

# **SURVEYOR** *California*

Summer 2013

Issue #174

## California's County Surveyors Websites

Articles starting on page 10

## Positional Time Travel A Discussion of the Horizontal Time-Dependent Positioning (HTDP) Utility

Article by Scott P. Martin, PLS on page 24



# RDO Integrated Controls IS COMMITTED TO BEING YOUR POSITIONING TECHNOLOGY SOLUTION PROVIDER Throughout California



**SOLUTIONS PROVIDER** GIS | GPS | Laser | Machine Control | Mobile Mapping | Survey



RDO Integrated Controls was created in 2009 to provide technology solutions in the construction, mining and landfill industries.

We are the industry leader in GIS, GPS, Laser, Machine Control and Mobile Mapping.

Our service team is ready to support your job site in any way possible, including in person, online, and telephone support!

**We've moved to larger and more convenient locations to better serve you.**

**RDO Integrated Controls**  
3980 Research Drive  
Sacramento, CA 95838  
1-800-500-8575 (toll free)

**RDO Integrated Controls**  
1515 S. Sunkist St. • Suite J  
Anaheim, CA 92806  
1-888-527-3793 (toll free)



ARIZONA • CALIFORNIA • HAWAII • MINNESOTA • MONTANA • NORTH DAKOTA • SOUTH DAKOTA • WYOMING

Toll Free 877-90 RDOIC

[www.rdoic.com](http://www.rdoic.com)  
[www.rdomarketplace.com](http://www.rdomarketplace.com)

 **TOPCON**

NOW YOU CAN HAVE A PERFECT  
POINT OF VIEW FROM ANYWHERE



## Trimble VISION

Trimble Vision™ is designed to make surveying more efficient wherever the job takes you. Our portfolio of solutions provides you with the ideal tool kit to get your job done right the first time.

Choose Your Vision:  
[www.trimble.com/trimblevision](http://www.trimble.com/trimblevision)



© 2012, Trimble Navigation Limited. All rights reserved. Trimble and the Globe & Triangle logo is a trademark of Trimble Navigation Limited, registered in the United States and in other countries. All other trademarks are the property of their respective owners.

**FOR MORE INFORMATION  
CALL YOUR  
TRIMBLE DEALER**

**Allen Instruments**  
Anaheim, CA  
714-238-3434

**California Survey and Drafting**  
Sacramento, CA  
916-344-0232



# GET SPECIAL DISCOUNTS at Office DEPOT with your CLSA Membership

The program includes:

- Savings of up to 70% on commonly used items
- FREE next-business-day delivery
- Thousands of products in stock
- Unparalleled expertise
- Ultimate shopping convenience by phone, fax or online
- The latest in office technology
- Office Supplies, Furniture and More!

**OFFICE DEPOT  
IS YOUR  
ONE STOP SHOP!**

**CALL CLSA  
at 707-578-6016  
FOR MORE INFO**

**Office  
DEPOT**

*Taking Care of Business*

## 2013 BOARD OF DIRECTORS

### CLSA Officers 2013

Michael S. Butcher, President  
Rolland VanDeValk, President-Elect  
Jay K. Seymour, Secretary  
Roger K. Hanlin, Treasurer  
Frank R. Lehmann, Immediate Past President  
Dorothy Calegari, Executive Director

### Directors

#### BAKERSFIELD CHAPTER

Ronald J. Nelms

#### CASCADE CHAPTER

Jeff S. Steffan

#### CENTRAL COAST CHAPTER

Cristi Fry • Ian E. McClain • Linda M. Richardson

#### CENTRAL VALLEY CHAPTER

Jon D. Scarpa • Keith W. Spencer

#### CHANNEL ISLANDS CHAPTER

Marta Alvarez • Kurt J. Lehnhardt

#### DESERT CHAPTER

Douglas E. Redlin

#### EAST BAY CHAPTER

Harold B. Davis • Gwendolyn Gee • Steven J. Martin

#### GOLD COUNTRY CHAPTER

Marc R. Van Zuuk

#### HUMBOLDT CHAPTER

Peter D. Jackson

#### LAKE/MENDOCINO CHAPTER

A. Michael Gilmore

#### LOS ANGELES CHAPTER

Camden C. Cabrinha • Mark R. Danielson • Stephen M. Hughey  
Mark E. Price • Steven G. Steinhoff • Diane W. Wells

#### MARIN CHAPTER

William E. Schroeder

#### MONTEREY BAY CHAPTER

David M. Tully

#### MOTHER LODGE CHAPTER

Richard James

#### NORTHERN COUNTIES CHAPTER

James M. Herrick • Donald L. Solheim

#### ORANGE COUNTY CHAPTER

Anthony C. Cuomo • Joseph A. Padilla • Thomas E. Propst  
Joshua C. Tatman • David E. Woolley

#### RIVERSIDE/SAN BERNARDINO CHAPTER

William R. Hofferber • Ryan Hunsicker • Ryan M. Versteeg • Peter G. Wiseman

#### SACRAMENTO CHAPTER

Jerome R. Jones • Annette M. Lockhart • Jill Van Houten • D. Ian Wilson

#### SAN DIEGO CHAPTER

Anne L. Hoppe • David Paul Johnson • Casey Lynch • Gary Mellon

#### SAN JOAQUIN VALLEY CHAPTER

Kevin W. Nehring

#### SANTA CLARA/SAN MATEO CHAPTER

Paul W. Lamoreaux • James F. Wright

#### SONOMA COUNTY CHAPTER

Michael E. Ford • Aaron R. Smith • Steven J. Weiss

# Surveyor *California*

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."

## PERSONNEL

### OWNER

California Land Surveyors Association, Inc.

### CENTRAL OFFICE

526 So. E Street  
Santa Rosa, CA 95404

E-Mail address: [clsa@californiasurveyors.org](mailto:clsa@californiasurveyors.org)  
CLSA Homepage: [www.californiasurveyors.org](http://www.californiasurveyors.org)

### EDITOR

John P. Wilusz, PLS, PE

### ASSISTANT EDITORS

Paul M. Brown, PLS – Jill Van Houten, PLS

### CONTRIBUTING WRITERS

Anne Hoppe, PLS  
Dane Ince, PLS  
Michael P. Durkee, Esq.  
Richard R. Hertzberg, CPUC, ARM  
Ian Wilson, PLS

### DESIGN AND PRODUCTION

Tony Monaco

### ADVERTISING

Commercial advertising is accepted by The California Surveyor. Advertising rates and information can be obtained by contacting CLSA 526 So. E Street, Santa Rosa, CA 95404, Tel. (707) 578-6016 - Fax (707) 578-4406. Circulation: 4,800.

### EDITORIAL MATERIAL

All articles reports, letters, and contributions are accepted and will be considered for publication regardless of the author's affiliation with the California Land Surveyors Association, Inc. Contributions should be emailed to [clsa@californiasurveyors.org](mailto:clsa@californiasurveyors.org). We can accept WordPerfect or Microsoft Word files. We can accept ASCII text files or word processor files from the following programs: WordPerfect or Microsoft Word.

### EDITOR'S ADDRESS

John P. Wilusz, PLS, PE  
E-mail: [johnwilusz@gmail.com](mailto:johnwilusz@gmail.com)

### DEADLINE DATES

Spring ..... February 1      Summer ..... May 1  
Fall ..... August 1      Winter ..... November 1

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

Opinions expressed by the editor or individual writers are not necessarily endorsed by the California Land Surveyors Association Officers or its Board of Directors. Original articles may be reprinted with due credit given to the source and written notification to the California Land Surveyors Association, unless otherwise noted.

# Inside This Issue:

## Features:

### California's County Surveyors Websites

#### El Dorado

By: Annette Lockhart, PLS and Karen Hyder .....10

#### Kern

By: Donna Fujihara, PLS .....12

#### Placer

By: Diana Boswell. ....14

#### San Diego

By: Robert Laudy. ....16

#### San Joaquin

By: Warren Smith, PLS. ....18

#### Santa Clara

By: Gwen Gee, PLS, CFedS. ....20

#### Stanislaus

By: Rich Brown, LSIT. ....22

### Positional Time Travel

By: Scott Martin, PLS .....24

## Columns:

### Tech Tips: Seam Errors on a Digital Bar Code Level Rod

By: Michael Mcgee, PLS & Robert Reese, PLS .....28

### Professional Outreach Events

#### One of the Guys

By: Annette Lockhart, PLS .....30

#### Surveyor goes to Tustin

By: Don Mertens, PLS .....30

### Risk Management: Certificates of Insurance - Check Them Out

By: Richard Hertzberg, CPCU, ARM .....36

### SMA Expert Q&A

By: Michael P. Durkee, Esq. ....38

### The BPELSG Chronicles

By: Ray Mathe, PLS .....40

### Bad Backsights

By: Carl C. de Baca, PLS .....46

## Departments:

From the Editor .....6

Kids Korner .....7

President's Message .....8

Geography Quiz .....9/34

Letter to the Editor .....9

Congratulations 2013 New PLSs .....23

CLSA/CSU Fresno Endowment .....32/33

Index to Advertisers .....34

Welcome New CLSA Members .....35

Photo of the Year Submissions .....37

Conference 2014 .....41

Crossword Puzzle .....42/43

Sustaining Members .....44

Postcards .....45

Cartoon Captions .....45

San Francisco Treats .....46

## Cover

Photography by Steve Shambeck, PLS Photography  
[www.plsphotography.com](http://www.plsphotography.com)



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

John works for the California Department of Water Resources in Sacramento, CA.

## From the Editor

### Office of the County Surveyor

In this issue of the California Surveyor we focus on California's county surveyors. The office of the county surveyor can provide a wealth of information for the professional land surveyor and today much of that information can be accessed through the internet. We hope you find our county surveyor website articles useful tools for your on-line research. There are 58 counties in the state and in this issue we only had space for a handful of articles. Drop us a line and let us know if you would like to see more counties featured in a future issue of the magazine. The following essay is but a brief overview intended for general interest reading only. Consult the appropriate statutes for complete and definitive information regarding the topics presented herein.

### History of the County Surveyor

The duties of the county surveyor were set forth in the first statutes of California, i.e., the statutes passed during the first session of the legislature, which began in December 1849 and ended in April 1850. I found it interesting that the office of the county surveyor predates California's date of statehood, September 9, 1850. The statutes created 27 counties, out of which today's 58 have been carved. The last county formed was Imperial in 1907 from a division of San Diego.

The first county surveyors were elected officers who were required to subscribe to an oath or affirmation to support the Constitution of the United States and the Constitution of the State of California. (Over the years most county surveyors came to be appointed by the county Board of Supervisors and today the last elected county surveyor is in El Dorado County.) The responsibility for surveying and mapping county boundaries actually belonged to the surveyor general, but he was authorized to delegate this task and many others to the county surveyor. There will be more on the relationship between the surveyor general and the county surveyor shortly.

Among other duties, the first county surveyors were authorized to survey private lands divided by county boundaries. (This is still the case today.) I was surprised to learn that in those days only surveys executed by the county surveyor were considered legal evidence in court. That is to say, the only legally binding land surveys, private surveys included, were those done by the county surveyors. The reason is probably because there were few qualified land surveyors in the state at that time; this was long before surveying licensure requirements took effect on July 1, 1891. Evidently the founding fathers sought to minimize the effect of amateur surveyors.

The county surveyor and his deputies were entitled to the following compensation: Ten dollars for the first mile run with compass and chain and eight dollars for each mile thereafter; five dollars for each mile run with compass alone; three dollars for each plat and certificate; five dollars for each lot laid out and plotted in any city or town; two dollars for recording a survey; and fifty cents for each mile for traveling to the place of survey and returning. Each county surveyor was directed to transmit copies of his field notes and plats to the surveyor general (except for surveys of city or town lots) and he was required to indicate plainly on his maps where rivers, streams, and parcel boundaries intersected county lines.

### Duties of the Surveyor General

California's first statutes authorized the surveyor general to survey, mark, and map the boundaries of the state, counties, incorporated cities, and towns. He was further authorized to require the county surveyors to assist him within the limits of their respective counties in the execution of any surveys authorized by the legislation. The statutes designated the surveyor general as chief engineer and commissioner of internal improvements such as roads, railroads, canals, and aqueducts. Curiously, there is no mention of a "county engineer" or "engineer general" in the first statutes. The surveyor general was directed to require county surveyors to collect and provide detailed information about the state's resources within their jurisdictions. Some examples of the information county surveyors were required to provide are as follows:

- An estimate of the quantity of land within the county.
- An estimate of the quantity of lands used for tillage and grazing.
- An estimate of the number of horses, cattle, sheep, and swine.
- An estimate of the quantity of wheat, rye, maize, potatoes, grapes, and other agricultural productions of the preceding year, together with his views as to the presence, cause, and remedy of any diseases preventing an increase of the same.
- An estimate of the quantity and value of minerals produced, together with a description of the localities in which such minerals may be found.
- All facts within his personal knowledge which may promote the full development of the resources of the state.

The office of the surveyor general was eliminated by statute in 1929.

### The County Surveyor Today

A public officer of the State of California, the legislated duties of the county surveyor are today set forth primarily in the California Government Code. Other duties are defined the Business and Professions Code, Health and Safety Code, Streets and Highways Code, Public Resources Code, and Water Code. These duties are diverse and to some extent are carried out slightly differently across the state. Generally speaking, California's county surveyors provide the following services:

- Educate the public regarding rights and obligations affecting property owners.
- Review final and parcel maps, records of survey, corner records, lot line adjustments, property mergers, abandonment of public easements, offers of dedication, and similar documents for compliance with federal, state and local laws.
- Store, index, and provide public access to land based records for research purposes. Many offices scan maps and other documents and enter them into an electronic database for easy access, and copies of records that are archived in other jurisdictions can often be found in the

*Continued on next page*



office of the county surveyor. Depending on the county, documents available for research generally include the following: Final and parcel maps, records of survey, corner records, lot line adjustments, offers of dedication, certificates of compliance; unrecorded surveys; PLSS maps; swamp and overflowed lands surveys; highway maps; right-of-way maps; assessor maps; deeds; zoning maps; special district maps; annexation maps, county boundary maps; state boundary maps; and aerial images.

- Create and maintain GIS maps and official documents for local jurisdictions including school, fire, utility and community service districts.
- Determine boundaries of county owned properties, including roads, rights-of-way, easements, and county controlled districts.
- Conduct surveys as required by the Board of Supervisors and the courts.
- Provide data to the State Land Commission regarding county surveys that cross state owned lands such school lands, swamp and overflowed lands, tidelands, and navigable streams.
- Authorize retracement surveys using monument preservation funds of historical land division lines such as government section lines, rancho lines, grant lines, rancho section lines, acreage subdivision lot lines, and subdivision boundary lines.
- Collaborate with other agencies in the land development process and provide support and expertise to other departments and jurisdictions for the benefit of the public.
- Serve as ex-officio deputy county recorder and certify to the authenticity of certain documents in that capacity.

### Credits

My thanks to Michael Emmons, PLS for providing me with his list of California codes pertaining to the office of the county surveyor and for his peer review of this article. Michael is a retired Santa Barbara County Surveyor and current Secretary of the League of California Surveying Organizations ([www.lcso.com](http://www.lcso.com)). My thanks to Annette Lockhart, PLS of the California Department of Water Resources ([www.water.ca.gov](http://www.water.ca.gov)) and Rich Brown, PLS of the Stanislaus County Surveyors Office ([www.stan-county.com/publicworks/division/surveyor/index.shtml](http://www.stan-county.com/publicworks/division/surveyor/index.shtml)) for their help researching and editing the website articles.

### About the Picture

The picture above was taken with an iPad using the app "Theodolite HD" by Hunter Research & Technology. The app uses the iPad's built-in GPS receiver and gyroscope to provide measurements of horizontal and vertical angles much like a theodolite. Just point the cross hairs at your target and read the measurements on the screen. My friend Karen Tolentino, EIT found the app on the internet and shared it with me because she knows I have an interest in surveying equipment. Karen has considerable experience with construction surveys using total stations and GPS as a staff sergeant in the U.S. Air Force.

Technology like this theodolite app is a double-edged sword for surveyors. Technology makes our work physically easier and helps us get more work done faster with fewer workers. At the same time it presents serious challenges to our profession. Does the need for fewer workers translate into an ever-shrinking population of surveyors? And how will land surveying as a profession stay relevant in a world where everyone can make expert measurements? If you have thoughts about the impact of technology on the future of our profession please share them with us. We plan to address this important subject in future issues of the California Surveyor.



Standing next to me in the picture are my friends from the California Department of Water Resources: Karen Tolentino, EIT, and Jeff Galef, PE. Amy Simpson, PE, also with the Department, was the photographer. ❖

## 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.

**Name, Abigail Willson** (Daughter of Crissy Willson) sporting a "My Sights are Set on Surveying" tattoo and reading a "Choose Your Path, Make Your Mark" brochure. These and other recruitment materials are available through CLSA. Contact the CLSA Central Office for more information. CLSA Central Office (707) 578-6016 [clsa@californiasurveyors.org](mailto:clsa@californiasurveyors.org)



By: Michael S. Butcher, PLS - President

*Michael is Vice President of SB&O, Inc. in San Diego, CA. In addition to serving as CLSA President, Mike is also the CLSA Legislative Committee Chairman.*

## President's Message

### Mentoring: A Mutually Beneficial Relationship

At my recent Chapter meeting I noticed many new faces, and a lot less gray hair in the room. We gave recognition to new Surveyors who were recently notified that they passed the LS exam. Can you remember the excitement and/or trepidation when opening the envelope from the BPELSG? I congratulate the new licensees for their accomplishment and wish them the best as they navigate through their career. Moreover, I extend a sincere thank you to those that chose to help advance our profession by mentoring a new generation of Surveyors. Your dedication helped these new licensees achieve their success and I know you share in the joy of seeing them attain licensure. (A full list of new LS's can be found on page 23.

The value of mentoring within our profession cannot be overstated. In the beginning, mentors assist in teaching the information you need to take the first step - becoming licensed. However, true mentors continue to be there as a resource to help shape you as a professional and guide you through your career. I still rely on mentors; Surveyors to bounce ideas off of and gain different insight. Mentors aren't necessarily your elder, some of my mentors are near my age, some a bit older, some a bit younger. All are colleagues, yet each have the unique quality of a mentor which is the willingness to listen, draw from experience, and suggest a fresh perspective.

We all have unique abilities and areas of expertise and it is important that we continue the tradition within our profession of sharing knowledge and experience with the future generation. There is a lot to be gained by being a mentor. Not just the good feeling you get by helping someone, but a true value in facilitating your own professional growth by mentoring someone else. Knowing you are responsible for guiding someone helps to motivate you to look at your own performance and grow both personally and professionally.

#### Getting Involved

The greatest benefit to be derived from membership in any professional organization is the opportunity to establish key relationships with others who are dedicated to the advancement of the profession. As members of the California Land Surveyors Association (CLSA), we are able to unite with our colleagues and through our association we can participate in the exchange of new concepts, ideas, and help solve problems that may exist within the surveying profession.

In recent years, I have heard lively discussion on topics such as GIS, laser scanning, photogrammetry, and the role (or lack thereof) of the Surveyor. It is important we continue to talk about these issues and CLSA provides the means to do so. CLSA is unique in that we represent all Land Surveyors. Our membership includes private sector and public sector surveyors. This provides a vast networking resource and wealth of industry knowledge. One can attend local Chapter meetings which provide an opportunity to discuss topics and mentor one another. Another way to mentor is through the CLSA online Discussion Board. This provides a resource to widely share information throughout the survey community and beyond.

However you choose to get involved, I encourage you to make a personal commitment to continue learning, teaching and supporting your peers. Respectfully challenge others and yourself with the intent of facilitating growth. Finally, encourage others to share their ideas. We must invest our time and expertise to continue moving the profession forward. ❖







CLSA EDUCATION FOUNDATION

*New Photos Added!*

## Land Surveying Photo Gallery

Unique Historic Photos Now Available for Purchase! Order Today!



Proceeds from the sale of photos benefit California Land Surveyors Association Education Foundation (CLSA EF) and will be used to fund scholarships for land surveying students.

CLSA would like to thank Bryant Sturgess for generously donating his collection of historic images.



Order online at: [CLSAphotos.smugmug.com](http://CLSAphotos.smugmug.com)



## Letter to the Editor

Dear Editor,

I am writing to express my appreciation for Phil Danskin's article "Thank You for Your Interest" in Issue #173. I can relate to his advice: "Be prepared for competitors that, to put this generously, play by different rules than you do." You could also call it "playing by different rules" or "what CLSA members do NOT do." Like many intangibles, professionalism may be more easily defined by considering what it is not.

I would add three specifics to Mr. Danskin's "be prepared" advice: 1.) Don't be surprised by what some not-so-professional land surveyors are willing to say for money. 2.) When you are the target, and you will be sooner or later, don't feel like the Lone Ranger since it happens to all of us. 3.) Perhaps most important is to adopt a "let it go" (quickly) mantra. It is just like the unsportsmanlike conduct we see everywhere. Life is too short and you won't pay the bills if you let this stuff get to you and sap the energy you should be putting into your work. Remember the "fake Buddha quote," no less valuable even if we may not know for certain the identity of the author: "Holding onto anger is like drinking poison and expecting the other person to die."

Stephen Hughey, PLS ❖



## Geography Quiz

by: Anne Hoppe, PLS  
and Germar Berhard, Ph.D.  
Photography by:  
Germar Berhard, Ph.D.

### Question:

We are on the largest island of the Tuscan archipelago. A French emperor who was integral to the adoption of the metric system was exiled here in 1814.

Where are we?

*Answer to the Geography Quiz on page 34*





# El Dorado County



By: Annette Lockhart, PLS and Karen Hyder

*Annette works for the California Department of Water Resources and Karen works for the El Dorado County Surveyor.*

*Editor's note: The El Dorado County Surveyor is the only remaining county surveyor in the state that is elected rather than appointed.*

<http://www.edcgov.us/Surveyor/>

## County Surveyor Mission Statement

- To assist the Land Survey Professional in the mapping of land boundaries and divisions.
- To educate the public in rights and obligations that may affect them as property owners.
- To collaborate with other agencies in the land development process for the benefit of the public.
- To determine boundaries of county owned properties and county controlled districts at the request of the Board of Supervisors.

## GIS Mission Statement

*(The Geographic Information Systems (GIS) Department is also housed under the County Surveyor's Office.)*

The mission of the GIS program in El Dorado County is to develop, manage and maintain an enterprise, standards-based geographic information system that will provide timely, accurate, well-documented geospatial and associated tabular data in an accessible yet secure format that facilitates improved operations, decision-making, and customer service.

## Contact Information:

County Surveyor, El Dorado County: Rich Briner, PLS

### Street Address:

Surveyor  
360 Fair Lane  
Placerville, CA 95667

### Telephone:

Local Number: (530) 621-5440  
From El Dorado Hills: (916) 358-3555 x5440  
From South Lake Tahoe: (530) 573-7955 x5440  
Email: [surveyor@edcgov.us](mailto:surveyor@edcgov.us)

**Internet Address:** <http://www.edcgov.us/Surveyor/>

### Available through the Surveyor's website:

- Corner Records – Can be downloaded as PDF files.
- Parcel Inquiry Application-GOTNET  
\*GIS Maps with a wide selection of layers (i.e. parcel lines, zoning, etc.)
- Documents and forms
- Links to other county departments to assist with document look-up, etc.

## El Dorado County

El Dorado County, located in east-central California, encompasses 1,805 square miles of rolling hills and mountainous terrain. The County's western boundary contains part of Folsom Lake, and the eastern boundary is also the California-Nevada State line. The County is topographically divided into two zones. The north-east corner of the County is in the Lake Tahoe basin, while the remainder of the County is in the "Western Slope," the area west of Echo Summit.

The 2010 the population of El Dorado County was 181,058. Over the years, the population has grown as the Greater Sacramento area has expanded into the region. El Dorado County thrives as tourists are drawn to visit its unique historical sites and beautiful landscapes. Lake Tahoe continues to attract visitors from around the world and west of the Lake Tahoe basin, agriculture thrives with family farms boasting apples, vineyards and Christmas trees.

## Divisions of the El Dorado County Surveyor's Office

### The Land Survey Division

- Checks maps and documents for compliance with federal, state and local laws.
- Reviews Subdivision and Parcel Maps, Record of Surveys, Corner Records, Lot Line Adjustments, Property Merges, Abandonment of Public Easements, Offers of Dedication, etc.
- Creates GIS maps and official documents for local jurisdictions including school, fire, utility and community service districts. This Division will also survey county lands at the request of the Board of Supervisors.

### The Addressing Division

Responsible for road names and assignment of situs addresses to provide a uniform numbering system to protect the health, safety and welfare of those who live and work in the county. The work of this Division enhances the ability of emergency vehicles to respond rapidly to calls, provides for an orderly election process and reduces confusion and error in locating businesses and residences, expediting postal and other delivery services.

### The Certificate of Compliance Division

Determines, processes, issues and records Certificates of Compliance. A Certificate of Compliance states that a parcel is in compliance with the Subdivision Map Act and local ordinance and that it can sold, leased, or financed.

*Continued on next page*



**The Land Management Information System Division**

Maintains, and enhances the Land Management Information System and data base used by the departments of El Dorado County.

**The Geographic Information Systems Division**

Responsible for developing, managing and delivering a wide variety of maps and data to the general public and most of the departments and agencies in the County.

**Tips for Using the El Dorado County Surveyor's Web Page**

The EDC Surveyor page begins at the top with a welcome message and then provides some quick links in a blue box on the left side of the screen. Contact information is in a white box on the right above a spinning compass.

- Parcel Inquiry
- Application-GOTONET
- Corner Records
- F.A.Q.
- Forms & Documents
- Links & Resources
- GIS Map Library
- Situs Updates-ast 60
- Free Schedule
- Student Map Contests

**Corner Record Inquiry QR Symbol**

Scan this QR Symbol with your smart phone and you can access corner records in the field. The code is on the reverse side of Rich Briner's business card, so keep one in your truck.



**CORNER RECORD INQUIRY**

[www.edcgov.us/Surveyor/CornerRecordInquiry.asp](http://www.edcgov.us/Surveyor/CornerRecordInquiry.asp)

**GOTNET Inquiry QR Symbol**

Scan this QR Symbol with your smart phone and you can access GIS maps for parcel inquiry applications in the field. Keep a copy in your truck.

**GOTNET INQUIRY**

[gemp.edcgov.us/gotnet](http://gemp.edcgov.us/gotnet) ❖



**TRI STATE PHOTOGRAMMETRY**  
*Land Information Solutions*

**Tri State Photogrammetry**

**Northwest Region Office**  
1925 E. Prater Way  
Sparks, Nevada 89434  
(775) 358-9491  
Fax: (775) 358-3664

**Southwest Region Office**  
3471 W. Oquendo Rd., Ste. 102  
Las Vegas, Nevada 89118  
(702) 222-0986  
Fax: (702) 895-9652

**Topographic & Planimetric Mapping For Design Engineering**

**Digital Orthophotography & Cadastral Mapping**

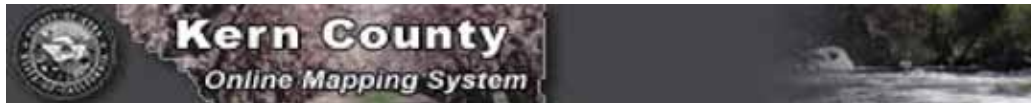
**GPS/RTK Surveys**

**Image Matched DTM/DEM & Contouring**

**1-800-411-3752**  
**www.TriStateLtd.com**

# Kern County

<http://esps.kerndsa.com>



## Mission Statement of Kern County Engineering, Surveying and Permit Services:

"To facilitate the processing of Tract Maps, Parcel Maps, Lot Line Adjustments, Annexations, Records of Survey, Corner Records, and Parcel Map Waivers and ensure that property rights and public welfare are protected; to provide prompt and accurate survey services to other Departments and Government entities; and to provide a research center that is unsurpassed in its availability of information and commitment to service."

## Contact Information:

County Surveyor, Kern County: Donna Fujihara, PLS

### Street Address:

Office of the County Surveyor  
Public Services Building  
2700 "M" Street., Suite 570  
Bakersfield, CA 93301-2370

Telephone: (661) 862-5084

Email: [dfuji@co.kern.ca.us](mailto:dfuji@co.kern.ca.us)

Internet Address: <http://esps.kerndsa.com>

## Maps available for downloading from the website:

- Record of Surveys
- Parcel Maps
- Final Maps
- Corner Records
- Unrecorded Maps  
(These are located under "Miscellaneous Surveys.")
- Government Plat Maps
- County Surveyor Corner Ties

## Kern County

Kern County spans the southern end of California's Central Valley. Covering about 8,161 square miles (21,137 km<sup>2</sup>), it ranks third in area and ranges west to the southern slope of the Coast Ranges, and east beyond the southern slope of the eastern Sierra Nevada into the Mojave Desert. The population of Kern County was 856,158 in 2012, making it the eleventh most populous county in the state. The seat of county government is in the City of Bakersfield.

## Kern County Surveyor's Office

The Kern County Surveyor's Office (KCSO) is located in Bakersfield and is part of the Kern County Engineering, Surveying and Permit Services Department (ESPS). ESPS is a component department of the Development Services Agency of Kern County, and facilitates land development for Kern County

By: Donna Fujihara, PLS

Donna is the County Surveyor for Kern County.



under the direction of the Board of Supervisors. ESPS maintains a web site at <http://esps.kerndsa.com> that has links to a variety of engineering, surveying and development related information. One of those links leads to the KCSO web page (Surveying); it can be reached directly at <http://esps.kerndsa.com/surveying>.

## KCSO Web Page

The KCSO page begins at the top by showing the name of the parent department ESPS, then providing some quick links to fees, development, engineering and survey information. Below that, the County Surveyor's contact information, physical address of our building and business hours are all listed (for the more geographically oriented customers, the NAD83 Latitude of 35° 23' 01" North and Longitude 119° 00' 52" West, should help to find our location). In addition, there are links to Record of Survey guidelines, Annexation requirements, Checklists for various map submittals, Easement and survey information, Various forms, Statutes, Codes and Board rules, County Maps and Frequently asked questions. Each of the above opens a new page where the researcher will find a substantial amount of information and other linked pages.

## GIS Tool

The GIS tool, under Services on the ESPS home page, is great for obtaining different types of information at one location. Once you agree to the disclaimer, launch the map viewer and you will be directed to a layout of the entire county. At the top is a locate button that allows you several ways to get you to a more specific location. Map layers are located on the right side with a myriad of information available for viewing. This includes assessor maps, parcel maps, tract maps as well as zoning, zip codes and district boundaries, NGS benchmarks, to name a few.



This site is provided through a cooperative effort from a number of County departments. We hope that this site will be a useful tool to introduce you to Geographic Information Systems (GIS). We attempt to make this data accurate but inaccuracies may occur. Please contact the appropriate department to verify data before making decisions based on this site.

### Step 1: Learn to Use the Maps

We recommend looking at the following prior to launching a map:

- Quick tutorial

### Step 2: Launch the Map

Click on the icon below to launch the Geocortex IMF Map Viewer.



Launch Map Viewer

*Continued on next page*



a drawing that shows the subdivisions within the county. This includes tract maps, parcel maps, lot line adjustments, parcel map waivers, as well as public access easements, county properties and county roads. Numbered bubbles shown on each case map are references to the recorded information. These references are found along the borders of the case map. Copies of the references can be obtained through the Recorder's Office, Clerk of the Board (Board of Supervisor's Minute Books) or the County Maproom.

### **The Maproom**

The Maproom, located within ESPS, keeps the online information up to date, as well as maintaining the items stored in the file room. These items include maps, field books, subdivision folders, improvement plans and aerial photographs. Surveyors, engineers and the general public can also come to the Maproom counter and do their research. Common research includes locating local benchmarks for construction purposes and viewing historic aerial photographs.

### **Kern County Mapping and Survey Information Internet Research Site**

We offer almost all of our mapping on the internet. To research survey information in Kern County go to our web site at <http://esps.kerndsa.com/maps>. Add this link to your favorites; it will give you additional pages to maps not listed on the GIS. Definitions of each link are posted on the above mentioned site. Case maps are made according to the Township and Range. Some are broken into individual sections or quarter sections.

### **Maps Available for Downloading**

Under the Maps tab there are several types of maps available for downloading. Each map type is indexed by Township, Range and Section. These include Government Plats, Sales Maps and Corner Records. Unrecorded maps are located under the Miscellaneous Surveys.

### **Guidelines and Checklists**

The Kern County Surveying page assists surveyors/engineers with information regarding the submittal of a map or in the preparation of a legal document. Record of survey guidelines including the cost for checking and recording a map, checklists for submitting lot line adjustments, parcel map waivers, parcel maps, and final maps and various forms are also available for downloading.

### **Land Development**

At the bottom of the web pages, there is a link to Planning and Community Development, where you can find the fee schedule for whatever type of project you're doing, as well as downloadable forms and applications for land development, street vacations, zone changes, etc. There is also a link to Roads for development review information, a transportation impact fee schedule, encroachment permit information and applications. For those who already have a development project in for processing, at the bottom of the web pages, there is a DSA Project Tracker link. This will take you to a program that currently tracks the status of parcel maps, tract maps, parcel map waivers and lot line adjustments. The Welcome page gives a brief explanation of how to use the program and what information you can expect to view. ❖

## **Proudly Supporting CLSA Since 1978**



**Custom orders your way ... when you need them.**

**When your name is on it, our name is behind it.**

**Berntsen delivers.**

**The professional's choice in survey products • [www.berntsen.com](http://www.berntsen.com) • 877.686.8561**

By: Diana Boswell

Diana works for Engineering and Surveying Division of Placer County.

# Placer County

<http://www.placer.ca.gov/departments/communitydevelopment/eng>

Find Corner Records, Mapping Submittal Requirements and current Map Statements at our Webpage below, or come to our office to use our self-service Survey Research Room that includes all Recorded Maps (11X17 format) and Recorded Documents on either Micro-film (Pre-2000), or by computer database search using the Recorder's search engine for newer Recorded Documents. The Unrecorded Survey Database is also available in the Survey Research Room (Bring a thumb drive to download files). Or visit our website: <http://www.placer.ca.gov/departments/communitydevelopment/eng>

## Contact Information:

Street Address:  
 3091 County Center Drive  
 Auburn, CA 95603

Telephone: (530) 745-3000  
 Fax: (530) 745-7589



Use the "Surveying" tab on the left to navigate to Map specific Statements, Checklists, Documents, Requirements and the Corner Record Database\* & Images \*Access 2007 format or Access 2000 format.

## Other Helpful County Websites:

PLANNING DEPARTMENT - Geographic Information and Zoning  
<http://www.placer.ca.gov/departments/communitydevelopment/planning/permitsandgis>  
 Clerk-Recorder <https://portal1.recordfusion.com/countyweb/login.do?countyname=Placer> ❖



Get a Full Data Collection Bundle for As Low As **\$1,295**

SAVE  
UP TO  
**\$695**



~~(MSRP \$1,990)~~  
Limited Time Offer  
**\$1,495**  
**- \$200\***  
**\$1,295**

**\* TRADE-IN A DATA COLLECTOR (WORKING OR NOT) AND RECEIVE AN ADDITIONAL \$200 OFF THE SALE PRICE**

## Tool & Equipment Rental

Top quality total stations, rotating lasers, auto levels, HDS, precision GPS, and Distos for surveyors and contractors



Local presence ■ National reach ■ Global resources

Visit your local Leica Geosystems Solutions Center for more details:

2942 Century Place  
Costa Mesa, CA 92626  
Phone: 800-938-0606  
714-546-0606  
Fax: 714-546-9724

1447 Rollins Rd.  
Burlingame, CA 94010  
Phone: 800-462-8181  
Fax: 650-348-0502



# San Diego County

By: Robert Laudy

Robert is the DPW Unit Manager for Cartographic Services

<http://www.sdcounty.ca.gov/dpw/surveyor.html>



## Contact Information:

San Diego County Surveyor: Terrence T. Connors, PLS

Street address:

San Diego County Surveyor  
San Diego County Department of Public Works  
5510 Overland Avenue, Suite 210  
MS-O-336  
San Diego, CA 92123

Telephone: (858) 694-3869

Email: [Terry.Connors@sdcounty.ca.gov](mailto:Terry.Connors@sdcounty.ca.gov)

Internet address: <http://www.sdcounty.ca.gov/dpw/surveyor.html>

Staff Contact: Robert Laudy

Email: [Robert.Laudy@sdcounty.ca.gov](mailto:Robert.Laudy@sdcounty.ca.gov)

Telephone: (858) 694-3484

## Survey Records System Simplifies and Expands Research

### Background

County of San Diego staff, industry professionals and the general public, all need access to survey records and related documents stored by the County. Most of these documents were traditionally researched and retrieved using manual indexing systems and viewed and printed from aperture cards, hard copies and other analog materials.

The Department of Public Works, Cartographic Services Section introduced the Survey Records System (SRS) in 2005. SRS is an online web-based records retrieval system that allows the public and county employees to geographically search for land-based records from their homes or offices and receive them electronically as downloaded images. The system has been received enthusiastically by the public and by County staff.

The Center for Digital Government and Education recognized the DPW's SRS with a 2005 "Best of the Web" Digital Government Achievement Award in the Government to Government category. Being completely web-based, SRS requires no software installation on users' computers. They do need to make sure they have Microsoft Silverlight installed, but that is pretty standard now. So records are available from laptop computers connecting to the Internet from anywhere.

## SRS Expands

In 2013, Cartographic Services completed an expansion of the Survey Records System. Called SRS Phase 2, this expansion doubled the number of documents available online, while also making some welcome user interface improvements.

There is now even less need for the public to travel to the County Operations Center to view and purchase records and documents, since almost all of Cartographic Services records are now online. However, if customers do come in to the office, they will have four new kiosks at their disposal to assist in the search for their records.



Continued on next page



### SRS Webpage

SRS can be accessed at this address: [https://www.sdcounty-luegepay.com/SRI\\_Internet/](https://www.sdcounty-luegepay.com/SRI_Internet/)

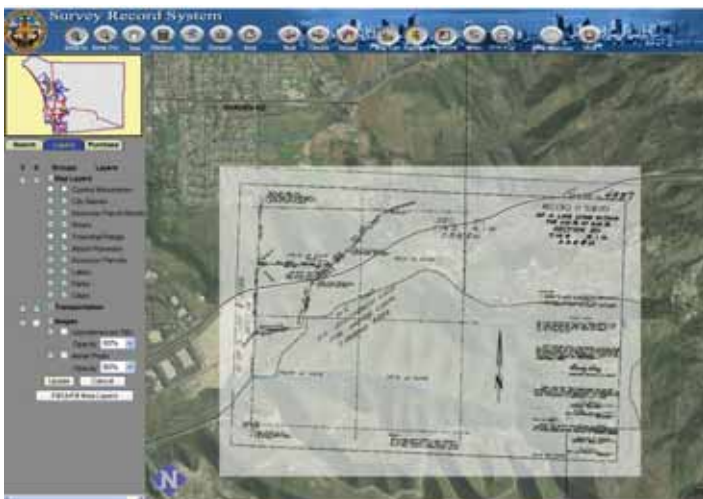
Clicking on the graphic screen image will bring up the map of San Diego County. At this point, the user can choose to zoom into the area of interest and search by shape or by document type. When doing a search by type, users can choose to locate specific documents or simply select all and find any doc type available for the area in question.



Survey Record System

Document Type	Document ID	Document	Total Pages	Downloaded Pages
Parcel Map	PM 01730	TM 12447	104	5
Document Type	Document ID	Document	Total Pages	Downloaded Pages
Contract Record	CR 00007		2	0
Document Type	Document ID	Document	Total Pages	Downloaded Pages
Old Survey	OS 00001		1	0
Document Type	Document ID	Document	Total Pages	Downloaded Pages
Final Survey	FS 01001		1	0
Document Type	Document ID	Document	Total Pages	Downloaded Pages
Recorded E/S Survey	RES 00002	FILE 001 0004	104	1
Recorded E/S Survey	RES 00003	FILE 001 0003	104	1
Recorded E/S Survey	RES 10004	APN 120-33-APN 120-34-APN 120-07-1-APN 11	104	2
Document Type	Document ID	Document	Total Pages	Downloaded Pages
Final Survey	FS 01007		1	0
Document Type	Document ID	Document	Total Pages	Downloaded Pages
Public Record System	PR 01001	FILE 001	104	0

Desired maps can be placed into the shopping cart and purchased via the e-commerce site. Then, the maps are available for download.



SRS is managed by the Cartographic Services Section. Cartographic Services is part of the County of San Diego, Department of Public Works, Office of the County Surveyor. SRS Coordinator Contact for questions and/or comments:

Kris Lingelser, Senior GIS Analyst  
County of San Diego  
Department of Public Works  
Cartographic Services  
5510 Overland Ave. Room 270  
San Diego, CA 92123  
(858) 694-3253  
[kris.lingelser@sdcounty.ca.gov](mailto:kris.lingelser@sdcounty.ca.gov) ❖



The **MEASURE OF EXCELLENCE**

The Landmark Name  
**SURV-KAP**  
in Survey Products

**EASY ORDERING ONLINE!**

**SURV-KAP.com**

SURVEY MARKERS, CAPS AND ACCESSORIES • 800-445-5320

100% GUARANTEED

# San Joaquin County

Warren is the Deputy County Surveyor for San Joaquin County

<http://sjmap.org/website/surveyorlandrecords>



## Web-Based Records Retrieval & Viewing System

The Surveyor Division of the San Joaquin County Department of Public Works contains thousands of land and survey-related records within San Joaquin County. Historically, these records have been accessed at the Recorder's Office in downtown Stockton, or the County Surveyor's Office. With the Surveyor Land Records System, the method for accessing public records has been drastically changed by using a powerful web-based public records retrieval and viewing system. Records and documents are scanned and linked to corresponding geographic locations within the County Public Land Surveying System. Then records can be easily located and retrieved using a standard web browser from any personal computer connected to the Internet. Users can access Parcel Maps, Records of Survey, unfiled Maps, and Final (Subdivision) Maps in Maps and Plats.

### Contact Information:

Deputy County Surveyor, San Joaquin County: Warren Smith, LS

Street address:

Office of the County Surveyor  
1810 E. Hazelton Avenue  
Stockton, CA 95205  
Telephone: (209) 468-3049

Email: [wsmith@sjgov.org](mailto:wsmith@sjgov.org)

Internet Address: <http://sjmap.org/website/surveyorlandrecords>

Maps and documents available for downloading from the website:

- Records of Survey
- Parcel Maps
- Final Maps
- Unfiled Surveys
- Corner Records (separate link)

## San Joaquin County

San Joaquin County spans the eastern end of the California Delta. Covering about 1426 square miles, it ranges from the interior Coast Ranges to the beginning of the Sierra Nevada foothills. The population of San Joaquin County was 702,612 in 2012. The seat of government is in the City of Stockton.

## San Joaquin County Surveyor's Office

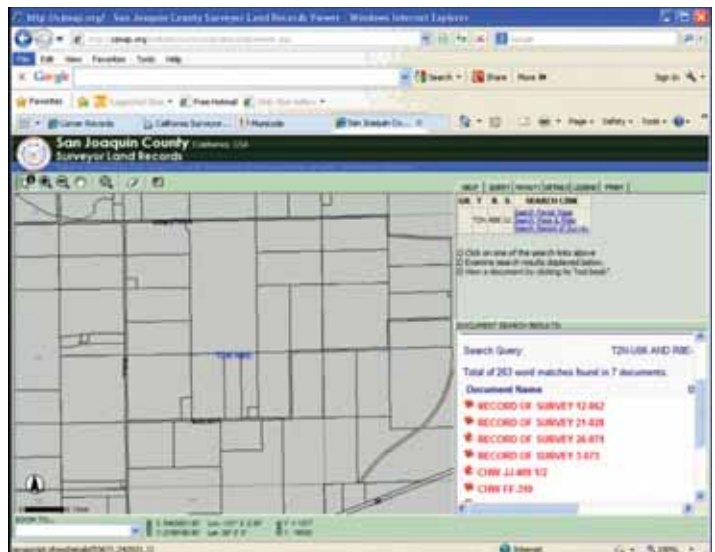
The San Joaquin County Surveyor's Office (SJSO) is located in Stockton and is part of the San Joaquin County Public Works Department as a unit of the Development Services Division.

## SJSO Web Page

The above hyperlink is the main page of the website for accessing images of record maps, records of survey and unfiled maps sorted by PLSS section. Within the vicinity of Stockton, the C.M. Weber grant is subdivided by sections as well.



Zooming into an area of interest will bring up the following screen, which allows for a search of appropriate maps. Clicking on the record will bring up a TIFF image of the map. By clicking on the red "book", a downloadable image of the map can be viewed, printed and saved.

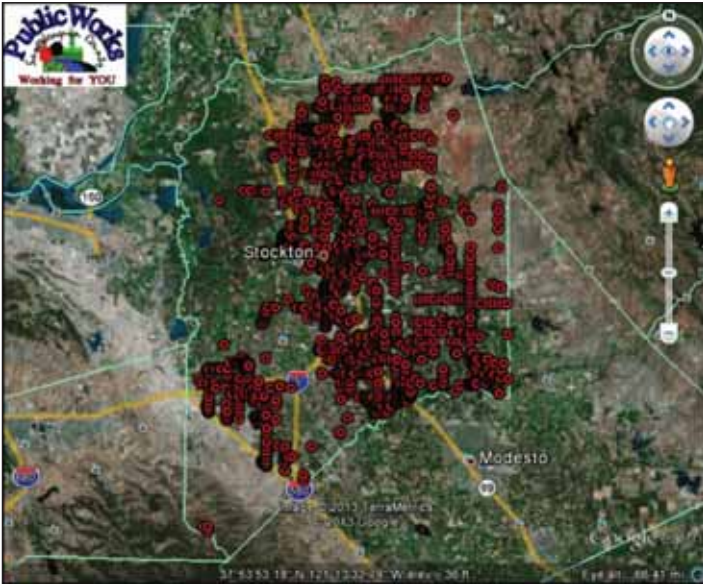


Continued on next page



### Corner Records

Corner records can be accessed via this site, which includes a downloadable .kmz file for locating via Google Earth: <http://www.sjgov.org/pubworks/cornerrecords.htm>



### Additional Maps

Extensive records of Charles Widdows, and several other deceased local surveyors are available through various indices. Most of these unfiled survey maps have been scanned, and are retrievable along with filed records of survey. County Surveys performed since 1850 have also been scanned, and are being indexed for inclusion into the electronic database. These include the swamp and overflowed surveys within the Reclamation Districts in the Delta and along rivercourses.

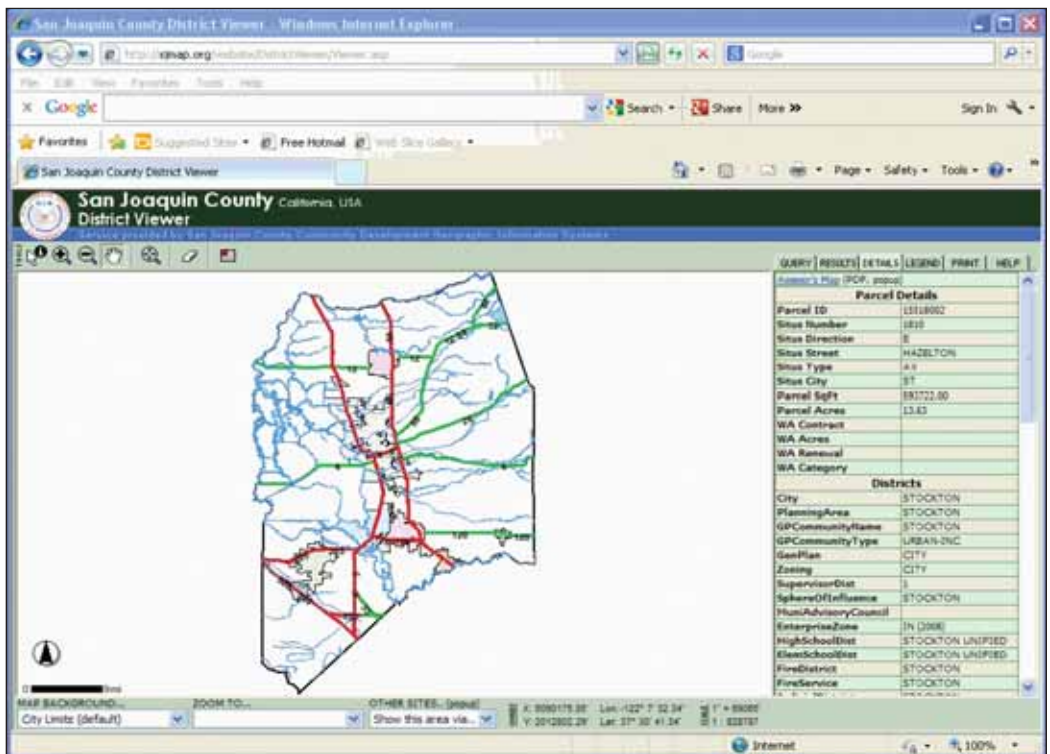
### Fee Schedule

The fees for submittals and application information are found on the Public Works main page as a link.

### Geographic Information System

A District Viewer is available via this <http://sjmap.org/website/DistrictViewer/Viewer.asp>

This brings up a County wide viewer which has layers containing zoning, flood information, special districts and aerial images spanning 20 years. Public information for individual parcels can be extracted, including Assessors Maps. The map background can be selected using the list at the lower left. ❖



# HOLMAN'S | USA


PRECISION PERFORMANCE SINCE 1955

## SECO GPS TRUCK DOOR BRACKET

MOBILE RTK/GNSS SIMPLIFIED

### BUY THIS:

**Seco GPS Receiver Truck Door Mount Assembly**  
**Price \$649.95**  
**Item#: 5114-20-FLY**



### GET THIS:

**HP 35-S Scientific Calculator**  
**Retail Price of \$59.99**

Prices are subject to change. Sale ends 7/31/13. Limited Quantities. Plus tax and shipping if applicable. Questions? Call our Retail Customer Service at 1-800-545-0932.

### Thrive with Holman's!

6201 Jefferson St. NE  
 Albuquerque, NM 87109  
 Phone: 1-800-545-0932  
 Online: [www.holmans.com](http://www.holmans.com)

Surveying | Computers | Plotters

**Since 1955**

By: Gwen Gee, PLS, CFedS

Gwen is the County Surveyor for Santa Clara County

# Santa Clara County

<http://www.sccgov.org/sccsurveyor>



## Office of the County Surveyor, Our Mission:

"Help to ensure professional surveying and mapping services, in order to safeguard property and public welfare."

## Contact Information:

Surveyor, Santa Clara County: Gwen Gee, PLS, CFedS

### Street address:

Office of the County Surveyor  
70 West Hedding Street  
East Wing, 7th Floor  
San Jose, CA 95110

Telephone: (408) 299-6864

Email: [gwen.gee@pln.sccgov.org](mailto:gwen.gee@pln.sccgov.org)

General email: [county.surveyor@pln.sccgov.org](mailto:county.surveyor@pln.sccgov.org)

Internet Address: <http://www.sccgov.org/sccsurveyor>

### Items on the website:

- Map research - determining County grid number for searching
- Record map index - online research for recorded maps
- Cadastral Maps
- Corner Records
- Tract number to map index

### Available in digital form upon request:

- Government plat maps and field notes
- County surveyor maps
- Various miscellaneous maps
- County surveyor transit books and level books
- Vault maps and road files
- Annexation records
- Historical maps (Herrmann, McMillan, Ryder etc.) – may have maps outside the county.
- State highway map index

### Record Maps are available from the County Recorder's Office

- Clerk-Recorder's Office
- East Wing, First floor
- 70 West Hedding Street (at First Street)
- San Jose CA 95110
- Email: [ClerkRecorder@REC.SCCGOV.ORG](mailto:ClerkRecorder@REC.SCCGOV.ORG)
- Record Documents: (408) 299-5688
- Monday through Friday 8:00 AM to 4:30 PM

## Santa Clara County

Santa Clara County is located at the southern end of the San Francisco Bay area. As of 2010 it had a population of 1,781,642. The county seat is San Jose. The highly urbanized Santa Clara Valley within Santa Clara County is also known as Silicon Valley. Santa Clara is the most populous county in the Bay Area region, and one of the most affluent counties in the United States.

Santa Clara County was one of the original counties of California, formed in 1850 at the time of statehood. The original inhabitants included the Ohlone, residing on Coyote Creek and Calaveras Creek. Part of the county's territory was given to Alameda County in 1853.

## Santa Clara County Surveyor's Office

The Santa Clara County Surveyor's Office (SCCS) is located in San Jose. It is part of the Development Services Office. The County Surveyor has a blog for additional information such as updates, enhancements, directions and parking information at: <http://sclcountysurveyor.blogspot.com/>

## SCCS Web Page

The SCCS page begins at the top by showing the name of the parent department Development Services Office. Under the County Surveyor website the Office of the County Surveyor's contact information, physical address of our building and business hours are all listed (for the more geographically oriented customers, the NAD83 Latitude 37-21-04 North Longitude 121-54-17 West, should help to find our location). In addition, there are related links to Easement and Right of Way Abandonments, Private Street Name Changes, County Surveyor's Blog, and County Archivist. Under related articles, Map Review is where information on submitting Tract Map, Parcel Map, Record of Survey, Corner Record and Certificate of Correction and their related attachments are found. Also Annexations and Map Research procedures can also be found. Finally, the Attachments are where the Fee Schedule, Land Surveyor Right of Entry, Survey Monument Conservation and Preservation.

## Santa Clara County GIS

<http://www.sccgov.org/sites/gis/Santa%20Clara%20County%20Interactive%20Map/Pages/Santa-Clara-County-Interactive-Map.aspx>

The County GIS link is also on the SCCS page. As the County Information Services Department releases GIS layers on the public portal, they will show up here. This is an interactive GIS map. Currently map layers include city limits, topography, road names, property information, aerial data and the County Boundary.

*Continued on next page*





### County Surveyor Maps and Records

The County Surveyor has a series of map books that date back to its creation at statehood. These are large bounded map books located at our counter. The County Surveyor was initially an elected official and early County Surveyors often had a private business in addition to the County Surveyor duties. The records for these early County Surveyors were kept together as a collection as best as possible. This is why there may be maps that are out of the County and a few that are in Mexico. The collections contain their maps and field notes. The most popular collections are the Herrmann and McMillan records. Currently these original records are kept at the County Surveyor's Office.

Other maps and records include the School District Maps which were used as the basis for the current County Assessors Maps. This is useful for researching historical land boundaries. The Road Files and Vault Maps are from the era when the County had a Public Works department before it was divided into the Santa Clara Valley Water District, County Roads & Airports and the Santa Clara Valley Transportation Agency.

### Items Available for Downloading

Currently Corner Records and Cadastral Maps (1980's) are available on our website for downloading. As more items are scanned into digital format, they will be added to our website.

### Guidelines and Checklists

The SCCS webpage assists surveyors/engineers with information regarding the submittals of Record of Survey maps, Corner Records, Certificate of Corrections, Annexations, Abandonments and Private Street Name Changes. Fees for map checking, checklists and standard statements for submitting subdivision maps (parcel maps, and final maps) are also available for downloading. The index for Certificate of Corrections is in our Record Map database and conformed copies kept on file by the Recorder's Map Book and Page.

Other attachments available for downloading include Right of Entry, Survey Monument Conservation and Monument Preservation.

### Development Services Office

Links to the following departments are also on the SCCS website:

- Building Inspection
- Land Development Engineering
- Clean Water Program
- About Us (Staff Directory) ❖



## LEWIS & LEWIS ENTERPRISES

1600 CALLENS ROAD  
P. O. BOX 1328 - VENTURA, CA 93002-1328  
TELEPHONE (805) 644-7405

# 60

## YEARS

1953 - 2013

**"3" Generations**

R.B. "Mr" Lewis LS 1770

R.T. "Bob" Lewis LS 2777

T.R. "Tom" Lewis BS CJA

### SERVING the Land Surveying Profession for "60" years

Originally: Land Surveyors – Offshore Surveyors – Navigators

---

Also offering a complete line of Quality Land Surveying Products

### The Goal: QUALITY SERVICE & SUPPORT

### QUALITY



- GPS
- Total Stations
- Data Collectors and Controllers
- Laser Levels
- Robotic Total Stations
- Automatic Levels
- Transits

Accessories & Supplies  
Toll FREE (800) 235-3377  
Email: sales@lewis-lewis.net



**"ES & OS"**  
Total Stations



**"PS"**  
Robotics



**"GR-5"** GPS GNSS  
Receivers & Systems

SALES, RENTALS & FINANCING • NEW, DEMO & USED  
Instruments, Accessories & Supplies • SPECIALS

Go to.... [www.lewis-lewis.net](http://www.lewis-lewis.net)



By: Rich Brown, LSIT

Rich works as an Engineering Technician in the Office of the Stanislaus County Surveyor

# Stanislaus County

<http://www.stancounty.com/publicworks/division/surveyor/index.shtm>



## Duties of the County Surveyors Office

The County Surveyor's Office, an office located within Stanislaus County Public Works, is charged with the responsibility of maintaining the Survey System of Lands while providing support and expertise to both public and private sectors in matters related to surveying, legal descriptions, and deeds. The County Surveyor's Office indexes all record maps and survey data on the County's G.I.S. website.

### Contact Information:

County Surveyor, Stanislaus County: Wayne G. Sutton, L.S.  
3863

Street address:  
Stanislaus County Surveyor  
Stanislaus County  
Department of Public Works  
1716 Morgan Road  
Modesto, CA 95358

Telephone: (209) 525-4127

Email: [suttonw@stancounty.com](mailto:suttonw@stancounty.com)

Internet address:  
<http://www.stancounty.com/publicworks/division/surveyor/index.shtm>

Records located at: <http://gis.stancounty.com/giscentral>

Staff Contact: Rich Brown  
Email: [rich.brown@stancounty.com](mailto:rich.brown@stancounty.com)  
Telephone: (209) 525-4125

## Maps and records available from the GIS website:

- Certificates of Correction
- Corner Records
- County Surveys
- GLO Plats
- Parcel Maps
- Record of Surveys
- S.B.E. Maps
- Subdivision Maps
- Tie Cards (Soon to be added.)

## Stanislaus County

Stanislaus County is located in the center of California's Central Valley. Covering about 1,495 square miles, with a population of 521,726 reported in 2010. The seat of county government is in the City of Modesto.

## County Survey Applications and Forms

Stanislaus County's applications and forms are located through the Public Works web site at <http://www.stancounty.com/publicworks/> See "Helpful Links" located on the right side of the page. Applications and information for the County Surveyor's services, including fee schedule and map submittal requirements are located here.

## County Recorded Maps and Survey Data

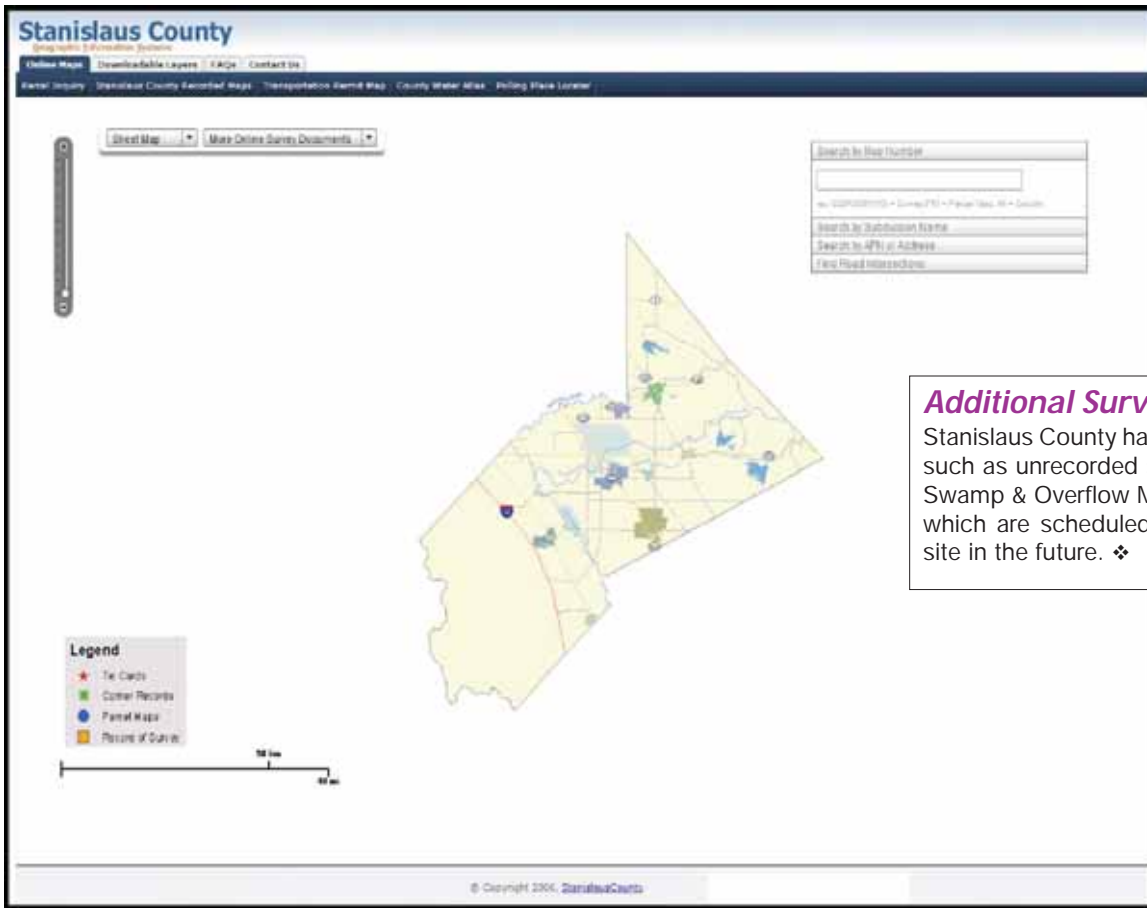
Stanislaus County maintains its index on the County's G.I.S. (Geographical Information System) site along with parcel information, located at <http://gis.stancounty.com/giscentral/>



Selecting "Stanislaus County Recorded Maps" will result in sending you to the page featured on page 23 (next page.) This page will allow you to search for subdivision maps, parcel maps, records of survey, corner records and tie cards all by geographical search or by informational look-up (upper right corner). Also available from this page, under the "More Online Survey Documents" pull down, located in the upper left corner, is a list search of Certificates of Correction, County Surveys (soon to be moved to the geographical search), G.L.O. (General Land Office) Plats, and S.B.E. (State Board of Equalization) Maps.

*Continued on next page*





**Additional Survey Data Available**  
 Stanislaus County has additional data available, such as unrecorded surveys, benchmarks, and Swamp & Overflow Maps, to name a few. All of which are scheduled to be added to the web site in the future. ❖

## CONGRATULATIONS 2013 NEW PLSs

D'Artagnan Alba, PLS 9052 (Tehachapi)  
 James Bailey, PLS 9019 (Reno, NV)  
 Brandon Barnett, PLS 9040 (Norco)  
 Forrest Beresini, PLS 9056 (Napa)  
 Chad Blau, PLS 9021 (Clovis)  
 Shaun Bootsma, PLS 9000 (Petaluma)  
 Tom Caseldine, PLS 9029 (Corona)  
 Sudhir Chaudhary, PLS 8993 (Napa)  
 Michael Chiara, PLS 9058 (Folsom)  
 Robert Cleveland, PLS 9016 (Stockton)  
 Bruce Cramton, PLS 9039 (Trabuco Canyon)  
 Michael Dauster, PLS 9047 (Bakersfield)  
 Arthur Decamp, PLS 9034 (Auburn)  
 Ryan Engel, PLS 9022 (Vacaville)  
 John Erickson, PLS 9033 (Davis)  
 Manuel Esparza, PLS 9002 (Cypress)  
 Christian Foster, PLS 9001 (Tustin)  
 Jason Fussel, PLS 9006 (Buellton)  
 Daniel Garcia, PLS 9038 (Downey)  
 Russell Guizado, PLS 9030 (Pasadena)  
 Stuart Hagerman, PLS 9053 (Vacaville)  
 Neil Hansen, PLS 9027 (Burbank)  
 Andrew Harris, PLS 9014 (Carlsbad)  
 Jason Harrison, PLS 9003 (Oakland)  
 Steve Hennessee, PLS 8999 (South Pasadena)  
 Leonardo Hernandez, PLS 8997 (Visalia)  
 Tristan Higgins, PLS 9048 (Turlock)  
 Roy Hill, PLS 8996 (Yuba City)

Paul Hillmer, PLS 9017 (Riverside)  
 Justin Holt, PLS 9008 (Simi Valley)  
 Jonathan Hose, PLS 9035 (Grass Valley)  
 Geoffrey Howland, PLS 9011 (San Diego)  
 Joseph Hughes, PLS 8992 (Sebastopol)  
 Dean Jurado, PLS 9032 (Modesto)  
 Justin Lambert, PLS 9046 (Citrus Heights)  
 Josh Locker, PLS 9015 (San Marcos)  
 Jacob Logan, PLS 9042 (San Marcos)  
 Mike Lopez, PLS 8995 (Camarillo)  
 Matthew Machado, PLS 9055 (Modesto)  
 James Menesez, PLS 9012 (Atascadero)  
 Benjamin Moody, PLS 9018 (Yuba City)  
 Kirkpatrick Myers, PLS 9009 (Pleasanton)  
 Jason Nakamura, PLS 9061 (Seattle, WA)  
 Joseph Neely, PLS 9026 (Fair Oaks)  
 Christopher Pentec, PLS 9059 (Danville)  
 Kacie Plouff, PLS 9013 (Valencia)  
 Christopher Prewitt, PLS 9025 (Bakersfield)  
 Kristopher Puthoff, PLS 8994 (Morgan Hill)  
 Keith Ream, PLS 9050 (Crestline)  
 Dennis Rose, PLS 9045 (Costa Mesa)  
 Christopher Royak, PLS 9060 (Bellevue, WA)  
 Matthew Russell, PLS 9010 (Roseville)  
 Gary Schenk, PLS 9054 (Huntington Beach)  
 Steve Slocum, PLS 9044 (Irvine)  
 Nickolas Smith, PLS 9057 (Henderson, NV)  
 Shane Sobocki, PLS 9041 (Thousand Oaks)

Cody Sommer, PLS 9020 (Henderson, NV)  
 Kevin Stein, PLS 9028 (San Mateo)  
 Mathew Steward, PLS 9036 (San Luis Obispo)  
 Zeljko Sumera, PLS 9007 (Sun Valley)  
 Mark Swallow, PLS 9005 (Novato)  
 Michael Thompson, PLS 9023 (Livermore)  
 Joshua Tremba, PLS 9043 (Forest Falls)  
 Anne-Sophie Truong, PLS 8998 (San Mateo)  
 Eric Vance, PLS 9037 (Ukiah)  
 James Walsh, PLS 9024 (Aztec, NM)  
 Alexander White, PLS 9004 (San Ramon)  
 Lee Williams, PLS 9051 (Poway)  
 Brendan Williams, PLS 9049 (Folsom)  
 Jeff Wright, PLS 9031 (Santa Clarita)





By: *Scott P. Martin, PLS*

*Scott Martin is a Senior Transportation Surveyor in the Caltrans Office of Land Surveys in Sacramento specializing in GPS Surveys and Geodetic Control. He serves as the chairperson for the California Geodetic Control Work Group chartered by the California GIS Council. He is also a member of the California Spatial Reference Center's Coordinating Council.*

*The author would like to thank Marti Ikehara, retired NGS Geodetic Advisor to California, for providing technical and literary review of this article.*

# POSITIONAL TIME TRAVEL

## A DISCUSSION OF THE HORIZONTAL TIME-DEPENDENT POSITIONING (HTDP) UTILITY

When John asked me if I would write an article for the California Surveyor on the NGS utility, Horizontal Time-Dependent Positioning (HTDP), I thought perhaps he had been in the sun too long, or possibly was taking a “dive” to undermine the publication after pressure from some of the competition. However, I told him I would consider the idea anyway. After all, trying to write something even remotely pleasing to read, on such a technical, dry topic doesn’t exactly get the literary salivary glands flowing. So here goes....well, I hope not.... nothing.

Having worked in ever-moving California for all 36 years of my surveying career-- the past 13 or so on projects often involving the now-retired NGS Geodetic Advisor to California, Marti Ikehara-- I was aware of this software tool written by NGS called HTDP. In fact, I knew it was sanctioned in the PRC (8815.3) as authorized for use to align survey control to the same epoch date. I even knew that a user could actually input custom velocities, rather than using the defaults in the velocity model program. I knew enough that I could throw the term HTDP around like I had some level of expertise in the use of it. Truth was, until recently, I had never actually used HTDP.

A few months ago, the opportunity arose for me to be involved in a project where the work was done in 2012, but, for various project reasons, the deliverables were to be referenced horizontally to NAD83(1992) epoch 1991.35 (a.k.a. the HPGN epoch). Suddenly, my years of letting HTDP roll off my tongue were about to be tested, because I was approached for input about how best this might be done. If California was a stable state, in a geophysical sense, the answer would be rather obvious and easy. However, this project not only was in California, but in the Bay Area, where there are dozens of fault zones. I had no clue how well HTDP would model the crustal motion in this complex area across more than 20 years of elapsed time. How would it treat the displacements: both “co-seismic” -displacement that occurs during the actual event, and “post-seismic” - displacement that occurs following the event, often for several months until things settle back to “normal” secular crustal motion? Heck I didn’t even know how to use the tool at all.

Time to dive in and get educated

I started by talking to Marti and others about HTDP. I read the User’s Guide for Version 3.2.3 on the NGS HTDP web page. One concern that some people I spoke with raised was that HTDP was not capable of accurately transforming positions across NGS realizations (adjustments) of NAD83, as would be needed in this case. However, I found nothing in the User’s Guide regarding this limitation – no warnings, no statements, nothing. What I learned is that NGS had chosen to not develop a tool to model between specific realizations of NAD83 because the error in the model approached or exceeded the amount of “shift” that resulted from the realization or adjustment. However, customer demand has resulted in

a Beta version of this type of tool now being available from NGS – GEOCON and GEOCON11). In other words, certainly in California, most of the change in the position of any given point over time was the result of secular crustal motion and seismic event displacement, not from an adjustment of NAD83 (such as the 2007 National adjustment). Thus, at least so far, HTDP has ignored those types of shifts. I also learned that HTDP utilizes blocks with assigned velocities (velocity grid files) and has been updated each time more data becomes available. When Version 3.2.1 was released, the velocity grid files along the creeping segment of the San Andreas Fault were reduced down to 0.6 minutes of latitude and longitude blocks, which was more than 6 times more refined than in previous versions. This tool has been ever evolving and improving. Based on this new knowledge, I now wanted to do some testing.

Now keep in mind, I am not a scientist, mad or otherwise. I am a surveyor (mad or not is debatable) so the proof would be in the numbers for me. Because I was looking at a specific project, it made sense to perform my testing on the control being used for this project, rather than some random points. After all, my task was to determine how best to provide the deliverables referenced to the 1991.35 epoch for this job. I had to see if HTDP was part of my answer.

In the project, there were three different sub areas that would be controlled independently of the others. Control points still existing in each sub area that had 1991.35 superseded coordinates on the NGS datasheet were sparse. Two areas had only a single point and the third had three. I decided to start with the one that had the most.

Basically my thought was to transform the NAD83(2011) epoch 2010.00 published coordinates for the three points having 1991.35 superseded values using HTDP and compare the results to the original published 1991.35 positions, now superseded. I know, some folks say I shouldn’t haven’t gone “across” the 2007 adjustment, but this was a test, and I honestly believed that was not an issue, based on what I had read and learned.

Okay, here is where it gets tough to keep any literary style or flow going – the number crunching.

The three points I started with, PID’s AA3807 (GPS CONTROL POINT 10), AA3819 (HPGN D CA 04 GJ), and HS5109 (GOLD CREEK), are located along Highway 680 in the Pleasanton to Lafayette area, generally a north-south route. AA3807 and HS5109 are spaced almost 17 miles apart with AA3819 near the mid-point. They are near the Calaveras Fault alignment based on some geologic resources I consulted.

In HTDP, I selected the “Interactively update positions and/or observations to a specified date” option (See Figure A). There was only one

*Continued on page 26*



# ENGINEERING SUPPLY COMPANY

THE LEADER IN PRECISION POSITIONING SYSTEMS SINCE 1985

Call Toll Free: 800-788-3307 [www.escsurvey.com](http://www.escsurvey.com)

Two Full Service Locations To Serve You!

Concord, California  
5700 Imhoff Dr., Suite J

W. Sacramento, California  
1030 Riverside Pkwy., Suite 150

 **TOPCON** Sales - Service - Training - Rentals

 **TOPCON**  
UNIVERSITY

On Demand Training  
When You Need It!

## There's No Limit To Your Productivity!

With Quality Topcon Products And World Class Customer Service!

Factory Trained and Certified: Sales, Service and Training!



LASER SCANNERS • IMAGING & ROBOTIC TOTAL STATIONS • CONVENTIONAL AND REFLECTORLESS TOTAL STATIONS • THEODOLITES • DIGITAL & AUTO LEVELS • FIELD CONTROLLERS SURVEYING SOFTWARE • GEODETIC & GIS GPS RECEIVERS • NETWORK SOLUTIONS • ACCESSORIES

NAD83 option for the input reference frame for the North American Plate-- NAD83(2011/CORS96/2007)-- which confirmed that HTDP considers these all the same with regards to the transformation parameters.

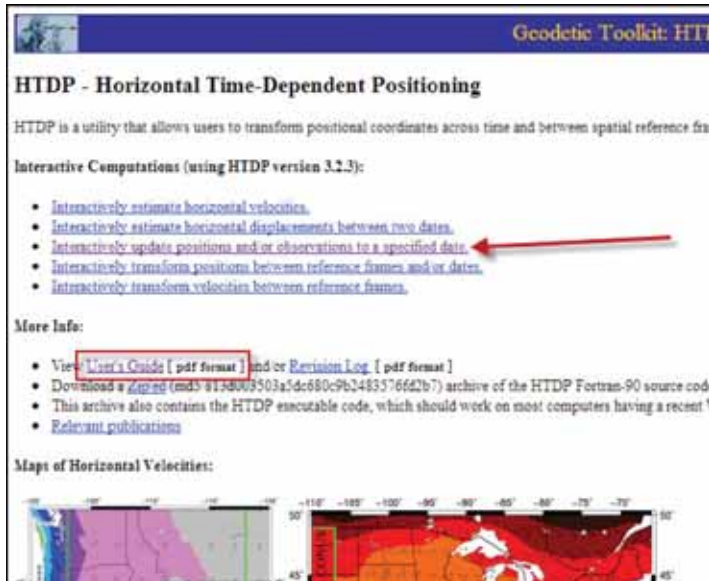


Figure A

I started with the NAD83(2011) 2010.00 latitude, longitude, and ellipsoid height from the current data sheet for point AA3807, so 2010.00 was the reference date for the input position. Note that there are two date format options for input (See Figure B), month-day-year and decimal year, so be sure to select the correct option. My output reference frame date was 1991.35.

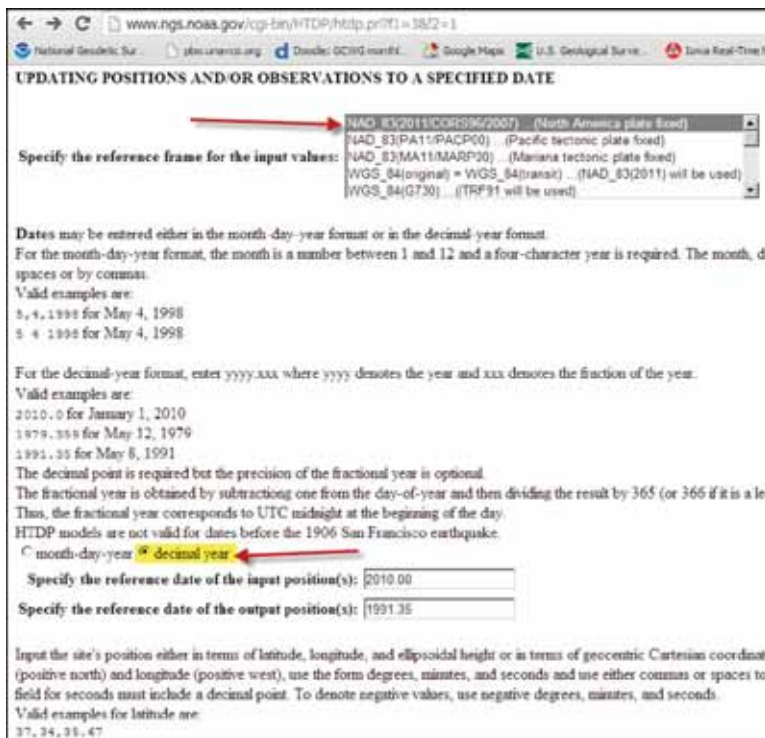


Figure B

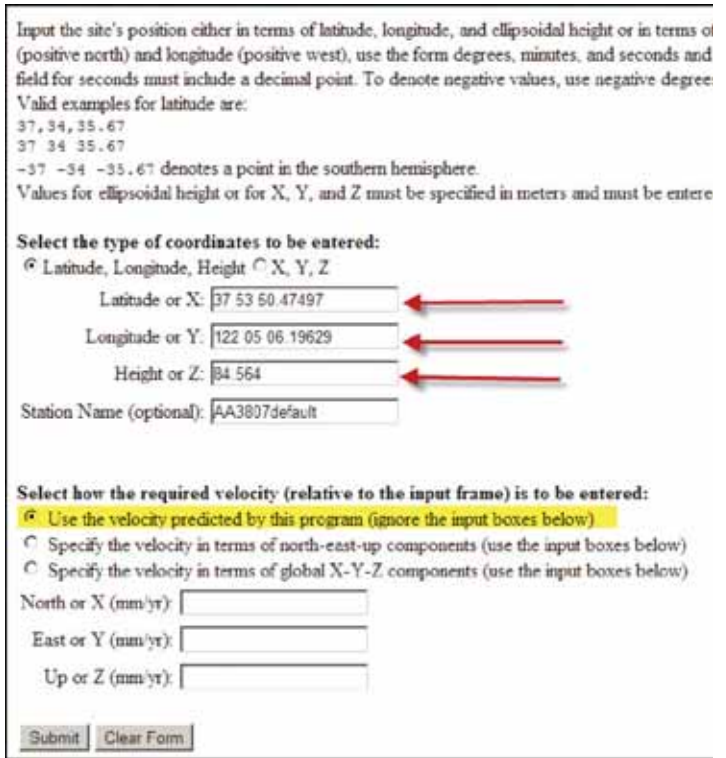


Figure C

I input the Lat/Lon/Ellipsoid height from the data sheet. I then selected the option to use the HTDP predicted velocity for the transformation (See Figure C) rather than customizing (I'll talk more about that later – oh joy) and let the program do its thing. I repeated this for the other two points, PID AA3814 (HPGN D CA 04 FH) and HT2440 (W 1446). Figure D shows the results for the linear differences between the Superseded published 1991.35 and the HTDP-derived 1991.35 coordinates.

Point Name (PID)	Delta N (cm)	Delta E (cm)	2011 Network Accuracy (cm) (95%)
AA3807	-1.7	2.9	0.74
AA3814	-2.5	2.3	0.82
H55109	-1.2	3.0	0.68
AA3814	0	2.9	0.51
HT2440	-0.9	0.1	0.71
Average	-1.26	2.54	0.71
Combined Average (hypotenuse) cm	2.57		
Ave. Network error (cm)	0.71		
Combined ave. error - Ave. Network Error	1.86		

Figure D

You may be wondering why I'm showing the 2011 Network Accuracy data. Each NAD83 (2011) set of horizontal coordinates has an accuracy shown on its Datasheet that indicates how close NGS believes this adjustment of the NAD83 coordinates come to 'truth'. The range for these 5 points is 0.51 cm to 0.82 cm, with an average of 0.71 cm. This represents the 'error' or inaccuracies in the "HTDP'd coordinates" even before using HTDP model, which has its own set of errors.

Continued on next page



It appears the HTDP velocity grids are roughly twice as accurate in the Northing than they are in the Easting for points translated back to 1991.35.

Also included in the table are two points (AA3814 and HT2440) located along Highway 880 between Union City and San Leandro near the Hayward fault. These points are about 12 miles westerly of the first three mentioned above. Point HT2440 did not have a 1991.35 superseded value, but it did have a NAD83(1998) epoch 2002.75 value from a Height Modernization survey, so the comparison shown above relates to the 2002.75 value. It is interesting to note that the transformation for this point also went across the 2007 National Adjustment, yet the calculations are within a centimeter. In my feeble mind, that tells me that going across the 2007 Adjustment introduced very little error, if any. The amount of error seems to be much more a function of time elapsed, based on this very small sample.

As you can see, HTDP was able to model back to the original 1991.35 published position (or 2002.75 in the case of HT2440) within a couple centimeters (on average) when the estimated network accuracy error is removed. The misfits to the published coordinates were directionally consistent, as well. Even though these points are in a fairly small area, I noted that each of them had a slightly different predicted velocity in HTDP (both in north and east), which shows how refined the velocity grids are in this area.

Although this is a fairly small sample set, and by no means a rigorous statistical analysis, my results show that HTDP is a pretty darn good modeling tool given that, for example, the predicted velocity rates are up to 25.56 mm/year (latitude) by 17.25 mm/yr (longitude) for point AA3814 for a total displacement between 1991.35 and 2010.00 of 0.477 meters north and 0.322 meters west. I believe these results also show that going across the 2007.00 realization of NAD83 likely contributed very little error to the transformation. I was pretty pleased by the results of this limited testing, but I wasn't done yet.

For the area near Hayward along Highway 880, I retrieved information for four NGS CORS stations in the vicinity, specifically the NAD83(2011) –not IGS08—velocity information, from NGS CORS Coordinate sheets (<http://www.ngs.noaa.gov/CORS/data.shtml>). These stations are: DH9021 (P222), DO2391(WINT), DE6356 (ZOA2), and AF9690 (CHAB). I did not compare their locations to mapped faults, which in retrospect, would have been better science. Maybe next time? I then computed an average velocity in the north and east directions. Then, I went back into HTDP, but instead of using their velocity predictions, I entered the ones averaged from the four CORS stations (using the north-east-up components option) and transformed AA3814 again. See Figure E for the results.

One thing to note: If you look closely at the bottom of Figure C, where the custom velocities can be entered, you will notice an error. It says “North or X (mm/yr)” and “East or Y (mm/yr)”. This is a common mis-

HTDP Transformations			
CORS Average Velocities Results and comparison to HTDP Default Results - AA3814			
CORS Point Name (PID)	V North (mm/yr)	V East (mm/yr)	V up (mm/yr)
P222 (DH9021)	25.6	-19.1	-2.1
WINT (DO2391)	25.5	-17.3	-1.3
ZOA2 (DE6356)	25.7	-19.1	-0.3
CHAB (AF9690)	20.5	-14.0	-1.7
CORS Average Velocity	24.325	-17.375	-1.7
AA3814	25.56	-17.25	-1.36
HTDP default values			
AA3814 results using CORS Average custom Velocities (4 stations)	Delta N =-0.023 m	Delta E = 0.001 m	
AA3814 results using HTDP default values (from Figure D)	Delta N =0.00 m	Delta E = 0.029 m	

Figure E

take. I experimented and determined that the North box is just that (and not X) and the same for the East box. Also, remember that sign is important. In this case, and essentially all of California, the custom velocity for the East component had to be entered as a negative number.

As you can see, the results are still pretty good –acceptable for most applications. I would say that, seeing the marked difference in velocities, the first three CORS stations listed in the table are all moving together and the last is likely across a fault(s) from the other three. Further analysis would be required to make this determination, which could result in removing the last CORS station from the average calculation. What entering these “custom” velocities doesn't do is account specifically for any co- or post-seismic displacements for which the HTDP grids do. Furthermore, CORS velocity vectors are used, along with other sources of data, including CGPS, to develop and improve the velocity grids in HTDP. Therefore, it's not reasonable to think one could improve on HTDP by using a small CORS or CGPS sampling, unless it was suspected that the velocity grid file in HTDP covering a specific area could be improved by isolating the velocity used to very specific CORS/CGPS stations in the immediate vicinity of your project, if available. It would be akin to developing a localized custom geoid model by using denser, localized data, but that is the subject of another article, at another time, by a different author!

My conclusion was that HTDP could be used to transform other control in this project from the published NAD83(2011) epoch 2010.00 position back to 1991.35 and expect the results to be within a previously published 1991.35 position within 2-3 centimeters, possibly better. The proof will ultimately be in the network adjustment statistics and analysis of the project's observations, but I am confident the work will meet the specifications for this project. No wonder the California Public Resources Code endorses the use of this utility to align survey control to the same epoch date. For this small sample that I researched, it worked well, even in one of the most complex geophysical areas of California.

While I am not an HTDP expert now, at least I can honestly say I have used it. ❖



# Seam Errors on a Digital Bar Code Level Rod

So you got your new bar code digital level to do that first order work your new client requested. Nice. And you bought the three section rods, understandably, because the one-piece invar rods are so darned expensive and a little difficult to carry around. How good is the rod reading value at the top? Is it really 4 meters? Or is it 3.999 meters? Or worse, you really don't know? These rod seam errors – a back sight reading either below or above a seam and a foresight reading on the other side of one or even two seams – might accumulate enough in a level run to affect the accuracy of your benchmark elevations and closures. They can be identified and eliminated, particularly with level runs having extreme elevation differences between setups.

The calibration form (Figure 1 - Opposite page) is a method to identify the seam errors on a digital bar code leveling rod with sections. Once you have these numbers on hand, you can apply them to your level runs to improve accuracy. The other advantage is that your clients will understand your conscientious and scientific approach to the technical side of surveying.

## The Setup

The procedures below are for one rod. Complete the calibration form for each rod. Set up an area (concrete steps make a pretty good test site) with stable, well-defined benchmarks, approximately 2-3 feet difference in elevation. Set up the level so it sees the bottom section of the rod on both benchmarks. Note that you should be at least 20cm or 6" below the seam and 6" above the bottom of the rod, and about 3-6m or 10-20 feet away from the rod. You don't want the field of vision of the sensor reading the barcode as it crosses the seam.

## First Reading

Read the rod's bottom section on Benchmark "A". Read the rod's bottom section on Benchmark "B".

The difference between the rod readings is the apparent true difference between "A" and "B" (H1).

## Second Reading

Set up the level so it sees the rod's middle section on "A" and bottom section on "B". Read the rod's middle section on Benchmark "A". Read the rod's bottom section on Benchmark "B". The difference between the rod readings is the difference across the seams between "A" and "B" (H2). The difference between the H2 and H1 is the rod seam error between the bottom section and the mid-section.

## Third Reading

Set up the level so it sees Rod's top section on "A" and mid section on "B". Read the rod's top section on Benchmark "A". Read the rod's middle section on Benchmark "B". The difference between the rod readings is the difference across the seams between "A" and "B" (H3). The difference between the H3 and H1 is the rod seam error between the middle section and the top section.

This procedure and form was used quite successfully on a city-wide leveling project in the City and County of San Francisco. We hope this helps with your projects as well.

Too easy! ❖

*Continued on next page*

## CORRECTION NOTICE

In the Tech Tip article "Active Control Networks in California" (Issue #173, Spring 2013), it has come to the attention of the author that there are additional GNSS sites and real-time networks in California that could be added to the Google Earth .kmz that was created and made available on the CLSA website ([www.californiasurveyors.org/pdfs/](http://www.californiasurveyors.org/pdfs/)

CGPSNetworksBenchmarks.kmz). We have since added the real-time network of California Survey and Drafting Supply in northern California. If you would like your network or any other additional networks or sites added, please contact CLSA Central Office and they will happily update the downloadable .kmz accordingly.



# Seam Errors on a Digital Bar Code Level Rod

Continued from previous page

Figure 1

Rod Seam Calibration Form				
Crew: _____		Date: _____		Air Temp: _____ (F) (C)
Rod Length: _____ (F) (M)		No. Sections: _____		Coeff Expan.: _____ ppm/ _____ ° (F) (C)
Rod Readings				
Rod No.:	Rod No.:			
	<b>FIRST</b>	Bottom Section rod readings only: below lower seam on "A" & "B"		
1	"A" (3.0'+/-) Bottom Section			
2	"B" (1.5'+/-) Bottom Section			
3	"A" - "B" = BM Diff. = H1			
	<b>SECOND</b>	Lower Seam rod readings: above seam on "A", below seam on "B"		
4	"A" - Middle Section			
5	"B" - Lower Section			
6	"A" - "B" = H2			
7	Lower Seam Error= H2-H1			
	<b>THIRD</b>	Upper Seam rod readings: above seam on "A", below seam on "B"		
8	"A" - Top Section			
9	"B" - Middle Section			
10	"A" - "B" = H3			
11	Upper Seam Error = H3 - H1			

Notes for digital barcode level rod:

1. Replace and re-read rod several times and record average.
2. Sight distance 3m-6m (10'-20'); read rod at least 20cm (0.6') above and below the seams
3. A and B should be solid high points.
4. Lines 1, 2 & 3 across should be the same for all rods; differences may indicate worn foot
5. Lines 4, 5 & 6 and Lines 8, 9 & 10 across should be the same for all rods but within 0.0003m (0.001')
6. Lines 7 (Lower Seam Error) and 11 (Upper Seam Error) should be not more than 0.0003m (0.001')

3 - THIRD SETUP - Read "A" on top section, read "B" on mid section  
 2- SECOND SETUP - Read "A" on mid section, read "B" on bottom section  
 1 - FIRST SETUP - Read "A" & "B" on bottom section only

## One of the Guys

By Annette Lockhart, PLS – Director and Immediate Past President, Sacramento Chapter

A few years ago, I was visiting Northern Counties Chapter for the first time. The extra spark to their meetings is that there are almost as many spouses as there are members in attendance. That night Barbara Solheim (wife of Don) invited me to speak at an event for 7th and 8th grade girls at Yuba College – the Math Science Conference. I have been participating in the yearly event ever since.

The girls from the local Yuba-Sutter Middle Schools attend the Math Science Conference with their math or science teachers as part of their school curriculum. Each student at the Conference has selected in advance three areas of interest to learn about that morning. Presenters in each session are women from professions that utilize math and science in their practice. The objective of the Math Science Conference is to introduce the girls to career opportunities in the fields of math and science while they are still in junior high, and to encourage them to stay in school and plan for a career.

The event is sponsored by Marysville-Yuba City Branch of the American Association of University Women. AAUW has been empowering women as individuals and as a community since 1881. AAUW believes in the value of educational programs that encourage girls to succeed in these traditionally male-dominated fields and introduce girls to female role models. AAUW creates programs that offer girls the opportunity for hands-on activities while also exposing them to a multitude of educational and professional options. In the past, Jill Van Houten has assisted me, but this year I was on my own. This year we talked a little about GPS and went outside to learn about contours with the help of a plastic box, food coloring, and markers. (See accompanying pictures by Artis Buerki.) As with Trig Star, I like doing these events because I am a big fan of surveying. I am truly convinced that if given the opportunity everyone would join our team. I know some of you actually knew that surveying existed as a kid, but I did not. It took me a while to find it. I just want to spare other kids that kind of pain. ❖



Photography: Artis Buerki  
Publicity Plus Marketing

## Surveying Goes to Tustin

By Don Mertens, PLS

Frank Romano and Robert Rinella from the California Department of Transportation (CALTRANS), along with Kari Irwin (Business & CTE) and Don Mertens (Surveying) represented Santiago Canyon College at the Tustin Unified School District College Day on Friday, May 3, 2013.

Approximately 600 high school students participated in this hands-on career fair with 30 college and educational institutions showcasing their programs. Students who stopped by the Santiago Canyon College exhibit table not only learned about the educational paths available, they also had an opportunity to learn about careers in the surveying field with interactive survey equipment on display. ❖



Don Mertens talks to a student during the Tustin Unified School District event.



## Presco Flagging Tape



Item#	Description	List Price	APE Price
120480	Blue	\$2.00	\$1.20
120500	Green	\$2.00	\$1.20
120520	Pink	\$2.00	\$1.20
120540	Red	\$2.00	\$1.20
120560	White	\$2.00	\$1.20
120640	Orange	\$2.00	\$1.20
120660	Yellow	\$2.00	\$1.20
120670	Black	\$2.00	\$1.20
120570	Green Glo	\$2.00	\$1.20

## APE Upside-Down Marking Paint



Item#	Description	List Price	APE Price
121400	Orange Flo - 17oz	\$6.50	\$3.25
121410	Hot Pink Flo - 17oz	\$6.50	\$3.25
121420	Red Flo - 17oz	\$6.50	\$3.25
121430	White - 17oz	\$6.50	\$3.25
121440	Yellow High Vision - 17oz	\$6.50	\$3.25

## APE Field Books



Starting at  
\$2<sup>25</sup>

Item#	Description	List Price	APE Price
115300	APE Field Book	\$8.85	\$6.95
115320	APE Level Book	\$8.85	\$6.95
115340	APE Job Book (16 pages)	\$2.90	\$2.25

## ChrisNik MAG Nails



Starting at  
\$4<sup>95</sup>

Item#	Description	List Price	APE Price
119940	3/4" Mag Nails	\$6.66	\$4.95
119950	1" Mag Nails	\$8.90	\$6.95
119960	1 1/4" Mag Nails	\$12.76	\$9.95
119970	1 1/2" Mag Nails	\$17.30	\$12.95
119980	2" Mag Nails	\$20.36	\$14.95
119990	2 1/2" Mag Nails	\$24.99	\$18.95

## SHOP ONLINE @ AllenPrecision.com



100% Price Match Guarantee



More than 3,300 Products



FREE Shipping on Orders Over \$250



Live Chat with Knowledgeable Staff



Order at 1-800-241-6223 | www.allenprecision.com



# CSU Fresno Endowment Fund

## *Donate Today to Ensure Tomorrow*

### The Issue:

- California has been steadily reducing funding for educational institutions.
- The CSU Fresno Geomatics program is considered to be small and is more susceptible to cutbacks or elimination.
- Both professors that hold a professional land surveying license, are now retired.

### The Need:

- CSU Fresno Geomatics program was the first four year surveying degree program in the nation and the first to become ABET accredited.
- CSU Fresno Geomatics has graduated over 700 students.
- Students graduating from the CSU Fresno Geomatics program have gone on to serve in many leadership positions in the land surveying profession both in the private and public sector.

### The Solution:

- The CLSA Education Foundation has worked with CSU Fresno to create an endowment that will fund a full-time professor licensed to practice land surveying in California. This will help to ensure that the CSU Fresno Geomatics program continues.
- Lyles Foundation will match all donations, dollar-for-dollar, up to \$1 million.

### The Benefit:

- Your donation is fully tax deductible! CLSA Education Foundation is a 501(c)3 charitable organization. Tax ID number 68-0482650
- Show your support for the surveying profession and the great program at CSU Fresno.

**Don't Wait – Donate by September 20, 2013  
to Take Advantage of Matching Funds**

***Example Donation:***

California Surveying & Drafting Supply donated \$10,000  
Lyles Foundation matched, dollar-for-dollar, with a donation for \$10,000

**After matching funds the Donation made by  
California Surveying & Drafting Supply \$20,000!**

**Make checks payable to: CLSA Education Foundation  
Deliver by September 20, 2013**

***Every dollar counts – all donations, any amount, welcomed and appreciated!***

**Mail to: 526 South E Street – Santa Rosa, CA 95404  
To donate by credit card, please call us at (707) 578-6016**



# Endowment Donors (as of August 2013)

## Double Diamond (\$10,000 & Up)

California Surveying & Drafting Supply  
GME Foundation\*

## Diamond (\$5,000 - \$9,999)

Leica Geosystems

## Platinum Level (\$3000 - \$4999)

Bakersfield Chapter  
Riverside/San Bernardino Chapter

## Gold Level (\$1,000 - \$2,999)

Bakersfield Chapter  
Bedrock Engineering, Inc. (Clovis, CA)  
Central Valley Chapter  
Channel Islands Chapter  
East Bay Chapter  
Hennon Surveying (Glendale, CA)  
Jim & Barbe Herrick  
Gary Lippincott  
KDM Meridian, Inc.  
McPheeters & Associates (Clovis, CA)  
David Murtha  
Ron Nelms  
Northern Counties Chapter  
NorthStar Engineering (Chico, CA)

## Gold Level (Continued)

Myles Pustejovsky  
Sacramento Chapter  
San Diego Chapter  
Simpson Land Surveying, Co. (Santa  
Barbara, CA)  
Sonoma County Chapter  
Fred Wheeler

## Silver Level (\$500 - \$999)

Travis & Khae Bohan  
Ed Boris  
Central Coast Chapter  
Dorothy Calegari  
Les Freligh  
Humboldt Chapter  
Michael Jones  
Frank Lehmann  
Penfield & Smith  
Keith Spencer  
League of California Surveying Organizations  
San Joaquin Valley Chapter

## Bronze Level (\$200 - \$499)

Frank Borges  
Rich Briner  
Michael Cusick  
Gwen Gee  
Kevin Hills  
Jerry Hovell  
John Koroyan  
Kurt Lehnhardt  
Steve Martin  
Anne Minney  
Debbie Naves  
Richard Roper  
Ross Thompson  
Li Zhang

## Copper Level (up to \$199)

Dimensions 4 Engineering, Inc.  
(Santa Rosa, CA)  
Thomas Decker  
Janine Hampton  
Jessica Lehman  
Tim Mack  
PLS Photography  
Michael Renteria

\*Several companies and individuals made generous contributions to the Fresno GME Foundation. Their donations to the Fresno GME were used to help fund the endowment. Those donors include:

- Joseph Bell Hyde Memorial (Diamond Level)
- Johnson-Frank & Associates (Diamond Level)
- Towill, Inc. (Diamond Level)
- Psomas (Diamond Level)
- Hennon Surveying & Mapping (Gold Level)
- Bush & Associates (Gold Level)
- KDM Meridian (Gold Level)
- Fuscoe (Gold Level)
- David Woolley (Silver Level)
- Coast Surveying (Silver Level)
- Greg Helmer (Silver Level)
- NCS-ACSM
- Bree Gallery (Silver Level)
- John Chiappe, Jr. (Copper Level)
- Gene & Mary Muse (Silver Level)
- Robert Sellman (Bronze Level)
- Gary Dixon (Gold Level)
- Bedrock Engineering (Platinum Level)
- James Crossfield (Platinum Level)

## A Call to Alms

### Dear Land Surveying Professionals:

Public schools have faced severe funding shortfalls due to the downturn in the economy. Small programs like Geomatics Engineering at Fresno State are under increased scrutiny for closure as a means of cutting costs by the university. Dr. Crossfield is in semi-retirement. Dr. Ogaja resigned from the program in February. Fortunately, some graduate students (Scott Roberts, Chase Miller and Travis Bohan) stepped in to teach his classes and Dr. Nader, though retired, picked up a class or two. But this is a temporary fix that is not sustainable and a new professor is actively being sought. CSU, Fresno will likely not be willing to fill the position without outside means of financial support due to the small size of the program. There is a very real danger the university will see this as an opportunity to shutter the program and save itself some money.

The CSU, Fresno Endowment Fund was established to subsidize the salary of a new professor. Matching funds from the Lyles Foundation for donations made by September 2013 will double your donation. For example, should you decide to donate a \$500 dollars, your donation will be matched dollar-for-dollar by the Lyle Foundation making your donation \$1000. The goal is for \$750,000. You may have noticed that many CLSA Chapters and individuals have already donated, as chronicled in the California Surveyor magazine and on the CLSA website.

CLSA and its affiliate Chapters have been incredibly supportive of their surveying students. Now it is the Geomatics program itself that is in danger and we face the very real possibility of losing California's only four year ABET accredited land surveying program.

In fact it was the country's first four year ABET accredited land surveying program, receiving its accreditation in 1978. Robert Parsons (RIP) from the Monterey Bay Chapter was the first graduate in 1971. The degree began as Surveying and Photogrammetry, transitioned to Survey Engineering and it is now called Geomatics Engineering. The curriculum includes land surveying, geodesy, photogrammetry and GIS. But most importantly, the program teaches professional stewardship and leadership skills. Students are taught very early to join and participate in CLSA, ASPRS and NSPS. They learn the value of teamwork and continuing education by volunteering in the annual CSU, Fresno Geomatics Engineering Student Conference.

To date there have been over seven hundred graduates. Unfortunately, that's only about 16 a year and enrollments are falling. Anything the profession could do to help encourage enrollment would also help greatly. Bill Hofferber speaks to this in his recent April CLSA Education Foundation report. Please consider speaking to your local high school students about our profession. I wish I had learned about it sooner, as I feel it is the greatest vocation in the world. The loss of the availability of this program to future surveyors would be a tragedy. I feel so strongly about this I will be donating \$1000 before the September matching deadline; I hope and trust that other CLSA Chapters and members will do the same. Consider it an essential investment in the future of our profession.

Sincerely,  
David Biswanger, LSIT, MSCE  
Secretary, Monterey Bay Chapter CLSA

*Editor's Note: David Biswanger is a Fresno State graduate and currently works for the East Bay Municipal Utility District. ❖*

## Index To Advertisers

Allen Instruments	35
Allen Precision Equipment	31
Berntsen International, Inc	13
California Surveying & Drafting	48
Central Coast Aerial Mapping, Inc.	37
Engineering Supply Company	25
First American Data Tree	47
Holman's Inc.	19
Leica	39
Leica Geosystems Solutions Center	15
Lewis & Lewis	21
Office Depot (Member Benefit)	4
RDO Integrated Controls	2
Santiago Canyon College	43
Surv-Kap	17
Trimble	3
Tri State Photogrammetry, Ltd	11
Vista International Insurance Brokers	34



## Geography Quiz Answer

by: Anne Hoppe, PLS and Germar Berhhard, Ph.D.  
Photography by Germar Berhhard, Ph.D.

We are on Isola d' Elba, the third largest island of Italy. Napoleon I was exiled here for 300 days.

France officially introduced the metric system in 1799. Although it was decreed that its use was to be mandatory in Paris that year and across the provinces the following year, the decree was not universally observed across France. In 1812 Napoleon introduced a system known as mesures usuelles for retail trade that was based on the kilogram and meter. This laid the foundation for the definitive introduction of the metric system across Europe. – from Wikipedia



# MANAGE YOUR RISK

**Insurance Products From Vista International**

- ✓ **Professional Liability**
- ✓ **Office Package**  
(Property, General Liability, Equipment)
- ✓ **Business Auto**
- ✓ **Workers Compensation**
- ✓ **Personal Insurance**



**Vista International Insurance Brokers**  
1318 Redwood Way, Suite 250  
Petaluma, Ca 94954  
**Call (707) 796-7180 or**  
**(800) 819-8808**  
[www.vistainternational.com](http://www.vistainternational.com)  
License No. 0F64200



# Welcome *New CLSA Members*

## CORPORATE

D'Artagnan Alba, Tehachapi  
 Randall A. Bergquist, Bakersfield  
 Justin Dankel, Temecula  
 Paul C. Ehe, Running Springs  
 Manuel O. Esparza, Cypress  
 Jason L. Fussel, Buellton  
 Neil C. Hansen, Burbank  
 Steve Hennessee, South Pasadena  
 Jonathan Hose, Grass Valley  
 Dean A. Jurado, Modesto  
 Alex J. Kelsner, San Francisco  
 J. E. Leavitt, Rancho Cordova  
 Jayne E. Leavitt, Rancho Cordova  
 Vit Liskutin, Riverside  
 Anthony D. Maddox, Palm Desert  
 James T. Menesez, Atascadero  
 Gordon O. Olson, El Centro  
 Matthew D. Russell, Sacramento  
 Gary W. Schenk, Huntington Beach  
 Nathan D. Sellers, Redding  
 Nickolas G. Smith, Henderson, NV  
 Kevin Stein, San Mateo  
 Harry Verheul, Hanford  
 James B. Walsh, Aztec, NM  
 William W. Whatley, Keene

## ASSOCIATE

David C. Anaya, Pico Rivera  
 Joseph Barnett, Paradise  
 Nathan Buchholz, Sacramento  
 Tom M. Caseldine, Corona  
 Don Erpelding, Desert Hot Springs  
 Philip Lattuca, Yucaipa  
 Charles Miller, Fresno  
 Evin Murphy, Monterey  
 Robin Peters, Jackson  
 Ethan Remington, Carlsbad  
 David J. Schilke, San Diego  
 Jason Weisz, Redding

## AFFILIATE

Robert Bell, Aumsville, OR  
 Jeffrey Bruce, Monrovia  
 DeLisa Bryant, Colton  
 Daniel Esenwein, Ripon  
 Manuel Flores, Huntington Beach  
 James Jensen, Santa Rosa  
 Michael G. Kidd, Las Vegas, NV  
 Jedediah Lewis, Weaverville  
 Robert Mercado, North Las Vegas NV  
 Greg Schram, Santa Rosa  
 Tim Schram, Santa Rosa  
 Whitney Smelser, Newbury Park  
 John Wallace, San Luis Obispo  
 Jason Whitley, Santa Cruz  
 Kathleen Wold, Morro Bay  
 Michael Wood, Independence, OR

## STUDENT

William J. Inman, Red Bluff  
 Patricia Ortega, Moreno Valley  
 Shane Perkins, San Jose  
 Fabiola Silva, Los Angeles



**Trimble SALES • SERVICE • RENTALS • SUPPLIES**



### Trimble® R10 Productivity Beyond GNSS



The first of its kind, the revolutionary Trimble R10 GNSS system is designed to help you work more effectively, no matter how extreme the environment. The new, lighter design is more balanced, allowing you to travel farther, faster, and gather data more easily.

### Trimble® S6 Now available with Trimble VISION™

Now available with Trimble VISION™ technology, the Trimble S6 Total Station enables surveyors to remotely see and measure through a live video feed from the instrument on their data controller. By integrating survey data with the live video surveyors can verify their work and ensure that they have captured everything before leaving the job.



### Spectra Precision® EPOCH® 50 GNSS Receiver Designed for Survey Pro



The Spectra Precision® EPOCH® 50 GNSS system, with its 220 channels, makes effective use of the GPS L1/L2/L2C/L5 and GLONASS L1/L2 signals for outstanding satellite coverage and precise positioning.

### Spectra Precision® ProMark 700 GNSS

At less than 1.5 lbs., the ProMark 700 GNSS receiver is the lightest network RTK rover on the market today. Very compact, slim and cable-free, ProMark 700 is portable, ergonomic, rugged, and shockproof.



# ALLEN

**Instruments & Supplies**

Arizona  
**800.272.0180**  
 7114 E Earll Drive  
 Scottsdale, AZ 85251

California  
**800.215.2737**  
 2940 La Palma Ave  
 Anaheim, CA 92806

*Allen Instruments & Supplies serving all of Arizona and Southern California. Each location offers a retail showroom and training facility. Allen Instruments & Supplies' two locations are the only Trimble Authorized sales distribution and service facilities in Arizona and So California.*

[www.alleninstruments.com](http://www.alleninstruments.com)





# Photo of the Year Entries

Submit Photos to [CLSA@californiasurveyors.org](mailto:CLSA@californiasurveyors.org) Deadline: December, 31<sup>st</sup> 2013

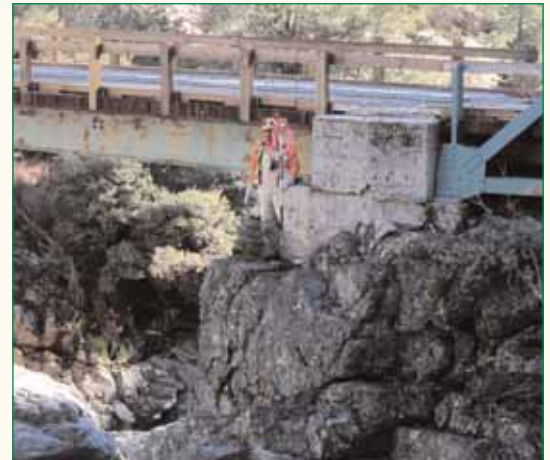


**ABOVE:** California Department of Water Resources survey monument in the foreground with Shasta Dam in the distance.

Submitted by Annette Lockhart, PLS

**TOP RIGHT:** Move over Rover! While surveying this southern California cul-de-sac the words of my old party chief came back to me... "If you want other land surveyors to follow in your footsteps - make sure you make it easy to find your trail." (No! - I did not set a new MAG Nail)...

Submitted by David Paul Johnson, PLS



**ABOVE:** MHM, Inc. surveyors working on a topographic survey for a bridge replacement project on Scales Road near the Yuba County and Placer County line.

Submitted by Roger K. Hanlin, PLS



## Central Coast Aerial Mapping, Inc.

SMBE/SWBE & Utilities Clearinghouse Certified

Digital Photogrammetric Mapping

Digital Terrain Models (DTM)

Surface Models/TINs

AutoCAD/Microstation/ArcGIS

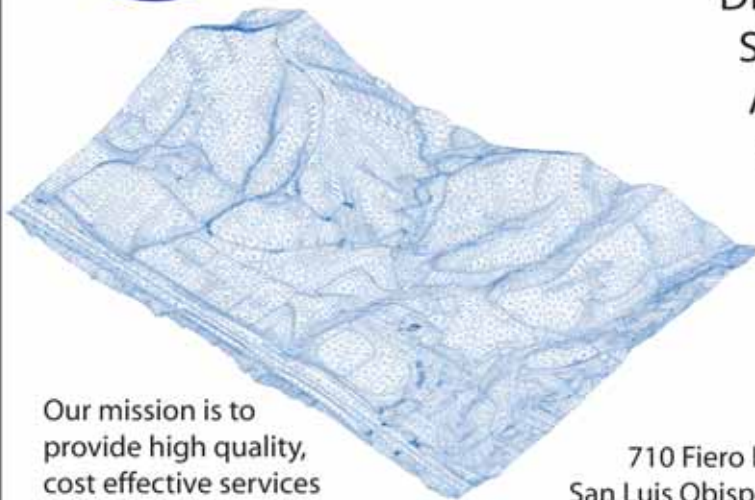
Seamless Color Orthophotos

LIDAR Aquisition

Photogrammetric Scanning

Digital Camera Aquisition

Airborne GPS (ABGPS)



Our mission is to provide high quality, cost effective services for our clients.

Made in U.S.A.

710 Fiero Ln. #24

San Luis Obispo, CA 93401

P(805) 543-4307 F(805) 543-7257

mail@aerial-maps.com www.aerial-maps.com



ASPRS Certified

# Q&A SMA Expert



*Michael P. Durkee, is a partner at McKenna Long & Aldridge where he represents developers, public agencies and interest groups in all aspects of land use law. Mike is the principal author of Map Act Navigator (1997-2013), and co-author of Ballot Box Navigator (Solano Press 2003), and Land-Use Initiatives and Referenda in California (Solano Press 1990, 1991).*

*mdurkee@mckennalong.com*

## Question

**First, what are the “rules of contiguity?” And second, when the common owner of two contiguous lots forms a “Trust” and puts that contiguous land into the Trust, after the landowner’s death, is the Trust considered to be the “same” owner (for purposes of determining what type of map to use) as the landowner who formed the Trust?**

## Discussion

Great question! Here are my thoughts.

Generally, the “rule of contiguity” holds that when a “common owner” of real property seeks to divide a parcel of land that is “contiguous” to another parcel of land likewise owned by the same owner and which other parcel was previously subdivided by the same owner, the two divisions are counted together (the older division’s lot count is added to the newer division’s lot count) in order to ascertain the total number of parcels created over time, and therefore to determine what kind of map (Tentative or Parcel) the current subdivision proposal will require. While generally “contiguous” means sharing a common border or touching, the Map Act expands the definition and considers property to be contiguous even if separated by roads, streets, drainage canals and other similar public improvements (see, Map Act section 66424). So, for example, if an owner purchased two contiguous lots (Parcel A and Parcel B) from someone else, and then divided Parcel A into 4 lots, he would use a Parcel Map (creation of 4 or fewer lots). If some time later, he decided to divide Parcel B into 2 lots, that lot-split would require a Tentative Map, because counting the lots he created earlier on contiguous property (4 lots on Parcel A), the lot-split division on Parcel B actually created the 5th and 6th lots on “contiguous” property, and therefore, that lot-split division must be done with a Tentative Map (division resulting in 5 or more lots requires a Tentative Map).

This is the rule, even when the divisions are separated by time. In *Bright v. Board of Supervisors*, 66 Cal. App. 3d 191 (1977), a subdivider owned two adjacent parcels. He owned the first parcel as his own separate property, and he owned the second property with his wife as joint tenants. Then in 1971, the owner transferred a portion of the second

property to his wife as her own separate parcel. In 1973, he then applied for a parcel map proposing to divide the first property (his separate property) into four lots. The court held that the 1971 division and the 1973 division had to be counted together for purposes of determining whether a Parcel Map or a Tentative Map would be required. In so counting, his 1973 proposal was actually creating 6 total lots (when his 1971 and 1973 divisions were added together), thus a Tentative Map was required for his 1973 4-lot subdivision proposal. The fact that the second division occurred later in time did not matter to the court. As long as the same common owner (subdivider) had an interest in the contiguous property being divided, the passage of time between divisions did not change the fact that ultimately, the common owner of contiguous property caused five or more parcels to be created; the map that causes the lot count in total to go to 5 or more must be a Tentative Map, regardless of how many lots it, alone, is creating.

Applying those rules then leads to the second question: Is a Trust a separate and distinct enough entity - from the landowner who creates the Trust - so that the rule of contiguity would not be applied if, after the landowner’s death, the Trust (as the owner of Parcel B) seeks to divide Parcel B into two lots. In my opinion, the Trust should not be treated as the same owner as the landowner. While I do not pretend to be an expert on Trusts, I do know that the Map Act “resets” each time a new owner is in the picture. In other words, if instead, the landowner had given Parcel B to his daughter, the daughter should not have the earlier Parcel A 4-split held against her (the rule of contiguity would not be applied) when she applies to do a lot-split on Parcel B, because she was not the owner of Parcel A, her father was. My limited understanding of Trusts is that they survive the Trust creator’s death because they are considered a legal entity separate and apart from the Trust creator. As such, the Map Act should view them as a new owner of Parcel B, not the old owner of Parcel B (the landowner who created the Trust). Therefore, if the Trust is considered the new owner of Parcel B, then the rules of contiguity regarding the old owner (the landowner who formed the Trust) should not apply. Again, this is my opinion.

**Thanks again for the great questions! ❖**





# WHEN YOU'RE NOT SURE — **JUST SCAN IT!**

Robotic Total Station | Imaging | Scanning | GNSS - All in a Single System

What if your robotic total station had scanning capabilities, without the need for complex registration of scan data in the field or processing in the office? The **NEW! Leica Nova MS50** enables you to capture and create a point cloud directly in the field — all through a familiar survey workflow.

It's a risk-free entryway into the profitable world of laser scanning, so you can be sure every time.

[www.novalearningnetwork.com](http://www.novalearningnetwork.com)

For more information contact your local Leica Geosystems representative:

Hans Haselbach Northern CAC C. 650-544-7247 hans.haselbach@leicaus.com	Jason Paris Northern CAC C. 831-247-1881 jason.paris@leicaus.com	James Yaccino Southern CAC P. 714-308-3889 james.yaccino@leicaus.com
---------------------------------------------------------------------------------	---------------------------------------------------------------------------	-------------------------------------------------------------------------------

- when it has to be **right** 



By: Ray Mathe, PLS

Senior Registrar with the Board for Professional Engineers,  
Land Surveyors, and Geologists

## The BPELSG Chronicles

### BPELSG and the County Surveyor

The connection between the county surveyor and BPELSG is beneficial to the profession of land surveying. The county surveyor has the opportunity to review much of the surveying that goes on every day all across California. While the duties of the county surveyor are set forth in various portions of the Government Code and related regulations, the primary interaction with BPELSG and county surveyors is related to the PLS Act (Business and Professions Code, Division 3, Chapter 15, §§8700-8805) and Board Rules (California Code of Regulations, Title 16, Division 5, §§400-476). Quite often, the county surveyor supports BPELSG with enforcement cases and communication to the local communities. However, just because the county surveyor works in concert with BPELSG does not mean they are exempt from following the standard of care commonly known as the PLS Act and Board Rules.

Complaints are received by BPELSG related to licensed or unlicensed practice; the individual submitting the complaint is referred to as the "Complainant" and the subject of the complaint is referred to as the "Subject". To begin the investigation, Complainants are asked to provide supporting documentation. However, when the Complainant is the client of the Subject or a general member of the public, BPELSG will more than likely need additional relevant documents and record maps to even begin the investigation, which the client or general member of the public may not be aware of. When the Complainant is a professional surveyor, BPELSG often times still needs additional information. The best resource for copies of many of these documents and maps is the county surveyor. County surveyors are extremely helpful and vital to the investigation by providing copies to BPELSG in a timely manner.

Additionally beneficial to BPELSG is the fact that county surveyors submit a good portion of the complaints relating to failure to file (or complete the filing of) records of survey and corner records. Don't forget surveyors in California have had a filing requirement for their surveys since 1891! And, at that time, the minimum discipline against the licensee was revocation of the license for at least one year. Recently, county surveyors' complaints outnumber other surveyors' complaints for these types of violations. And I would say it isn't because practicing land surveyors don't see violations on a regular basis. My personal experience prior to my working here at BPELSG with other surveyors not wanting to submit a complaint to BPELSG is they don't want to appear to be "judging" their brothers and sisters in surveying. The sad commentary on this statement is that it appears to be a small number of professionals who "fail to file" and everyone in the area knows the names of these individuals violating the laws. Is the best approach to only complain and do nothing else? I would say "no," but that is a topic for another day. Another comment I have heard other surveyors say is, "Surveyors haven't filed records in our area for years! I didn't think it was really a requirement for all surveys." Let's just say regional incompetence is not a free pass.

County surveyors can also be a partner in communication with the public and surveying community by distributing BPELSG publications like the Consumer Guide and the Guide for City and County Officials. Some county surveyors have helped communicate Monument Conservation requirements to local cities. County surveyors have also worked with BPELSG to develop practices and procedures to protect and replace our cadastral infrastructure...monuments within their own jurisdiction.

The PLS Act and Board Rules detail the county surveyor's roles and responsibilities in regards to record of surveys and corner records. The county surveyor must examine record of surveys and corner records in accordance with Sections 8766 and 8773.2 of the PLS Act, respectively. After proper examination of these survey records, the county surveyor must sign the required statements for each. Is the signing of these statements merely only a ministerial action? Unquestionably - NO. Prior to signing any of the required statements, the county surveyor must exercise their professional experience, judgment and application of the laws and regulations related to each survey record. Only then should the county surveyor sign those survey documents. Am I saying that a surveyor needs to change the methods or procedures that they used for their survey because a county surveyor demands they do the survey using a specific method before the county surveyor will sign the document? Absolutely not! However, a surveyor may want to take the county surveyor's counsel seriously because the county surveyor generally has a good understanding of local issues, standard of care, and has the opportunity to see far more surveys than the average surveyor performs in their career.

In my experience, many county surveyors have added great value to the survey records that are submitted to their office. This has benefited both the public and the professionals alike. Interestingly though, county surveyors' contributions to the surveying community have varied across the state and over time. The same is true for interaction with BPELSG. Some counties rarely, if ever, contact or assist BPELSG. Budget issues and newly appointed county surveyors can strain the collaboration with BPELSG. Where there is poor or no partnership everyone loses some benefit.

Budgets aside, the county surveyor has played a vital role in the development and growth of California and is critical for the continued success in future development. Understanding of laws, regulations, local ordinances, and historic surveys are invaluable resources for the surveyors, the public and BPELSG. For BPELSG to best protect the public, it is vital the relationship with county surveyors continue and improve each day. ❖



*San Diego*  
2014

*Mark Your Calendar!*



APRIL 12-16

# CLSA/NALS Conference

Town and Country Resort and Conference Center, San Diego, Ca



**CONTINUING EDUCATION**  
**SCHOLARSHIP AUCTION**  
**EXHIBITS**



Registration info at [www.californiasurveyors.org](http://www.californiasurveyors.org) or [www.nv-landsurveyors.org](http://www.nv-landsurveyors.org)  
T.: 707.578.6016 F.: 707.578.4406 E.: [conference@californiasurveyors.org](mailto:conference@californiasurveyors.org)



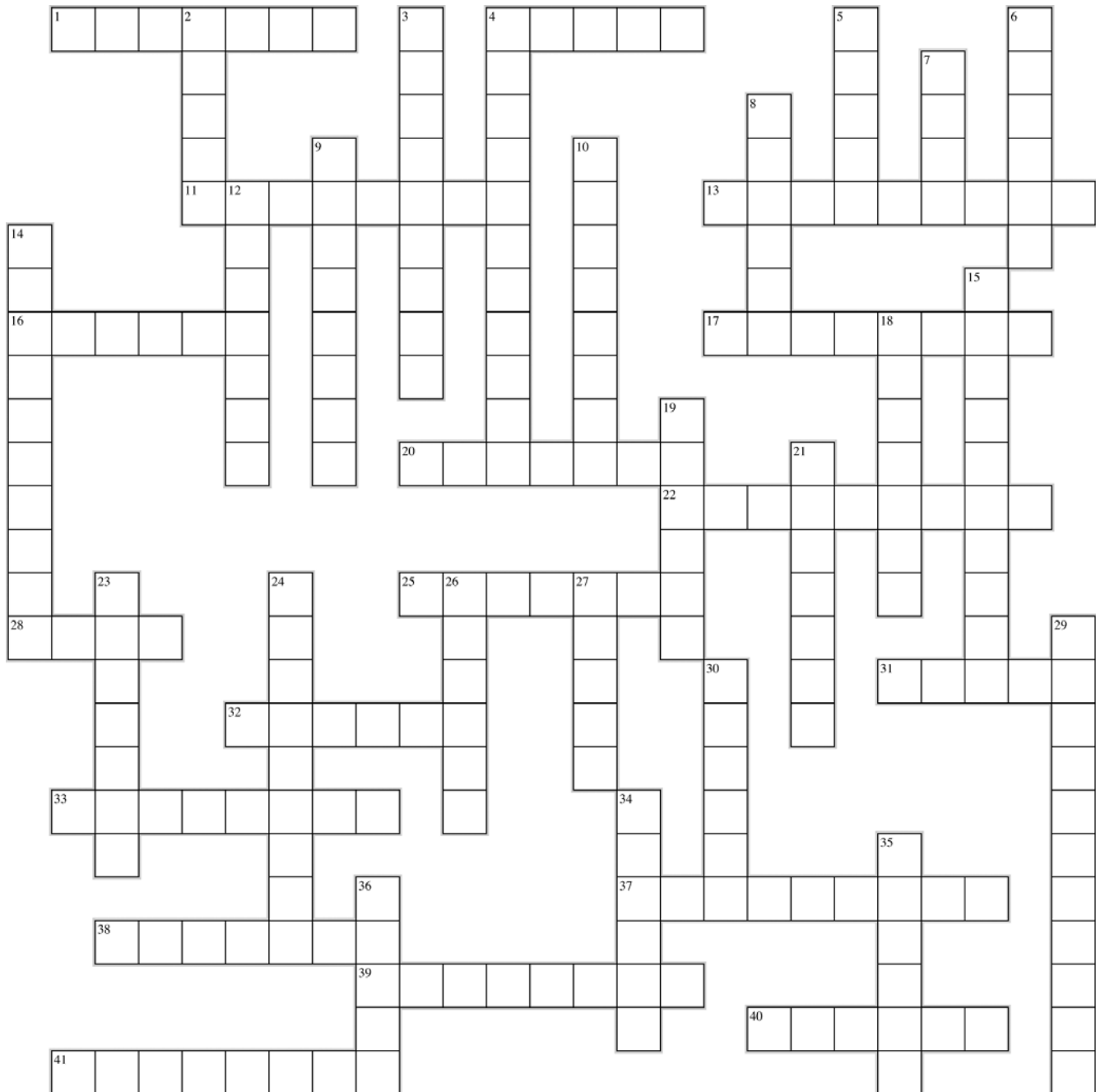
# Crossword Puzzle

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 #27

*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](mailto:clsa@californiasurveyors.org)*





## Across

1. MAGNETIC DIRECTION
4. ORAL EVIDENCE
11. END
13. D IN HTDP
16. PLACER COUNTY SEAT
17. BRITISH RECORD OF SURVEY BOOK
20. RETIRED NGS COORDINATOR
22. ALLOWABLE VARIATION
25. 100 FT CHAIN
28. ROBERT'S ERROR TYPE
31. TREE MARK
32. BIGGER THAN A STATUTE MILE
33. IMPORTANT NORTH-SOUTH LINE
37. DIVISION
38. ROBERT'S ROD
39. DIRECTION FROM NORTH
40. AGAINST LATIN
41. NEAR

## Down

2. OPINIONS OF A JUDGE
3. HEIGHT ABOVE DATUM
4. BRINER'S TOWN
5. VERTICAL MINE PASSAGE
6. SYMBOL TABLE
7. CONVEYANCE DOCUMENT
8. SPANISH GRANT LESS THAN 1000 ACRES
9. LINE OF EQUAL ELEVATION
10. KERN'S SURVEYOR
12. BOUNDARY WALKER
14. SUTTON'S COUNTY
15. GEE'S COUNTY
18. ZONED OFFSET FOR BUILDINGS
19. FEDERAL QUITCLAIM
21. HORIZONTAL ANGLE IN QUARTERS
23. 1853 TREATY WITH MEXICO
24. NEW POINT OR FRESNO MAGAZINE
26. AFFIRM
27. TAKE EXCEPTION
29. NEXT TO LAST
30. DEEP GULLY
34. TYPE OF SURVEYOR WARREN SMITH IS
35. TO D
36. MAP

## Santiago Canyon College

### SURVEY/MAPPING SCIENCES PROGRAM



Preparing for California LSIT or LS exams? Need to upgrade your skills? New surveyor? We offer:

- Affordable classes with certified instructors
- Survey/mapping certificate and degree programs
- Computer labs equipped with GPS, ESRI-GIS, and AutoDesk software
- Total Stations and GPS for field exercises
- Online and evening classes available
- Career training for new surveyors

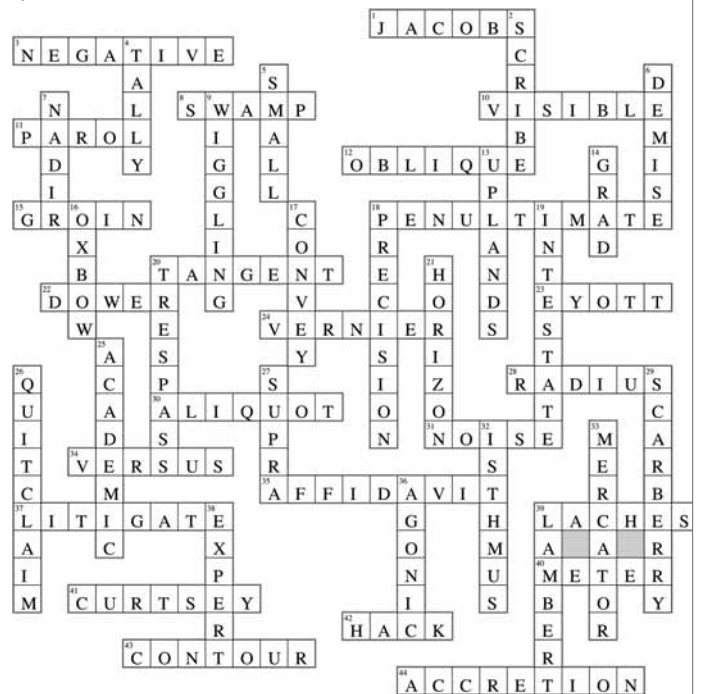
For more information call (714) 628-4883 or visit

[www.sccollege.edu/survey](http://www.sccollege.edu/survey)



**Santiago Canyon College**  
8045 East Chapman Avenue  
Orange, CA 92869

### Key to CLSA puzzle #26 (Surveyor Issue # 173)





# Sustaining Members

**LEJA SURVEYING CORP.**  
Land Surveying & Mapping • Court Diagrams  
Legal Descriptions

**Steve Leja**  
P.L.S. 5933

Telephone (909) 797-3043  
Cell (909) 709-6861 • Fax (909) 797-3876  
13642 Highland Oaks Dr. • Yucaipa, CA 92399

**ALLEN Instruments & Supplies**

**Dan McMahon**  
Sales Representative  
760.271.4681 Mobile  
714.238.3434 Office

800.215.2737 • Fax 714.238.3441  
2940 E. La Palma Ave., Suite F  
Anaheim, CA 92806  
www.alleninstruments.com

**Trimble**  
dan@alleninst.com

**TRI STATE SURVEYING, INC.**

**MICKI J. JEFFERSON, P.L.S., W.R.S.**  
PRESIDENT - CHIEF EXECUTIVE OFFICER  
**(775) 358-9491**

Boundary Surveys • Water Rights  
Land Division Mapping • Aerial Mapping  
Construction Surveys  
Global Positioning Surveys  
Design/Topographic Surveys

1925 E. PRATER WAY  
SPARKS, NV 89434-8938  
Email: MJJefferson@TriStateLtd.com

www.TriStateLtd.com  
FAX (775) 358-3664

**SURV-KAP®**

520-622-6011  
1-800-445-5320  
FAX: 520-792-2030  
www.surv-kap.com

**John G. Baffert**  
President

PO. Box 27367 • Tucson, AZ 85726 • 3225 E. 47th Street • 85713

**Sustaining Members**

**Trimble**

Trimble Navigation Limited  
5475 Kellenburger Rd.  
Dayton, OH 45424-1099

800.538.7800  
937.233.8921  
937.233.9441 fax

**Berntsen**  
Custom Identification Products

**Tim Klaben**  
Marketing Manager

Berntsen International, Inc.  
PO Box 8670  
Madison, WI 53708-8670  
www.berntsen.com  
tklaben@berntsen.com

Tel. (608) 249-8549  
Fax (608) 249-9794  
Tel. (800) 356-7388  
Fax (800) 249-9794

**Marking the Infrastructure of the World.**

**PACIFIC LAND SEMINARS**

**TONY CUOMO**  
PRESIDENT

538 Aliso Avenue  
Newport Beach, CA 92663

tony@pacificland.com (562) 980-6160  
www.pacificland.com (949) 548-4472

**ENGINEERING SUPPLY COMPANY**  
THE LEADER IN PRECISION POSITIONING SYSTEMS SINCE 1980

Two Full Service Locations  
To Serve You! 800-788-3307

Concord, California  
5700 Walnut Dr., Suite 2  
W. Sacramento, California  
1000 Franklin Hwy., Suite 100

**TOPCON** Sales Service Training Rentals

There's No Limit To Your Productivity!  
With Quality Topcon Products And World Class Customer Service!

**MOUNT DIABLO SURVEYORS HISTORICAL SOCIETY**  
A CALIFORNIA NON-PROFIT PUBLIC BENEFIT CORPORATION (953 311000)

Bart's Solar Compass

**COLLECT, PRESERVE & DISPLAY ARTIFACTS of the LAND SURVEYING PROFESSION**

5042 Amethyst Ct, San Jose, CA 95136 www.mdahs.org

SALES • RENTALS • SERVICE • TRAINING

**CALIFORNIA SURVEYING & DRAFTING SUPPLY**

SACRAMENTO • DUBLIN • FRESNO • LAS VEGAS  
LOS ANGELES • SAN DIEGO

**800.243.1414 • www.csdinc.com**

**TOPCON Quality Product - Service - Support**

**Lewis & Lewis**  
(800) 342-3607  
Sales - Rental - Repair - Financing  
www.lewis-lewis.net

VENTURA: 1600 Callens Rd. Ventura CA 93003 (805) 644-7403  
FAX (805) 642-3970 Email: sales@lewis-lewis.net  
SAN DIEGO: 340 S. Andreasen Dr., Suite A Escondido, CA 92029  
(760) 747-8823 FAX (760) 480-5778 Email: jump@lewis-lewis.net

**CARTWRIGHT AERIAL SURVEYS, INC.**

**BILL CALMES**  
PRESIDENT

EXECUTIVE AIRPORT:  
5979 FREEPORT BLVD.  
SACRAMENTO, CA 95822

CALMES@CASHMAP.COM  
WWW.CASHMAP.COM  
(916) 421-3465  
FAX (916) 422-9631

**SUSTAINING MEMBERSHIP**

Membership in the California Land Surveyors Association, Inc. as a Sustaining Member is open to any individual, company, or corporation who, by their interest in the land surveying profession, is desirous of supporting the purposes and objectives of this Association. For information regarding Sustaining Membership, contact:

**CLSA Central Office**  
526 So. E Street, Santa Rosa, CA 95404  
Tel: (707) 578-6016 Fax: (707) 578-4406

**EngineerSupply.com**  
Your Resource for Engineering Tools and Supplies.

BluePrint Storage  
Laser Measuring Devices  
Measuring Wheels  
Surveying Equipment  
Calculators  
Digitizers  
Hand Trucks  
Metal Locators

CALL TOLL-FREE 800-591-8307  
Visit Us on the Web at www.EngineerSupply.com

**PACE ENGINEERING**  
Complete engineering services with attention to individual client needs since 1978

**ANDREW RIELAND, LLS**  
SURVEY SUPERVISOR  
LS 4322

1730 SOUTH STREET  
REDDING, CA 96001  
e-mail: arieland@paceengineering.us

(530) 244-0202  
FAX (530) 244-1978

**VERTICAL MAPPING RESOURCES, INC.**  
An Equalizer in Land Information  
www.verticalmapping.com

San Diego, CA  
4524 Avenida  
Commodore, CA 92118  
Ph. 619.445.1330  
Fax. 619.445.1321

Sacramento, CA  
191 Blue Blinn Road, #110  
Folsom, CA 95630  
916.922.2375 FAX  
Cell. 916.921.1487

**Seafloor**

Manufacturer of the HydroLife-IM & SonarMite-BT  
Hydrographic Survey Systems  
Sales • Rentals

Call (530) 677-1019 or visit Seafloorsystems.com  
3941 Park Drive, Suite 20-218, El Dorado Hills, CA 95702



## Top Captions for issue #173 Cartoon



"CLSA is sponsoring a free retirement clinic at the Hall of Science on the campus of the University of Thana Ana. This year's theme: Quit while you are still alive, there have been too many surveyors who died while counting the months 'til they could retire. All those attending should look for the bright orange survey party sign and the cardboard cutout of the theodolite taped to the wall. All attendees will receive either a red or orange balloon courtesy of CLSA."

Submitted by B.J. Tucker

Expose yourself to science." – Submitted by John Wilusz

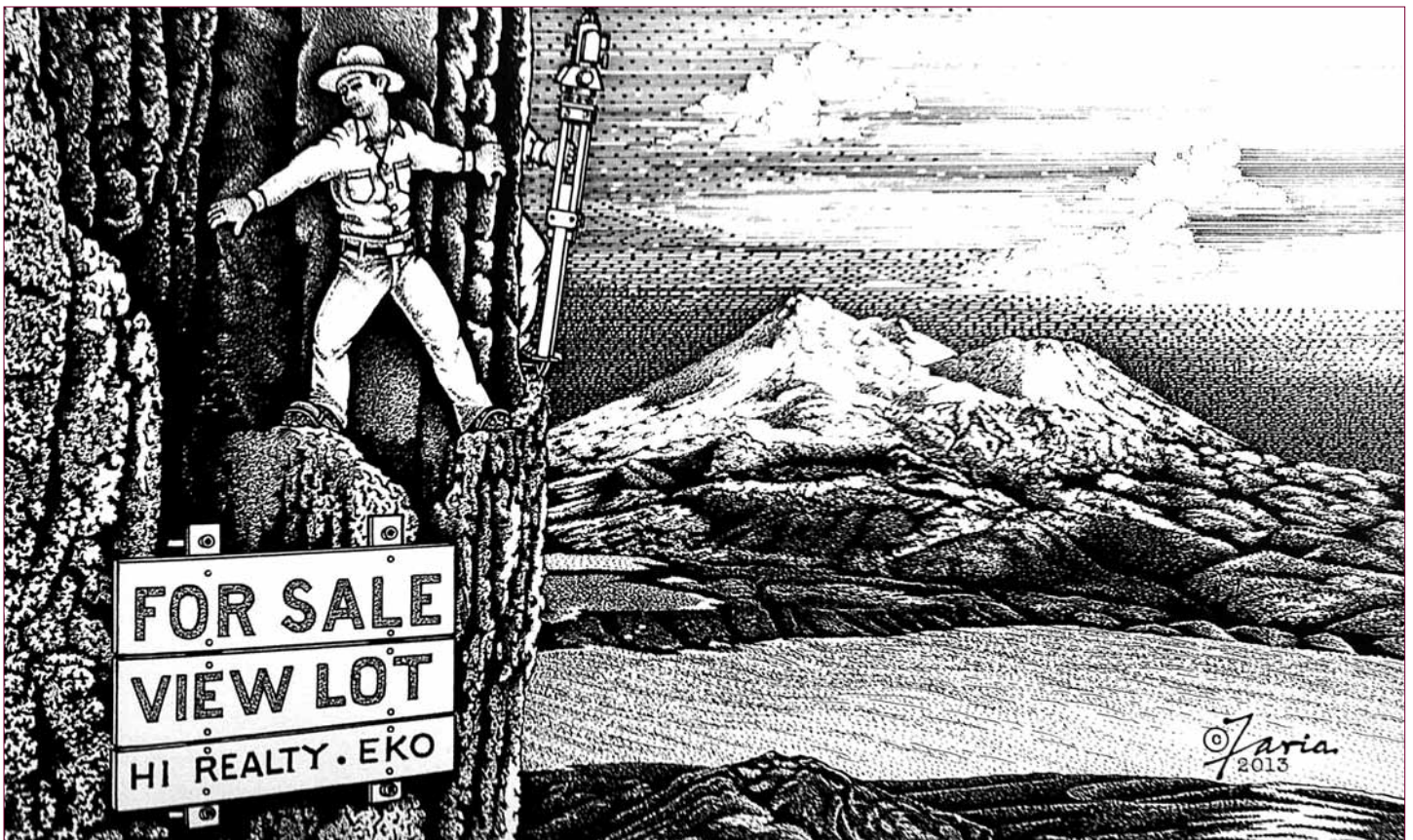


Station Crap – We've all been there.

From the Georgia Land Surveyor, January – February 2012.

Submitted by David Cyfers.

Submit your caption for the below cartoon to [clsa@californiasurveyors.org](mailto:clsa@californiasurveyors.org) by March 1st. Our favorite captions will be published in the next issue of the California Surveyor.







By: Carl C. de Baca, PLS

Carl is Principal of Alidade Surveying in Elko, Nevada, the current NSPS Area 9 Director, and a past editor of the California Surveyor. He can be reached at: alidade.nv@sbcglobal.net.

## Bad Backlights

Dear Mr. C.de Baca,

Our software programming department has received your latest letter and we want to express our appreciation for your concern. Your overwhelming knowledge of certain surveying techniques, especially those of a 'mature' nature, seems effortlessly demonstrated every time you address our humble firm. Please know that we always value your unique input and we sympathize with your desire to see, as you put it, "critical enhancements" to our suite of hardware and software products. However in these lean economic times we find ourselves with very limited resources and must maintain our focus on certain more pressing issues, specifically those likely aimed at a larger market.

We are confident that you will be pleased to note that our programmers hold your correspondence in such special esteem that many of your letters hang framed on the walls of our Research and Development department. Where, we wonder, do you get the energy to offer us all these ideas? With respect to your latest communication, many among us recognize both the economic and environmentally conscious aspects of your suggestion. Any efforts made to use less energy and "green up" the surveying profession are both noble and practical.

Nevertheless, it is with no little melancholy that I am compelled to inform you that we are presently unable to devote resources to constructing an interface between our software and the Wild T-1. We certainly agree that this particular instrument is, as you so emphatically assert, "the best instrument ever made for stadia measurement". While we regretfully decline to undertake this effort, I must inform you that some in our R&D department are still vigorously debating your previous request. Surely, the merits of adding a floppy disk drive to our flagship GNSS receiver and /or our top of the line survey controller speak for themselves, but no one is sure that a reliable source for floppy disks can be secured. I must say, however, that certain of the staff seem to have taken a particular delight in working on a prototype during their break time.

Please do not let this temporary setback dissuade you from continuing to bring your enlightening suggestion to our attention.

Sincerely yours,  
C. Spaught Runne  
Director of Development  
Squimble Geospatial, Inc. ❖

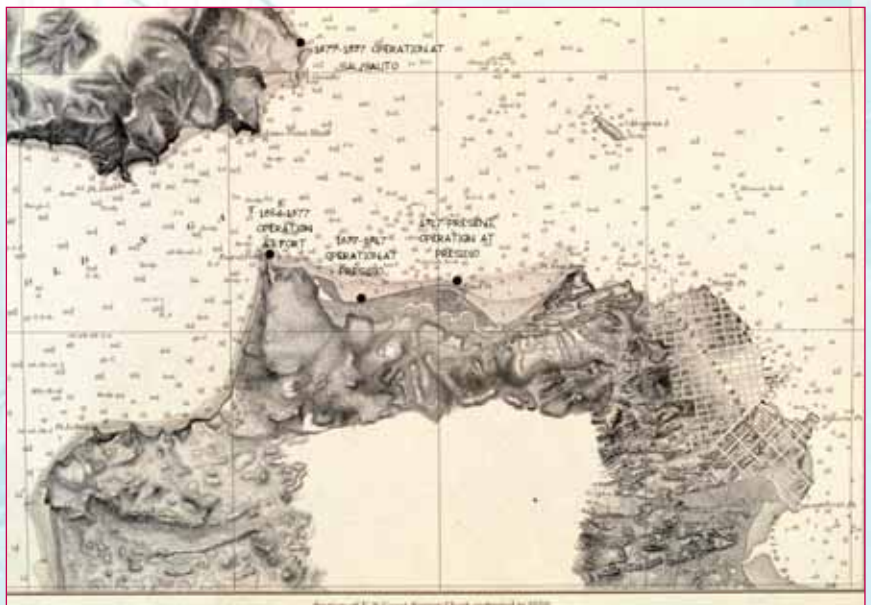
## San Francisco Treats

By: Dane Ince, PLS

Bragging rights for the longest running set of tidal data collection in the western hemisphere goes to San Francisco. Currently we are at 159 years of data collection and counting. At Fort Point on June 30, 1854, a self-registering tide gauge was installed. This location was abandoned in 1877 because the infrastructure fell into disrepair. Data was collected in Sausalito beginning in 1877 and was discontinued in 1897 and operations move backed to the Presidio. This new Presidio location was about mile east of Fort Point. There were periods of overlapping operation of these tide gauges during their various moves. The last move came in 1927 to a location just west of the Crissy Field Air strip to what is known as the Fort Point Coast Guard Wharf.

The first self registering tide gauge in the United States by the Coast Survey was constructed by Joseph Saxton, of the Office of United States Weights and Measures. ❖

Source data NOAA Technical Report NOS CO-OPS 035 Fort Point photos are from the photo gallery of the National Park service website for Fort Point





# VERIFY INFORMATION YOU NEED TO EXPEDITE SURVEY COMPLETION

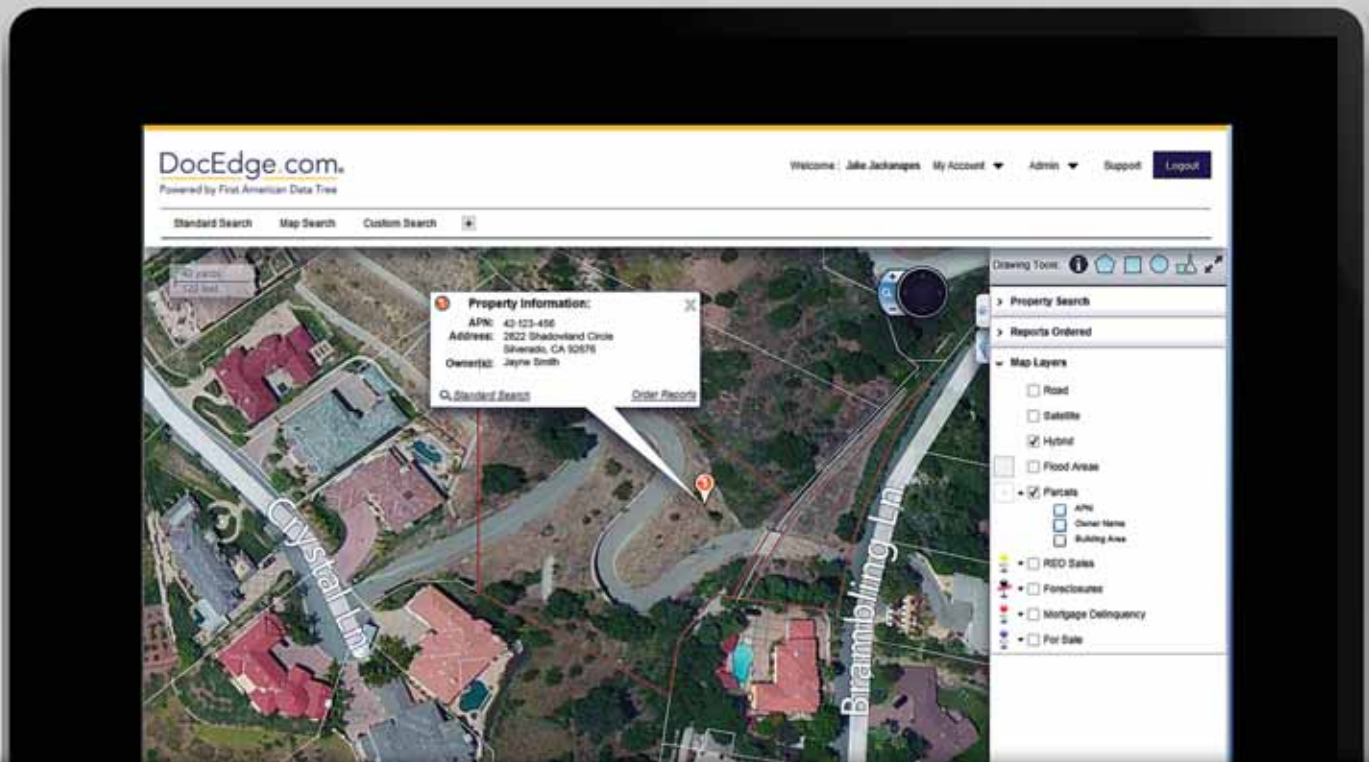
Reduce the turn-around time on land survey completion utilizing DocEdge.com. Leveraging GIS technology, DocEdge.com empowers you to

- Directly access
- Legal descriptions
  - Recorded documents
  - Parcel maps
  - And more!

quickly identify parcel boundaries overlaid on aerial imagery, allowing you to visually assess property lines instantly. And that's just the beginning.

Call today for a **FREE** trial!

**DocEdge.com**<sup>®</sup>  
Powered by First American Data Tree



**First American  
Data Tree**

800.708.8463 • [www.DataTree.com](http://www.DataTree.com)

**Be Certain.™**

# Evolving Surveying Solutions

for an Evolving Industry



Integrated  
Robotic  
Total Stations



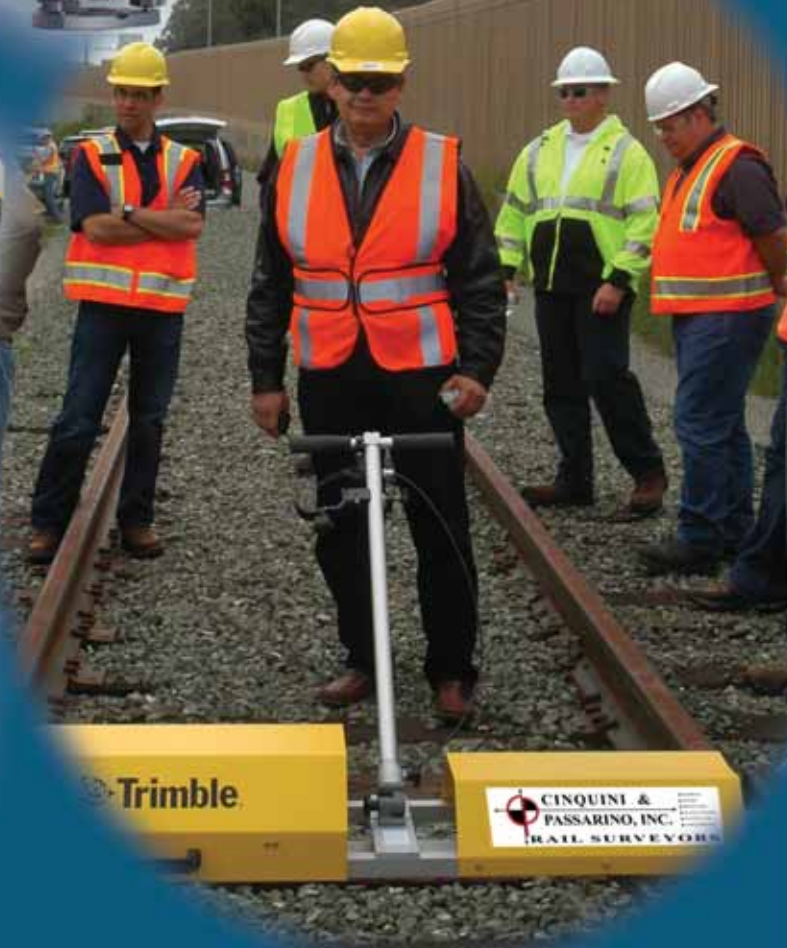
Gatewing X100  
Aerial Mapping and  
Surveying System



TX5 3D  
Laser Scanner



R10 GNSS Network Rover



CALIFORNIA SURVEYING  
& DRAFTING SUPPLY

[www.csdsinc.com](http://www.csdsinc.com) • [sales@csdsinc.com](mailto:sales@csdsinc.com)

*Trimble Authorized Sales, Service and Training*  
*Daily/Weekly/Monthly Equipment Rentals*

GEDO CE Rail  
Measurement Trolley