

MISSOURI SURVEYOR

A Quarterly Publication of the
Missouri Society of Professional Surveyors

Jefferson City, Missouri

March 2006



February, March & April, 1806	4
Investigating the Missouri-Iowa Boundary	10
The Porcupine Surveyors	18
Rendezvous 2005	20
"A Very Fine Day"	25

Cover photo by Troy Hayes

MISSOURI SURVEYOR



CALENDAR OF EVENTS

2005-2006

May 11, 2006
Board Meeting and Golf
Tournament Fundraiser
Witch's Cove
Lake Ozark, MO

May 12-13, 2006
Spring Workshop
Lodge of Four Seasons
Lake Ozark, MO

July 14-15, 2006
Board Meeting and Minimum
Standards Workshop

September 28-30, 2006
49th Annual Meeting
and Convention
St. Charles Convention Center
Embassy Suites Hotel
St. Charles, MO

December 2, 2006
Board Meeting
Jefferson City, MO

March 7-13, 2007
ACSM Joint Conference
American's Center
St. Louis, Missouri
Headquarters Hotel:
Millennium Hotel St. Louis

May 8-10, 2008
Spring Workshop
Lodge of Four Seasons
Lake Ozark, MO

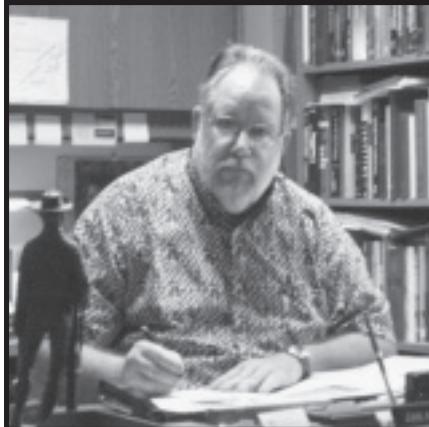
May 7-9, 2009
Spring Workshop
Lodge of Four Seasons
Lake Ozark, MO

John Alan Holleck, Editor



Notes from the Editor's Desk

by John Alan Holleck



Well it's the first of March and it came in like a lamb. According to myth, the month will go out like a lion. As I try to recreate some past March's, I am unable to remember any, so I guess it is wait and see for the end of the month. I trust you missed me in December but I was having physical problems that kept me pretty busy. However, every thing seems to be all right and I am back. Is it me or are our winters getting milder each year? Maybe there is something to the theory of "global warming", enough rambling on to this month's issue.

After the President's Message and Notes from the Editor is the newest installment of Patrick Lee's series on the Lewis and Clark expedition of the Louisiana Purchase. This installment contains edited material from the exploration journals, February, March and April of 1806. This is followed by another original article entitled "Investigating the Missouri-Iowa Border" by Troy Hayes. It concerns a recent investigation of a portion of the boundary. Next in line is a reprint from the *Nebraska Surveyor*, "The Porcupine Surveyors Or The Public Has The Right To Know" by Kim H. Leavitt. The article refers to an incident between himself and a citizen bent on establishing his own corners using GPS. This followed by a picture and short article about the transfer of documents by DNR-Land Survey to the Secretary of State, Robin Carnahan. The center of this issue contains another original article "Rendezvous 2005" about the "Ninth Annual Surveyors Rendezvous", 8-10 December 2005. The group participated in a retracement in the southwestern corner of Phelps County.

The second half of this issue contains a potpourri of articles, hopefully, of interest to the readership. The first is an article "A Very Fine Day" by Denny and Delores DeMeyer discussing the research they performed prior to the national "Surveyors Rendezvous 2005" held in Spokane, Washington. The DeMeyers traveled to Calgary, Alberta to trace the 1807 crossing of the Canadian Rockies into British Columbia by David Thompson, a year after the Lewis and Clark presence in Washington State. Dr. Freddy Davis offers some advice in "What To Do When You Are Chased By A Snake" about an adventure he had while living in Okinawa. Dallas Peters in a Letter to the Editor suggests that while Walter Cunningham, of Utah, was looking for obscure surveys he might have looked next door to John C. Fremont in Colorado. "When An Easement Is Not An Easement" by Richard F. Bales discusses some issues with ALTA/ACSM Title Surveys. Mr. Bales is a title consultant. The final offering of the March issue is short article by John A Hogan, a Georgia land surveyor, "Measurements Don't Mean Much" equates all the money surveyors spend on equipment to measure and evaluate calls like "400feet, North 5 degrees to a concrete monument".

Hope everyone is having a good new year and that you are able to find something interesting in the new issue. This issue begins my eleventh year as your editor and it has been a privilege to serve you. Sandy and I have enjoyed working together; enough so to keep me busy thinking of ways to make each issue better than the last. If advertising suggests the quality of a publication than we must be doing something right. Please submit your thoughts to us concerning the job we are doing, the *Missouri Surveyor* is your publication after all.

THE MISSOURI SURVEYOR

Published quarterly by the
**Missouri Society of
Professional Surveyors**

OFFICERS

Steven A. Borgmann President
F. Shane Terhune President-Elect
Donald R. Martin Vice President
Darrell D. Pratte Secretary-Treasurer
Sandra C. Boeckman .. Executive Director
Craig L. Ruble ... Immediate Past President

DIRECTORS

C. Leon McGee
Ralph L. Riggs
Mark W. Nolte
Brian D. Viele
Joe Carrow
P. Mark Lindenmeyer

ADVERTISING RATES

	4 issues	1 issue
Full Page	650.00	200.00
Half Page	400.00	150.00
(horizontal or vertical)		
Quarter Page	250.00	100.00
Professional Card	50.00	N/A

COPY DEADLINE

June Issue - May 1
September Issue - August 1
December Issue - November 1
March Issue - February 1

EDITOR

John Alan Holleck
8510 E. 59th St.
Kansas City, MO 64129
Phone or FAX (816) 353-1782
E-mail: editor@missourisurveyor.org

PUBLISHER

Sandra Boeckman
P.O. Box 1342
Jefferson City, MO 65102
(573) 635-9446 FAX (573) 635-7823
E-mail: mspss@missourisurveyor.org

The Missouri Surveyor is published quarterly by the Missouri Society of Professional Engineers, to inform land surveyors and related professions, government officials, educational institutions, contractors, suppliers and associated businesses and industries about land surveying affairs. Articles or opinions appearing in this publication do not necessarily reflect the viewpoints of MSPS but are published as a service to its members, the general public and for the betterment of the surveying profession. No responsibility is assumed for errors, misquotes or deletions as to its contents. Articles may be reprinted with due credit given.

President's Message

by Steven A. Borgmann



Thank you to everyone who helped make Legislative Day in Jefferson City a success. We were able to come together as a strong survey community and communicate our needs to our Representatives and Senators. It is important to remember to contact your State Representatives and Senators and keep them informed of our concerns and the impact current issues will have on the public.

Just as communication is important on the state level, shared knowledge and communication among each of us is a great tool to accomplish many things within our survey community. I would like to invite the president and/or a representative of each chapter to attend the State Board Meetings. The next meeting is May 11th at the Lodge of the Four Seasons.

Great proof of the importance of our community and widening our boundaries is a new chapter. It is my honor to recognize the Southwest Chapter of MSPS. With the assistance of the Ozark Chapter and the will of many surveyors in the Southwest area, this chapter is on track to becoming a strong and vital part of MSPS Community.

I had the privilege of attending the banquets for the installation of the officers within the St. Louis and Ozark Chapters of MSPS. Congratulations to the new officers of all Chapters, your leadership to your community of surveyors is greatly appreciated and necessary for the strength and continuation of our Chapters.

A very important aspect of surveying comes from our past. The MSPS History Committee is looking to do many interesting things this year. The committee has begun investigating the archives at the St. Louis History Museum and Repository in Rolla for information on surveys and maps. If you have any interest in helping in the investigation of old surveys and maps in your area, contact Stan Emerick or anyone on his committee. Be on the lookout for articles on their findings in the coming issues of the Missouri Surveyor.

Many of you know, Leon McGee who has served on the Board of Directors and many committees with MSPS. Regrettably in February we received Leon's letter of resignation. His dedication and service will be greatly missed. We wish him the best with the U.S. Fish and Wildlife in Atlanta, Georgia. Thank you for your time and service.

I look forward to seeing all of you at the Spring Workshop May 11th thru 13th at the Lodge of the Four Seasons.

Cover: Adam Teale, PLS, takes GPS observation at Mile 50 West.

February, March & April, 1806

From Astoria, Oregon to north of Walla Walla, Washington

Written & Edited by Patrick Lee

This is the 18th in a series of 21 articles about the Lewis & Clark Expedition. The first 10 articles covered all the preparations for the journey. The second ten describe the journey itself, in three-month segments. The final article discusses the accomplishments and legacy of the Corps of Discovery.

February 1 (Lewis) today we opened and examined all our ammunition, which had been secured in leaden canesters...perfectly as dry as when first put in...we have an abundant stock to last us back (At Fort Clatsop, near Astoria, OR, until March 24)

February 3 (Lewis) four men... returned, and brought with them...about a bushel [of salt]...a tedious operation to boil sea-water, though, we keep the fires going day and night...

February 4 (Lewis) Observed meridian altitude of the sun's upper limb with the sextant by direction observation...46°10' 16" 3" N. By means of several observations we found the error of the sextant to be 0° 5' 45".

February 6 (Lewis) ...Sergeant Pryor returned with the flesh of only two elk...the Indians having purloined the balance of the seven elk Which Drewyer had killed...

February 7 (Lewis) This evening we had what I call an excellent supper it consisted of a marrowbone a piece and a brisket of boiled Elk that had the appearance of a little fat on it. this for Fort Clatsop is living in high stile...The smallpox has destroyed a great number of the natives...about 4 years since...destroy several hundred, four of their chiefs fell victimys to it's ravages.

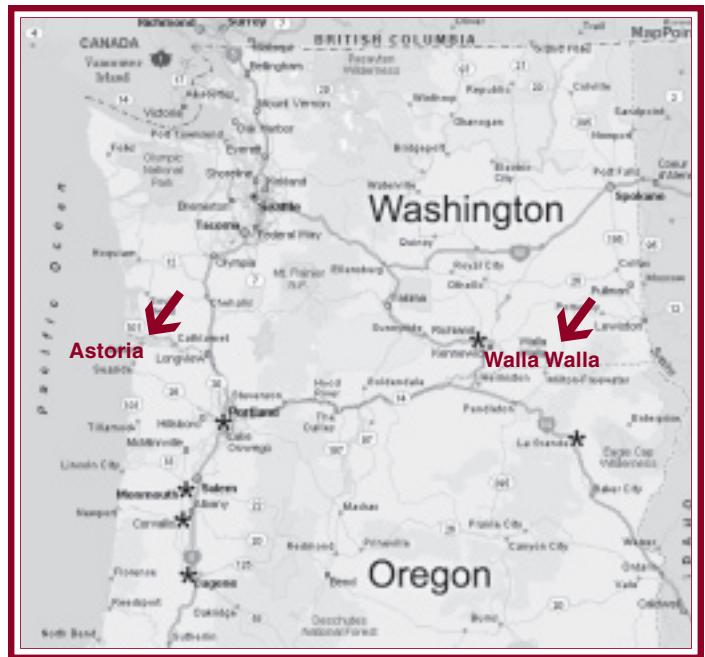
February 13 (Lewis) the Indians inform us that we shall have a great abundance of a small fish in march...must be the herring.

February 14 (Clark) I compleated a map of the Country through which we have been passing...We now discover we have found the most practicable and navigable passage across the Continent of North America...

February 16 (Gass) During one of the most disagreeable nights, myself and one [out on a hunting trip] other lay out in our shirts and overalls, with only one elk-skin to defend us from a violent night's rain.

February 17 (Lewis) At 2 p.m. J. Fields arrived from the salt-makers and reported they had two kegs of salt on hand...[enough] to last us till we reach our deposit on the Missouri...Shannon brought me one of the large carriion Crow or Buzzards [California Condor]...wounded and taken alive...I blieve this to be the largest bird of North America—handsome bird at a little distance.

February 20 (Lewis) ...we were visited by Tâh-cum a principal chief of the Chinnooks and 25 men...



notwithstanding their friendly disposition, their great avarice and hope of plunder might induce them to be treacherous.

February 22 (Lewis) ...the woodwork and sculpture of these people...evince an ingenuity by no means common among the Aborigines of America ... [more] sick at any one time since we left Wood River.

February 25 (Lewis) We are mortified at our inability to make more celestial observations since we have been at Fort Clatsop; but the weather has been such as to render this impracticable.

February 28 (Lewis) Kuskellar, a Clatsop, and his wife visited us. They brought some anchovies, sturgeon, a beaver-robe, and some roots for sale; but they asked such high prices...that we purchased nothing but part of a sturgeon...

March, 1806

March 1 (Lewis) Kuskellar and his wife left us about noon. He had with him a good-looking boy about ten years old, who he told us was his slave ... Like other nations, the Clatsops adopt their slaves and treat them very much as if they were members of their own families.

March 4 (Lewis) the Anchovy [eulachon] is so delicate that they soon become tainted unless pickled or smoked...the natives...hang them in the smoke of their lodges...the fresh sturgeon they keep for many days by immersing it in water. they coock their sturgeon by means of vapor or steam.

(continued on page 5)

February, March & April, 1806 (continued)

March 5 (Lewis) ...the hunters returned...They had neither killed nor seen any Elk...we have only 2 days provision on hand, and that nearly spoiled

March 6 (Lewis) ...visited by Comowoll and two of his children. he presented us with some Anchovies... this we have found the most friendly and decent savage that we have met with in this neighborhood.

March 7 (Gass) ...we now experience the want of tobacco and out of 33...but 7 who do not make use of it; we use crab-tree bark as a substitute.

March 8 (Lewis) M'Neal and Goodrich are so far recovered from the lues veneris [syphilis] that the use of mercury in their cases was discontinued.

March 10 (Lewis) The hunters...informed us they measured a pine tree...as high as a man could reach, it was 40 feet in the girth [circumference] ...at least 200 feet without a limb...very lofty above the commencement of the limbs...safely estimated at 300 feet. it had every appearance of being perfectly sound.

March 13 (Gass) I this day took an account of the number of pairs of mockasons each man in the party had; and found the whole to be 338 pair. [For 32 adults on a return journey through prickly pear cactus, where over the worst terrain, moccasins were worn out in two days.]

March 14 (Lewis) The Indians tell us that the Salmon begin to run early in the next month

March 15 (Lewis) we were visited by Delashshelwilt a Chinook Chief and his wife and six women of his nation which the old baud his wife had brought for market. this was the same party that had communicated the veneral to so many of our party in November...of which they have finally recovered. I therefore gave the men a particular charge with respect to them which they promised me to observe.

March 17 (Lewis) Old Delashelwilt and his women remain...[camped] near the fort and ...determined to lay seige to us but I believe notwithstanding every effort of their winning graces, the men have preserved their constancy to the vow of celibacy.

March 18 (Lewis) [Lewis drew up the following statement along with a list of their names, posted one copy in their cabin and gave other copies to the Indians to give to any visiting ships.] The object of this list is, that...it be made known to the informed world, that the party...sent out by the government of the U' States in May 1804, to explore...the Continent of North America, did penetrate the same by way of the Missouri and Columbia Rivers, to...the Pacific Ocean

[They drew a brief map and marked their route on the back of the paper.]

March 19 (Lewis) [Describing the physical characteristics of the local Indians] the most remarkable trait...is the peculiar flatness and width of the forehead which they artificially obtain by compressing the head between two boards while in infancy...this is a custom among all the nations we have met West of the Rocky mountains...heads...not more than two inches thick about the upper edge of the forehead and reather thiner still higher. From the top of the head to the extremity of the nose is one straight line.

March 20 (Gass) ...killed by the party from the 1st of Dec. 1805 to the 20th March 1806...131 elk, and 20 deer.

March 21 (Gass) The women are much inclined to venery, and like those on the Missouri are sold to prostitution at an easy rate. An old Chin-ook squaw frequently visited our quarters, with nine girls which she kept as prostitutes. The honour of the Flatheads [most likely, the Nez Perces, west of the Bitterroot Mountains] ...they do not exhibit those loose feelings of carnal desire, nor...the common customs of prostitution: ...the only nation on the whole route where anything like chastity is regarded.

March 22 (Lewis) At noon we were visited by Comowool...to this chief we gave our house and furniture. He has been more kind and hospitable to us than any other Indian in this vicinity.

March 23 (Clark) ...we loaded our canoes & at 1 P.M. left Fort Clatsop on our homeward bound journey...we were never one day without 3 meals of some kind a day either pore Elk meat or roots

March 24 (Clark) proceeded to the Cath lah mah Village...these people is the dirtiest and Stinkingest place I ever Saw in any Shape whatever

March 26 (Lewis) our men who are accustomed to the use of this article Tobaco... appear to suffer much for the want of it. they substitute the bark of the wild crab which they chew; it is very bitter, and they assure me they find it a good substitute...the smokers substitute the inner bark of the red willow and the sacacommis [bearberry]

March 28 (Gass) On this island there are a greater number of snakes, that I had ever seen in any other place... almost as numerous as the blades of grass

...the hunters returned...They had neither killed nor seen Elk...we have only 2 days provision on hand, and that nearly spoiled

(continued on page 6)

February, March & April, 1806 (continued)

March 29 (Lewis) [Came to] a village of Quathlapotles [Cathlapotles] Öconsists of 14 large wooden houses...received us very kindly, and voluntarily spread before us wappatoo and anchovies; but as soon as we finished...they began to ask us for presents...

March 30 (Lewis) I took a walk of a few miles through the prairie...this valley is...about 70 miles wide...competent to the maintenance of 40 or 50 thousand souls if properly cultivated and is indeed the only desirable situation for settlement which I have seen on the West side of the Rocky mountains. [From a similar entry on April 4, this must be a description of the Willamette Valley south of the river.] (Vancouver, WA, across the river from Portland, OR)

April 1806

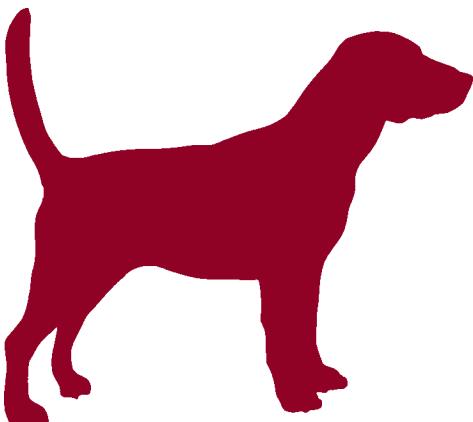
April 1 (Lewis) I purchased a canoe from an Indian for...six fathoms of wampum beads; he seemed satisfied with his bargain and departed...but shortly after returned and canceled the bargain, took his canoe and returned the beads. This is frequently the case in traiding and is deemed fair by them.

April 4 (Lewis) The nations of this valley ... add a species of bath peculiar to themselves, by washing the whole body with urine every morning.

April 5 (Lewis) the Musquetoes have also appeared but are not yet troublesome...

April 7 (Lewis)we had dried a sufficient quantity of meat to serve us as far as the Chopunnish, with occasional supplies, if we can procure them, of roots, dogs, and horses...

April 8 (Gass) from the 4th of November 1805 to the 25th of March 1806, there were not more than 12 days in which it did not rain, and of these but 6 were clear.



April 9 (Lewis) we passed several beautifull cascades [Multnomah Falls and four smaller falls] which fell from a great hight over the stupendious rocks

April 10 (Lewis) at 6 A M we set out...we continued up... [with] great difficulty in consequence of the rapidity of the current...we had but one sufficient toe roap...could only take them one at a time which retarded our progress very much.

April 11 (Lewis) [While Clark supervised the portage around 1 1/2 miles of rapids] a few men were absolutely necessary...to guard our baggage from the War-cle-lars...the greatest thieves and scoundrels we have met with...[they] stole my dog this evening...sent three men in pursuit... they also stole an ax from us...our men seem well disposed to kill a few of them. we keep ourselves perfectly on our guard.

April 12 (Lewis) ...above our camp is one of the most difficult parts of the rapid ...for the three last days...we have made only 7 miles.

April 13 (Lewis) ...the dog now constitutes a considerable part of our subsistence and with most of the party has become a favorite food...I prefer it to lean venison of Elk, and it is very far superior to the horse in any state

April 16 (Clark) ..the principal Chief of the Skillutes set before me a large platter of [steamed] onions...we all ate of them...very sweet and the tops tender...I smoked with all the principal men...and lay myself down on a mat to sleep but was prevented by the mice and vermin with which this house abounded...very troublesom to me. (Near The Dalles, OR)

April 19 (Lewis) there was great joy with the natives last night in consequence of the arrival of the salmon

April 20 (Lewis) [The Eneshers or Teninos] are poor, dirty, proud, haughty, inhospitable, parsimonious and faithless in every rispect, nothing but our numbers I beleive prevents their attempting to murder us...[They] pilfered six tomahawks and a knife...they stole two spoons

April 21 (Gass) While we were making preparations to start, an Indian stole some iron articles from the men's hands; which so irritated Captain Lewis, that he struck him; which was the first act of the kind...during the expedition.

April 24 (Clark) most of the party complain of their feet and legs this evening being very sore...caused by walking over

(continued on page 8)

TDS Ranger X-Series

more power, new wireless capabilities, tougher than ever

How do you improve surveyors' favorite data collector? Keep the features they depend on, like field-ready ruggedness, 30-hour battery and easy-to-use keypad. Then add functions surveyors have been asking for. That's what we did with the TDS Ranger X-Series. See what makes the Ranger better than ever:

Go wireless

Stay connected to your field equipment while leaving those bulky cables behind. The Ranger now gives you the option of integrated Bluetooth and 802.11b wireless.

Expand capabilities

You'll get more work done in less time with the Ranger's faster processor and increased memory. New CF slots let you add accessories like GPS, GPRS or a digital camera. And the new SD slot boosts data storage for larger jobs.

Versatile software platform

Unlike some data collectors, the Ranger runs the latest version of Windows Mobile™ software. That gives you the ability to run thousands of familiar applications.

Survey Pro™ 4.1

The Ranger isn't all that's new. TDS continues to improve Survey Pro software with new features like Smart Targets, IP modem support, Geolock™ and more. And TDS designed the Ranger and Survey Pro to work together, giving you an unbeatable combination for fast, accurate data collection.



TRIPOD DATA SYSTEMS
A TRIMBLE COMPANY

See all the Ranger's new features
at www.tdsway.com/RangerX.



©2006 Tripod Data Systems, Inc. Tripod Data Systems, TDS, the TDS triangles logo, Ranger, Survey Pro and Geolock are trademarks of Tripod Data Systems. All other brand names and trademarks are property of their owners. Specifications subject to change.

For Western Missouri call

1-800-821-3896



GRINER & SCHMITZ
1701 BROADWAY
KANSAS CITY, MO. 64108
WWW.GRINERSCHMITZ.COM



For Eastern Missouri call

1-314-521-9041



Surveyors Materials Inc.
8875 Frost Avenue
St. Louis, Mo. 63134

www.surveyorsmaterials.com

February, March & April, 1806 (continued)

rough stone and deep sand after being accustomed to a soft soil...made 12 miles today.

April 27 (Lewis) ...the principal Cheif of the Wallahwallahs joined us with six men...by name Yel-lept had visited us on...19 October...he appeared much gratifyed at seeing us return, invited us to remain at his village...we should be furnished with a plenty of such food as they themselves had...This Chief is a man of much influence...among neighboring tribes and nations (On the Washington side, near the mouth of the Walla Walla River)

April 28 (Clark) one of their party...we were told was a medesine man & could foretell things. that he had told of our coming into their country and was now about to consult his God the Moon if what we said was the truth &c &c.

April 30 (Lewis) We have now 23 horses, many of which are young and excellent animals...but afflicted with sore backs. The Indians in general are cruel masters; they ride very hard, and the saddles are so badly constructed that it

is almost impossible to avoid wounding the back...At eleven o'clock, we left these honest, worthy people, accompanied by our guide and the Chopunnish family, and directed our course N. 30° E., across an open, level, sandy plain...

Source material for this article:

While the verbatim accounts could also be found in the original public domain journals of Lewis, Clark and their men, these were excerpted from:

The Lewis and Clark Journals, An American Epic of Discovery by Gary Moulton, ©2003 by the Board of Regents of the University of Nebraska.

The History of the Lewis and Clark Expedition, Volumes 2 & 3, Edited by Elliott Coues, ©1893, Dover Publications, Inc.

The Journals of Lewis and Clark, edited by Bernard DeVoto, ©1953 & 1981, Houghton Mifflin Company

© While all the quotes are in the public domain, this compilation is copyrighted and may not be reproduced without the prior consent of the editor, Patrick Lee. 573-657-2739, jefferson@patricklee.com, www.patricklee.com.



MARK-IT®
SURVEY MARKERS & MONUMENTS
A Division of Desert Engineering Group, Inc.

HISTORY IN THE MARKING

 SURVEY
MARKERS
MONUMENTS
REBAR CAPS
BENCH MARKS
& ACCESSORIES

A Division of Desert Engineering Group, Inc. 3162 E. 46th Street, Tucson, Arizona, 85713 U.S.A.
(520) 882-7363 or 1-800-323-4578 www.survey-markers.com



MO Colleges/Universities Where Land Surveying Coursework is Available

The following list will be updated quarterly as new information becomes available.

Longview Community College - Lee's Summit, Missouri

Contact: Ken Eichman
Longview Community College
Science and Technology Bldg.
500 Longview Road
Lee's Summit, Missouri 64081
816-672-2283

Florissant Community College - St. Louis, Missouri

Contact: Ashok Agrawal
Florissant Community College
3400 Pershall Road
St. Louis, Missouri 63135
314-595-4535

Southwest Missouri State University - Springfield, Missouri

Contact: Thomas G. Plymate
Southwest Missouri State University
901 So. National
Springfield, Missouri 65804-0089
417-836-5800

Mineral Area College - Flat River, Missouri

Contact: Jim Hrouda
Mineral Area College
P.O. Box 1000
Park Hills, Missouri 63601
573-431-4593, ext. 309

St. Louis Community College at Florissant Valley

Contact: Norman R. Brown
St. Louis Community College at Florissant Valley
3400 Pershall Road
St. Louis, Missouri 63135-1499
314-595-4306

Three Rivers Community College - Poplar Bluff, Missouri

Contact: Larry Kimbrow, Associate Dean
Ron Rains, Faculty
Three Rivers Community College
2080 Three Rivers Blvd.
Poplar Bluff, Missouri 63901
573-840-9689 or -9683
877-TRY-TRCC (toll free)

University of Missouri-Rolla - Rolla, Missouri

Contact: Distance & Continuing Education
University of Missouri-Rolla
conted@umr.edu
103 ME Annex
Rolla, Missouri 65409-1560
573-341-4132

University of Missouri-Rolla - Rolla, Missouri

Contact: Surveying Courses in Civil Engineering
Dr. Bill Schonberg, Chairman
University of Missouri-Rolla
Dept. of Civil Eng.
civil@umr.edu
1870 Miner Circle
Rolla, Missouri 65409-0030
573-341-4461

University of Missouri-Columbia, Missouri

Contact: Lois Tolson
University of Missouri-Columbia
W1025 Engineering Bldg. East
Columbia, Missouri 65211
573-882-4377

Missouri Southern State College - Joplin, Missouri

Contact: Dr. Tia Strait
School of Technology
3950 E. Newman Rd.
Joplin, MO 64801-1595
1-800-606-MSSC or 1-417-782-MSSC

"...and I asked the person at Berntsen...

can you get my order to me in a couple of days?

Know what he said...?"



"You'll have them tomorrow."

Berntsen's Quick Response. That's ours too. While we can't guarantee every order will arrive the next day, we're committed to making sure that you get your survey markers as fast as possible, and the best customer service in the industry. We actually monitor our on-time performance on a daily basis to make sure that it's the best in the industry.

At Berntsen, we know that our success is due to great customers like you. That's why we strive to give you the very best on-time delivery. All day, every day.

Wherever you find customers who demand the very best, you'll find Berntsen survey markers & products and on-time delivery.

BerntsenTM

Helping you make your mark on the world.

877.686.8561 www.berntsen.com



Investigating the Missouri-Iowa Boundary

by Troy Hayes, PLS

Midland Surveying Inc. and affiliate Company Midland GIS Solutions of Maryville and St. Joseph, Missouri were recently selected by the Missouri Department of Natural Resources Land Survey Program to perform a boundary line investigation, monumentation search and perpetuation of existing monuments along the Missouri/Iowa boundary.

Midland Surveying has practiced in Northern Missouri and Southern Iowa for over 30 years. The firm's knowledge of the area's history and the boundary, familiarity of the area, and past experience on large boundary projects all contributed to the success of this project.

In 1999, the Company was selected to retrace the disputed boundary between Missouri and Nebraska at McKissick's Island in Atchison County, Missouri. The disputed land of over 5000 acres was created by avulsion from a major flood of the Missouri River in 1867. This resulted in a long dispute and eventual 1904 U.S. Supreme Court decision requiring a survey of McKissick's Island. Eighteen of the original thirty-

six concrete monuments from the 1904 survey were recovered, enabling surveyors to retrace and re-monument the entire disputed boundary. Some of the original monuments were located at a depth of nearly six feet below the silt of the 1867 river channel. Midland's 1999 survey was ratified and approved by State Legislatures in both Missouri and Nebraska and eventually by the United States Congress as a part of the Missouri-Nebraska State Line Boundary Compact.

In 2002, President of Midland Surveying and Buchanan County Surveyor, Troy Hayes, was assisted by Charles Kutz, Platte County Surveyor; Mike Flower, PLS, State Land Surveyor; and Dan Lashley, PLS, Chief of the Cadastral section for the Missouri Dept. of Natural Resources Land Survey Program, to perform a survey to re-establish the lost boundary between Buchanan County and Platte County, Missouri. This survey involved extensive research of prior

(continued on page 11)

John R. Teale Appointed to Land Survey Division

John Teale was confirmed by the Senate Committee on Gubernatorial Appointments as a member of the Land Survey Division of the Missouri Board for Architects, Professional Engineers, Professional Surveyors and Landscape Architects on Wednesday, March 1, 2006. John replaces Kevin DeSain of St. Louis whose term expired in September 2005.

John Teale, PLS is a Professional Land Surveyor in Missouri, Iowa, Nebraska and Kansas. He received his Bachelor of Science Degree from Northwest Missouri State University in 1973. He served as Vice-President and Corporate Secretary of Midland Engineering, Inc. of Maryville and St. Joseph, Missouri from 1977 to 1989 and President of Midland Engineering, Inc. from 1989 to 2001. He served as President of Midland Surveying, Inc. of Maryville and St. Joseph, Missouri from 2001 until 2005. He currently serves as the Secretary.

In 2000 he became the co-founder and now serves as President of Midland GIS Solutions, LLC of Maryville and Sunrise Beach, Missouri. He also serves as Co-Owner and President of Nodaway County Abstract & Title Company of Maryville, Missouri.

John served on the MARLS (now MSPS) Board from 1985 and served as President in 1992. John served as MSPS Co-Chairman of the Missouri Highway Liaison Committee and is currently a member of the Northwest Missouri State University

Department of Geology/Geography Professional Advisory Council.



Senator David Klindt and John Teale after the confirmation hearing on March 1 at the Missouri State Capitol.

Investigating the Missouri-Iowa Boundary (continued)

county and state road survey records which proved to provide the most reliable evidence of the lost boundary. Using modern technology, the group was able to retrace the ancient road surveys and re-establish the lost county line. This retracement survey was approved and adopted by County Commissioners in Buchanan and Platte Counties as the official county boundary.

In early 2005, Midland was selected by the Land Survey Program to perform the Missouri/Iowa boundary line investigation. The experience Midland had gained on previous projects proved invaluable to the success of the boundary line investigation. Midland utilized thorough research, an understanding of the original surveys, and the firm's experience in utilizing modern technology to retrace ancient surveys to complete this project.

The boundary line investigation began with research of the original surveys along the Missouri/Iowa boundary. Field search and recovery of the existing cast iron monuments, which had been established at 10 mile intervals along the original boundary, followed the research. The final phase of the project included the establishment of State Plane Coordinates and preparation of Certified Land Corner Documents for the recovered monuments.

The original survey of the Missouri/Iowa boundary, commonly known as Sullivan's Line, was completed by surveyor John Sullivan in 1816. Sullivan was to mark the west and north boundaries of Missouri. He commenced at the east bank of the Missouri River opposite the mouth of the Kansas River and navigated north 100 miles to establish the Northwest Corner of the state. He then ran east just over 151 miles to the Des Moines River on the state's east boundary. Later surveys revealed this line was neither straight nor running due east. Sullivan blazed trees and established wooden posts at each mile along the boundary.

In the years following Sullivan's survey, there were numerous disputes as to the location of the state boundary – the most famous being the Honey War which led to a small border skirmish between the militias of Iowa and Missouri over the location of some productive honey trees with respect to the state boundary. In 1850, the United States Government appointed commissioners from the states of Missouri and Iowa to retrace and establish permanent monuments along Sullivan's Line. They were also instructed to establish the Missouri/Iowa boundary on the north side of the Platte Purchase, which extended from the west end of Sullivan's Line approximately 60 miles west to the Missouri River. During the survey of 1850, evidence of Sullivan's Line was recovered. The surveyors also commenced at Sullivan's northwest corner and extended Sullivan's Line west on a parallel of latitude from that point, establishing new

Fremont County Road Crews assisted in the recovery of Mile 50 West.



monuments at each mile as well as new cast iron monuments at every 10th mile west to the Missouri River.

The retracement of Sullivan's Line in 1850 revealed that the original line did not follow a true parallel of latitude, and that Sullivan had encountered problems with his direction as he ran along the original line. However, the evidence of this original line was ultimately held as the state boundary. Even after the line was retraced in 1850, disputes continued to occur along the boundary. The last of these major conflicts occurred around the turn of the century between residents of Decatur County, Iowa and Harrison and Mercer Counties in Missouri. To resolve that dispute, the United States Coast and Geodetic Survey was commissioned to retrace the boundary between mile 40 and mile 60 east. During this survey, evidence from the original survey was recovered and granite monuments were placed at each mile along this 20 mile stretch.

After reviewing the notes and reports of the original surveys, Hayes solicited the help of GIS specialists from affiliate company, Midland GIS Solutions, to assist in preparing search maps and extracting search coordinates for the 15 monuments that were to be recovered as a part of this project. Utilizing digital ortho-photography and the public land survey grid layer available from USGS, the GIS specialists prepared digital maps and used original government plats in the vicinity of the 10th mile cast iron monuments to plot the location of the monuments along the state boundary. This was done relevant to the fallings noted on the original government plats between the nearest intersecting section lines. Once the maps were prepared, a preliminary search coordinate was extracted from the map

(continued on page 12)

Investigating the Missouri-Iowa Boundary (continued)



Mile 130 East was recovered near the calculated search position utilizing the Trimble Geo-Explorer. The monument is located in a remote area inhabited by Amish farming families. Local residents that were interviewed had no knowledge of the monument.

for each of the monuments. This provided the field crews with a visual image of the search area as well as a search coordinate to be inserted into the Trimble GeoExplorer handheld GPS receiver that was utilized for the initial search. Utilizing the work maps and search coordinates, surveyors were able to recover several of the original monuments during their initial search. The actual coordinate positions of the recovered monuments were recorded with the GeoExplorer and refined search positions were calculated for missing monuments. Utilizing this process, the field crews were able to recover 13 of the 15 monuments in the contract and confirmed the removal or destruction of the other 2 monuments.

Testimony from local residents and personnel from the County Engineering Departments in Iowa's bordering states also proved invaluable in the recovery of the monuments. In the case of Mile 50 West at Sullivan's original northwest corner, the monument was recovered after refining the search position by determining coordinates on the recovered monuments at Miles 40 and 60 West. This monument, which was

had apparently been capped with concrete at the time the road was constructed. Keith Hinds with the Decatur County Iowa Engineer's Office also volunteered his personal time to assist Midland Surveying with the recovery of the 40th and 50th mile monuments to the east of the original northwest corner.

After the monuments were recovered, static GPS observations were taken in sessions at each monument for a minimum of 2 hours. Due to the lack of existing control monumentation along large areas of the boundary in north central Missouri, the Land Survey Program requested that Midland Surveying process all GPS observations utilizing the On-Line Positioning User Service (OPUS), maintained by the National Geodetic Survey. In the vicinity of some of the monuments, Midland found in comparing the OPUS observations to existing control monumentation, that the results were very good with

... there were numerous disputes as to the location of the state boundary — the most famous being the Honey War which led to a small border skirmish between the militias of Iowa and Missouri ...

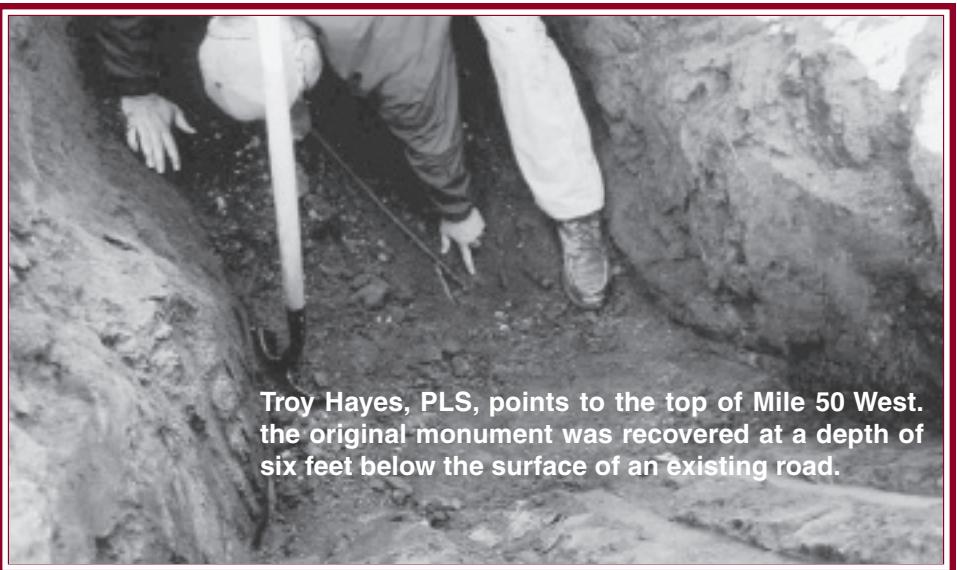
reported to have been set in a low, wet swale in the original notes, was found buried approximately 6 feet below the fill of a county road just to the west of a sizeable culvert with a large drainage area running north and south from the county road. When surveyors were unable to confirm the location of this monument using hand tool excavations, the Fremont County, Iowa Highway Dept. graciously volunteered a backhoe to excavate and confirm the location of the monument. The monument was found in its original position and

(continued on page 16)

Investigating the Missouri-Iowa Boundary (continued)

only negligible differences between published coordinates and the results of the OPUS observations. To complete the project, a Missouri Certified Land Corner Document was prepared for each recovered monument and published with State Plane Coordinate values. These documents were filed with the Land Survey Program who will in turn file copies with each of the Missouri Counties along the boundary. Midland also provided each Iowa County affected by the project with copies of the same documents to their County Engineer Offices. 

Midland GIS Solutions is currently utilizing the coordinate values of the state boundary monuments in preparing a county-wide geographic information system for Harrison County, Missouri and is in hopes of using the data obtained from the boundary survey as they continue to map the northern counties of Missouri and the southern counties of Iowa on future projects.



Troy Hayes, PLS, points to the top of Mile 50 West. the original monument was recovered at a depth of six feet below the surface of an existing road.

LAND SURVEYING / ENGINEERING POSITIONS

Central Missouri Professional Services, Inc., 2500 E. McCarty, Jefferson City, Missouri is seeking qualified people to fill the following positions. C.M.P.S. has excellent working conditions and a good benefits program. Seen Resume by mail to CMPS, Attn: Survey Positions, email your Resume to info@cmps-inc.com, see Greathires.org and www.cmps-inc.com, "Employment Opp" for more information.

ENGINEERING / SURVEYING TECHNICIAN - Position requires AutoCAD drafting ability and experience with land surveying and engineering projects. Position works directly with clients, exercising significant independence throughout the survey and design / development phases of projects.

LAND SURVEYOR - C.M.P.S. is seeking a land surveyor with a strong background in Property Boundary, Topographic and ALTA Surveys, property descriptions and easements. AutoCAD ability required. P.L.S. or L.S.I.T. preferred. Position works directly with clients, exercising significant independence throughout all phases of projects.



R8 GPS RECEIVER

ST. LOUIS

CHICAGO

KANSAS CITY

INDIANAPOLIS

MILWAUKEE

OMAHA



Trimble R8: The Future of GPS Surveying Today

The Trimble® R8 GNSS System is a multi-channel, multi-frequency GNSS (Global Navigation Satellite System) receiver, antenna, and data-link radio combined in one compact unit.

The Trimble R8 combines advanced receiver technology and a proven system design to provide maximum accuracy and productivity.

From the powerful Trimble field software to the receiver itself, the Trimble R8 GNSS system's overall design has been tried, tested, and proven. As a rover it is rugged, lightweight and cable free for unsurpassed ergonomics in the field. As a base it is flexible and also cable free: use the Trimble R8 as a base or rover according to each job's needs.



FOR MORE INFORMATION,
CONTACT SEILER INSTRUMENT

ST. LOUIS
(800) 489-2282

KANSAS CITY
(800) 489-3383

www.seilerinst.com

- SALES •
- SERVICE •
- RENTALS •
- TRAINING •



ST. LOUIS
Tom Seiler
(800) 489-2282 x331 • E-mail: tseiler@seilerinst.com
Jeff Brinkman
(800) 489-2282 x364 • E-mail: jbrinkman@seilerinst.com

KANSAS CITY
Max Clark
(800) 489-3383 x15 • E-mail: mclark@seilerinst.com
Steve Tomps
(800) 489-3383 x18 • E-mail: stomps@seilerinst.com

We're Setting the Standard Again!

Featuring GPS technology you shouldn't collect data without...



Eagle Point is proud to offer a GPS solution that maintains RTK accuracies for up to 15 minutes during communication outages. All too often, obstacles such as hills, trees and buildings can interrupt the communication link to the base station, preventing traditional RTK systems from producing an accurate position fix. SMI Version 8, coupled with NavCom's StarFire™ receivers with RTK Extend™, can eliminate the time-consuming and costly alternatives of moving the base station or installing signal repeaters in order to get that position fix.

Those same obstacles may also be responsible for loss of the L2 Satellite measurements. That's where SureNav™ comes in. Available on SMI Flex GPS and StarFire receivers, SureNav intelligently evaluates all available satellite information and continues to use those measurements even when the L2 signal is lost due to partial blockage from foliage or other structures.

...And an affordable data collection solution with power

We are pleased to announce this new product packed with features to make you more productive.

The Jett-ce data collector comes standard with:

- Color Touch Screen Display
- Windows® CE.net
- 64 MB RAM/64 MB Storage
- Water and shock resistant case
- Locked Compact Flash Expansion Slot
- 8-12 hour Rechargeable NiMH battery
- 200 MHz X-scale Processor
- A customized keyboard providing access to common commands with a single key press

Current HP 48 SMI users will appreciate the custom keyboard layout. We've designed the keyboard to be nearly identical to the HP 48GX, so the transition to the Jett-ce will be fast and easy with little or no learning curve.

And if that's not enough power, you can upgrade the standard package to include a 400 MHz processor, 128 MB of storage, an additional battery, Bluetooth and a hand strap.

Buy our standard Data Collection package which includes the Jett-ce data collector, SMI Version 8 Data Collection software, and cables, mount and manuals all for only \$1800.



Phone 563.556.8392 • Toll-free 800.678.6565 • Fax 563.556.5321 • 4131 Westmark Drive • Dubuque, IA 52002-2627 • www.eaglepoint.com

Midland ad
pu full page - pg 16 last issue



S6 TOTAL STATION



ST. LOUIS
CHICAGO
KANSAS CITY
INDIANAPOLIS
MILWAUKEE
OMAHA

Trimble S6: The Sum of Everything You've Been Hoping For

Fast. Silent. Precise. The Trimble® S6 Total Station redefines these words with exceptional servo and angle sensor performance. Based on fifty years' experience in total station technology, the Trimble S6 has been engineered with innovative MagDrive™ servo technology, state-of-the-art electronics, and modern communication protocols.

And the result? The most advanced optical total station in the world.

For your unsurpassed convenience and efficiency, the Trimble S6 is a 100% cable-free Robotic total station and rover. Numerous new features and the latest technologies will catapult your productivity and profitability forward. And as an entirely upgradable surveying solution, the Trimble S6 will grow with your business.



- SALES •
- SERVICE •
- RENTALS •
- TRAINING •



**FOR MORE INFORMATION,
CONTACT SEILER INSTRUMENT**

**ST. LOUIS
(800) 489-2282**

**KANSAS CITY
(800) 489-3383**

www.seilerinst.com

ST. LOUIS
Tom Seiler
(800) 489-2282 x331 • E-mail: tseiler@seilerinst.com

Jeff Brinkman
(800) 489-2282 x364 • E-mail: jbrinkman@seilerinst.com

KANSAS CITY
Max Clark
(800) 489-3383 x15 • E-mail: mclark@seilerinst.com

Steve Tomps
(800) 489-3383 x18 • E-mail: stomps@seilerinst.com

The Porcupine Surveyors Or The Public Has The Right To Know

by Kim H. Leavitt, P.L.S.

Recently, I was approached by a man who wanted me to give him coordinates on the corners of his aliquot-part section land property. He wanted to find his property corners with his handheld GPS unit. When I inquired about his intent he suddenly became evasive. I explained to him that the corners he was searching for had never been placed by the original surveyor, except for the section and one quarter corners. His response astonished me. He told me he was going to find or place his corners himself. He didn't listen to the rest of the discussion about not placing property corners without the benefit of a license.

This experience has forced me to evaluate the public's knowledge about surveying and the misunderstanding about today's technology. This man was under the impression he could place his corners using scaled distances from a quad, overlaid with his property corners. He would then establish latitude and longitude on these points and simply walk to his corner location using his trusty super deluxe, all weather, all truth, all accurate, \$99 GPS handheld unit, hereafter known as just the "unit".

My theory of using this method to survey could be explained in the following analogy. If you have eight property corners gather eight cows together. Load them in a helicopter (you may need to make more than one trip) then fly over your property on a true north bearing, drop a cow for each corner. If you want to be more accurate you might try dropping porcupines, these will stick better and are smaller, thus increasing your accuracy or should we say positional tolerance. I'm sure you all have your own analogy, more explicit than mine.

The point being, if this fellow is a cross section of the public, we as surveyors have some major problems. Maybe, we should do nothing, knowing there will be years of work to straighten out these porcupine surveys. My fear is that "doing nothing" will leave the door open for many "unit users", to continue thinking that they have a right to encroach into our profession.

In our Rules of Professional Responsibility, Rule 005. "Responsibility to the Public", we read in part, that our primary obligation is to "safeguard the life, health, property and welfare of the public". If we are to safeguard the property

and welfare of the public, how can we let "unit users" off the hook? Maybe we should legislate a warning label for all low accuracy GPS units. It could read as follows: WARNING: This device should not be used by anyone pretending to be a Professional Land Surveyor.

I wonder if Cabalas or Sportsman's Warehouse would display a warning, or even better, put a sticker on every unit they sell. This would insure that only sportsmen trying to find their way home would be using the unit.

There has to be a way we can educate the public about the importance of Land Surveying. Those who care have joined State and National organizations to assure their voice can be heard on issues that affect our profession. Those who don't will allow a dwindling profession to continue to slide down a slippery slope.

The public has the right to know about our profession, its governing rules and regulations. How is it that so little is known about surveying from the public's prospective? I'm sure I can do a better job of letting the

public know what surveying is about. What is our Society doing and is it our responsibility? What are the Board of Professional Engineers and Professional Land Surveyors doing and is it their responsibility? What is ACSM or NSPS doing and is it their responsibility? If we as surveyors don't know if anything is being done to educate the public, I'll guarantee the public doesn't know.

"Unit users", staking their portion of paradise, are all after the same thing, to save money. No matter how we see it, if someone can figure out a way to save dough, one will. If we let "unit users" continue to invade our profession there won't be a profession.

We need to get serious about saving a wonderful profession. Jointly, we need ideas that may be beyond the current boundaries we have set. How can we educate the public? After all, they have the right to know. 

*Reprinted from Saskatchewan Land Surveyors Newsletter,
Spring 2004*

As seen in Nebraska Surveyor, Summer 2004

Department of Natural Resources Delivers Historically Significant Land Survey Documents to Secretary of State

Staff from the Division of Geology and Land Survey's Land Survey Program and Missouri Society of Professional Surveyors (MSPS) members Troy Hayes and John Read delivered maps and surveys to Secretary of State Robin Carnahan on November 22, 2005. The presentation was attended by J. Michael Flowers, State Land Surveyor, Mimi Garstang, Director of Division of Geology and Land Survey, Troy Hayes, Midland Surveying, John Read, Stone County Surveyor representing the Missouri Association of County Surveyors, Dan Lashley and Darrell Pratte, both Section Chiefs with the Land Survey Program, along with staff from the Secretary of State's Office.

The surveys presented to Secretary of State Robin Carnahan included the official state boundary mile posts between Missouri-Iowa, two Missouri-Arkansas state boundary surveys, the Tri-State Corner Intersection of Missouri, Kansas and Oklahoma, as well as county boundary surveys between St. Francois and Ste. Genevieve Counties and Platte and Buchanan Counties. The surveys were placed in the rare documents vault of the Secretary of State Office along with other important state documents. These surveys are also available through the Land Survey Program Repository. 



PHOTO L to R :Mike Flowers, Land Survey Program Director and State Land Surveyor; Mimi Garstang, Director of DNR's Division of Geology and Land Survey and State Geologist (DGLS); Darrell Pratte, PLS, DGLS Land Survey and Project Manager; Robin Carnahan, Secretary of State; John Read, PLS, Stone County Surveyor and President of Missouri Association of County Surveyors; Troy Hayes, PLS, Nodaway and Buchanan Counties Surveyor; Dan Lashley, PLS, DGLS Land Survey and Project Manager. Photo courtesy: Krista S. Myers, Secretary of State's Office.

Rendezvous 2005

During the months of December 1822 and January 1823 William Ashley, Deputy Surveyor under contract with the General Land Office in St. Louis, Mo., subdivided T34N R10W of the 5th PM. Ashley had a crew that included John Martin, Garner Claric, ____ McDonald, one additional member and most likely a camp keeper. The crew received a wage of \$28 per month. Ashley received \$3 per mile for surveying the section and the meander lines of the rivers. The east-west section lines required a one-mile random line and correcting to the true line as determined by the north or south falling to the section corner. This included the monumentation of approximately 95 section and quarter corners and the marking of witness and line trees. This would equate to approximately \$180 for subdividing the township plus \$3 per mile for meandering both sides of the Piney Fork of the Gasconade River. Ashley commenced the survey of T34N R10W on either December 8 or 9, 1822 and completed the township on January 3, 1823.

Fast forward to December 8th through 10th, 2005. The "Ninth Annual Surveyors Rendezvous" was held in Section 24 T34N R10W in the southwestern corner of Phelps County. One hundred and eighty-two years later, 26 land surveyors spent two days learning the history of the USPLSS, retrace-

procedures for following in the footsteps of the GLO Deputy, county surveyors, witness tree identification, corner identification and enduring the same weather conditions the original GLO surveyors faced in December 1822. Twenty-six surveyors, not including the sponsors, Robert Shotts, Ralph Riggs, Craig Ruble and presentors Dan Lashley and Johnnie Young attended this year's rendezvous. This small group of instructors includes some of the most experienced retracement surveyors in Missouri.

On Thursday afternoon, the workshop started off with a presentation by Bob Shotts on winter tree identification. Ashley's field notes for T34N R10W noted a large variety of original bearing trees. Ashley had witnessed the original corners by marking pine, black oak, post oak, hickory, elm, ash, walnut, sycamore and a few others. He noted that the land was hilly, stony, poor timber, lots of undergrowth and with excellent soil along the Piney Fork of the Gasconade River. I can personally attest to the fact that the land is still hilly and the timber has not changed, with the exception of a lot of cedar trees not noted in the original field notes. After a lecture on winter tree identification a walkabout tour of the valley where we were camping became the test for seeing how many trees the attendees could identify. Bob Shotts provided additional



Deputy US Surveyor Loyd Todd and Survey Crew together for a group picture after the retracement survey through the Mark Twain National Forest utilizing the methods and equipment of the original GLO. This crew arrived first and recovered the C1/4 corner originally set in 1873 by the Phelps County Surveyor. Pictured left to right: Paul Taylor-Springfield, Loyd Todd-Ozark, Rick McCallister-Springfield, Ray Riggs-West Plains, Joe Bax-Lake Ozark, Gerald Bader-Ste. Genevieve, Dewane Carpenter-Lebanon, Justin Burris-Newburg.

Rendezvous 2005 (continued)

assistance with tips about tree structure, bark, twig and a little help from fallen leaves. By the end of the tour many of the attendees would name at least ten different species with ease. Thursday evening consisted of a pot luck dinner and a large crowd around a campfire kept burning with the designated fire keeper Loyd Todd and a few others.

Friday morning started off with a hardy breakfast with lots of coffee around the campfire. With the temperature hovering around 1° above zero, I asked myself again after last years record cold temperatures "What am I doing here?" This must be a really tough bunch or we're all a little "touched." I must say there was not a single "no-show" on the attendance. The enthusiasm and dedication to learn became much more important than the PDU's offered.

Friday was a full day of outside classroom on GLO history, instructions, procedures and methods with hands-on application. After instructions for the morning exercise, the attendees were divided up into three very large survey crews. Each crew selected one member to be the deputy surveyor with the rest of the members becoming chainmen, axeman and flagman. The mission of each crew was to accomplish three tasks. To start, each crew was given a selected corner of Section 24 T34N R10W to find. With the assistance of the original notes, subsequent surveys, an approximate latitude-longitude and 1:24,000 topographic map the field search began. After finding the corner, the crew had to evaluate the evidence and decide if there was sufficient GLO or subsequent survey evidence to accept the corner as existent or declare it lost.

The first crew started at the north quarter corner of Section 24. A leaf-covered sandstone was found in the open woods with no existing fences or occupation. No conclusive GLO evidence was visible. However, in 1870, the Phelps County Surveyor, T.D. Smith noted a 16"x9"x6" sandstone at the corner and described it in his survey record. This found stone fit the dimensions of Smith's stone and along with an 1892 County Surveyor's bearing tree, a post oak snag at the correct record bearing and distance and two stump holes with rotated bearings from a 1935 USFS record the evidence looked strong. The corner was accepted and the survey was begun to find the center quarter corner with a staff compass and two-pole chain. A line was run South 1° West. The Deputy Surveyor on the compass, one flagman to set the

foresight, the axeman roughly clearing the line and the chainmen measuring 80 times (33 feet per pull) or eight outs. At 40 chains, a sandstone from an 1873 survey fell 44.2 feet east and 4.2 feet north from the last pull. The center quarter corner was found to be 40.065 chains south of the north quarter corner.

...there was not a single "no-show" on the attendance. The enthusiasm and dedication to learn became much more important than the PDU's offered.

The second crew started at the west quarter Section 24, T34N R10W at a sandstone set by county surveyor Smith in 1873. One stump hole from the GLO survey was found. This corner was accepted and the crew ran east toward the center quarter of the section.

The third crew had an advantage at the east quarter section when they found a big and bright DNR monument previously restored in 2003 by PLS 1898. After a look at the existing evidence, the crew ran west 39.8 chains and found the center quarter corner sandstone previously set by county surveyor Smith in 1873.

All three crews arrived at the center quarter corner within approximately thirty minutes of each other with crew number 3 led by Deputy Surveyor Loyd Todd being first to arrive, locate the stone monument and prove it was the same stone as noted by the county surveyor in 1873. This crew was later declared the winner of the exercise. The crew included the following: Rick McCallister, Springfield, Paul Taylor, Springfield, Justin Burris, Newburg, Dewayne Carpenter, Lebanon, Ray Riggs, West Plains, Gerald "Duck" Bader, Ste. Genevieve, and Joe Bax, Lake Ozark. Much to the surprise of many of the attendees was that with only a staff compass and a two pole chain, their measurements placed all of them very near the location of the monument set in 1873 by the county surveyor with essentially the same type of procedure and equipment that had been used in 1822 by GLO surveyors and later on by the county surveyor.

On a lighter note, the survey crews also determined there was a second corner in the area of the center quarter corner marked by a mound of stones. During the process of investigating the second corner, a 3-inch iron pin with a cap stamped PLS #2122 was found. This just happened to be Loyd Todd's PLS number and cap. Loyd is from Ozark, Mo. and the look on his face and reaction to the finding of a corner monument in the middle of the Mark Twain National For-

(continued on page 22)

Rendezvous 2005 (continued)

est with his cap was enjoyed by all with a big laugh. It seems Ray Riggs from West Plains planted the bogus corner prior to anyone arriving. Needless to say the joke on Loyd was the climax of an interesting exercise for all and will be remembered by Todd as the surveyor whose non-minimum standard monument was found. I had to ask Loyd if he had filed a corner document on his corner.

The balance of the day was spent by the three individual groups evaluating field evidence for GLO and corners previously set of record. One crew had some added assistance from two disgruntled landowners, Bloody McCoy and Killer Hatfield (otherwise known as Dan Lashley and Bob Shotts). These two landowners traveled to the corner location and gave vital testimony and argument to the surveyors on everything they needed to know about the existing evidence, why their corner was correct and why the surveyor should use their corner as gospel. As it turns out, neither corner proclaimed to be correct by Bloody McCoy or Killer Hatfield was the original GLO corner. Many of us have experienced this type of situation at least once in our surveying careers, but dread to think about as we perform a survey.

Friday evening included a dinner around the campfire and a lot of discussion of the day's activities. A visit by Dan Lashley, Deputy Surveyor in character and dress completed the evening. Lashley's presentation was a brief history on Span-

ish Grants and claims known in the USPLSS as US Surveys for those lands granted, owned , or occupied in Missouri prior to 1803 the date of the acquisition by the United States of the Louisiana Purchase. These grants numbering around 3,344 in Missouri and were made by the French and Spanish governments. However, the final confirmation starting in 1805 for some of the landowners, heirs or assignees lasted until after the Civil War in 1867. This presentation included a lot of historical information and was most informative as it related to the GLO and USPLSS in Missouri.

Again my attendance to this workshop was an enjoyable experience despite of the weather and a painful toothache that ultimately required a root canal. According to the sponsors RR&S Inc (Ruble, Riggs and Shotts) and with the assistance of Johnny Young and Dan Lashley, there will be a 10th Annual Rendezvous in 2006. Next years program will include the monumentation (DNR type restoration) of USPLSS corners, field techniques of the original GLO surveys, good food and hopefully, a warmer weekend in December. Contact one of the presenters for a reservation to attend next year's Rendezvous and to relive the experience of a Deputy Surveyor or member of the field crew. 

Photographs provided by Bob Shotts. Visit the Ruble, Riggs and Shotts Website at www.rrspl.com for more pictures of the workshop activities.



Verifying dimensions of 1873 Stone set at C1/4 corner.
Rick McCallister (camo ball cap) on left and Loyd Todd (gray stocking cap) digging out the found stone.

Rendezvous (continued)



Campfire gathering prior to start of morning session. Temperature around 12 degrees. Left to right not including those with back to the camera: Gerald Bader (orange cap), Ralph Kliethermes, Duane Carpenter, Justin Burris, Jim Hayes, Fres Wilde, and Joe Bax.



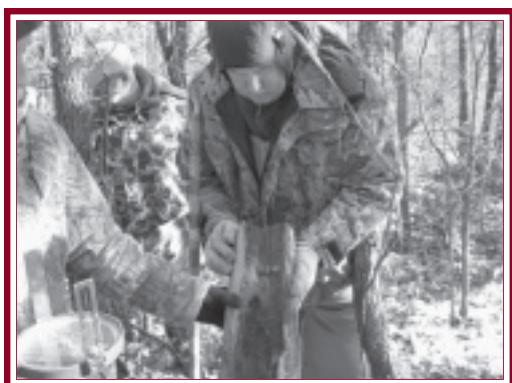
Found the Center 1/4 corner. Is it the same ones set by Phelps County Surveyor in 1873? Duane Carpenter, Jeff Means, Shane Terhune.



Camp Cook Shack with onlookers: Ryan Riggs, Fred Wilde, Joe Bax (tending the fire), Shane Terhune, Jeff Means.



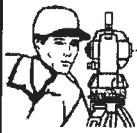
US Surveyor General J. Michael Flowers and Deputy Surveyor Gerald Bader from the Southeast District at Ste. Genevieve.



Witness Tree Identification. Overgrowth with makings. Ralph Kliethermes, Mike Mainer, Shane Terhune



Looking for Witness Tree evidence: Craig Ruble, Justin Burris, Jeff Means.



Hayes Instrument Co.

'Your Financial & Equipment Partner'
502 S. Cannon Blvd.
Shelbyville, TN 37160
Ph: 931.684.0555 Fax: 931.685.9505



Hayes 'Worry-Free' Lease

'Cancel Anytime - Purchase Anytime'

Hayes

!!!Example Lease Package!!!	Competitive Cash Sale Price	Monthly Payment
Total Station (All models available)	\$4,990.00	\$143.71
HP48 TDS/SMI Data Collection Pkg	698.00	20.10
Heavy-Duty Tripod	125.00	3.60
CST Magnetic Locator	479.00	13.79
Hand-held Radios (\$189.00 ea) (2)	378.00	10.88
CST Optima Single Tilting Prism	115.00	3.31
8ft Prism Rod, Quik-Lok™ or Tru-Lock™	79.00	2.27
Total	\$6,864.00	\$197.66

Topcon - Sokkia - Pentax - Nikon - Trimble Instruments

Build Your Own Lease

Cancel Anytime - Purchase Anytime

Instant Credit Approval

Equipment Shipped Within 48 Hours

Prices are subject to change without notice

800.251.1280

www.HAYESINSTRUMENT.com

Surveyors Materials
(pu pg 24 last issue)



**missouri registered
ARCHITECTS
ENGINEERS
LAND SURVEYORS**

HARMS, INC.

p.o. box 52 eldon, mo 65026

(573) 392-3312

EXPLORE NEW BOUNDARIES!

The Landmark Name
SURV-KAP®
In Survey Products

Monuments, Caps and Accessories
800-445-5320
surv-kap.com

© 2005 SURV-KAP, INC.

"A Very Fine Day"

"Off On Discovery" with David Thompson

by Denny & Delores DeMeyer

The LSAW Historical Society together with the Surveyors Historical Society hosted "Rendezvous 2005" at Spokane House featuring the North American (ok, Canadian) surveyor, explorer and map maker; David Thompson. This event was scheduled for September 31st through October 2, 2005 and timed to coincide with the grand opening of a special exhibit featuring David Thompson at the Museum of Art & Culture in Spokane. Spokane House has the significance of being the first white settlement built in Washington State.

In preparation for the above event and in order to perform research on the man and his journeys, Delores and I flew to Calgary, Alberta to retrace a portion of David Thompson's 1807 first crossing of the Rocky Mountains into what is now British Columbia, Washington, Idaho & Montana. Ironically, it was the killing of two Peigan Indians by Lewis & Clark's Corps of Discovery in July of 1806 that helped Thompson to make this 1807 trip. The Northwest Company (and Hudson's Bay Company) had been plagued by the warlike Peigans (Sioux/Blackfoot tribe) since their arrival in the area; camping around Rocky Mountain House and generally intimidating the other tribes. Most tribes welcomed (or at least tolerated) the fur traders. The Peigans, who generally preyed on their Indian neighbors, resented the white man giving the other tribes trading goods and weapons to defend themselves. Thompson later wrote:

"...the murder of two Peagan Indians by Captain Lewis of the United States, drew the Peagan to the Missouri to revenge their deaths; and thus gave me an opportunity to cross the Mountains by the defiles of the Saskatchewan River..."

We arrived in Calgary on August 23rd, rented a Chevy Trailblazer (name was kind of appropriate) and began retracing some of Mr. Thompson's travels. Our destination for that night was the town of Rocky Mountain House (RMH) near the location of the original Rocky Mountain House established by the Northwest Company in 1799. On our drive north from Calgary we traveled the side roads (mostly

Highway No. 22) in order to give us the opportunity to follow a portion of David Thompson's 1800 travels between RMH and the vicinity of Calgary.

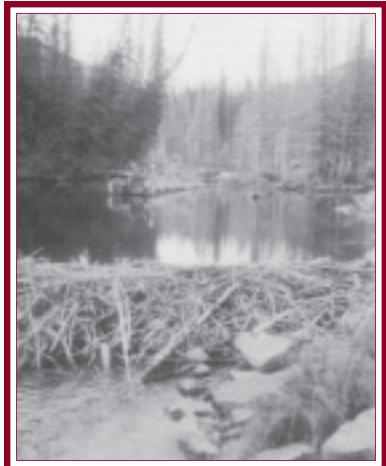
NOTE: While checking into our motel for the night, I was surprised to be handed the business card of Bob Haagsma, a local Alberta land surveyor in and councilman for RMH. (NOTE: on the evening before we left, I had emailed my friend Ken Allred and asked if he had any recommendations for contacts when in the area, not expecting that he would get it in time, let alone be able to arrange for someone to meet us. What a tremendous effort on Ken's part). I gave Bob a call and he was nice enough to rearrange his schedule for us to have lunch together the following day.

Early the next morning, we took the 4 mile drive to Parks Canada's Rocky Mountain House National Historical Site for their annual celebration of "David Thompson Days". Featured events included a voyager bed race, David Thompson Run, canoe race, etc. Both the Northwest Company and their rival, the Hudson's Bay Company, shared the area (building their forts next to each other) until their closure in 18xx. After a thoroughly enjoyable day at the Park (and lunch with Alberta surveyor Bob Haagsma) we spent another evening in the town of Rocky Mountain House.

Early the next morning, after bacon, eggs, hash browns and French toast (no dried dog meat or powdered moose [a Canadian delicacy] for us) we headed up the David Thompson Highway (Highway No. 11) on our retracement of David Thompson's 1807 journey.

May 10, 1807, Sunday: "A very fine day. At 9 1/2 Am sent off Mr. Finan McDonald & 5 men in a Canoe with Goods & Necessaries to the expedition across the Mountains... At 10 Am I set off with Bercier on Horseback..."

Earlier in 1806, Thompson had sent Jaco Finley and some voyageurs up the North Saskatchewan River, over Howse Pass and down the Blaeberry River (Thompson's "Portage River") to where it emptied into the Columbia River (at the time, Thompson called it the Kootanae River) near the present town of Golden, BC. Finley's job was do cut out a



Shunda Creek



Site of Rocky Mountain House

(continued on page 28)

Leica SmartRover Travel Light



SmartStation

TPS1200

GPS1200

Commonality

Reference Station

Leica Geo Office



Introducing the Leica SmartRover: The world's lightest cable-free RTK GPS System.

Now the world's best-performing GPS system is also the world's lightest. Less weight reduces operator fatigue – and boosts productivity. Best of all, we've dropped weight without reducing performance. You still get the powerful SmartTrack measurement engine that out-performs every GPS system on the market. Count on heavyweight performance from this amazingly lightweight system. Only from Leica Geosystems.

Leica SmartRover

- SmartTrack and SmartCheck for best GPS results
- All-on-the-pole convenience
- WinCE and Bluetooth/MIL spec ruggedness
- Fully compatible with Leica TPS1200 and SmartStation
- To schedule a demo, contact your local Leica Geosystems dealer or call 1-800-367-9453.

Laser Specialists Inc.
Olathe, KS • 800-377-4272
Springfield, MO • 800-555-9477

- when it has to be **right**

Leica
Geosystems

"A Very Fine Day" (continued)



Kootanae Plains

trail, cache supplies and build canoes at the mouth of the Blaeberry for Thompson's 1807 push to build a trading house on the West side of the Rocky Mountains.

NOTE: Jaco Finley was very prominent in the history of the

northwest fur trade. He was a sometime employee of the Northwest Fur Company and shows up quite often in Thompson's reports and narrative. Jaco was the man that actually constructed Spokane House just northwest of the city of Spokane in 1811 and the site of Rendezvous 2005. Jaco's grave was just recently discovered on the site and plans are being made to perhaps contribute to the placement of a commemorative plaque there.

First stop for us was Shunda Creek {Thompson's "Jaco's Brooke"} for a "coffee" break. Besides our exploration of the NW Company's fort at the Historic Site, this was the first time we could be sure we were where Thompson actually walked in 1807.

May 16th, 1807, Saturday: "A very fine day... We now turn to the right {from the North Saskatchewan River} to go up along the Brook — our Co[urse] will be ab[out] S 70 W, that of the Canoe between the 2 Mountains ab[out] S 25 W and the Mountains may be about 6 or 8 M distant."

It took Delores and me two hours to reach Kootanae Plains, an open area that offered the first good grass for Thompson's horses. It had taken Thompson and his men 3 weeks.

June 3rd, 1807, Wednesday: "A morning of small Rains, but a fine day. ...Co[urse] S[outh] 22 E[ast] 4 m[iles] thro' the Kootanae Plains, where we put up near the Canoe & People at 1 Pm — we came fast on, often at a sound Trot. The Valleys...are pleasant, & one might pass an agreeable summer in such places as we have come..."

The Kootanae Plains are now an ecological reserve because of its unique environment and another good "coffee" break stop.

On June 6th, Thompson had reached "The Forks" at the junction of the North Saskatchewan and Howse Rivers "the Forks; we take the So[uth] branch... Our Co[urse] S 80 W 1 M[ile] s 20 E 2 M — I lost my compass for the present..." This is near the point where the David Thompson Highway comes to an end at Saskatchewan Crossing where you have the choice of turning north up the Icefields Parkway (Highway No. 93) toward Jasper, Alberta or south toward Lake Louise and Banff. Thompson did neither, he continued westerly across Howse Pass and then down the Blaeberry "Portage" River. Delores and I headed to the village of Lake Louise for a nice lunch and ice cream cones.

Later that afternoon we drove Highway No. 1 over Kicking Horse Pass into British Columbia down to the town of Golden and then up the Blaeberry River in order to visit Thompson Falls (which Thompson never mentions) and get a feel for the country that Thompson traversed by horse to the Columbia. The gravel road going up the Blaeberry River is very difficult to find but after finally stopping and asked directions (sorry guys, she made me do it), we finally found it and the falls.

Thompson starts down the Blaeberry:

June 26th, 1801, Friday: "A very fine day. Arose early & by 6 1/2 Am got ready and set off... the rapid current... endanger not only the wetting of the Goods but also the Lives of the Men... they cross only by clinging fast to the Horses. stopped 1 3/4 H[ours] to refresh the Horses... Gave the Men a large Dog of which they made a heavy meal".

This portion of Thompson's trek (down the Blaeberry) must have been one of the most difficult, for he did something he rarely did; complain.

"The trees everywhere fallen down & the Moss overgrown with a kind of wild willow vine {vine maple} & very short prickly Shrubs {devil's club}, we had to cut much wood away and widen the Path... the Horses were obliged to jump with their Loads over much wind-fallen Wood. Cut away much wood, yet the Horses were continually bucking... the Road is so very narrow & bad"

Later, in a report to his partners, Thompson wrote:

"From what has been said of the Road on the Portage {Blaeberry River} it is clearly seen that Jaco Finley with Men engaged last Summer to clear the Portage Road has done a mere nothing..."

and went on to recommend that

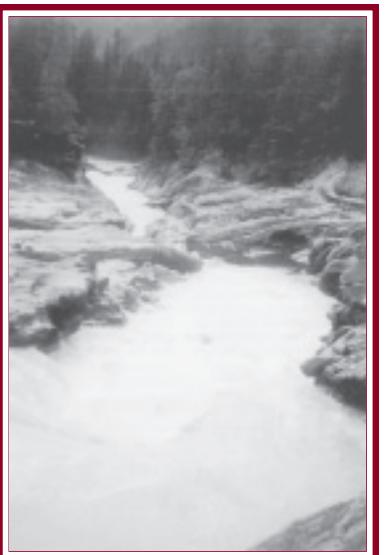
"...Jaco ought to lose at least 1/2 his wages."

On June 30th, Thompson reached where the Blaeberry River entered the Columbia River (Thompson believed it was the Kootanae River at the time).

"Visited the Canoes left by Jaco — found them unfit for carriage but handy for light voyaging."

By July 12th "A Rainy night but fine day", Thompson and his

(continued on page 29)



Thompson Falls

"A Very Fine Day" (continued)

men had constructed new canoes and were ready to head up the Columbia River in search for a place to build the first trading post West of the Rocky Mountains and winter quarters.

July 18th, 1807, Saturday: "A very fine day... At Noon arrived at the Kootanae Lake {now Lake Windermere}. Boulard... arrived on three NW Horses, having left the others behind from the badness of the Roads & his being a complete Rogue."

Thompson immediately began construction but did not like his original site for the trading post from the beginning. He was worried about being able to defend the site from Indian (Peigan) attacks but thought it the best place to catch fish. On July 28th he abandoned this first location and began construction of another. The site eventually selected by Thompson for Kootanae House is located on a knoll above where Toby Creek {Thompson's "River of the Lakes" (?)}.

July 28th, 1807, Tuesday: "A very fine day... I took 2 Men with me and luckily found a place where a good House &c may be built & not easily attacked, close on the banks of a rapid Stream" {today's Toby Creek}

From the area of the mouth of the Blaeberry River, we traveled down the East side of the Columbia River on Highway No. 95. Here the Columbia wanders through a broad valley with thousands of acres of wetlands, looking much like when Thompson's first visited. Upon our arrival in Invermere we contacted our friend, Mr. Cameron Berry. With his help we drove to the site of Thompson's original Kootanae House, the first trading post west of the Rocky Mountains. Here we were again assured that we were walking where David Thompson stepped 197 years ago.

NOTE: In August, 2003 the town of Invermere dedicated a very large bronze statue of David Thompson and his wife Charlotte. Both the LSAW Historical Society and the Surveyors Historical Society contributed money to this worthwhile effort. Delores and I were able to attend representing the above societies and there we met representatives from the British Columbia, Alberta and Saskatchewan surveying organizations, together with local dignitaries, historians and keynote dinner speaker; Jack Nesbit, author of the book "Sources of the River".

By October, Thompson was satisfied enough with the progress of the trading post that he decided to go "off on discover" to explore the region of the "Lake {Flatbow or Lower Kootanae} Indians".

October 2, 1807, Friday: "A very fine day..." At 9:50 Am set off with 2 Horses, a few scraps of Provisions & the Lake Indian Chief Ugly Head for my guide." {The chief was called "Ugly Head" because of his uncommon curly hair}. "...At 5 Pm passed... over McGillivray's Portage {now Canal Flats}, a very good road among Red Fir Trees, the first I have seen... To McGillivray's River" {now the Kootanae River}. "We have passed among

clear Woods of Mountain Larch {or tamarack}, a beautiful tall straight timber Tree admirably adapted to Ship uses, now beginning to shed their foliage".

October 3, 1807, Saturday: "A very fine day". Thompson continued his trip down the Kootanae River to where the St. Mary's River enters the Kootanae and in the vicinity of today's Fort Steele National Historical Site. Here he and his guide Chief Ugly Head turned aside and went up the St. Mary's for a while before Thompson discovered that they were taking a "short cut" to Kootanae Lake (many miles up and over the Purcell Mtns. to the West) instead of following the Kootanae River. This he did not want to do; instead he wished to see how far the Kootanae was navigable by canoes (into present day Montana). Disgusted, he retraced his steps, returning to Kootanae House on October 6th.

The next morning I paid another visit to Kootanae House to again walk the site where David Thompson spent many months, then headed south to retrace Thompson's October travels. We traveled up the Columbia to its headwaters in Columbia Lake, over Canal Flats and then down the Kootanae River traveling as far south as today's Fort Steele before turning around and heading back to Invermere for the night. Next morning we headed up and over Vermillion Pass to Banff, had breakfast and then retraced Thompson's 1800 trip down the Bow River to Calgary.

I have liberally borrowed information from a variety of sources, including but not limited to:

"Columbia Journals" by Barbara Belyea; an edited version of Thompson's field books and narrative. A "must have" book.

"On the Road with David Thompson" by Joyce and Peter McCart; a very good book on how to retrace some of Thompson's journeys on today's road.

"Sources of the River" by Jack Nesbit; a first person and personal account of Nesbit's canoe journey down the Columbia River from source to mouth. 

Left to right: John Matthews, BCLS,
Wayne Stockton,
SLS, Denny
DeMeyer, LSAW &
SHS, Gordon
Thompson, BCLS,
Gordon Webster,
SLS, Dave Williams,
ALS, and Ron
Scobie, BCLS &
SLS.



What to do When You Are Chased by a Snake

The Four Elements of Life Control

by Dr. Freddy Davis

I lived for several years on the Japanese island of Okinawa. It is a tropical island setting with a wealth of beauty and lots of things to do. We lived on the side of a mountain that overlooked the Pacific Ocean. The beauty that we were able to observe from there was breathtaking.

There were a lot of enjoyable things about living in Okinawa, but one of the things that I enjoyed most was learning to scuba dive. The island itself is a coral reef island so it is surrounded by all difference types of coral— different colors, different shapes. There are also dozens of varieties of tropical fish. And the water was as clear as a bell. Even from the surface, by wearing a mask, you could see all of the beautiful sea life that was thirty or forty feet down.

But for a diver, it is not just the sea life. Different parts of the island have very different terrain, and you didn't even need a boat to enjoy it. In most places you can just swim out a few feet and have a great dive in water that is anywhere from fifty to one hundred and twenty feet deep. In some places there is a wall. You swim out and all of a sudden the bottom goes from twelve feet to sixty feet deep straight down. Other places have caverns or giant boulders or wavy hills. So much variety.

Of course, scuba diving can be dangerous if you don't know what you are doing. That is why people who want to take up the sport have to get training. There is an actual certification that a person must get in order to participate in the sport. In the certification class you study all of the things you need to know to be safe. You learn how to use the equipment and actually practice doing it. You learn how to calculate the length of time you can dive at different depths so as not to get the bends. And, of course, you learn about different kinds of sea life — particularly about creatures that can be dangerous.

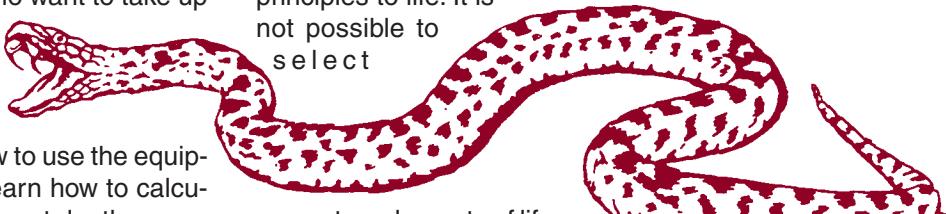
One day I was out diving with a friend and I came across a brown water snake. There were two kinds of snakes in the waters of Okinawa. Both are poisonous, but the brown ones are more so, and they are more aggressive. Well, I didn't see this snake until I was fairly close to him and when he saw me, he started coming at me. I had seen this kind of snake before and always steered clear, but had never had one come toward me. I had been told that they won't mess with you unless you mess with them, but for some reasons this guy started coming and kept coming.

Now I don't like snakes, to begin with, and especially poisonous ones. When I saw him coming, I turned around and swam away as fast as I could. After I had gone a little ways I looked back and to my surprise, he was still coming. You guessed it, I swam even harder. That rascal chased me close to forty yards before he finally gave up. Well, I knew that he wouldn't chase me forever and that if I could move out of his territory he would leave me alone. If I had not known what to do, though, I might have tried to attack him back or do something else stupid that would have caused disastrous results.

The Four Foundations for Gaining Control of Your Life

Knowing what to do is not something that just happens to us. We have to take the time and make the effort to figure out what we need to know, then go after it. We have to prepare. But we also need the whole picture. If we prepare in the wrong areas, or if our preparation is incomplete, we will end up as if we had never done any preparation at all. This principle applies to every arena of life — to our family, our job, our sports activities and every other area. Since the principle is so pervasive, it is important to make sure we completely understand it so we can use it in life.

People tend to be way too narrow in the way they apply growth principles to life. It is not possible to select



one or two elements of life to grow in and neglect the rest. The areas that are not strong will, eventually, pull down even the areas that are strong. We have to develop our whole self all the time. So just what are the areas that we have to focus on? Well, there are four.

Emotional Control

The first element of our personhood relates to our emotional development. We can be in control of our emotions or they can be in control of us. Many people think that they can't have that kind of control, but there are skills related to emotional flexibility, attitude, coping mechanisms and identification which can allow us to become quite adept at controlling our emotions.

(continued on page 31)

What to do When You Are Chased by a Snake

The Four Elements of Life Control (continued)

Physical Control

The second element relates to our physical body. In order to maintain person control we have to exert a lot of energy — and that requires good physical conditioning. With proper nutrition, rest and exercise it is possible for us to develop the stamina necessary to move us to higher levels of personal development.

Mental Control

The third element involves our mental development. It is actually possible to develop our brain capacity in various ways so that we can be more effective in the activities we involve ourselves in. We can develop our brain function skills in the areas of content acquisition, quickness, outlook, concentration, focus and perspective.

Spiritual Control

The final element relates to our spirit. The spiritual part of our being involves our self-awareness, creativity, conscious relationships, communication choice, analysis, contemplation, imagination, self-discipline and perspective. These are the elements that make up the core of our beings as humans. We are also able to develop each of these elements of our spirit to become more effective in our development.

The Choice to Take Control

To really get a grasp on the full scope of these four areas would require a whole book. But even a brief description of the whole gives us a sense of the personal development task. We can't just work on one part of our life, or even several parts, and neglect the others. Every part makes up who we are and we have to develop them all or the ones which don't grow will begin to pull down the others.

We all have choices to make in life. Some of the choices have small consequences, but others may have life or death significance. Preparation for the choices is not something that just happens. We have to deliberately become aware of the areas of our lives that need work, then actively and aggressively go after it. But when we make the effort to get it right, all the preparation is worth it. At that point we are able to see those snakes that are coming toward us and know exactly what to do to deal with them. 

Dr. Freddy Davis is the owner of TSM Enterprises and conducts conferences, seminars and organizational training for executives, managers and sales professionals to help develop greater effectiveness and productivity. He is the author of the book Supercharged! as well as the Nutshell Series of books for strengthening business. You can visit the TSM website at www.tsmenterprises.com, or you can contact Freddy directly at 888-883-0656 or davis@iname.com.

Letter to Editor

Wonder why Walter M. Cunningham P.L.S. Surveying Faculty Member Salt Lake Community College searched the world over for obscure surveying facts and neglected to mention the fact John C. Fremont mapped the route to the Great Salt Lake and was on the shore of same September 8, 1843 at observed Latitude 41 deg. 11 min. 26 seconds, longitude 112 deg. 11 min. 30 seconds? Fremont's Report was published in 1845 and the Pruiss (Fremont's cartographer) Route Map was published in 1846. Nice that somebody saw fit to name a minor island in the lake after the man that mapped the Mormon Trail for Brigham Young and described what he would find when he got there.

I'm writing this because I have a low opinion of any surveyor that would so casually ignore a fact that he surely must be aware of. Wonder if he also casually ignores found corner evidence and sets his own multiple corner?

Fremont was a Surveyor, Senator, General, Governor and the first Republican Candidate for President of the United States. He was not a Mormon. Wonder if that mattered to Mr. Cunningham?

Did you know that Gutzon Borglum first tried to sculpt Stone Mountain in Georgia using light projected on the mountain by a projector? The result was so out of proportion that he was replaced and all of his work removed. Guess he was low bidder on Mt. Rushmore. I was there last Summer and it looks like good work.

Dallas R. Peters, PLS 

When an Easement is Not an Easement

by Richard F. Bales

All surveyors are familiar with the ALTA/ACSM land title survey, commonly known as the "ALTA" Survey. As you know, Table A of the 1999 land title survey standards is a listing of "optional survey responsibilities and specifications". This listing includes such things as a flood zone designation, land area, and location of utilities.

I was recently asked to review a land title survey of some vacant commercial property in Northern Illinois. The surveyor performed a land title survey pursuant to a contract with the owner of the land, a major real estate developer. The owner specified in his contract that the surveyor need not disclose the location of utilities as set forth in item 11 of Table A of the survey standards. Accordingly, the surveyor's field crew failed to locate and disclose a storm sewer line that cut through the land. After the buyer reviewed the survey and signed the contract to purchase the property, he discovered the storm sewer line and realized that he would be unable to build his proposed building on the property because of this sewer. The buyer now wished to back out of the contract.

The surveyor contacted me and asked if I thought that he had a duty to show the storm sewer line and if his survey was defective. Although it appears that the survey is not in error, this situation and my resultant analysis is perhaps worthy of consideration by surveyors. To understand my conclusion that the surveyor had no duty to show the storm sewer line, one must first understand the correlation between paragraph 5(h) of the body of the survey standards and item 11 of Table A of these standards.

Paragraph five of the standards includes this preamble: "The [plat of survey] shall contain, in addition to the required items already specified above, the following information:" A series of lettered subparagraphs follows this introduction; paragraph 5(h) reads in part as follows: "Observable evidence of easements and/or servitudes of all kinds, such as those created by roads; rights-of-way; water courses; drains; telephone; telegraph, or electric lines; water, sewer, oil or gas pipelines on or across the surveyed property and on adjoining properties if they appear to affect the surveyed property, shall be located and noted... Surface indications, if any, of underground easements and/or servitudes shall also be shown."

Table A includes these instructions: "If an item is checked] the following optional items are to be included in the ALTA/ACSM LAND TITLE SURVEY: [emphasis in original.]" Item 11 reads in part as follows: "Location of utilities existing on or serving the surveyed property as determined by: (a) Observed

evidence manholes, catch basins, valve vaults or other surface indications of subterranean uses; wires and cables (including their function) crossing the surveyed premises..."

At first glance it appears that these two portions of the survey standards conflict in that they seem to address essentially the same thing — utility easements. But inconsistent provisions in a document should be construed together and reconciled, if possible (see, e.g., *Law v. Kens.* 384 Ill.591, 52 N.E.2d 212 (1943). Therefore, further study is necessary in order to determine what the representatives of the American Land Title Association and the American Congress on Surveying and Mapping intended when they drafted these survey standards.

Although it appears that the survey is not in error, this situation and my resultant analysis is perhaps worthy of consideration by surveyors.

Paragraph 5(h) refers to "easements and/or servitudes". By definition, an easement is the right of one party to use the land of another party. For example, a storm sewer might be termed an easement in gross. Black's Law Dictionary defines an easement in gross as "not appurtenant to any estate in land or does not belong to

any person by virtue of ownership of estate in other land, but is mere personal interest in or right to use land of another..."

The Merriam-Webster dictionary defines "servitude" as "a right by which something (as a piece of land) owned by one person is subject to a specified use of enjoyment by another". Thus, the concept of servitude also involves the right of one person to use someone else's land. Black's Law Dictionary contains a similar (but lengthier) definition. It seems, then, that this characteristic — the right to use the land of another — is the distinguishing and defining difference between paragraph 5(h) of the body of the standards and item 11 of Table A. That is, whenever a surveyor performs a survey, he or she is obligated pursuant to paragraph 5(h) to disclose all "easements and/or servitudes" — this is, any and all observable evidence on the land of someone else's use or interest in the land.

Examples of this would be a neighbor's driveway that burdens a portion of the land; utility wires that cross the rear of the land as they travel across adjoining property, bringing electricity to neighboring buildings; and a storm sewer, but only if that storm sewer benefits land owned by someone other than the landowner of the property in question, because only then would the storm sewer be an easement or servitude. Another example might present an even clearer distinction. Consider a residential lot. Utility poles and wires

(continued on page 34)



ST. LOUIS
CHICAGO
KANSAS CITY
INDIANAPOLIS
MILWAUKEE
OMAHA



Where is everything else?

Trimble GeoXT

It's a big world out there, and using GPS to survey and map it precisely saves time and money in this most stringent of all applications. Today, Trimble GPS makes it possible for a single surveyor to accomplish in a day what used to take weeks with an entire team. And they can do their work with a higher level of accuracy than ever before.

Mapping is the art and science of using GPS to locate items, then create maps and models of everything in the world.

Finally, a scanner that thinks like a surveyor!

The Trimble® GX™ 3D Scanner is an advanced surveying instrument that uses high-speed laser and video to capture vast amounts of coordinate and image data. Portable, versatile, usable and robust,

the Trimble GX is the scanner that thinks like a surveyor. If you combine the Trimble GX and the powerful data editing software package RealWorks Survey, you will benefit from the most efficient solution available on the market for 3D scanning applications.



- SALES •
- SERVICE •
- RENTALS •
- TRAINING •



ST. LOUIS
Pat Stack

(800) 489-2282 x367 • E-mail: pstack@seilerinst.com

KANSAS CITY
Steve Tomps

(800) 489-3383 x18 • E-mail: stomps@seilerinst.com

www.seilerinst.com

When an Easement is Not an Easement (continued)

run across the rear of the lot and other lots in the subdivision. A 'drop line' runs from the utility wires to the house on this lot, thus providing utilities to the home. Similar drop lines provide electrical service to the neighboring homes. If a surveyor is asked to perform a land title survey of this house, and if this surveyor is not instructed to include any optional Table A information on his plat of survey, the surveyor would still have an obligation to show the utility poles and wires on his survey. The reason for this is because the surveyor is still bound by paragraph 5(h); these utility poles and wires are clearly in the nature of an easement. The surveyor would not, however, have to show the drop line running from the utility wires to the house, as that drop line does not represent an interest that is being used by another party. It exists solely for the benefit of the landowner.

On the other hand, if item 11 of Table A has been checked off, the surveyor will have to show this drop line, as this line clearly is a "wire and cable crossing the surveyed premises," as set forth in item 11.

In the present example, the issue is: does the storm sewer exist solely for the benefit of the landowner? If so, it is not by definition an "easement and/or servitude" and thus need not be disclosed on a land title survey in which item 11 of Table A is not checked off. In my situation, the land in question is still owned by a developer, who put the storm sewer in to service the lots in the industrial park. To date, though, he has not yet sold off any of the lots. Therefore, the storm sewer is not an easement or servitude; the surveyor wins, albeit barely.

Interestingly enough, a similar situation was addressed in the December 2002 issue of the Wisconsin Professional Surveyor, the magazine of the Wisconsin Society of Land Surveyors. Gary Kent, as President of the American Congress on Surveying and Mapping, wrote about a surveyor who failed to show a manhole on his land title survey. In subsequent litigation, the plaintiff argued that the surveyor should have shown the manhole because of paragraph 5(h). The surveyor countered by arguing that pursuant to his contract, he was not required to disclose item 11 information

on his plat of survey. Mr. Kent comes to the same conclusion that I independently arrived at. He writes that paragraph 5(h) and item 11 address two different issues. He states that "under 5(h), a manhole is clearly 'observable evidence of an easement and/or servitude' unless further investigations were to reveal that it was not. For example, a manhole for a storm sewer that drains a parking lot to onsite detention might very well not be evidence of an easement."

Finally, he concludes with a very appropriate distinction: "It is an aside that as evidence of a sewer, the manhole did not have to be shown on the survey because Table A item 11 was not included. But as observable evidence of an easement under paragraph 5(h), it did have to be shown." [emphasis in original]

Gary Kent's example, of course, while illuminating, is distinguishable from the present situation. Mr. Kent writes about a manhole that was observable evidence of an easement — that is, someone else's interest or use in the property in question. But in my example, there is no such evidence of an easement — rather, the storm sewer is used solely by the owner of the land. Because this storm sewer is not an easement or servitude, it did not fall within the four corners of paragraph 5(h).

On the other hand, if this storm sewer serviced other land not owned by the landowner, then my case would be directly analogous to the example set forth. The storm sewer then would be in the nature of an easement. As such, it would have to be shown on the survey.

So what can surveyors learn from this episode? As there may be times when what appears to be an easement may not be an easement, it seems to me that surveyors of commercial or industrial properties or large tracts or residential land should make sure that their field crews understand the fine distinction between paragraph 5(h) and item 11. If in doubt, it would probably be best for the surveyor to show any and all possible evidence of utilities on his or her plat of survey.

In the alternative, should the surveyor show a note on the plat of survey, explaining that pursuant to contract, some or all evidence of utilities is not disclosed on the plat? Probably not. Mr. Kent (who was called as an expert witness), indicates that the case was settled out of court. It appears that the surveyor paid damages — even though the surveyor's plat included this caveat: "No certification is made as to the locations of underground utilities such as, but not limited to, electric, telephone, cable TV, gas, water, sanitary and storm sewers. Only above-ground visible features are shown. Other utilities may exist of which [surveyor] has no knowledge." 

Reprinted from Empire State Surveyor, May 2004



**Finally,
a scanner that thinks like a surveyor.**

Perhaps you've thought about 3D laser scanning and the substantial market opportunity it can unlock for your business. Consider the new Trimble® GX™ 3D Scanner. Created with surveyors in mind, this scanner can easily integrate scanning technology into everyday business. The Trimble GX is easy to learn, easy to use, highly portable with various power supply options, and offers our highest levels of interoperability. It's a no-brainer.

SURVEY WORKFLOW

Hardware and software designed by surveyors for surveyors.

VERSATILITY

Portable and flexible to help you adapt scanning into a wide range of applications.

THE RIGHT CONNECTIONS

Trimble's 3D scanning solution is part of Trimble's Connected Survey Site model that creates powerful synergies between the Trimble GX and other Trimble systems and services.



 **Trimble**[®]

www.trimble.com

©2005, Trimble Navigation Limited. All rights reserved. Trimble and the Globe & Triangle logo are trademarks of Trimble Navigation Limited registered in the United States Patent and Trademark Office. SUR-081

**FOR MORE
INFORMATION CALL YOUR
TRIMBLE DEALER**

Seiler Instruments
St. Louis, MO
314-968-2282

Seiler Instruments
Belton, MO
816-331-3383

Measurements Don't Mean Much

by John A. Hogan, LS

An odd saying coming from a land surveyor one might think. The land surveyor is trained and educated in measurements and mathematics. He or she will obtain formal education in the realms of geometry, trigonometry, calculus, and statistics in order to have the background needed to conduct precise measurements and to analyze the results. The land surveyor will also invest tens of thousands if not hundreds of thousands of dollars in high tech gadgetry such as electronic distance meters and global positioning devices which, when used properly can measure miles within inches of truth. An odd saying indeed, and in truth measurements do mean a great deal when speaking of descriptions of land, but measurements are not nearly as important as the average person may think in respect to determining legal boundaries.

To understand this concept one must first understand the way legal descriptions are written. A legal description is more or less a guide to assist in understanding what one individual intends to convey to another individual. Within the average legal description there are "calls" which define the boundaries of the lands to be conveyed. Calls describe a path or route one should be able to follow to find the boundaries of that parcel. The calls may contain distances, bearings, and terminal or ending points. An example may be: *400 feet (distance) North 5 degrees (bearing) to a Concrete Monument (terminal or ending point)*.

The distance tells how far one should travel to find the monument, the bearing tells what direction one should travel in to find the monument, and the word "concrete" describes what kind of monument one is seeking. The most important part of this call or of any description is the terminal or ending call for a particular type of monument. Recorded distances and bearings are subject to mistake. Mistakes can happen from lack of care of surveyors or landowners measuring and recording data between monuments. Types of equipment used, type errors, and plain carelessness can lead to mistaken distances and bearings being recorded. This is why having physical boundary monuments in place, called for, and maintained is extremely important when conveying or owning land. It is well settled in the Courts that regardless of mistakes in written distance between known physical and called for objects, those objects are to hold as the land boundary when proved. Below are but a few cites which lead to this conclusion:

From the dictations of Chief Justice Lumpkin: Riley v. Griffin 16 Ga. 141 (1854)

Rule 5. Consequently, if marked trees and marked corners be found, distances must be lengthened or shortened, and courses varied, so as to conform to these objects.

Rule 7. Whenever a natural boundary is called for in a grant or deed, the line is to determine at it, however wide of the course called for it may be, or however short, or beyond the distance specified.

Rule 11. And thus, it will be seen that courses and distances occupy the lowest grade, instead of the highest, in the scale of evidence, as to the identity of land.

Rule 16. Courses and distances are mere pointers and guides only.

The above are a few of the more prominent rules dictated by Chief Justice Lumpkin the 1854 case of *Riley v. Griffin*, these rules have been well codified into law within the State of Georgia. This case is heralded as the "granddaddy" of boundary case law in this State to this day. Within this text one can find the true reason as to the importance of seeking clearly defined/well written legal descriptions and well marked/maintained boundaries. 

John Hogan is a practicing professional land surveyor and the elected County surveyor of Berrien County, Georgia.

Reprinted from "The Georgia Land Surveyor"

Survey Crew Expenses in 1822

How much did it cost to provide for a five-man GLO survey crew in 1822? This list was found in Missouri Field Notes Volume 81 page 265. The survey was the subdivision of Township 34 North Range 10 West, Phelps County by William Ashley, Deputy Surveyor.

2 bushels meal (cornmeal)	\$	1.50
1 bushel meal		0.75
1 bushel meal		0.75
3 pounds salt		0.18 3/4
2 bushels meal		1.50
3 pounds salt		0.18 3/4
1 1/2 bushels meal		1.12 1/2
2 pounds salt		0.12 1/2
shoeing horses		4.50
2 bushels corn (for horses)		1.00
78 pounds pork		2.34
3 bushels corn		1.50
2 green buckskins		1.00
TOTAL		\$ 16.46 1/2

It would appear the survey crews lived primarily on cornbread and salted pork. The large amount of salt was most likely used to cure deer meat or preserve the pork. The corn supplemented the diet of grass for the horses, as grass was limited during the winter. The most expensive item was getting the horses shod. The green buckskins (not tanned) could have been used for making bags or perhaps used for the tent.

Submitted by J. Michael Flowers, PLS

Autodesk® 2006

ST. LOUIS

CHICAGO

KANSAS CITY

INDIANAPOLIS

MILWAUKEE

OMAHA



From idea to design, Autodesk's line of CAD software enable you to increase productivity, efficiency and flexibility.

Autodesk®
Authorized Value Added Reseller

Seiler Instrument can help.

**SALES CONSULTATION
CUSTOM TRAINING
TECHNICAL SUPPORT**

www.seilerinst.com

 **SEILER**
SURVEY - CONSTRUCTION
MAPPING - CAD

ST. LOUIS
Pat Stack

(800) 489-2282 x367 • E-mail: pstack@seilerinst.com

KANSAS CITY
Lisa Martin

(800) 489-3383 x13 • E-mail: lmartin@seilerinst.com

Stephanie Murrell
(800) 489-3383 x20 • E-mail: smurrell@seilerinst.com

2006 MSPS Corporate Members (as of 3/2/06)

ABNA Engineering, Inc., St. Louis
Adventures with Professional Technologies L.L.C., Fulton
Affinis Corp, Overland Park
AGC Engineers, Liberty
Allenbrand-Drews & Assoc., Inc., Olathe
Amsinger Surveying, Inc., Marshfield
Anderson Engineering, Inc., Springfield
Anderson Survey Company, Lee's Summit
Aylett, Flowers Survey & Engineering Company, Gladstone
Bader Land Surveying, Inc., Ste. Genevieve
Bartlett & West Engineers, Inc., St. Joseph
Barton Engineering Co., Inc., Lebanon
Benton & Associates, Inc., Jacksonville
Bowen Engineering & Surveying, Inc., Cape Girardeau
Buescher Frankenberg Associates, Inc., Washington
Burdine & Associates, Inc., Arnold
C.M. Archer Group, PC, St. James
Campbell Barber Lambeth & Assoc. PA, Merriam
Cardinal Surveying & Mapping, Inc., St. Charles
Cochran, Wentzville
Cochran Engineering & Surveying, Union
Cole & Associates, Inc., St. Louis
Doering Engineering, Inc., St. Louis
Elgin Surveying & Engineering, Inc., Rolla
Frontenac Engineering Group, Inc., St. Louis
George Butler Associates, Inc., Lenexa
Global Link Land Surveying & Engineering, Inc., Springfield
Govero Land Services, Inc., Imperial
Great River Engineering of Springfield, Inc., Springfield
Harms, Inc., Eldon

J. R. Grimes Consulting Engineers, Inc., St. Louis
John R.M. Nelson, Inc., Bolivar
Koehler Engineering & Land Surveying, Inc., Cape Girardeau
Logan & Associates, Inc., Pleasant Valley
Mathews & Associates, Inc., Springfield
Midland Surveying, Inc., Maryville
Migar Enterprises, Inc., Grandview
Pickett, Ray & Silver, Inc, St. Peters
Poepping, Stone, Bach, & Associates, Inc., Quincy
Riggs & Associates, Inc., West Plains
Robert S. Shotts, Inc., Lebanon
Ruble Surveying, Co., Salem
Schlagel & Associates, PA, Lenexa
Schmitz, King & Associates, Inc., Olathe
Shafer, Kline & Warren, Inc., Kansas City
Shaffer & Hines, Inc., Nixa
Sherrill Associates, Coffeen
Site Development Engineering Inc., St. Louis
Smith & Co., Inc., Poplar Bluff
Sprenkle & Associates Inc., Monett
St. Charles Engineering & Surveying, Inc., St. Charles
Taliaferro & Browne, Inc., Kansas City
The Sterling Company, St. Louis
Tri-State Engineering, Inc., Joplin
West Wildwood Surveying, LLC, Ellisville
White Land Surveying, LLC, Republic
Whitehead Consultants Inc., Clinton
Zahner & Associates, Inc., Perryville
Zambrana Engineering, Inc., St. Louis
Zavradinos Professional Services, Inc., Chesterfield

ALLEN PRECISION EQUIPMENT



Wireless GPS Systems With Glonass

- Complete RTK GPS system that hasn't the mess of complicated, tangled cables
- Super fast, cable-free base station setup – tripod, tribrach, HiPer Lite – you are done!



HiPer Lite Plus
Systems Starting
As Low As
\$569.00 per month
glonass capable!

800.241.6223 • www.allenprecision.com

"Oath of the Chainman"

GLO Field Notes Volume 22, page 95 for T41N R6E "1837"
Deputy Surveyor William Bartlett

"Each of you do solemnly swear in the presence of Almighty God that you will faithfully and impartially execute and fulfill the duties of chainman. That you will level the chain and plumb the pins so as to obtain the true horizontal distance and that you will make a true report of the length of all lines. You shall assist in measuring to the best of your abilities, so help you God."

Sworn to the Subscriber at this 21st April, 1837
William Bartlett – Deputy Surveyor
Jonathan Strictland X (his mark)
Ethan Bischard X (his mark)

Township 41 North Range 6 East is a fractional township located on the eastern side of Jefferson County on the Mississippi River near Herculaneum. An oath was required for all members of the survey crew.

Do you think we could get our field crews to adhere to their duties today by a sworn oath?

Submitted by J. Michael Flowers, PLS

Please Patronize Our Supporters

ANDERSON
SURVEY COMPANY

203 Northwest Executive Way
P.O. Box 673
Lee's Summit, Missouri 64063
Phone: 816-246-5050

LOGAN & ASSOCIATES
Professional Engineers & Professional Land Surveyors

BOB W. STEVENS, PLS

300 N. CHURCH ROAD • SUITE 100 • LIBERTY, MO 64068
(816) 781-7626 • FAX (816) 781-7483 • loganpe@swbell.net
PROFESSIONAL CIVIL ENGINEERS/LAND SURVEYORS
SUBDIVISIONS FOR RESIDENTIAL/COMMERCIAL/INDUSTRIAL


Engineering • Surveying

CENTRAL MISSOURI PROFESSIONAL SERVICES, INC.
2500 East McCarty Street
Jefferson City, Missouri 65101
(573) 634-3455
FAX (573) 634-8898

ANDERSON
ENGINEERING, INC.
EMPLOYEE OWNED

Michael D. Gray, P.L.S.
Vice President / Surveying Dept. Manager
2045 W. WOODLAND, SPRINGFIELD, MO 65807
PHONE: 417.866.2741 FAX: 417.866.2778
CELL: 417.830.0598 E-MAIL: mgray@aslnmo.com
www.aslnmo.com


SHAFER, KLINE & WARREN, INC.
Kansas City, MO 681-756-0444
Macon, MO 660-385-6441
Chillicothe, MO 660-646-9788
Offices in Missouri & Kansas

- ALTA/ACSM Land Title Survey
- Preliminary & Final Plats
- Ownership & Easement Maps
- Development Plans
- Complete Architectural Survey
- Corners & Improvements
- Corners & Property Line Encroachments

Surveyors Materials, Inc.
8875 Frost Avenue
St. Louis, MO 63134
Voice: 314-521-9041
Fax: 314-521-9043
Edward Owen
Vice President


KUCERA INTERNATIONAL INC.
PHOTOGRAMMETRISTS • GEOMATIC PROFESSIONALS • ENGINEERS

Kucera Midwest
113 Birchwood Drive
Ballwin, MO 63011
(636) 527-6206
Fax (636) 527-6209
Cell (636) 448-5813
k.swisher@kucerainternational.com
www.kucerainternational.com

Kim Swisher
Technical/Sales Representative


Missouri Society of Professional Surveyors

John Alan Holleck
Newsletter Editor
8510 E. 59th St. • Kansas City, MO 64129
Phone / Fax: 816-353-1782
Email: editor@missourisurveyor.org
Web Site: www.missourisurveyor.org

PLACE YOUR AD HERE FOR \$50.00

PLACE YOUR AD HERE FOR \$50.00


MISSOURI REGISTERED ARCHITECTS
ENGINEERS
LAND SURVEYORS
HARMS, INC.
p.o. box 52 eldon, mo 65026
ph (573) 392-3312 fax (573) 392-6943
email harmse@aurie.net


ELGIN SURVEYING & ENGINEERING, INC.
www.elginsurvey.com
Richard L. Elgin, Ph.D., PE, FLS
richard.elgin@elginsurvey.com
(573) 364-6362
MO 573-364-6362
319 First St. Street
Rolla, MO 65076-3747


Missouri Society of Professional Surveyors

Sandra C. Boeckman
Executive Director
722 E. Capitol Ave. • PO Box 1342 • Jefferson City, MO 65102
Phone: 573-635-9446 • Fax: 573-635-7823
Email: msps@missourisurveyor.org
Web Site: www.missourisurveyor.org


Martin & Whitacre Surveyors & Engineers, Inc.
Gary W. Whitacre, L.S.
3D Laser Scanning
1508 Bidwell Road
P.O. Box 413
Muscatine, IA 52761
e-mail: gwhitacre@martin-whitacre.com

Office: 563/263-7691
Fax: 563/263-0048
Mobile: 573/299-4144


rotolite of st. louis, inc.

Engineering Systems Authorized Reseller
Inkjet Plotters
ANDY J. CANZIANI
DIRECTOR OF SALES
5301 Hampton Avenue • St. Louis, MO 63109
(314) 832-2091
Fax: (314) 832-9423
e-mail: andy.j.canziani@rotolite-stl.com



**Missouri Society of
Professional Surveyors**
P.O. Box 1342
Jefferson City, Missouri 65102

PRSRT STD
US Postage PAID
Permit No. 364
Jefferson City, MO 65101