from the Missouri University of Science and Technology (MS&T), and his PhD from the University of Arkansas. Formerly an Assistant Professor, he now is Adjunct Professor of Civil Engineering at MS&T. Semi-retired, he works part-time for Archer-Elgin Surveying and Engineering, LLC of Rolla. Dick authored The U.S. Public Land Survey for Missouri. Dick also wrote Shoulda Played the Flute, a memoir of his year flying helicopters in Vietnam (available on Amazon). Dr. Elgin is a past president of MSPS, and was editor of Missouri Surveyor for many years. He is a past member of the Missouri Board for Architects, Professional Engineers, Professional Surveyors and Professional Landscape Architects. He is licensed in several states.

Ron Heimbaugh, PLS, is the Missouri State Land Surveyor and the Director of the Department of Agriculture's Land Survey Program. He earned a Bachelor of Science degree in Industrial Technology from the College of the Ozarks in 1990 and later completed surveying coursework at the University of Missouri - Rolla (now known as Missouri University of Science and Technology). He has nearly 30 years of surveying experience between the private sector and state government. Ron began his surveying career in 1990 and was employed with Rolla area civil engineering and land surveying firms for 17 years. During this time he was involved in every facet of the surveying profession. In 2008, he accepted a position as a project surveyor with the Land Survey Program. Then, in 2013, he became the Field Surveys Section Chief and was promoted to State Land Surveyor and Director of the Land Survey Program in 2017. Ron is currently a member of the Missouri Society of Professional Surveyors Board of Directors, the Missouri Society of Professional Surveyors Standards Committee, and the Rolla Technical Institute Advisory Board.

Jess Moss, PLS, is the Geodetic Section Chief at the Missouri Department of Agriculture Land Survey Program. He earned a Bachelor of Science degree in Civil Engineering from Missouri Science & Technology. He stayed at Missouri S&T until 2003, studying Geotechnical Engineering. Jess has 15 years of surveying experience mainly in the private sector. In 2004 he began working at Cochran Engineering and Surveying in Union, Missouri. In May of 2008 he began working for Archer-

Elgin Surveying and Engineering (a/k/a Elgin Surveying and Engineering) out of Rolla, Missouri. He became a licensed professional surveyor in 2008. During this time, he was involved in every facet of surveying including estimating, research, fieldwork, and deliverables for cadastral, topographic, control and construction stakeout surveys. In August of 2015, Jess accepted a position as a Project Surveyor for the Land Survey Program. In 2017 he became the Geodetic Coordinator for the state of Missouri. Jess is currently a member of the Missouri Society of Professional Surveyors.

Dr. Joseph V. R. Paiva, PLS, PE, is CEO of GeoLearn, an online education company specializing in education using video rather than PDFs. He has technical, general and executive management experience in civil engineering, mapping/GIS and surveying consulting firms and companies that develop products for the geospatial market such as Sokkia, Gatewing and Trimble. Due to his Gatewing experience, his interest in unmanned airborne systems (drones) continues; he is an FAA licensed Remote Pilot. Dr. Paiva also has considerable experience as an educator, having taught surveying for eleven years at the University of Missouri-Columbia, as well as performing adjunct online teaching duties at the Missouri University of Science and Technology, and Texas A&M-Corpus Christi and currently, at the State Technical College of Missouri. He has been active in several professional organizations, the most notable being service as an ABET commissioner and program evaluator. He is currently on the Unmanned Airborne Systems committee of NSPS and the Education Committee of the Surveying and Geomatics Division of the American Society of Civil Engineers. Joe became president of the Surveying and Geomatics Educators Society in the summer of 2017.

Carol Payne is the Repository Section Chief of the Missouri Department of Agriculture's Land Survey Program. She holds two Bachelor of Art Degrees. One in Psychology/Sociology and a second in Business Administration/Management both from Columbia College. Ms. Payne has been employed by the State of Missouri for 32 years. The last 24 of those have been with the Land Survey Program. Eighteen of those have been in her current position. Ms. Payne was at the helm when the Repository began offering "online" plats/surveys, in October 2012. She worked with Records & County Surveyors to obtain their records in digital format thus eliminating bygone expenses. Ms. Payne lives in the country on land which has been in her family 86 years. She has four adult children and seven

grandchildren. She stays busy in her spare time traveling, spoiling grandkids and volunteering at her church, Greentree Christian, where she facilitates DivorceCare and other small group studies.

Jim Peterson, PhD, PE, PLS, has over 28 years of experience as a professional surveyor, engineer, constructor, educator, and researcher with his Remote Pilot Certificate. His career took him across North America, Europe, and Australia promoting mobile mapping and unmanned aircraft systems (UAS). He is currently an Assistant Professor of Construction management at Missouri State where he teaches construction, surveying, and UAS related classes. He was an Assistant Professor of the UAS degree at Southeast Missouri State. He also was an adjunct professor at Southern Illinois University at Edwardsville (2005-2017) where he completed his M.S. in Civil Engineering (C.E.) and helped start the Land Surveying Specialization. Previously he was a lecturer at Missouri University of Science and Technology (MST) (2009-2011) where he completed his Ph.D. in C.E. (2015) specializing in surveying with UAS. MST is also where he obtained his B.S.C.E. (1991). He was a Technical Manager at the Center of Expertise for Photogrammetric Mapping at the U. S. Army Corps of Engineers. He has been a Vice-President of aerial mapping companies, managed and owned a number of engineering, surveying, and construction companies. He was also a Domain Expert for Trimble Navigation and Gatewing. He began his career with McCarthy and Booker Associates in St. Louis. He is passionate about teaching and his research. He is part of the Missouri Transect, a research project through the National Science Foundation using UAS to collect high accuracy imagery to model the effects of climate on plants.

Brian Portwood, PLS, resides in Vancouver, Washington, where he is employed as a federal surveyor by the US Department of Energy. He has 34 years of overall experience in the land surveying industry and has been licensed in several western states for several years. He is also an author of extensive material supporting continuing professional education, focused upon boundary and title issues. In recent years he has specialized in providing guidance on the value of land surveys in the context of easement law and federal litigation, while emphasizing effective collaboration between land surveyors and other professionals to properly address and resolve land rights issues.

Joe Svoboda is the CEO of The Miller Group, a managed service IT provider in Saint Louis. The Miller Group provides service to over 400 businesses and manages over 4,000 devices and is ranked as one of the top MSPs in the country. Joe holds numerous Microsoft and other industry certifications over his 23 years in IT.

Jacque Walters is a Land Survey Specialist I with the Missouri Department of Agriculture; Weights, Measures, and Consumer Protection; Land Survey Program. Jacque attended Rolla Technical Institute (RTI) after working at HD Lee in Lebanon, Missouri. for 20 years. She studied Drafting and Design and graduated in May 2005. While attending classes at RTI, Jacque interned for Land Survey Program from April 2004 to July 2005 in the Repository. She also attended East Central College graduating in December 2005 with an Associate Degree in Drafting and Design. Jacque has continued her education by taking surveying classes from State Technical College of Missouri and University of Wyoming. She was hired in her current position in July 2005 to work in the Land Survey Program.

Steve Weible, PLS, is a native of western Sainte Genevieve County, Missouri, who discovered an interest in land surveying through an opportunity for summer employment after his freshman year of college. He went on to earn a bachelor of science degree in civil engineering from the University of Missouri-Rolla in 1994. After graduation, he worked for three years in mining before realizing that land surveying was his real passion. He began working full time in land surveying in 1997 at Govero Land Services in Imperial, Missouri. He later moved to Rolla, Missouri, and began work with the Missouri Department of Natural Resources in 2000 as a land surveyor-in-training. In 2001 he was transferred to the State Park Survey unit and in 2002 he was licensed in Missouri as a Professional Land Surveyor. Since being licensed, he has served as the Professional Land Surveyor for Missouri State Parks. In 2016 he was moved from Rolla to the State Parks Central Office and now resides in Jefferson City.

Chris Wickern, PLS was forced into surveying by the US Army in 1984 and discovered a passion for this noble Profession. He surveyed in 7 states and on 3 different continents while serving as an Artillery Surveyor. Chris lives and works in Sedalia, Missouri at Engineering Surveys & Services and is the current President of MSPS.

REGISTRATION FORM

Name _____ RLS # _____

Firm _____

Address _____

City/State/Zip _____

Phone _____ Email _____

MSPS Member Convention Registration Fees

Member Registration - 3 Days	\$330.00	\$ _____
Thursday Only	\$110.00	\$ _____
<i>Thursday AM/PM Only (circle one)</i>	\$55.00	\$ _____
Friday Only	\$110.00	\$ _____
Saturday Only	\$110.00	\$ _____

Non-Members

Non Member Registration - 3 Days	\$550.00	\$ _____
Thursday Only	\$200.00	\$ _____
<i>Thursday AM/PM Only (circle one)</i>	\$100.00	\$ _____
Friday Only	\$150.00	\$ _____
Saturday Only	\$200.00	\$ _____

Optional Activities

Golf (Includes Cart & Two Mulligans)	\$85.00	\$ _____
Golf Sponsor	\$100.00	\$ _____

Sub-Total \$ _____

10% Surcharge for Late Registration (After 9/20) \$ _____

Grand Total \$ _____

Payment Information

Charge my Credit Card Check Enclosed Invoice my Organization

Credit Card # _____ Exp. Date _____ CVV Code _____

Mail Registration Form with Payment to:

MSPS

722 E. Capitol Avenue

Jefferson City, MO 65101

Fax: 573-635-7823 ~ Email: mmps@missourisurveyor.org

Registration Deadline: September 20, 2019

REGISTRATION INFORMATION

Registration fee is \$330 for Members and \$550 for Non-Members. **The deadline for registrations is September 20, 2019.** After this date, a 10% processing fee will be added to all registration fees. The fee includes instructional materials, refreshment breaks, a luncheon each day(3), a cocktail reception and three buffet breakfasts. To register, complete the attached registration form and mail, fax or email it with your payment to MSPS.

MSPS

722 E. Capitol Avenue
Jefferson City, MO 65101
Phone: 573-635-9446
Fax: 573-635-7823
mmps@missourisurveyor.org

~~~~~

## GOLF TOURNAMENT

The Golf Tournament benefitting the MSPS PAC Fund will be held at Eagle Knoll Golf Course.

You may pick a partner or a foursome. If you do not have a partner, one will be provided to you. The format is a four-person scramble with a shotgun start.

The cost is \$85 per person and includes 18 holes, a cart and two mulligans.

Eagle Knoll Golf Course  
5757 E. Eagle Knoll Drive  
Hartsburg, MO 65039

## LOCATION & LODGING

Holiday Inn Executive Center, Columbia, MO, is the site for the 2019 Annual Meeting of the MSPS. A special room rate of \$104.95 (single or double rooms) has been extended until **September 9, 2019.** Reservations can be made by calling 573-445-8531. Parking is complimentary for all guests and attendees. Ask for the conference special rate and identify yourself with MSPS when making reservations.

~~~~~

DRESS

Men's business casual: jacket optional, casual pants (khakis) with a collared shirt or golf shirt. Women's business casual: slacks, skirts, dress or Capri's with coordinating top or jacket.

~~~~~

## CANCELLATION POLICY

MSPS reserves the right to cancel the program and return all fees in the event of insufficient registration. A participant may cancel a registration at any time, but a \$25 processing fee will be applied to all refunds.

**NO REFUNDS WILL BE ALLOWED  
AFTER September 20, 2019.**

## SPOUSE HOSPITALITY ROOM

A hospitality room will be provided on Thursday, Friday and Saturday from 8 am to 5 pm. Please see the registration desk for hospitality room location. A map of Columbia will be available at the registration desk.

~~~~~

CONTINUING EDUCATION

This course has been approved for 20.5 Professional Development Units (PDUs) by the Missouri Board of Architects, Professional Engineers, Professional Land Surveyors and Professional Landscape Architects (4 hours of Standards).

**PDU breakdown on days
is as follows:**

Thursday - 7.5 PDUs
Friday - 5.0 PDUs
Saturday - 8.0 PDUs

~~~~~

## FOR MORE INFORMATION

Contact Sandra Boeckman,  
MSPS Executive Director,  
at 573-635-9446.

**Please send all registration  
information to:**

MSPS  
722 E. Capitol Avenue  
Jefferson City, MO 65102  
Fax: 573-635-7823  
[mmps@missourisurveyor.org](mailto:mmps@missourisurveyor.org)