California Surveyor

Fall 2010

Issue #163

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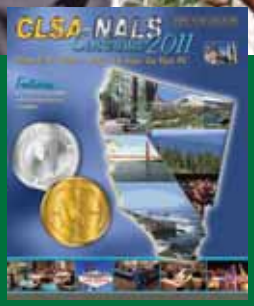

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California Surveyor

The quarterly publication of the California Land Surveyors Association, Inc. and is published as a service to the land surveying profession of California. It is mailed to all Licensed Land Surveyors in the State of California as well as to all members of the California Land Surveyors Association, Inc. The California Surveyor is an open forum for all Surveyors, with an editorial policy predicated on the preamble to the Articles of Incorporation of the California Land Surveyors Association, Inc. and its stated aims and objectives, which read:

"Recognizing that the true merit of a profession is determined by the value of its services to society, the California Land Surveyors Association does hereby dedicate itself to the promotion and protection of the profession of land surveying as a social and economic influence vital to the welfare of society, community, and state."

"The purpose of this organization is to promote the common good and welfare of its members in their activities in the profession of land surveying, to promote and maintain the highest possible standards of professional ethics and practices, to promote professional uniformity, to promote public faith and dependence in Land Surveyors and their work."

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DEADLINE DATES

Spring	February 10	Summer	May 10
Fall	August 10	Winter	November 10

Articles, reports, letters, etc., received after the above mentioned date will be considered for the next edition.

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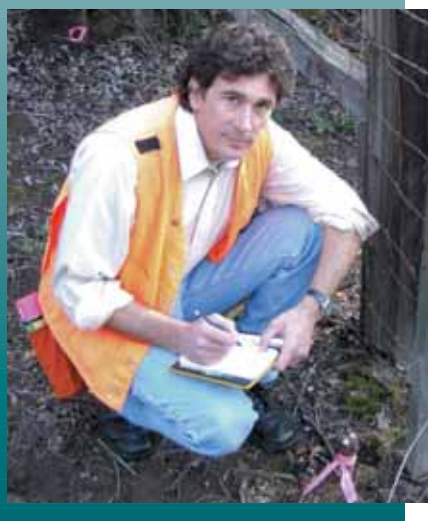
On The Cover:

John Knox, PLS returns to Yosemite Forest Dynamics Plot.
Photograph by Patrick Busby.



By: John P. Wilusz, PLS, PE - Editor

John Wilusz, PLS, PE, works in the Delta Levees Program at the California Department of Water Resources in Sacramento, CA.

From the Editor

This issue's editorial was supposed to be about the National Museum of Surveying. I was scheduled to visit the museum in Springfield, Illinois in September and was looking forward to reporting on my trip in the magazine. But things changed abruptly at the last minute. The day before my flight, on a Thursday afternoon, our house was burglarized. Among other things the thief stole my total station, a Topcon GPT 2003. That turned out to be the key that cracked the case.

I called the Citrus Heights Police Department (CHPD) as soon as I arrived home from work and realized what had happened. There would be no packing for a trip to Illinois that night. The CHPD said they would send an officer to the house. While waiting for the police I called both Scott Martin, PLS, and Rob McMillan, PLS, with the news. I gave each identifying information on the instrument and asked them to spread the word through the surveying community. If the thief tried to sell my equipment to another surveyor I might be able to recover it.

"Surveyor's Laser" on Craigslist

By the time the officer arrived my wife was home from work. We told him what we knew about the incident and gave him a list of the things that were missing. Before he left the officer told us to keep an eye on eBay and Craigslist because stolen goods often show up there. Unfortunately my computer's monitor and my wife's laptop were among the missing goods. We were unable to follow through with his suggestion, so I called Scott again and asked for his help.

Scott spotted my total station on craigslist the next morning. It was listed as a surveyor's laser. He gave me the information, I passed it along to the CHPD, and they dispatched another officer to the house that afternoon. After the officer arrived he and I searched for the listing on his laptop and, sure enough, we found the surveyor's laser with an asking price of $1,500. "It's a steal," wrote the seller.

The Sting

On Saturday morning Sergeant Dave Moranz of the CHPD called the house. He told me he called the seller's phone number posing as a buyer and he wanted to know where to find the serial number on my instrument. I emailed him a picture. He also asked if the equipment had any unique identifying marks. I had to think about that. If you've seen one GPT 2003 you've seen them all, and I never engraved or otherwise deliberately marked the instrument. Then I remembered something. There is a small scratch on the objective lens of the telescope. It's not obvious but if you look for it it's there.

A few hours later Sergeant Moranz called again. He was at the thief's house and he asked us to come reclaim what was left of our stolen property. When we arrived he brought a number of items out from the house and asked if they were ours. Some were, some weren't. Then he brought out the familiar yellow plastic case that holds my Topcon total station. He put the case on the trunk of a police car and opened it. The serial number had been removed. I picked up the instrument and we examined it together. I turned the instrument so the sergeant and I could both see the telescope. There was a small scratch on the objective lens.

Thanks to the CHPD and Scott Martin, PLS

My wife and I are grateful for the fine service of the Citrus Heights Police Department, and Sergeant David Moranz in particular. In fact all of the officers we met through this ordeal were responsive, professional, and courteous. We are also thankful for my friend and fellow land surveyor, "Detective" Scott Martin. It's interesting that the thief almost certainly would not have been caught if he hadn't taken the total station. There was nothing else that was so easy to identify and so hard to sell. ■

Letters to the Editor

Record of Survey Map Check Fees

Record of survey (RS) fees in some areas of California are exorbitant.San Bernardino County just raised its RS fee to $500 for one sheet and $100 for every additional sheet. Final map consultation is $150 and they are charging for non-public agency research, with a minimum fee of $55 for 30 minutes. Very few licensed surveyors are billing out at $110/hour these days.

Just what are they doing for hundreds, and in Napa County, thousands of dollars? This is a record of survey we're talking about. No lots are being created. The surveyor is simply following deed and/or record map data and showing his findings. The County Surveyors have no liability, so why are they even doing more than making sure the surveyor's signature block is correct?

The surveyor cannot record his map elsewhere and the law states most clearly when a record of survey is required. Each government agency sets its own rates. Even with public hearings they often ignore its citizens and if you are outside the voting district they have no use for your opinion even though their decisions affect you. Simply put it is government enforced extortion.

Maybe someday government will realize that raising fees during economic lows only hurts economic growth.

W. Tom Foster
PLS 4978

A Student Member's First Board of Directors Meeting

Arriving at my first CLSA Board of Directors meeting (31 July 2010) I didn't know what to expect, but everyone was welcoming and made me feel right at home, answering any questions that I had. It was impressive to see all the CLSA chapters represented in one room discussing matters that affect professional practice in California. Everything went smoothly considering the agenda was the size of a small phone book. The one thing that stood out the most for me was the passion each member had in voicing opinions on issues of statewide and national significance. It opened my eyes to the importance of being involved in an organization like CLSA. It was very educational to see what goes on behind the scenes and I am impressed that this group of dedicated people would spend a Saturday, especially one as beautiful as it was, for the benefit of the profession. For me this reinforces the fact that this is the profession, and these are the people, I want to be involved with.

Richard Aviles
Education Committee Student Member

Postcards

CSU Fresno - New Library

CLSA member and newly enrolled CSU Fresno student Tiffany Tatum, expresses her appretiation of CLSA.

Founders Plaza at Balboa Park, San Diego.
Submitted by Anne Hoppe, PLS.

By: Aaron R. Smith, PLS - President

President's Message

At the time of preparing this message it is the end of August, the hot summer days are here, we are preparing for the fall months and daylight savings. As I look back at some of the things we have been able to accomplish, I am quite impressed. The CLSA Board of Directors, Committees and Central Office have been hard at work. I would like to take this opportunity to highlight some of this year's accomplishments.

CLSA has become more active in the GIS community. The GIS Committee, chaired by Annette Lockhart, developed a brochure discussing the relationship between GIS and Land Surveyors. This brochure will serve to educate GIS professionals on the important knowledge, skills and experience that land surveyors bring to the process of accurately creating and maintaining critical base layers common to many geographic information systems. CLSA was represented with a booth at the CalGIS Conference and at the ESRI Survey Summit. In addition, CLSA hosted a panel discussion developed by the GIS Committee, at the ESRI Survey Summit. Special thanks to Annette Lockhart, Keri Rynerason-Garrity, Jerry Miller and Jimmy Elmore for participating on the panel discussion. I would like to applaud the GIS Committee for accomplishing so much in such a short time.

The CLSA Professional Practices Committee (PPC), chaired by Robert Reese, is hard at work developing two monument conservation brochures. One brochure providing information for the "awareness group" and another providing information for the "duty group." The awareness group brochure targets those that should be aware of the laws and regulations for preserving both horizontal and vertical control monuments. This brochure outlines the benefits of preserving these monuments, and the cost one could incur if the monuments become lost and have to be reestablished, not to mention the accuracy on which that monument may, or may not, be replaced in the same location as it once existed. The duty group brochure will be geared towards those professionals, companies, agencies, and reviewing bodies to ensure that those monuments that will be impacted by your project will not be lost, and if so, then perpetuate those monuments. This will help protect the interest of the public and land boundaries if utilized. This brochure will be of great benefit for those who want to open communications with the agencies reviewing these development plans that have the potential for destroying monuments. These brochures are near completion, so keep an eye on the CLSA website for their release.

The CLSA Legislative Committee continues to be one of CLSA's hardest working committees. The Legislative Committee meets quarterly to review legislative issues that affect the land surveying profession. The Committee has recently been asked to provide information regarding the position of County Surveyor, the laws in which they are elected or appointed, the codes under which they operate and the reporting relationship between the County Surveyor and the Board of Supervisors. At the July CLSA Board of Directors meeting, a lively discussion ensued on this very topic. We have approached a time when pre-82' engineers that held the position of Public Works Director or County Surveyor are retiring, and their replacements need to meet the criteria outlined within the laws surrounding these positions. This topic will continue and, I suspect, will not go away anytime soon. It is at this time we can be most beneficial and assist our local agencies in specific laws with regards to the County Surveyor position.

Our Safety Tailgate Committee, chaired by Rolland VanDeValk, recently completed the CLSA Safety Tailgate Meeting Guide, and it is quite impressive. The guide has over 75 different meetings, as well as information on OSHA regulations. The guide also provides record keeping sheets. This guide is well done in both its presentation and functionality. The CLSA Safety Tailgate Meeting Guide is available complimentary to CLSA members and can be downloaded from the CLSA Members Only Website. A printed version of the guide may be ordered through the CLSA Store.

CLSA is participating in this year's NSPS Lobby Day. There are 55 legislators in California and CLSA Chapters are hard at work making appointments and meeting with their respective legislators. In an effort to assist volunteers, CLSA Central Office has developed a Lobby Day Guidebook which includes sample letters and tips on successful meetings. We feel confident that we will make an impact on Washington. CLSA was blessed with the presence of Carl CdeBaca, Area 9 Director for NSPS, at the July Board of Directors meeting. Carl and CLSA NSPS Governor, Matt Vernon, presented information regarding the potential NSPS withdrawal from ACSM. Without more information available from NSPS regarding the impact, both fiscally and in regard to membership, CLSA was not able to take a position. Anticipating the report from the NSPS Strategic Planning Committee being released in September, CLSA has added this item to the agenda for the November Board of Directors meeting. Special thanks to Carl CdeBaca for attending the CLSA Board of Directors meeting.

I would like to congratulate Rolland Van De Valk for his election as the incoming 2011 CLSA Treasurer. Rolland is from the Bakersfield Chapter and he will be a fantastic addition to the CLSA team.

I would also like to thank Bill Hofferber, President-Elect, for his commitment and travels he has made this year. Bill has been tireless in his effort to visit every CLSA Chapter, and CLSA is grateful for his dedication.

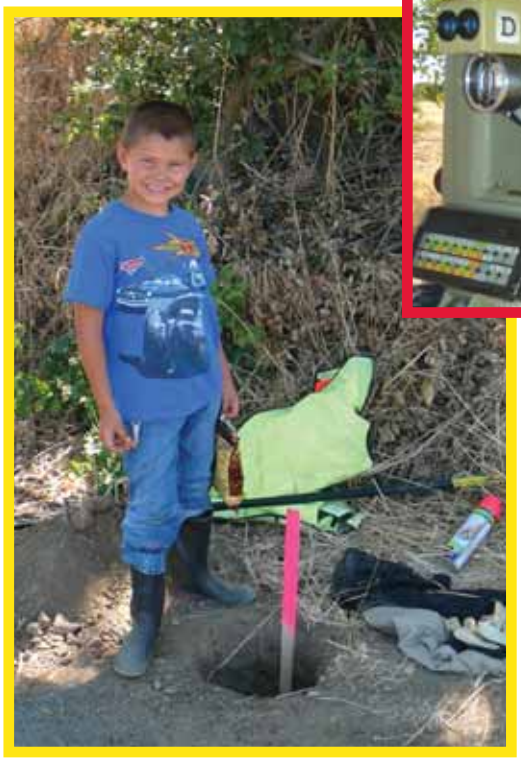
Finally, I would like to give special recognition to one of CLSA's hardest working volunteers. John Wilusz, Editor of the California Surveyor, continues to publish a top notch magazine. The California Surveyor received national recognition with our 3rd straight win of the NSPS Excellence in Journalism award. Thank you John for all that you do to make CLSA and the land surveying profession look so great!

As I close out with this message, I must say CLSA has a great number of people with incredible talents. As I watch each of the committees working hard to advance our great profession and bring awareness to the general public on what it is we do, I am proud to have this great opportunity to work with each of you. Aside from the committees I mentioned already, we have many more committees, liaisons, and coordinators doing a great job.

Thank you to each and every one of you who have made time in your schedules to help CLSA become what it is today. I look forward to a fantastic completion to our 2010 year. ■

Kids Korner

Do you have a picture of a "junior surveyor" in your family that you would like to share? Send it in and we will put it in the Kids Korner.



(LEFT) Nick Labedzki and his daughters Czesa and Elvie help measure the Sacramento calibrated base line in August 2010.

(LEFT) Most dads take their kids to the ball game on Saturday, but not Aaron Smith, PLS. Aaron's son Trevor has accompanied his father on many weekend journeys scouting boundaries and digging up monuments. In this picture, taken in 2007, Trevor is taking a well-deserved break after recovering a monument called for in an 1889 deed.

(RIGHT) Here we have PLS 7393 (Uncle Keith Nofield) teaching his 8-year-old nephew, Tyler Hawes, how to hold a short staff plumb before collecting data for a topographic survey in Scotts Valley, CA.

By: John Knox, PLS and James A. Lutz, Ph.D.

***John Knox** has been a practicing land surveyor since 1980. He earned his California PLS in 1990 and is currently working for the State of California in Orange County.*

***Jim Lutz** is a Research Associate in the College of the Environment at the University of Washington. He studies decadal to centennial forest change, with special interest in old-growth forests and the changing rates and patterns of tree mortality.*

Return to the Yosemite Forest Dynamics Plot

July 2010 marked the return of the scientists to the Yosemite Forest Dynamics Plot (YFDP), and along with them, the Land Surveyors. In case you missed the article in the Summer 2009 edition of California Surveyor (Issue #159), following is a brief summary of the project and the work we did last season.

Established in 2009 as one of the world's 40 Smithsonian-affiliated forest dynamics plots, the YFDP was carved out of a portion of the Rockefeller Grove near the western boundary of Yosemite National Park for the purpose of mapping and tagging all woody stems greater than 1 cm in diameter. Researchers, led by James A. Lutz, Ph.D., from the University of Washington (UW), will be studying the life and death of these trees and their shrub-like cousins for decades to come. The surveyors' role in all of this was to establish a 20-meter grid covering 25 hectares; sounds easy, right? Well, maybe not so easy - follow me here. Access is via an old logging road whose terminus is roughly the middle of the westerly line of the plot. From there, we worked steadily downhill and farther away from the road every day.

The routine was to run random traverses from west to east, zigzagging through dense forest, while staking out and setting the grid corners. All without the benefit of a machete – all interfering tree limbs and brush had to be tied down or held off line (glad we brought those UW students with us!). After nine hours or so of scrambling through the forest, egress was back through our original

footsteps, carrying out everything we carried in, with the exception of our lunches and the stainless steel pins that served as grid point monumentation. Once the east line was reached, respective crews turned north and south to tie into each other's control. By the end of the week, we had

Continued on next page

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surveyed roughly two-thirds of the desired 25 hectares. We were all a bit disappointed that we didn't complete our task; task mastering is after all what we're paid to do. However, as volunteer surveyors our production was good; a small army of thirty or so researchers had mapped and tagged a mere 10 hectares. Many of us knew then that we would return to complete the work the following year.


3

Surveyors Return to the YFDP

So there we stood, July 2010, three volunteer survey crews, knowing full well what lay ahead of us; this year we would complete the grid. Originally square in shape, the plot was modified to rectangular by Dr. Lutz to capture more diversity, eliminating some areas disturbed by the 1930s logging in the northernmost tiers, and extending the plot farther to the east (and did I mention, farther down hill?). Berk Blake, PLS, who once again served as the project coordinator, provided the ASCII files with coordinates of the proposed grid corners and last year's control scheme. Blake and his party chief Jon Bratt, along with two willing students from UW, began a control traverse at the roadway terminus on the project base line, winding back down the access road and circling around to the new southeast corner of the plot. At this point they turned north and tied into control set by the other two crews run by Marta Alvarez, PE, PLS, and John Knox, PLS. Alvarez and Knox, assisted by Margaret Martinez and Patrick Busby, PLS, and another four willing UW students began their traverses on last year's control at the old east line and proceeded on parallel paths toward the new east line.


4

Once the east line was reached and all possible grid points were set, the crews turned north and began parallel traverses back to the west. At the end of four days, all of the pins were in the ground and there was much rejoicing. As he did last year, Blake will be reprocessing all the raw data and delivering the resultant coordinates for all set monuments. Now one year wiser, Dr. Lutz assembled an even larger army of researchers, roughly forty strong, consisting of fellow professors, fellow forest professionals, grad students, returning students (yes, one year of punishment wasn't enough for some of them), and new student volunteers. They located the trees within each grid square using a basic station/offset method using laser rangefinders, holding our final reprocessed coordinate values for each corner monument (remember the way we used to do topographic mapping – measuring down and out from the curb lines?). And yes, this year they too completed their task, and also did much rejoicing. In all, 35,000 trees were tagged!

Prescribed Burn Nearby

All went off without a hitch, unless you consider being in the forest while the Park Service was conducting a prescribed burn just over the hill from where you are working to be a hitch. The long planned burn had the goal of reducing fuel accumulation from the years of fire suppression since the land was deeded to Yosemite National Park. The burn was conducted on the last day of the surveying, so we needed to establish different ingress and egress routes, along with an evacuation plan. We were promised a thirty-minute warning should evacuation become necessary; we were told that the fire crews could hold just about any line for thirty minutes. OK then, as we walked in that day on our new access route, I could only picture my thirty-minute emergency escape plan. The scramble back uphill to the edge of the plot culminated with a half-mile sprint straight up a literal 2:1 slope (who chose this route?) following the fire hoses to the helipad at the peak. All to be done at the end of the day. Carrying all the gear. Busby and I joked that we'd let the students carry us out like British royalty on freshly hewn pine boughs. In the end, the Park Service controlled the burn, and we had just one more anecdote for the campfire. In summary, this year was not unlike last year. Hard work, surrounded by stunning forest, accompanied by fantastic students and faculty, excellent camp chow, refreshing campfire conversations, bathing in icy snow-melt streams; the stuff of lasting memories. But there will be no next year – we worked ourselves out of a job. Unless of course the researchers want another Big Plot somewhere… ■

Continued on next page

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1) *Craig Smith sets out a grid corner. Photograph by Margaret Martinez.*

2) *John Knox sights line while students hold branches out of the way. Photograph by Patrick Busby.*

3) *Marta Alvarez instructs student Kimiko LaHaela. Photograph by Margaret Martinez.*

4) *Last break before descending to the plot. Left to right are: Margaret Martinez, Lisa Clark, Marta Alvarez, Warren Childe, Kimiko LaHaela, John Knox, Craig Smith, Andrea Blin, Patrick Busby. Photograph by Marta Alvarez.*

5) *James Lutz supervises as survey crews prepare for the long hike into the plot. Note the fire hose in place for the prescribed burn. Photograph by Scott Batiuk.*

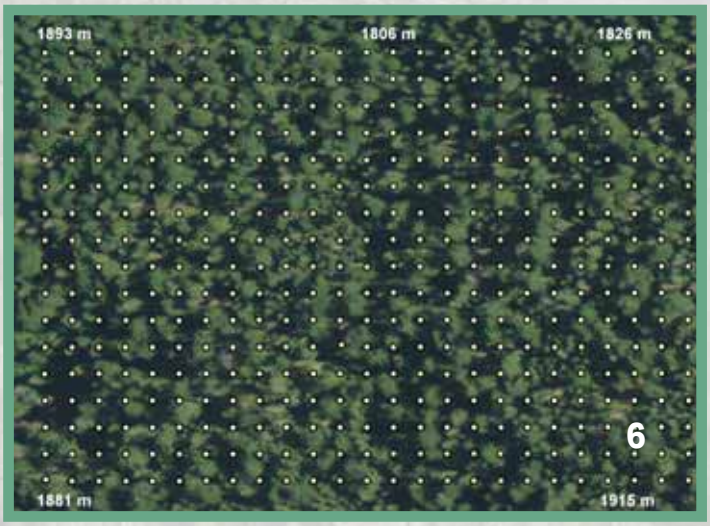
6) *The completed Yosemite Forest Dynamics Plot 20 meter grid with principal elevations shown. The background (2009 National Agriculture Imagery Program (NAIP) orthoquad) allows comparison of the size of the tree canopies with the 20 meter grid. Image by Jim Lutz.*

7) *Left to right are: Patrick Busby, Lisa Clark, John Knox, Tucker Furniss, Andrea Blin, Warren Childe. Photograph by Craig Smith.Ï*

8) *Warren Childe rests and reviews the day's progress. Photograph by Marta Alvarez.*

9) *John Knox*

10) *Lisa Clark*



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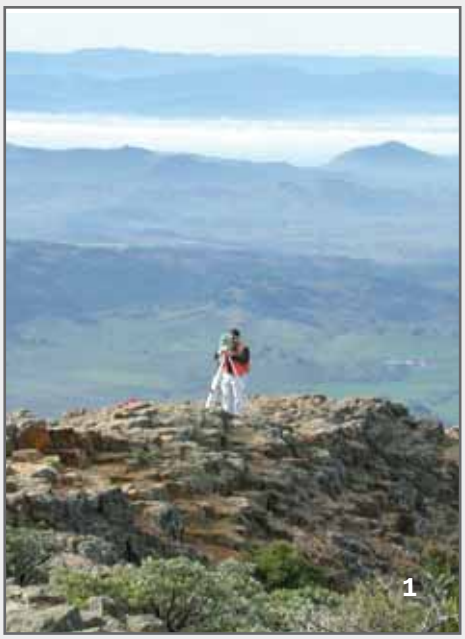
By: Marc R. Van Zuuk, PLS and Dan Gregory, PLS

CAL FIRE Land Surveyors Receive Awards


1

The Lands Unit of the California Department of Forestry and Fire Protection (CAL FIRE) Technical Services Section consists of a staff of six land surveyors. This small group of professionals provides land surveying support for the Department's state-wide capital outlay program. CAL FIRE Technical Services is tasked with replacing and/or relocating the aging 228 fire stations, 39 conservation camps and 112 communication sites, and assists with 575 local government stations operated by CAL FIRE. These facilities are spread throughout the Department's approximately 31 million acres of State Responsibility Area. The team also provides surveying related support to CAL FIRE's Resource Management and California State Fire Marshal programs.

In addition to the primary support for capital outlay projects, the survey team's work includes boundary surveys on the nine state forests, civil design surveys, forensic surveying and evidence mapping in support of the Department's legal counsel, as well as support for the Attorney General's office for work involving CAL FIRE related issues. The work that has generated the most attention for CAL FIRE's Land Surveyors has been the support to the Department's Civil Cost Recovery program. This program is a focused effort on the part of the State to recover the costs of fire suppression when the cause of the fire is determined to be the result of negligent or criminal conduct and the persons responsible can be identified.

The survey team is increasingly called upon to provide forensic surveys when a serious accident has occurred such as a vehicle accident, a burn over, or a line of duty fatality. The purpose of the forensic survey is to assist in determining the exact cause, location, and relief features of an incident. This is for both investigative and preventative purposes. Accurate mapping of the site and layout are critical to the forensic review of the incidents and the factors that contribute to accidents. Once the cause and factors are determined, a review of department procedures and policies is conducted to minimize and hopefully eliminate the possibility of a repeat of the accident.


2

In 2004, staff surveyor Marc Van Zuuk convinced the Civil Cost Recovery program to try out a new kind of surveying tool, LiDAR, for mapping evidence on the two-year-old Poe Fire in Butte County. This technological effort, combined with a thorough investigation, resulted in a $10 million dollar settlement for CAL FIRE. That success led CAL FIRE to purchase a Leica ScanStation 2. In the years since, the LiDAR equipment, as well as more conventional tools, has become increasingly called upon for mapping of evidence at fire points of origin and for serious accident investigations.

These efforts on the part of CAL FIRE's Surveyors have not gone unnoticed by CAL FIRE's executive branch and legal counsel. Each year the Director of CAL FIRE recognizes work performed beyond the scope of the employee's normal job requirements, and in June of this year CAL FIRE Director Del Walters presented awards to the CAL FIRE Surveyors for their contributions in two specific investigations.

The first investigation was the Witch Fire that started on the evening of October 21, 2007. The fire was contained on November 6 after burning nearly 200,000 acres in the area of Witch Creek, east of Ramona in San Diego County. The fire investigators were able to identify high voltage power lines as the cause of the fire. The following year, the Surveyors were called into action by CAL FIRE Chief Counsel Giny Chandler, to provide an independent check of data being gathered by Surveyors representing the power company involved in the litigation. The complexity of this work was evidenced by the 43 plaintiff's and defendant's attorneys that were on site while this work was being performed. The data gathered was used for numerous exhibits by CAL FIRE's legal staff to support the Civil Cost Recovery program.

For the work on the Witch Fire investigation, CAL FIRE surveyors were nominated by Ms. Chandler for the 2009 CAL FIRE Directors Innovation Award. This honor recognizes CAL FIRE employees whose superior performance demonstrates unique creativity,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inventiveness, and innovation in the resolution of problems; and whose accomplishments demonstrate the ability to achieve objectives despite budgetary or other constraints. Those receiving this award were surveyors Jeff Gawronski, Dan Gregory, Jason Gasser, and Marc Van Zuuk.


4

The second investigation was for the Camp 16 Burnover and Fatal Vehicle Accident, which was part of the larger Station Fire that started on August 26, 2009, approximately 1.5 miles north of the United States Forest Service's Angeles Crest Station in Los Angeles County. This was a large and very fast moving fire, burning nearly 161,000 acres before containment on October 16. The incident itself occurred under the jurisdiction of the U.S. Forest Service and grew to include Los Angeles County Fire Department. CAL FIRE became involved at the request of LA County Fire due to the loss of two of the county's veteran fire fighters, Captain Ted Hall and Fire Fighter Specialist Arnie Quinones. The LA County Sheriff and U.S. Forest Service investigators determined that the fire was the result of arson, making the deaths of the two firefighters a homicide.

The loss of life occurred near Camp 16 where nearly 70 employees and inmates sheltered in place as the fast moving fire burned over the entire camp. A serious-accident review team was assembled by CAL FIRE with Chief John Ellis as the team leader. Chief Ellis called in the Surveys Unit for detailed site mapping. LiDAR was used at this site along with static and RTK GPS methods, reflectorless total station and conventional total station. All the CAL FIRE collected data was combined and then supplemented with LiDAR data collected by one of the California Highway Patrol MAIT teams (Multidisciplinary Accident Investigation Team). The blended data set was used to create a number of custom exhibits for the SART team. A report on the Camp 16 burn over has been released to the public and can be viewed at: http://fire.lacounty.gov/top_story_images/Camp16SAIR.pdf

For their work as part of the Station Fire, Camp 16 Serious Accident Review Team (SART), CAL FIRE surveyors were nominated by Chief Ellis for the 2009 CAL FIRE Directors Superior Accomplishment Award. This honor is bestowed to CAL FIRE employees whose superior performance results in an exceptional contribution to the department and whose achievements clearly and unquestionably are above their normal job requirements. Those receiving this award were Jeff Gawronski, Dan Gregory, and Dave Karoly.


6


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7

CAL FIRE and the Technical Services Survey Team continue to work with other programs within the department to provide a wide range of services. Working in a public safety agency provides many opportunities for the skilled and committed Land Surveyors that benefit the citizens of the State of California in more ways than one.

The surveying group is led and managed by CAL FIRE's Real Property Manager/ Supervising Land Surveyor, Jerold Peterson PLS 6838. Under Jerold is the Department's Surveys Unit led by Senior Land Surveyor Marc R. Van Zuuk PLS 6230, and includes, Party Chiefs Jeffery Gawronski PLS 7733 and David Karoly PLS 7849 and Land Surveyors Dan Gregory PLS 8454 and Jason Gasser PLS 8536. Dan and Dave are members of the Sacramento Chapter of the California Lands Surveyors Association (CLSA). Marc and Jerold are members of the Gold Country Chapter of CLSA. Marc is a past CLSA State president. ■

All photographs by Marc Van Zuuk, PLS.

1) John Gilmore at an historic triangulation station on the top of Mt. St. Helena.

2) Lieca ScanStation 2 at the Whiskey Fire in Butte County, west of Paskenta. The fire still burning in the distance.

3) At the Witch Fire in San Diego County. From left to right are Dan Gregory and Jeff Gawronski. In the background are three surveyors from San Diego Gas and Electric.

4) Dave Karoly at the site of a helicopter accident in Monterey County.

5) At the Ophir Fire in Butte County, south of Oroville. Jason Gasser is kneeling, Jeff Gawronski is standing.

6) Lieca ScanStation 2 at the Whiskey Fire. Photograph by Jason Gasser.

7) GPS receiver at the Harris Fire, about 4 miles north of Tecate Mexico.

By: Stephen M. Hughey, PLS, Ph.D.

***Steve** is a past president of the Los Angeles Chapter of CLSA and current representative to the Board of CLSA. He has served as Director of Survey with Land Design Consultants since 2003 and as part time lecturer in the survey program at Cal Poly Pomona. Like many other surveyors he is currently seeking full time employment.*

Surveying for Sanitary Sewer Design ***and Surface Deformation Monitoring***

When things get tough, the tough go underground… that is… if they are aware of the amount of infrastructure money that is being spent rehabbing old and building new sanitary sewers. If the Los Angeles Sanitation Districts numbers are any indication of the trend statewide, the linear feet installed with open trench methods will continue to exceed by several times that installed with trenchless technology, but either method means work for surveyors in a time when new subdivision work is "in the tank." This brief article is about how the average California surveyor might position himself to profit from demand for private surveying services generated by Sanitation Districts and their contractors. These services include surveys for projects in design either for new construction or rehab, open trench or trenchless, and for the surface deformation monitoring required for the trenchless approach.

Social and Political considerations. Photograph is courtesy of Trenchless Flowline, Inc

This last item is probably the place to start since it is the one with which most of us have the least experience and for which there is so little information in print. During the last decade of the last millennium and the first of this one, rapid advances in directional boring techniques[i] have catalyzed a shift to trenchless installation for portions of gravity sewer with excessive depths[ii] or major crossings. Contracts for trenchless installation have been awarded even for what would have been shallow trenches with no major crossings. Any number of considerations can make trenchless a more attraction option than the conventional approach.

Trenchless Projects on the Rise

Ten years ago the city of Carmel, Indiana paid for trenchless installation of 98% of the mainline and laterals to service the Glenwood Subdivision, formerly on septic systems. They did this because "…it was important that streets and lawns not be destroyed in order to improve the sewer system."[iii] Just imagine the phone calls, texting, letters and opposition campaign contributions that would have been generated by scenes like that pictured in Figure 1, especially if spread over the entire subdivision. Infrastructure project priorities aren't the only thing this city seems to get right; it was just ranked 14 among 100, "Best Places to Live, Money's List of America's Best Small Cities" (July 2010).

The Los Angeles County Sanitation District (LACSD) did eight trenchless projects over the last two years. Like machine control grading, trenchless methods theoretically require fewer construction stakes than open trench installation, but add an additional requirement: surface deformation monitoring (SDM). SDM is necessary because of the potential for settlement, crack-outs or

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Was it like that before? Photograph is courtesy of Trenchless Flowline, Inc. This is NOT one of their projects.

heaving as is illustrated in Figure 2. The best big-picture reason why monitoring is so important came from Don Avila, LACSD Information Officer, "LACSD was the first special district formed, and its 23 directors are the mayors of the cities it serves. The last thing those mayors want is sink holes, or street pavement cracking or heaving from excessive pressure."

I contacted many contractors for this article and was given some hope of being able to present a few more photographs to illustrate the kind of mishap (or absence thereof) close monitoring is designed to document. One wrote back, "Fortunately we do not have any of the kind of photos you are looking for. Best of luck!" That's his story and he's stickin' to it! I see now it is like getting an email from a stranger asking you to send them a picture of your most embarrassing moment. Ain't gonna happen! The availability of so few photos may be due to the nature of the beast. Robert Carpenter, Editor of Underground Construction Magazine, explains: "We all talk about the good, the bad and the ugly, but if something goes wrong we are looking to fix it, not take pictures."[iv] This was in the context of "crack-outs" or mud creeping out of the pilot hole from excessive pressure.

I was able to cull only two or three accounts of seriously problematic incidents. No one wants to be associated with those, especially in print, even when they happened over a decade ago. One was about a little "speed bump" that developed in an inter-

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section when the pressure got away from the contractor. Another had to do with a "good sized line" tunneled under an interchange in Southern California for which I'll use only its "initials" to keep it all anonymous. Let's just say that the "60-605" interchange is reportedly several inches lower than it was when it was first opened to traffic and leave it at that.

A Market for Good Times and Bad

It is no secret that over the last year or two those who were providing surveying services for development of land in California have not been living in the manner to which they were previously accustomed. When it first slowed down I used to joke that we were parked with signs on the windshields, "WILL SURVEY FOR FOOD!" In February of this year I emailed another surveyor looking for work. I informed him that that I'd been dropped from salary to hourly with so few hours that it no longer made sense to purchase monthly parking at the Pasadena office of the firm for which I have been Director of Survey the past seven years. He wrote back, "We can meet at my house for top ramen and popcorn, macaroni and cheese has gotten too expensive." It wasn't that long ago that he had some 35 employees. I'm sure he was kidding about the top ramen, but I wasn't kidding about the parking. Like a few other surveyors in my periphery he reports today that the situation has improved slightly and that now he is at least getting by.

A few surveyors report that they are still employed full-time and go to work every day just as they did before this thing hit. It may be anecdotal and based solely upon my personal recollection, but I have the impression that their work is related for the most part to schools and infrastructure. For the average surveying firm trying to find a spring in the economic wilderness that is California today, the challenge is how to locate survey specific opportunities in infrastructure. One of the most stable of these is sanitary sewer systems which will probably be around as long as death and taxes.

Getting Over Prestige Issues Regarding "Dirty Jobs"

Just before the bottom fell out of the boom, a bored young surveyor working for the County Sanitation District approached me looking for a more challenging position hoping to move up faster in private industry. At the time the demand was still high for anyone with only a few months experience, and he seemed impatient for promotion which had been slow in coming at the County. I thank God for the good sense I had that day, good sense I seldom seem to have when it comes to my own predicaments. I told him that with his young family he was much better off exercising patience and staying where he was.

Something he said must have clued me in to another underlying issue. Like many of us he was attracted to surveying because of one environment, but found himself working in another. He had been introduced to surveying in England on projects that varied more from day to day. Now it must have seemed to him that his surveying career was "in the toilet" staking for construction of underground conduits for human waste. I assured him that even if the general public lacks appreciation for infrastructure in general and sanitary sewers in particular, few jobs in surveying are based on a more timeless demand. I told him the following story to illustrate the extent of this ignorance about what goes on beneath those heavy metal covers.

It happened in Los Angeles during the late 1980's. The use of Closed Circuit Television (CCTV) in sanitary sewers made it viable to isolate and rebuild only the failed portions of lines instead of excavating an entire section from manhole to manhole. The savings were phenomenal, and I had teamed up with an engineer hugely benefitting from all the hype hitting the city council. One councilwoman decided to come out and get a first hand demonstration of the highly touted technology. [v]

What did the Councilwoman expect to see? There we all were, I in my orange safety vest with field gear, the engineer, the politician and her entourage all in immaculate business attire. All of us were milling around a manhole just downstream from a cul de sac in a sleepy residential neighborhood with zero traffic. At just about the time some resident was wrapping up his morning constitution, the engineer asked me to open the manhole for the councilwoman to personally inspect. As we huddled around the open manhole a solid wrapped in pink paper exited the upstream invert and beached itself temporarily in the center of our gaze. The Councilwoman instinctively turned away apparently having satisfied her curiosity. While the successful engineer asked me to replace the cover he smiled and quietly said to me, "Some people may turn their nose up at it (sanitary sewers), but it is my bread and butter."

How Your Firm Can Find Opportunities in Trenchless Construction

Step One – Appreciate what is at stake.

A superintendent of collection systems in the Bay area highlighted these enduring demands, "We have a joke here that everything has to be a 20-year fix. Contractors and technologies come and go, but the district is never going away. We have to deal with everything forever."[vi]

It will take only a few mouse clicks and phone calls for the average surveyor to discover how much is at stake in his district. Keep in mind that surveys for design are required for *all* projects whether for repair or for new construction. Last year, for example, LACSD awarded this work for qualified private surveyors. Winning bids typically averaged ranged from $10-30K and up to $50K for longer projects. Substructure mapping is critical in surveying for any sewer design but this particularly the case with proposed trenchless construction. [vii]

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Surveying for Sanitary Sewer Design and Surface Deformation Monitoring

LACSD: SANITARY SEWER PROJECTS IN GENERAL	2008	2009
Number of projects	17	7
Typical project cost	$130K - $18Mil	$65K - $8 Mil
Contracts for new construction	65,000 feet	5,000 feet
Contracts for repair of existing	25,000 feet	20,000 feet
Survey work for projects in design	$150,000	$125,000

LACSD: PROJECTS WITH TRENCHLESS COMPONENT	2008	2009
Number of projects	7	1
Typical length of trenchless component	100 – 3000 feet	1000 feet of micro-tunneling

LACSD: PROJECTS WITH OPEN CUT TRENCH ONLY	2008	2009
Number of projects	5	2
Typical project cost	$400K - $4.6 Mil	$500K - $1.2 Mil

There are other things for surveyors to like about trenchless sewer construction. Let's suppose by way of example that only 10% of the linear feet of sanitary sewer installed last year in the LACSD was done with tunneling. The corresponding percent of the total spent was significantly greater than that portion. Costs are very project-specific, but to give the reader some idea, they are now being estimated at $20-$30 per inch/foot[viii] for open cut and at $40-$50 per inch foot for tunneling.[ix] The benefit to the surveyor is that even with only 200 feet of tunneling here and there on a line of much greater overall length, the contractor may have to hire a licensed surveyor to perform deformation monitoring surveying and provide timely reports to the district on the trenchless component of the overall project. It all depends on the depth of the line and its location with respect to adjacent structures or utilities belonging to a municipality or Caltrans.[x]

Step Two - Get qualified With the Public Agency and its Contractors.

Don't think of this as cold calling someone who is not interested in what you have to offer. Most of these districts are in a very intensive phase of Waste Discharge Requirements (WDR) mandating Capacity Management, Operation and Maintenance (CMOM) requirements begun on May 2, 2006 when the California State Water Resources Control Board adopted Order Number 2006-0003. All municipalities with one mile or more of sanitary sewer were given one to four years to come up with a Sewer System Management Plan (SSMP) which was to include CCTV for all lines and a commitment to projects to correct what was discovered by the cameras. LA County and the City of LA were both among the few, the proud who were way ahead in this game having begun CCTV on their lines back in the late 1980's when I was meeting with the engineer and councilwoman. Rumor has it that today a very high percentage of these districts are at about the same place LACSD district was at around the year 2000, and the in-house crews have their hands full with construction staking alone. Two or three times a year the contractor must include even the construction staking in his scope. That is why the local sanitation district and contractor welcome contact from the average surveyor as long as he can show them his qualifying sanitary sewer project experience.

The average surveyor may be surprised that his district needs assurances of qualification for this work over and above his state license, but, believe you me, the need is there. Many surveyors settle into professional niches in which they never see a sewer plan. I remember at the height of the most recent boom we hired a PLS who was also a tenured professor in a survey program in an engineering department. Centex needed some sewer laterals staked the next day and we were behind. I thought to pull the professor off a field note indexing project to help me catch up by simply transferring the stations of the laterals from the plan sheets to grade sheets. When he asked, "What is a lateral?" I decided to just stay late and do it myself.

The district is looking for projects you have done that will show them you understand their systems. One way to do this is to set up an excel sheet with the sewer systems you have staked. The one I submitted had a column of hyperlinks to a scan of the key map and title page for the plans. The next column had hyperlinks to "birds eye" views of each site on Bing.com. Even if the job was small it showed at a glance the high value of the associated project and how far we had been willing to travel for the right clients. Since LACSD also required a contact name and phone number, it goes without saying that in the current economic climate I called them in advance to make sure they had not "gone dark." This provided me with an excuse for a marketing call, and I found that even if the phone had been turned off the district understood.

Step Three - Find a Project and Modify a Monitoring Plan Template to Make it Project Specific.

The closest projects may come to you; the others will require visiting websites to find out which contractors landed projects with tunneling. An experienced contractor knows that monitoring means several visits or "move ons" which in turn can mean high travel costs unless he finds a surveyor very near the site. He is therefore most likely to call the local firm even if he has worked successfully with other surveyors on previous projects.

When I was pulling together a surface deformation monitoring plan for a LACSD project in Pasadena I could not find a template to work with. I conferred with the pros at the Sanitation district and with my team and created from scratch a project specific

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SDM plan which the contractor could submit to LACSD and which we could attach to our proposal and so prescribe carefully the work included in the fixed portion of the fee. I would have liked very much to include a complete copy of the plan so the reader can review the specifications, the sample deliveries and the charted schedule of visits, but the space here is very limited. That is just one more reason to become a member of CLSA, because this plan is being made available to the members at no charge in the members-only section of the website as past questions for review for the PLS exam.

Be Willing to Eat a Few Hours on the First One

Once the plan is submitted and approved by the district, there is no guarantee that the surveyor who prepared, signed and submitted the plan must be the one who executes it. That means that if a principal of the survey firm that prepared the monitoring plan reasonably wants to bill extra fees for changes required by the district after submission, and the contractor decides as a result to put the actual monitoring out to bid, the survey firm down the street may do the work the first survey firm planned.

A few months ago another surveyor came up to me after an LA Chapter CLSA dinner and said, "Stephen Hughey! I knew your name was familiar! Hey! That was a great monitoring plan you did! It worked out well for us!" - Better luck to you, dear reader! ■

[i] *Some very accessible docs on the web quickly give some idea of what has been happening: http://en.wikipedia.org/wiki/Directional_drilling and a brochure by Ted R. Dimitroff posted at http://www.pinpointearth.com/PDFs/DirectionalBoringSewerArtile.pdf.*

[ii] *In LACSD the rule of thumb is typically 25 feet deep, although the designers often call for them in connection with crossings even 10 feet deep. The consideration for depth is of course how expensive it would otherwise be for jacking. Many thanks to Michael Tatalovich (MTatalovich@lacsd.org) and Tamara Nikonova (TNikonova@lacsd.org). Any mistakes in passing on the information they gave me are all on me.*

[iii] *Stephen Corbitt, chief executive officer and president of Corbitt & Sons as quoted in http://www.allbusiness.com/real-estate-rental-leasing/rental-leasing/818071-1.html.*

[iv] *Personal phone interview.*

[v] *For an update see Gary N. Young, Mark W. Wallbom, Steven P. DiBenedetto, Francisco A. Romero, Keith J. Sjostrom, David Hanson, "Advances in Underground Imaging" (NASTT, Toronto 2009).*

[vi] *Walter Lunn, superintendent of collection systems for Stege Sanitary District, in California's San Francisco Bay area as quoted in "Sewer: Mains in Motion" the cover story in the July 2008 issue of the Ezine Municipal Water and Sewer posted at http://www.mswmag.com/ezine/2008/07/32.*

[vii] *Martha explains that the numbers on the chart will not add up because in most cases the projects do not bid the same year they do the survey. On average design takes 18 months more or less depending on the project. Longer alignments can take even longer.*

[viii] *$/inch/foot is $/ inch diameter of pipe/ length of pipe.*

[ix] *These numbers and the charted ones are thanks to Martha Trembly, Section Head for Sanitary Sewer Design, LACSD. Any misunderstandings are probably mine.*

[x] *Yeun J. Jung and Sunil K. Sinha, "Damage Prevention Best Practice for Buried Utilities" (NASTT, Orlando 2005) focuses on preventing damage prior to construction with accurate modeling of existing substructures. I have yet to find in publication references to the part played by surface deformation monitoring with data collected by competent surveyors to prove damage/non-damage before, during and after the project.*

By: Jay Kay Seymour, PLS

***Jay** has been a professional land surveyor since 1978. A third generation surveyor originally from Kansas, he is licensed as a land surveyor in Kansas, Colorado, and California. His company, Professional Land Consultants, specializes in planning, land surveying, consulting, and educational seminars. He has provided training for the legal, title, land development, and land surveying communities since 1984.*

Sunshine, Surveying, and Skin Cancer

Sunshine, surveying, and skin cancer - do they go together? In my case, after forty-one years of surveying and fifty years of golf, they do. This is the story of how I found out I had skin cancer, what I did about it, and how I am living with it today. For those of you who work and play outdoors, like I did for so many years, I hope to provide some helpful tips to preserve your health.

My journey began during a routine dental appointment when my dentist looked down at me and told me I have skin cancer. "Is that your area of expertise?" I asked. Her response was short and sweet. "If I were you I would go see a doctor ASAP!" So I did. Turns out my dentist discovered what I took to be a small blemish under my left eye socket, something I would never suspected as being dangerous. Now, I must admit, I knew I had an issue with a mole that was on the tip of my nose, but you know us surveyors, I thought it will go away! I still told myself that even though I had several issues with it bleeding when I toweled-off daily following showering. My doctor took some skin samples from my nose, the location under my left eye and one sample from my forehead. On New Years Eve day 2009 he called me with some bad news: "You have skin cancer, Jay". Now, for those of you that have not had to deal with the "C" word, let me tell you it rocks your world to your core. The mind is overwhelmed with the possibilities. How bad is it? What do I do now? Can the doctors get rid it? If so, will it come back? The doctor's diagnosis meant nothing to me at the time, but my Google search revealed the following: I had at least two locations of non-melanoma basal cell and perhaps one location of squamous cell skin cancer.

When I met with the dermatologist she told me that she would slice off a small sample, would then take it down the hall to the pathologist for examination, and upon their findings would continue the process until we had clear healthy cells along the edges of the cut. She said the samples would be like cutting a Thanksgiving turkey! She said each session would take about and hour and they usually need 1-3 sessions.

Armed with this information, I showed up for the first of three procedures and met my surgeon. Remember this was supposed to be like slicing turkey, right? In reality the process was more like digging out the last remaining scoop of ice cream from the carton. Oh yes, they also forgot to tell me that upon completion of the digging and slicing they would cauterize the wound and send me out to a waiting room with other patients to calmly wait for the results. Now imagine if you will a room full of patients with various forms of bandages on their bodies. It was like a scene out of the movie M.A.S.H.!

The "good-news" was it only took a little over three hours for the first location; about four for the second; and finally, five hours for the last. After a little nose reconstruction surgery I was as good as new. My surgeon explained that my modeling days were over. I joked with him that that was not going to be an issue for me, but thanks for the update.

Skin Cancer Facts

Now like the old Dragnet Show...nothing but the facts!

Skin cancer is the most common of all cancers. It accounts for nearly half of all cancers in the United States. Most of the more than 1 million cases of non-melanoma skin cancer diagnosed yearly in the United States are considered to be sun-related. Melanoma, the most serious type of skin cancer, accounted for about 60,000 cases of skin cancer in 2007 and most (about 8,110) of the 10,850 deaths due to skin cancer.

What is non-melanoma (basal or squamous cell) skin cancer? Most skin cancers are classified as non-melanoma, usually starting in either basal/squamous cell. These cells are located at the base of the outer layer of the skin or cover the internal and external surfaces of the body. Most non-melanoma skin cancers develop on sun-exposed areas of the body, like the face, ear, neck, lips, and the backs of the hands. Depending on the type, they can be fast or slow growing, but they rarely spread to other parts of the body.

Risk Factors for Skin Cancer

Risk factors for non-melanoma and melanoma skin cancers include:

- Unprotected and/or excessive exposure to ultraviolet (UV) radiation
- Fair complexion
- Occupational exposures to coal tar, pitch, creosote, arsenic compounds, or radium
- Family history
- Multiple or atypical moles
- Severe sunburns as a child

Signs and Symptoms of Skin Cancer

Skin cancer can be found early, and both doctors and patients play important roles in finding skin cancer. If you have any of the following symptoms, tell your doctor.

- Any change on the skin, especially in the size or color of a mole or other darkly pigmented growth or spot, or a new growth.
- Scaliness, oozing, bleeding, or change in the appearance of a bump or nodule.
- The spread of pigmentation beyond its border such as dark coloring that spreads past the edge of a mole or mark.
- A change in sensation, itchiness, tenderness, or pain.

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Can Skin Cancer be Prevented?

The best ways to lower the risk of non-melanoma skin cancer are to avoid intense sunlight for long periods of time and to practice "sun safety". You can continue to exercise and enjoy the outdoors while practicing sun safety at the same time.

Here Are Some Ways you Can Do This:

- Avoid the sun between 10 a.m. and 4 p.m.
- Seek shade: Look for shade, especially in the middle of the day when the sun's rays are strongest. Practice the shadow rule and teach it to children. If your shadow is shorter than you, the sun's rays are at their strongest.
- Slip on a shirt: Cover up with protective clothing to guard as much skin as possible when you are out in the sun. Choose comfortable clothes made of tightly woven fabrics that you cannot see through when held up to a light.
- Slop on sunscreen: Use sunscreen and lip balm with a sun protection factor (SPF) of 15 or higher. Apply a generous amount of sunscreen (about a palm ful) and reapply after swimming, toweling dry, or perspiring. Use sunscreen even on hazy or overcast days.
- Slap on a hat: Cover your head with a wide-brimmed hat, shading your face, ears, and neck. If you choose a baseball cap, remember to protect your ears and neck with sunscreen.
- Wrap-on sunglasses: Wear sunglasses with 99% to 100% UV absorption to provide optimal protection for the eyes and the surrounding skin.

Follow these practices to protect your skin even on cloudy or overcast days. UV rays travel through clouds. Avoid other sources of UV light. Tanning beds and sun lamps are dangerous because they can damage your skin.

Like most of the children of the 60's, I was really into my sun tanning! I was one of those stupid kids that put baby oil on to speed up the tanning/burn process. I surveyed for my father in the Kansas sun without a shirt, no hat, and of course no sun protection. I was amazed that the doctor could only find three locations. Was I lucky or stupid? ... BOTH! Would I do something different today? Of course!

Today I always wear a hat. I always spray on protection to all exposed areas for the day with an SPF 40+. If I am going to be outside for extended periods of time I put on sunscreen at least one hour prior to exposure; that allows the skin time to absorb the protection. I use lip balm with an SPF 15+, and I protect myself even on the cloudy days. And finally, I always wear sunglasses.

I am an outdoor person and always will be. I do not plan on avoiding the sun but I do take it more seriously now. My doctor explained that this is a "preview of coming attractions" and there most likely will be more signs of cancer in the future! Armed with this information and knowing my love for the outdoors will never diminish, I simply play it safe and smart. My advice to you is to do the same. Use common sense; look and listen to your own body; be smart and take the necessary precautions; and most of all take care of yourselves. ■

The More Things Change...

By: Dave Woolley, PLS

David E. Woolley, PLS, *is the CLSA Orange County Chapter Legislative Chairman, Chapter Representative, State PPC Member, and owner of D. Woolley & Associates, Tustin, CA*

Quotes from the near and distant past that prove the point: The more things change, the more they remain the same.

The following quote was taken from *"The California Surveyor"*, Issue 14, Summer Edition, 1970, Presidents Message by Robert W. Curtis

"It has recently come to my attention that we, in the Land Surveying profession, are still faced with a problem as old as the profession itself. I'm referring to "Week-ending" or, if you prefer, "Moonlighting." In either case, the practice is a black eye to our profession.

In my opinion, the Moonlighter is a cheat. He cheats the client, he cheats his employer and he cheats the profession. To begin with, the proper basis for any survey is research and on this point I believe the research must be performed by the surveyor doing the actual survey. Who else can properly judge when he has enough proper information with which to perform the survey? Pray tell, when will the Moonlighter do the research considering all areas normally providing the needed information are only open 8:00 a.m. to 5:00 p.m., Monday through Friday. Lunch-hour searching is simply ridiculous. Therefore, the Moonlighter is cheating his employer. If he doesn't do a proper search, he is cheating the client. Under the circumstances, I suggest most moonlighters simply do not do a proper search.

So now to the field! I wonder whose equipment this paragon of our profession is using? Being in a private practice, I can say with some authority that the days of needing only a beat-up transit and patched chain are long gone, except for the moonlighter that is. While the entire profession is working to develop higher standards of practice in all areas, our moonlighting friend has the whole operation in reverse!

Well now, let's get the job on the table. How often upon proper analysis we find we need to return to the field to check a tie or look for additional information, or, for that matter, any reason at all. The moonlighter, of course, finds this out some evening after his (normal?) days work. At this point, he must wait until next week-end or forget it and go ahead with the job. You guessed it, after all the Moonlighter was hired because he promised he could do a cheap job. No doubt about it. Next week-end it's back to the field to set the final stakes. If there's not enough time to finish the job on Saturday, there always Sunday. That's what I call really putting the profession before the public. The people out for their Sunday drive can get a first-hand look.

At last we come to the map. The record of what was found and set, perhaps the most important single step of the survey, because right or wrong it's done and the future surveyor must have this information. Does he file a Record of Survey? Most likely not, after all this will cost more money, and it will place his name before the profession as a Moonlighter. I suggest the map, like the entire survey, will be subprofessional.

Besides performing in a subprofessional manner, the Moonlighter often competes with the private practitioner on the basis of price, contending he can do the job cheaper and we all know what a "cheap survey" is worth. Moreover, it costs the private practitioner a great deal just to open his doors each morning, costs the moonlighter laughs at, such as office space, equipment, salaries, taxes, insurance, etc.. Speaking of insurance, I wonder if the Moonlighter carries Workmen's Compensation and Errors and Omissions Insurance?

What about the poor client, what recourse does he have against Mr. Moonlighter who hasn't the proper insurance or business equity to back him up. Sure, Mr. Moonlighter can lose his license if he makes a big enough mess, but that still doesn't help the poor client. If our friend works for a surveying or engineering firm, I wonder if some smart lawyer wouldn't name the firm in a suit. After all, he is after money, which most Moonlighters appear to be short of. The firm may not have any responsibility, but they will have to pay to prove it.

In conclusion, I consider Moonlighting subprofessional and in some cases even dishonest. Any public agency, firm or corporation that knowingly permits their employees to conduct such a practice, are doing disservice to the public, themselves and the profession."

Commentary by David E. Woolley, PLS

Moonlighting was a controversial topic for Mr. Curtis in 1970; I suspect it was a hot topic long before then and certainly is today. Many respected surveying companies started out as moonlighters while still working with their former employers. The reality is that many moonlighters started by offering their services to their employers clients for less money. This is not only bad form ethically; it exposes their current employer to liability.

Often times the moonlighter is offering services, presumably, to make additional income and seldom does the surveyor realize the likelihood of being sued for intentional interference with the company's business and conversion of company property (use of company equipment without permission) which is the nice way of saying "stealing". As most surveyors know, land surveying equipment is expensive as are the computer programs needed to process the data. Point of consideration, how much is a client worth in dollars? It would not take an auditor much time to determine the exact number.

The moonlighter rationalizes their practice as their "right to earn a living," even though their right to work is not being denied, there is no right granted to steal.

There are many more facets to this conversation than the space allocated will allow. Sometime in the future, I will be proposing to CLSA for their consideration, language to codify the practice of moonlighting. I have borrowed the following language from the state of Kentucky as a starting place.

"*A professional land surveyor who renders occasional, part-time, or consulting services to or for a business entity required to hold a permit [license] from the board under this section shall not be designated as the person in responsible charge of the land surveying activity of that firm.*"

In California, this would apply to the Organizational Records all land surveying firms have on file with our Board. Kentucky law addresses the sole practitioner that moonlights with the permission of an employer or in a manner which is not as responsible charge for a separate business entity with the following clause:

"*Individual professional land surveyors providing land surveying services in their own names shall be excluded from the provisions of this subsection.*"

Ideally, we will end the practice of having one surveyor being on the Organizational Records of several firms while being employed full time for another entity. ■

By: Rolland Van De Valk, PLS

Rolland *is a project manager for Porter & Associates, Inc. in Bakersfield, California. He has been licensed in California since 1995. He the CLSA Bakersfield chapter representative and the Tailgate Safety Meeting Guide Committee chairman.*

Safety Tailgate Meetings

Safety tailgate meetings are an integral part of an effective safety awareness program. In fact, in California the law requires them for those who work in the construction industry. However for the land surveyor the construction site is not the only place to encounter risks and hazards. It is important that the surveyor understand the benefits of safety tailgate meetings and learn the proper techniques for preparing and presenting an effective meeting.

Effective safety meetings are short in duration and introduce team members to safe work practices with the goal of minimizing risk. Meetings are typically organized by supervisors. Team members come away from these meetings more alert to avoiding work-related accidents and illnesses. Two of the most important tools in safety are "knowledge" and "awareness" and these meetings bring both to the employee. These sessions are intended to periodically focus attention on important safety issues, frequently reminding employees why procedures and other safeguards are in place and why it is important to follow them. To ensure a healthy and safe work place, land surveyors should educate themselves on how to conduct an effective safety tailgate meeting. While there is no set formula there are several key points, that when followed in whole or in part, will dramatically increase your chances for a successful meeting.

When and Where to Hold a Safety Tailgate Meeting

Plan to hold your meeting at the beginning of a shift or at the end of a break. A surveyor can hold a meeting with the crew in the morning before the truck is loaded and the team leaves for the job site. In the office, a meeting can be held in the morning before the busy day begins. In either case make sure that everyone attending the meeting is comfortable and can see and hear the presentation. Stay away from areas that may have distracting activities and noise. The meeting place should have adequate lighting and be a comfortable temperature.

Length of Meeting

Keep your meetings short. You will miss the mark if your meeting is too long and those in attendance lose focus. A 10-15 minute meeting should work fine.

Meeting Topic

The choice of a relevant topic is very important. A topic that is too broad can cause a meeting to run long and lose effectiveness. Be concise. The topic should be pertinent to the current scope of work. Perhaps the topic will be about a particular hazard or situation the field crew could encounter during their day ahead. To help you with topic selection you can review past accidents and near-accidents, draw from your own experience or the experiences of others, or make use of existing publications. More on this below.

Preparation and Presentation

Budget enough time to research your topic prior to the meeting. Be comfortable with the subject so that your presentation is not just reading aloud from a book or pamphlet. Look for informative materials that you can distribute to your employees. Be prepared to answer questions or be able to tell someone where they may find the answer. You have a good chance of capturing your audience if you can start the meeting off with a real life incident.

Audience Participation

You should always encourage the participation of those in attendance. Take any and all questions related to the topic. However, be prepared to moderate the discussion to keep it focused and short. Your presentation should inspire employees to think about safety, and it should encourage them to come up with ideas for preventing accidents and minimizing hazards in the workplace. Ask them for topics and suggestions for future meetings.

Documentation

It is very important to document your safety tailgate meetings. Make sure that meeting notes are taken. All questions, suggestions or comments should be documented for future reference. The names of those in attendance should be noted as well. This is easily accomplished by having everyone sign an attendance sheet.

The CLSA Safety Tailgate Meeting Guide

The California Land Surveyors Association recognizes the importance of, and is an advocate for, safety in the workplace. The CLSA "Safety Tailgate Meeting Guide" was designed to assist land surveyors prepare for and present effective safety tailgate meetings. It contains over 70 meeting topics that have been specifically chosen for their relevance to the land surveying profession. That is over two years worth of topics if you schedule your safety meetings bi-weekly. Each topic section can be copied and used as handout material. The guide also provides pre-printed documentation sheets to help the user document each meeting. If you are serious about safety in the workplace I encourage you to take advantage of this valuable resource. Members may download this guide complimentary from the CLSA Members Only Website. Hard copies are available for purchase from Central Office.

Thanks to those responsible for the CLSA "Safety Tailgate Meeting Guide": Keith Nofield, Dan Walsh, Stephen Hughey, the CLSA Central Office, and the CLSA Board of Directors. Members may download a complimentary copy of the Safety Tailgate Meeting Guide at www.californiasurveyors.org ■

Index To Advertisers

By: Richard Hertzberg, CPCU, ARM, Vista International Insurance Brokers

RISK MANAGEMENT FOR LAND SURVEYORS

Proposed Land Surveyor Workers Compensation Class Revision Overturned

California Workers' Compensation Insurance Rating Bureau (WCIRB) proposed and then revised their own changes to the standard classification for engineers, land surveyors, oil or gas geologists or scouts and geophysical exploration to be effective on January 1, 2011. The proposed changes to Classification 8601(1), Engineers-consulting would have set up a separate classification for land surveyors that would have resulted in a rate increase for land surveyors. However, still pending and subject to approval by the California Insurance Commissioner is an overall rate increase for all workers compensation classes of approximately 30% to be effective on January 1, 2011.

Here's What's Happening.

WCIRB still wants to amend Classification 8601(1) Engineers-consulting-mechanical, civil, electrical and mining engineers and architects not engaged in actual construction or operation, to include outside salespersons and clerical office employees. This amounts to an additional rate increase. WCIRB wanted to have land surveyors separately classified under Classification 8602(1) because they found that surveyors have more workers compensation losses than civil engineers. They will have a footnote for clarity saying land surveyors are part of the engineer classification as they have always been.

Successful arguments against a separate land surveyor classification by the American Council of Engineering Companies of California (ACEC CA) and additional information from the Board of Professional Engineers and Land Surveyors and several employers established that land surveyor exposure is similar to civil engineer exposure and determined that because of GPS and other technology land surveyors would be spending more and more time in the office and less time in the field over the next 10 years. So the rating classifications will remain the same except that outside salespersons and clerical persons working for engineers and land surveyors will be rated under the 8601(1) classification and no longer have their own separate classification. What's going on?

Putting draftsmen and clerical help in the engineering classification will cost engineers more in workers comp premium. Separating land surveyors out of the engineer and architect classification would have cost land surveyors more in workers comp premium. If you think these changes are going to cost you more money, and chances are they will, you can call the WCIRB at 415 777-0777 or email them at wcirb@wcirbonline.org.

What's Important?

Even though the proposed changes will not affect you as much as they would have if they had been implemented, it's very important for you to continue to implement good risk management techniques for your work force. Stress safety and careful working through seminars, on site training and lunch box sessions. Be sure you classify your work force correctly. Remember as an owner you can (if you want to) exclude yourself from workers compensation coverage.

Even sole proprietors without workers compensation coverage need to follow good, safe work procedures for all jobs and kinds of terrain. When a contractor or owner requests workers comp coverage in their specifications, see if you can negotiate your way out of this requirement since you have no employees. And finally, remember to include a fair proportion of your workers comp coverage cost in your bids, if you can. Work well and work safely and be glad you don't have to comply with a new classification system. ■

CLSA Remembers... Ted J. Kerber, PLS #4351

It is with great sadness that we report the passing of Ted J. Kerber, PLS #4351 on August 24, 2010, following a two year battle with cancer.

Ted was a member of the California Land Surveyors Association (CLSA) Board of Directors and actively served on numerous committees throughout his many years of membership.

Ted will be remembered as a true Professional Surveyor who took professionalism in land surveying very seriously. He was a helpful friend, a wise teacher, a steadfast mentor, and "the guru of the Hewlett-Packard programmable handheld calculators." The San Joaquin Valley Chapter, CLSA, has established a Ted J. Kerber Memorial Scholarship Fund.

Ted will be greatly missed.

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By: Carl C. de Baca, PLS

Carl C.de Baca *is the owner of Alidade, Inc., Elko, Nevada. He is a past editor of the California Surveyor, and is the current NSPS Area 9 Director.*

Mandatory 4-Year Degree for Surveyors

I was privileged to dine at a table once, with one of the giants of contemporary surveying education in California. It was a large table and there were nine other surveyors feasting on the chicken and vegetable dish that all conference-hosting hotels seem to put forth so effortlessly. 36 degrees to my left, (for the table was round), was a friend of mine who gave my leg subtle kicks concealed by the tablecloth, as the Luminary held forth that those of us without a bachelor's degree were dinosaurs, and the sooner we die off, the better the profession will be. His reasoning had something to do with the non-papered surveyors being unprepared for the times. His side of the table was populated by a more mammalian variety of surveyors who chuckled at the assertions. I made it through that meal with nothing more than a bruised ego and a bruised leg, (and a further diminished taste for chicken in gravy). I have in the years since, looked keenly for evidence to refute this headmaster's decree and I have seen it repeatedly in the faces of surveyors I know, from California to Connecticut, and all places in between. But recently something has certainly changed. If we are dinosaurs, then our Chicxulub meteor has arrived.

The NSPS Board of Directors, of which I am honored to belong, voted in the last year, to declare that the organization supports a mandatory bachelor's degree in surveying as a requirement to gain licensure. There are still many of us, myself included, who got our licenses the 'hard way' and from 25 years of personal observation I'd say many of the most competent boundary analysts I have ever known were educated outside the conventional system. It was a difficult moment for me to cast my vote in support of a requirement that, if in place when I was young and devouring every page of "Evidence and Procedures," would leave me unable to become licensed in the profession that I have loved since the first time I closed a level loop. Yet, cast an aye vote I did, and here's why:

The luminary I referred to above has been proven right, but not for the reasons he put forward. The level of competence of our profession has never been higher, and yet those with a 4 year degree are still in the minority. However, I see the economic downturn (disaster? depression?) of late 2008 as the arrival of a meteor that has slammed into the surface of surveying. 2009 and 2010 have been marked by a huge dust cloud of uncertainty and unemployment. Many old dinosaurs and probably quite a few younger dinosaurs are going to die off, (or 'retire' if you find that term less offensive). No one knows how long the dust cloud or the burn-off of large-scale land development will last. The optimistic predict that we have reached the bottom of the calamity and that things are starting to improve. But when the skies clear there will be both fewer of us and fewer opportunities for us. A clear line has been etched in our history, not unlike the Cretaceous-Tertiary boundary which marked the great dinosaur die-off 65 million years ago.

The past 10 years saw the federal government, the banks, the developers, and the home-buying public vigorously ignoring the law of supply and demand. State and local agencies did their share too. We managed somehow to create and sustain a system where supply increased, demand increased and price increased too, while interest rates stayed low, all in blatant disregard for basic economic principles. As we secretly knew it would, this enormous artificial construct collapsed and the resulting shockwave has severely damaged the US economy and with it our profession's security. The good times we experienced over the last decade can never happen quite this way again.

The landscape so friendly for so long to us surveying dinosaurs is devastated, defoliated, destroyed. As the skies clear and new vegetation takes root, there is still an ecological niche for land surveyors to fill, but it is a smaller niche. Wholesale land development is probably never going to come back to pre-2008 levels, here or elsewhere. Banks will never lend as generously as before. The government will take an increasingly dim view of the energy costs of millions of us driving to the distant suburbs and the administration, through the EPA will use its new asserted dominion over carbon dioxide emissions as a primary tool of social re-engineering. Not to mention that right now and in the foreseeable future, the money it takes to build

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and buy houses is in short supply. The Fed is monetizing debt at a furious pace and that will inevitably lead to higher interest rates. That it has not so far, is merely another feat of suspending reality and will change in the coming years. Cap and trade legislation, if enacted, will dramatically increase the cost of all forms of energy, and make living in the suburbs that much more expensive.

It is easy to see that the surveying species will have a lower population after 2008 than before it given a decreasing need to carry multiple survey crews due not only to a shortage of work, but also to new equipment that makes one-man crews not only viable but preferable in some instances. The evolutionary line between surveyors and GIS professionals, who once had a common ancestor, is now quite distinct and a distinct machine guidance species is now emerging, as well. GIS data capture and tasks related to machine guidance are increasingly accomplished by non-surveyors.

All is not lost however, life has a way of surviving and thriving, adapting and expanding to fill unexpected niches, and so it will be with surveying. But the day of the dinosaur: the 18 year old chainman who becomes the 21 year old party chief, the 23 year old office technician and then the 25 year old LS, is over. The end actually started long ago, before the meteor hit. For instance, in California the unionization of field surveying gave an alternate career path to many of those who we would have previously groomed for the dinosaur path. With the high pay and steady work for union filed crews, the best and brightest of them chose to stay in the field. Coupled with the burgeoning success of those who took the education route at schools across the country, including the two here in California, it only serves to demonstrate the obvious: dinosaur, thy days are numbered.

And so I have come to embrace the inevitable. I have never liked the arguments sounded by some that we are somehow less professional because amongst us are the self-educated, or that the path to making more money profession-wide, is primarily through formalized education. But there is now a strong and permanent network of educational resources available nationwide, and we find ourselves in a time where many will retire or change professions before the workload picks up again. It only makes sense to do what we can to fill those colleges with young recruits right now in order to replenish the ranks of surveyors in the coming years. And I still don't like banquet chicken. ■

By: Robert Reese, PLS

Things That Go Bump In The Light

Contributor's Note: With GPS rising to the level of the preferred positioning tool for many projects, it's advisable to check and see how sharp that tool is on any given day. On the way to the job site, I call the Colorado number for NOAA's Space Weather Prediction Center (SWPC), 303.497.3235, to listen to the Geophysical Alert Message (GAM) and get an idea of the sun's and earth's space "weather" conditions.

The **Solar Flux** metric indicates the levels of radiation coming from the sun, directly related to sun spot activity. Radiation spikes can cause poor receiver signal reception, or even black out the receiver entirely. Since we have recently (Dec 2008) ended an extended 11-year sunspot cycle and are just beginning (low sunspot activity) cycle #24, many GPS users may not have experienced the heightened disruptive levels of solar storms that occurred about seven years ago.

The **A-Index** and **K-index** metrics relate to the condition of the magnetic field around the earth. Magnetic fields activity (as well as solar radiation) interacting with the ionosphere can generate electric currents, again causing problems with propagation of GPS signals.

The last part of the GAM is a status report on Space Storms, that is, solar flares and other high energy bursts of a temporal nature. Such "storms" are more prevalent during high sunspot activity.

The GAM can provide a snapshot of short-term condition of these various phenomena, giving you, the conscientious GPS practitioner, an insight into how well your GPS might perform on a given day, or the reason why those data link radios or cell phone radios just don't seem to work quite right.

Thanks and credit is due to the SWPC for the following discussion directly lifted from the SWPC webpage on the GAM. See http://www.swpc.noaa.gov/Data/info/WWVdoc.html for links to more sun stuff than you will ever have time to review.

Robert Reese

The Geophysical Alert Message "WWV Broadcast"

Latest WWV - Geophysical Alert Message:
http://www.swpc.noaa.gov/ftpdir/latest/wwv.txt

Latest WWV by telephone (303) 497-3235:

Older Geophysical Alert Messages:
http://www.swpc.noaa.gov/ftpmenu/forecasts/wwv.html

Subscribe for email distribution through the Product Subscription Service:
https://pss.swpc.noaa.gov/LoginWebForm.aspx?ReturnUrl=/productsubscriptionservice/MainMenuWebForm.aspx

Also available on National Weather Service systems:
http://www.swpc.noaa.gov/wwire.html

Geophysical Alert Message Description Sample Messages

The messages begin with 6 standard header lines. On NWS systems, this product is called the "Three-hourly Space Weather Conditions and Forecast" and their header contains two additional lines.

The first paragraph: the dates have leading zeros. The mid-latitude A- and K-indices are normally from Boulder magnetometer, but alternate stations are used when necessary.

The second and third paragraphs express observed and expected condition in term of the NOAA Space Weather Scales. See description below.

```
:Product: Geophysical Alert Message wwv.txt
:Issued: 2007 Nov 21 2105 UTC
# Prepared by the US Dept. of Commerce, NOAA, Space
Weather Prediction Center
#
#  Geophysical Alert Message
#
Solar-terrestrial indices for 21 November follow.
Solar flux 69 and estimated mid-latitude A-Index 12.
The mid-latitude K-index at 2100 UTC on 21 November
was 1 (5 nT).
```

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```
No space weather storms were observed for the past
24 hours.

No space weather storms are expected for the next
24 hours.

 :Product: Geophysical Alert Message wwv.txt
:Issued: 2002 Feb 06 2105 UTC
# Prepared by the US Dept. of Commerce, NOAA, Space
Environment Center
#
#  Geophysical Alert Message
#
Solar-terrestrial indices for 06 February follow.
Solar flux 203 and estimated mid-latitude A-Index
16.
The mid-latitude K-index at 2100 UTC on 06 February
was 3 (21 nT).

Space weather for the past 24 hours has been moderate.
Geomagnetic storms reaching the G2 level occurred.
Solar radiation storms reaching the S2 level
occurred.
Radio blackouts reaching the R1 level occurred.
Space weather for the next 24 hours is expected to
be minor.
Geomagnetic storms reaching the G1 level are expected.
```

```
:Product: Geophysical Alert Message wwv.txt
:Issued: 2002 Feb 06 0005 UTC
# Prepared by the US Dept. of Commerce, NOAA, Space
Environment Center
#
#  Geophysical Alert Message
#
Solar-terrestrial indices for 05 February follow.
Solar flux 221 and mid-latitude A-Index 17.
The mid-latitude K-index at 0000 UTC on 06 February
was 3 (36 nT).

Space weather for the past 24 hours has been moderate.
Geomagnetic storms reaching the G2 level occurred.
Solar radiation storms reaching the S2 level
occurred.
Radio blackouts reaching the R1 level occurred.

Space weather for the next 24 hours is expected to
be extreme.
Geomagnetic storms reaching the G1 level are expected.
Solar radiation storms reaching the S3 level are
expected.
Radio blackouts reaching the R5 level are expected
```

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Geophysical Alert Message Description

The National Oceanic and Atmospheric Administration (NOAA) uses WWV and WWVH to broadcast geophysical alert messages that provide information about solar terrestrial conditions. Geophysical alerts are broadcast from WWV at 18 minutes after the hour and from WWVH at 45 minutes after the hour. The messages are less than 45 seconds in length and are routinely updated every 3 hours beginning at 0000 UT. Updates are more frequent when activity warrants.

The geophysical alerts provide information about the current and predicted solar terrestrial conditions found useful for long distance HF radio communications and other applications. The alerts use a standardized format and terminology that requires some explanation. The terms used in the announcements are defined below:

Solar flux is a measurement of the intensity of solar radio emissions with a wavelength of 10.7 cm (a frequency of about 2800 MHz). The daily solar flux measurement is recorded at 2000 UTC by the Dominion Radio Astrophysical Observatory of the Canadian National Research Council located at Penticton, B.C., Canada. The value broadcast is in solar flux units that range from a theoretical minimum of about 50 to numbers larger than 300. During the early part of the 11-year *sunspot cycle*, the flux numbers are low; but they rise and fall as the cycle proceeds. The numbers will remain high for extended periods around sunspot maximum.

The A and K indices are a measurement of the behavior of the ***magnetic field*** in and around the Earth. The *K index* uses a scale from 0 to 9 to measure the change in the horizontal component of the geomagnetic field. A new K index is determined and added to the broadcast every 3 hours based on magnetometer measurements made at the Table Mountain Observatory, north of Boulder, Colorado, or an alternate middle latitude observatory. The *A index* is a daily value on a scale from 0 to 400 to express the range of disturbance of the geomagnetic field. It is obtained by converting and averaging the eight, 3-hour K index values. An ***estimate*** of the A index is first announced at 2100 UTC, based on 7 measurements and 1 estimated value. At 0000 UTC, the announced A index consists entirely of known measurements, and the word "estimated" is dropped from the announcement.

Space Weather describes the conditions in space that affect earth and its technological systems. Space weather is a consequence of the behavior of the sun, the nature of Earth&s magnetic field and atmosphere, and our location in the solar system.

Space Weather storms observed and expected are characterized using the NOAA Space Weather scales. The abbreviated table below shows the levels of activity that are included in the announcements and the associated terminology. The descriptor used to identify observed or expected conditions is the maximum level reached or predicted. See NOAA Space Weather Scales for further description.

NOAA Space Weather Scales			
Geomagnetic Storms	**Solar Radiation Storms**	**Radio Blackouts**	**Descriptor**
G5	S5	R5	Extreme
G4	S4	R4	Severe
G3	S3	R3	Strong
G2	S2	R2	Moderate
G1	S1	R1	Minor

Geomagnetic storm levels are determined by the estimated 3-hourly Planetary K-indices which are that are derived in real time from a network of western hemisphere ground-based magnetometers.

Table 3.1 - Geomagnetic Storm levels	
Planetary K indices	**Geomagnetic storm level**
K = 5	G1
K = 6	G2
K = 7	G3
K = 8	G4
K= 9	G5

Table 3.1 - Geomagnetic Storm levels

Solar Radiation storms levels are determined by the proton flux measurements made by the primary GOES satellite.

Table 3.2 - Solar Radiation Storm levels	
Flux level of > 10 MeV particles	**Solar Radiation Storm level**
10	S1
10^2	S2
10^3	S3
10^4	S4
10^5	S5

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Radio Blackouts are determined by the x-ray level measured by the primary GOES satellite.

Table 3.3 - Radio Blackouts	
Peak x-ray level and flux	**Radio Blackout level**
M1 and (10^{-5})	R1
M5 and (5×10^{-5})	R2
X1 and (10^{-4})	R3
X10 and (10^{-3})	R4
X20 and (2×10^{-3})	R5

Section	Table 3.4 - Information in Voice Message
1	The solar-terrestrial indices for the day: specifically the solar flux, the A index, and the K index.
2	Space Weather storms observed during the previous 24 hours. Includes all observed geomagnetic storms, solar radiation storms (proton events) and Radio blackouts (class M1 and greater flares).
3	Space Weather expected during the following 24 hours.

Section	Table 3.5 - Example of Actual Geophysical Alert Message
1	Solar-terrestrial indices for 08 November follow. Solar flux 173 and Mid-Latitude A-index 14 The Mid-latitude K-index at 1500 UTC on 08 November was 3.
2	Space Weather for the past 24 hours has been severe. Solar radiation storm(s) reaching the S4 level is in progress. Radio blackouts(s) reaching the R2 level occurred.
Alternate section 2	No Space Weather storms have been observed during the past 24 hours.
3	Space Weather for the next 24 hours is expected to be severe. Solar radiation storms reaching the S4 level are expected to continue. Radio blackouts reaching the R2 level are expected.
Alternate section 3	No Space Weather storms are expected during the next 24 hours.

Every geophysical alert consists of three parts as shown in tables 3.4 and 3.5. Table 3.4 describes the information contained in the geophysical alert. Table 3.5 provides example text from an actual message.

The announcements include the descriptor of the largest space weather event observed (2) or expected (3) in the first line of each section. The remaining lines give the type of events and the level observed for each one. In the example above, no geomagnetic storm information is included because none was observed or is expected during the period. In the case where none of the three types of events are observed or expected, the announcement would contain section 1, plus alternate section 2 and alternate section 3.■

Welcome *New CLSA Members*

CORPORATE
Ronald Archer, Livermore
Amy Bledsoe, Glendora
Timothy Campbell, Mission Viejo
Linwood Carleton, Bakersfield
Bradley Danielson, Susanville
Jason Kirchmann, Santa Rosa
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SMA Expert Q&A

By: Michael P. Durkee, ESQ

Michael P. Durkee, *a partner in the Walnut Creek office of Allen Matkins, represents developers, public agencies and interest groups in all aspects of land use law. Mike is the principal author of Map Act Navigator (1997-2010), and co-author of Ballot Box Navigator (Solano Press 2003), and Land-Use Initiatives and Referenda in California (Solano Press 1990, 1991). 415.273.7455 mdurkee@allenmatkins.com*

Question

In my last Ask the Map Act Expert column, I responded to two questions concerning lot line adjustments (LLAs): (1) are the local ordinances of cities and counties required to characterize the approval of an LLA as a "discretionary" approval?; and (2) must the local ordinance limit the property owner to four total lot line adjustments over the lifetime of its ownership of the property, *i.e.*, is the local ordinance required to limit "sequential" LLAs?

These two questions are gaining attention statewide and are now the subject of litigation – in fact, the author is representing CLSA as *Amicus Curiae* (friend of the court) in litigation pending in Napa County. Therefore, this column provides further discussion and additional ideas concerning the discretionary approval question. In my column in the next issue, I will provide further discussion and additional ideas concerning the question of "sequential" LLAs.

Discussion

My analysis in the previous column began with a basic tenant of Land Use Law in California: a city or county's inherent police power derives from Article 11, § 7 of the California Constitution, and not from the delegation of authority by the state or statute. Therefore, the question when reviewing any local LLA regulation or action is simply the presence or not of conflict with the Map Act; the Map Act does not have to grant "permission" to cities or counties for the local LLA regulation or action to survive challenge. For the reasons discussed below, I submit that there is an absence of an express or implied Map Act directive that Lot Line Adjustments must be treated locally as discretionary acts (*i.e.*, a conflict).

When considering the Map Act's treatment of the ministerial or discretionary nature of LLAs, we see the *absence* of a "discretionary directive" by the Map Act regarding LLAs. In particular, Government Code section 66412 sets forth a number of different exclusions (including the LLA exclusion (§ 66412(d)), with differing express indications as to whether the activity seeking the Map Act exclusion must be subject to "discretionary action" in order to qualify for the exclusion.

For example, the Map Act exclusion for wind-powered electrical generation devices (§ 66412(i)) expressly provides that the activity seeking the exclusion must be subject to a discretionary action somewhere in the process in order to qualify for the exclusion:

> *This division shall be inapplicable to … (i) [t]he leasing of, or the granting of an easement to, a parcel of land, or any portion or portions thereof, in conjunction with the financing, erection, and sale or lease of a windpowered electrical generation device on the land, if the project is subject to discretionary action by the advisory agency or legislative body." (Emphasis added.)*

Likewise, the Section 66412(j) exclusion regarding cellular radio transmission facilities and the Section 66412(m) exclusion regarding solar electrical generation devices both expressly provide that the activity seeking the exclusion must be subject to a discretionary action somewhere in the process in order to qualify for the Map Act exclusion.

In striking contrast to these Map Act exclusions (that expressly require a discretionary action somewhere in the process to qualify for the exemption) the phrase, "if the project is subject to discretionary action by the advisory agency or legislative body," simply does not appear in the LLA exclusion, nor is it elsewhere in the Map Act, nor can it be implied to exist.

The rule of construction regarding statutory interpretation under these circumstances is clear: "'Where a statute, with reference to one subject contains a given provision, the omission of such provision from a similar statute concerning a related subject is significant to show that a different intention existed.' [citation omitted]" (*People v. Licas* (2007) 41 Cal. 4th 362, 367.) For example, in *In re Eastport Assoc.* (C.D. Cal. 1990) 114 B.R. 686, the federal court, in reviewing a Map Act claim, made clear that the grandfathering provision set forth in one Map Act section could not be implied to exist in another Map Act section, since that omission must be assumed to be part of the statutory scheme.

In other words, the absence of the express requirement for discretionary action in the LLA subsection of the Map Act's exclusion section (§ 66412) – when that section clearly and expressly requires other activities to undergo a discretionary process – must be interpreted to conclude that the omission was intentional and that the Map Act does not require a discretionary process for LLAs.

As such, in the opinion of the author, a city's or county's determination that LLA approvals are ministerial should be "lawful" because it would not conflict with the Map Act. ■

By: Dee Smith, PLS

Santiago Canyon College Student Profile
Melissa Gruner

Melissa Gruner is a tall, attractive, articulate brunette. With her poise and confidence you would easily place her as an attorney. In fact she worked as a paralegal for many years. And it's hard to fathom that she also trained and worked as a cement mixer truck driver. Today she is on her way to becoming a licensed land surveyor, thanks to the program offered at Santiago Canyon College (SCC).

About four years ago Melissa took a personal inventory of her priorities and decided that she would be more fulfilled professionally if she found a career that enabled her to be outdoors. "I was in search of a job that would challenge me mentally and give me the ability to work outdoors," said Gruner. "The cement mixer truck driver job was very technical and required critical thinking, which I need. I was, after all, a biochemistry major in college." She took the truck driving job to gain exposure to the construction industry – a niche that she felt held potential for a future career. While driving the mixer truck, she learned about land surveying and thought it might hold the key to her future. "I began researching the profession. My search included exploring the requirements for licensing and certifications. That led me to learn about Santiago Canyon College (SCC), which has a regional reputation for excellence and offers a comprehensive program. The faculty is composed of working professionals employed by noteworthy private firms and public agencies. And, the campus was close to home!" she added.

Now entering her second year at the college, Gruner is one of the program's most successful students and she is mentoring other women who are entering the profession. Her professional promise is also catching the attention of industry professionals. Having just completed her first internship with a firm in Orange County – a company cited as one of the best mid-sized land surveying firms in the industry - she has been offered a paid position. She will sit for the Land Surveying In Training (LSIT) exam this spring.

"Melissa Gruner is the poster child for the type of student we wish to recruit to the program," explained Tricia Evans, SCC dean of the Division of Business and Career Technical Education. "Our goal is to expand enrollment to include 25% women. Land surveying provides a life-long, well-compensated career path. With the graying of the workforce, it is one of the professions that will be in need of trained, licensed professionals." In addition to earning scholarships for professional merit from the campus and the California Land Surveyors Association (CLSA), Gruner is credited with establishing the only chartered community college student chapter in the state for CLSA. Today, the student chapter, which she began last year, is now the largest in the state. She is committed to bringing "enrichment and professional development opportunities to students like me who are new to the profession as well as those attending SCC to sustain their licensing and certifications."

"I owe my success to SCC. The faculty and administrators have extended themselves to help me make the professional connections necessary to ensure I have strong job prospects. I can't say enough good things about the program and faculty," Gruner added. In this economic climate when thousands of talented mid-career professionals are out of work and looking for retraining, Gruner is grateful she found SCC and a new career. "I'm perfectly suited for land surveying because I love math and problem solving, and both are fundamental to field work," Gruner explained. The new paid position, which grew out of her first internship opportunity, will lead to a mapping analyst job that will place her in the field working on a wide range of surveying projects. "What I love about land surveying is the diversity of the job. Conducting a land surveying project in the field is like being on a treasure hunt. My job is to read someone else's treasure map, to identify the clues, and to find the treasure – in this case property boundaries. The profession will provide me with the mental stimulation I need while addressing my need to be outdoors in a fresh-air environment," Gruner added. "This is a dream come true!" ■

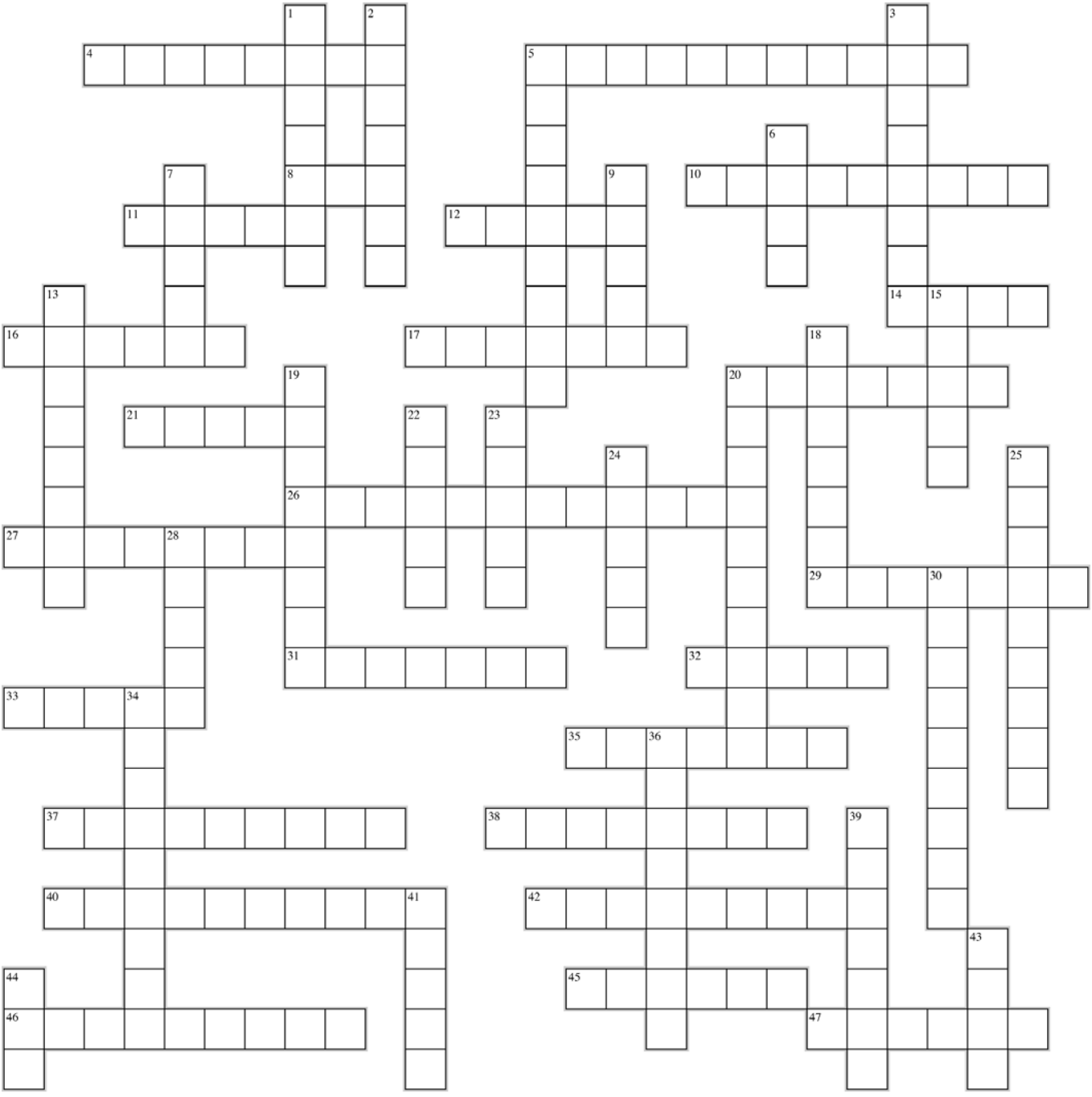
Crossword Puzzle

By: Ian Wilson, PLS

Ian Wilson, PLS *is the Director of Survey for Cardno WRG, Inc. in Roseville, CA. He started surveying in 1988 in Southern California and is now enjoying life in Northern California. Ian enjoys hearing from fellow members about the crossword puzzle and is always looking for clue ideas and input. He is licensed in California and Nevada and has specialized in boundary, topographic and Land Title surveys. His expert witness practice in boundary and easement issues is growing. Ian has been a member of CLSA since 1988.*

CLSA Crossword Puzzle #16

If you have an idea for a puzzle theme or a clue you would like to include in an upcoming puzzle, email to clsa@californiasurveyors.org



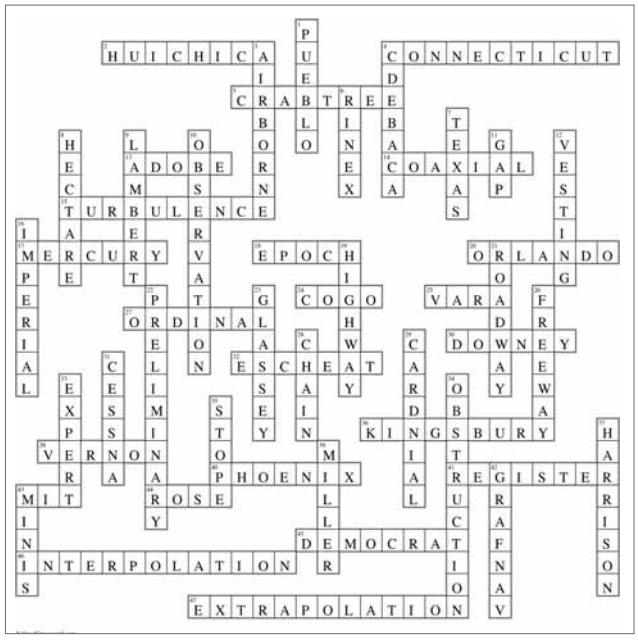
Across

4. DISTANCE ALONG A MERIDIAN
5. TYPE OF GOVERNMENT APPROVAL
8. CAUSE OF MOST SKIN CANCERS
10. RANGE OF FREQUENCIES OR THE SIZE OF A WEDDING RING
11. TIDAL WAVE
12. "ANCIENT" RULE
14. NUMBER OF DIMENSIONS OF A NODE
16. RECIPIENT C OF THE 2009 CAL FIRE DIRECTORS SUPERIOR ACCOMPLISHMENT AWARD
17. CAL FIRE DIRECTOR
20. 2009 FIRE IN LA COUNTY
21. COORDINATOR OF THE SURVEY WORK FOR THE YFDP
26. TYPE OF LEGAL BRIEF, 2 WORDS
27. NORTH-SOUTH LINE
29. RECIPIENT B OF THE 2009 CAL FIRE DIRECTORS SUPERIOR ACCOMPLISHMENT AWARD
31. ONE OF FOUR PLS ON THIS YEAR'S PORTION OF THE YFDP SURVEY
32. SUNNY
33. 2007 FIRE NEAR RAMONA
35. LEFT TO THE STATE
37. GPS SPACE VEHICLE
38. TYPE OF SKIN CANCER
40. SUNLIGHT SIGNALER
42. AIRY CHARGED BLANKET
45. 0.0166667 DEGREES
46. POSITION PREDICTOR
47. CIVIL DIVISION

Down

1. HUSBAND'S RIGHT IN A WIFE'S ESTATE AFTER HER DEATH
2. DEPARTMENT CREDITED WITH DEVELOPING GPS FOR USE
3. YET ANOTHER OF FOUR PLS ON THIS YEAR'S PORTION OF THE YFDP SURVEY
5. BOUNCING ERRORS
6. ANOTHER OF FOUR PLS ON THIS YEAR'S PORTION OF THE YFDP SURVEY
7. ANOTHER TYPE OF SKIN CANCER
9. METAL ROD
13. ALWAYS SIDE BY SIDE
15. PERIOD OF TIME
18. NORMAL DISTANCE FROM TRUE
19. MOST SERIOUS TYPE OF SKIN CANCER
20. MOONLIGHT SIGNALER
22. USED BY "THE ANCIENTS" TO HOLD A SPLINE
23. LAST OF FOUR PLS ON THIS YEAR'S PORTION OF THE YFDP SURVEY
24. MISSTATEMENT
25. RECIPIENT A OF THE 2009 CAL FIRE DIRECTORS SUPERIOR ACCOMPLISHMENT AWARD
28. AN ARTIFICIAL CHANNEL
30. NOT JULIAN
34. PIECE OF GROUND ENCLOSED WITHIN A FENCE SURROUNDING A HOUSE
36. TYPE OF CURVEY CURVE
39. SPANISH VERSION OF AN ACRE
41. SMALL RIPARIAN ISLAND
43. POINT OF TANGENCY BETWEEN TWO CURVES
44. INHERITABLE ESTATE

Key to CLSA puzzle #15 (Surveyor Issue # 162)



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